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FINAL REPORT
LAB. JOB NO. LJ 10309-50/KA-035
CONTROLLED AIR INCINERATOR UPGRADE, TA-50

Presented to

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EXECUTIVE SUMMARY

In 1976, Los Alamos National Laboratory (LANL) constructed a controlled air incinerator (CAI) at TA-50 in Los Alamos, New Mexico. The CAI is designed to treat both transuranic wastes and mixed hazardous/radioactive wastes; therefore a RCRA permit is required for operation. As part of the permitting process, a trial burn was conducted in 1986 to determine 1) the CAI's destruction and removal efficiency for principal organic hazardous wastes and 2) the required RCRA operating conditions and limits for the CAI (1).

The results of the test burn showed the CAI to be in full compliance with the RCRA requirements and the CAI was brought from experimental mode to operational mode in anticipation of operating under the RCRA permit. Modifications, primarily related to the air pollution control system, were made to the CAI in order to bring it into full operational mode.

ICF Kaiser Engineers was contracted to provide an independent evaluation of the modified air pollution control system to determine

1) the effect of modifications on operational reliability of the air pollution control system,

2) the effect of modifications on hydrogen chloride and particulate matter removal efficiencies, and

3) the expected performance of the air pollution control system with regard to the RCRA permit limits.

ICF Kaiser Engineers has studied both the original and modified air pollution control systems and found the modified system to be much more operationally reliable, greatly improved in its ability to remove air pollutants, and easily capable of meeting the RCRA requirements, even under worst-case conditions.

1.0 Purpose of Study

The purpose of this study is to provide the Laboratory with an independent evaluation of the modifications made to the air pollution control system of the controlled air incinerator (CAI) operated by the Los Alamos National Laboratory (LANL).

Modifications were made to the quench tower, venturi scrubber, absorption column and high efficiency particulate air (HEPA) filter portions of the air pollution control system following a 1986 trial burn conducted with the CAI. These modifications were made to bring the CAI from experimental mode to operational mode.

This report summarizes the modifications made to the components listed above and provides an evaluation of the effect of these modifications on 1) the operational reliability of the system, 2) the expected performance of the system to remove hydrogen chloride and particulate matter, and 3) the enhanced ability of the modified system to comply with the parameter values proposed in the RCRA permit.

Detailed information concerning the design and operational parameters of the original CAI tested in the 1986 trial burn can be found in LANL reports (2,3).

2.0 Modified Air Pollution Control System

The design and operation of the CAI's air pollution control system were modified subsequent to the 1986 trial burn. These changes improved operational reliability and enhanced the removal efficiencies of the system. For reference, a process flow diagram of the original system is shown in Figure 1, while Figure 2 presents the modifications which were made to the system.

In both systems, hot gas would flow first through wet collection devices, then through dry collection devices before being released to the atmosphere. Primarily, modifications were made to individual units of the air pollution control system, with the overall flow process remaining unchanged. The four units which were modified are as follows: 1) the quench tower, 2) the venturi scrubber, 3) the absorption column, 4) the HEPA filter system.

The remainder of this section summarizes the modifications made to these units.

2.1 Quench Tower

Unit Description

The quench tower is the first component of the air pollution control system and is located directly downstream from the combustion chambers. The quench tower serves to pre-condition the hot exhaust gas prior to the gas entering the emission control devices.

Figure 1

PERFORMANCE-TESTED AIR POLLUTION CONTROL SYSTEM LAYOUT FOR THE CONTROLLED AIR INCINERATOR

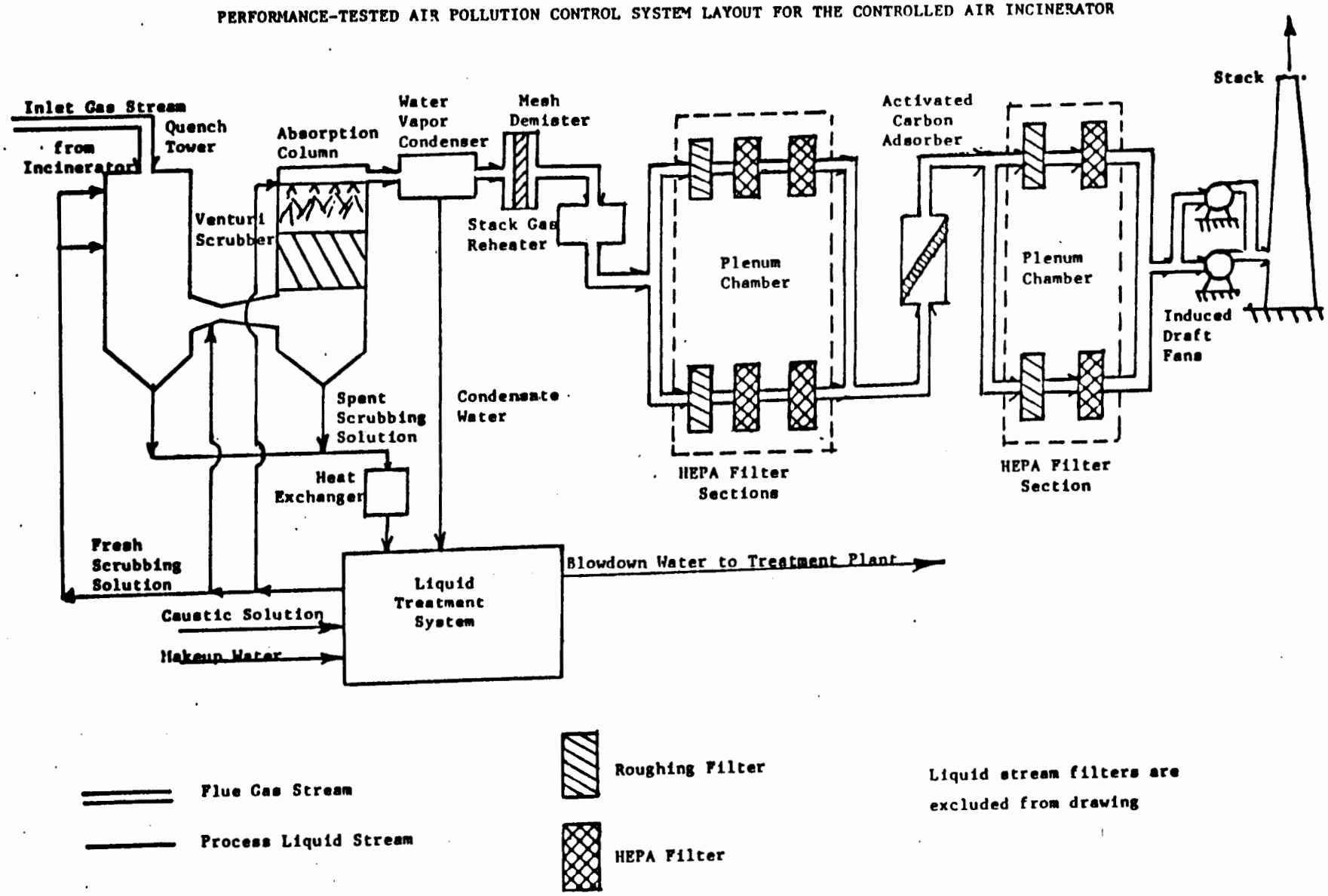
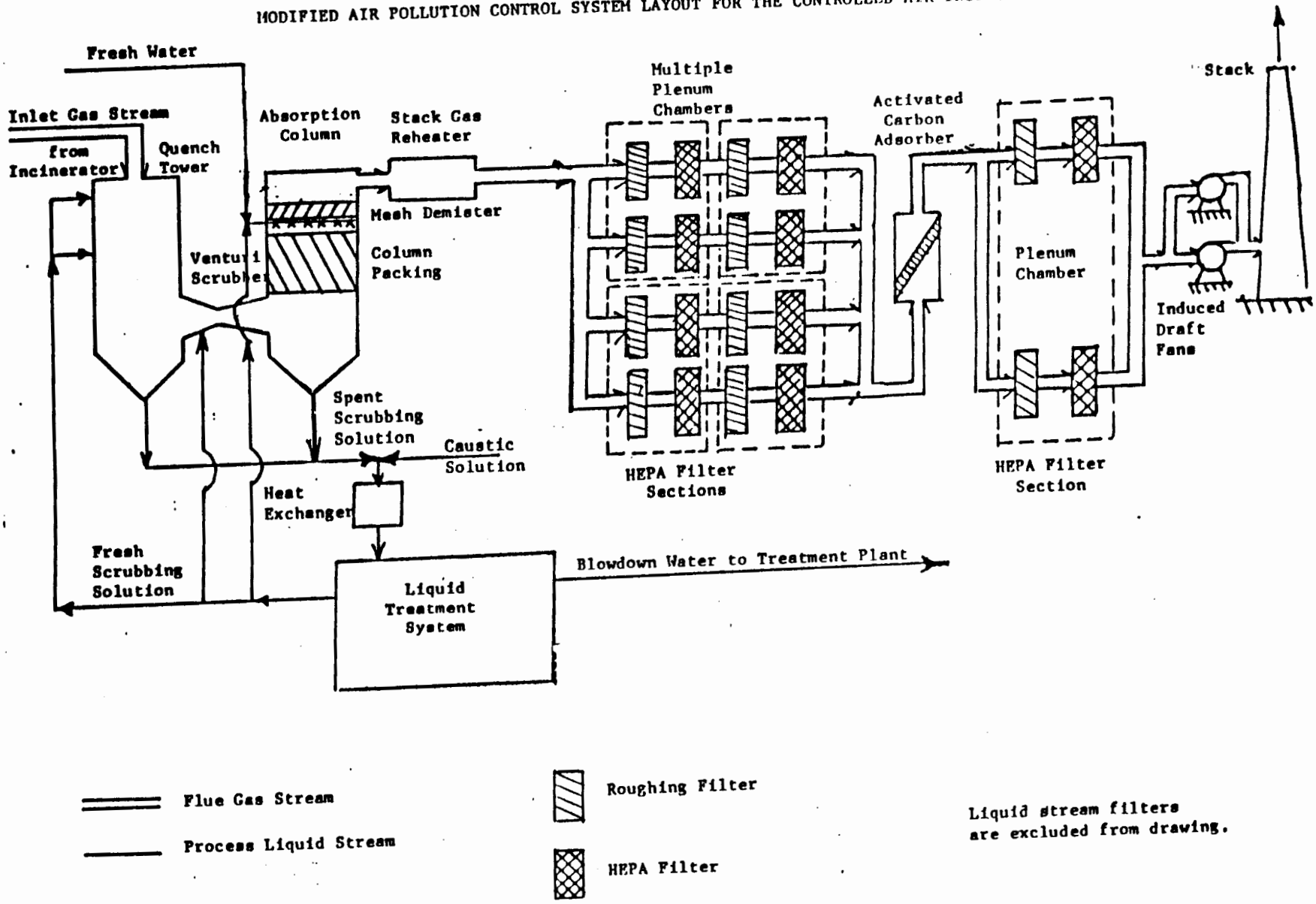


Figure 2

MODIFIED AIR POLLUTION CONTROL SYSTEM LAYOUT FOR THE CONTROLLED AIR INCINERATOR



Water evaporation within the quench tower cools the hot gas from 2,000° F to 180° F and raises the moisture content of the gas from approximately 6 percent to 18 percent (by volume). The cooled, neutralized scrub solution used in the quench tower is added by a combination of wetted wall and spray droplet mechanisms. Used scrub solution is drained from the bottom of the quench tower for subsequent neutralization, purification, and recycling.

Unit Modifications

Five modifications were made to the quench tower in order to improve its operational reliability, reduce maintenance requirements, and improve its ability to cool and humidify the gas stream. Four of these modifications dealt with physical changes to the unit, while the fifth was an operational change. These modifications are as follows:

1. Modification: Replacement of the original FRP fiberglass unit with a similar unit made of Hastelloy C-22 alloy.

   Purpose: Improve resistance to 1) corrosion caused by chloride ions under acidic conditions and 2) thermal stress damage caused by sudden increases in gas temperature during process upsets.

2. Modification: Replace the original liquid overflow weir assembly with a welded annular multiple-spray injection system constructed from Hastelloy C-22. The system consists of 12 upward-directed, curved-cylindrical nozzles, 30° on center, which injects the scrub solution against a splash plate.

Purpose: Provide a more uniform liquid distribution to the quench tower. The concentric barrier promotes gas separation and the formation of a wetted layer along the sides of the quench tower. The Hastelloy C-22 provides improved corrosion and thermal resistance.

3. Modification: The three concentric spray nozzles located in the lower portion of the quench tower and originally constructed with Hastelloy C-276, have been replaced with nozzles made of C-22 alloy. The new nozzles are now located 120° horizontally on center, pointed at 30° below the horizontal.

   Purpose: The Hastelloy C-22 provides greater thermal and heat resistance than the original material. The new alignment promotes effective cooling/humidification through increased gas-liquid contact.

4. Modification: All original gaskets have been replaced with Viton plastic gaskets. All plug valve linings in the new unit are constructed of teflon.

   Purpose: The new gaskets have improved sealing properties as well as improved thermal and corrosion resistance. The new plug valve linings have improved thermal and corrosion resistance.

5. Modification: A booster pump has been added to the scrub solution supply line. This pump increases the pressure at the three lower spray nozzles from 80 psi to 110 psi.

   Purpose: The increased pressure provides finer atomization of the scrub solution and more rapid cooling of the offgas.

6. Modification (operational): The liquid flow rate in the quench tower has been increased from 24 to 28 gallons per minute (gpm) by the addition of 4 gpm to the liquid flow rate in the upper part of the quench tower.

   Purpose: The increased flow rate increases the liquid shower rate, provides an additional 10° F cooling of the exit gas stream and increases the moisture content of the gas stream by 2 percent to 3 percent (by volume). These improvements in turn enhance the performance of the downstream venturi scrubber.

2.2 Venturi Scrubber

Unit Description

The venturi scrubber, located between the quench tower and the packed absorption column, is the CAI's primary device for particulate removal. The venturi scrubber's purpose is to sufficiently reduce the particulate loading of the gas stream in order to increase HEPA filter life by preventing blinding and plugging of the filters. The venturi scrubber also acts to remove a portion of the soluble gaseous constituents.

Unit Modifications

Several modifications have been made to the venturi scrubber to improve its operational reliability and removal efficiency. These modifications consist of three physical and two operational changes to the unit. These changes are as follows:

1. Modification: Replace original diffuser sections made of FRP fiberglass with identical sections constructed from Hastelloy C-22.

   Purpose: Improved thermal and corrosion resistance.

2. Modification: Alignment of the venturi diffuser duct relative to the packed absorption column has been changed. Originally, the duct aligned axially with the center of the cylindrical, separation unit of the packed absorption column. The modified exhaust duct is aligned tangentially, forcing the gas stream to enter the cylindrical separation unit at its outer periphery.

   Purpose: The modified system causes a cyclonic flow pattern to be established which improves removal of entrained droplets and prevents them from becoming re-entrained.

3. Modification: Modifications were made to the nozzle restriction section of the venturi scrubber. The original flow restriction orifice, which was lined with Hypalon plastic, has been replaced by a new control pinch valve lined with Viton plastic; and the inlet liquid spray elbow nozzle - originally a 1/4 inch orifice diameter - has been replaced with a 3/8 inch orifice diameter nozzle.

   Purpose: The new materials utilized are more durable and corrosion/erosion resistant then the original materials. The new elbow nozzle is 1) less subject to plugging and abrasion and 2) allows a higher liquid flow rate with no net increase in liquid-phase pressure drop.

4. Modification (operational): The liquid flow rate to the venturi scrubber has been increased from 5 to 10 gpm.

   Purpose: Improve particulate removal efficiency of the system. Increasing the liquid flow raises the liquid to gas ratio, which raises the number of liquid droplets in the gas stream. This in turn increases the potential for liquid droplets to collide with particulate matter and thereby remove the particulates from the gas stream.

5. Modification (operational): The variable area orifice opening of the venturi scrubber is restricted to a greater extent in order to increase the gas phase pressure drop across the unit from 40 inches of water to 60 inches of water.

   Purpose: Improve particulate removal efficiency of the system. The additional energy provided by increasing the gas phase pressure drop and velocity breaks the liquid stream into a greater number of small size droplets, thereby improving the mixing of the gas stream with the liquid droplets. This in turn increases the potential for liquid droplets to collide with particulate matter and remove them from the gas stream.

2.3 Absorption Column

Unit Description

The packed absorption column was installed for the primary purpose of removing hydrogen chloride and other soluble gases from the exhaust gas stream. The absorption column is designed to remove hydrogen chloride from the gas phase into the liquid phase by countercurrent contact with a sodium hydroxide solution in a packed column.

Unit Modifications

Several modifications have been made to the packed absorption column since the RCRA trial burn to improve its performance and reliability. These modifications include three physical changes, one operational change, and three process design changes.

The physical changes are as follows:

1. Modification: Replace FRP fiberglass as the material of construction with Hastelloy C-22 alloy.

   Purpose: Increased durability and corrosion resistance.

2. Modification: Increase the column diameter from 24 inches to 30 inches.

   Purpose: Improve removal efficiency by reducing the gas velocity and increasing gas phase retention time.

3. Modification: Replacement of the structured polypropylene packing with a structured-type Hastelloy C-276 packing.

   Purpose: Increase surface contact area, increase thermal resistance, and lower the unit linear pressure drop from over 3.0 inches of water to under 1.0 inch of water.

The operational change is as follows:

4. Modification: Increase the liquid shower rate from 7 gpm to 20-25 gpm.

   Purpose: Increase removal efficiency of the absorption column by increasing the liquid capacity.

The three design process changes are as follows:

5. Modification: Replace the indirect contact gas phase condenser with a liquid phase heat exchanger.

   Purpose: Improve moisture removal in the absorption unit by providing additional cooling of the water entering the absorption unit and allowing the unit to act as a direct contact condenser.

6. Modification: Replace the external polypropylene demister with an internally located, intermittently showered Hastelloy C-22 demister; located immediately below the packing in the absorption unit.

   Purpose: Reduce corrosion, thermal stress and filter blinding by reducing salt mist carryover into the HEPA filter system.

7. Modification: Relocate the stack gas super heater from immediately upstream of the HEPA filters to immediately downstream of the absorption column.

   Purpose: Reduce potential for blinding of the HEPA filters due to water droplet carryover. The new location provides for a longer hot gas retention time which in turn allows for increased water evaporation.

2.4 HEPA Filtration

Unit Description

The HEPA filter system is utilized to provide a very high degree of particulate removal from the exhaust gas stream and provide protection against the release of radionuclides. The HEPA filtration system is a second stage treatment and acts as a final polishing of the gas stream by removing the very fine particles which remain following cleaning by the quench tower, venturi scrubber and absorption column.

The HEPA filter system consists of two sections which are separated by an activated carbon adsorber.

Unit Modifications

The section of HEPA filters upstream of the activated carbon adsorber has been duplicated. The duplicate bank of filters provides for continued operation during filter replacement. Because only one bank is on-line at a time, the removal efficiencies of the system are not affected by this modification.

3.0 RCRA Requirements

The RCRA trial burn (1) of the CAI was conducted in September of 1986. Permit conditions for operation of the CAI are based on the experimental operational conditions utilized during the successful trial burn. These draft permit conditions are listed in Table 1 for both solid fuels and liquid fuels (4).

3.1 Trial Burn Performance Data

A RCRA trial burn was conducted on September 4-7, 1986 on the controlled air incinerator (CAI). The purpose of this trial burn was to determine incinerator performance and the destruction and removal efficiencies (DRE) for the principal organic hazardous contaminants (POHCs) to be processed in the CAI. The trial burn was conducted by burning a mixture of 30-40 percent by weight carbon tetrachloride and 15-20 percent by weight trichloroethylene to simulate a high chlorine content waste feed.

The feed material was burned at a rate of 166-203 pounds per hour (solid feed) and 147-173 pounds per hour (liquid feed). The liquid fuel test runs were made with feed material containing varying amounts of aluminum stearate, which was added to simulate ash and particulate producing feed.

A summary of the results of the RCRA trial burn is presented in Table 2. The parameters investigated during the trial burn were 1) oxygen and carbon monoxide content of the off gas, 2) DREs for carbon tetrachloride and trichloroethylene, 3) hydrogen chloride

Table 1

RCRA OPERATING REQUIREMENTS FOR THE CONTROLLED AIR INCINERATOR

Operating Parameter	Units Employed	Solid Feed	Liquid Feed	Specific Comments
Emission Standards				
POHC DRE[1]	%	99.99	99.99	Most compounds
HCl Emissions or Removal Efficiency	lb/hour	4.0	4.0	Less restrictive shall apply
	%	99.0	99.0	
Particulate Concentration	gr/dscf	0.08	0.08	60°F, 14.7 psia 7.0% O_2, dry
Combustion Imputs				
Max. Heat Rate	MM Btu/hr	1.5	1.5	
Max. Waste Feed	lb/hour	125.0	Not a permit condition	
Max. Organic Chlorine	lb/hour	99.4	99.4	Total
Operating Temp.				
Primary Chamber	°F	>1,400	>1,400	Feed cutoff
Secondary Chamber	°F	>2,000	>2,000	Feed cutoff
Exhaust Gas				
Max. Flow Rate	lb/hour	3,654	3,933	Feed cutoff
CO Concentration	ppm (vol)	100/500	100/500	Timed immediate feed cutoff
Minimum O_2, wet Sec. Comb. Chamber	% (vol)	7.5	6.0	Feed cutoff
Scrubbing Water				
Minimum Flow Rate	gal/min	10.0	10.0	
Minimum Exit pH	-	1.0	1.0	Feed cutoff
Pressure Drop				
Venturi Scrubber	inch H_2O	40.0	40.0	
HEPA Filter	inch H_2O	0.1	0.1	

Note: 1. Destruction and removal efficiency of the primary organic hazardous constituents.

Table 2

SUMMARY OF THE RCRA TRIAL BURN EMISSION LEVELS

Parameter Measured	Units Employed	Average Value	Observed Range
Carbon Tetra-chloride Destruction	% of input	99.99924	99.99898 - 99.99999
Trichloroethylene Destruction	% of input	99.99987	99.99933 - 99.99999
Liquid Feed Rate	lb/hour	169.2	147 - 173
Solid Feed Rate	lb/hour	186.2	166 - 203
Oxygen Content(wet)	% by vol	-	6.0 - 11.0
Carbon Monoxide	ppm by vol	5.5	3.0 - 14.0
Particle Exit Concentration[1]	gr/sdcf	0.0135	0.0001-0.0244
Particle Emission Rate	lb/hour	0.0550	0.0010-0.1132
Chlorine Feed Rate[2]	lb/hour	87.25	67.01-102.14
Chlorine Emission Rate[2]	lb/hour	0.1425	0.0015-.4220
Chlorine Exit Concentration[2]	ppm by vol	40.287	0.447-82.000
Chlorine Removal Efficiency	% of input	99.825	99.585-99.998
Exit Liquid pH	-	-	1.0 - 10.3

Notes: 1. Corrected to 7.0 percent oxygen by volume.

2. Reported as hydrogen chloride vapor.

emission rates, 4) the pH of the exit liquid, 5) the particulate matter concentrations in the off gas, and 6) the incinerator temperature (2,000°-2200°F).

The oxygen content of the gas stream was continually above 6.0 percent by volume (wet) during the trial burn. The average carbon monoxide concentration was always below 14 parts per million (ppm) by volume in the incinerator exhaust gas.

Stack tests were made to determine the level of carbon tetrachloride and trichloroethylene in the exhaust gas. These exit concentrations were compared to inlet feed rates to the incinerator to determine the DRE's for these two constituents. Test results showed that the DRE for carbon tetrachloride, in all cases, exceeded the minimum requirement of 99.99 percent of the input. Under the successful, Day 4 operating conditions, the DRE for trichloroethylene was greater than the minimum allowable DRE of 99.9999 percent. These operating conditions are the basis for the CAI's RCRA permit.

The hydrogen chloride emission rates were all well within regulatory requirements. The maximum hydrogen chloride emission noted during the test burn was 0.422 lbs/hr which is one-tenth of the allowable RCRA limit. The hydrogen chloride removal efficiency ranged from 99.585 percent to 99.998 percent and was at all times greater than the minimum allowable removal efficiency of 99.0 percent.

The pH of the exit liquid ranged from 1.0 to 10.3 during the trial burns. All pH values reported were at or above 1.0, which is the suggested minimum value for the permit limitation.

The particulate matter concentrations during the trial burn ranged from a minimum of 0.0001 gr/dscf to a maximum of 0.0244 gr/dscf. The average particulate concentration in the exhaust gas was 0.0135 gr/dscf, which was well below the maximum allowable level of 0.08 gr/dscf.

It should be noted that these low particulate emissions were achieved despite the fact that when these tests were made, a corroded mild carbon steel, induced draft fan was contributing rust particles to the particulate load. This fan had been severely corroded during years of previous service, and its use during the trial burn resulted in the abrasion of iron oxide and iron chloride particles, thus adding to the particulate matter collected during sampling. Particulate matter concentrations measured during the trial burn would have been measurably lower if the fan were in proper condition.

3.2 RCRA Draft Permit Limitations

The September 1986 trial burn of the CAI provided the data for establishing the specific permit conditions that, in addition to standard RCRA requirements, will apply to the modified incinerator. The list of draft permit conditions is given in Table 1 and apply to the incineration of solid and liquid wastes.

4.0 System Performance Assessment

An evaluation of the performance capabilities of the CAI air pollution control system was made to determine the effects of modifications made since the RCRA trial burn. Three performance measures were considered in making this evaluation as follows:

1) estimation of the potential effects of the modifications on operational reliability of the air pollution control system,

2) estimation of the potential effects on the removal efficiencies for hydrogen chloride and particulate matter, and

3) an analysis of the expected compliance of the modified system with the proposed RCRA permit limits for hydrogen chloride and particulate matter.

The calculation of removal efficiencies is discussed in subsection 4.1. The remainder of section 4.0 presents the findings of the system performance assessment.

4.1 Calculation of Removal Efficiencies

The system performance assessment was based on worst case conditions in terms of chlorine and particulate matter concentrations in solid and liquid feed. To assess the hydrogen chloride and particulate matter removal characteristics of the CAI, a total feed rate of 175 lbs/hr was used to represent an intermediate condition which simulates both solid and liquid feed. The chlorine content of the fuel was assumed to be 57 percent by weight which is equivalent to burning the maximum allowable chlorine-containing mixture of carbon tetrachloride and trichlorethylene (4). The fuel fly ash content used for the

particulate matter performance assessment was 5 percent by weight, with 6 percent of this ash content assumed to be retained in the combustion chambers. This fly ash content is equivalent to burning the worst case Navy flare materials (5).

The individual removal efficiencies for hydrogen chloride and particulate matter have been estimated for each component of the air pollution control system.

The determination of the collection efficiency factor of each emission control device for removal of each air pollutant allows an overall removal efficiency factor to be calculated as demonstrated in the literature (6,7,8,9,10,11,12).

The calculation of air pollutant removal efficiencies was based on the fuel mixture characteristics discussed above, and the contact times/mass transfer characteristics of the respective gas-liquid contact devices.

4.2 Operational Reliability

The purpose of the modifications made to the air pollution control system was to improve operational reliability of the CAI in converting it from the research and development mode to the operational mode. These modifications have been described in Section 2.0. The remainder of this section evaluates the effects of modification on the operational reliability of the quench tower, the venturi scrubber, the absorption column and the HEPA filters.

4.2.1 Quench Tower

Modifications to the quench tower should either increase operational reliability by reducing maintenance needs, or improve the efficiency of the unit.

Utilizing Hastelloy C-22 material to construct the quench unit itself, the spray nozzles, gaskets and seals, greatly reduces the maintenance needs by increasing corrosion resistance and cooling efficiency of the system. The quench tower is subject to both high temperatures and corrosive conditions. The parts constructed with the new material will prove much more operationally reliable.

Replacing the weir in the upper part of the quench system with a spray system ensures a more uniform water flow distribution to the quench tower.

Achieving additional cooling and humidification of the gas stream through increased liquid flow rate serves to enhance the operation of the venturi scrubber. Venturi spray droplets which previously were expended in cooling the offgas are made available for particulate capture.

4.2.2 Venturi Scrubber

The design and operational changes to the venturi scrubber should improve operational reliability, and lower maintenance requirements.

The most important changes for improving operational reliability are changing the materials of construction from fiberglass to Hastelloy C-22, modifying the wet surfaces of the

control pinch valve to Viton rather than Hypalon, and changing the sizing of the gas-liquid contact system components. These modifications 1) improve resistance to thermal and corrosion degradation and 2) improve the particulate removal efficiency of the venturi scrubber, thus reducing the chance of blinding HEPA filters located downstream from the venturi scrubber. Blinding of filters reduces filter life, causing increased maintenance and operational costs.

4.2.3 Absorption Column

The design and operating modifications to the absorption column and demister have several beneficial effects. The replacement of the old fiberglass absorption unit with a new Hastelloy C-22 unit, and the old polypropylene packing with Hastelloy C-276 packing, will make the system less subject to damage from sudden temperature increases.

The potential for filter blinding of the downstream HEPA filters due to water droplet/salt mist carryover has been greatly reduced by 1) the relocation of the demister, 2) use of fresh water intermittently in the demister shower and 3) the relocation of the stack gas super heater.

4.2.4 HEPA Filter System

Operational reliability of the HEPA filtration has been greatly increased by the addition of the parallel bank of filter units within the upstream section of HEPA filters. Continued

operation of the filter system during filter replacement is now possible with this modified configuration.

4.3 Hydrogen Chloride/Particulate Matter Removal

Various modifications were made to the original air pollution control system for the purpose of enhancing the removal of either hydrogen chloride or particulate matter from the gas stream. These modifications have been described in Section 2.0. The remainder of this section evaluates the effects of modification on the removal efficiencies of the quench tower, the venturi scrubber, the absorption column and the HEPA filters.

4.3.1 Quench Tower

The quench tower should achieve a limited amount of removal of hydrogen chloride and other soluble gases and/or particulate matter. It can act as a wetted-wall, concurrent-flow absorption column in the upper portion and as a crossflow spray chamber in the lower part of the column. Considering solubility, liquid flow and gas retention time, the quench tower could achieve 28 percent hydrogen chloride removal before system modification, and an estimated 36 percent removal after system modification.

The expected degree of particulate matter removal in the quench tower is also enhanced, but to a lesser degree, as the quench tower primarily affects only the larger particles present in the gas stream. Removal of particulate matter is estimated to

improve from 15.5 percent prior to modification to 20.5 percent after modification.

4.3.2 Venturi Scrubber

Hydrogen Chloride Removal

The venturi scrubber has only a limited gas phase retention time so there can be only a modest increase in the hydrogen chloride removal efficiency, due primarily to the increase in liquid flow rate. The hydrogen chloride removal efficiency across the venturi scrubber would be expected to increase from 15 percent to 33 percent due to the changes made.

Particulate Matter Removal

The major portion of particulate matter present in the gas stream is removed in this unit of the air pollution control system due to the high energy input to the venturi scrubber. The estimated particulate matter removal efficiency is 96.8 percent with 40 inches of water pressure drop for the performance-tested system as compared to 97.5 percent removal efficiency with 60 inches of water pressure drop, after making modification. These estimates of removal efficiency are based on theoretical calculations and not on actual material balances or measurements.

The most important changes for improving particulate matter removal efficiency are as follows:

1) altering the venturi diffuser duct alignment from axial to tangential to improve liquid droplet separation;

2) increasing the gas phase pressure drop across the system to increase collection efficiency, and

3) increasing the liquid flow rate to the venturi scrubber to augment the liquid-to-gas flow ratio.

4.3.3 Absorption Column

Hydrogen Chloride Removal

The design and operating modifications to the absorption column and demister have several beneficial effects relating to the removal of hydrogen chloride from the gas stream.

The increase in the column diameter acts to reduce the superficial gas velocity in the column. The decrease in gas velocity in turn promotes a longer contact time with the liquid and provides greater potential for absorption of hydrogen chloride and other soluble gases.

The replacement of the polypropylene packing with Hastelloy C-276 packing allows for a greater interfacial contact area with an increased potential for removal of the acidic gases into the alkaline aqueous phase.

The increase in the liquid flow rate with no corresponding increase in the gas flow rate results in an increase in the liquid-to-gas flow ratio with a reduction in acid gas concentration in the absorption column effluent liquid stream, and a lowered pressure drop across the absorption column. Thus, a higher gas-to-liquid phase concentration driving force is maintained, with a resultant increase in gas phase removal efficiency of hydrogen chloride.

For the absorption tower alone, the increased gas phase retention time, increased liquid flow rate, and reduced gas stream velocity is expected to increase the removal efficiency for hydrogen chloride and other soluble gases. The average hydrogen chloride removal efficiency is expected to increase from 99.5 percent before modification to 99.95 percent after modification. This increase in removal efficiency will result in a substantial reduction in hydrogen chloride emission levels for the modified CAI.

Particulate Matter Removal

The effect of the modifications to the absorption column on particulate matter removal efficiency is considerably less than for hydrogen chloride removal efficiency because particulate matter removal is more dependent on energy input than retention time. However, the particulate removal efficiency would be expected to increase from 25.3 percent prior to modification to 28.8 percent after modification.

4.3.4 HEPA Filter System

The HEPA filtration system does not significantly contribute to the removal of hydrogen chloride from the gas stream.

The modifications to the HEPA filtration system do not increase the particulate removal efficiency. The duplicate bank of filters is utilized only as an alternate to the original bank of filters.

4.4 Comparison to RCRA Requirements

There are a number of RCRA permit requirements which must be fulfilled by the air pollution control system. All of these requirements relate either to hydrogen chloride control or particulate matter control. The modified air pollution control system has been analyzed to determine the expected compliance of the system with the applicable RCRA requirements. The findings of this analysis are given in the remainder of Section 4.

4.4.1 Hydrogen Chloride Control

Information reported by Bonner (8) indicates that hydrogen chloride removal is particularly dependent on gas-liquid contact time. The absorption of hydrogen chloride is primarily dependent on the contact time, provided that there is sufficient contact area available and sufficient neutralization capacity in the liquid phase, such as provided by addition of sodium hydroxide to the scrub solution. The required contact time to achieve 99.0 percent hydrogen chloride removal from the gas phase into the liquid phase is reported to be approximately 0.50 seconds. The estimated hydrogen chloride removal efficiencies of the air pollution system before and after modification are presented in Table 3.

For the performance-tested system, a gas phase retention time of 0.95 seconds was calculated for the wet contact devices,

Table 3

HYDROGEN CHLORIDE REMOVAL EFFICIENCIES (ESTIMATED)

System Component	Removal Efficiency (%) Original System	Modified System
Incineration System	0.0	0.0
Quench Tower	28.0	36.0
Venturi Scrubber	15.0	33.0
Absorption Column	99.50	99.95
Condenser	3.0	-
Mesh demister	-	12.0
First HEPA Filter	0.0	0.0
Second HEPA Filter	0.0	0.0
Activated Carbon Adsorber	0.0	0.0
Third HEPA Filter	0.0	0.0
Total System	99.70	99.980

based on equipment sizes and gas flow rates. The estimated operating conditions for the gaseous emission controls before system modification were 1) an overall liquid to gas flow ratio of 23.3 gal/1000 cf, and 2) an overall gas phase pressure drop of 45 inches of water across all of the contact units.

RCRA Requirement, Hydrogen Chloride Removal Efficiency

The estimated hydrogen chloride removal efficiency of the air pollution control system before modifications were made was 99.70 percent. In comparison, the actual average hydrogen chloride removal efficiency measured during the RCRA trial burn was 99.825 percent, with measured values ranging from 99.585 to 99.998 percent. These removal efficiencies were in compliance with the RCRA requirement of 99.0 percent minimum removal efficiency.

The modifications to the air pollution control system increase the design hydrogen chloride removal efficiency. This increase is primarily due to two modifications. First, the overall gas phase retention time is increased from 0.95 to 1.38 seconds, primarily through an increase in the absorption column contact time from 0.69 seconds to 1.10 seconds. Second, for the air pollution control system as a whole, the liquid-to-gas flow ratio is increased from 23.3 to 39.8 gal/1,000 cf as the liquid addition rate is increased from 36 to 60 gal/min.

The modified system design hydrogen chloride removal efficiency is consequently increased from 99.70 percent to 99.98 percent. This increase in removal efficiency increases the margin

by which the CAI meets its RCRA requirement for minimum allowable hydrogen chloride removal.

A summary of the performance characteristics of the performance-tested and modified air pollution control systems for hydrogen chloride removal is presented in Table 4.

RCRA Requirement, Hydrogen Chloride Emissions

The effects of system modification were evaluated with respect to the estimated hydrogen chloride emission rates. A worst case condition was assumed based on a hydrogen chloride emission rate of 102.15 lbs/hour from the incinerator, with a secondary chamber exhaust hydrogen chloride gas concentration, before pollution control, of 22,500 ppm by volume, and no net retention in the combustion chambers. This hydrogen chloride emission rate is also the inlet loading used to evaluate the performance-tested pollution control system, in order that the emission rates and emission concentrations for the two systems could be compared on a uniform basis.

For the original system, the expected hydrogen chloride emission rate corresponding to the maximum chloride feed rate is 0.303 lbs/hour and the expected exit gas concentration is 66.74 ppm by volume.

The modifications to the air pollution control system provide for an overall removal efficiency of 99.98 percent of the hydrogen chloride equivalent present in waste feed. The hydrogen chloride emission rate from the incinerator exhaust stack following the

Table 4

PERFORMANCE CHARACTERISTICS RELATED TO HYDROGEN CHLORIDE REMOVAL (ESTIMATED)

Performance Factor	Units Employed	Original System	Modified System	RCRA Limit
Input Feed Rate	lbs/hour	102.15	102.15	NA
Outlet Concentration	ppm by vol	66.74	4.56	880[1]
Outlet Emission Rate	lbs/hour	0.303	0.021	4.00
Removal Efficiency	% of input	99.70	99.980	99.0
Penetration Level[2]	-	3.0×10^{-3}	2.05×10^{-4}	NA
Decontamination[3] Factor	-	337	4880	NA

Notes:

1. Calculated value based on flow conditions at a 99.0 percent removal efficiency.
2. Ratio of the outlet concentration to the inlet concentration.
3. Inverse of the penetration level.

individual might be able to do while attending to the Q107 during its cool down phase.

Certain possibilities exist for increasing the HFATS filter test rate. First, the series of calibration checks and the extensive data collection that were conducted in the operational evaluation may not be necessary for routine FTF operation of the HFATS. The high degree of stability displayed by the HFATS supports extending the time between calibration checks. A significant amount of time was required to automatically store the large amount of data retained for each filter test. This time could be significantly reduced by using a faster data storage system and by limiting the amount of data stored. Another way of reducing the time required to test filters would be to reduce the clearing time between the upstream and downstream counts and between the 100% flow test and the 20% test. A valve design that would permit reduction of the required clearance time is being investigated.

These recommendations have the potential of increasing the HFATS test rate to approximately that of the Q107. However, it is unlikely that the HFATS test rate could be increased to a rate much higher than the Q107 rate because of the 4 to 5 minutes required by the HFATS to make the necessary count measurements for a filter test.

HFATS Operational Safety

A major advantage that was attributed by the Oak Ridge staff to the HFATS was that the DEHP odor present when operating the Q107 was not present during the operation of the HFATS. In addition, a former Oak Ridge test system operator who had stopped testing filters because of sensitivity to DEHP odors, was able to test filters with the HFATS. The Department of Energy has adopted the policy of limiting workplace exposures to filter test material through the use of engineering controls.[1] The challenge aerosol concentration used in the HFATS is at least an order of magnitude lower than the Q107 challenge concentration, which means the source term for emissions to the workplace is greatly reduced for the HFATS relative to the Q107. The reduced source term is probably at least partially responsible for the absence of odor associated with the HFATS operation. Reduction of the source term represents an appropriate engineering control for limiting workplace exposures.

Another major operational safety issue is the potential fire hazard the Q107 thermal generator presents. Because of the possibility of fire, Q107 systems are fitted with costly fire suppression equipment. None of the HFATS components present a safety problem of this magnitude. The HFATS generator uses air-operated jets to produce the challenge aerosol. This method of aerosol production greatly reduces the risk of fire.

Operation of the HFATS

The Oak Ridge staff gained several insights into the operation of the HFATS in the FTF environment relative to the operation of the Q107. A major difference in the systems was the relative amounts of operator attention that they required. Because the Q107 uses a thermal generator that heats the test aerosol material to near its

flash, once the system is started, it must be attended to until approximately a half hour after the cool down phase is initiated in order to assure that temperature excursions are thwarted.

During actual operation of the test systems the HFATS required much less attention and adjustments than did the Q107. Most of the attention and adjustments required by the Q107 was associated with maintaining the challenge aerosol particle size and concentration. The challenge aerosol particle size requirements for the HFATS are less stringent than those for the Q107 because the HFATS particle size discrimination is performed by the LAS. The output of the HFATS generator and the performance of the HFATS diluter and the LAS as indicated by the performance indicators was so stable that close monitoring by the operator was not needed. The HFATS required almost no adjustment during the study.

Maintenance of the HFATS

Direct comparison of the maintenance time required by the test systems is not completely appropriate because of the differing ages of the system's components. The HFATS system components, however, were not all new. For example, the LAS used in the study was over 7 years old and used a laser tube that at the beginning of the study was more than 1 year old. The HFATS required less than 2 hours maintenance during the 9-month operational evaluation, which was associated with cleaning the critical optics of the LAS. The Q107 aerosol generation system required more than 2 days maintenance. Maintenance of the large capacity equipment used to condition high flow air streams of the Q107 generating system to within very close tolerances has been a recurring problem at Oak Ridge. Repair of these conditioning systems has required significant periods of down time and has been costly.

A concern with the HFATS is the availability of repairs and replacement parts for the LAS. A possible remedy to this potential problem is to contract with the LAS manufacturer to maintain a LAS that would be ready to be shipped to a FTF in the event a replacement was needed. The time between maintenance periods for the LAS should be increased according to the LAS manufacturer because the useful life of the laser tubes has been extended from 1 year to 5 years by the use of a new glass to metal sealing process. The tube in the LAS used in the study has lasted over 2 years to-date.

IV. Summary

The comparison of 0.31 μm HFATS penetration measurements and rejection rates to those of the Q107 indicated that there was not much difference in the magnitude of the measurements. This indicated that operation of the HFATS in this mode would not greatly affect the measurements reported by the FTFs. On the other hand the 0.15 μm HFATS measurements made at the 100% test flow were distinctly greater than the corresponding Q107 measurements. The HFATS provides the capability of measuring worst case filter penetration and readily determining penetration in terms of physical factors of concern (i.e. mass, radioactivity, etc.).

The HFATS demonstrated excellent stability as indicated by the diluter evaluation results, the LAS size calibration results and the upstream count rate results. These data suggest that an extended calibration check schedule would be appropriate for the HFATS.

The major negative impact that the HFATS appears to have on the FTF operation is the lower rate at which filters are tested. However, there was no difference in the number of filters that could be tested by either system in a day. The HFATS exhibited certain positive effects on the FTF operation. These included potential reduction in the workplace airborne levels of the test aerosol material, limiting the fire hazard associated with testing filters, easier operation and potentially less costly and less frequent maintenance.

V. Conclusion

The results of this study demonstrate the operability and maintainability of the HFATS in the FTF environment. The operational advantages cited above and the technical advantages cited elsewhere demonstrate that the use of the HFATS at the FTFs would improve the FTF operation and improve the technical defensibility of the FTF penetration measurements.[2] Because of this conclusion, the authors recommend that the Department of Energy consider adoption of the HFATS as an approved filter test system under the provisions of the NE-F-3-43.[1]

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Ronald C. Scripsick

NEW FILTER EFFICIENCY TESTS BEING DEVELOPED FOR THE DOE

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ABSTRACT: The United States Department of Energy (USDOE) is considering adoption of new test specifications and new test techniques for quality assurance testing of nuclear grade high efficiency particulate air (HEPA) filters. Proposed new filter test specifications require penetration measurements to be made at a particle diameter in the range from 0.1 μm to 0.2 μm rather than at a particle diameter of 0.3 μm which is currently required. The new specifications are aimed at making penetration measurements at or near the size of maximum penetration for the current generation of nuclear grade HEPA filters. The new test specifications provide a high estimate of filter penetration relative to the predicted penetration of field challenges in terms of aerosol size and aerosol density. This conservative estimate is required to assure that USDOE air cleaning systems adequately protect public and worker health and the environment in the event of unplanned release of hazardous materials.

Operational evaluation of a high flow alternative filter test system (HFATS) developed for the USDOE by Los Alamos National Laboratory is currently being completed. Interim results of this evaluation and results of laboratory and full-scale evaluations demonstrate that the HFATS is capable of providing measurements of filter penetration at specific sizes over the diameter range from ~0.1 μm to ~0.4 μm within the operational requirements of the USDOE Filter Test Facilities.

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KEYWORDS: filter efficiency, filter tests, penetration measurement system, filter efficiency standards, HEPA filters

INTRODUCTION

The United States Department of Energy (USDOE) uses nuclear grade high efficiency particulate air (HEPA) filters in critical air handling systems for protection of public and worker health and the environment. The filters are used to decontaminate ventilation airstreams of hazardous particulate radionuclides and other hazardous particulate materials. The performance of these filters is directly related to the quality of the air that is introduced in the workplace or released to the environment. The lowest allowable airborne concentrations (AACs) of these hazardous materials can be on the order of 10^{-13} g/m^3 for workplace releases and on the order of 10^{-14} g/m^3 for environmental releases [1,2]. The highest filter challenge concentrations of these materials can be in the range from 100 mg/m^3 to 10 g/m^3 during severe upset conditions [1,3]. Consequently, the air cleaning systems must have a design capacity capable of decontaminating airstreams by as much as a factor of 10^{12} to 10^{15}. To achieve these capacities system designers often use HEPA filter banks in tandem. For example, to obtain a decontamination factor on the order of 10^{14} requires four tandem banks of HEPA filters with each bank having a collection efficiency $\geq$99.97 per cent.

To assure that filters placed in air cleaning systems meet design specifications, every nuclear grade HEPA filter purchased for use in USDOE facilities must pass a quality assurance (QA) test at a USDOE Filter Test Facility (FTF) before it is forwarded to the purchaser. This QA testing includes filter efficiency measurements made at rated flow and also at 20 per cent of rated flow for filters with rated flow of 125 cubic feet per min (CFM, ~3.5 m^3/min) and higher. The current test specifications call for measurement of filter efficiency at 0.3 μm using a thermally generated di-(2-ethylhexyl) phthalate (DEHP) or di-(2-ethylhexyl) sebacate (DEHS) aerosol, an Owl polarized light aerosol size analyzer and a scattered-light photometer (SLP). New standards for USDOE filter testing are in the final stages of being adopted [4-7]. Specifications of the filter efficiency test proposed for these standards are discussed in this report. In addition a new filter efficiency test system is described that was developed for the USDOE by Los Alamos National Laboratory.

PROPOSED FILTER EFFICIENCY TEST SPECIFICATIONS

Aerosol Size

The major change proposed in the new filter efficiency test specifications is to require penetration measurements to be made at a

particle size in the diameter range from 0.1 μm to 0.2 μm rather than at a particle diameter of 0.3 μm which is currently required [5]. Examination of the predicted rated flow performance of HEPA filters available when the currently designated test systems were developed indicates that the size of maximum penetration was near 0.3 μm, which corresponds to the particle size at which the current systems were designed to operate [8]. This result suggests that the designers of the current systems intended to measure penetration near the aerosol size of maximum penetration. The merit of such a test of filter performance is that the measurement result is a conservative or worst case estimate of filter performance in terms of challenge aerosol size. For a given air flow, no challenge aerosol consisting of particles similar in shape to and of the same or greater density (ρ, specific gravity) as the test aerosol particles should have a greater penetration than the test penetration. This conclusion follows directly from theoretical and experimental evidence that shows HEPA filter penetration as a unimodal function with respect to aerosol size [8-13].

Theoretical evaluation of the performance of the current generation of nuclear grade HEPA filters operating at flows between rated flow and 20 per cent rated flow predicts the maximum penetration aerosol diameter to be in the range from ~0.1 μm to ~0.2 μm [8]. This predicted shift from a maximum penetration diameter of ~0.3 μm is predominately a result of the median fiber diameter used in the media being reduced from 1 - 2 μm to median diameters in the range from 0.3 μm to 0.5 μm [8]. Experimental measurements of the maximum penetration diameter at rated flow for the media used in modern HEPA filters and the HEPA filters themselves show the diameter to be in the range from ~0.13 μm to ~0.17 μm [11,13, and 14]. Variations in the size of maximum penetration arising from differences in the fiber composition and fiber volume fraction of HEPA filter media, as well as other factors, make specification of a precise size of maximum penetration impossible. In terms of the USDOE test, the predicted maximum penetration aerosol diameter at rated flow is different than the diameter at 20 per cent rated flow. Therefore, a maximum penetration test should specify measurement of penetration at a particle size within a range of particle sizes. The theoretical and experimental evidence cited above indicates that this diameter range should be 0.1 μm to 0.2 μm for the current generation of nuclear grade HEPA filters.

Penetration Rejection Criterion

The penetration rejection criterion of the proposed new filter efficiency test specifications is 0.03 per cent penetration at a particle size in the diameter range from 0.1 μm to 0.2 μm. This criterion is in general more stringent for intact filters than the currently designated penetration rejection criteria because measurements made with the current system are approximately equivalent to the penetration near 0.3 μm which is distinctly below the penetration at the size of maximum penetration. However, penetration measurements on filters with pinholes or other defects can be

independent of aerosol size (see the "Damaged Filter Tests" section) with penetration at a diameter of 0.3 μm being approximately equal to the penetration at a particle size in the diameter range from 0.1 μm to 0.2 μm. In this case the current and proposed criterion are equally stringent. Therefore, the 0.03 per cent penetration limit is necessary to guarantee that in all cases the proposed criterion is at least as stringent as the current criterion.

Examination of the penetration of over 800 nuclear grade HEPA filters at specific aerosol diameters over the range from ~0.1 μm to ~0.4 μm shows that all but a small fraction of the filters could meet the above criterion [14]. However, the examination also showed that the fraction of filters failing to meet the proposed criterion was larger than the fraction of filters failing to meet the current penetration rejection criterion [14].

Test Material Density

The new filter test specifies that penetration measurements are to be made with an aerosol material with a density near $\rho = 1$ g/cm^3. A theoretical study by Tillery shows the magnitude of maximum HEPA penetration decreasing as the ρ of the challenge aerosol material increases [9]. Experimental support for this finding was observed by Tillery in a study where the maximum HEPA filter penetration of plutonium dioxide aerosol particles (ρ = ~10 g/cm^3) was observed to be significantly lower than the penetration measured using the current approved DEHP/DEHS (ρ = 0.983/0.915 g/cm^3) test method [15,16]. These findings indicate that, for a given aerosol size, test measurements made with a material of low ρ relative to the ρ of materials encountered in the field provide a worst case estimate of filter penetration. For the USDOE, much of the particulate airborne contaminants of concern are composed of actinide compounds which rarely, if ever, have densities less than 1 g/cm^3. The actinide compounds also include materials with AACs that are among the lowest of all AACs, so that conservative filter efficiency estimates may be necessary to insure that exhaust air is sufficiently decontaminated [1,2]. Certain particulate materials found in USDOE facilities, like lithium compounds, may have densities less than 1 g/cm^3. In general, these materials have higher AACs than the actinides so that conservative estimates of filter efficiency may not be as critical as they are for filters used in actinide air cleaning systems [1,2].

NEW FILTER EFFICIENCY TEST SYSTEM

The method for QA penetration testing of size 5 HEPA filters (rated flow of 1000 CFM [~28 m^3/min]) at USDOE FTFs comes largely from military standard MIL-STD-282 [17]. Since the adoption of MIL-STD-282, there have been many advances in aerosol technology which have potential for beneficial application to QA penetration testing in the areas of reproducibility, accuracy, ease of operation,

and development of more detailed and meaningful filter performance data.

An investigation of alternative filter penetration test methods was undertaken at Los Alamos National Laboratory starting in 1982 with funding from the USDOE Airborne Waste Management Project Office. Commercially available aerosol instrumentation and technology was reviewed with regard to needs identified in the current high flow (500 CFM [~14 m^3/min] and greater rated flow) test system (Q107 test system). Consideration was given to developing a test system that would meet the current test specification and at the same time be capable of measuring penetration at the size of maximum penetration which is required in the proposed new test specifications. Once the most promising alternative test system components were selected, a laboratory evaluation of the components was carried out to determine the best match to meeting the identified needs of the Q107. From this evaluation, a set of components comprising the High Flow Alternative Filter Test System (HFATS) were selected. Laboratory-scale and full-scale systems were evaluated and refined at Los Alamos. In late 1984 and early 1985, full-scale proof-testing and a public demonstration of the prototype system were conducted at the Oak Ridge Filter Test Facility (ORFTF), Oak Ridge Gaseous Diffusion Plant at Oak Ridge, Tennessee. A summary report on the development of the HFATS was published in 1985 [18]. A final report is in preparation [19]. An operational evaluation of the HFATS was initiated in late 1985 at the ORFTF. Data collection for this evaluation was completed in early 1986. A report on the results of the operational evaluation is to be published in the proceedings of the 19th DOE/NRC Nuclear Air Cleaning Conference to be held August 17-21, 1986, in Seattle, Washington [14].

HFATS Description

The HFATS takes advantage of commercially available aerosol technology. The system, which is shown diagrammatically in Fig. 1, uses a modified Laskin nozzle aerosol generator/aerosol neutralizer system to provide the filter challenge [19,20]. The neutralizer is used to standardize electrical charge on the aerosol challenge. The challenge has a measured geometric mean diameter of ~0.2 μm and a geometric standard deviation of ~1.6 [19]. The aerosol concentration produced by the system in an ~28 m^3/min flow test stream has been measured to be ~5 mg/m^3 which is approximately one-tenth the concentration produced by the currently used thermal generation system [19]. Operation of the generation system over a period of months under actual test conditions indicates that the lower challenge concentration may significantly reduce potential operator exposure to test aerosol materials [14]. In addition, the new generation system is easier to operate than the current thermal generator, operates well below the flash point of DEHP, and is expected to produce no decomposition materials.

A laser aerosol spectrometer (LAS, Model LAS-X, Particle Measuring Systems, Inc., Boulder, Colorado) interfaced with a microcomputer (Model HP-85B, Hewlett-Packard Co., Corvallis, Oregon) and an aerosol diluter has shown the greatest potential for fulfilling the aerosol

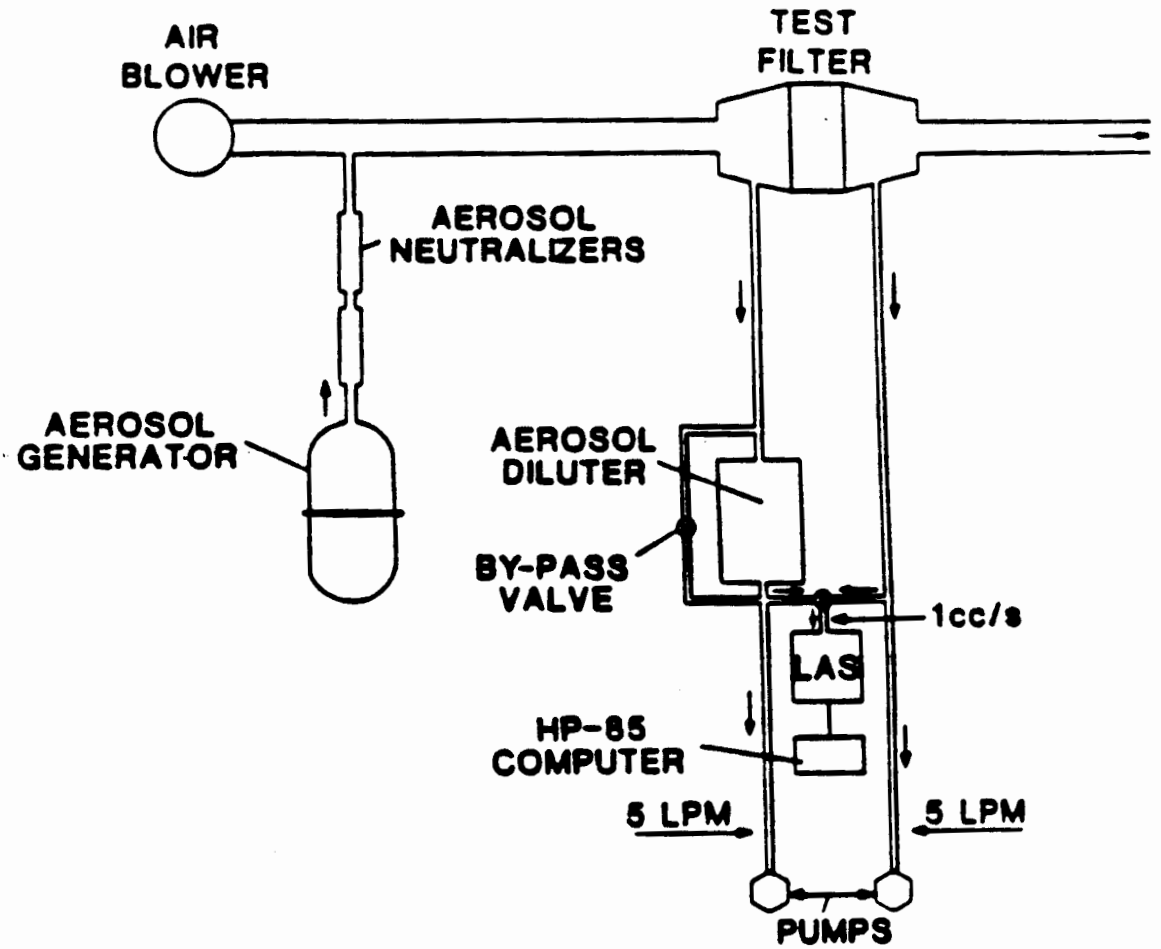

Figure 1. A schematic diagram of the HFATS showing the major components of the system which includes the aerosol generator, the aerosol neutralizers, the HFATS aerosol diluter, the laser aerosol spectrometer, and the HP-85 computer.

monitoring needs of the HFATS [18,19]. Laboratory evaluation indicated that the LAS can accurately measure aerosol diameter size from ~0.12 μm diameter to over 0.4 μm and can accurately measure aerosol size distributions with concentrations up to ~3 x 10^3 particles/cm^3. Because filter challenge concentrations over 10^5 particles/cm^3 are required for filter testing it was necessary to use a diluter in conjunction with the LAS. The LAS/microcomputer/diluter aerosol monitoring system combines the function of the Owl and SLP. It is capable of measuring penetration at a specific aerosol size or over a range of sizes.

All evaluations of the alternative test system conducted thus far have been performed using DEHP. The system was designed so that operation with a variety of test materials is possible. During the course of the investigation, alternatives to DEHP have been identified in terms of certain toxicological and physical criteria [18,19]. Enough information has been obtained so that alternatives to DEHP could be put into use at the FTFs with limited testing should USDOE decide to eliminate the use of DEHP.

HFATS Performance

Damaged Filter Tests: A series of damaged filter tests were performed to evaluate the response and sensitivity of the HFATS to filters with 2 mm holes. After one hole was placed at the edge of the filter, penetration measurements were made in four different positions on the test chuck, each time rotating the filter in the plane of the chuck by 90°. At airflow rates of ~28 m^3/min and 200 CFM (~5.7 m^3/min) a significant difference in the measured penetration was observed relative to the intact filter but no significant difference was observed in the penetration measurements made in the four positions. These results indicate that the penetration measurements using the alternative test system were not sensitive to the position of leaks.

A series of penetration measurements were also made at both airflow rates on the filter with 0, 1, 3, 5, and 9 2-mm holes. The penetration values were calculated by dividing the aerosol concentration at a specific size measured downstream of the filter by the upsteam concentration measured at the same aerosol size. Figure 2 shows, as expected, that for both filter flow rates, penetration increased with increased damage to the filters. For every level of damage, penetration measurements were greater for the lower airflow rate than for the high airflow rate. This finding agrees with filter "pinhole leak" theory which states that the fraction of flow passing though holes in a filter increases as total flow through the filter decreases over the regime where flow through the holes remains turbulent [21]. For the tests on the intact filter, this trend was reversed with the 5.7 m^3/min test showing a lower penetration relative to the ~28 m^3/min test.

Penetration dependence on aerosol size is evident for the intact filter operating at ~28 m^3/min (Figure 2) with maximum penetration at an aerosol diameter of ~0.15 μm, and penetration

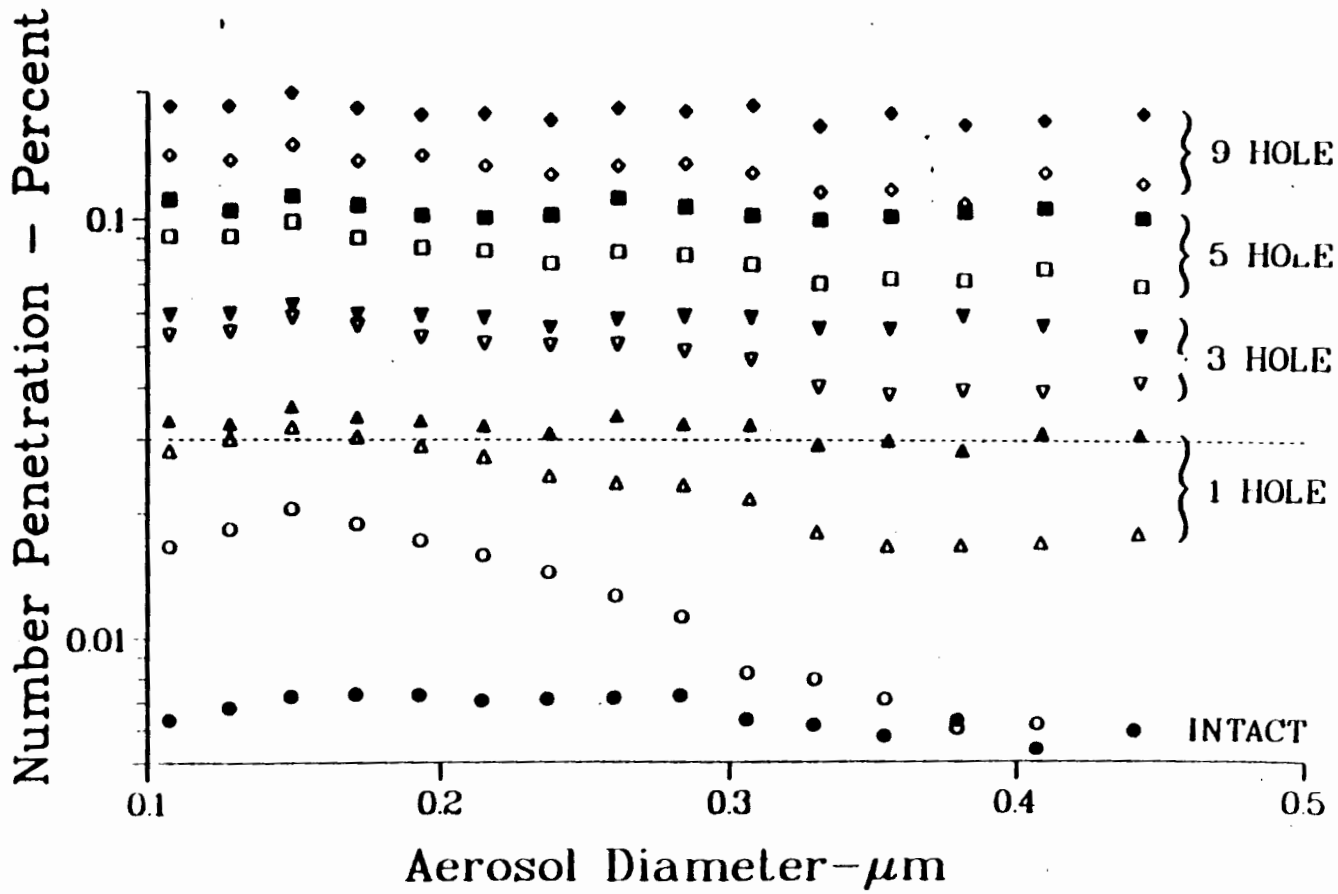

Figure 2. Result of damage filter tests. Solid symbols indicate tests conducted at 5.7 m^3/min. Open symbols indicate tests conducted at 28 m^3/min.

for 0.3 μm diameter particles approximately half the maximum. For damaged filters operated at ~28 m^3/min, the "shape" of the penetration curve flattens as damage to the filter progresses, with penetration virtually independent of aerosol size for the measurements of the filter with five and nine holes. Independence of penetration as a function of aerosol size is a result of the increased fraction of the downstream aerosol that is associated with leaks. In contrast, intact filter penetration, as shown in Figure 2, is a function of aerosol size, which is a result of different upstream and downstream aerosol size distributions. As the aerosol penetrating through the holes dominates the aerosol penetrating the filter, any dependency of penetration on size is eliminated.

Results of this series of studies on damaged filters demonstrates that the HFATS can be used to measure penetration of size 5 filters operated at airflows of ~28 m^3/min and ~5.7 m^3/min and is sensitive to leaks in these filters.

Intact Filter Tests: Because the HFATS is capable of measuring penetration as a function of size in the aerosol diameter range of ~0.1 μm to ~0.4 μm, the measurements made with the HFATS provide information on the performance of the HEPA filters purchased by DOE and DOE contractors that the Q107 system is not capable of providing. Some typical penetration measurement results on individual filters are shown in Figures 3, 4, and 5. The measurements were made on size 5 filters operating at ~28 m^3/min and ~5.7 m^3/min.

The data presented in Figures 3, 4, and 5 are typical of the penetration measurement results routinely observed for the filters tested in HFATS operational evaluation where over 800 nuclear grade HEPA filters were tested [14]. For the full rated flow, maximum penetration is normally observed in the vicinity of 0.15 μm diameter which agrees with theoretical and experimental evaluations of nuclear grade HEPA filter media and constructed filters [8,11, and 13]. For 20 per cent of rated flow, penetration is observed to be largely independent of aerosol size.

This latter observation does not agree with the theoretical and experimental findings for nuclear grade HEPA filter media [10,12]. The fact that the penetration is independent of aerosol size for constructed filters at 20 per cent of rated flow suggests the possibility that penetration through filter defects created during construction is dominating the overall filter penetration. From pinhole leak theory, if indeed the defect penetration is dominating overall penetration, this dominance would become more pronounced as flow is decreased [21]. Some limited testing of size 5 filters at 80 CFM (~2.25 m^3/min) was performed by the OR FTF staff to evaluate this hypothesis. These data showed a marginally higher penetration at the lower flow relative to the penetration at ~5.7 m^3/min which supports the defect penetration hypothesis. Additional low flow studies conducted by Los Alamos staff in early February 1986 indicate that the higher penetration measurements associated with the ~2.25 m^3/min flows may be the result of background aerosols and not filter penetration. Additional studies will be required to make definitive conclusions.

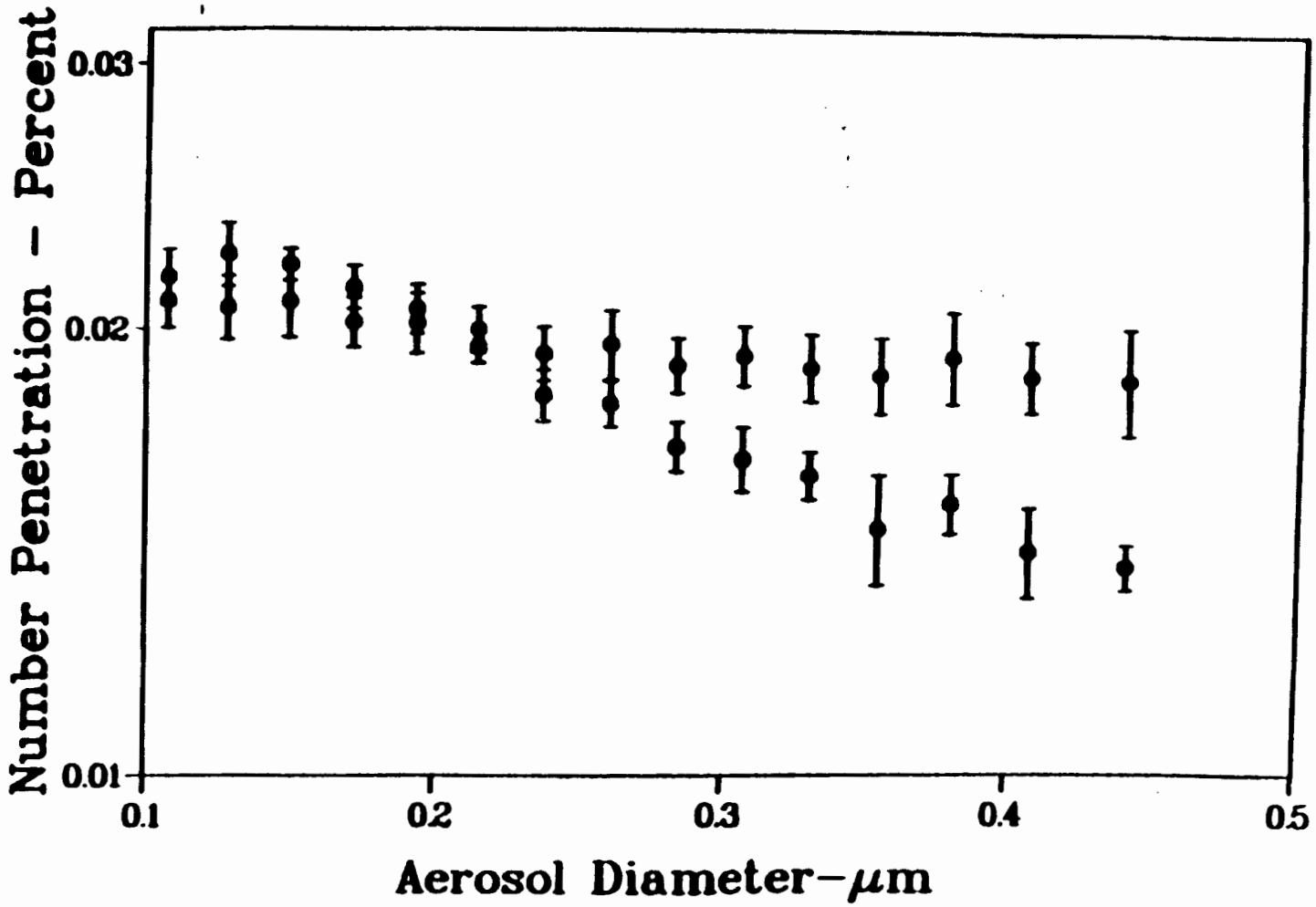

Figure 3. Typical HFAIS penetration measurement results on size 5 filters operating at 28 m^3/min (open circles) and 5.7 m^3/min (solid circles).

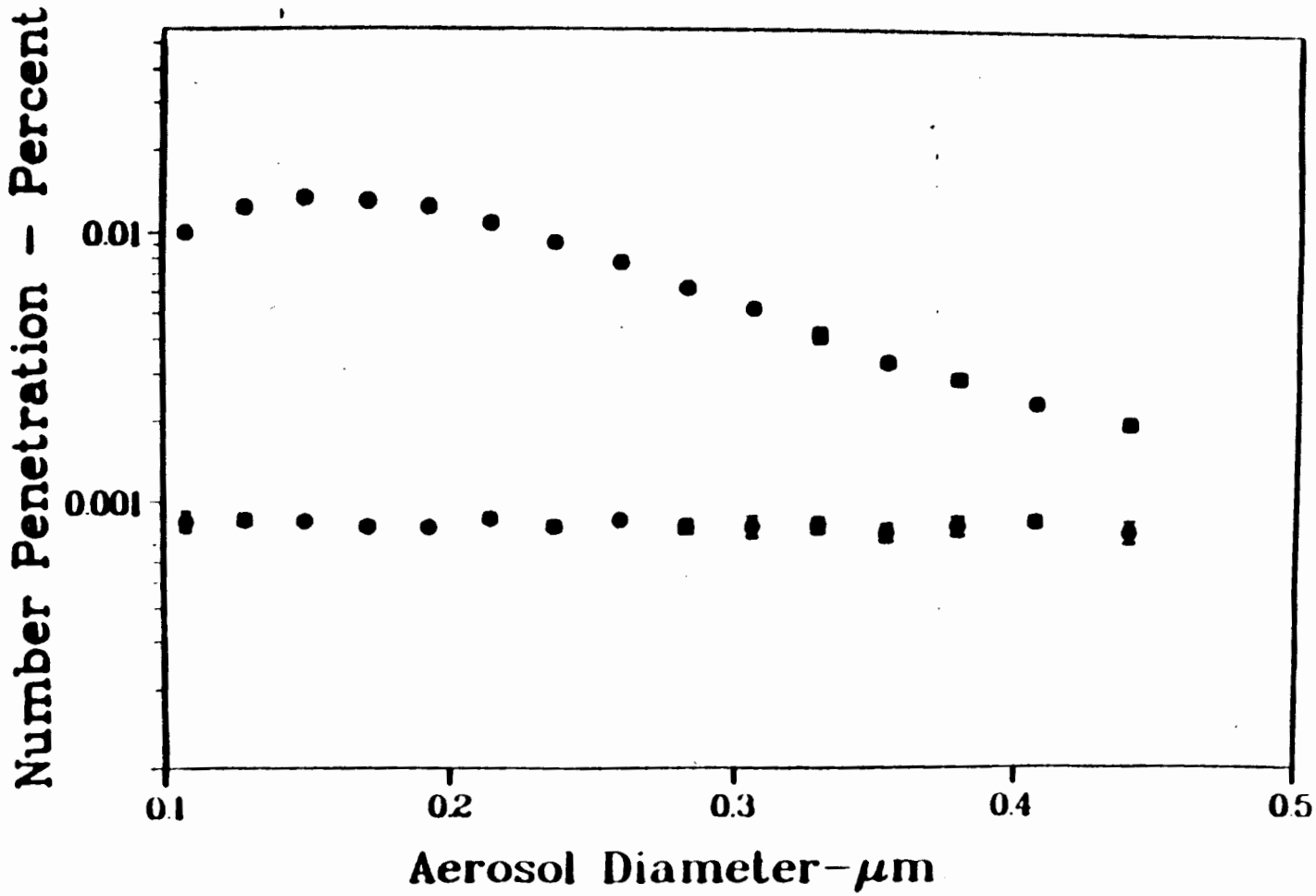

Figure 4. Typical HFAIS penetration measurement results on size 5 filters operating at 28 m^3/min (open circles) and 5.7 m^3/min (solid circles).

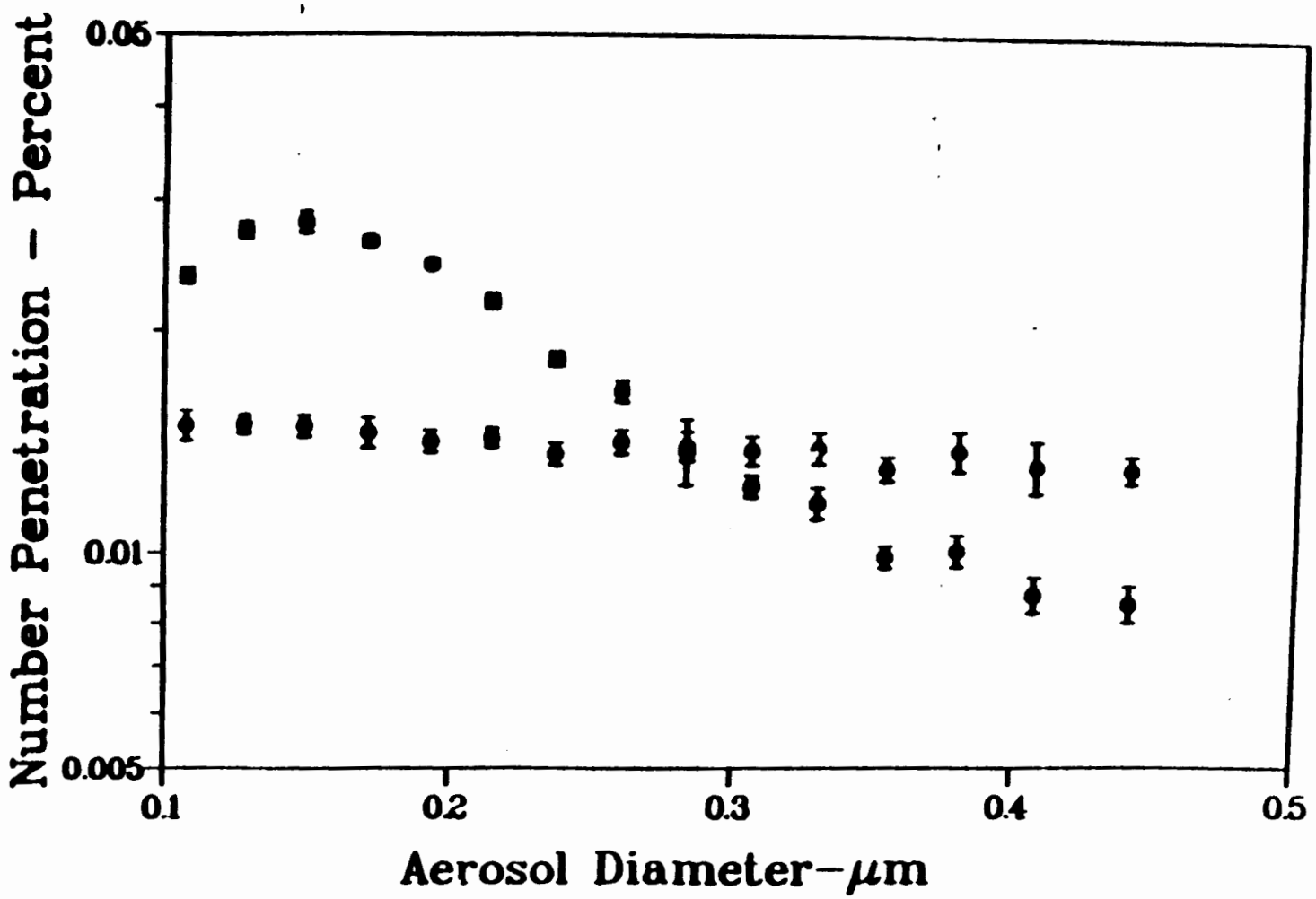

Figure 5. Typical HFAIS penetration measurement results on size 5 filters operating at 28 m^3/min (open circles) and 5.7 m^3/min (solid circles).

The three filter penetration curves shown in Figures 3, 4, and 5 demonstrate typical measurements on size 5 HEPA filters in the HFATS operational evaluation. These curves also represent three classes of HEPA filter performance that have been observed in the operational evaluation which are: (1) 20 per cent flow penetration equal to or greater than the rated flow penetration over the HFATS size range (see Figure 3), (2) 20 per cent flow penetration below the rated flow penetration over the HFATS size range (see Figure 4), and (3) 20 per cent flow penetration curve intersecting the rated flow penetration curve in the HFATS size range. These curves demonstrate that, depending on the filter and the aerosol size, the penetration at rated flow may be greater than, equal to, or less than the penetration at 20 per cent rated flow.

HFATS Measurement Uncertainty: Two key design criteria for the HFATS were (1) the system was capable of making filter penetration measurements within the individual filter test time requirements of the USDOE FTFs and (2) the precision of the system measurements were within acceptable limits. The allowable time for HFATS measurements was based on the existing time required for testing of filters on the Q107. This time was estimated to be in the range of 3 to 5 min for tests at 100 per cent flow and 20 per cent flow.

No guidance was found to independently suggest acceptable limits for the precision of test system measurements. A precision of ~10 per cent coefficient of variation was adopted for penetration values of 0.03 per cent or larger.

A theoretical model was developed to estimate the uncertainty of alternative test system penetration measurements. The model is based on standard propagation of error techniques neglecting covariance terms and uses Poisson statistics to estimate uncertainties in the upstream and downstream LAS concentration measurements. The model equation is as follows:

$$CV_p = [(P\ N\ T_d)^{-1} + (D/(N\ T_u)) + CV_D^2]^{1/2} \quad , \qquad (1)$$

where

CV_p = coefficient of variation for penetration,
P = aerosol number penetration,
N = undiluted upstream count rate, counts/s,
T_d = downstream counting time in seconds,
D = dilution ratio,
T_u = upstream counting time in seconds, and
CV_D = coefficient of variation for dilution ratio.

A plot of Eq. 1 over the penetration range specified by NE-F-3-43 is shown in Figure 6 for $N = 1.4 \times 10^4$ counts/s (undiluted count rate at 0.3 μm)), $T_d = 60$ s, $D = 220$, $T_u = 10$ s, and $CV_D = 0.05$, which are the selected operating conditions for the alternative test system [5]. The value for N made at ~0.3 μm

aerosol diameter on the HFATS challenge aerosol. The value of CV_p was measured in a HFATS diluter evaluation reported elsewhere [18,19]. Under these operating conditions, the total time required to measure the penetration of a filter at two airflow rates would be less than 5 min, which meets the first design criterion. The plot in Figure 6 shows that for penetration measurements greater than 0.02 per cent, the CV_p is less than 0.1, which satisfies the second design criterion. The higher CV_p values for penetrations below 0.02 per cent are acceptable because the precision of penetration measurements in this range is not as critical as the precision of the measurements above 0.02 per cent.

In order to examine the accuracy of the model, the predictions of the model were compared to estimates of uncertainty made from testing of five size 5 filters at rated flow. Six penetration measurements were made on each filter using the alternative test system operating with a 10 s upstream count and a 60 s downstream count. The average penetration and the coefficient of variation associated with each filter were calculated and the results plotted in Figure 6. This comparison is limited in that only five filters were studied. However, it is encouraging to note that four of the five measured data points were at or below the predicted coefficient of variation. The single CV_p measurement in excess of this prediction is for a measured penetration of <0.005 per cent, so that the relatively high CV_p (~20 per cent) still represents a relatively small variation in penetration (<± 0.001 per cent).

DISCUSSION AND CONCLUSION

Conservative Quality of Test Efficiency Measurements

From the discussion above it is apparent that the current and proposed filter tests were designed to provide conservative estimates of filter efficiency. Estimates of filter penetration from experimental studies of flat sheet HEPA filter media indicate that penetration at a particle size of ~0.5 μm can be an order of magnitude lower than the penetration at the size of maximum penetration [11]. This finding indicates that penetration measurements at the size of maximum penetration are a very conservative estimate of filter penetration and that depending on the challenge aerosol size can over-estimate field penetration by an order of magnitude or more. This conclusion coupled with the conservative penetration estimate related to the relatively low density of the DEHP/DEHS test aerosol serve to give the USDOE filter test the appearance of being ultra-conservative.

Certain factors serve to mitigate this conservative quality of the test. HFATS penetration measurements on HEPA filters at 20 per cent rated flow show an independence to aerosol size so that the penetration measured at 0.17 μm may be the same penetration that would be measured at larger sizes. This finding suggests that the

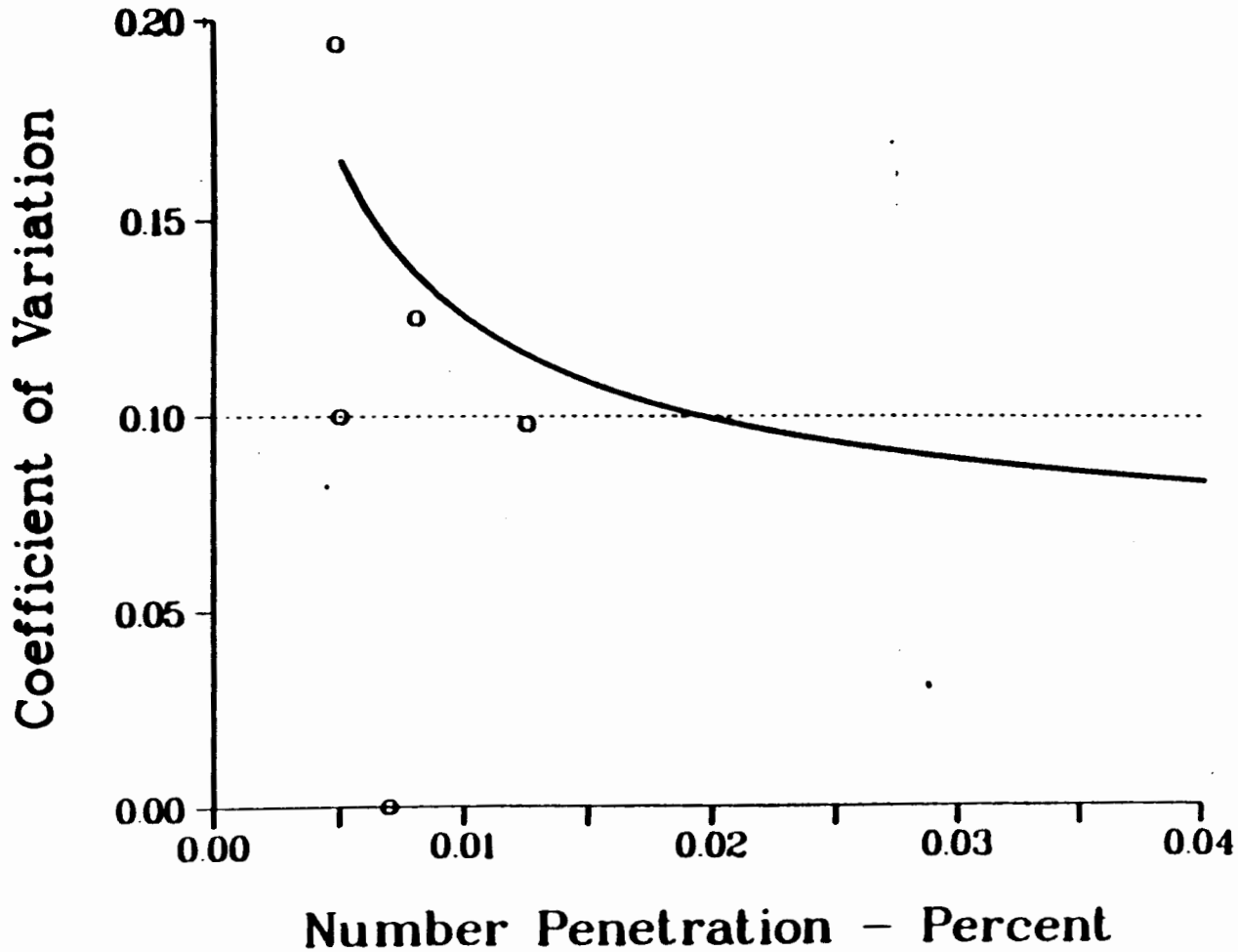

Figure 6. Uncertainty in penetration measurements. The solid curve is the theoretical prediction of uncertainty. The data points (O) are uncertainty estimates based on actual penetration measurements.

20 per cent rated flow measurements may not be as conservative an estimate of field penetration as the rated flow penetration measurements appear to be. The extent of the aerosol size independence of penetration should be investigated.

As is pointed out in the text, not all materials encountered by USDOE filters have a density greater than or equal to the density of DEHP/DEHS. For the materials which have a density less than the density of DEHP/DEHS the rated flow maximum penetration may be greater than the DEHP/DEHS measured maximum penetration [9]. This observation indicates that for materials of relatively low density, the DEHP/DEHS measured maximum penetration at rated flow may not be a conservative estimate of the maximum field penetration at rated flow. The penetration behavior of these lighter materials at 20 per cent rated flow is not known.

Studies of the performance of tandem HEPA filters indicates that the penetration through successive banks of filters increases because the aerosol penetrating each successive bank is enriched in particles of the size of maximum penetration [9,22]. The penetration of the successive banks of filters approaches but does not exceed the penetration at the size of maximum penetration [9]. These findings indicate that penetration at the size of maximum penetration may be a conservative estimate of field performance of the filters in the first bank of a tandem HEPA filter system but this estimate of performance becomes less conservative for filters in successive banks.

Because the USDOE uses these filters to protect public and worker health and the environment, some degree of conservative estimation of field filter performance is necessary. Overall, the indications are that the proposed USDOE test will provide a conservative estimate of HEPA filter performance. For single bank systems or the first bank of tandem systems, operating at rated flow and being challenged with material of high density relative to the test aerosol density, the test is probably a very conservative estimator of field filter performance. The test is probably a less conservative estimator for filters in the backup banks of tandem systems, operating at flows other than rated flow, and being challenged by materials of low density relative to the test aerosol density.

Plans for Adoption of Proposed Tests Specifications and the HFATS

The proposed test specifications are to be reviewed by a USDOE-selected technical review group along with other standards that are in the final stages of being adopted [4-7]. This review is to be completed by Fall 1986. The standards will be revised as necessary to accommodate the comments of the technical review group. These standards will be identified as mandatory standards in USDOE order 6430 [23].

The USDOE is to be petitioned to consider adoption of the HFATS in mid-1986 according to procedures specified in NE-F-3-43 [5]. Upon acceptance of the petition, Los Alamos is to submit evidence supporting adoption of the HFATS to USDOE. The USDOE with input from

the technical review group will decide whether to adopt the HFATS as an improved test method. This decision could be made by the end of 1986. If adopted, the HFATS would be ready for placement in the FTFs by the end of 1987.

In 1987, the US Army Product Assurance Directorate (PAD) plans to initiate evaluation of the HFATS for use in the PAD QA HEPA filter testing program. Implementation of the HFATS at PAD is scheduled to be completed by the end of 1987.

Also in 1987, the USDOE and PAD plan a cooperative effort to adapt the HFATS technology to a Low Flow Alternative Filter Test System (LFATS) for testing size 3 and smaller HEPA filters (rated flows of 125 CFM [~3.5 m^3/min] and lower). The adaptation is scheduled to be completed by the end of 1987. The USDOE plans to perform an operational evaluation on the LFATS in 1988.

ACKNOWLEDGMENTS

The proposed test specifications were co-authored by Ronld C. Scripsick and Marvin I. Tillery of Los Alamos, James F. Bresson of USDOE/Interim Waste Operations, Sidney C. Soderholm of the University of Rochester, and Werner Bergman of Lawrence Livermore National Laboratory. Lloyd Wheat of Los Alamos as well as Soderholm and Tillery participated in the development of the HFATS. Harry J. Ettinger was the program manager at Los Alamos and funding for these activities came from Bresson and Tom Thomas of the USDOE Airborne Waste Management Program.

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EIGHT NORTHERN INDIAN PUEBLOS COUNCIL

P.O. Box 969
San Juan Pueblo, New Mexico 87566
(505) 852-4265

August 24, 1989

RECEIVED
4 1989 5:05 pm
PUBLIC HEALTH DIVISION
DIRECTOR'S OFFICE

Mr. Walter Youngblood
Public Health Division
State of New Mexico
Health and Environment Department
1190 St. Francis Drive
Santa Fe, New Mexico 87504

Dear Mr. Youngblood:

On behalf of the Eight Northern Indian Pueblos Council, please find enclosed our DRAFT POSITION PAPER relative to the Los Alamos National Laboratory's application to continue handling hazardous waste.

Our Board of Governors will not meet until early September 1989 to formalize and act on the Position Paper, therefore, this document is subject to change and approval.

Should you have any questions, please do not hesitate to call me at 852-4265 for additional information.

Sincerely,

Bernie F. Teba by [illegible]

Bernie F. Teba, Executive Director
EIGHT NORTHERN INDIAN PUEBLOS COUNCIL

Enclosure

DRAFT POSITION PAPER OF THE EIGHT NORTHERN INDIAN PUEBLOS COUNCIL (ENIPC) ON THE APPLICATION BY THE LOS ALAMOS NATIONAL LABORATORY TO CONTINUE TO HANDLE HAZARDOUS WASTE

As the representatives for the Eight Indian Pueblos communities of Northern New Mexico and with centuries of respectful habitation in this land, we wish to express our concern about the Los Alamos National Laboratory's plan to begin regular incineration of "mid-level (TRU) radioactive and hazardous wastes.

Our forefather's settled in this region many centuries ago with the belief that the land and its resources would live in harmony and that we as the caretakers of this land would, heretofore, protect and preserve those resources. "Living in harmony" means to respecting Mother Earth and Nature and maintaining a balance between them and their children.

Today we face a different situation. In this age of "nuclear energy harnass", it became obvious after a time, what are we to do with the waste and how can we "destroy" it without harming man or his environment. It apparently cannot be done safely even though attempts are made to do so.

In researching the issues relative to the Laboratory's application, we have identified some of the primary problems with their incinerator plan and would request a response from your office on the following:

** Radioactive materials are not destroyed by fire. They are merely reduced in size, increasing their chance to escape through filter systems and to be ingested or inhaled. One of the radioactive elements, plutonium, we understand lasts

240,000 years and is deadly in microscopic quantities. We also understand that the emissions from the smokestack will not be monitored.

** After incineration, a highly toxic and dangerous ash containing radionuclides, heavy metals, dioxins and PIC's will remain to be disposed of.

** There is also a high probability of airborne releases of radioactive materials occurring through the smokestack. While the stacks will be equipped with filter systems to screen out particulate matter, no foolproof filtration system exists. Massive atmospheric releases of plutonium and other deadly radioactive elements in recent years at DOE's Rocky Flats Plan in Colorado have proven to be the rule, not the exception.

** The filter's will be cleaned with water. This process pollutes the water and turns yet another precious resource into yet another waste. Thus, creating another problem.

** The current regulations stipulate that outside authorities must be notified of airborne releases within 24 hours. With even a gentle wind blowing, released radiation would spread to the surrounding region in a matter of hours, not days. Can LANL guarantee that no human, animal or other physical resource would be exposed and die from its effect.

** The primary standards that will regulate LANL's incineration process were drawn up by the Atomic Energy Commission in the late 1940's. They are dangerously out of date

and not in line with present-day understanding of the dangers of low but sustained exposure to radiation and hazardous wastes.

** DOE will essentially "self-regulate" and "self-monitor" the incinerator. As revealed around the nation over the last few years, DOE has a horrendous record in protecting the worker and public safety, and in meeting environmental standards.

** Many commercial incinerators around the nation have been designated as "Superfund" sites--places of extreme environmental contamination selected by EPA for special clean-up projects. Communities surrounding such sites have markedly higher of incidences of cancer, birth defects and other major illnesses.

The Eight Northern Indian Pueblos Council feel that many of these questions which we have addressed above have yet to be answered; additionally, because of the permanent long term effects of whatever is decided, we feel that questions we have posed should be answered to our satisfaction, perhaps with guarantees that we would suffer no ill effects. Until we are satisfied with the answers, the Governors of the Eight Northern Indian Pueblos hereby adamantly oppose the LANL application to incinerate anykind of radioactive or hazardous waste.

Therefore, we recommend that the State of New Mexico <u>not approve</u> LANL's application.

CCNS

Concerned Citizens for Nuclear Safety

Mr. Kelly Crossman
1190 St. Francis Drive
Santa Fe, New Mexico, 87501

RECEIVED
AUG 24 1989 4:55pm
PUBLIC HEALTH DIVISION
DIRECTOR'S OFFICE

August 24, 1989

Dear Mr. Crossman,

Enclosed are comments from Concerned Citizens For Nuclear Safety on Los Alamos National Labs (LANL) radioactive-hazardous waste incinerator.

First, we would like to thank you for being on the stand to answer questions from the public. We object to the fact that EID did not provide a panel that included representatives from air quality, radiation protection, etc. We feel it would have been more comprehensive and helpful to you, as well as the public.

We protest the idea that only the "permit" was on the stand, therefore, only the state had to answer all the questions. There would be no permit if LANL had not applied. The fact that LANL refused to participate and answer any questions from the public is appalling. There is something wrong with the policy at EID if there is no right to publicly question the applicant. In light of Secretary Watkins' ideas on DOE facilities being more open and less secretive, LANL's refusal creates more of the same distrust.

As we understand the idea of segmenting the permitting process, there are still major questions about the radioactive portion of the permit that won't get answered before the incinerator is allowed to burn. We object to DOE being allowed to essentially permit themselves in regard to radioactivity. We would like to see EID take a more aggressive stand on regulating DOE facilities. If new legislation is needed, we would be happy to participate.

EID doesn't seem to question DOE credibility, even in the atmosphere of criminal investigations at Rocky Flats. Does the EID have access to infra-red photography? This was the only method the FBI could use to determine that Rocky Flats was incinerating illegally. EID should not take the stance that they

712 Calle Grillo Santa Fe, New Mexico 87501 (505) 986-1973

trust DOE, no one in the community does in light of the DOE's past track record of safely operating and managing facilities.

With optimum health and safety considerations in mind, we would like to see continuous stack emission monitoring (CEM) on this incinerator. It is necessary to have CEM with immediate shut-down abilities in case of malfunction of the machine. LANL promotes this incinerator as the best, most highly technical incinerator ever built. No doubt it is, however, when relying on technology, we need to remember the Challenger disaster, the Chenobyl explosion, the Titanic and other examples of advanced technology that failed. Our concern is not only failure of technology, but of human error, such as the Valdez accident. With the public's fears at it peak, CEM by both the EID and an independent citizens monitoring group, would help to ease some of the concerns.

It is necessary for CEM to check for dioxins, furans, heavy metals, and other toxic substances that could reach the atmosphere and pollute our environment. The Radioactive Waste Campaign Fact Sheet included covers this subject in detail. It is critical that the EID recognizes the need for researching all toxic emissions and not hesitate to call for a full account of these substances.

The choice of incineration for disposal of radioactive waste has not been proven as the most appropriate method. Radioactivity has been dealt with previously in a closed system, incineration opens radioactivity to the atmosphere. LANL states that it would only be a small amount of radiation that would escape, however, the question of how much radiation is harmful is toxic. LANL and other nuclear proponents have long held to the threshold theory which believes there is a "safe" level of radiation for the human body. Enclosed find reports by Drs. Sternglass and Gould that find this long time assumption to be false.

There has been no health and safety assessment done on the local effects of radioactive-hazardous waste incineration. There has been no environmental impact statement done to determine if the quality of life in New Mexico would change in case of a fire of accident in the incinerator. There has been no studies on the impact of fire and/or explosion on the tourism and real estate in the area.

Enclosed find a list of incinerator accidents from the Citizens Clearinghouse. There has also been no study on the cumulative effects of all the incinerators in the country burning at once? What is the effect on our atmosphere?

There is growing evidence that radioactivity is adding to the depletion of the

ozone layer. Has this been addressed by EID? Why not? We have global ecological concerns that can no longer be denied. Radioactive substances can last 240,000 years, how can one take responsibility for the safety of thousands of generations with so little thought to the dire consequences? No longer can the public let the decisions that affect thousands of generations be in the hands of those who take the word of DOE as the truth. The truth is that we are at one of the most critical junctures in the history of mankind. We can go ahead with a lack of respect for natural law, or choose to discontinue producing that which is impossible to dispose of. The DOE should clean up its' mess before being allowed to produce more. Cleanup at Los Alamos is estimated at $2 billion. Does this point to a working hazardous waste program? We don't think so. How can we continue to afford this type of waste cleanup.

It is ludicrous to invest in a waste disposal program that generates more waste. The ash is highly concentrated radioactive waste, the water that cleans the filters becomes radioactive and the filters themselves must be disposed of in a radioactive dump. Incineration is a landfill in the sky. The waste does not disappear because the volume reduces, it is only dispersed in the air we breathe. There is no excuse for this kind of short-sighted thinking.

The EID and other state and federal agencies must begin to think in terms of the long range results of their methods of dealing with radioactive materials and byproducts.

I have enclosed several recent reports that support our position of the need for greater safety measures and more research needed before any incineration takes place.

Respectfully submitted,

Elizabeth Billups

Elizabeth Billups
Research Director

Radioactive Waste Campaign Fact Sheet

RECEIVED
4 1988 4:55pm
PUBLIC HEALTH DIVISION
DIRECTOR'S OFFICE

Burning Radioactive Waste: What Comes Out of the Stack?

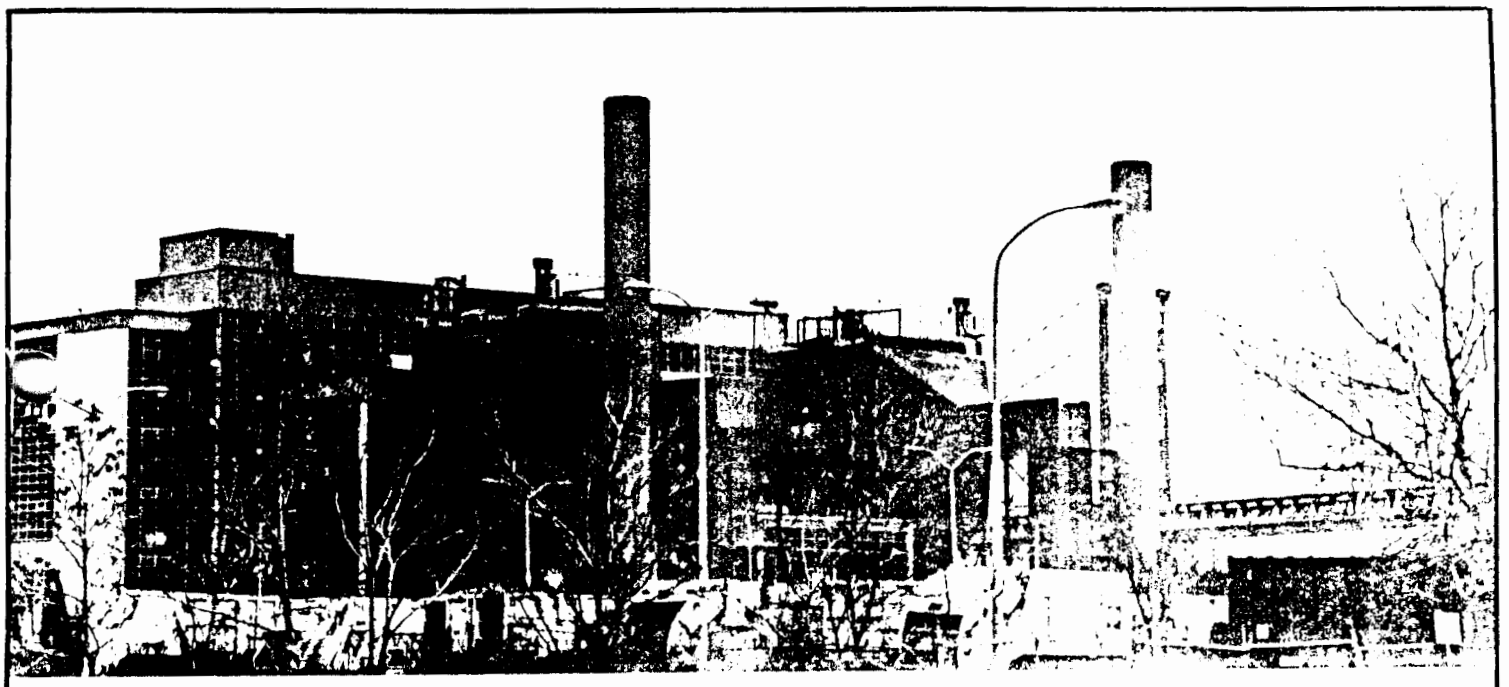

Figure 1. Large centralized incinerators have been proposed for Ohio, Pennsylvania and North Carolina but local residents are questioning what will come out of the stack.

Introduction

Just as cities produce piles of garbage, the United States has a nuclear industry that produces garbage—radioactive garbage. And, just as big cities like New York are beginning to run out of landfill space for garbage, so too the nuclear industry faces a shortage of space for its radioactive waste.

Space is limited in radioactive landfills because three have closed due to radioactive leakage, and no new ones have opened. Because of past problems, citizens are vigorously opposing burial of radioactive waste. Landfills have a proven record—proven to fail. For more information on landfills, see "Radioactive Waste: Buried Forever? A Profile of Commercial Radioactive Landfills."

With landfill space limited, generators of radioactive waste are promoting incineration as a way to reduce the waste volume. Three large centralized incinerators have been proposed by Battelle Columbus Labs in Columbus, Ohio; Babcock and Wilcox in Apollo, Pennsylvania and US Ecology in Bladen County, North Carolina.

The idea behind incineration is simple—just as wood ash is much smaller than wood, radioactive ash occupies less volume than untreated waste. But unlike wood, the "smoke" and ash are both radioactive, and, anything touched by radioactivity becomes radioactively contaminated. While incineration reduces the volume of the original waste, it does

new waste—radioactive filters and scrubber solutions used to partially clean the incinerator exhaust gas.

While incineration will reduce the waste volume, it cannot reduce the radioactivity. Only time can do that. Incinerators release radioactivity to the air and can create a new toxic chemical hazard that was not previously part of the waste. Dioxin, a known carcinogen, may form and be released in the incineration process.

If the purpose of incineration is to reduce the volume, then why not squash or supercompact the waste? The idea behind supercompaction is also simple—a hydraulic press, similar to a car crusher, compresses the waste into a small package. This process releases extremely small amounts of radioactivity which is contained in the building. Supercompaction does not create dioxin, is less expensive than incineration, and achieves approximately the same volume reduction.

Low-Level Waste—What Will be Burned?

Incineration is proposed for "low-level" radioactive waste, which may be in the form of paper, plastic, metal, liquid, or animal carcasses. The term "low-level" includes all radioactive waste except for irradiated nuclear fuel, uranium mill tailings from mining and processing ore, and plutonium-contaminated waste. "Low-level" does not mean safe. The hazardous lifetime of "low-level" waste can vary from less than a day to tens of thousands of years.

Radioactive waste is produced by nuclear power plants, industrial radionuclide generators (like Hoffman-La Roche in New York and New England Nuclear in Massachusetts), medical, research and academic institutions, and the U.S. government. Over 90% of the radioactivity projected to be burned is called dry active waste (DAW),from nuclear power plants. Much of the remainder is industry and institution DAW[1] with about 1% of the radioactivity in animal carcasses. *See Figure 2.* Wastes may also contain viruses and chelating agents used in cancer therapy. Below is a more detailed discussion of what would be burned.

Fuel Cycle Wastes

In terms of radioactivity, most civilian "low-level" waste is produced by nuclear power plants. This material, usually called fuel cycle waste, includes: dry radioactive waste (protective clothing, gloves, paper wrappings, plastics and air filters, small metal and glass items, construction and insulation materials and packaging waste); ion-exchange resins and filters and contaminated turbine oil. The predominant radioactive materials are cesium, cobalt, manganese and iron. Cesium-137, which constitutes about 20% of the radioactivity in fuel cycle waste, has a half-life of 30 years. As a rule of thumb, it takes ten half-lives for radioactive material to decay to non-hazardous levels. Thus, cesium-137 must be isolated for 300 years (10 half-lives x 30 years). In addition to its radioactive properties, fuel cycle waste can be chemically reactive, toxic, corrosive and flammable.

Dioxin and Polyvinyl Chloride. Most of the waste that would likely be incinerated is dry radioactive waste (DAW) that includes plastics, such as polyvinyl chloride (PVC), paper and wood. The combination of chlorine and carbon produced by burning PVC plastics, paper and wood can form dioxins in the incinerator. A national survey of nuclear power plants has revealed that dry radioactive waste from reactors contain from 10-20% polyvinyl chloride.[2]

In addition to potential dioxin problems, when polyvinyl chloride (PVC) plastics burn, they produce hydrochloric acid (HCl). "HCl emissions can corrode metals, irritate the eyes, nose and throat, and contribute to acid rain problems." [3] The more polyvinyl chloride burned, the more hydrochloric acid is produced. To remove HCl, the incinerator gas must be scrubbed and neutralized. Because the incinerator gas is radioactive, the scrubber solution then becomes radioactive and must itself be solidified and disposed of as radioactive waste. The Tennessee Valley Authority, which now uses supercompaction to reduce its low-level radioactive waste volume, has found when the content of PVC in incinerator feed reaches 20%, incineration ceases to be cost-effective.[3]

Ion Exchange Resins. Though incinerator proponents acknowledge that dry active waste from power reactors will be burned, they dodge the question whether other materials, such as resins, will also be burned? These resins, similar to a water softener system, are used to cleanse reactor cooling water. They are much more radioactive than DAW. *See Figure 2* Resins, which contain a large amount of plastic, should not be burned, but rather, properly stored in safe containers.

Waste from Medical and Research Institutions

The waste stream produced by medical, research, and academic institutions is relatively low in radioactivity and short-lived compared to that from other sources. It contains DAW, biological wastes and liquid scintillation fluids. The major radioactive materials are tritium, carbon 14, technetium-99m, and iodine-125, most of which decay to safe levels within a year.

DAW consists of contaminated paper, filter, plastic, glass and rubber from radioactive experiments and treatments.

Sources of Low-Level Radioactive Waste

	Curies
Institutional	
Biological waste	300
Liquid Scintillation Vials and Liquids	160
Dry Active Waste	1,600
Industrial	
New England Nuclear	308,700
Other	188,400
Dry Active Waste	200
Power Reactors	
Resins/sludges	105,000
Dry Active Waste	25,500
Decon Waste	856,800
TOTAL	**1,486,700**

* Data from Ref. 1

Percentage of Radioactivity in Incinerator Waste

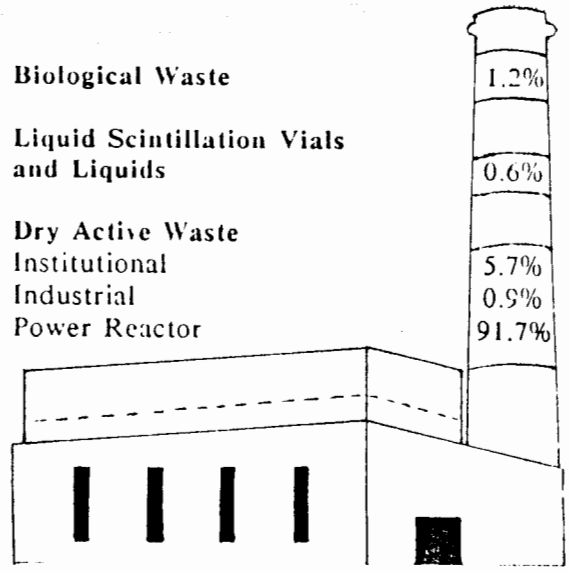

Figure 2. Sources of radioactive waste for incineration. Out of 1.5 million curies of radioactivity of low-level waste generated annually in the United States, about 28,000 curies of dry active waste (DAW), liquid scintillation vials, and animal carcasses are slated for incineration. Almost all the radioactivity in potential incinerator waste is contained in DAW which can be supercompacted and stored.

Biological wastes are animal carcasses used in experiments, usually contaminated with carbon-14 or tritium. While animal carcasses are a small portion of the waste problem, their radioactivity is long-lived, and they pose a potential infectious hazard.

Scintillation fluids, containing either toluene or xylene, are used in research to count radioactivity. These mixtures, called scintillation cocktails, contain very little radioactivity, but the toluene and xylene are volatile and chemically toxic. Although incineration is the best technology to reduce this toxicity, less hazardous chemical alternatives to toluene and xylene are available.

Iodine-125 is extensively used in medical research. When incinerated, iodine forms a gas, and, if inhaled, concentrates in the human thyroid causing hyperthroidism and thyroid cancer. Because of this threat, the Nuclear Regulatory Commission (NRC) has recommended that materials containing iodine-125, which has a 60 day half-life, be stored for a year to reduce the radioactivity to acceptable levels.

Although incineration of medical and research waste is taking place at 50 to 70 small incinerators in the U.S., it is interesting to note that the NRC does not know the exact number or location of these incinerators. A survey by the University of Maryland showed that 87% of the medical and academic institutions that were incinerating their animal carcasses and other biological wastes were also incinerating additional radioactive waste.[5] A survey by the American Hospital Association conducted June 1983 showed that only 15% of the hospitals have the type of controlled-air incinerators necessary to burn plastic safely.[6] Most do not have filters and scrubbers to clean the dangerous exhaust gas.

Industrial Waste

Radionuclides are produced industrially for use in pharmaceuticals and also in smoke detectors, luminous dials, measuring devices (particularly in the oil industry) and numerous other applications. Radionuclides, mostly in DAW form, include tritium, carbon-14 and the full spectrum found in irradiated fuel. The radiopharmaceutical industry generates and processes radioactive chemicals for use in medicine and research. Two U.S. companies are the main suppliers: Hoffman-LaRoche in Tuxedo, New York produces over half of the radiopharmaceuticals used by medical facilities throughout the country and New England Nuclear in Massachusetts processes tritium for use in research. Principal radiopharmaceutical manufacturers are located in New Jersey, Missouri, Massachusetts, Illinois and California.

Industrial generators produce a large percentage of the toxic waste found in the radioactive waste stream. They are also the main generators of tritium sent for disposal. Industry produces thousands of curies of tritium annually. Applications to incinerate this waste always assume that all the tritium will be released from the stack because control mechanisms to contain tritium are never considered. If inhaled tritium can cause cancers and genetic damage. *(Health effects are discussed in more detail on page 5.)*

Incinerators: How Would They Work?

The large centralized incinerators proposed in Ohio, Pennsylvania and North Carolina would be dual chamber controlled air incinerators. A controlled air incinerator is designed to burn material in a primary chamber using a non- turbulent, deficient air process, much like burning charcoal. (*See Figure 3.*) This type of burning helps to control the amount and size of the particulates that go up the stack. Particulates can settle in lungs and must be carefully monitored.

Waste arrives at the incinerator in containers. Then the contents of the containers and the entire container too, if it is combustible, are loaded into the primary chamber. In some incinerator designs, a feed shredder ensures that the dry radioactive waste will burn more evenly and completely at a stable temperature. The radioactive ash is removed from the primary chamber and the gases and particulates are passed into a secondary chamber, which has an excess of oxygen to allow a complete burn up. The gases and particulates are burned in the secondary chamber at a temperature of 1800-2000°F. for 1.4 to 2 seconds. This retention time in the secondary chamber at a specific temperature is essential to completely destroy the gases and reduce dangerous emissions.

Retention time, however, is a complex engineering problem that requires an exact characterization of the waste to ensure the proper conditions. Since some waste would be dense and highly compacted, and burn with much difficulty, such as animal carcasses, while other would be loose (and perhaps sprayed with highly combustible scintillation fluids), it will be difficult to control combustion so that waste burns evenly and completely at a stable temperature. Incomplete combustion would lead to greater releases of particulates and dioxins.

Dioxin

None of the three license applicants for large centralized incinerators has even considered the possibility of dioxin formation. This is a very disturbing omission since dioxins have been detected at many small operating incinerators. For example, in 1983 the Canada Royal Jubilee Hospital incinerator was tested and found to be emitting dioxins. According to a Canadian Report from the Expert Advisory Committee on Dioxins in November, 1983, the largest source of dioxin-type substances emitted into the environment is from improperly operated incinerators. Dioxins were also detected in stack filter samples from three hospitals in Maryland, and one in Hampton, Virginia.

Dioxins are a toxic chemical formed from carbon and chlorine. The exact formation mechanism is unclear. While dioxins can be destroyed with high temperatures, according to some scientists, they can reform in cooler parts of the incinerator. The Center for the Biology of Natural Systems (CBNS) evaluated dioxin studies and could find "no significant relationship between emission levels and furnace temperatures." Tests by the Environmental Protection Agency (EPA) of the Hampton, Virginia incinerator showed a high rate of dioxin emission at a considerable range of combustion temperatures. A model incinerator in Chicago, on the other hand, had consistently lower dioxin emission rates with lower

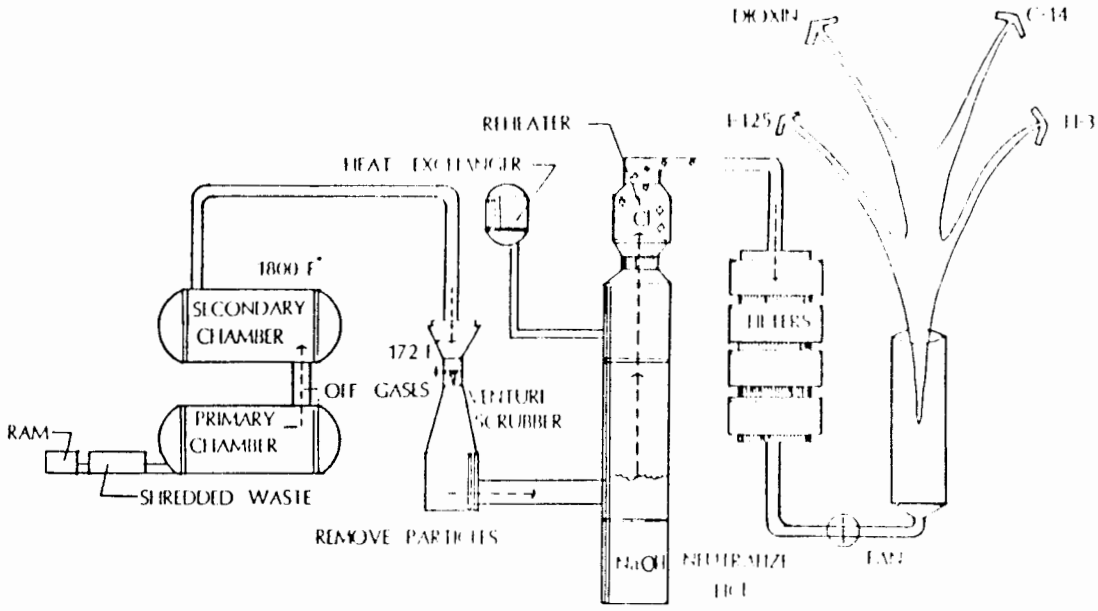

Figure 3. Incinerator Diagram. Waste is burned in the primary chamber while off gases and particulates are burned at higher temperature in the secondary chamber. The scrubber collects particulates and neutralizes the acidic acid. The toxic chemical, dioxin, and radioactive gases (carbon-14, tritium and iodine-125) are expected to bypass the remaining filters and be released.

combustion temperatures. The CBNS report speculates that dioxins form in the incinerator stack and the off-gas system on ash particles. This could explain why dioxins form regardless of combustion temperature. Since it is generally agreed that the ingredients to form dioxins include chlorine from PVC's and carbon, it makes sense that PVC should not be incinerated.

While proposed radioactive waste incinerators include scrubbers and filters to collect particulates and chlorine compounds, it is impossible to know whether they would eliminate dioxins since the formation mechanism is unclear. Experience with monitoring dioxin formation and release from incinerators is very limited. Tests of stack emissions are expensive and time-consuming, and only a few incinerator emissions have been completely analyzed for dioxins. Considering the health consequences *(see page 6)*, dioxin formation is a risk that should be strictly avoided.

Incinerator designs call for scintillation fluids, mostly toluene and xylene, to be separated from their glass vials and injected into either the secondary or primary chamber, depending on the design. Other organic fluids, such as turbine oil, would be similarly injected. A similar system at Ontario Hydro was inoperative due to spray nozzle corrosion.

Tritium emissions are another problem when thinking about incineration. Since tritium is a radioactive form of hydrogen and behaves like water, it can be captured on condensers, distilled to a smaller volume and bottled, instead of being emitted out of the stack. This method would be consistent with the EPA's "best available control technology."

Health Effects

Radiation cannot be seen, felt or smelled. It can be detected only with sensitive instruments. Any, even low, doses increase the risk of developing lung, bone and other kinds of cancer, leukemia, premature aging, birth defects, sterility, genetic mutation, blood composition changes and eye cataracts. The latency period before disease is evident may be several decades.

Tritium and Carbon-14 Risks

All the tritium and carbon-14 burned in any incinerator will be released to the atmosphere in a form that can be inhaled by local residents. The exact relationship between the amount of tritium (radioactive water) inhaled and biological damage is uncertain. Since radiation from tritium is low energy, and not penetrating, the health effects due to external exposure are small. On the other hand, since water and carbon are integral to the human system, if inhaled or ingested, tritium or carbon-14 can be incorporated into the DNA structure. Radiation can then alter the genetic makeup of molecules, and lead to cancers and genetic effects.

Incinerator Accidents

The technology for incineration is not perfect. While the large commercial incinerators proposed in Ohio, Pennsylvania, and North Carolina are the first of their kind to be considered in the United States, there are smaller incinerators that have been in operation on the sites of nuclear power plants and industrial radionuclide generators. Even in small, well-supervised incinerators, the potential for technical failure and human error is high. The most dramatic accidents to date have been:

1) June 10, 1983 Nuclear Fuel Services, Erwin, Tenn.

Fire in the off-gas ventilation system of radwaste incinerator. Flames went shooting out the chimney. Extensive damage to the incinerator. Released radioactivity collected on filters. Blower acted as a blowtorch igniting the downstream ducts. Spray nozzles that were supposed to put out the fire in the secondary chamber didn't work. Combustible materials continued to be fed into the burning chamber, fueling the fire.

2) January, 1978 General Electric, Wilmington, N.C.

Explosion destroyed incinerator. Campaign staff are in the process of studying records of the incident. In December, 1979, G.E. applied for a construction permit to build a new incinerator.

3) November 28, 1979 Babcock and Wilcox, Lynchburg, Va.

Stack radiation detector almost completely clogged with solid material. Detector taped with plastic tape to a metal frame allowing it to swing around in the chimney. Filter holder was not properly sealed—allowing leakage. All of the stacks were sampled with inadequate detection devices, not properly sized for the diameter stack, contrary to NRC recommendations.

4) September 27, 1984 Duke Power, Oconee Nuclear Reactor, S.C.

Radioactively-contaminated turbine oil was "inadvertently" sent to the oil-fired Lee Steam Station for burning. From September 1981 to July 1984, approximately 19,000 gallons of contaminated oil was burned at the Lee Station, which is not licensed to handle radioactive materials. Oconee administrators mistakenly thought that the activity of their oil was in "exempt quantities" defined in 10 CFR 30.18.

Human Error

Pregnant rats given continuous doses of tritiated water have suffered decreased hormone activity in their livers and brains.[8] If tritiated water is available for incorporation during the formation and growth of a tissue, the probability of radioactivity becoming part of the DNA is great. Once the tritium is incorporated into the cells, it will tend to stay. Rapidly reproducing cells are the most susceptible. Thus, pregnant women and children would be the most likely victims of long-term exposure to tritium.

The NRC takes its dose regulations for tritium from the International Commission on Radiological Protection (ICRP), a self-appointed international body of scientists which has recently recommended that the maximum permissible limit for tritium be quadrupled for air in the work place. There are serious flaws in this recommendation:

1) It assumes that tritium will be distributed evenly in the body. A study by the U.S. Department of Health contradicts this:

"The biological cycle of tritium does in fact appear to indicate that it does not behave solely as an element of tritiated water, but that it can be concentrated in certain elements of the biological cycle . . . Moreover, the distribution of tritium in the body is not as regular as was believed."[8]

2) Because of the long half-life (12 years), tritium will be hazardous in the environment for 120 years. It is readily assimilated into living things like plants and animals and can eventually enter people as tritiated amino acids. It will then be built up into nucleic acids in the body, becoming incorporated in DNA. Rats which have been fed low doses of tritium in the form of tritiated water prior to mating have been found to pass intestinal tumors to their offspring.[8]

3) There is no lowest level at which tritium does not have health effects. An experiment by Dobson and Cooper at Lawrence Livermore Laboratories never found a level of tritium low enough to not have harmful effects.[8]

4) Adequate data on low doses of radiation have not yet been developed. While many health effects, cancer especially, will not become apparent until 20-30 years after the initial exposure, extrapolations have been made from data with observation periods of under 20 years.

With these four points in mind, both the NRC and ICRP should use conservative exposure limits for both workers and the general public.

Iodine Risks

Iodine is easily vaporized and passed through filters. A fraction of gaseous iodine will bypass the chemical adsorbers and be released. The largest number of projected health effects due to the incinerator, primarily to infant thyroids, will arise from inhaling iodine or drinking iodine-contaminated milk. Because iodine-125 can be stored for two years to decay to non-hazardous levels, the NRC recommended this action be taken if the Battelle Labs incinerator is approved. While similar iodine delay requirements should apply to all incinerators, none has been proposed by US Ecology and Babcock and Wilcox.

Dioxin Risks

The toxic chemical, dioxin, can enter the body through:

1) breathing air containing dioxin laden dust particles,
2) ingestion, through vegetables, meat and milk, and
3) absorption through the skin

For some forms of dioxin, the amount that can cause cancer is very, very small. Ontario Hydro's standard for dioxin emissions is 30 trillionths of a gram per cubic meter of air and is based on the minimum amount of dioxin that has been observed to cause cancer in animals, divided by 1000. Of course, zero is the only safe dose since any amount of a carcinogen increases the probability that cancer will occur. The "30 trillionths" standard is equivalent to a grain of sand in an Olympic-size swimming pool. At Times Beach, Missouri, the EPA has followed the guide that any soils contaminated at a level of 1 part per billion (ppb) or more should be removed from human contact.

The principal organs of dioxin in rats, guinea pigs and mice susceptible to dioxin are the liver, thymus, ear ducts, and kidney. Other forms of dioxins are currently being studied by the National Cancer Institute in Bethesda, Maryland. Dioxins are considered to be a serious public health problem because of their persistence in the environment and their possible entrance into our food chain.

Table 1. Supercompaction. Advantages and Disadvantages.

Advantages	Disadvantages
+ Lower maintenance costs	- Volume reduction factor less than incineration, depending on waste composition
+ No increase in off-site dose	- Final product may be combustible or biologically active if animal carcasses are included
+ Simple operation	
+ Volume reduction of metals	
+ Equipment costs 1/4 of incineration	
+ No liquid generation (scrubbers)	
+ No solidification system needed	
+ Final product is more physically stable	

Alternatives to Incineration

The purpose of incineration is to reduce the volume of radioactive waste that needs to be stored or disposed of. The most important step in managing radioactive waste is redefining the category of "low-level" waste to exclude parts that will be radioactive for tens of thousands of years. Waste from the core of a nuclear reactor must be stored in a more durable facility than waste from a medical institution. The redefinition of low level radioactive waste to exclude the longer-lived materials is currently a major controversy on the federal and state level. If long-lived radioactive wastes are separated out from the low-level waste stream, then storage options become manageable.

Storage facilities are more efficiently utilized if wastes are first reduced in volume. Supercompaction is an alternative to incineration that has been used extensively the past four years in foreign countries, and, more recently, by utilities in the U.S. A shredder/compactor tears up dry active waste and then, with a force of 1,500 to 2,200 tons, greatly reduces the volume.

A shredder/compactor can reduce compactible dry waste volumes by a factor of 13 to 15, while also reducing the volumes of materials previously considered non-compactible, such as mop handles and metal objects. Depending on the waste compositions of material burned, incineration can reduce combustible waste volumes by a factor of 10 to 20. The actual volume reduction factor, however, is much less when adding the new radioactive waste generated by the incinerator itself. The scrubber solution that cleans the off-gas is voluminous, particularly if the PVC content ranges to 20%, and contaminated filters will also need regular replacement. Furthermore, a binder, such as asphalt, must be mixed with the incinerator ash in order to make a disposable solid. If the utility dry active waste contains 20% PVC, which is the representative case for some utilities, the shredder/compactor produces a smaller waste volume than an incinerator.[10] In addition, incineration will not reduce the waste volume of non-combustible materials, such as metal.

The advantages and disadvantages of incinerators and shredder/compactors are shown in Table 1. Incineration does greatly reduce the volume of pathological waste and scintillation fluids and detoxifies hazardous waste. For dry active waste, however, this is not a significant advantage, but it is important for pathological waste from bioresearch, and scintillation fluids from hospitals. It is clearly preferable to incinerate animal carcasses that have infectious or communicable diseases. It is also preferable to incinerate scintillation fluids, which are flammable organics. Incineration of animal carcasses and scintillation fluids does not pose a dioxin hazard, because little chlorine is present, but does lead to the release of long-lived carbon-14, tritium and other radionuclides. The amounts of animal carcasses needing disposal could be greatly reduced through a lesser dependence on the use of animals in radiation experiments.

Economic Comparison. Calculations by the Campaign show that supercompaction plus 100 year storage is comparable in price to incineration plus disposal, assuming the radioactive landfill operates according to design. Based on past experience, this is a questionable assumption. Landfills have leaked, trench covers subsided, and burial grounds eroded. Expensive future repairs, as have occurred in the past, were not included in our analysis. Neither economic nor convenience offer a strong reason to incinerate dry active waste. It certainly cannot be justified on health grounds.

Both the capital and operating costs are lower for supercompaction as compared to incineration. According to quoted prices by TVA,[3] the capital costs of a controlled air incinerator for DAW, plus a solidification system to encapsulate the ash, is approximately four times greater than a supercompactor. In 1983 dollars, the capital costs are:

Fontijne Supercompactor	$1,300,000
GNS "FAKIR" Supercompactor	1,000,000
Controlled Air Incinerator with Solidification System	4,200,000

Incinerator cost estimates in 1985 show capital costs up to $10 million.[12] The operating costs for a supercompactor are also less. Supercompactors need fewer employees, do not need large amounts of chemicals in scrubber solutions and are simpler to operate and maintain.

Recommendations

The Sierra Club Radioactive Waste Campaign recommends the following policy on volume reduction of low-level radioactive waste:

1. Supercompaction and above ground storage of low level radioactive waste is the volume reduction method of choice for dry active waste. Reactor resins should also be containerized and stored. Incineration of scintillation fluids and irradiated animal carcasses is justified when the biological hazard exceeds the radiation hazard. This could be accomplished at already operating controlled air incinerators, not at centralized ones of the size proposed in Pennsylvania and North Carolina.

2. The emissions from pathological and controlled air incinerators should be carefully monitored and regulated, particularly for dioxins. Any incinerator for biological waste and scintillation fluid must include the Best Available Control Technology. The EPA should list dioxin as a toxic air pollutant under the Clean Air Act, set standards, and include a careful monitoring program.

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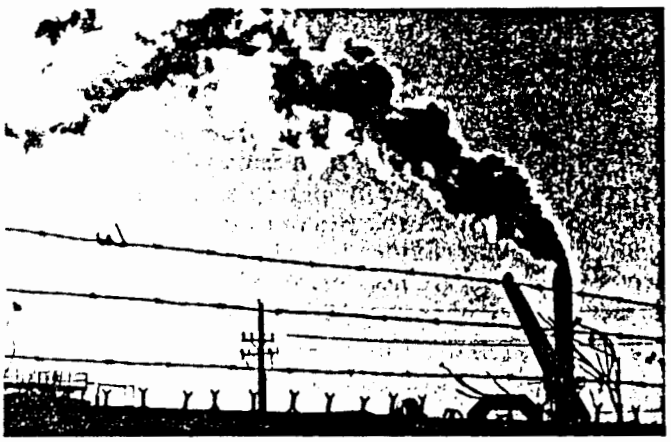
DIRECTOR'S OFFICE

Hazardous Waste Incinerators

"Land based hazardous waste incinerators are stationary point sources which emit pollutants into the air, land, and water media. Emissions may occur as part of the incineration process, as part of the scrubber operations, or as fugitive emissions. Uptake of emissions by terrestrial life may occur through air, water, soil, or via the food web."

—EPA Science Advisory Board, April 1985



Brown/Greenpeace

Waste Management incinerator in Chicago, Illinois

Hazardous Waste: Where Does It Go Next?

EPA reported that U.S. industries produced nearly *600 billion pounds* of hazardous waste in 1983. Each year, more hazardous waste is produced. What can be done to protect the general public and their air, water, and soil from this enormous quantity of toxic chemicals?

Today hard experience is teaching what common sense has known all along: hazardous materials must be kept out of the air, water and soil. Every state has groundwater and surface water supplies contaminated by hazardous waste, communities destroyed by toxic waste dumps, and men, women and children who are suffering from exposure to discarded industrial chemicals.

Public demand has resulted in better protection for water and soil. Beginning in the early 1970s, Congress passed a series of laws curtailing direct discharge to water and shallow land burial of hazardous waste. However, regulating air emissions of hazardous chemicals has barely begun.

Incineration: Is It Just a "Landfill in the Sky?"

EPA and industry plan a massive expansion of incineration capacity during the next few years. According to the Office of Technology Assessment, some 20% of hazardous waste is supposedly suitable for incineration but only 1% of hazardous waste is currently being incinerated. To burn all wastes classified as burnable, existing incinerators must go to maximum capacities and maximum operating times. . . and many more communities will be targeted as sites for new hazardous waste incinerators. The people in these communities want answers:

1. What are the risks to the public and the environment from hazardous waste incinerators?

Scientists—those who work for EPA and industry—agree that hazardous waste incinerators emit toxic chemicals into the air. They also agree that there are both short-term and long-term health effects from accumulations of toxic fallout from incinerators. But damages to public health and the environment cannot be accurately predicted because of lack of information.

Incinerators have been operating for years, but little is known about their effects because they tend to be located in developed areas where the effects of their toxic air emissions are not easily distinguished from the effects of other toxic air emissions.

Scientists, who are conducting incineration research for the EPA, are concerned that "the formation and release of (products of incomplete combustion) PIC during incineration may . . . pose a significant risk to the public," as stated in the EPA's report "Inhalation Pathway Risk Assessment of Hazardous Waste Incineration Facilities." In this same report, scientists warned that "the human health risk from incineration of carcinogenic heavy

metals (such as chromium, cadmium, beryllium) may be significant."

In their review of the EPA's program of hazardous waste incineration, the EPA Science Advisory Board issued this warning, "Based upon the data submitted for its review and observations made during site visits of operating facilities, the Committee is concerned . . . about the reliability of operating large-scale land based incinerators . . ."

2. Does anyone really know how well hazardous waste incinerators are working?

No reliable method exists to measure or monitor the performance of hazardous waste incinerators. As one EPA report says, "The complexity of the incineration process; the differences in incinerator designs, and the difficulties in monitoring changing operating conditions make the accurate prediction of absolute incineration performance an essentially impossible task."

EPA requires destruction and removal efficiencies (DREs) of 99.99% ("four 9's") of some hazardous waste and 99.9999% ("six 9's") for critical items, such as PCBs. Unfortunately, DREs are not measured during actual, routine operations when real waste is being burned. DREs are determined during a one-time-only "trial burn" of selected chemicals under carefully controlled conditions.

The stack gas samples that are collected and analyzed in trial burns are usually no more than 1/650,000th of one day's output of stack gas. Unless major modifications are undertaken, an incinerator is permitted to operate for 10 years on the basis of this one trial burn. Reassessments of DREs during the remainder of the incinerator's operating life are not required.

According to an EPA report, this trial burn method provides "only a 'snapshot' of the incinerator's efficiency during the trial burn." This same report warns, "No information is obtained about how the incinerator's performance might fluctuate with future changes in operating conditions or waste feed characteristics."

The EPA Science Advisory Board expressed concern on this issue as follows:

> "Research on the performance has occurred only under optimal burn conditions and sampling has, on occasion, been discontinued during upset conditions which take place with unknown frequency. Even relatively short-term operation of incinerators in upset conditions can greatly increase the total incinerator emitted loadings to the environment."

Even if the trial burn DREs could be achieved routinely, communities near incinerators are exposed to significant quantities of unburned wastes that escape in the stack gas. In an EPA-contracted study of ten commercial hazardous waste incinerators in 1986, the average incinerator had a feedrate of 6,100 pounds/hour, operated 6,037 hours/year, and burned 36,865,000 pounds of liquid hazardous waste in that one year.

At a 99.99% DRE for all of this waste at all times—no upsets, no loss of efficiency in startups and shutdowns, and no variations in waste feedstreams—at least 3,686 pounds of unburned waste was blown out of the stack of that average incinerator in one year.

3. What are "Pro ·ts of Incomplete Combustion?"

When a hazardous waste—a chlorinated organic solvent, for example—is burned, most of it breaks down into carbon dioxide, water and chlorine. Of these, only the chlorine is toxic. But the hot molecules also rearrange and recombine into many new, relatively complex chemicals, so-called "products of incomplete combustion" (PICs). *One EPA study cautions that these PICs "are more difficult to destroy and may be more toxic than the parent compound."*

Among the more notoriously toxic PICS that were identified in the EPA's study of eight hazardous waste incinerators were benzene, chloroform, tetrachloroethylene, and napthalene, as well as formaldehyde, phosgene, dioxins and furans. . . . And these were only a fraction of the chemicals that are actually present in stack gases. Another EPA study questions "whether the 90–99 percent of the hydrocarbons which have not been identified could result in a significant risk to human health."

4. What happens to metals during incineration?

When EPA evaluated the performance of eight incinerators, they found metals at varying concentrations in all stack gases. The metals come from the waste itself and from waste containers, such as metal drums that are routinely burned at some incinerators. Another EPA study cautions, "Stack releases of heavy metals (such as arsenic, chromium, and lead) are independent of DRE since heavy metals are not destroyed by incineration processes."

Midwest Research Institute found that as much as 53% of the heavy metals burned in an incinerator are released in the stack gases. Metals not emitted in stack gases are deposited in the incinerator ash.

Among the eight incinerators evaluated, one incinerator was emitting lead at the rate of 23 pounds per day into the air—almost 6,000 pounds per year at average operating times. The emission rate of cadmium was 67 pounds per year, while the rate for nickel was 452 pounds per year.

5. What are fugitive chemicals?

Unburned waste, newly-formed toxic PICs and heavy metals are not the only toxic air pollutants released at incinerators. Fugitive emissions, chemicals that escape during transportation, storage and processing, may be an even greater problem. The EPA Science Advisory Board cautions that " . . . fugitive emissions and accidental spills may release as much or more toxic material to the environment than the direct emissions from incomplete waste incineration."

At one large commercial incinerator burning pesticide-related wastes, gross fugitive emissions were estimated at 10,000 pounds per year. Ninety-three percent of the chloroform and 62% of the toluene found in the air at this incinerator were fugitive emissions. In other words, thirteen times more chloroform escaped from storage tanks, leaky valves, etc. than was blown out of the incinerator stack.

6. What about incinerator residu

Besides burning waste, hazardous waste incinerators also generate waste: fly ash that goes up the stack, bottom ash that is left in the incinerator—and residues from air pollution control devices.

When a common hazardous waste, such as organic liquid, is burned, most of the waste is vaporized, but as much as 9% remains as an ash. When solid hazardous waste is burned, as much as 29% remains as ash, according to an EPA report. This incinerator ash carries toxic heavy metals and PICs. In one ash study, 37 toxic PICs were found at levels ranging from 0.1 to 500 parts per million (ppm). Metals in the ash included lead, 5,000 ppm; arsenic, 27 ppm; cadmium, 61 ppm; and nickel, 7300 ppm.

Using these measurements, the ten incinerators evaluated by the EPA in their 1986 study could have produced at least 33 million pounds of ash, containing 165,000 pounds of lead and 241,000 pounds of nickel. The most common method of disposal for such ash is burial in landfills.

Some incinerators have air pollution control devices, such as scrubbers or filters, to capture a portion of the gaseous pollutants emitted. Stack gas scrubbers do not reduce the quantity of toxic emissions from an incinerator, they simply shift them from one medium, air, to another, water or soil. Scrubber water is routinely treated and discharged into ponds or the facility's wastewater discharge while solid filters are usually buried in landfills.

7. What goes into a hazardous waste incinerator?

Very little is known about the complex mixtures of toxic chemicals that are burned in incinerators. Accurate chemical analyses are so difficult that, according to another EPA report, "Except in settings where an incinerator is dedicated to a particular chemical process waste stream, a detailed quantitative makeup of the waste being burned is unknown."

8. How well is EPA overseeing hazardous waste incinerators?

According to criticisms leveled by their own Science Advisory Board, EPA's oversight of hazardous waste incineration has been inadequate at best.

In their review of EPA's hazardous waste incineration program released in April 1985, the Science Advisory Board was blunt: ". . . the Agency continues to experience difficulties both in assessing and managing hazardous waste incineration programs."

The Board identified areas where critical information needs were ignored: ". . . the Agency did not assess a number of scientific issues relating to the incineration of liquid hazardous wastes . . . ," ". . . inadequate resources were devoted to a holistic and scientific review of these technologies regarding their environmental impacts and acceptability . . ." and . . . "To date, the sampling of stack gas emissions has not occurred in a manner which would allow appropriate scientific evaluation."

In addition, the EPA has not established, much less implemented, any firm guidelines for incinerator construction and operation. For instance, in an EPA-funded survey of eight incinerators, "(o)perating temperatures ranged from 650 to 1450 C and calculated residence time varied from 0.07 to 6.5 seconds."

EPA restricts only six categories of the many hundreds of air contaminants emitted by incinerators. Based on a limit for each contaminant, the restrictions are insensitive to the cumulative effect of the total emissions, the buildup of bioaccumulative toxic fallout and the effect of other pollution sources in the area.

Perez/Greenpeace

"We don't know what they were burning in their incinerator, but we know that it was making us sick. We know that we couldn't hardly have rest in our own homes. We know that we couldn't have any more beautiful gardens. . . We lived off this farm, raising butterbeans, okra, peas. . . We had all that. And not just the McCastle family. The entire Alsen community lived off our nice gardens. The only thing we would have to buy would be meat. We raised hogs, but not after Rollins came in. Nobody could eat the meat. The hogs went to dying. The chickens went to dying. We didn't know what it was. Then we found out that Rollins was burning hazardous waste."

—Mary McCastle, Coalition for Community Action, Alsen, Louisiana, March 1987

Summary

Hazardous waste incineration is riddled with unknowns, but one thing is certain—the health and the environment of communities in which incinerators are sited are at risk. Incinerators release unknown quantities of unknown chemicals, presenting health threats of unknown magnitude and unknown duration to the people and ecosystems of neighboring communities.

Incineration's appeal lies in its ability to make hazardous waste seem to vanish into the air. With increasing restrictions on other forms of disposal, incineration is being promoted as a simple and cheap "permanent" solution to the vast quantities of hazardous wastes produced. In reality, incineration is a controlled and officially sanctioned "toxic waste leak" through stack emissions and ash disposal.

Incineration involves very real risks and very real uncertainties for the host communities. Incinerating hazardous waste does not stop their spread through the

system modifications thus would be reduced to 0.021 lbs/hour with an exit gas concentration of 4.56 ppm by volume.

Both the original and modified systems are well under the maximum allowable levels for outlet emission rates and outlet concentrations. Again, the modifications to the air pollution control system provide an additional margin of safety in meeting the RCRA requirements.

Hydrogen Chloride Decontamination Factors

The additional hydrogen chloride removal achieved by system modifications represents a net reduction of 93.1 percent as compared to the performance-tested system. The calculated decontamination factor for hydrogen chloride removal prior to making the system modifications was 337 as compared to a decontamination factory of 4,880 after system modifications, a factor of nearly 15. The decontamination factor is not controlled by a RCRA permit limit.

RCRA Requirement, Exit Stream pH

The RCRA permit requires the exit stream pH be no lower than 1.0. This condition was met during the trial burn as the final pH of the exit liquid stream from the wet contact air pollution control system ranged from 1.0 to 10.3 even in the most extreme cases. Therefore, operating conditions were primarily acidic but were never so acidic as to inhibit hydrogen chloride mass transfer into the aqueous phase to any appreciable extent.

The modifications made to the air pollution control system are not anticipated to affect the pH of the exit stream. An analysis of the proposed liquid pH permit condition indicates that a minimum scrub solution pH of 1.0 is reasonable in order to provide a margin of safety against increased emissions during periods of process upset.

Hydrogen chloride vapor pressure data indicates that a liquid pH below 0.5 in combination with hydrogen chloride concentrations above 1.0-2.0 percent by weight is necessary to inhibit mass transfer into the liquid phase sufficiently to lower removal efficiencies below the required 99 percent (13). These findings are in agreement with a recent laboratory study by the U.S. Environmental Protection Agency which shows that hydrogen chloride removal efficiencies can generally be maintained even under conditions of low absorbing liquid pH (14).

4.4.2 Particulate Matter Control

An analysis was made of the effects of system modifications on particulate matter removal efficiency. This analysis indicates that important factors affecting particulate matter removal include 1) the type and sequence of the emission control devices employed, 2) the liquid-to-gas contact ratio for the wet collection devices, and 3) the gas phase pressure drop across the individual collection devices, both wet and dry.

A summary of the estimated particulate matter removal efficiencies for the components of the air pollution control system is presented in Table 5.

The overall performance characteristics of the particulate air pollution control system compared to the RCRA requirements are presented in Table 6.

Particulate Matter Removal Efficiency

The RCRA permit does not specifically state a minimum particulate removal efficiency to be met by the CAI, rather a maximum emission limit of 0.08 gr/dscf is cited.

The particulate matter emission control system for the CAI can be divided into a wet collection section and a dry collection section.

The major wet particulate emission control device upstream of the HEPA filters is the venturi scrubber. The estimated particulate removal efficiency of the venturi scrubber before making system modifications was 96.8 percent, based on a gas phase pressure drop of 40.0 inches of water with a gas-liquid contact ratio of 3.1 gal/1,000 cf. The calculated particulate removal efficiency of the venturi scrubber after system modification is 97.5 percent, based on a gas phase pressure drop of 60.0 inches of water with a gas-liquid contact ratio of 6.2 gal/1,000 cf.

Table 5

PARTICULATE MATTER REMOVAL EFFICIENCIES (ESTIMATED)

System Component	Removal Efficiency (%) Original System	Removal Efficiency (%) Modified System
Incineration System	3.0	3.0
Quench Tower	15.5	20.5
Venturi Scrubber	96.8	97.5
Absorption Column	25.3	28.8
Mesh Demister plus condenser	6.2	9.5
First HEPA Filter	99.99[1]	99.99[1]
Second HEPA Filter	99.99[1]	99.99[1]
Activated Carbon Adsorber	0.00	0.00
Third HEPA Filter	99.97[2]	99.97[2]
Total System	99.99999999999[3]	99.999999999993[3]

Notes: 1. HEPA filter removal efficiency for a particle size distribution including particles greater than 0.3 microns.

2. HEPA filter removal efficiency for a particle size distribution 0.3 microns and under.

3. The total removal efficiencies are theoretical numbers and do not represent significant figures.

Table 6

PERFORMANCE CHARACTERISTICS RELATED TO PARTICULATE MATTER REMOVAL (ESTIMATED) (BASIS)

Performance Factor	Units Employed	Original System	Modified System	RCRA Allowable Level
Inlet Feed Rate[1]	lbs/hour	8.282	8.282	NA
Outlet Concentration	gr/dscf[2]	1.32×10^{-13}	8.80×10^{-14}	0.080
Outlet Emission Rate	lbs/hour	9.30×10^{-13}	6.18×10^{-13}	0.552[3]
Removal Efficiency	% of input	99.99999999999	99.999999999993	NA
Penetration Level[4]	-	1.1×10^{-13}	7.5×10^{-14}	NA
Decontamination Factor[5]	-	8.9×10^{12}	13.4×10^{12}	NA

Notes:

1. Particulate feed to the quench tower.
2. Based on standard conditions of 60.0°F, 14.7 psia and 7.0 percent oxygen by volume (dry).
3. Calculated value based on flow conditions at 99.0 percent removal efficiency.
4. Ratio of the outlet concentration to the inlet concentration.
5. Inverse of the penetration level.

The overall estimated particulate matter collection efficiency of the wet collection system is 98.11 before making modifications compared to 99.8 percent after modifications.

The particulate matter removal efficiency for the dry collection system (HEPA filters) is much higher than for the wet collection system. The estimated particulate matter removal efficiency before and after modification is 99.9999999994 percent, which is equivalent to a decontamination factor of 167 billion.

The overall particulate matter removal efficiency for the complete air pollution control system is so extremely high that the concept is meaningless. Prior to system modification, the overall particulate removal efficiency of the air pollution control system was 99.99999999999 percent, equivalent to a decontamination factory of 8.9 trillion. The calculated overall particulate matter removal efficiency after system modification has increased to 99.999999999993 percent, which is equivalent to a decontamination factor of 13.4 trillion. The improvement in system performance resulting from modification is demonstrated by an increase of 50 percent in the decontamination factor of the overall air pollution control system.

RCRA Requirement, Particulate Matter Emission Rate

The estimated particulate matter emission loading from the combustion chambers to the air pollution control system is 8.28 lbs/hour. This emission rate is the same before and after system modification.

The estimated particulate emission rate following the wet collection system is 0.155 lbs/hour before system modification. This emission rate is equivalent to an emission concentration of 0.022 gr/dscf and is based on a stack flow rate of approximately 700 dscf/min. The calculated particulate emission rate following the wet collection system after making modifications is 0.103 lbs/hour, which is equivalent to an exit particulate concentration of 0.014 gr/dscf. Both of these particulate matter concentrations are sufficiently low to meet the RCRA emission standard of 0.080 gr/dscf, even without the additional particulate removal provided by HEPA filtration.

HEPA filtration reduces the estimated particulate matter emission rate from the stack to 9.30×10^{-13} lbs/hour or 1.32×10^{-13} gr/dscf, for the unmodified system. The calculated particulate matter emission rate from the stack after system modification is 6.18×10^{-13} lbs/hour, or 8.80×10^{-14} gr/dscf. Comparison to the allowable 0.08 gr/dscf shows that both the performance-tested system and the modified system are well within the RCRA requirements.

5.0 Conclusions

The evaluation of the effects of modifications to the air pollution control system of the controlled air incinerator at TA-50 results in the following conclusions.

5.1 Hydrogen Chloride Removal

The original, performance-tested system was able to obtain a hydrogen chloride removal efficiency of 99.7 percent, which is well above the minimum standard of 99.0 percent. The off-gas treatment control system was able to reduce the hydrogen chloride emissions under the worst case chlorine inlet load to 0.303 lbs per hour, compared to an allowable maximum of 4.0 lbs/hour. The decontamination factor for the system was 337.

The modified air pollution control system is able to achieve significant reduction in hydrogen chloride emissions as compared to the performance-tested system. The removal efficiency is increased to 99.98 percent and the emission rate is reduced to 0.021 lbs/hour, at the worst case chlorine inlet loading. The decontamination factor is increased to 4,880 and the margin of safety is increased to 193.2, which is substantially higher than for the original system. Consequently, the modified system is able to meet the proposed hydrogen chloride permit limits with a considerable improvement in the margin of safety over the performance-tested system.

The modified emission control system is able to maintain a high degree of hydrogen chloride removal efficiency under

foreseeable operating conditions. The system is able to effectively remove hydrogen chloride from the gas stream under conditions of liquid pH 1.0 or greater.

5.2 Particulate Matter Removal

The evaluation of the air pollution control system for particulate matter removal indicates that the performance-tested configuration was able to meet the applicable emission standard of 0.08 gr/dscf. This standard was met even under the worst case condition where rust from the induced draft fan, resulting from hydrochloric acid corrosion and moisture damage during prior use, was entrained in the exit gas stream during the trial burn.

The modified air pollution control system is able to achieve considerably better performance than the performance-tested system. The particulate matter decontamination factor for the modified system is improved by approximately 50 percent, compared to the original system, due primarily to the increased pressure drop across the venturi scrubber. The expected exit particulate matter concentration is 12 orders of magnitude below the allowable level.

The allowable concentrations can be met even if no HEPA filters are used to treat the flue gas stream. Therefore, the HEPA filters provide a high degree of safety against exceeding emission standards during any process upsets, such as sodium chloride aerosol entrainment due to absorption column malfunction.

5.3 Destruction Removal Efficiencies

The performance-tested incineration system was able to meet the DRE requirement of 99.99 percent for carbon tetrachloride under all test conditions. The DRE for trichloroethylene was above the minimum allowable level of 99.9999 percent when the CAI was operated under the same conditions as detailed in the RCRA permit. DREs are primarily a function of the combustion chamber rather than the air pollution control system and the modifications discussed in this report are not expected to significantly affect them.

5.4 Radioactive Dose Commitment

Radioactive dose commitment calculations were made for the performance-tested air pollution control system (15). These dose commitment calculations were based on stack height of 12.2 meters (40 feet), a stack diameter of 0.91 meters (3 feet), and an exit velocity of 8.6 meters/second (28 ft/sec). The equivalent exit gas flow rate under these conditions was calculated as 5.60 cubic meters/second or 11,869 cf/min and includes the building air vent exhaust. Modifications to the air pollution control system of the CAI do not affect the above values.

6.0 References

1. "RCRA Trial Burn Final Report for the Los Alamos Controlled Air Incinerator," Volume I and II, Submitted to the New Mexico Environmental Improvement Division, Santa Fe, New Mexico by the Los Alamos National Laboratory, Los Alamos, New Mexico, March 1987.

2. Neuls, A.S., Draper, W.E., Koenig, R.A., Newmyer, J.M., and Warner, C.L., "The Los Alamos Controlled Air Incinerator for Radioactive Waste: Volume I - Rational, Process, Equipment, Performance and Recommendations", Report No. LA-9427, Vol. I, Los Alamos National Laboratory, Los Alamos, New Mexico, August 1982.

3. Koenig, R.A., Draper, W.E., Newmyer, J.M. and Warner, C.L., "The Los Alamos Controlled Air Incinerator for Radioactive Waste: Volume II - Engineering Design Reference Manual," Report No. LA-9427, Vol. II, Los Alamos National Laboratory, Los Alamos, New Mexico, October 1982.

4. "Draft Operating Permit Conditions Under the Resource Conservation and Recovery Act: Module V Controlled Air Incinerator Operation", Letter to Harvall E. Valencia, U.S. Department of Energy, Los Alamos, New Mexico from C. Kelly Crossman, New Mexico Environmental Improvement Division, Santa Fe, New Mexico, May 8, 1989.

5. "The Controlled Air Incineration of Navy Colored Flare Materials", Los Alamos National Laboratory, Los Alamos, New Mexico, September, 1986.

6. Calvert, S., Goldschmid, J., Leith, D., and Melrta, D., "Wet Scrubber System Study - Volume I - Scrubber Handbook," Report No. EPA-R2-72-118a, Prepared for U.S. Environmental Protection Agency Research Technology Park, North Carolina by Air Pollution Technology Inc., San Diego, California, August 1972.

7. Hesketh, H.E., "Fine Particle Collection Efficiency Related to Pressure Drop, Scrubbant, and Particle Properties and Contact Mechanism, " Journal of the Air Pollution Control Association, 24 (10), 939-942, October 1974

8. Bonner, T., Desai, B. Fullenkamp, J., Hughes, T., Kennedy, E., McCormick, R., Peters, J. and Zorders, D., Hazardous Waste Incineration Engineering, Noyes Data Corporation, Park Ridge, New Jersey, 1981.

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12. Danielson, J.A., Air Pollution Engineering Manual, Los Angeles County Air Pollution Control District, Los Angeles, California. Prepared by U.S. Department of Health Education and Welfare, National Center for Air Pollution Control, Cincinnati, Ohio, 1967.

13. Perry, R.H., and Chilton, C.H., Chemical Engineers Handbook, Fifth Edition, McGraw-Hill Book Company, New York, New York, 1973.

14. Carnes, R.A., "USEPA Combustion Research Facility Permit Compliance Test Burn, "In Proceedings of the Eleventh Annual Research Symposium at Cincinnati, Ohio, April 29 - May 1, 1985, Freeman, H.F., ed., "Incineration and Treatment of Hazardous Waste, "Report No. EPA/600/9-85/028, U.S. Environmental Protection Agency, Hazardous Waste Engineering Research Laboratory, Cincinnati, Ohio, September 1985.

15. Memorandum from K. Hargis to T. Buhl on Radioactivity Dose Commitment Calculations for the Controlled Air Incinerator at TA-50, Los Alamos National Laboratory, Los Alamos, New Mexico, HSE-8, June 29, 1989.

[redacted]

LANL Permitting (red) file 1989

Folder #1: Correspondence prior to public comment period for LANL permit (pre May 10, 1989) plus correspondence after May 10 to December 31 that does not pertain to the LANL permit

Folder #2-5: Correspondence relating to the LANL permit; includes correspondence establishing the public comment period for the draft permit, correspondence received during the public comment period from May 10 to August 24, 1989 (everything between the two purple sheets of paper), correspondence regarding the LANL permit from August 25 to December 31, 1989.

All of this file ['89 (4)] was copied for the LANL permit-appeal administrative record.

AHGordon
01/09/90

08. 24. 89 02:02 PM *ALBUQUERQUE AREA OFC P01

RECEIVED 1989 AUG 28 PM 3:27

BUREAU OF INDIAN AFFAIRS
Albuquerque Area Office
Verification Number: FTS 474-2978

Please transmit 4 pages and 1 cover sheet to:

Name: Bill Henker Office Phone No. FTS 255-6775

Area/Branch Office RCRA Permitting Branch Environmental Protection Agency

City & State Dallas Texas

Machine No. FTS 255-2142 Verification No. FTS 255 6775

* * * * * * * * * * * * *

Your Name: Jane Marshall

Office Phone No. FTS 4743167 Date 8-24-89

* * * * * * * * * * * * *

Dispatched by: _____ Date _____

Fax Received by _____ Time _____

Specialist, Branch of Environmental Quality, at FTS 474-3341 or 505-766-3341.

Sincerely,

Acting Area Director

Enclosure

RECEIVED

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
ALBUQUERQUE AREA OFFICE
P.O. BOX 26567
ALBUQUERQUE, NEW MEXICO 87125-6567

IN REPLY REFER TO:
340 - Branch of Regional
Water Rights Protection

AUG 24 1989

Mr. Bill Honker
RCRA Permitting Branch, MOUHP
Environmental Protection Agency, 12th Floor
1445 Ross Avenue
Dallas, Texas 75202-2733

Dear Mr. Honker:

On behalf of the Pueblo of San Ildefonso (the Pueblo), comments on the Proposed Environmental Protection Agency (EPA) Resource Conservation and Recovery Act operating permit for Los Alamos National Laboratory are enclosed. The Bureau of Indian Affairs (BIA) feels that more coordination among the Los Alamos National Laboratory, the EPA, the Pueblo, and the BIA is necessary in view of the Operating Memorandum of Understanding among the Pueblo, the Department of Energy and the BIA for sampling of water, food, soil and sediment on Pueblo lands.

If you have questions or comments, please contact Jane Marshall, Hydrologist, Branch of Regional Water Rights Protection, at FTS 474-3167 or 505-766-3167 or Marcus Sekayouma, Environmental Protection Specialist, Branch of Environmental Quality, at FTS 474-3341 or 505-766-3341.

Sincerely,

Acting Area Director

Enclosure

COMMENTS BY THE BUREAU OF INDIAN AFFAIRS (BIA) REGARDING THE PROPOSED ENVIRONMENTAL PROTECTION AGENCY RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) OPERATING PERMIT FOR LOS ALAMOS NATIONAL LABORATORY (LANL)

GENERAL COMMENTS

1. BIA has some concern about the extensive time periods covered by the permit. In terms of Pueblo activities, this time span covers several different changes in Pueblo governments, and a large resource of time commitments will be needed by each administration to assess the impact of the RCRA sites on the Pueblo lands. For this reason, BIA and the Pueblo should be continuously updated on the permit activities, be copied all monthly, quarterly or annual reports regarding activities, and be given an annual review (in meeting form) of all progress and operations which could cause impact to Pueblo resources.

2. Notification of the Pueblo and BIA Branch of Environmental Services should be a part of the permit in case of releases or actions related to this permit.

3. The RCRA permit does not address the impact or penalty for non-compliance with the various sections of the permit. For assurance to the Pueblo, those enforcement measures should be spelled out in the permit.

SPECIFIC COMMENTS

Page 2, Section B, subsection 1(b) discusses methods of treatment, storage, or disposal of hazardous wastes or hazardous constituents. BIA recognizes that many of the materials handled by LANL are very toxic and recommends that specific treatment technology beyond existing standards be used to ensure minimization of threat to human health and the environment. Double containment of storage tanks is one such method which could minimize hazardous waste contamination by preventing leaks into the environment.

Page 2, Section B, subsection 4, discusses 15 days as a notification period after discovery of release of a hazardous waste or constituent. The Pueblo and BIA should be notified immediately in the case of airborne releases and notified within 24 hours of liquid or solid waste releases which could impact Pueblo lands. Notification should include steps taken by LANL to remedy the problem. A representative of San Ildefonso may be determined as the contact person regarding such releases, and that person could begin to take appropriate action as necessary.

Page 5, Section B, Special Permit Conditions, discusses the placement of perched-zone monitoring wells in the canyons above the Pueblo. When available, a map locating these wells would assist BIA and Pueblo personnel with locating these wells in relation to the wells currently monitored by LANL and BIA On the Pueblo lands.

Page 7, Monitoring of Surface and Ground Water, discusses the monitoring currently conducted and reported on in the LANL annual Environmental Surveillance Report. The permit monitoring is site specific and seems to be more comprehensive. Therefore, we recommend that reporting be at least quarterly for the results of permit monitoring and that the Pueblo and BIA both be copied with the reports.

Page 9, Section d., Corrective Action for Continuing Releases, discusses proposal of a permit modification if corrective measures are needed. We request that the Pueblo and BIA be mailed any notice of a comment period or hearing.

Page 12, Section G., Notification Requirements for Newly Discovered Releases, discusses a notification period of time which is too long and does not mention notification of what steps are being taken to remedy the problem.

Page 13, Section H, RCRA Facility Investigation (RFI), discusses time requirements for preliminary reporting at 180 days. The Task/Site (RFI) workplans will not be 100% complete for eight years. In view of the seriousness of the nature and extent of the problem, and the previously completed studies by LANL, the identification of the work plan phase should be shortened.

Page 33, Task I, Preliminary Report, discusses the nature of the preliminary report providing background information pertinent to the facility. BIA and the Pueblo should be given a copy of this report upon completion.

Page 37 and 38, Section C., Health and Safety Plans, discusses health and safety measures for the RFI. Is this plan any different than health and safety plans which should already be in place at LANL?

Page 38, Community Relations Plan, does not give specific information about the plan. Is it possible for the public and Pueblo to be informed via short reports that are in lay terms? Is the concept of a public information center at the LANL library, a part of the Community Relations Plan?

Page 40, Section A., Environmental Setting - Hydrogeology, discusses methods of describing the hydrogeology of the area. If any surface geophysics or infrared photography is available, this information should be included.

Pages 42 and 43, Section C., Contamination Characteristics, discusses the determination of contaminant movement at a solid waste management unit (SWMU) but does not provide a means of controlling movement of the plume of contaminant or cleaning up the contaminant.

Page 46, Section C, Draft and Final, and Page 58, Task IX Reports, discuss preparation of specific reports. The final RFI Report (p. 46) and the progress reports (p. 58) should be provided to the BIA and the Pueblo.

Department of Energy
Albuquerque Operations
Los Alamos Area Office
Los Alamos, New Mexico 87544

HAND-DELIVERED

Mr. Richard Mitzelfelt
Director
New Mexico Environmental Improvement Division
P.O. Box 968
Santa Fe, NM 87503-0968

HAND-DELIVERED

Dear Mr. Mitzelfelt:

Enclosed are additional comments prepared by the Department of Energy and the University of California regarding Draft RCRA Permit No. NM0890010515-1.

Also enclosed is a fact sheet submitted by DOE entitled "Answers to Questions Regarding the Department of Energy's Regulation of Radioactive Waste." This fact sheet responds to concerns raised by the public at the public hearing held July 18-20, 1989, but which are irrelevant concerning the grant or denial of the RCRA permit. DOE requests that this fact sheet also be made part of the public record.

Sincerely,

James R. Anderson
Acting Area Manager

Enclosures

RECEIVED
PUBLIC HEALTH DIVISION
DIRECTOR'S OFFICE

FINAL REPORT
LAB. JOB NO. LJ 10309-50/KA-035
CONTROLLED AIR INCINERATOR UPGRADE, TA-50

Presented to

Los Alamos National Laboratory
Facilities Engineering Division
P.O. Box 1663 (ENG-1)
Los Alamos, New Mexico 87545

Prepared by

Kaiser Engineers, Inc.
1900 Diamond Drive
P.O. Box 1228
Los Alamos, New Mexico 87544

August 16, 1989

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AUG 1989
PUBLIC HEALTH DIVISION
DIRECTOR'S OFFICE

Bound Rel
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Department of Energy
Albuquerque Operations
Los Alamos Area Office
Los Alamos, New Mexico 87544

ANSWERS TO QUESTIONS REGARDING THE DEPARTMENT OF ENERGY'S REGULATION OF RADIOACTIVE WASTES

During the public hearing concerning the Department of Energy`s draft RCRA operating permit, the public asked several questions regarding DOE's authority to regulate itself regarding radioactive waste, as well as independent oversight of DOE's activities. Although these questions are not relevant to the grant or denial of the permit, DOE is taking this opportunity to answer those questions

EVOLUTION OF THE DEPARTMENT OF ENERGY

The Atomic Energy Act of 1954 (AEA), 42 United States Code (USC) Sections 2011 through 2296, created the Atomic Energy Commission (AEC) and authorized it to produce "special nuclear material." In 1959, Congress amended the AEA to establish programs for controlling radiation hazards. The amendment creaed the Federal Radiation Council to guide federal agencies in establishing radiation standards. The Federal Radiation Council was abolished in 1970; its functions were transferred to the Environmental Protection Agency.

In 1974, the Energy Organization Act, 42 USC 5801 trough 5891, abolished the AEC and delegated its function to the Energy Research and Development Administration (ERDA) and the Nuclear Regulatory Commission (NRC). ERDA took on the non-regulatory function of the AEC, including the weapons program. The NRC was given the AEC's licensing and regulatory authority over commercial uses of atomic energy. The NRC was not authorized to regulate ERDA nuclear weapon activities, except for high-level radioactive waste disposal, 42 USC 5842. The Department of Energy Organization Act, 42 USC 7101 through 7375, transferred the functions of ERDA to the Department of Energy.

REGULATION OF RADIOACTIVE WASTE

RCRA expressly excludes "source, special nuclear, and by-product material" as defined in the AEA from its regulations, 42 USC (27);

such materials are subject only to regulation by DOE or NRC. DOE has several orders dealing with the handling of its radioactive materials or waste, including the following:

DOE Order 1540.2 Hazardous Material Packaging for Transport

DOE Order 1540.3 Base Technology for Radioactive Material Transportation Packaging Systems

DOE Order 5480.2 Radioactive Waste Management

DOE Order 5480.3 Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes

Independent Oversight of DOE Activities

42 USC 2286 establishes the independent Defense Nuclear Facilities Safety Board. The Board is to be composed of five members appointed from civilian life by the President. The members are to be respected experts in the field of nuclear safety. No member of the Board may be an employee of, or have a significant financial relationship with, the Department of Energy or any of its contractors. President Bush nominated five nuclear energy experts to the Board in July, 1989.

The Board is to review standards relating to the design, construction, operation, and decommission of defense nuclear facilities of the DOE. This includes DOE orders, regulations and requirements. The Board is to recommend to the Secretary of Energy specific measures which should be adopted to protect public safety and health. The Board may also investigate events or practices at DOE defense nuclear facilties which the Board has determined may adversely affect public health and safety.

Point of contact for questions regarding DOE environmental practices.

If any member of the public has a question regarding activities at the Los Alamos National Laboratory, or regarding general DOE environmental practices, please contact Jim Phoenix at (505)667-5288, or Lisa Cummings at (505)667-4667. If they are unable to answer a specific question, they will be able to obtain the information.

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

DATE: August 24, 1989
IN REPLY REFER TO: ADO-89-722
MAIL STOP: A120
TELEPHONE: (505) 667-9390
(FTS) 843-9390

Mr. James R. Anderson
Acting Area Manager
U.S. Department of Energy
Los Alamos Area Office
Los Alamos, NM 87544

Dear Mr. Anderson:

Enclosed are the Los Alamos National Laboratory's comments on the record of the public hearing on the Department of Energy's (DOE) draft hazardous waste permit. These comments are our response to the statements made at the July 18-20 hearing and reflected in the written record.

In order to be accepted by the Environmental Improvement Division (EID) for consideration, these comments must be at their office by close of business on August 24, 1989.

Sincerely,

Allen J. Tiedman
Associate Director
for Operations

AJT:mc

Enclosures: a/s

Cy: J. Puckett, HSE-DO, MS K491
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SUPPLEMENTARY COMMENTS OF THE DEPARTMENT OF ENERGY AND THE UNIVERSITY OF CALIFORNIA ON DRAFT PERMIT #NM0890010515-1

The Department of Energy and the University of California request that these additional comments and information be made a part of the record of the proceedings on draft permit #NM0890010515-1. These comments address only issues which are relevant to the Environmental Improvement Division's (EID) decision on whether to issue the above referenced permit. EID staff and legal counsel acknowledged at the hearing that many of the comments received at that time, while reflective of public concern, were not relevant or were outside EID's jurisdiction.

At the hearing EID submitted for the record a document entitled, EID July 19, 1989 Statement Responding to Particular Concerns Expressed by Members of the Public Regarding the LANL Mixed Waste Incinerator. This document makes clear that the permit under review deals only with the treatment of chemical waste. Concerns dealing with the treatment of radioactive or mixed waste are not relevant to this proceeding and may not be considered by EID unless they directly relate to the storage or treatment of chemical wastes. For this reason, these supplementary comments address only issues relevant to the draft permit.

The great majority of public comments at the hearing related to concerns about the operation of the controlled air incinerator. LANL believes that the following additional comments and information will help to answer these concerns.

1) Continuous Monitoring of Stack Emissions:

40 CFR 264.345 requires continuous monitoring of Carbon Monoxide in stack exhaust gas. In addition, the NMEID Draft Permit and the CAI TSCA (PCB) permit require continuous monitoring of Oxygen (O_2) in the secondary combustion chamber during RCRA or TSCA operations. LANL also continuously monitors for Carbon Dioxide (CO_2) in the exhaust gas. (see transcript p. 105, 360)

Adequacy of CO Monitoring as an Indicator of Destruction Efficiency

EPA-sponsored and private research has shown that destruction and removal efficiency (DRE) cannot be correlated to levels of CO in flue gas, but that some correlation exists between CO levels and products of incomplete combustion (PICs) and total unburned hydrocarbons.[1-10] Studies have shown that when CO emissions are below 100 ppm, PIC emissions are always low (although the converse may not always be true). EPA, in its 12/29/87 Draft Incinerator Amendments, has accepted the need to establish permit CO limits at levels exceeding those demonstrated during trial burns to avoid numerous waste feed cutoffs due to CO exceedances. It is their finding that, in doing so, DREs will not be reduced below regulatory requirements and that PIC emissions will not vary significantly thereby, as they do not increase linearly at such low CO levels. EPA itself has therefore proposed a CO level of 100 ppm as a conservative indicator of low levels of PIC emissions and as being indicative of good combustion efficiency.[1]

EPA has found short-term CO excursions to be typical of incinerator operation (e.g., at times when burner firing rates are adjusted) and that establishment of a "never-to-exceed limit would impede incinerator operation while providing little reduction in health risk."[1] That exactly this type of situation can occur is readily apparent from a study of the trial burn CO recording chart. EPA has therefore proposed an alternative format in which dual CO levels are established, one at the 100 ppm range for timed cutoff, and a higher level of 1000 ppm for instantaneous cutoff.

LANL's proposal of a two-tier, 100 ppm timed and 500 ppm instantaneous cutoff permit condition for CO monitoring is consistent with this approach, while being more conservative than the EPA's own proposed 1000 ppm instantaneous cutoff limit as well as the hourly rolling average concept, proposed by EPA as an alternate monitoring technique.

In addition to continuous strip chart recording of process parameters required by the RCRA permit, manual and electronic data acquisition are employed to archive process data. This data is retained for EPA and NMEID inspection. Per permit conditions, EPA and/or NMEID may inspect monitoring records at any time. No capability currently exists or is planned for direct electronic transmission of monitoring data in real time to NMEID or EPA. Establishment of such a system at LANL's expense would provide no more data than is currently available through site inspection of monitoring records. NMEID undoubtedly does not have the staffing to assign personnel to monitor such transmissions continuously, nor does LANL expect to operate the CAI in a continuous manner. A better option might be for LANL to send hard copies of run data following incinerator campaigns, or to invite NMEID personnel on site to observe operations.

2) Description of Incinerator

General and detailed descriptions of the incinerator have already been provided or made part of the public record during the permit hearing. See:

a) Part B Application, Appendix J and J-1;
b) LALP-89-30 (CAI Brochure handed out at hearing--placed into record as Robinson Exhibit #1)

3) Previous Disposal of Ash

The CAI has completed approximately 3000 hours of operational time in the past 10 years. Approximately half of this time has consisted of test runs, without the burning of any real or simulated waste materials (for system checkout, refractory curing, etc.). The majority of materials that have been burned in the CAI have not been actual wastes, but instead have been simulated wastes composed of reagent chemicals for test burn purposes (e.g., RCRA Trial Burn, Army & Navy Smoke and Flare compound test burns, Fission Activation Product test burn, EPA PCB study, etc). Exceptions are the TRU contaminated PCBs and other TRU waste, the scintillation vial (pseudocumene or 1,2,4-trimethylbenzene) waste, and some materials contaminated with methanol (upon which the interim status request was based).

Liquids, which have represented a substantial portion of the materials burned in the CAI, typically leave little or no ash residues. Of the ash residues which were produced from various incineration campaigns, ash was typically removed from the lower chamber following each campaign. Ashes qualifying as TRU waste were sent to TA-55, where they were solidified along with evaporator bottoms from TA-55 processing operations. These materials are currently stored with other TRU wastes at TA-54, pending ultimate disposal (at WIPP or a similar facility). Non-TRU ashes, whether resulting from radioactive or non-radioactive real or simulated waste incineration, have been handled as low level or potential mixed waste. Consequently, these ashes have been sent to the mixed waste landfill at Area G. No ash has been disposed of at that site since the last operation of the CAI for scintillation vial destruction in the Spring of 1987. Some of the ashes resulting from simulated Navy Smoke compound incineration were apparently sent to Aberdeen, MD (at Navy request).

4) Trial Burn Description and Justification

The Trial Burn has been described in the Trial Burn Plan of the Part B Application and in the "Final Report on the RCRA Trial Burn of the Los Alamos Controlled Air Incinerator", submitted to the NMEID in March 1987.

The purpose of a Trial Burn is to establish the set of operating conditions under which an incinerator will be permitted under RCRA to operate. This is done by feeding a real or simulated chemical waste to the incinerator and sampling and analyzing the exhaust gas to determine

a) Destruction and removal efficiency (DRE) of the chemical species fed to the incinerator,
b) Particulate emissions, and
c) HCl emissions and removal efficiency.

In addition, operating parameters such as chamber temperature, waste feed rate, oxygen and carbon monoxide level in exhaust gas, scrubber liquid pH, venturi pressure drop, and other process parameters were monitored during sampling periods to correlate performance with incinerator operating conditions. Permitted operating requirements and conditions are then based on the operating conditions demonstrated during periods of successful performance.

The choice of carbon tetrachloride (CCl_4) and trichloroethylene (TCE), which are the two difficult-to-incinerate chemical compounds used for the Trial Burn demonstration, was based on accepted Trial Burn practice and guidance from both EPA and NMEID. EPA has established an incinerability ranking for chemical compounds based on heats of combustion. Choice of CCL_4 and TCE followed the accepted Trial Burn procedure of choosing low heat of combustion compounds under the rationale that demonstration of effective destruction of such compounds is valid proof of equivalent or greater destruction of compounds having higher heats of combustion. It is for this reason that EPA does not require a wide spectrum of chemical waste feeds for Trial Burn performance tests, and why choice of a single or a few

compounds for the test is accepted as demonstrating performance for compounds higher in heat of combustion on the incinerability ranking list. This performance was proven during the Trial Burn.

Per the RCRA permit, LANL will be required to conduct verification Trial Burns every five years or every 8000 hours of operation, whichever comes first.

Sampling and analysis were performed by independent contract firm and laboratories (Clean Air Engineering, Controls for Environmental Pollution). The sampling contractor performed CO, ORSAT (O_2, CO_2), Modified EPA Method 5 (particulate, HCl), and VOST (volatile organic sampling train) sampling and during the Trial Burn. Their monitoring instruments were calibrated prior to, and periodically during, the performance test.

LANL hired an independent contractor, Kaiser Engineering, to review the modified air pollution control system to determine the effect of the modifications on the operational reliability and efficiency of the unit and its expected performance with regard to the RCRA permit limits. The report concludes that the modified system is much more operationally reliable, greatly improved in its ability to remove air pollutants, and easily capable of meeting the RCRA requirements, even under worst-case conditions. A copy of the report is provided for the record.

5) California Particulate Standards

The New Mexico Environmental Improvement Division and the U.S. EPA Region VI are the only regulatory bodies which have authority over hazardous waste incinerator permitting in the State of New Mexico. LANL is in compliance with the applicable guidelines of these regulatory agencies (HWMR-5 and 40 CFR 264, Subpart O). For information purposes only, LANL has researched the California Particulate Standards.

State of California particulate standards for hazardous waste incinerators are established by 40 CFR 264, Subpart O and the following:

> California Administrative Code, Title 22: Social Security, Division 4, Environmental Health, Section 67453, Performance Standards for Permitted Facilities, Subsection D, and
>
> California Air Resources Board, Stationary Sources Division, Toxic Pollutants Branch; District Permit Guidelines for Hazardous Waste Incinerators, Guideline Document December 1985.

The standard for hazardous waste incinerators is 0.08 gr/dscf, the same as in New Mexico.

The California PM-2 submicron particulate limit which Mr. Horan references (p. 146 of transcript) is misleading. This standard is derived from a California Air Resources Board (CARB) evaluation of the performance of air pollution control devices for use on resource recovery (municipal waste incineration) facilities entitled "Air

Pollution Control at Resource Recovery Facilities" (May 24, 1984). The report does issue particulate emission guidance to each of California's 43 independent districts, based on a best available control technology (BACT) study of the projected performance capabilities of fabric filter (baghouse) types of particulate control. This guidance states that, as of the date of the report, fabric filters should be able to control particulate emissions from municipal waste incinerators to:

a) 0.01 gr/dscf for total particulate matter;

b) 0.008 gr/dscf for less than 2 micron particulate.

The report goes on to mention that fabric filters have "greater than 99% collection efficiency" and that, typically, particles of 2-3 microns tend to "bleed" through the filter. In contrast, HEPA filter collection efficiencies are tested and certified at greater than 99.97% for 0.3 micron particles, and thus exceed those of baghouse units.

The CARB report and its recommendations are intended to establish particulate emission guidelines for California air pollution control districts in siting new resource recovery facilities (municipal waste incinerators). They are not, per se, directed at hazardous waste incinerators, nor are hazardous waste incinerators within the state of California, or any incinerator facilities, municipal or otherwise, located outside the State of California subject to these guidelines.

Particulate emissions during the Trial Burn at LANL varied between 0.0066 and 0.024 gr/dscf, corrected to 7% oxygen. There is evidence that this was an inflated representation of actual process particulate emissions, resulting from entrainment of iron-based particulate in the offgas ductwork prior to the EPA Method 5 sample train.

Inspection of the carbon steel induced draft (ID) blowers following the Trial Burn showed that they were fairly extensively corroded. High moisture content and residual chlorides in the offgas were undoubtedly responsible for this corrosion. This assessment is supported by analysis of the offgas particulate collected during Trial Burn EPA Method 5 sampling. This particulate showed high levels of iron, and analysis of the corrosion scale from within the ID blowers indicated the presence of chlorides.

These findings are consistent with the theory that entrainment of fine particulates from the corroded blowers, which were located downstream of the offgas treatment system components and upstream of the offgas sample system ductwork, was responsible for higher than normal particulate readings. The upstream offgas treatment components in place during the Trial Burn were predominantly of non-ferrous construction (fiberglass reinforced polyester) and would not have contributed to iron-based particulate formation. The HEPA filter plenum and carbon bed adsorber shell (which were of steel construction) were located upstream of the final HEPA filters, which would have effectively attenuated any particulates formed from corrosion mechanisms to levels below those actually seen downstream of the ID blowers.

The ID blower condition is not surprising considering that the blowers had been in service since the mid-1970's. We have taken steps to correct this problem by replacing these blowers, which should help to reduce particulate emissions accordingly. Nevertheless, our measured particulates were well within the present hazardous waste incinerator guidelines of 0.08 gr/dscf cited in 40 CFR 264.343(c).

6) Potential Radioactive Effects (p. 180)

Effective destruction of chemical compounds is a function of temperature, the amount of oxygen available to promote combustion, adequate gas mixing and residence time. The radioactive constituents in mixed wastes have no known or demonstrable effect on efficiency of chemical destruction.

Damage or impairment of the incinerator due to exposure to radioactivity is not a valid concern. Although conditions of high neutron flux or gamma energy (such as in a reactor environment) can cause materials damage (such as embrittlement of metals), the CAI will not see appreciable levels of this type of radioactivity. The plutonium contaminating the radioactive and mixed waste emits primarily alpha activity, which is not a materials concern.

7) Revised EA

There is a 1973 EIS on the CAI and the TA-50-37 facility (see transcript p. 111). No revised EA has been prepared for the CAI b[illegible] either on past or ongoing equipment modifications or to incorporate changes in intended operation.

8) Particulate Sampling

Particulate sampling during the Trial Burn was taken in accordance with the procedures specified and described in 40 CFR 60, Appendix A, Method 5: "Determination of Particulate Emissions from Stationary Sources." Sampling was performed by the sampling contractor, Clean Air Engineering of Palatine, Illinois.

9) Paul Robinson's Emission Calculations

Mr.Robinson's statement regarding a 99.99% destruction of a 100 pound/hour feed resulting in a potential release of approximately 5 grams/hour of residual is essentially correct. However, his attempt to relate this 5 gram/hour of potential chemical emissions to 180 milligrams/cubic meter (0.08 grains/dscf) of particulate emissions is equivalent to mixing apples and oranges. The 99.99% requirement is for destruction of incoming chemical feed POHCs (principal organic hazardous constituents). The 180 mg/m^3 relates to allowable particulate emissions. The two are not the same.

LANL would like to correct for the record statements made by Kelly Crossman, under questioning by Paul Robinson (p. 291 & 292 of transcript) Mr. Crossman mistakenly says that LANL chose carbon monoxide as a difficult to incinerate compound, #4 on the EPA incinerability list of hard to incinerate compounds. This should be carbon tetrachloride. Also, on p.274 of the transcript Kelly Crossman

says that dioxin-type wastes which require a 99.9999% DRE will not be burned in the CAI under the permit. F027 wastes (tetra-, pentachlorophenols) are considered dioxin contaminated in the manufacturing process and are also considered to be dioxin precursors when incinerated. These wastes require a 99.9999% DRE. LANL has, per 40 CFR 264, demonstrated 99.9999% DRE capability and has applied to burn these types of waste, both in the Part A and in discussions with Mr. Crossman which led to the establishment of a 125 pound/hr solid feed limitation, specifically related to F027 incineration.

The CAI has burned pentachlorophenol in the past with no evidence of dioxin or furans in the offgas above the analytical detectible limit.

12) Response to Paul Robinson's Testimony

The only corrosion damage was to the carbon steel induced draft fans, downstream of the pollution control system and HEPA filters. Pollution control efficiencies and operation was not affected. Corrosion damage was due primarily to water damage from condensation in the blowers, and some chloride attack. These blowers have been replaced (see #5 above).

Modifications to the incinerator, other than replacement of the ID blowers, were not made necessary as a result of corrosion damage. At no time did LANL decide, nor was it necessary, to suspend chemical operations due to some other alleged system damage, nor was the decision to return to burning primarily TRU waste in the CAI a result of such corrosion damage.

The Part A is an accurate characterization of the possible chemicals which may be incinerated (p. 418).

Results of the Trial Burn are not nullified by any system modifications, as alleged by Robinson, nor is a second Trial Burn a foregone conclusion (p. 418, 430). LANL contracted with Kaiser Engineering to perform an independent engineering assessment of the potential effects of these modifications. Their assessment was that the modifications will not result in a degradation of the CAI's performance or its ability to meet RCRA performance criteria--to the contrary, system performance should be improved by those modifications. In addition, they find that the modifications should enhance the system's corrosion resistance (p. 418). EID staff have previously stated that LANL would not be required to re-perform a Trial Burn due to post Trial Burn modifications of which EID has been notified. These modifications are detailed in Appendix J-1 of the Part B Application.

His reference (p. 422) to "...the new source performance standard list, which can be found at page five dash five of the application for solid waste fired boiler..." is incorrect. This list, Table 3 is "...for applicable criteria pollutants, as well as organic compounds and heavy metals of interest." To construe this as a new source performance standard list is incorrect. Monitoring stack emissions for these pollutants is not required by the state or federal govenment. If there is a need to set standards for any of these pollutants they should be set to protect human health and the

environment independent of the emissions from the incinerators. Monitoring requirements not related to any emission, performance, or ambient standards and are not needed in the permit and are not authorized by the law or regulations.

Of the list of 18 provided by Paul Robinson (p.423), only three are demonstrated technologies in terms of continuous monitoring (oxides of nitrogen NO_x, sulfur dioxide, and carbon monoxide). Most of the others could be monitored in a performance test, but some could be expensive.

LANL may measure most or all of these pollutants during a performance test so there are data for comparison to other incinerators, but it should not properly be made a requirement of the permit. Monitoring for sulfur dioxide as an indicator of scrubber efficiency would not be reasonable as a permit condition. There are continuous monitors for hydrogen chloride, but LANL believes that their use is primarily confined to the demonstration stage.

Mr. Robinson confuses HEPA partilculate removal efficiencies with chemical DRE (see #9 above). The two are not interchangeable. F027 waste is not PCBs. (p. 431)
13) Reliability of HEPA Filters

A LANL staff member has prepared a critique of the paper by Joseph Goldfield on HEPA filters submitted for the record. The critique is attached for inclusion in the record.

<u>Additional Comments on Module VIII</u>

1) The introduction to this section should be revised to reflect that based on special permit conditions findings additional studies will be conducted as appropriate. Any additional studies will be defined/scheduled in the Installation Workplan and approved by the Administrative Authority. The text provided below should be inserted under H. (2) RFI Workplan (LANL Installation RI/FS Workplan. TASK I.A.1.h. should be deleted because the Laboratory does not have reasonable access to the described map. The requirements above will ensure that the Administrative Authority has an adequate understanding of the installation-wide geologic setting and hydrologic characteristics affecting the occurence, movement, and interaction of surface and subsurface water with a view toward contaminants. Additionally, springs, faults, gravel deposits, alluvium, and pumice deposits can be provided with TASK.I.A.1.c.

2) The following text should be inserted under R. Scope of Work for a RCRA Facility Investigation (RFI) and S. Scope of Work for a RCRA Corrective Measure Study (CMS), respectively.

The LANL Installation RI/FS Workplan (as part of the RFI Task I.A.) will include an overview of the installation-wide Los Alamos hydrogeological environment. This overview shall be a summary description of the major features and conceptual interrelationships of the hydrogeological environment at Los Alamos. It should address the regional and installation-wide geologic setting and hydrologic characteristics affecting the occurence, movement, and interaction of surface and subsurface water with a view toward understanding

potential pathways for transport of contaminants. This overview shall provide a guide and referencing to appropriate maps submitted with the installation workplan and to appropriate detailed information in the significant geologic and hydrologic reports and studies listed and summarized in the task "Identification and Summary of Previous Studies" required under Section B. Special Permit Conditions. The overview shall be reviewed and updated as appropriate annually (as part of the Installation Workplan update) to incorporate the major findings with installation-wide significance from studies conducted under either the Special Permit Conditions or the Task/Site RI/FS investigations.

3) In response to concerns raised at the hearing, LANL is proposing to undertake an expanded community relations plan as described below.

COMMUNITY RELATIONS PLAN

RCRD Facility Investigation (RFI)

The permittee shall prepare a Community Relations Plan (CRP) as part of the RFI Workplan which allows for public participation in the RFI process. The CRP will include:

Establish and maintain an active mailing list of interested parties;

Informal meetings, including briefings and workshops as appropriate, with the public and local officials before and during the RFI process, which includes activities associated withsthe RFI Workplan and RFI report;

News releases, fact sheets, and publicly available quarterly progress reports that explain the progress and conclusions of the RFI;

Updates of materials in the information repository and public reading room; and

Public tours and briefings to inform and to listen informally to public concerns and answer individual questions.

Corrective Measures Study

The permittee shall prepare a Community Relations Plan (CRP) as part of the Corrective Measure Study (CMS) Plan which allows for public participation in the CMS process. The CRP will include:

Establish and maintain a active mailing list of interested parties;

Informal meetings, including briefings and workshops as appropriate, with the public and local officials before and during the CMS process which includes activities associated with the CMS Plan and the CMS report;

News releases, fact sheets, and publicly available quarterly progress reports that explain the progress and conclusions of the CMS;

Updates of materials in the information repository and public reading room; and

Public tours and briefings to inform and to listen informally to public concerns and answer individual questions.

References:

(1) USEPA, "Draft Incinerator Amendments," 12/29/87.

(2) Shiva Garg, "Guidance on CO Emission Limits from Hazardous Waste Incinerators," USEPA Office of Solid Waste, Waste Treatment Branch WH565A, Washington, DC, 20460.

(3) D. Hall, et al., "Thermal decomposition of a Twelve-Component Organic Mixture'" Hazardous Waste and Hazardous Materials, 1985.

(4) L.J. Staley, "Carbon Monoxide and DRE: How Well Do They Correlate?," in Proceedings of the 11th Annual Research Symposium-Incineration and Treatment of Hazardous Waste, EPA/600/9-85/028, September, 1985.

(5) Timothy Oppelt, "Incineration of Hazardous Waste-A Critical Review," Journal of the Air Pollution Control Association, Vol. 37, No.5, May, 1987, pp. 557-586.

(6) L.J. Staley, et al., "Incinerator Operating Parameters Which Correlate With Performance," Project Summary, Hazardous Waste Engineering Research Laboratory, EPA/600/S2-86/091, February, 1987.

(7) Stacey Daniels, et al., "Significance of Major Gaseous Species in Combustion and Destruction of Hazardous Waste Constituents," presented at the 1985 Annual Meeting of the American Institute of Chemical Engineers, Chicago, Illinois, November, 1985.

(8) Rachel La Fond, et al., "Evaluation of Continuous Performance Monitoring Techniques for Hazardous Waste Incinerators," Journal of the Air Pollution Control Association, Vol. 35, No.6, June, 1985, pp.658-665.

(9) "Scientist Questions Use of Carbon Monoxide for Monitoring Waste Incineration Emissions," Environment Reporter, Bureau of National Affairs, October 4, 1985.

(10) S.L. Daniels, et al., "Experience in Continuous Monitoring of a Large Rotary-Kiln Incinerator for CO, CO_2, and O_2," presented at the 78th Annual Meeting of the Air Pollution Control Association, Detroit, Michigan, June, 1985.

A Review of the Report:

High Efficiency Particulate Arrestors (HEPA Filters) in the Nuclear Industry

Author: Joseph Goldfield, Consulting Engineer

Reviewer: Ronald C. Scripsick

Industrial Hygiene Group, HSE-5
Health, Safety, and Environment Division
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Review Date: August 17, 1989

General Comments

This paper reviews certain aspects of the history of HEPA filters and selected issues on filter testing and performance. The vast majority of issues raised by Goldfield are either common sense operating procedures for testing HEPA filters or are questions that have been addressed in the literature. Goldfield is either not aware or chooses to ignore the large body of information on HEPA filter testing and performance that has been developed over the past four decades. A good resource for this information is the Nuclear Air Cleaning Conference Proceedings. In this paper Mr. Goldfield describes certain obvious weaknesses of HEPA filter testing and performance, but he fails to document steps taken over the history of the nuclear industry to mitigate the weaknesses. This approach leaves the uninformed reader with unwarranted concern over issues that have been addressed.

Comments on "Testing of HEPA filters"

Hot DOP Tests

The "small hot DOP test" described by Mr. Goldfield is used to test respirator cartridges not HEPA filters as they are defined in the paper. Test aerosols produced by this and other "hot DOP test" systems are not believed to have "quite narrow" size distributions.[1] The effects of the broad size distribution produced by these systems on test results have been evaluated[2] and modern filter test systems have been developed[3,4], evaluated[5], and are now being implemented in DOE and US Army filter test programs.

The hot DOP test systems were designed to operate with a monodisperse 0.3 um test aerosol which was the size of maximum penetration for the first generation of HEPA filters. In the past decade it was found that the test systems produced a polydisperse aerosol with a count median diameter in the range of 0.15 um to 0.2 um and that with this aerosol the test systems gave a penetration measurement approximately equal to the penetration at 0.3 um diameter. The current generation of HEPA filters has a size of maximum penetration of approximately 0.15 um diameter. The new test systems are capable of measuring penetration at this size in compliance with DOE filter test standards.

"Why does a HEPA only require an efficiency of 99.97%?"

Nuclear facilities are designed to provide protection from release of airborne hazardous materials. The design requires decontamination of airborne releases to specified safe levels under normal and upset conditions. To accomplish the required level of decontamination ventilation systems are designed with the number of stages of HEPA filters that corresponds to that decontamination level. For example if a facility in a worst case scenario requires that process exhaust concentrations be reduced by a factor of 10^6 then two stages of HEPA filtration would be used. The first stage would reduce the concentration by a factor of at least 2000 and the next by a factor of at least 2000 for an overall decontamination of 4×10^6. These decontamination factors account for the fact that the second stage is challenged with an aerosol that is more

difficult to collect than was the first stage. Almost always another one or two stages of HEPA filtration is used in these facilities to give added measures of protection.

Designers of nuclear facilities prefer to use several stages of the HEPA filters with nuclear grade media certified at 99.97% efficiency rather that fewer stages of non-nuclear grade filters with higher efficiency. One reason is that the several stages provide a greater number of barriers between inside the nuclear containment and the environment. In the event that upstream stages are breached, stages downstream provide the required protection. Of course, the price of higher efficiency is increased energy costs for pushing a given flow through the filtration system. For a given number of stages an order of magnitude increase in operating costs is expected from an order of magnitude decrease in penetration.

The major reason not to change to higher efficiency media is that the 99.97% efficient media is the only media that is nuclear grade. Nuclear grade media meets specifications developed by government and professional organizations. These specifications assure the performance of the media in a variety of upset conditions. Tests are performed to assure flame resistance, strength, performance under high humidity conditions as well as other conditions. A higher efficiency media meeting these specifications has not been developed. So besides costing more to operate, their is no assurance that the higher efficiency media would meet performance criteria other than efficiency.

Comments on "Errors of Testing"

DOE operates three filter test facilities (FTFs) which determine compliance with HEPA filter quality assurance standards and policies. Every HEPA filter purchased for use in DOE nuclear air cleaning systems is tested for penetration and resistance at one of these FTFs prior to installation. In addition the FTF at Rocky Flats plant tests filter models for compliance to DOE qualified filter products standards.

Los Alamos coordinates and reviews data from a round-robin test (RRT) program for the DOE FTFs. This program evaluates measurement consistency within individual FTFs as well as among the FTFs. This program is mandated by DOE standards on filter testing.

"Hot DOP"

Evaluation of particle size control has been performed by Los Alamos and the DOE FTFs.[6] This study showed that the FTFs maintain very good control of particle size during tests of HEPA filters. This same study and another study [7] evaluated the use of a laser aerosol spectrometer for monitoring aerosol size at the FTFs. Use of the spectrometer at the FTFs was supported by the results of these studies.

Test flows at FTFs are calibrated using flow calibration plates traceable to the National Bureau of Standards.[8] Effects of temperature, and atmospheric pressure are accounted for using the ideal gas law.[9] Relative humidity effects were determined to be not significant relative to the accuracy and precision requirements for FTF measurements. Airflow

accuracy and precision for aerosol generation is not a meaningful issue. Airflow measurement is used for coarse adjustment of the aerosol generators and fine adjustment is based on aerosol measurement.

Temperature measurements are used at the FTFs to support test flow measurements and for coarse adjustment of thermal test aerosol generators. Effects on test flow accuracy are related to percent changes in absolute temperature so temperature changes of a couple degrees Celsius result in less than a percent change in flow. Temperature control of oils for generating aerosol is critical to maintain the liquids well below their flash point. A temperature measurement accuracy of approximately $\pm$ $1^{o}C$ is sufficient for FTF requirements. This accuracy is easily achieved by the modern laboratory equipment used in the FTFs.

All FTF filter penetration measurements are made by first checking the 100% level of the photometer and then quickly making the penetration measurement. The stability of the thermal aerosol generators is such that no significant change in the challenge occurs in the brief period between the 100% level check and the penetration measurement.

There is no evidence that electrostatic charge is affecting FTF measurements. Evaluation of filters tested by the FTFs for the range of of flows and aerosol size at which the tests are carried out indicate that collection is dominated by a diffusion collection mechanism.[5] Mr. Goldfield gives no mechanism by which filters could be inadvertently charged. Elaborate means are required to charge special filters specifically manufactured to take advantage of electrostatic collection. Davies[10] points out that organic oil aerosols are extremely efficient for destroying electrostatic charging capacities of fibrous filters. Nuclear grade HEPA filters are tested with such aerosols by the manufacturer prior to the FTF test. With the evidence that HEPA filter collection is dominated by a non-electrostatic mechanism, that no inadvertent charging mechanism is known, and that filters are dosed with organic oil prior to FTF testing the possibility of electrostatic charges affecting FTF measurements is highly remote.

Comments on "Filter and Installation Leakage"

"General"

Mr. Goldfield inaccurately quotes Burchsted(page 13, second complete paragraph).[11] Failure to pass in-place testing is not as prevalent as Goldfield indicates.[12] Filter installations not passing initial tests are repaired and re-tested until the installation meets test standards.

"Alpha Recoil Effect"

Contamination surveys of the downstream surface of in-service HEPA filters do not find levels above above background.[13] These results indicate that alpha recoil is not a mechanism for significant HEPA filter penetration. Studies should be conducted to determine the maximum possible impact that this mechanism could have on HEPA penetration.

Comments on "Multiple HEPA Filters Against Plutonium Aerosols"

The objective of the Gonzales[14] study was to evaluate performance of HEPA filters in the second and third stages of a filtration system not the performance of the combination of filter and filter mounting frames. Aerosol concentration in these stages is so low that all other sources of contamination had to be eliminated so that penetration through filters could be determined independent of these other potential contamination sources. Decisions to use laboratory aerosols were based on obtaining the most accurate and meaningful results. The laboratory situation provided better control over sample collection and measurement than would a field study. Consequently, results from the laboratory study could more accurately be applied to a variety of field situations than could results of a field study.

"Concentration Problems"

As mentioned above the purpose of the study was to measure the performance of the second and third stage of HEPA filters. Loading of the first stage filters was not relevant. First stage filters were operated within design criteria and were not allowed to plug. Loading on the second and third stages were well below limits where loading affects penetration.

There is no evidence from HEPA filter performance or fibrous filtration media theory that indicates penetration fraction is affected by challenge concentration.

"Leakage Effects"

In terms of operating parameters important to filter performance the 25 CFM filters were operated under the same conditions as are the larger filters in the field.

"Particle Size Effects"

Penetration measurements were made at specific aerosol size bands so that the measurements can be used to predict overall penetration over a wide range of challenge aerosol size distributions. These size bands extended to sizes below that of HEPA minimum efficiency. Consequently, measurements at smaller aerosol sizes would result in higher efficiency measurements.

Particle shape differences between the field aerosols and the laboratory aerosols would not be significant in terms of HEPA filter performance.

"Radon and Thoron Daughters"

Because plutonium activity levels were so low on the second and third stage samples, radon and thoron activity was allowed to decay away before making the plutonium activity measurements. The radon and thoron activity is associated with a naturally occurring gas and is not associated with plutonium processing.

"Filters in Series"

The conclusion of the Gonzales study that "ERDA" guidelines were not violated appears to be substantiated by the results. Addition of the maximum allowable leakage to the maximum penetration measured by Gonzales still results in an overall leakage less that the "ERDA" guide.

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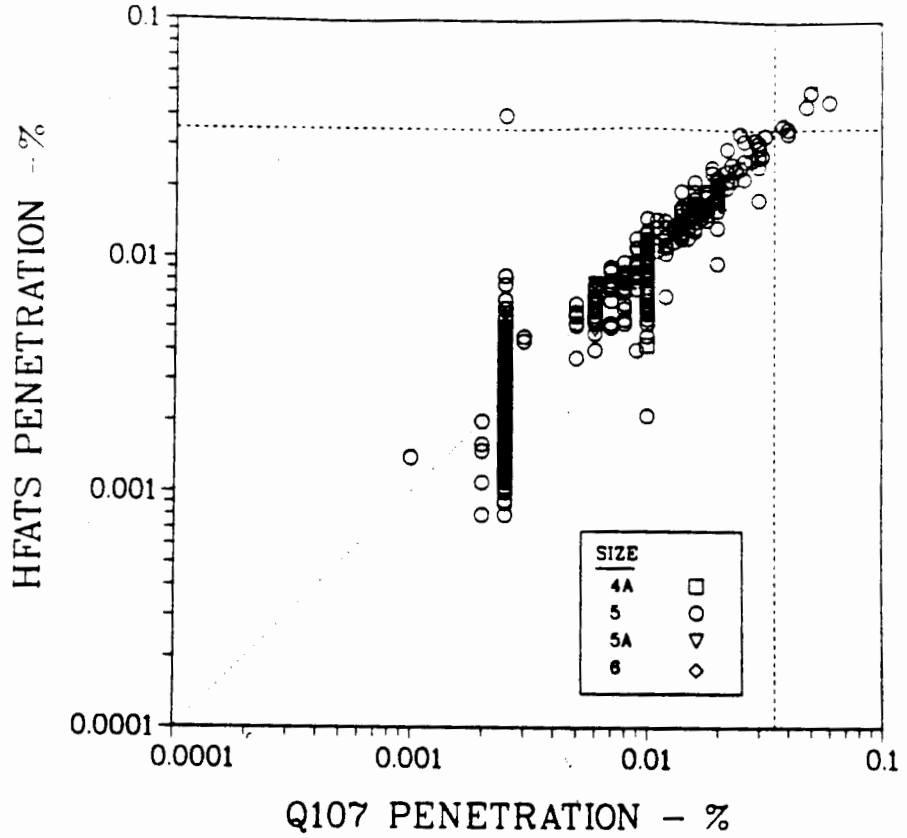

Figure 5. Comparison of the 20% flow test penetration measurements using the 0.31 µm HFATS data.

TABLE II

PENETRATION DIFFERENCES - 0.31 µm TESTS (HFATS - Q107)

FILTER SIZE	AVERAGE DIFFERENCE 100% FLOW	AVERAGE DIFFERENCE 20% FLOW
4A	-0.002*	-0.0004
5	0.001	-0.0004
5A	0.002	0.0002
6	0.002	0.0008

* Underline indicates significant difference (P <0.05).

Rejection rates for the 0.31 µm-HFATS comparisons are also listed in Table III. The combined HFATS rejection rates (HFATS only plus both) for all filters tested were ≤0.8% which is at the lower end of the range of rejection rates observed under routine conditions at the FTFs. The corresponding combined Q107 rates were lower than the HFATS rates.

TABLE III

PENETRATION REJECTIONS FOR THE 0.31 µm-HFATS COMPARISON

		FAILING 100% TESTS						FAILING 20% TESTS					
		HFATS ONLY		Q107 ONLY		BOTH		HFATS ONLY		Q107 ONLY		BOTH	
FILTER SIZE	NUMBER TESTED	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
4A	21	0	0	0	0	0	0	0	0	0	0	0	0
5	737	0	0	0	0	0	0	1	0.1	1	0.1	5	0.7
5A	39	0	0	0	0	0	0	0	0	0	0	0	0
6	52	1	1.9	0	0	2	3.9	1	1.9	0	0	0	0
TOTAL	849	1	0.1	0	0	2	0.2	2	0.2	1	0.1	5	0.6

Penetration Comparison with the 0.15 µm HFATS Data

Another important comparison that demonstrates the capability of the HFATS, is a comparison of HFATS measurements at the maximum penetration bin with the Q107 measurements. To determine if the bin in which the maximum penetration occurs is dependent upon the magnitude of maximum penetration, the maximum penetration bin was plotted against maximum penetration for the 100% and the 20% tests (Figures 6 and 7, respectively). Figure 6 shows that the maximum penetration occurs in the bin diameter range from approximately 0.1 µm to approximately 0.2 µm over the entire range of maximum penetration. No maximum penetration measurement occurred in a bin larger than the 0.21 µm bin. This relation between bin diameter and maximum penetration was independent of penetration. These conclusions are consistent with the shape of the 100% flow penetration curve found in Figure 3 which shows a distinct particle size of maximum penetration.

The 20% flow test results presented in Figure 7 show no such grouping of maximum penetration into a narrow bin diameter range. The data in Figure 7 appear to be evenly distributed over the entire range of bin diameters. This finding is also consistent with the shape of the 20% flow penetration curve found in Figure 3 which showed penetration to be independent of aerosol size.

The 100% flow data were used to plot the distribution of maximum penetration aerosol size (see Figure 8). For each of the filter

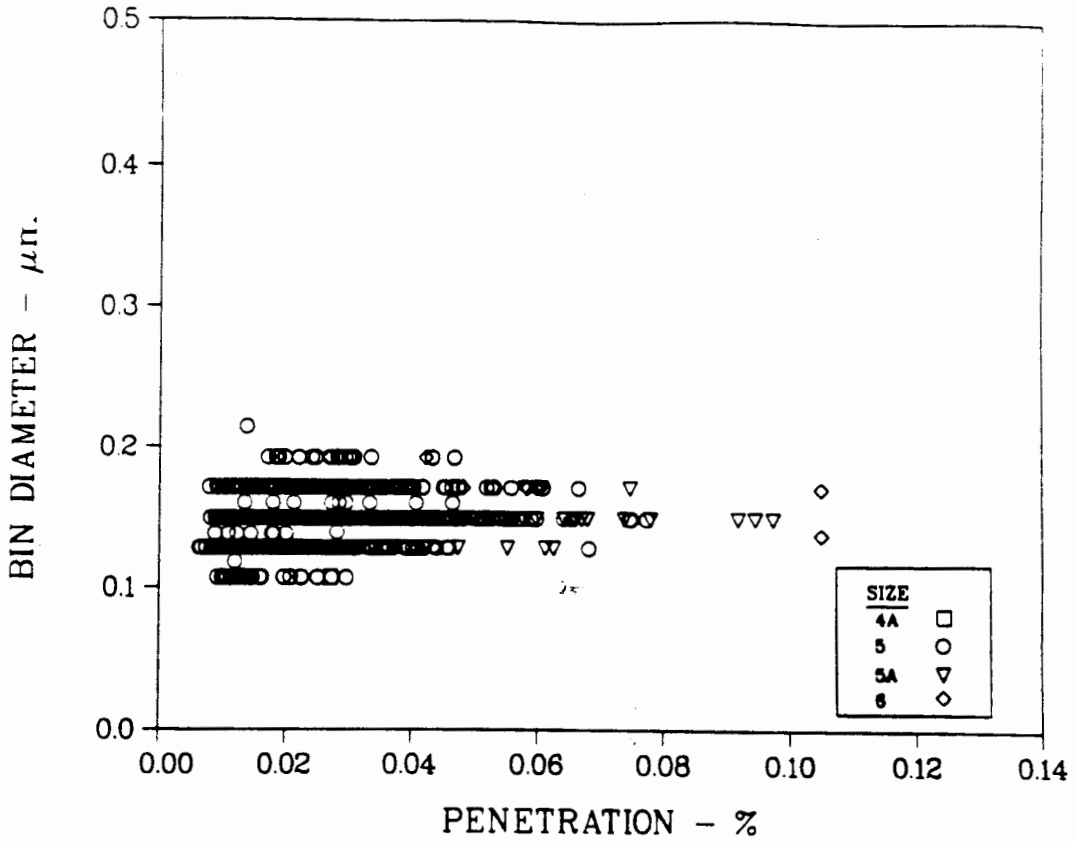

Figure 6. Plot of the maximum penetration bin diameter versus the maximum penetration for the 100% flow test data showing the grouping of the data in the bin diameter range from 0.1 µm to 0.2 µm.

sizes studied and for the total filter population, the maximum penetration was most frequently found in the 0.15 µm diameter bin. This corresponds to an electrostatic classifier measured diameter of approximately 0.17 µm. Table IV lists the number and percentage of filter tests that occurred in the various bins. For each of the filter sizes and for the total filter population, over 90% of the maximum penetration measurements occurred in the 0.13 µm to 0.17 µm bin diameter range. This range corresponds to an electrostatic classifier diameter range from approximately 0.14 µm to approximately 0.18 µm. No maximum penetration analysis of the 20% flow data was performed because those penetration data were found to be largely independent of aerosol size.

Results of the comparisons of the 0.15 µm HFATS data with the Q107 penetration data are shown in Figures 9 and 10. For the 100% flow data (see Figure 9), in almost every case the HFATS measurements are greater than the Q107 measurements. The results of the 20% flow comparison shown in Figure 10 are similar to the results of the 0.31 µm-HFATS comparison (see Figure 5) in which little difference was

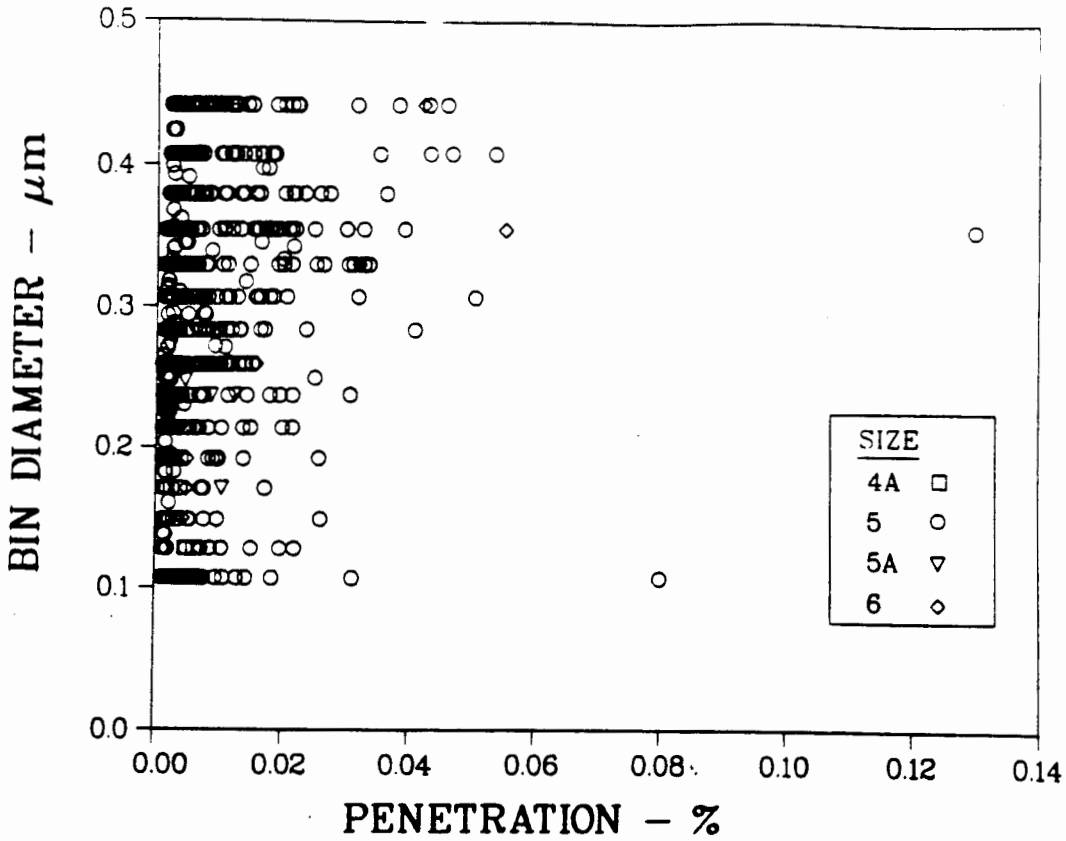

Figure 7. Plot of the maximum penetration bin diameter versus the maximum penetration for the 20% flow test data. No grouping of the data in a narrow bin diameter range was observed.

observed between the HFATS measurements and the Q107 measurements. Average differences in penetration are listed in Table V. The average differences for the 100% flow tests ranged from 0.012% to 0.025% which are much greater than the corresponding differences observed in the 0.31 μm comparison. For the 20% flow tests the average differences were <0.002% which is similar to the differences observed in the corresponding tests in the 0.31 μm comparison.

The number of filter tests where penetration measurements were above the penetration rejection limit are listed in Table VI. A total of five filter tests resulted in both systems measuring penetrations above the rejection limit. For the 100% flow tests, the HFATS measured penetrations above the rejection limit in 156 situations where the Q107 measured penetrations were below the limit. For this same set of tests, the Q107 rejected no filters that were accepted by the HFATS. The number of filters that were rejected by the two systems in the 20% tests was similar to the number of filters rejected in the corresponding tests of the 0.31 μm comparison (see Table III).

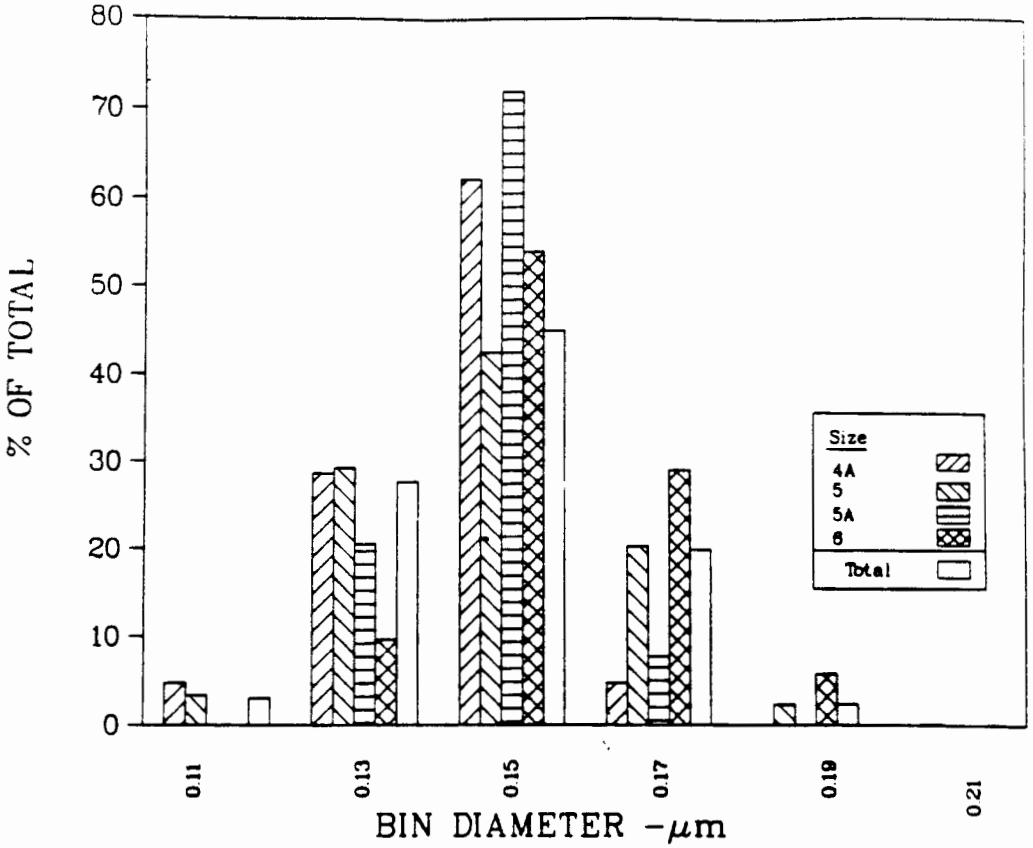

Figure 8. A discrete frequency plot of the bin diameters that contain the maximum penetration for all the filter sizes tested.

TABLE IV

AEROSOL SIZE OF MAXIMUM PENETRATION

	FILTER SIZE									
	4A		5		5A		6		TOTAL*	
BIN-um	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
0.11	1	4.8	25	3.4	0	0	0	0	26	3.1
0.13	6	29	21.5	29	8	21	5	10	234	28
0.15	13	62	312	42	28	72	28	54	318	45
0.17	1	4.8	149	20	3	7.7	15	29	168	20
0.19	0	0	17	2.3	0	0	3	5.8	20	2.4
0.21	0	0	1	0.1	0	0	0	0	1	0.1

* Filters with maximum in two or more bins were not included; therefore, this column adds to 830 rather than 849.

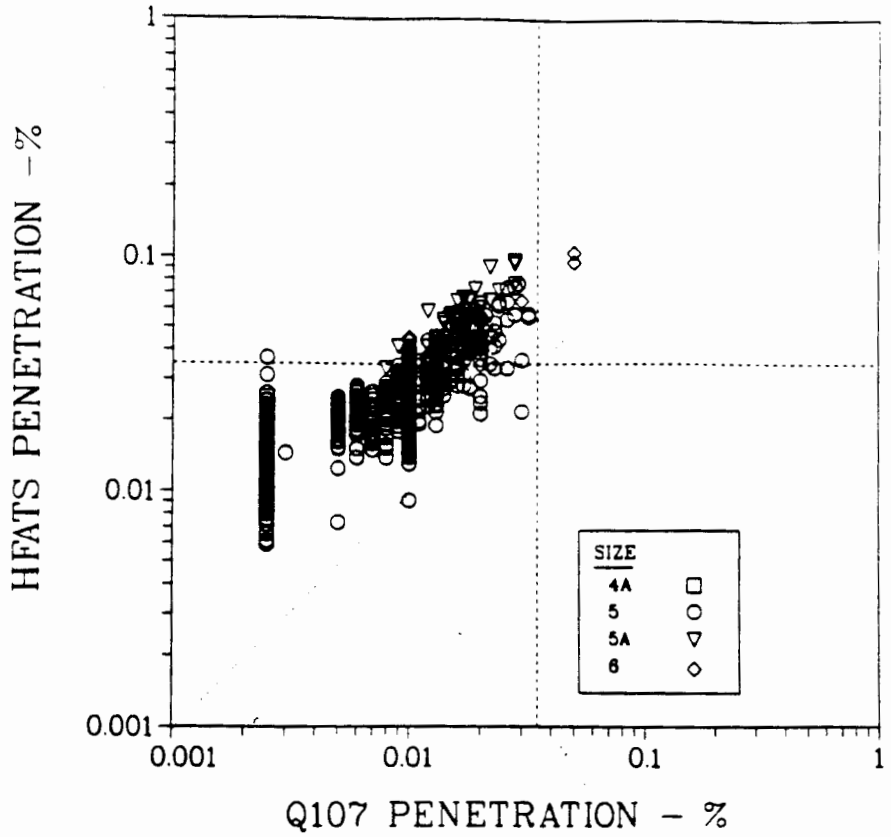

Figure 9. Comparison of the 100% flow test penetration measurements using the 0.15 µm HFATS data.

Rejection rates for the 0.15 µm-HFATS comparison are also listed in Table VI. The 100% flow "HFATS only" rejection rate for all filters tested was 18% which is much greater than the rejection rates observed under routine conditions at the FTFs. Over 50% of the size 5A and the size 6 filters were rejected by the HFATS in the 100% flow test. Thirteen per cent of the size 5 filters were rejected by the HFATS in this test. The remainder of the rejection rates listed in Table VI are at the lower end of the range of rejection rates observed at the FTF under routine conditions.

HFATS PERFORMANCE EVALUATION

Diluter Evaluation

A detailed calibration check of the HFATS diluter was performed at the beginning of the study (August 1985), once in the middle of the study (February 1986) and at the end of the study (May 1986). A plot of the dilution ratios measured during these three calibration sessions is shown in Figure 11. The dilution ratios at a given aerosol size were within 10% of one another. This indicates that the diluter calibration was stable during the 9-month study period.

LAS Size Calibration Evaluation

Prior to each HFATS test session the size calibration of the LAS was checked using a 0.22 µm manufacturer's diameter polystyrene

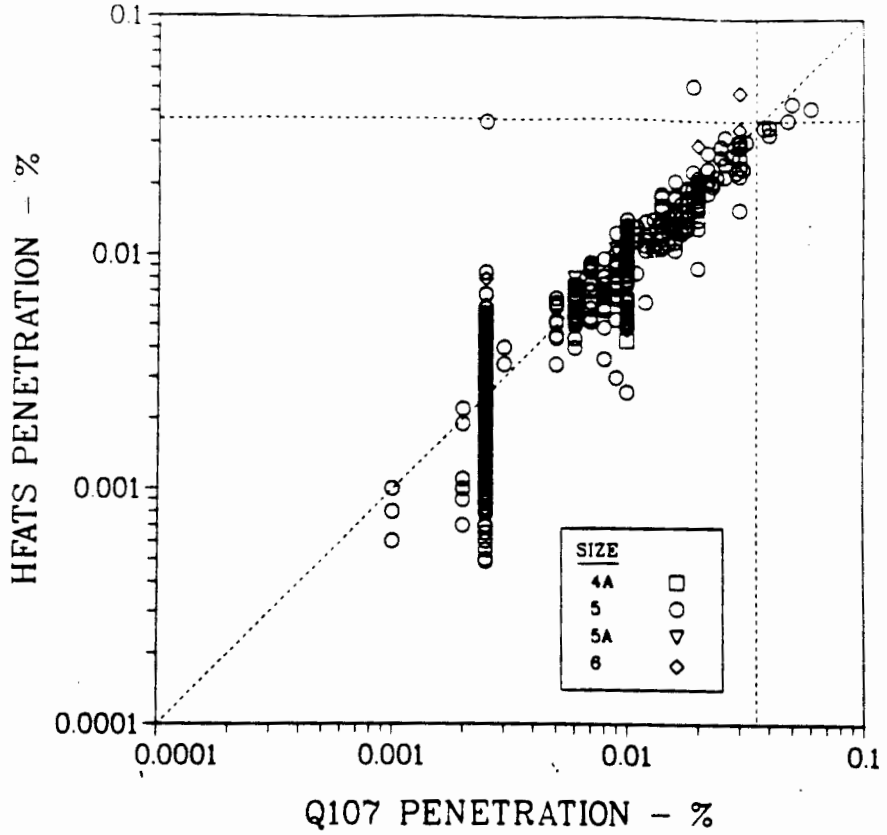

Figure 10. Comparison of the 20% flow test penetration measurements using the 0.15 µm HFATS data.

TABLE V

PENETRATION DIFFERENCES - 0.15 µm (HFATS - Q107)

FILTER SIZE	AVERAGE DIFFERENCE 100% FLOW	AVERAGE DIFFERENCE 20% FLOW
4A	0.017*	-0.0002
5	0.015	-0.0009
5A	0.012	-0.0002
6	0.025	0.0005

* Underline indicated significant differences (P <0.05).

microsphere suspension (PMS). The results of these calibration checks throughout the study are presented in Figure 12. Because the LAS is calibrated by the manufacturer with polystyrene microspheres no index of refraction correction was required for the calibration checks. The calibration of the LAS was within one bin of the manufacturer's diameter in all but one calibration check. A cleaning of the critical LAS optics in February 1986 shifted the LAS calibration from a diameter of 0.2 µm back to the PMS manufacturer's diameter. The 0.18 µm diameter calibration check in early May 1986, is suspected to be the result a steam excursion during a repair of the Q107 that dirtied the LAS optics. In this situation, the LAS reference voltage was below the manufacturer's recommended limit for operation. Again, cleaning of the critical optics by FTF personnel restored the calibration.

Upstream Count Rate Evaluation

After the upstream count of every filter test the upstream count rate measured by the LAS was automatically recorded and printed by the HP-85 microcomputer. As described earlier, this provides the operator with a continuing frequent indication on how well the HFATS is performing. Changes in the output of the blower or the HFATS generator or changes in the performance of the HFATS diluter or the LAS would affect this count rate. A plot of the measured count rates over the term of the study is shown in Figure 13. The plot shows no trend upwards or downwards over the term of the study. In general, the occasional single measurement changes in count rate were found to be associated with blower adjustments to accommodate the operation of the Q107. The count rate returned to its normal magnitude (between approximately 1400 and 1600 counts/sec) when the blower output was adjusted back to its standard level. The one sustained drop in count rate that occurred in early January 1986 was the result of the operator leaving the blower in the high output position after a Q107 test series. These data indicate that the performance of the HFATS equipment was stable during the 9-month study. Examination of the data during individual test sessions shows no distinct general increase or decrease in the upstream count rate.

TABLE VI

PENETRATION REJECTIONS FOR THE 0.15 µm-HFATS COMPARISON

		FAILING 100% TESTS						FAILING 20% TESTS					
		HFATS ONLY		Q107 ONLY		BOTH		HFATS ONLY		Q107 ONLY		BOTH	
FILTER SIZE	NUMBER TESTED	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
4A	21	0	0	0	0	0	0	0	0	0	0	0	0
5	737	95	13	0	0	0	0	2	0.3	3	0.4	3	0.4
5A	39	34	87	0	0	0	0	0	0	0	0	0	0
6	52	27	52	0	0	2	3.9	1	1.9	0	0	0	0
TOTAL	849	156	18	0	0	2	0.2	3	0.4	3	0.4	3	0.4

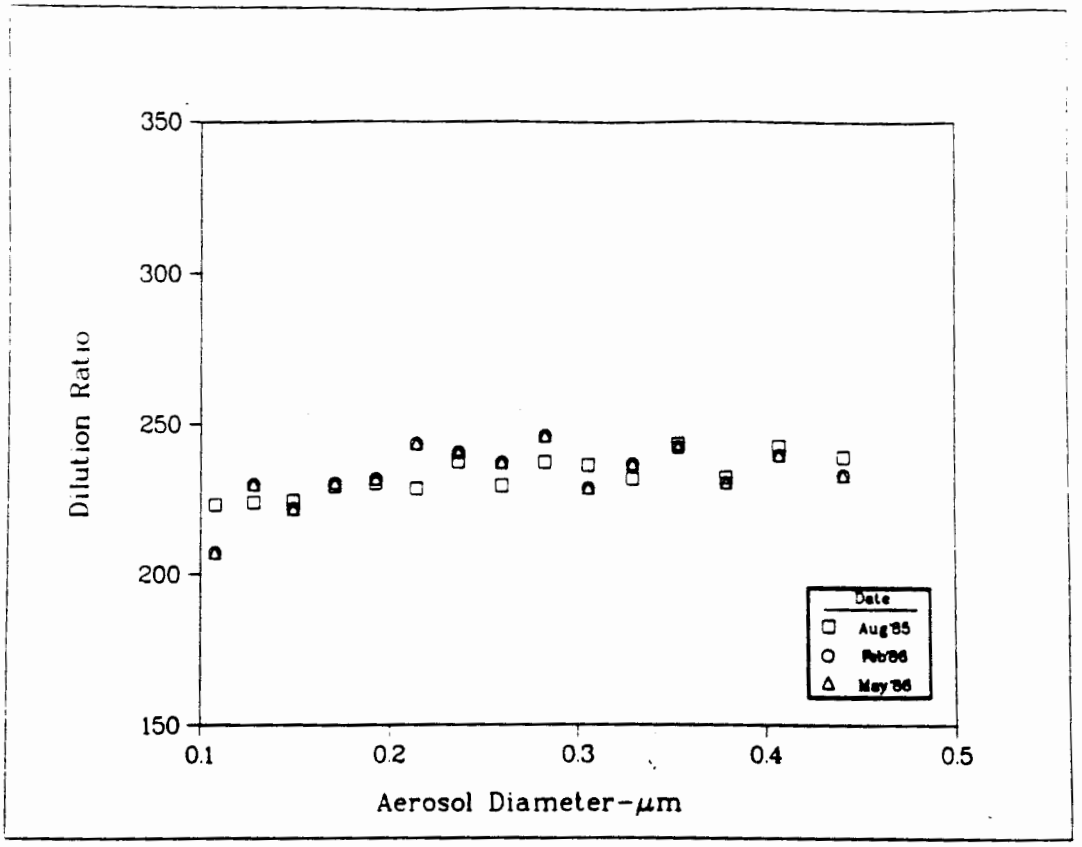

Figure 11. Comparison of three diluter calibration evaluations performed over the course of the study.

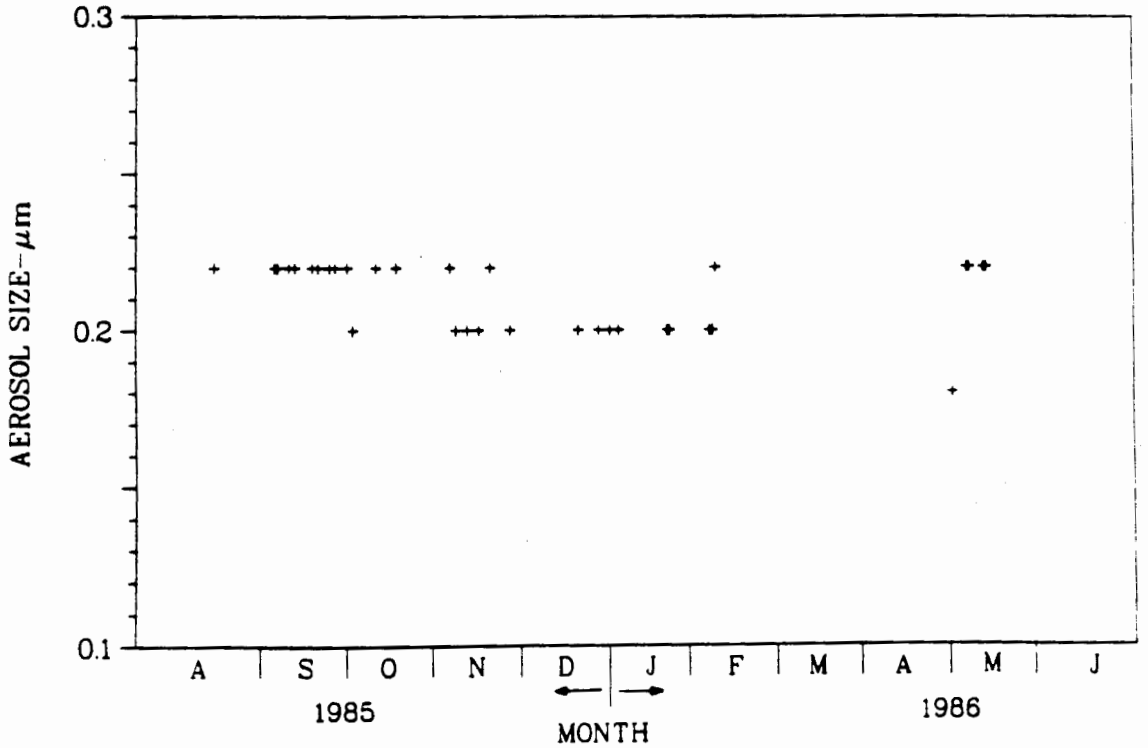

Figure 12. Results of the LAS calibration checks performed throughout the study.

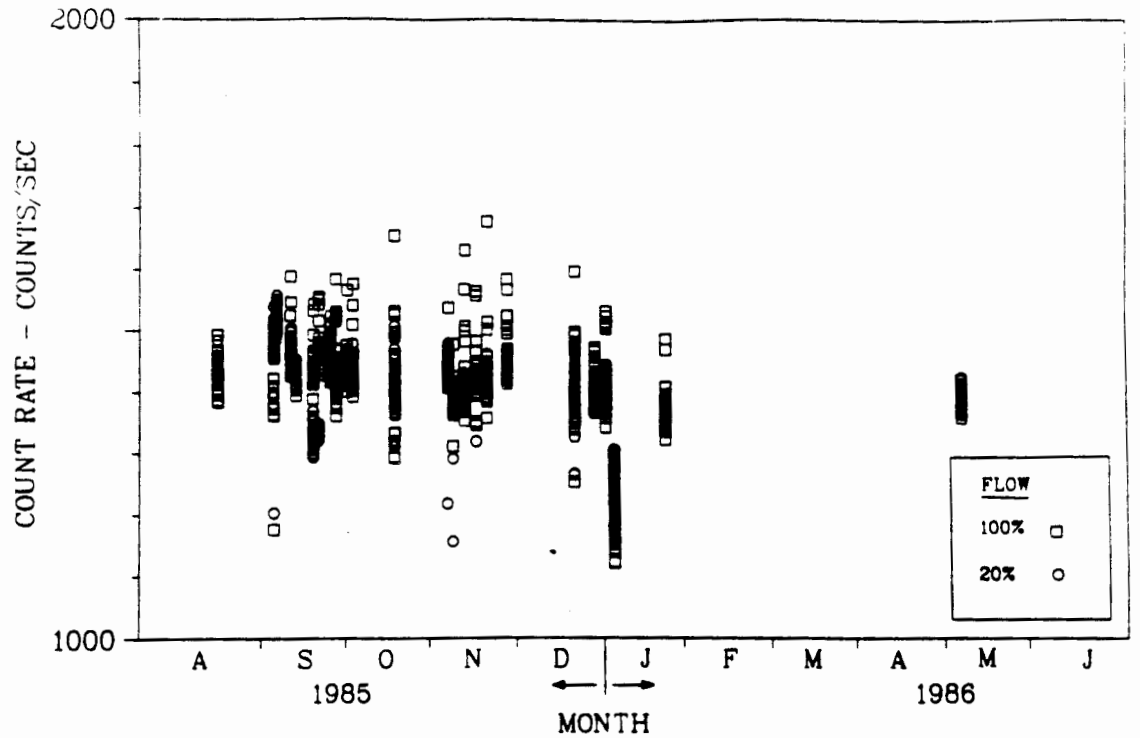

Figure 13. Results of the upstream count rate evaluation performed throughout the study.

HFATS IMPACTS ON FTF OPERATION

Comparison of Filter Test Rates

Records of the time required to test a filter set were kept by the Oak Ridge test system operator. The time recorded by the operator included the test system start-up time as well as the time required to test the set of filters. The time required to shutdown the test systems was not included in the recorded time because the time of day that testing had to cease was largely determined by the amount of time at the end of the work day that had to be allocated to storing the tested filters and recording filter test results.

The rate at which filters were tested was calculated by dividing the recorded time into the number of filters tested. A plot of these rates over the term of the study is shown in Figure 14. The HFATS test rates in the initial weeks of the study increased from a low of approximately 5 filters/hr to a rate of almost 6.5 filters/hr. This increase is probably related to the operator becoming familiar with the study and HFATS operating procedures. The HFATS rates measured from the beginning of October 1985 through the end of the study were constant, save one case, at a rate just below 6.5 filters/hr. The Q107 rates showed some fluctuation early in the study, but again by about the beginning of October 1985 the rates became constant, save two cases, at a rate of just below 7.5 filters/hr. The high rates (>7.5 filters/hr) observed in January 1986 were found to be associated with filter test sessions that were conducted after a

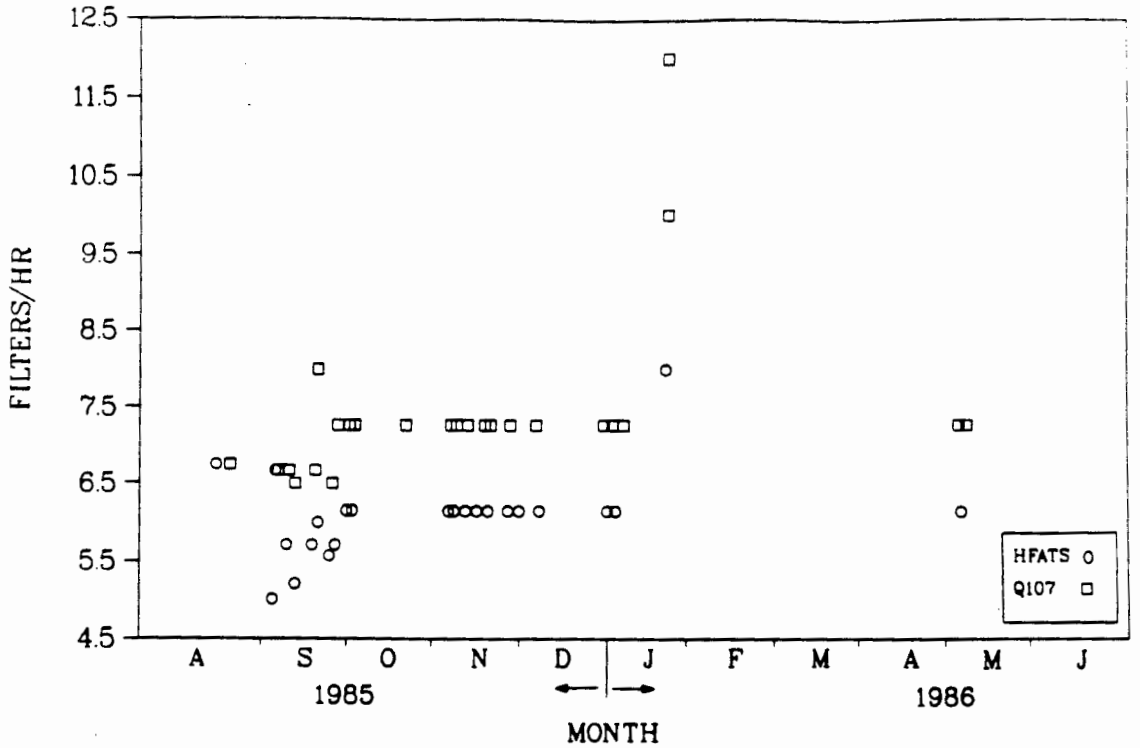

Figure 14. A plot of the filter test rates for the HFATS and the Q107 over the term of the study.

previous test session for which the test systems had been started. Consequently, no start-up time was included in the high rate session's recorded time.

Even though the rate at which the Q107 test filters is distinctly greater than the HFATS test rate, there was no difference in the number of filters that could be tested by either system in a work day. This conclusion comes from the fact that the number of filters that can be tested in a day at the ORFTF is largely dependent on the logistics of conveying filters to and from the location where they are tested and the Q107 cool down time. Filters are conveyed to and from the test location by a batch process in which a set of filters is unpacked, placed on a conveyor, and moved to the test location. After testing, they must be conveyed back to the store room and stored prior to loading the next set of filters for testing. Testing of two batches of up to 24 filters with the Q107 required enough of the work day that with the time required prior to the end of the work day for attending the Q107 during its cool down (approximately a half hour) there was no more time to load and begin testing another set of filters. The same two batches of filters can be tested by the HFATS in a day because the shorter time required to shutdown the HFATS (<5 min) allowed enough extra testing time to make up for the slower rate at which the HFATS tested filters. Operationally, the main difference in a day of testing with the two systems is that the operator spends more time testing filters with the HFATS and is not available to carry out other duties that the

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environment, but it does make liability for toxic contamination more difficult to prove.

Hazardous waste incineration facilities are known to emit toxic chemicals and metals into the air. Incinerators only aggravate the hazardous waste problem by providing the illusion of a "quick fix" for those who are so eager for an easy answer that they ignore the risks associated with this immature technology.

Given the serious concerns voiced by the scientific community and the experiences of communities where incinerators have been sited, the current enthusiasm for incineration can only be regarded as an incredible lack of reason, an hysteria of industry and government.

Source Reduction—The Affordable Solution to the Hazardous Waste Problem

Waste anywhere in our society is an economic burden. Hazardous waste is a double economic burden. It is costly to make. Once made, it is even more costly to manage. And everyone pays for the hazardous waste problem—the people who make it and the people who must live with it.

Taxpayers pay state and federal bureaucracies to protect them and the environment from hazardous waste, and they pay for increased health costs and treatment costs of damaged water and air resources. At the same time, industries are faced with escalating disposal costs for hazardous waste in addition to the costs of remedial actions and litigation surrounding abortive disposal attempts.

Source reduction—avoiding the generation of hazardous waste—is the only way to stop this cost spiral. Much hazardous waste is made up of imperfect products and raw materials that were poorly processed, the result of inefficient or careless operations. Good management, high production efficiency and non-toxic technologies that prevent the generation of hazardous waste are in everyone's economic interest . . . especially American industry. As part of the growing momentum for source reduction, the Office of Technology Assessment has already proposed a national waste reduction goal of 10 percent annually for 5 years.

Source reduction is a management strategy aimed at stopping the hazardous waste problem before it starts. Using waste audits to pinpoint the sources of hazardous waste, process by process, industries can then take preventive steps—raw material substitution, process redesign, product redesign, in-situ recycling, enhanced containment during transfer and processing, etc.—to avoid the generation of hazardous waste.

Hazardous waste is not a fact of life, it is a product of poor planning and inefficiency. Source reduction is the answer to the hazardous waste problem, not more high-risk, expensive treatment and disposal.

What Can You Do To Stop The Hazardous Waste Problem?

- Work for Source Reduction
  Make environmental rights . . . your right to air, water and soil that is free of toxics . . . the issue of every local, state and national election.
- Prove That Pollution Does Not Pay
  Work to stop the siting and expansion of hazardous waste incinerators, landfills and injection wells. Without these cheap, quick and dirty escape routes for their wastes, hazardous waste generators will be forced to turn to source reduction.

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THE TRACK RECORD OF THE HAZARDOUS WASTE INCINERATION INDUSTRY

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There are many examples of failures of hazardous waste incinerators. In this summary, we list examples of situations where incinerators failed, broke down or in other ways created health or environmental threats to the surrounding community. This list is in no way complete and is presented to provide an overview of the types of problems that have occurred. For further information on any of these examples, contact CCHW. A more detailed discusseion of the probl;ems of hazardous waste incinerators can be found in CCHW's guidebook Hazardous Waste Incineration, The Burning Issue.

Location/City/State	Operator	Problems
El Dorado, AR	Environmental Systems Co. (Ensco)	6 cases of rare sinus cancer have been treated by local doctors; in 1985-6, 217/282 workers showed high levels of PCBs in blood; 19% had more than 100 ppb, 9% had more than 200 ppb (ANT, 1987); fires in 1981 and 1983; "catastrophic" spill of PCBs in 1983 (AC, 1987); frequent complaints by local residents; the company has a history of leaks and spills from early 1970's through the present; repeated illegal discharges of PCB-tainted wastewater into local creek in 1981-2; cited for 30 violations of EPA waste water discharge permit; accepted 5 unauthorized shipments of hazardous waste in 1984 (AC, 1987); EPA and state have frequently fined Ensco for violations including improper storage of PCBs, groundwater contamination, failure to maintain proper records and use of improper decontamination procedures (WSJ, 1985).
Waterbury, CT	Environmental Waste Removal	Repeatedly cited for violations of federal and state pollution laws and fire codes; fined $25,000 in 1981 by EPA; EPA now suing EWR for failure to correct violations; burned PCBs without permit; fire at plant in 1983 sparked formation of local community group (USNWR, 1983).

CITIZEN'S CLEARINGHOUSE FOR HAZARDOUS WASTES, INC.
POST OFFICE BOX 926, ARLINGTON, VIRGINIA 22216
(703) 276-7070

Chicago, IL	Waste Management	PCBs were detected 1-1/2 miles downwind in soil at elementary school; levels were 16 times higher than school 2 miles upwind; facility has been fined for violations and has been accused of inadequate monitoring; in 1981, barrels blew up in furnace damaging seals; 3 years later, seals were replaced; in 1984, fined $12,600 because workers failed to wear protective clothing while handling hazardous waste (AC, 1987a and WSJ, 1985).
Coffeyville, Kansas	National Electric (Aptus)	In June, 1988, failure of safety system in storage bins caused explosion blowing hole in roof and spraying oil over workers causing one to be taken to hospital (CJ, 1988); fined $45,000 for 4 violations of storage and air pollution permits (CJ, 1986); groundwater contamination verified by state (CJ, 1987); nearby farmers blame infertility and stillborns in cattle on plant emissions (CJ, 1988a); truck carrying PCB transformers collided with car causing a "major" PCB spill (AG, 1986) closing interstate for 5 days (AG, 1986a).
Coffeyville, Kansas	Pyrochem	Neighbors constantly reported black smoke coming from stacks; nearby cars would be covered with black powdery substance (CJ, 1987b); plant failed EPA emissions test (CJ, 1986a).
Calvert City, Kentucky	LWD, Inc	Cited 4 times since 1980 for releasing dark smoke caused by equipment failures (LCJ, 1987); fined for permit violations: $100,000 in 1988, $4,000 in 1987 and $3,000 in 1985 (LE, 1988); explosion in 1987 burned one worker (PS, 1987).
Clay, KY	LWD, Inc	Explosion and fire in 1982 injured one worker and caused company to close (LCJ, 1987); many violations including fire safety standards were found (LE, 1988); transportation accident occurred when truck leaked toxic waste (Fire Chief as reported in LWV, 1988).

Baton Rouge, LA	Rollins Environ. Services	Citizens have complained for years of health problems they attribute to plant emissions; complaints include nausea, itchiness, sore throats, dead livestock, dirty cars; in August, 1985, inspectors found operator slumped against wall holding his head complaining he felt faint; they also found gauges malfunctioning, inadequate oxygen levels and other problems that sent "superheated" hazardous chemicals roaring into the sky; the incinerator was temporarily closed (AC, 1987a and WSJ, 1985).
Morgan City, LA	Marine Shale Processors	Cement Kiln modified to burn hazardous waste; in 1985 state issued compliance order that asserted that kiln had released hazardous chemicals into the environment; evaluation by Tulane University concluded that facility was not in compliance with fugitive emission standards for volatile organic hydrocarbons (DR, 1987); cited by EPA for violating air pollution standards in April, 1988 (MA, 1988); fined $2.8 Million in 1988 for accepting and recycling hazardous waste and for violating water quality laws (WTN, 1989); in January, 1989 fined $1.75 Million and charged with dozens of violations, including lack of waste storage permits, poor environmental safeguards, improperly trained personnel and improper sampling, record keeping and security procedures; 36 orders were issued seriously restricting operations; total fine is largest in state's history (WTN, 1989a).
Hope, ME	Union Chemical	Operated in old New England style church yard; violated state discharge, storage and air emissions standards (MPA, 1983); so many barrels were stored on -site that USEPA cited company for potential fire hazard and ordered removal of barrels (USEPA, 1979); groundwater and surface water contamination found; closed by state enforcement action; Superfund site (USEPA, 1986).

Flint, MI	Berlin & Farro	Opened in 1971, neighbors reported smoke and odors (CL, 1975); convertible car tops disintegrated; Runoff from site onto neighbor's land killed most trees and vegetation (MUCC, 1976); illegal dumping reported (MOD, 1983); 53 families were evacuated when sodium cyanide was found on-site because of the possible release of deadly hydrogen cyanide gas (OSUAM, 1985); shut down in 1975 in unprecedented emergency order due to emissions and poor operations (DNR, 1975).
Utica, MI	Liquid Disposal	Two workers killed in gas leak; soil, groundwater, surface water and air contaminated; Superfund site (USEPA, 1984).
Shakopee, MN	Environmental Systems Co. (Ensco)	Ensco violated all codes set by the city, state "you name it, they did it; they never paid any attention to the limits" according to city building inspector (AD, 1985).
Grand Island, Nebraska	IT Corp	Explosion in mobile incinerator critically injured two workers in October, 1987 (AP, 1987).
Logan Township, New Jersey	Rollins Environ. Services	Began operating in 1971; in 1974 people complained of odors making them sick; in 1977, 45,000 gal of PCBs in 3 tanks exploded killing 6 workers and seriously injuring several others; a huge cloud of smoke drifted over the community; the facility was closed for six months; located in a flood plain, groundwater and surface water contamination was detected in 1980; fined $65,000 in 1980 by Justice Dept for violating consent decree intended to limit air emissions; in 1981, another explosion occurred caused by excess pressure buildup; the plant was closed again; in 1986, accidentally burned iodine causing huge purple clouds to be released;

Logan Township, New Jersey (Cont'd)		fined $10,000 for violating operators permit; Rollins has been repeatedly cited for violations of its permits for storage and discharge of toxic chemicals (AC, 1987a, AEA, 1983 and WSJ, 1985).
Vineland, NJ	Vineland School	Unregulated incinerator burned 6000-8000 quart cans of mercury based pesticides; closed in mid 1960's; now a Superfund site (USEPA, 1984).
Oswego, NY	Pollution Abatmt Service	Liquid waste incinerator; company went bankrupt; now listed as Superfund site (USEPA, 1984).
Lenoir, NC	Caldwell Systems	Numerous toxic waste spills into creeks and fields (CO, 1988); closed in 1987 due to many violations of federal laws (AC, 1987); local residents documented spills, poor training, illegal dumping and midnight burns (NSHN, 1987); serious health problems in workers include headaches, rashes, respiratory burning, tremors, memory loss, psychological changes and hair loss (NSHN, 1987a); milk farmers next to site were told to stop drinking from all wells and to stop selling milk after soil, groundwater, creeks and vegetation near incinerator were contaminated with toxic chemicals (CCIC, 1987 and LEAF, 1988).
Grafton, Ohio	Ross Environ. Services	Sued by EPA for illegal storage of PCBs (LWV, 1988).
Reading, Ohio	Pristine Inc.	Liquid waste burner; open from 1974-1980; soil, groundwater and surface water contamination found; closed by state enforcement; now a Superfund site (USEPA, 1984).
Troy, Ohio	Miami County	Incinerator operated poorly by county; major groundwater contamination found; closed and listed as Superfund site (USEPA, 1984).

Rockhill, SC	Thermalkem (Stablex)	Explosion due to pressure build-up damaged incinerator wall in building (RHH, 1987); safety valves failed causing dump stack to remain open; air pollution control equipment failed releasing heavy smoke (DHEC, 1985); second explosion occurred in 1988 that caused 100 employees to be evacuated and 2 to be taken to hospital for tests (YO, 1988); in late 1970's fire lasted several days with some permanent injuries but no deaths (Director of Municipal County Preparedness Agency as reported in LWV, 1988).
Roebuck, SC	GSX/Thermal Oxidation Corp.	Neighbors became ill and experienced burning eyes, sore throats and strong odors almost 4 miles away (DHEC, 1987); state verified groundwater below site was contaminated (DHEC, 1987a and LEAF, 1988); power surge caused wastewater monitoring system to fail releasing caustic soda into North Tyger River; later that day more than 4000 fish were found dead (SHJ, 1988 and US, 1988); wastewater contaminant levels had previously exceeded permit limits (DHEC, 1987b).
Dyersburg, TN	Solid and Liquid Waste Disposal	Birds nest found in emissions stack; controls were rusty; waste often dumped on local roads and property instead of being burned (Garlington, 1987).
Deer Park, TX	Rollins Environ. Services	In 1981 cited by state for illegal burns; ash released from afterburners in 1983 during tour of plant; later inspections found ash smoldering on ground outside the burner; local residents complain of highest cancer rate in nation; skin diseases have been linked to emissions; violated emissions permit on 29 separate days during 2 year period; TX Air Control Board cite plant for failure to keep proper records on chemicals processed and stored (AC, 1987a, EA, 1982, NSN, 1983 and WSJ, 1985).

Grand Prairie, Texas	Bio Ecology Systems, Inc.	Operated from 1972-1978; located in a flood plain; company went bankrupt; now a Superfund site (USEPA, 1984).
Tooele, Utah	U.S Army (DOD)	Lethal nerve gas was released when pollution control equipment, piping ventilation and filtering systems failed at the same time; human error was also cited; an Army review panel also cited inadequate operational checks and balances, inadequate safety, training communication and procurement programs and misguided management at the plant; the original incinerator design was considered "state-of-the-art (CA, 1987)

European Incinerators

Nyborg, Denmark	Kommunekemi Chemical Plant	Closed in 1982 after toxic gases drifted through community. Emergency orders kept people inside their homes for 12 hours. Plant later reopened (Isherwood, 1983).
Bonnybridge, Scotland, England	Re-Chem International	Dairy cows picked up massive levels of contamination, threatening public health through sale of milk and meat. Cows were found to be ill down wind from incinerator (Egginton, 1985); study at Lancaster University found link between congenital eye malformations in children and both Re-Chem plants (see next entry); a separate study idendified a cluster of larynx (throat) cancer in adults within two kilometers (App, 1 mile) of plant (GA, 1988); plant now closed.
Pontypool, Wales, England	Re-Chem International	Farmers complained of sick livestock. Symptoms included sores, stiff limbs, poor condition, pneumonia and starvation (Egginton, 1985).
Umea, Sweden	Umea Incinerator	Tests done downwind from incinerator found fairly high levels of dioxins furans in air and soils. Milk from cows grazing nearby had more than 10 times as much dioxin and furan as cows grazing elsewhere (SN, 1985).

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IONIZING RADIATION

THYROID
IODINE-131
beta (gamma), 8 days

SKIN
SULFUR-35
beta, 87 days

LIVER
COBALT-60
beta (gamma), 5 yrs.

OVARIES
THE REPRODUCTIVE ORGANS are attacked by all radioactive isotopes emitting gamma radiation. In addition, the deadly PLUTONIUM 239 is known to concentrate in the gonads. The radiation it emits can cause birth defects, mutations and miscarriages in the first generation after exposure and/or successive generations.

IODINE-131
gamma, 8 days
COBALT-60
gamma, 5 yrs.
KRYPTON-85
gamma, 10 yrs.
RUTHENIUM-106
gamma, 1 yr.
ZINC-65
gamma 245 days
BARIUM-140
gamma, 13 days
POTASSIUM-42
gamma, 12 hrs.
CESIUM-137
gamma, 30 yrs.
PLUTONIUM-239
alpha, 24,000 yrs.

MUSCLE
POTASSIUM-42
beta, (gamma), 12 hrs.
CESIUM-137 (and gonads)
beta (gamma), 30 yrs.

LUNGS
RADON-222 (and whole body)
alpha, 3.8 days
URANIUM-233 (and bone)
alpha, 162,000 yrs.
PLUTONIUM-239 (and bone)
alpha, 24,000 yrs.
KRYPTON-85 (and ?)
beta (gamma), 10 yrs.

SPLEEN
POLONIUM-210
alpha, 138 days

KIDNEYS
RUTHENIUM-106
gamma (beta), 1 yr.

BONE
RADIUM-226
alpha, 1,620 yrs.
ZINC-65
beta (gamma), 245 days
STRONTIUM-90
beta, 28 yrs.
YTIRIUM-90
beta, 64 hours
PROMETHEUM-147
beta, 2 yrs.
BARIUM-140
beta (gamma), 13 days
THORIUM-234
beta, 24.1 days
PHOSPHORUS-32
beta, 14 days
CARBON-14 (and flat)
beta, 5,600 years

This is how ionizing radiation is concentrated in the human body. All this radiation is harmful to normal tissue, because it damages cells of the body. Generally speaking, alpha and beta rays are harmless to you as long as you don't breathe or eat them, but if you ingest them they set up permanent business next to the marrow of your bones, in your reproductive organs or vital parts.

The effects of ionizing radiation are not immediate. Exposure to radiation can cause cancers many years later. Exposure to very low levels of radiation can be equally dangerous over time.

The times listed next to the type of ray emitted are the half-lives: how long it takes for half of the radioactive material to break down.

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GUEST EDITORIAL

Jay M. Gould
Ernest J. Sternglass

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DIRECTOR'S OFFICE

Low-level radiation and mortality

The Chernobyl accident was the largest disaster ever created by humans. Within a few days it released into the biosphere nuclear fission products equal to about a tenth of the amount released by all bomb tests since 1945.

Low-level radiation from the Chernobyl accident arrived in the United States by about May 9, 1986. An increase in mortality followed almost immediately (*1*). Deaths of 20,000 to 40,000 Americans appear to have been accelerated in the four summer months of 1986, according to evidence drawn from many disciplines: biochemistry, medicine, radiation physics, statistics, epidemiology, and even ornithology.

In May 1987, we attended a conference in Amsterdam on health effects of radiation. There we heard, from many parts of Europe, chilling stories of the effects of the high radiation levels from Chernobyl, accompanied by anecdotal evidence of human and animal miscarriages; but no firm statistical data on human mortality or morbidity were presented. We wondered whether sufficient radiation had reached the United States to produce detectable effects on health. We found that there was, indeed, a 5.3 % increase in mortality in the United States in May 1986 over May 1985. That increase, the highest since 1934, has a probability of less than 1 out of 1000 of being a chance event.

For earlier studies we had assembled, from official sources, comprehensive data bases on radiation and mortality. These permit the quantification of deaths associated with low-level radioactivity at specific times and specific places in ways not possible before. The data base information allows us to separate the effects of radioactivity from those of other, more slowly varying, environmental and socioeconomic factors.

As Figure 1 illustrates, the arrival of low-level radiation from Chernobyl was recorded and so identified by EPA milk-monitoring stations in each state (*2*). The concentration of I-131, which has a short half-life, peaked in mid-May. Other radioactive isotopes like cesium-137, strontium-90, strontium-89, and barium-140 were also identified.

Changes in infant mortality rates in the South Atlantic states in June and July of 1986 over the corresponding months of 1985 were recorded (Figure 2). There were also significant declines in the number of live births in this and other regions of the United States in this period.

In Figure 3 we display the change from May 1986 over May 1985 for the total number of deaths as well as for two selected age groups and for three selected causes of death. All of these increases are statistically significant, at less than the 0.001 level. This figure also shows the much smaller percentage changes for May 1985 over May 1984. Unusual increases in mortality were recorded for people 25–34 years old. The number of deaths on which our statistical significance tests were based come from the provisional 10% sample of all death certificates analyzed in detail by age and cause of death by the U.S. National Center for Health Statistics (NCHS).

A similar chart can be prepared for the four-month period May–August 1986. The latest NCHS estimate of the number of deaths in those months is 672,000, a 2.7% gain over 1985, which because of the large number involved is statistically significant ($P < 0.001$). Although most of the additional deaths occurred in May, there was also a statistically significant decline in the number of

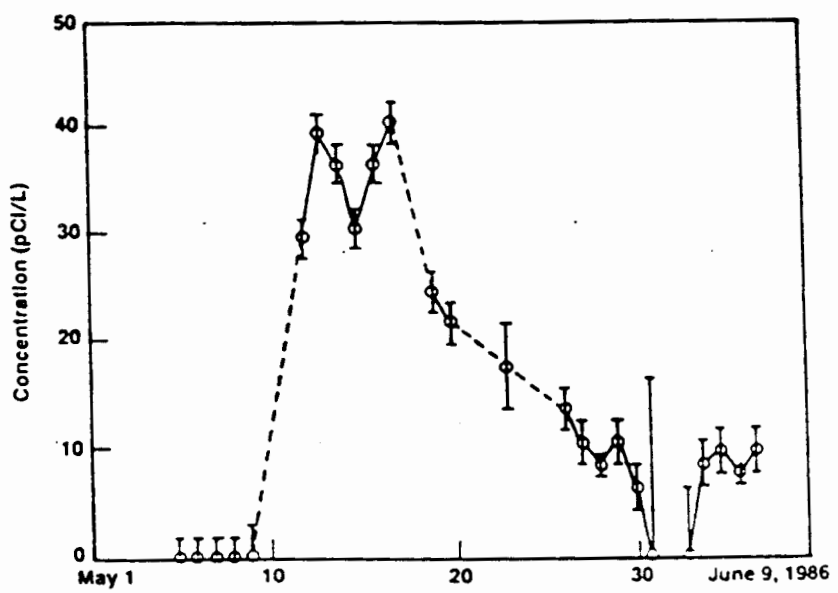

Figure 1. **Concentration of I-131 in fresh farm milk, May–June 1986 in the New York metropolitan area. (Recorded by the Environmental Measurement Laboratory of the Department of Energy)**

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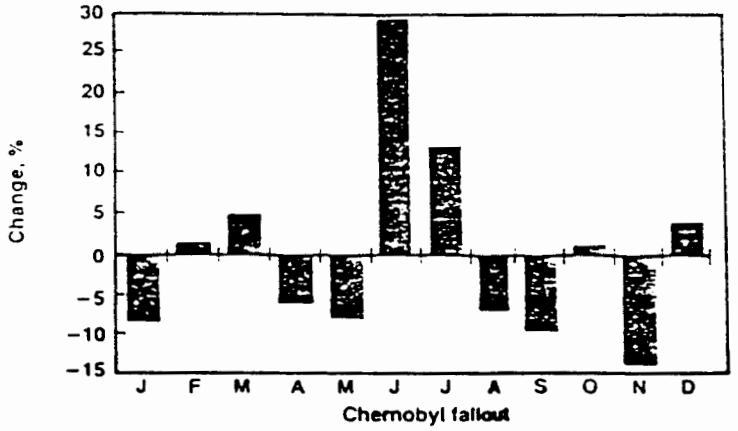


Figure 2. Change in infant mortality in the South Atlantic states in 1986 relative to 1985

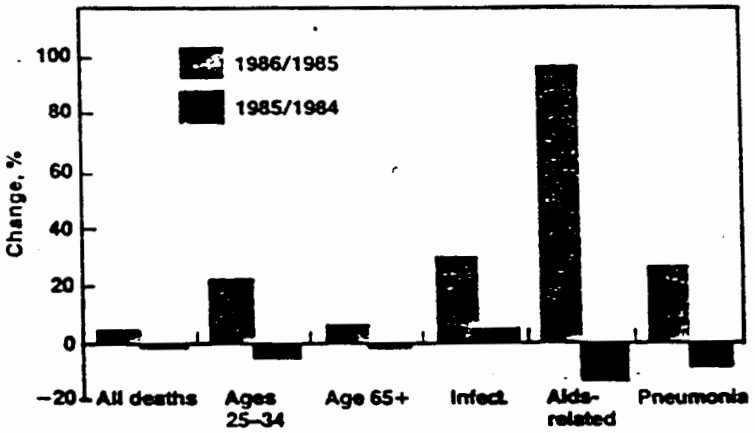


Figure 3. Changes in mortality rates, May 1986 vs. May 1985, compared with May 1985 vs. May 1984

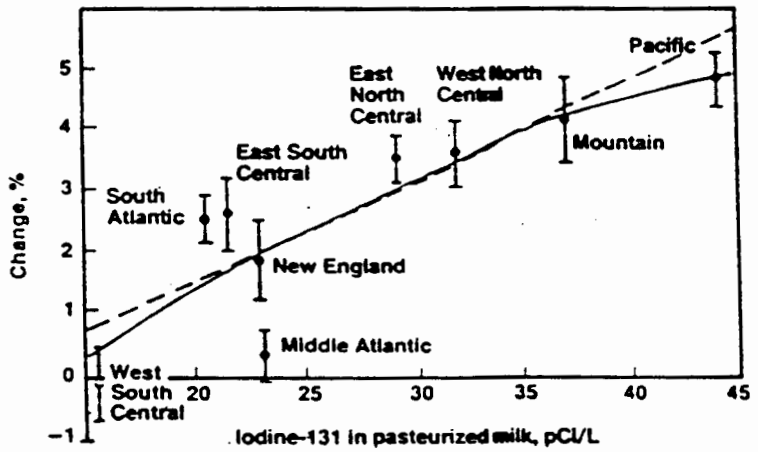


Figure 4. Regional percent change in mortality, May–August 1986 over May–August 1985. (Source: EPA and NCHS)

live births in June of 1986 and a sharp increase of 8% in the national infant mortality rate. By September of 1986, most of the immediate mortality effects appeared to have diminished.

In Figure 4 we show the percentage change in the total mortality of the nine U.S. census regions of the United States for May–August 1986 compared with May–August 1985, vs. the values of the I-131 levels in pasteurized milk as reported by EPA. The points shown represent the population-weighted averages of the peak concentrations of I-131 in May and June of 1986 in each state and region. The dotted line is a linear fit to the data and the solid line is the logarithmic fit that best represents the trend of the data. The error bars represent one standard deviation. The regression analysis yields a highly significant correlation coefficient of 0.87 ($P < 0.001$) for the log values, which increases to 0.94 if the Middle Atlantic division is omitted.

For the United States as a whole, the largest monthly increase in the infant mortality rate (IMR) came in June 1986, with an 8.2% increase over June 1985. In the Middle Atlantic region, which comprises New York, New

Figure 5. Dose–response curve: Percent increase in mortality as a function of I-131 levels (*6*)

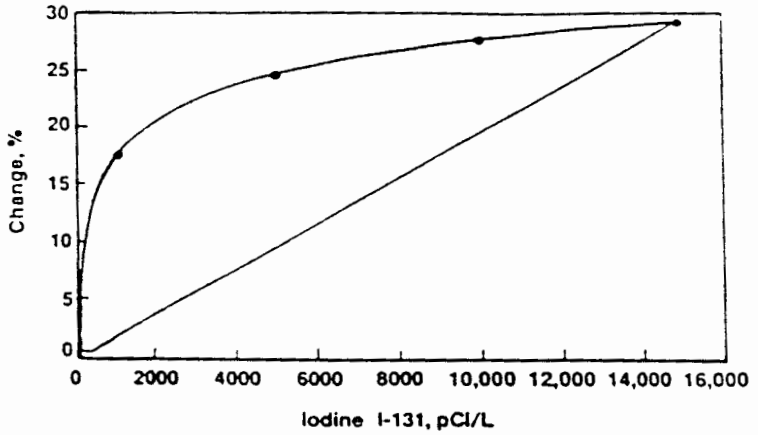
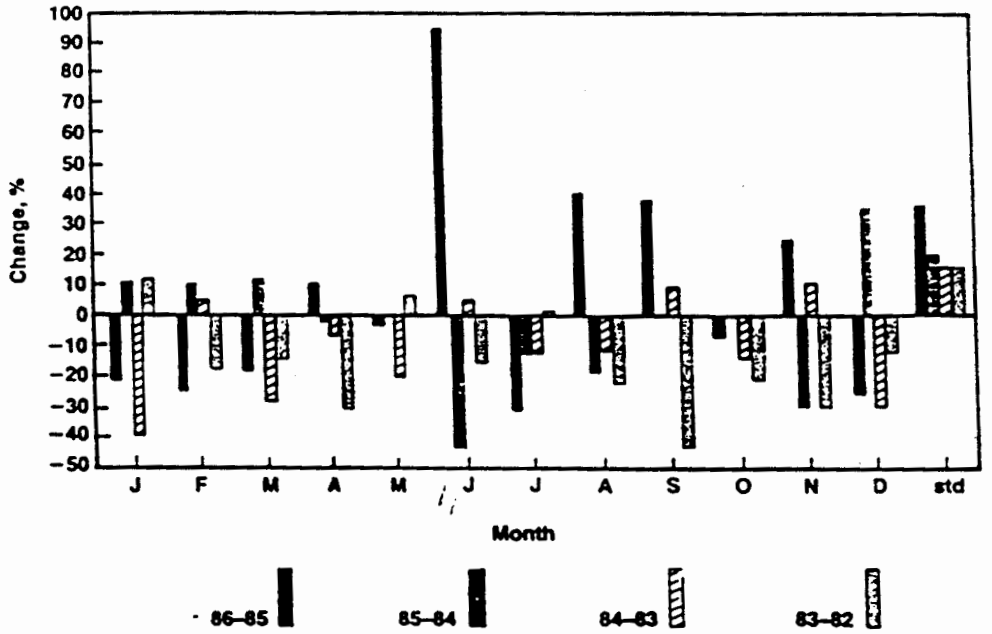


Figure 6. **Infant mortality, Baden-Württemberg a year-to-year comparison**



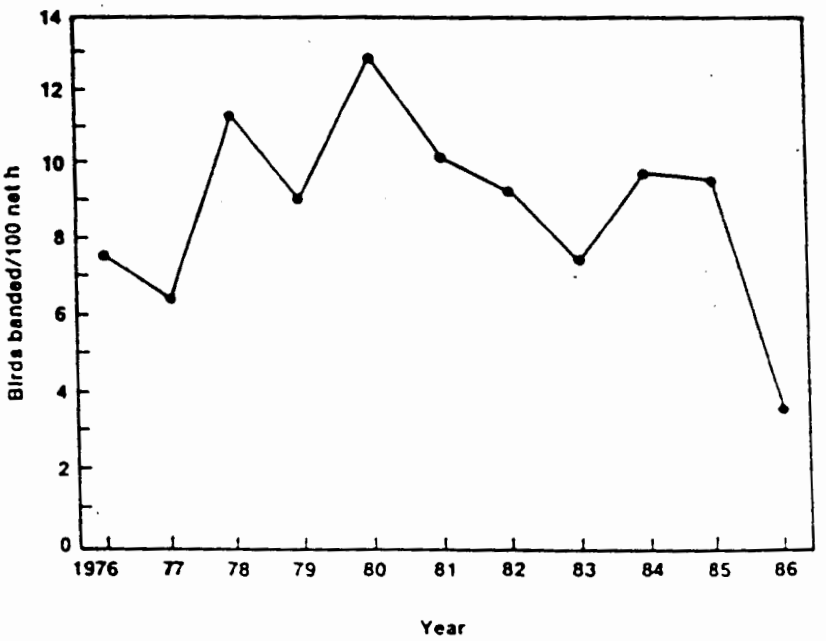


Figure 7. Number of newly hatched landbirds in the period May 10 to Aug. 17, 1976–86

Jersey, and Pennsylvania, New York City environmental groups warned residents not to drink fresh milk, which may explain why the experience in that region lies four standard errors below the regression line. The New York state IMR *declined* by 7.9 % from June 1985, and in New York City it *declined* by an amazing 19.6%. Milk consumption declined in New York in May 1986 but not in New Jersey or Pennsylvania, further implicating the milk.

Causes?

The biochemical mechanism underlying the destructive impact of low-level radiation has been proposed by A. Petkau (3) and others (4) and can be summarized as follows: Low-level emissions from ingested radionuclides promote the formation of oxygen free radicals which, in a chain reaction, can quickly destroy the membranes of cells, such as those of the immune system. At higher intensities of radiation, the free-radical concentrations increase and radicals quench each other. As a result, per unit of radiation absorbed in tissue, the process is perversely more efficient at lower rather than at higher doses or intensities.

Figure 5 indicates the shape of the logarithmic dose–response curve, taken from Figure 4 and extended to the higher concentrations measured in Europe (5). The straight line represents the expected effect based on the assumption made by physicists that the dose–response curve obeys a linear law. This assumption is based on our experience with short bursts of very high intensities, as in the case of medical therapeutic uses, or as in the case of the brief flash from an atomic bomb. The Chernobyl data are the first direct evidence for a large human population that the shape of the dose–response curve at the very low dose rates of fallout radiation exposures is in fact logarithmic and not linear.

Further confirmation of the logarithmic nature of the dose–response curve comes from Jens Scheer of the University of Bremen, who is now assembling monthly mortality data for areas in Europe that were heavily exposed to radiation from Chernobyl in 1986 (6). Figure 6 shows that in Baden-Württemberg a peak increase in the infant mortality rate was reached in June just as in the case of the South Atlantic states (Figure 2), but with an increase of 95% over 1985, vs. 8.2% for the South Atlantic states. This was the highest increase registered by any West German state.

Radiation levels in Europe were 100 to 1000 times greater than those in the United States, but the summertime increase in European mortality was higher by only about a factor of 10. This would be further evidence for the logarithmic nature of the dose–response curve for low-level radiation. It is to be remembered, however, that warnings not to drink milk were widely heeded in Europe and undoubtedly reduced exposures to fetuses.

The strong effect of low-level radiation on reproduction is supported by observations by David DeSante, who documented a massive and unprecedented reproductive failure of landbirds at the Point Reyes Bird Observatory some 25 miles north of San Francisco, in the period May 15–Aug. 15, 1986 (7). Figure 7 indicates that the number of newly hatched birds captured in the mist-netting program in this three-month period dropped 62% from the mean of the preceding 10 years (a drop of 9.4 standard errors).

The medical and scientific community has long believed, on the basis of linear extrapolations from high doses, that low-level radiation from fallout and nuclear plant releases can be dismissed as posing a negligibly small danger. This is the principal assumption that scientists must now reevaluate: It underestimates the effect of low doses for the most sensitive members of the population by a factor of about 1000.

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CEP
COUNCIL ON ECONOMIC PRIORITIES

NEWSLETTER

December, 1986 CEP Publication N86 - 12

Public Health

Nuclear Emissions Take Their Toll

By Jay M. Gould with Brian Jacobs, Celia Chen and Steven Cea

Chernobyl has raised the universal question of what is the true impact on public health of nuclear emissions. This newsletter, the fifth in a series of reports and publications by the Council on Economic Priorities on the geographic dangers of toxic waste, will review some of the evidence linking nuclear emissions in the US to increases in mortality rates.

A state is often too crude a geographic unit for the measurement of environmental dangers since these dangers are generally local and seldom impact to the same degree on all or most localities in a state. As a preliminary effort, however, statewide and county variations in total infant and cancer mortality rates can be used to appraise current regional variations in public health.

Economy Determines Mortality

The advance of any modern industrial society can be traced in terms of the systematic decline in its mortality rates over time and the consequent increase in the longevity of its population. This is true of the US over the past two hundred years or more, and certainly so in the 20th Century when the official mortality statistics became representative of the total population. The US total mortality rate stood at 17.2 deaths per 1,000 persons in 1900 and declined at an average annual rate of one percent to stand at 8.7 deaths per 1,000 persons in 1980. The annual decline in mortality rates can, of course, be expected to slow as the population ages over time. Thus the mortality rate, when adjusted for differ-

The Calculation of Excess Mortality

Insight into the probable consequences of the Chernobyl disaster can be gained through US Mortality data for areas exposed to nuclear emissions, provided the total volume of curies of radioactive materials released is known. This newsletter explores the impact on public health of the release (routine and accidental) of some 85 million curies of all noble gases and radioactive particulates emitted from all civilian nuclear power reactors in the US in the years 1974–1981, as tracked by the Brookhaven National Laboratory. Our analysis indicates that such releases (detailed in Table 4) based on mortality data for states most directly affected by such emissions are associated with nearly 9,000 excess deaths each year.

Brookhaven emissions surveys are extremely conservative. They do not cover emissions from the plutonium producing Hanford and Savannah River military reactors. The Atomic Energy Commission has been extremely sanguine about possible nuclear contamination of communities situated downwind from military reactors.

The Portland Oregonian (on May 11 and 12, 1986) revealed, on the basis of some 19,000 pages of classified data obtained as the result of FOIA, that the Hanford military reactors in Benton County, Washington, apparently released into the air 446,700 curies of radioactive Iodine-131 in the years 1945 to 1950, and an additional 7,616 curies in the years 1951–1961. This represents staggeringly high radiation levels—only 14 curies of radioactive Iodine were reported to have been released by the Three Mile Island disaster in 1979. For example, in an experiment "related to the development of a monitoring methodology for intelligence regarding the emerging Soviet nuclear program," Hanford purposely released 5000 curies of radioactive Iodine on Dec. 2–3, 1949. One particular stretch of farmland, lying just downwind of Hanford, came to be known as "Death Mile." Nine of its ten families have been stricken with cancer since 1950. The full impact of these emissions on the area affected has never been estimated. It is time for private citizens in the US as well as the USSR and Europe to demand official evaluations of the loss of life from nuclear emissions. It is CEP's hope that the findings and methodology offered in this newsletter receive the critical attention of radiation physicists, epidemiologists, and public health officials. ■

Continued from page 1

ences due to age, declined somewhat more—from 17.8 in 1900 to 5.9 deaths per 1,000 in 1980.

The infant mortality rate (IMR)—defined as the number of deaths within the first year per 1,000 live births—does not require age adjustment and has declined much more rapidly. Over time, the IMR is very much affected by the change in relative health standards of nonwhites since the IMR for nonwhites generally has been about 50 percent higher than the IMR for all babies. In 1915, the first year in which the official infant mortality rate was considered accurate, the IMR was 99.8. The 1980 figure, at 12.6, represents an average annual decline of 3.2 percent over a 65-year period. The average annual decline in the IMR usually ranged between two and four percent in accordance with the degree to which nonwhites and poor whites enjoyed better health and nutrition in periods of economic expansion.

This fact is indicated by Table 1 which summarizes trends in infant mortality by five-year periods since 1915. Annual declines are seen to average below three percent in depression years and over four percent in the "prosperous" full employment war years. In the decade 1955–1964, the years when atmospheric bomb testing produced peak fallout levels, the average annual decline slowed to one percent, however. The signing of the test ban treaty in 1963 saw fallout levels dropping sharply, and the average rate of decline in the 1965–1979 period was again well over four percent.

Cancer Rates Steadily Increasing

As the overall US mortality rate reflects the gradual aging of Americans, so does the cancer mortality rate—it has been increasing for decades. But the cancer rate is increasing even after adjustment for age and now accounts for about 22 percent of all deaths.

These mortality rates, used to evaluate public health standards, are closely intertwined. Historically, modern industrial technology, along with advancing medical technology, has elevated nutrition and health standards. It has also contributed greatly to the systematic lowering of mortality rates. But over the past three decades, increasing cancer rates, even after age adjustment, represent the grim side of that equation. They reflect in large part the environmental deterioration accompanying modern industrial technology. CEP is committed to the exploration of these complex and often contradictory economic, environmental, and public health issues.

Infant Mortality Linked To Fallout

Of the three mortality rates, the IMR is by far the most sensitive to both economic and environmental change. It can respond to a major environmental change within months. Let us again refer to Table 1 that summarizes official US IMR data by five-year periods since 1915. The necessity of including nuclear radiation in measures of environmental degradation is indicated by the flattening out of the long secular decline in the average annual IMR that occurred in the bomb test years.

When attention was first drawn to this ominous change in the late sixties, pronuclear proponents asserted this flattening out in the annual rate of the declining IMR merely reflected the natural limits of medical technology and the possible exhaustion of the powers of antibiotics. This argument was called into question after the ban on atmospheric bomb testing by the immediate resumption of the average annual four percent decline in the US IMR. That there are such cities as Amsterdam and Yokohama today with IMR ratios of the order of four or five, as against the current US IMR of 11, indicates we are still far from reaching any "natural" limit.

A 1986 publication of the Children's Defense Fund has, however, just warned that another ominous alteration in infant mortality rates has occurred in the period 1981 to 1984—when "the annual rate of decline has slowed to approximately three percent." In this period, the black infant mortality rate was also twice that of white infants, the greatest disparity in 23 years. (Table 1 shows that nonwhite infant mortality rates have historically been most responsive to both economic and environmental changes. Average annual declines were close to six percent in prosperous periods such as 1945–49 and average annual declines less than one percent in the peak bomb test years.) The Children's Defense Fund offers much evidence that these recent changes can be attributed to cutbacks in Federal health, nutrition, and service programs. The hypothesis that emissions from nuclear reactors are also adversely affecting infant mortality rates for both white and black babies shall be explored below.

Most of the nation's civilian power reactors came on line in the seventies, particularly in 1974 and subsequent years. Routine and accidental emissions from these reactors have been tracked by the Brookhaven National Laboratory.

The following is a summary of the latest Brookhaven Report:

Emissions, All Noble Gases, Million Curies

	1974–1981	Total 1970–1981
Boiling Water Reactors	23.732	40.252
Pressurized Water Reactors	11.687	11.719
Totals	35.419	51.971

This newsletter investigates the statis-

Continued page 4

TABLE 1: INFANT MORTALITY RATES IN THE US, 1915-1979

Five Year period	Av. # Deaths per 1,000 Births: All Babies	Av. # Deaths per 1,000 Births: Nonwhite	Annual % Rates of Change: All Babies	Annual % Rates of Change: Nonwhite
1975–1979	14.4	22.1	-4.9	-4.6
1970–1974	18.4	27.6	-4.2	-5.7
1965–1969	22.7	36.5	-2.2	-2.7
1960–1964	25.3	41.6	-0.9	-1.0
1955–1959	26.4	43.7	-1.3	-0.5
1950–1954	28.1	44.8	-3.6	-2.2
1945–1949	33.5	49.8	-4.9	-6.2
1940–1944	42.6	67.2	-4.6	-3.9
1935–1939	53.2	81.3	-2.6	-3.9
1930–1934	60.4	98.6	-2.7	-1.4
1925–1929	69.0	105.4	-2.2	-1.8
1920–1924	76.7	115.3	-4.7	-5.3
1915–1919	95.7	149.7	—	—

Source: *Vital Statistics of the U.S., 1980, Vol. II, Mortality, Part A, Section 2, Infant Mortality, page 1.*

TABLE 2: AVERAGE ANNUAL MORTALITY RATES, 1965-69 AND 1975-82 BY STATE AND REGION

	ANNUAL AVERAGE 1965-1969								ANNUAL AVERAGE 1975-1982								RATIOS OF CHANGE		
	BIRTHS	INFANT DEATHS	IMR	POP (TH)	DEATHS	MR	CANCER DEATHS	CMR	BIRTHS	INFANT DEATHS	IMR	POP (TH)	DEATHS	MR	CANCER DEATHS	CMR	IMR RATIO	MR RATIO	CMR RATIO
US	3571707	80399	22.5	196844	1870236	9.5	309907	157.4	3394435	45561	13.4	222093	1931224	8.7	399011	179.7	0.596	0.915	1.141
REGION																			
STATES																			
NEW ENGLAND	203572	4045	19.9	11329	117450	10.4	20753	183.2	156025	1738	11.1	12325	110743	9.0	25121	203.8	0.561	0.867	1.113
*ME	17082	339	19.0	984	10868	11.0	1819	184.9	15647	155	9.9	1112	10307	9.3	2245	201.8	0.519	0.839	1.092
NH	12152	241	19.8	692	7268	10.5	1282	185.2	12589	116	9.2	896	7356	8.2	1661	185.4	0.464	0.783	1.001
*VT	7759	154	19.8	421	4584	10.9	727	172.5	7157	70	9.8	501	4380	8.8	912	182.3	0.493	0.804	1.057
*MA	99179	1976	19.9	5408	59304	11.0	10315	190.7	71961	793	11.0	5755	53481	9.3	12001	208.5	0.553	0.847	1.093
*RI	16493	341	20.7	901	9499	10.5	1778	197.3	11906	170	14.2	953	9221	9.7	2151	225.6	0.685	0.918	1.143
*CT	50188	995	19.8	2922	25935	8.9	4832	165.3	36685	435	11.9	3107	25997	8.4	6152	198.0	0.598	0.943	1.197
MIDDLE ATLANTIC	624612	13720	22.0	36746	379695	10.3	67948	184.9	485919	6710	13.8	37008	352678	9.5	76788	207.5	0.629	0.922	1.122
*NY	316768	7048	22.3	18064	187780	10.4	34171	189.2	238206	3446	14.5	17756	167766	9.4	36670	206.5	0.650	0.909	1.092
*NJ	114861	2402	20.9	6978	65182	9.3	12405	177.8	91542	1129	12.3	7374	64995	8.8	14977	203.1	0.590	0.945	1.143
*PA	192983	4270	22.1	11704	126893	10.8	21372	182.6	156172	2134	13.7	11878	119917	10.1	25141	211.7	0.618	0.931	1.159
EAST NORTH CENTRAL	717885	15682	21.8	39166	371057	9.5	62907	160.6	632173	8464	13.4	41467	358145	8.6	74396	179.4	0.613	0.912	1.117
*OH	187946	3860	20.5	10583	99262	9.5	16933	161.2	163209	2124	13.0	10784	96324	8.9	20184	187.2	0.634	0.945	1.161
*IN	93432	2050	21.9	5018	47720	9.5	7808	155.4	84485	1066	12.6	5437	47044	8.7	9520	175.1	0.575	0.910	1.126
*IL	196649	4702	23.9	10870	100827	10.0	18354	168.9	176708	2677	15.1	11487	100418	8.8	20963	183.0	0.633	0.879	1.080
*MI	162783	3585	22.0	8581	74845	8.7	12877	150.1	137566	1878	13.7	9177	74149	8.1	15421	168.1	0.620	0.926	1.120
*WI	77154	1484	19.2	4194	40394	9.6	6947	165.6	70205	719	10.2	4662	40210	8.6	8309	178.2	0.532	0.896	1.076
WEST NORTH CENTRAL	279660	5543	19.8	16008	163935	10.2	26885	167.4	271081	3428	12.6	17063	157578	9.2	31482	184.5	0.638	0.902	1.102
*MN	66381	1235	18.6	3629	33527	9.2	5767	158.9	63172	728	11.5	4829	33818	8.2	6791	168.5	0.619	0.887	1.061
*IA	48982	943	19.3	2771	29521	10.7	4830	174.3	45090	507	11.3	2908	27048	9.3	5518	189.7	0.584	0.873	1.088
MO	88220	1757	21.9	4575	52026	11.4	8171	178.6	75737	1148	15.2	4880	49789	10.2	9809	201.0	0.692	0.897	1.125
ND	11902	227	19.1	633	5639	8.9	922	145.6	12347	162	13.1	652	5664	8.7	1088	166.8	0.688	0.975	1.146
SD	12089	261	21.7	673	6509	9.7	1072	159.3	12219	151	12.4	688	6396	9.3	1212	176.1	0.569	0.961	1.106
*NB	25176	410	16.3	1449	14098	10.3	2510	173.7	25871	323	12.5	1563	14546	9.3	2893	185.1	0.768	0.905	1.066
KS	35149	710	20.2	2278	21814	9.6	3525	154.7	36645	407	11.1	2342	21133	9.0	4170	178.0	0.550	0.942	1.151
SOUTH ATLANTIC	549857	13976	25.5	29637	276855	9.3	42176	142.3	520991	7919	15.2	36248	328918	9.0	65682	181.2	0.597	0.951	1.273
*DE	18213	223	21.8	524	4904	9.4	780	148.9	8961	118	13.1	596	5048	8.5	1118	187.5	0.603	0.903	1.259
*MD	62382	1426	22.9	3660	31342	8.6	5563	152.0	51019	687	13.5	4214	32425	7.7	7551	179.2	0.589	0.899	1.179
*DC	28530	673	23.6	804	10513	13.1	1488	184.1	18163	442	24.3	664	8715	13.1	1764	265.6	1.831	1.003	1.443
*VA	79611	1965	24.7	4547	37396	8.2	5040	120.4	72084	1036	14.2	5205	48453	7.7	8381	158.6	0.576	0.931	1.235
WV	38526	752	24.6	1819	19687	10.8	2958	162.2	29080	426	14.6	1916	19440	10.1	3621	189.0	0.594	0.941	1.165
*NC	93958	2607	27.7	5068	43458	8.6	5804	114.5	83625	1307	15.6	5775	47644	8.3	9085	157.3	0.563	0.962	1.374
*SC	58123	1398	27.9	2634	22066	8.4	2919	110.8	48484	830	17.1	3057	23853	7.8	4394	143.7	0.614	0.931	1.297
*GA	98399	2320	25.7	4510	39555	8.8	5423	120.2	87781	1294	14.7	5345	43667	8.2	7890	147.6	0.574	0.932	1.228
*FL	183316	2612	25.3	6071	67215	11.1	11415	188.0	120994	1788	14.7	9396	99682	10.6	21879	232.9	0.582	0.958	1.238
EAST SOUTH CENTRAL	245812	6768	27.5	12908	126134	9.7	17965	138.3	232995	3567	15.3	14485	132058	9.2	24997	173.5	0.556	0.944	1.255
KY	59054	1391	23.6	3205	31989	10.0	4817	150.3	58376	727	12.5	3683	32962	9.1	6448	179.0	0.529	0.917	1.191
*TN	73683	1858	25.2	3919	38466	9.8	5430	138.8	69524	1078	15.5	4482	41673	9.3	7928	176.9	0.614	0.947	1.274
*AL	65319	1839	28.2	3521	32062	9.3	4504	130.2	59996	971	16.2	3833	34508	9.0	6567	171.3	0.575	0.967	1.316
MS	47836	1680	35.1	2343	22817	9.7	3126	133.4	45099	792	17.6	2487	22834	9.2	4054	163.0	0.500	0.943	1.222
WEST SOUTH CENTRAL	363118	8633	23.8	19010	165622	8.7	26388	138.8	415829	5753	13.9	23114	198373	8.2	36606	158.4	0.583	0.945	1.141
*AR	34128	758	22.2	1973	19848	10.1	2998	151.5	34761	461	13.3	2241	21712	9.7	4226	188.6	0.596	0.963	1.245
LA	76263	2104	27.6	3663	33187	9.0	5098	139.1	76743	1234	16.1	4118	35235	8.6	6793	164.9	0.583	0.947	1.186
OK	48468	869	21.5	2514	24370	9.7	3985	158.6	47463	620	13.1	2958	27290	9.2	5297	179.1	0.608	0.952	1.129
TX	212259	4902	23.1	10861	88297	8.1	14304	131.8	256062	3438	13.4	13797	106136	7.7	20291	147.1	0.581	0.946	1.116
MOUNTAIN	155932	3447	22.1	7846	63311	8.1	9288	118.4	208613	2487	11.9	10917	77254	7.1	14425	132.1	0.539	0.877	1.116
MT	12346	269	21.8	699	6591	9.4	1008	143.6	13337	148	11.1	780	6519	8.4	1227	157.4	0.518	0.887	1.096
ID	12782	251	19.6	705	5786	8.2	893	126.7	10511	167	9.0	911	6362	7.0	1207	132.5	0.468	0.851	1.046
WY	5823	128	21.9	323	2872	8.7	395	121.7	8636	84	9.7	442	3033	6.9	530	119.8	0.443	0.786	0.984
CO	38034	838	22.0	2019	17256	8.5	2498	123.7	46947	560	11.9	2807	19034	6.8	3478	123.9	0.542	0.794	1.002
NM	21933	557	25.4	1004	7007	7.0	985	98.1	24450	299	12.2	1264	8441	6.7	1540	121.8	0.482	0.957	1.242
AZ	32610	765	23.5	1634	13204	8.1	2045	125.8	45519	614	13.5	2575	19903	7.8	4001	155.4	0.575	0.960	1.243
UT	23661	432	18.2	1070	7023	6.9	930	92.1	39592	469	11.8	1393	8217	5.9	1327	95.2	0.649	0.856	1.034
NV	8744	207	23.7	442	3623	8.2	533	120.4	11622	147	12.6	745	5666	7.6	1115	149.6	0.531	0.928	1.242
PACIFIC	432059	8585	19.9	24114	206979	6.6	35682	148.0	471609	5496	11.7	29549	231439	7.8	49515	167.6	0.586	0.913	1.132
*WA	53940	1071	19.9	3190	29404	9.2	4833	151.5	60195	731	12.1	3949	31298	7.9	6602	167.2	0.611	0.860	1.104
*OR	33100	650	19.6	1983	18923	9.5	3126	157.6	40104	494	12.3	2522	21077	8.4	4385	173.9	0.627	0.876	1.103
*CA	345019	6864	19.9	18941	158651	8.4	27720	146.4	371310	4271	11.5	23078	179104	7.8	38528	166.9	0.578	0.927	1.141

*NUCLEAR STATES

IMR : INFANT MORTALITY RATE (DEATHS/1000 BIRTHS)

MR : MORTALITY RATE (DEATHS/1,000 PERSONS)

CMR : CANCER MORTALITY RATE (DEATHS/100,000 PERSONS)

tical relationship between the 35.4 million curies emitted in the years 1974–1981 and infant and other mortality rates in the years 1975–1982 in states most directly affected.

For the purpose of this inquiry, the contiguous states (excluding Alaska and Hawaii) are divided into two groups—*nuclear states* (those with power or military reactors) and *nonnuclear states* (those without). Actually, the geographic distribution of reactors in the US is so wide that only 19 states can be regarded *nonnuclear*. Small states, like the District of Columbia or Rhode Island, lying directly downwind from reactors in adjoining states are included in the *nuclear* group.

Our definition of *nuclear* states (designated by an asterisk in Table 2) must of necessity include Washington and South Carolina, home of the Hanford and Savannah River military reactors. Emissions from these reactors are not reported by Brookhaven, and cannot be assumed to have reached peak levels in the late seventies as is the case of civilian power reactors. Again, Brookhaven does not report on emissions from the hundreds of small experimental reactors located at research institutes, universities, and large hospitals. Most of these can be found in the states designated in Table 2 as *nuclear*.

The years 1965–69 were chosen as the most suitable control time period—radiation from bomb test fallout was at very low levels. Both Nevada and Utah, which have no nuclear reactors, were included in our *nonnuclear* states. Some residents of both these states, however, might have been affected by occasional accidental emissions from underground tests in the Nevada desert. These tests continued without interruption after the atmospheric test ban in 1963. In fact, these tests are continued today with as yet unknown public health consequences.

The average annual mortality rates have been calculated in both time periods for these two groups of states. The results are summarized in Tables 3 and 4. The tables suggest that emissions from nuclear reactors in the *nuclear* states may have had a small but statistically significant adverse impact on mortality rates in the 1975–1982 period when such emissions reached high levels.

Thus, according to Table 3, which summarizes the rate in the *nuclear* and *nonnuclear* states, the infant mortality rate in the *nuclear* states was 22.2 per thousand births in the 1965–69 period, somewhat lower than the national IMR in those years of 22.5 (not a statistically significant difference). In that same period, however, the IMR for *nonnuclear* states was much higher than the *nuclear* IMR, but ended somewhat lower in the later period. Its decline, over these years, was at the annual rate of 0.89 percent, as against 0.83 percent for the *nuclear* states.

While these differences appear small, in Table 4 they translate into disturbingly large annual estimates of *excess* deaths. This calculation yields what the observed deaths would have been in the *nuclear* states if they had had the same percentage change in mortality rates experienced by the *nonnuclear* states.

A surprisingly similar difference is arrived at between the two groups of states with respect to cancer mortality. While the cancer mortality rate in the *nuclear* states was somewhat below that of the nation in the early period, it was considerably higher in the later period.

At first glance, this appears surprising because we would expect at least a five-year lag of cancer mortality from the year of exposure, suggesting that emissions in the 1974–81 period should lead to elevated cancer mortality levels in the eighties and nineties. The elevated cancer rates in the late seventies may reflect the much higher but earlier and yet unknown emission levels from military reactors. They may also reflect the emissions from some civilian reactors in the 1970–74 years.

Indeed the impact on public health of military reactor emissions deserves separate study (See front page box) both because the time period of operation spans several decades, and because the cumulated volume of emissions may be higher than that of civilian reactors. However, so much is *not* known about the treatment and disposal of the huge stockpiles of military waste, we must

TABLE 3: SUMMARY OF CHANGES IN MORTALITY RATES, 1965–69, 1975–82, US, NUCLEAR AND NON-NUCLEAR STATES

	US	NUCLEAR STATES	NON-NUCLEAR STATES
1965–69			
Total # Infant Deaths	401995	310289	91706
Total # Live Births	17858535	13989682	3868853
Average Annual IMR (Deaths Per 1000 Live Births)	22.510	22.180	23.704
Total # of Deaths	9351192	7467466	1883726
Average Annual Population	196844	155742	41103
Average Annual Mortality Rate (Deaths Per 100,000)	950.11	958.96	916.60
Total # Cancer Deaths	1549534	1256809	292725
Average Annual Cancer Rate (Deaths Per 100,000)	157.44	161.40	142.44
1975–82			
Total # Infant Deaths	364490	270823	93667
Total # Live Births	27155479	20187695	6967784
Average Annual IMR (Deaths Per 1000 Live Births)	13.422	13.415	13.443
Total # of Deaths	15449794	12157892	3291902
Average Annual Population	222093	172840	49253
Average Annual Mortality Rate (Deaths Per 100,000)	869.56	879.27	835.45
Total # Cancer Deaths	3192087	2561141	630946
Average Annual Cancer Rate (Deaths Per 100,000)	179.66	185.22	160.13
Ratios of Change, 1975–82/1965–69			
Infant Mortality Rate	0.5963	0.6048	0.5671
Total Mortality Rate	0.9152	0.9169	0.9115
Cancer Mortality Rate	1.1411	1.1476	1.1242
Annual Percent Rates of Change			
Infant Mortality Rate	−4.04	−3.95	−4.33
Total Mortality Rate	−0.85	−0.83	−0.89
Cancer Mortality Rate	1.41	1.48	1.24

assume that the associated public health problems may be of the same order of magnitude as those of the civilian reactors.

Unlike infant and total mortality rates that are steadily declining, cancer mortality rates have been rising for several decades. The causes of this increase involve a complex mix of environmental and demographic factors for which total cancer mortality rates, unadjusted for sex, race, or age, require considerable further research.

Differences in Mortality

What do these results signify? First, the small differences between the mortality changes of the two groups of states *cannot* be attributed to chance. On the other hand, can these differences be attributed to different nuclear emissions levels? There is no clearly defined tendency evident in Table 2 among *each* of the so-called *nuclear* states to have increases in mortality that exceed those of the nation. This becomes evident by considering the ratios of change for each state for the three different mortality rates shown in Table 2. It can be said that a state does *worse* than the nation if the decline in its infant or total mortality rate was less than that of the nation or if the gain in its cancer mortality rates was greater than that of the nation. Thus, the 30 *nuclear* states have 90 opportunities to be measured against the national performance, and the 19 *nonnuclear* states have 57 such opportunities. (As examples, the *nuclear* state of Connecticut performed *worse* than the nation with respect to all three mortality rates, and the *nonnuclear* state of Wyoming performed *better* on all three counts.)

But the *nonnuclear* states can be seen to do *better* than the nation in only 54 percent of all cases, and the *nuclear* states do *better* in about 52 percent of all cases. Thus, it cannot be said that *nonnuclear* states have a tendency to perform significantly *better* than *nuclear* states. How can these apparently contradictory results be reconciled with the results of Tables 3 and 4? Can it be that the statistically significant differences between the two groups of states shown by Table 3 reflect factors other than nuclear emissions? There is a simple explanation of this paradox.

There are a total of about 90 civilian and military reactors that released emissions of varying volumes in the most recent time period. The effects of these emissions will be primarily found in residents of those relatively few counties most directly impacted by the releases. The vital statistics for these counties should then show up in these counties and not in the far more numerous remaining counties that make up the United States.

We do not have emissions data as yet for military reactors, which, in any case, were in continuous operation in both the two time periods we are considering. We can, however, attempt to de-

Continued page 6

TABLE 4: CALCULATION OF ANNUAL EXCESS MORTALITY IN NUCLEAR STATES 1975–82

	NUCLEAR STATES	NON-NUCLEAR STATES
1965–69		
Average Annual IMR (Deaths Per 1000 Live Births)	22.18	23.70
Average Annual Mortality Rate (Deaths Per 100,000)	958.96	916.60
Average Annual Cancer Rate (Deaths Per 100,000)	161.40	142.44
1975–82		
Average Annual IMR (Deaths Per 1000 Live Births)	12.58	13.44
Average Annual Mortality Rate (Deaths Per 100,000)	874.09	835.45
Average Annual Cancer Rate (Deaths Per 100,000)	181.45	160.10
Actual Avg. Annual Infant Deaths	33853	11708
Actual Avg. Annual Live Births	2523462	870973
Actual Avg. Annual Deaths	1519737	411488
Actual Avg. Annual Population	172840	49253
Actual Avg. Annual Cancer Deaths	320143	78868
Estimated Avg. Annual Infant Deaths	31740	—
Estimated Avg. Annual Deaths	1510780	—
Estimated Avg. Annual Cancer Deaths	313611	—
Excess Annual Infant Deaths	2113	—
Excess Annual Total Deaths	8957	—
Excess Annual Cancer Deaths	6532	—

In this table we have calculated the "excess" in mortality in the nuclear states as the difference in the number of expected deaths if these states had the same change in mortality since 1965–69 as was experienced by the nonnuclear states. These calculations are warranted by the fact that this assumption yields differences that are highly unlikely to be attributed to chance. The standard deviation (σ) of the difference between the observed mortality rate and an expected rate is given by the formula:

$$\sigma\, r_o - r_e = \sqrt{\frac{(r_o)(1-r_o)}{N} + \frac{(r_e)(1-r_e)}{N}}$$

where r_o and r_e are the observed and expected mortality rates expressed to six decimals on a per capita basis, and N represents the number of deaths in the 1975–82 period. The results can be tabulated as follows:

	IMR	CMR	TMR
1. r_o	.01342	.001852	.008793
2. r_e	.01258	.001814	.008741
3. $r_o - r_e$	.00084	.000038	.000052
4. $\sigma\, r_o - r_e$	.00031	.000037	.000037
5. Line 3/Line 4	2.72	1.01	1.38
6. Chance Probability	.004	.156	.084

Line 6 indicates the probabilities of securing the observed difference on line 3 purely by chance. The difference in infant mortality rates is most significant, for the probability of getting as large a difference as was observed is only four out of 1000. (A probability ratio of 50 times out of 1000 is generally taken as indicative of a highly improbable result of chance.) The observed difference in cancer mortality rates lies at the borderline of chance. The probability that both the observed differences in the infant and cancer mortality could simultaneously be the result of chance could be calculated by multiplying .004 by .156 to yield .0006, because these two mortality rates are completely independent. The p value for total mortality—.084—lies at the borderline of chance probability, but since total mortality includes both infant and cancer deaths (with a joint p of only .0006), it is hard to believe that all other deaths would not be affected by the same extra force of mortality that affected infants and cancer victims.

fine a *nuclear* county for the 50 civilian power reactors for which we do have emissions data for recent years.

Some 175 counties have been chosen as a first step to defining a *nuclear* county, one that would be more directly exposed to recent radioactive emissions from civilian reactors. These include, in addition to the county in which the reactor is located, an average of two or three counties lying within 25 or 30 miles from the reactor. Those adjacent counties lying to the north and east are favored in accordance with the prevailing wind patterns in the US. (For example, it has been suggested that such wind patterns account for the severity of acid rain in the Northeastern region of the US.)

This too is a highly simplistic definition. Windborne emissions by no means represent the most important way in which nearby residents can be affected. For example, rainfall affecting adjacent counties probably determines the ulti-

TABLE 5: NUCLEAR COUNTIES: SUMMARY OF CHANGES IN PUBLIC HEALTH MEASURES, 1965-69 AND 1975-82

	NUCLEAR COUNTIES				
	BOILING WATER REACTORS	PRESSURIZED WATER REACTORS	ALL REACTORS COUNTIES	NONNUCLEAR COUNTIES	US TOTALS
1965-69					
Number of Counties	71	114	175	2968	3143
Number of Births	1325248	1498874	2730406	15258955	17989361
Number of Infant Deaths	30524	32060	60723	348023	408746
IMR (Deaths per 1000 Births)	23.0	21.4	22.2	22.8	22.7
Number of Fetal Deaths	19185	21256	39226	239246	278472
FMR (Deaths per 1000 Births)	14.5	14.2	14.4	15.7	15.5
Population, 1970	14552937	17508052	31072244	172232619	203304863
Number of Deaths	693005	737496	1387843	8006837	9394680
MR (Deaths per 1000 Persons)	9.5	8.4	8.9	9.3	9.2
Number of Cancer Deaths	117589	126722	237103	1316843	1553946
CMR (Deaths per 100,000 Persons)	161.6	144.8	152.6	152.9	152.9
1975-82					
Th. Curies Emitted, 1974-81	2.37E+07	1.17E+07	3.54E+07		
Emission Per Capita	1.583	0.577	1.035		
Number of Births	1809882	2305116	3975794	23412534	27388328
Number of Infant Deaths	26331	29542	54210	314397	368607
IMR (Deaths per 1000 Births)	14.5	12.8	13.6	13.4	13.5
*Number of Births	1572114	1987858	3439066	20268725	23707791
*Number of Fetal Deaths	15645	18412	33071	198107	231178
*FMR (Deaths per 1000 Births)	10.0	9.3	9.6	9.8	9.8
Population, 1980	14975515	20292643	34186432	192359373	226545805
Number of Deaths	1037764	1331493	2300973	13185191	15486164
MR (Deaths per 1000 Persons)	8.7	8.2	8.4	8.6	8.5
Number of Cancer Deaths	220776	289143	495352	2707124	3202476
CMR (Deaths per 100,000 Persons)	184.3	178.1	181.1	175.9	176.7
RATIOS OF CHANGE					
IMR	0.632	0.599	0.613	0.589	0.592
FMR	0.687	0.653	0.669	0.623	0.630
MR	0.910	0.974	0.942	0.922	0.925
CMR	1.140	1.230	1.187	1.150	1.156

*Fetal Death data relates to the period 1975-81. As of this writing, 1982 data are unavailable

mate destination of most emitted radioactive particulates and effluents. Nearby residents can also be affected by the possible contamination of water, milk, and produce from counties even further removed from the point source of the emissions. Each reactor represents a unique geographic situation that deserves a careful examination of wind, precipitation and fresh food transportation patterns. This examination will offer a more complete definition of those adjacent counties vulnerable to local emissions.

Nevertheless, it turns out that even with the admittedly restricted definition of the 175 nuclear counties used here, results indicate adverse impacts on measures of infant mortality, fetal mortality, total mortality, and cancer mortality in the late seventies as compared with the earlier period. These results are summarized in Table 5 which replicates the methodology of Table 3. Now, however, the change in mortality rates of *nuclear* counties are compared with *nonnuclear* counties.

In addition, the nuclear counties are separated into two groups; those close to boiling water reactors and those close to pressurized water reactors. For all *nuclear and nonnuclear* counties, the rates for infant, fetal, and total mortality are seen to decline over the selected time period. It will be seen, however, that the declines in *nuclear* counties in each case fell short of the declines in *nonnuclear* counties. With respect to cancer mortality, which has been rising over these years, the 19 percent gain in *nuclear* counties exceeded the 15 percent gain in *nonnuclear* counties.

Could such results be the product of chance? If the answer is yes, then we would expect a 50 percent probability for each change in mortality in *nuclear* counties to be worse than the change in *nonnuclear* counties. The chance of then getting four such results at the same time would be equal to a coin tosser getting four heads in a row, i.e., $(.50)^4 = .0525$, or about one in twenty. Actually, the probability of obtaining all four observed changes in mortality rates by chance is less than 2 out of 100 as evident in the caption to Table 6.

Given the fact (demonstrated in the caption to Table 6) that the difference in the mortality experience of the two groups of counties is significant, we can speculate that there may be two ways to increase the statistical significance of our findings. The time periods studied should be extended and additional *nuclear* counties included. Extending the definition of *nuclear* counties possibly affected by radioactive rainfall might, for example, double the number of deaths involved. If the divergence between observed and expected rates remained the same, the significance of the results would be increased by 40 percent (i.e., by $\sqrt{2}$).

If the more current experience in the eighties is included, more significant divergences in the cancer rates can be expected. Based on only a few years in the early seventies, the cancer rate divergence in Table 6 is seen to be the least significant. If nuclear emissions in the seventies do result in elevated cancer rates, such effects will more likely be seen in the next twenty years.

A more detailed, properly financed study would, of course, try to account for other environmental factors and allow for adjustments for changes in age, sex, and race required by proper biostatistical procedures. These results, in CEP's opinion, would illuminate the main thrust of these findings.

It is clear that emissions in the *nuclear* counties have had an adverse impact on mortality, particularly on the very young and very old. It will be noted that the total mortality rate (TMR) registered in the *nuclear* counties had the smallest likelihood of being due to chance. This rate mainly reflects the deaths of persons over 65 years of age. But infant and fetal deaths are almost

Continued page 9

TABLE 6: THE STATISTICAL SIGNIFICANCE OF CHANGING MORTALITY RATES

	IMR	FMR	TMR	CMR
1. Mortality Rate, Nuclear Counties 1965-69	0.02224	0.014366	0.008933	0.001526
2. Ratio of Change in Nonnuclear Counties	0.5888	0.6234	0.9215	1.1504
3. Expected Mortality Rate, Nuclear Counties, 1975-82 (1 × 2)	0.013095	0.008956	0.008232	0.001756
4. Observed Mortality Rate, Nuclear Counties, 1975-82	0.013635	0.009616	0.008413	0.001811
5. Difference (4-3)	0.000540	0.000660	0.000181	0.000055
6. Standard Deviation of the Difference	0.000697	0.000745	0.000084	0.000084
7. 5/6	0.77	0.89	2.14	0.65
8. Chance Probability	0.2207	0.1867	0.0162	0.2579

In this table, we are testing the differences between a mortality rate registered in the combined group of 175 nuclear counties in 1975-82 with what would have been expected if these counties had the same change in mortality experienced by all the nonnuclear counties. We know from Table 5 that these counties had a somewhat better performance with respect to all four mortality rates.

For the sake of precision, we have expressed all rates on a per-capita basis to six decimals. For example the IMR of the nuclear counties would have been .013095 instead of .013635 if its 1965-69 rate had undergone the same ratio of change (.5888) reported for the nonnuclear counties. Is the difference between this "expected" rate and the observed actual rate (.000540) significant? The answer is given by the formula for the standard deviation (σ) of the difference between two sample rates:

$$\sigma_{r_1 - r_2} = \sqrt{\frac{(r_1)(1-r_1)}{n} + \frac{(r_2)(1-r_2)}{n}}$$

where r_2 is the expected rate, r_1 is the observed rate, and n is the number of deaths involved in the calculation of the mortality rate.

We see from rows 6, 7 and 8 above that the probability of securing by chance alone a divergence between the expected and observed IMR as great or greater than .000540 is about 22 percent. By itself, this cannot be regarded as a significant divergence. Similarly, the "chance" probabilities of securing the observed divergences in the fetal and cancer mortality rates are respectively 19 percent and 26 percent, each being high enough to be regarded as the possible product of chance. But since each of these three rates are completely independent, we can ask what is the probability that all three divergences are simultaneously the product of chance? The answer, given by multiplying the three independent probabilities is .0106, which is about one chance in one hundred.

This is in agreement with the very low chance probability (.0162) of securing the observed divergence in the total mortality rate, which of course includes infant, fetal, and cancer deaths. Thus, we have two pieces of evidence to suggest that there are less than two chances out of one hundred for the following statement to be false: In the period 1975-82 there was some extra force of mortality present in the nuclear counties not operating in the nonnuclear counties.

TABLE 7: REACTORS AND LOCATIONS

REACTOR	B/P	TOTAL EMISSIONS 1974-81	LOCATION	COUNTIES INCLUDED
Big Rock Point	B	3.34E+05	4 miles NE of Charlevoix, MI	MI: Charlevoix, Cheboygan, Emmett
Brown's Ferry	B	1.04E+06	10 miles NW of Decatur, AL	AL: Lawrence, Madison, Morgan TN: Franklin, Lincoln
Brunswick	B	1.06E+06	20 miles S of Wilmington, NC	NC: Duplin, New Hanover, Onslow, Pender
Cooper	B	1.03E+05	70 miles S of Omaha, NB	IA: Fremont, Mills NB: Cass, *Douglas, Lancaster, *Sarpy, *Washington
Dresden 1, 2 & 3	B	3.97E+06	14 miles SW of Joliet, IL	IL: Cook, DuPage, Kendall, Will IN: Lake
Duane Arnold	B	2.42E+04	8 miles NW of Cedar Rapids, IA	IA: Benton, Buchanan, Delaware, Dubuque, Linn
Edwin I. Hatch 1 & 2	B	7.47E+04	11 miles N of Baxley, GA	GA: Appling, Candler, Tatnall, Toombs
Humboldt Bay	B	9.62E+05	4 miles SW of Eureka, CA	CA: Del Norte, Humboldt, Siskiyou, Trinity
James A. Fitzpatrick	B	3.58E+05	36 miles N of Syracuse, NY	NY: Jefferson, *Oswego, St. Laurence
La Crosse	B	3.01E+05	19 miles S of La Crosse, WI	WI: Buffalo, Jackson, La Crosse, Monroe, Trempealeau
Millstone N1 & 2	B/P	5.63E+06	3.2 miles WSW New London, CT	CT: New London RI: Kent, Providence, Washington
Monticello	B	1.76E+06	23 miles SE of St. Cloud, MN	MN: Benton, Isanti, Morrison, Sherburne
Nine Mile Point	B	2.04E+06	8 miles NE of Oswego, NY	NY: Lewis, *Oswego
Oyster Creek	B	2.92E+06	9 miles S of Toms River, NJ	NJ: Middlesex, Monmouth
Peach Bottom	B	5.53E+05	17.9 miles S of Lancaster, PA	PA: Berkes, Lancaster, *Lebanon
Pilgrim	B	1.27E+06	25 miles SE of Boston, MA	MA: Norfolk, Suffolk
Quad Cities	B	1.24E+06	20 miles NE of Moline, IL	IL: Carroll, Whiteside IA: Clinton
Vermont Yankee	B	9.23E+04	5 miles S of Brattleboro, VT	NH: Cheshire, Sullivan VT: Windham
Fort St. Vrain	B	2.28E+02	35 miles N of Denver, CO	CO: Adams, Boulder, Denver
Arkansas 1 & 2	P	9.68E+04	6 miles WNW Russellville, AR	AR: Conway, Johnson, Newton, Pope, Van Buren
Beaver Valley	P	3.08E+03	Shippingport, PA	PA: Beaver, Butler, Lawrence
Calvert Cliffs	P	8.24E+04	45 miles SE of Washington, DC	MD: Calvert, Charles, Dorchester, Prince Georges, St. Marys Talbot
Crystal River	P	1.59E+05	70 miles N of Tampa, FL	FL: Alachua, Gilchrist, Marion, Putnam
Davis Besse	P	9.41E+03	21 miles E of Toledo, OH	MI: Monroe OH: Lucas, Ottowa
Donald C. Cook	P	7.34E+04	11 miles SSW of St. Joseph, MI	IN: La Porte, St. Joseph MI: Berrien, *Van Buren
Fort Calhoun	P	1.01E+04	19 miles N of Omaha, NB	IA: Harrison, Pottawattamie NB: *Douglas, *Sarpy, Saunders, *Washington
H.B. Robinson	P	8.10E+03	4.5 miles WNW of Hartsville, SC	NC: Anson SC: Chesterfield, Darlington, Marlboro
Haddam Neck	P	1.62E+04	10 miles SE of Middletown, CT	CT: Middlesex
Indian Point 1, 2 & 3	P	9.18E+04	3 miles SW of Peekskill, NY	NY: Rockland, Westchester
Joseph M. Farley	P	2.61E+04	Dothan, AL	AL: Barbour, Geneva, Henry, Houston GA: Early
Kewaunee	P	1.05E+04	27 miles ESE of Green Bay, WI	WI: *Brown, Door, *Kewaunee
Maine Yankee	P	1.96E+04	3.9 miles S of Wiscassett, ME	ME: Kennebec, Knox, Lincoln, Waldo
McGuire	P	0.00E+00	17 miles N of Charlotte, NC	NC: Cabarrus, Catawaba, Gaston, Mecklenberg, Rowan, Union SC: York
North Anna	P	3.02E+04	40 miles NW of Richmond, VA	VA: Caroline, Hanover, Henrico, King William
Oconee	P	2.41E+05	30 miles W of Greenville, SC	SC: Greenville, Oconee, Pickens
Palisades	P	6.23E+03	5 miles S of South Haven, MI	MI: Allegan, Cass, Kalamazoo, *Van Buren
Point Beach	P	5.94E+04	15 miles N of Manitowoc, WI	WI: *Brown, *Kewaunee, Manitowac
Prairie Island	P	7.21E+03	26 miles SE of Minneapolis, MN	MN: Dakota, Goodhue, Hennepin, Ramsey, Scott, Washington WI: Pierce, St. Croix
R.E. Ginna	P	2.30E+04	16 miles NE of Rochester, NY	NY: Monroe, Wayne
Rancho Seco	P	2.11E+04	25 miles SE of Sacramento, CA	CA: Amador, El Dorado, Sacramento
Salem 1, 2	P	2.03E+03	20 miles S of Wilmington, DE	DE: New Castle NJ: Cumberland, Salem
San Onofre	P	7.37E+03	2.5 miles S of San Clemente, CA	CA: Orange, Riverside
Sequoyah	P	1.20E+04	Daisy, TN	TN: Hamilton, Meigs, Rhea
St. Lucie	P	1.04E+05	8 miles S of Ft. Pierce, FL	FL: Indian River, Okeechobee, St. Lucie
Surry	P	7.94E+04	19 miles NW of Newport News, VA	VA: Charles City, Surry, York
Three Mile Island 1,2	P	1.01E+07	10 miles SE of Harrisburg, PA	PA: Schuykill, Dauphin, *Lebanon, Northumberland
Trojan	P	6.52E+03	35 miles NW of Portland, OR	OR: Columbia, Multanomah WA: Clark, Cowlitz
Turkey Point	P	9.96E+04	10 miles E of Florida City, FL	FL: Broward, Dade
Yankee Rowe	P	1.29E+03	20 miles NW of Greenfield, MA	MA: Franklin NH: *Cheshire VT: *Windham
Zion	P	3.12E+05	6 miles N of Waukegan, IL	IL: Lake WI: Kenosha, Racine

*Counties close to more than one reactor.

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Council on Economic Priorities
NEWSLETTER

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For Further Reading

Quality Of Life In American Neighborhoods: Levels of Affluence, Toxic Waste and Cancer Mortality In Residential Zip Code Areas, Jay M. Gould, Westview Press, 1986. See also CEP Newsletters "Toxic Waste and Cancer: The Link is Getting Stronger," Sept. 1984; "Freedom of Information Act: Breaking the Federal Barrier," June 1985; "Toxic Waste in Chesapeake Bay: Bad for People as Well as for Fish," Nov. 1985.

Maternal and Child Health Data Book, Children's Defense Fund, Washington, D.C. 1986.

Radioactive Materials Released From Nuclear Power Plants, 1981, J. Tichler and C. Benkovitz, Brookhaven National Laboratory, 1984

Measurement of Low Levels of X-ray Mutagenesis in Relation to Human Disease, C. Waldren, L. Correll, M.A. Sognier, T.T. Puck, July, 1986, Proc. U.S. Natl Academy of Science. The data obtained by these investigators, using a new laboratory technique involving individual human chromosones implanted in animal cells, show that the effect of low dose radiation exposures is more than 200 times greater than had previously been assumed on the basis of high dose studies

This is a part of a rapidly growing body of clinical literature on ionizing radiation effects which can be secured from the **Health and Energy Institute** in Washington, D.C. The detailed annual mortality date for the 175 counties studied here can be obtained on a personal computer diskette from Public Data Access Inc., 30 Irving Place, New York, NY 10003. (212-529-0890). PDA can assemble diskettes with mortality rates for any desired group of states or counties in great detail, and in any desired mode, such as Wordstar, Lotus, or D-Base III

immediately responsive to the lethal effects of radioactive iodine included in the emissions. Table 5 shows that the greatest adverse change in the infant and fetal mortality rates was registered by those counties close to boiling water reactors. These counties had emission rates of 1.6 curies per capita as against 0.6 curies per capita for the pressurized water reactor counties in the 1975–82 period.

There is little point at this early stage in the investigation to attempt to quantify the extent of the adverse impact since we do not yet have a satisfactory delineation of all the *nuclear* counties affected by both civilian and military reactors. In Table 7, the 175 counties adjacent to each civilian reactor which we have chosen as *nuclear* counties for this Newsletter are listed. Almost certainly, there are several hundred more that could be included among those directly or indirectly affected by emissions from both civilian and military reactors. It is CEP's hope that environmental organizations around each reactor will, on reading this Newsletter, share with us their knowledge or even suspicions about those counties omitted from our preliminary definitions. By adding counties with a lesser impact, the average divergence in mortality rates from those in *nonnuclear* areas will be narrowed. The additional deaths, however, will make our findings more significant statistically and can lead to a more precise quantification of the number of excess deaths to be attributed to emissions. Until then, the estimate of an excess 9000 deaths per year derived from this analysis of *nuclear* states can stand as a preliminary overall estimate.

It is also clear that CEP's estimates of the public health impact of radioactivity and other environmental abuses such as toxic waste can be made far more precise by allowing for differences due to age, sex, and race. Computer tapes from the National Center for Health Statistics are now in CEP's possession. From these tapes, the mortality rates for each county, since 1968, for all white and nonwhite males and females, by age group and for several hundred detailed causes of death can be calculated. Use of this extraordinary database, a tribute to the work of statisticians and epidemiologists of the National Center, will make it possible to pinpoint those groups in our population bearing the brunt of the loss of lives from all environmental abuses. ■

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The Health Effects of the WIPP Waste Repository
Statement By Dr. Jay M. Gould, Director
Radiation and Public Health Project (RPHP)

The proposed action of the Final Environmental Impact Statement for the Waste Isolation Pilot Plant greatly underestimates, by a factor of 1000 or more, the radiological risks to the public of both the operation of truck and rail transport facilities and of the operation of the WIPP facilities in the testing phase, both before and after final emplacement of radioactive waste.

The purpose of my testimony today is to show that there are many indications that the current radiation standards are inaccurate and inadequate as guidelines for the safe siting of transuranic and mixed waste. The Waste Isolation Pilot Plant FEIS radiological risk estimates focus only on carcinogenic risks and ignores the far greater risks from the possible release into the atmosphere and water supplies of long-lived radionuclides. These radionuclides, once ingested, attack the immune system and accelerate deaths from a wide range of illnesses. I shall review recent statistical and biochemical laboratory studies which reveal the actual dangers from ingested radioactive particles, and demonstrate that the current standards used by the Department of Energy are woefully understated.

Professor Sternglass, in a separate statement, has reviewed in some detail the biochemical mechanism by which Strontium-90 and many of the transuranics, products of reprocessing and fabrication operations of Department of Energy (DOE) facilities, do biological damage after entering the food chain. Once ingested, the radionuclides become heavily concentrated in certain organs such as the bone marrow, where the blood cells that make up our immune systems originate. As many researchers have established in the past 20 years, in particular Dr. Abram Petkau of the Canadian Atomic Energy Commission, constant emissions at extremely low radiation levels from ingested radionuclei promote the formation of "free radicals." These free radicals then most efficiently are drawn to blood cells, and penetrate and destroy them. At higher levels of radiation the larger number of "free radicals" tend to negate each other so that this process is perversely most efficient at low radiation levels.

These findings of Dr. Petkau support the position that there is no safe lower limit of exposure to radioactivity. Even the smallest releases of long-lived radionuclei from

the treatment and storage operations at the WIPP present some possibility of effecting human health. It would be far better at present to keep all radioactive waste in place until the DOE more fully comprehends the actual health risks involved, and can then accurately estimate health and environmental risks.

Furthermore, there is substantial evidence to show that all large-scale radioactive releases since the invention of nuclear technology have been associated with immediate excess mortality effects which cannot be attributed to chance.

The Radiation and Public Health Project (RPHP) has performed analyses of official U.S. mortality data going back to 1945, and has found massive evidence of excess mortality associated with a number of major nuclear releases:

Atmospheric bomb testing.

The Savannah River accident of 1970 (only recently revealed after nearly two decades of concealment).

Accidental releases from the Millstone, Connecticut reactor in 1975.

The Three Mile Island (TMI) releases of 1979 and 1980.

Recurrent recent releases from the Pilgrim Massachusetts and Peach Bottom Pennsylvania reactors.

But by far the most revealing evidence comes from our findings, recently published by the American Chemical Society, that fallout from Chernobyl reached the United States early in May of 1986 and accelerated the deaths of some 40,000 Americans.1

Our Chernobyl findings that the deaths of some 40,000 Americans were accelerated in the Summer of 1986 in the wake

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1. We include this article in the Appendix to this Statement along with a Dec. 1986 publication entitled " Nuclear Emissions Take their Toll," in which we first found evidence that after 1975 statistically significant excess mortality could be found in areas downwind of nuclear reactors. A later study offered to Senator Kennedy's Public Health Committee in 1987 indicated that most of the post 1975 excess mortality was associated with TMI, in the years 1979-82, totalling as much as 50,000 excess deaths concentrated in Upper New York State, Pennsylvania and Maryland.

of the arrival of Chernobyl radioactivity on or about May 9 1986, indicate that the excess mortality was concentrated among the very young, the very old, and those suffering from pneumonia and from infectious diseases, especially those related to AIDS--in short those with vulnerable immune systems, in accordance with the Petkau "free radical" discoveries.

That these excess deaths were a result of Chernobyl was further substantiated by unexpected mortality excesses being most pronounced in heavy rainfall regions with above average concentrations of radioactive iodine in the milk. Further support came from the fact that in the very same time period--mid May to mid August 1986--excess mortality in the heavily irradiated southern provinces of West Germany was an order of magnitude higher than in the U.S. although its radiation exposure to Chernobyl fallout was two or three times higher, thus confirming also the expected logarithmic shape of the dose response curve to radiation levels.234

Still further confirmation that ingested radioactive particles from Chernobyl fallout could damage the immune system came from ornithologists, in particular Dr. DeSante,

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2. The dose response curve was logarithmic or "supralinear", which is to say that per unit of radiation the response in terms of mortality rises most steeply at low levels of radiation.

3. Technically speaking, calculations performed on the post-Chernobyl health data show that the dose-response curve at low doses is neither a quadratic, upward curving one, nor a straight line (linear) relationship. It is rather a <u>supra-linear or logarithmic</u> function that rises more rapidly at low doses than at high doses. This logarithmic form of the dose-response curve is consistent with the laboratory results of Petkau and others, on the form of relationship for the <u>indirect, free-radical mediated effect</u> of radiation on cell membranes, particularly the oxygen "free radical" now known to be involved in a wide range of immune deficiency diseases.

4. The logarithmic form of the dose-response also means that there is actually no conflict between our conclusions about the serious effects of very low protracted exposures and the results of studies done on high dose-rate exposures in laboratory animal studies, and observations of A-bomb survivors. It is simply the case that the effect <u>per unit dose</u> is much lower at high intensity and short exposures than at low dose-rate exposures due to the lower efficiency of free radical damage at high intensities, when large number of free radicals tend to negate each other.

who found that in this same period there was a catastrophic reproductive failure among land birds, who fed their young insects contaminated by radioactive rainfall. Such findings gives us reason believe that the free-radical effect of low level radiation affects many if not all forms of life.5

The Chernobyl accident, for all its tragic consequences, offers an opportunity to reassess whether the price we pay for the continued operation of nuclear reactors is too great for society. Let us list separately here some the special characteristics of the Chernobyl accident which makes such a reassessment absolutely imperative:

It involved a much larger population than any earlier studies of exposed populations.

It involved a normal population, not hospital patients, workers of a limited age range of 18-65, or survivors of a traumatic event such as the destruction of Hiroshima and Nagasaki.

It involved extremely low doses of radiation, comparable to those received from distant nuclear detonations, or to the permissible releases from nuclear reactors and plutonium separation facilities. There is, therefore, no need to make any assumptions as to how best to extrapolate theoretically the effects expected at very low doses.

It involved accurately measured amounts of radioactivity in the diet, including milk, over a wide range of concentrations, especially when European data are taken into account. No such accurate measures of dose were available in any earlier studies of environmental radiation exposures or direct radiation exposure at Hiroshima or Nagasaki.

It involved internal radiation exposure as a result of inhalation and ingestion of radioactive nuclei involving alpha and beta emitters--as distinguished from the external radiation exposure from normal background levels, diagnostic or therapeutic X-rays, or gamma exposure in the cases of Hiroshima and Nagasaki.

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5. The probability that the observed mortality excess among humans in the U.S., West Germany and among newly hatched land birds could be simultaneously the product of chance during the time of the Chernobyl fallout is infinitesimal (i.e. of the order of one out of 10^{30}).

The statistics emerging from the Chernobyl disaster permit for the first time ever, the establishment of a dose response relationship at extremely low doses in a normal human population, down to a small fraction of the doses encountered in the normal environment. Our studies show that protracted internal exposures at low doses do not lead to a reduced effect, but rather to an increased effect, as compared to brief but high dose-rate exposures. They show, also, that there is no safe threshold for small exposures comparable to those from normal background radiation sources, and certainly there is no "beneficial" effect as has recently been argued by nuclear proponents.

To the extent that normal background radiation enters the food chain, it is, and always has been, a human health risk. Low-level radioactivity from man-made radionuclei is an additional very new and present danger. It would indeed be foolish to contribute further to the possibility of radioactive ills by siting radioactive waste at the Waste Isolation Pilot Plant facility without first being clear that there are no increased health or environmental risks associated with this action. Yet the WIPP facility's Supplementary Environmental Impact Statement and the Final Environmental Impact Statement (FEIS) does not consider the Petkau Effect, nor does the Department of Energy acknowledge the substantial health effects of protracted low-level internal exposure to radiation. Instead the DOE relies on erroneous extrapolations from external dose data.

We would suggest that the Department of Energy examine much more carefully their assumptions regarding the health effects of low-level radiation exposure before siting any waste at the WIPP facility. We would also suggest that they take a serious look at other governmental data regarding adverse radioactive health effects. We speculate that the Department of Energy knows more than they are telling.

Our Chernobyl findings clearly demonstrate the health risks of protracted low-level radiation internal exposure. Perhaps the most disturbing of our Chernobyl findings is the special vulnerability of persons aged 25-34. Along with the astonishing increase of AIDS-related deaths in May of 1986, this suggests that perhaps the primary insult to human immune systems came in the peak years of atmospheric bomb testing.

Both Linus Pauling and Andrei Sakharov had predicted in 1958 that millions of persons worldwide would be mortally affected by fission products released into the biosphere by the atmospheric bomb tests which began in 1945. According to recent estimates by the time the partial test ban was signed in 1963, the superpowers had released the equivalent of

approximately 40,000 Hiroshima bombs. Sakharov's prediction that this would result in some 12 million deaths worldwide has since been supported by the flattening out of mortality rates in the fifties, after steady improvement since 1900. This flattening out indicates that about 9 million excess deaths occurred in the U.S. alone in the period 1950-1962, along with immune damage sustained by millions of the baby boom generation born in the years of atmospheric fallout.

The potential dangers of low level radiation from ingested fission products have long been known to the Department of Energy and its predecessor, the Atomic Energy Commission (AEC), even before the development of the atomic bomb.6

Dr. John Gofman, one of the participants in the development of the bomb and one time Director of the Biomedical Division of the Livermore Laboratory has made the most impassioned attack on the callousness of his colleagues in 1979, suggesting they have committed the most serious crime:

> There is no way I can justify my failure to help sound an alarm over these activities many years sooner than I did. I feel that at least several hundred scientists trained in the biomedical aspect of atomic energy--myself definitely included--are candidates for Nuremberg-type trials for crimes against humanity for our gross negligence and irresponsibility. Now that we

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6. Richard Rhodes, in his classic The Making of the Atomic Bomb, relates that early in 1943, Enrico Fermi told Oppenheimer that in the event that it was not possible to build a fast-fission bomb "...radioactive fission products bred in a chain-reacting pile might be used to poison the German food supply...Oppenheimer had also discussed Fermi's idea with Edward Teller. The isotope the men identified that 'appears to have the most promise' was strontium, probably strontium-90, which the human body takes up in place of calcium and deposits dangerously and irretrievably in bone."

Rhodes states that Oppenheimer decided to wait before passing this suggestion on, summarizing Fermi's suggestion as follows: "In this connection I think we should not attempt a plan unless we can poison food sufficient to kill half a million men, since there is no doubt that the actual number affected will, because of non-uniform distribution, be much smaller than this" (Richard Rhodes, *The Making of the Atomic Bomb*, Simon and Schuester, New York, 1986, p. 511).

know the hazard of low-dose radiation, the crime is not experimentation--it's murder7.

Furthermore, there seems to be little doubt that the health problems resulting from atmospheric testing were specifically covered up by nuclear policy-makers. For example here is an account of the cover-up published in the Washington Post::

"Officials involved in U.S. bomb tests feared in 1965 that disclosures of a secret study linking leukemia to radioactive fallout from the bombs could jeopardize further testing and result in costly damage claims...That study, as well as a proposal to examine thyroid cancer rates in Utah, touched off a series of top-level meetings within the old Atomic Energy Commission over how to influence or change the two studies. The document also indicates that the Public Health Service, which conducted the studies, joined the AEC in reassuring the public about any possible danger from fallout (Bill Curry in The Washington Post: April 14,1979)."

It now appears clear that the bomb tests not only tested bombs, but they also experimented with human lives. The Department of Energy in the SEIS for WIPP want a Test Phase "...to gather data in order to assess the long-term performance of the repository and demonstrate safe waste management system operations (SEIS, S-2,3)." We suggest that there be no more tests or experiments that threaten the human health and the health of the environment.

We suggest instead that the Department of Energy now use its energy to look very very seriously at the consequences of its own previous nuclear experiments, that it instead develop approaches to waste siting that place health and the environment first and foremost, and that it establish risk assessment models based upon its commitment to these new values, re-siting radioactive waste only when there is absolutely no doubt that all aspects of the siting are proven safe. To transport and site transuranic and mixed waste now at the WIPP facility, a leaking facility, using inappropriate health-risk standards is irresponsible should definitely not take place.

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7. John Gofman, *An Irreverent, Illustrated View of Nuclear Power*, San Francisco, CA: Committee for Nuclear Responsibility. 1979. pp. 227-228.

Appendix

Low-Level Radiation and Mortality.

Nuclear Emissions Take Their Toll.

University of Pittsburgh

RECEIVED
JUN 14 1989 4 55PM
PUBLIC HEALTH DIVISION
DIRECTOR'S OFFICE

June 8, 1989

Hearing Officer
DOE-SEIS Project
P.O. Box 5400
Albuquerque, NM 87115

Sir:

Please enter the attached comment relating to the Special Environmental Inpact Statement for the WIPP site into the public record of the June 15-16 public hearings.

Sincerely yours,

Ernest J. Sternglass

Ernest J. Sternglass, Ph.D.
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Statement of Dr. Ernest J. Sternglass

My name is Dr. Ernest J. Sternglass and I am Professor Emeritus of Radiological Physics at the University of Pittsburgh School of Medicine where I have carried out extensive research in the area of radiological instrumentation and the biological effects of low-level radiation since 1967. I have published two books and a series of scientific papers covering my research works.

The purpose of my testimony is to explain why it would be dangerous to proceed with the proposed plan discussed in the Supplementary Environmental Impact Statement (SEIS) to begin immediate emplacement of radioactive and mixed wastes at the Waste Isolation Pilot Plant (WIPP) facility. Others have commented on the pathways by which transuranic (TRU) waste might be released into the outer environment, exposing humans, and of course all other forms of life, to the waste. I would like to focus my comments on the health effects of such radioactive releases.

The principle reason is that existing EPA radiation standards are grossly inadequate to protect the health of the workers and the public from low-levels of ingested or inhaled radioactive substances of all types, but particularly those man-made isotopes that are produced in the course of the manufacture of nuclear weapons, such as strontium-90, plutonium, and other transuranic elements.

This has become evident only in the last fifteen to twenty years when unexpected large increases in childhood leukemia, cancer, congenital defects, premature births, as well as infant and total mortality of all ages, was found to be associated with the release of nuclear weapons fallout and transuranic waste.

This has come to light only in recent decades as discussed in detail in my book Secret Fallout published by McGraw Hill in 1981, and also summarized in the statement submitted in this WIPP hearing by Dr. Jay Gould.1 In the course of the last 15 years a new discovery was made that allows one to understand why such unexpectedly large effects

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1. See also my attached article "The Implications of Chernobyl for Human Health." International Journal of Biosocial Research. Volume 8(1): 7-36,1986.

of low-dose radiation that enter the body through he drinking water, the air, and the diet occurred at rates thousands of times greater than expected on the basis of all our earlier experience with medical X-rays and the studies of the Hiroshima-Nagasaki survivors.

It now appears that these unexpected health effects were produced by an indirect chemically-mediated action of radiation, whereby ingested fission products promote the formation of "free radicals" that damage the immune system. This mechanism was discovered in 1972 by Abram Petkau.2

Dr. Abram Petkau is a Canadian physician and biophysicist who currently manages the Medical Biophysics Branch of the Whiteshell Nuclear Research Establishment, located in Pinawa, Manitoba. While studying the action of radiation on cell membranes in 1971, Dr. Petkau conducted an experiment never done before. He added a small amount of radioactive sodium-22 to water containing model lipid membranes extracted from fresh beef brain. To his surprise, the membranes burst from exposure to just one "rad" (a measure of the amount of radiation absorbed) over a long period of time. Conversely, Dr. Petkau had previously found that 3,500 rads were required to break the cell membrane when X-rays were applied for a short period of only a few minutes. He concluded that the longer the exposure, the smaller the dose needed to damage cells.

After several more experiments, he discovered the cause of this surprising effect from low-level radiation. The irradiation process was liberating electrons, which were then captured by the dissolved oxygen in the water, forming a toxic negative ion known as a free-radical molecule. The negatively charged free-radical molecule is attracted to the electrically polarized cell membrane. This causes a chemical chain reaction that dissolves the lipid molecules, which are the principal structural components of all membranes in cells. The wounded and leaking cell, if unable to repair the damage, soon dies. If the free radicals are formed near the genetic material of the cell nucleus, the damaged cell may survive, but in mutated form. Subsequent research by Dr. Petkau and other scientists ultimately demonstrated that this process occurs even at background

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2. A. Petkau (1972), "Effect of 22 Na+ on a phospholid membrane," Health Physics, 22:239. See also A. Petkau (1980), "A Radiation carcinogenesis from a membrane perspective," Acta Physiologica Scandinavia, Suppl. 492:81-90.

radiation levels.3 At high levels of radiation, Petkau found less cellular damage from free-radical production per unit of energy absorbed than at low levels of radiation.

Free radicals are so dangerous to living systems because they form in water, and water comprises 80 percent of a cell. Free radicals not only destroy healthy cells, but also affect normal cell function in a way believed to speed the aging process.

Nature has provided some protection from free radicals, probably because they are naturally produced by the oxygen metabolism within the cell. The protector, superoxide dismutase, quenches the chain reaction.4

It is now believed that superoxide dismutase is found in all cells which use oxygen in their life processes. For example, human tissues that contain naturally high levels of superoxide dismutase, such as the brain, liver, thyroid, and pituitary, are more resistant to the effects of radiation than tissues low in superoxide dismutase content, such as the spleen and bone marrow. Apparently this enzyme evolved to protect biological systems from superoxide, or free-radical, damage caused by ultraviolet light, background radiation, and the result of normal energy production in the cell. However, radiation which is produced by fission products and other radioactive isotopes such as the

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3. A. Petkau and W.S. Chelack (1976), "Radioprotective effect of superoxide dismutase on model phospholipid membranes," Biochemica et Biophysica Acta, 433:445-456. See also A. Petkau, W. Kelly, W.S. Chelack, S.D. Pleskach, C. Barefoot, and B.E. Meeker (1975), "Radioprotection of bone marrow stem cells by superoxide dismutase," Biochemical and Biophysical Research Communications, 67, 3:1167-1174, A. Petkau, W.S. Chelack and S.D. Pleskach (1976), "Protection of post-irradiated mice by superoxide dismutase," International Journal of Radiation Biology, 29, 2:297-299, A. Petkau (1978), "Radiation protection by superoxide dismutase," Photochemistry and Photobiology, 28, 765-774, A. Petkau (1986), "Protection and repair of irradiated membranes," in Free Radicals, Aging, and Degenerative Diseases, Alan R. Liss, Inc., pp. 481-508, and A. Petkau (1987), "Role of superoxide dismutase in modification of radiation injury," British Journal of Cancer, 55, Suppl. VIII, 87-95.

4. Irwin Fridovich (1978), "The biology of oxygen radicals: the superoxide radical is an agent of oxygen toxicity; superoxide dismutases provide an important defense," Science, 201, 875-880.

transuranic elements ingested through the food chain, or applied externally, can produce more free radicals than the body can deactivate (or "dismutate"), resulting in gross damage that may be irreparable. Furthermore, Dr. Petkau and others have found that only 10 to 20 millirads will destroy a cell membrane, in the absence of the protective superoxide dismutase.

The free-radical reaction can be quenched in another way. At higher intensities of radiation, the free-radicals become so concentrated that they tend to deactivate each other. If this were not so medical X-rays would cause far greater biological damage than they do. A simple analogy can explain this phenomenon. Think of the free radicals as individuals in a crowded room. A fire starts and everyone tries to get out at the same time. As a result, everyone bumps into each other and very few escape. If only a few people are in the room when the fire occurs, however, everyone leaves easily through the door. Escape is very efficient.

Thus, chronic exposure to low-level radiation produces only a few free radicals at a time that can reach and penetrate the membranes of blood cells with great efficiency, thus damaging the integrity of the entire immune system with very little radiation absorbed. In contrast, short, intense exposures to radiation, as with medical X-rays, form so many free radicals that they bump into each other and become harmless ordinary oxygen molecules. Short exposures thus produce much less membrane damage than the same dose given slowly over a period of days, months, or years. However, existing radiation standards are based on our experience with short, high-dose rate exposures such as from medical X-rays or the direct flash of gamma rays from the atomic bomb detonations.

More recently, Charles Waldren and co-researchers have found that when a single human chromosome is placed in a hybrid cell and irradiated, the ionizing radiation produces mutations much more efficiently at low than at high doses, as is the case of cell membrane damage.5 They found that very low levels of ionizing radiation produce mutations 200 times more efficiently than the conventional method of using high dose-rates, or brief bursts from X-ray machines. They found that the dose-response curve exhibits a downward

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5. Charles Waldren, Laura Correll, Marguerite A. Sognier and Theodore T. Puck (1986), "Measurement of low levels of X-ray mutagenesis in relation to human disease," The Proceedings of the National Academy of Sciences, 83, 4839-4843.

concavity (logarithmic or supra-linear relationship) in mammalian cells, so that the mutational efficiency of x-radiation is maximal at low doses, exactly was found by Petkau for free-radical mediated biological damage. Thus, their findings contradict the conventional scientific dogma that the dose-response curve is linear, and that a straight line can be used to estimate low-dose effects from studies of high doses, which is the basis of our existing radiation risk estimates.

A protracted exposure to ingested beta emitters can be 1,000 times more harmful to cell membranes than a brief external exposure to X-rays, because DNA repairs itself relatively efficiently after an X-ray hit compared to the damage caused by oxygen free-radicals at very low doses.6 This type of exposure may thus account for the jump observed in mortality immediately after every nuclear plant accident, or after fallout from atmospheric bomb tests.

Strontium-90 and many of the transuranic elements are chemically similar to calcium and, therefore, concentrates in the bone of the developing infant, child, and adolescent. Once in the bone, these elements irradiate the marrow where the cells of the immune system originate at a low rate over a period of many years. As first discovered by Stokke and his co-workers at the Oslo Cancer Hospital in 1968, extremely small doses of only 10 to 20 millirads of protracted dose from internal emitters can produce visible damage to the blood forming cells of the bone marrow, probably via the production of free-radical oxygen.7 This can lead to the development of bone cancer, leukemia and other malignant neoplasms both directly by damaging the genes, and indirectly by lowering the ability of the immune system to detect and destroy cancer cells.8

An accumulation of radionuclides from the combination of growing uptake and slow excretion, and the consequent mortality also appear to involve deaths from heart diseases, as well as from cancers and other causes. Free-radical oxygen, produced most efficiently by internal beta emitters such as strontium-90, may be a factor in coronary heart disease. The theory is that the free radicals oxidize the

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6. T. Stokke, P. Oftedal, and A. Pappas (1968), "Effects of small doses of Strontium-90 on the ratbone marrow," Acta Radiologica, 7:321-329.

7. Ibid.

8. Peter A. Cerutti (1985), "Prooxidant states and tumor production," Science, 227, 375-381.

low-density cholesterol and cause it to become more readily deposited in arteries, thus blocking the flow of blood and inducing heart attacks.9

To summarize, Petkau and others have demonstrated that the response per additional dose of radiation is greater at low levels of intensity than at higher levels. The correlations of health effects with exposure to ingested low-level radiation that are discussed in detail by Dr. Gould in his testimony regarding the Waste Isolation Pilot Plant (WIPP) can thus be explained by the indirect action of radiation via free radicals damaging the normal function of the hormonal and immune systems of humans and animals alike. Thus the observed significant excess deaths could be the result of exposures to fission products and other radioactive elements such as plutonium, Strontium-90 and Iodine-131 in food, milk, water and air, according to this biochemical mechanism.

These new finding imply that releases of radioactive materials from a nuclear waste storage site are thousands of times more hazardous biologically than assumed on the basis of all existing standards relating to permissible releases to the environment. All such releases result in long term internal low dose-rate exposures of critical hormone-producing organs and the bone marrow over many weeks, months or years.

These standards are all based on the assumption that it is valid to extrapolate from high doses and short exposures such as received from the atomic bomb detonation at Hiroshima and Nagasaki to the very much lower doses and chronic exposures received from radioactive chemicals released into the food supply, the water and the air. As the SEIS for Waste Isolation Pilot Plant points out, "cancer data from the Japanese survivors of nuclear detonations in World War II are used in most of the analyses in the BEIR III report (SEIS, 5-25)." Using the Hiroshima-Nagasaki data to arrive at health risk assessments, however, ignores the more significant danger of protracted internal radioactive exposure, especially in low doses.

Recent laboratory and epidemiological data cited above show that the dose response curve is not linear down to the low doses of environmental radiation, and that instead it rises much more rapidly for the small doses so that the

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9. See Jane E. Brody (1988), "Natural chemicals now called major cause of disease," The New York Times, April 26, and Jean L. Marx (1987), "Oxygen free radicals linked to many diseases," Science, 235, 529-531.

calculated risks of low-dose exposures has been vastly underestimated.

Thus even a small revision of the existing EPA standards that may be proposed to take account of errors in the doses estimated to have been received by the atomic bomb survivors would not be adequate to protect public health.

Because this crucial manner is currently under review and open for public comment, it will not be resolved by the end of 1989, when the Department of Energy proposes to begin introducing radioactive wastes into the WIPP facility according to the proposed plan. It would therefore be impossible to meet the requirements of such existing environmental protection laws such as the RCRA which mandates that hazardous wastes slated for land disposal be treated in such a manner as to "minimize the present and future threat to health and the environment."

Therefore, even the introduction of only ten percent of the total capacity for radiation waste storage as presently proposed would constitute a dangerous action from the point of view of public health, especially in view of the existing problems of water seepage that could endanger the underground water supply and could contaminate local rivers for thousands of years. This would also be the case for potential transportation accidents. All of which now appear to involve much greater health and socio-economic impacts than had been anticipated when the facility was originally designed.

I therefore urge that no precipitate action be taken at this time to transport any radioactive and mixed wastes to the WIPP site, and that instead steps be taken to provide carefully monitored retrievable above-ground storage for the existing transuranic waste at their present locations until all the existing unresolved questions relating to the impact of low-level radiation on human health and the environment can be resolved as required by law.

University of Pittsburgh

June 8, 1989

Hearing Officer
DOE-SEIS Project
P.O. Box 5400
Albuquerque, NM 87115

Sir:

Please enter the attached comment relating to the Special Environmental Impact Statement for the WIPP site into the public record of the June 15-16 public hearings.

Sincerely yours,

Ernest J. Sternglass, Ph.D.
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2. A. Petkau (1972), "Effect of 22 Na+ on a phospholid membrane," Health Physics, 22:239. See also A. Petkau (1980), "A Radiation carcinogenesis from a membrane perspective," Acta Physiologica Scandinavia, Suppl. 492:81-90.

radiation levels.3 At high levels of radiation, Petkau found less cellular damage from free-radical production per unit of energy absorbed than at low levels of radiation.

Free radicals are so dangerous to living systems because they form in water, and water comprises 80 percent of a cell. Free radicals not only destroy healthy cells, but also affect normal cell function in a way believed to speed the aging process.

Nature has provided some protection from free radicals, probably because they are naturally produced by the oxygen metabolism within the cell. The protector, superoxide dismutase, quenches the chain reaction.4

It is now believed that superoxide dismutase is found in all cells which use oxygen in their life processes. For example, human tissues that contain naturally high levels of superoxide dismutase, such as the brain, liver, thyroid, and pituitary, are more resistant to the effects of radiation than tissues low in superoxide dismutase content, such as the spleen and bone marrow. Apparently this enzyme evolved to protect biological systems from superoxide, or free-radical, damage caused by ultraviolet light, background radiation, and the result of normal energy production in the cell. However, radiation which is produced by fission products and other radioactive isotopes such as the

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3. A. Petkau and W.S. Chelack (1976), "Radioprotective effect of superoxide dismutase on model phospholipid membranes," Biochemica et Biophysica Acta, 433:445-456. See also A. Petkau, W. Kelly, W.S. Chelack, S.D. Pleskach, C. Barefoot, and B.E. Meeker (1975), "Radioprotection of bone marrow stem cells by superoxide dismutase," Biochemical and Biophysical Research Communications, 67, 3:1167-1174, A. Petkau, W.S. Chelack and S.D. Pleskach (1976), "Protection of post-irradiated mice by superoxide dismutase," International Journal of Radiation Biology, 29, 2:297-299, A. Petkau (1978), "Radiation protection by superoxide dismutase," Photochemistry and Photobiology, 28, 765-774, A. Petkau (1986), "Protection and repair of irradiated membranes," in Free Radicals, Aging, and Degenerative Diseases, Alan R. Liss, Inc., pp. 481-508, and A. Petkau (1987), "Role of superoxide dismutase in modification of radiation injury," British Journal of Cancer, 55, Suppl. VIII, 87-95.

4. Irwin Fridovich (1978), "The biology of oxygen radicals: the superoxide radical is an agent of oxygen toxicity; superoxide dismutases provide an important defense," Science, 201, 875-880.

transuranic elements ingested through the food chain, or applied externally, can produce more free radicals than the body can deactivate (or "dismutate"), resulting in gross damage that may be irreparable. Furthermore, Dr. Petkau and others have found that only 10 to 20 millirads will destroy a cell membrane, in the absence of the protective superoxide dismutase.

The free-radical reaction can be quenched in another way. At higher intensities of radiation, the free-radicals become so concentrated that they tend to deactivate each other. If this were not so medical X-rays would cause far greater biological damage than they do. A simple analogy can explain this phenomenon. Think of the free radicals as individuals in a crowded room. A fire starts and everyone tries to get out at the same time. As a result, everyone bumps into each other and very few escape. If only a few people are in the room when the fire occurs, however, everyone leaves easily through the door. Escape is very efficient.

Thus, chronic exposure to low-level radiation produces only a few free radicals at a time that can reach and penetrate the membranes of blood cells with great efficiency, thus damaging the integrity of the entire immune system with very little radiation absorbed. In contrast, short, intense exposures to radiation, as with medical X-rays, form so many free radicals that they bump into each other and become harmless ordinary oxygen molecules. Short exposures thus produce much less membrane damage than the same dose given slowly over a period of days, months, or years. However, existing radiation standards are based on our experience with short, high-dose rate exposures such as from medical X-rays or the direct flash of gamma rays from the atomic bomb detonations.

More recently, Charles Waldren and co-researchers have found that when a single human chromosome is placed in a hybrid cell and irradiated, the ionizing radiation produces mutations much more efficiently at low than at high doses, as is the case of cell membrane damage.5 They found that very low levels of ionizing radiation produce mutations 200 times more efficiently than the conventional method of using high dose-rates, or brief bursts from X-ray machines. They found that the dose-response curve exhibits a downward

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5. Charles Waldren, Laura Correll, Marguerite A. Sognier and Theodore T. Puck (1986), "Measurement of low levels of X-ray mutagenesis in relation to human disease," The Proceedings of the National Academy of Sciences, 83, 4839-4843.

concavity (logarithmic or supra-linear relationship) in mammalian cells, so that the mutational efficiency of x-radiation is maximal at low doses, exactly was found by Petkau for free-radical mediated biological damage. Thus, their findings contradict the conventional scientific dogma that the dose-response curve is linear, and that a straight line can be used to estimate low-dose effects from studies of high doses, which is the basis of our existing radiation risk estimates.

A protracted exposure to ingested beta emitters can be 1,000 times more harmful to cell membranes than a brief external exposure to X-rays, because DNA repairs itself relatively efficiently after an X-ray hit compared to the damage caused by oxygen free-radicals at very low doses.6 This type of exposure may thus account for the jump observed in mortality immediately after every nuclear plant accident, or after fallout from atmospheric bomb tests.

Strontium-90 and many of the transuranic elements are chemically similar to calcium and, therefore, concentrates in the bone of the developing infant, child, and adolescent. Once in the bone, these elements irradiate the marrow where the cells of the immune system originate at a low rate over a period of many years. As first discovered by Stokke and his co-workers at the Oslo Cancer Hospital in 1968, extremely small doses of only 10 to 20 millirads of protracted dose from internal emitters can produce visible damage to the blood forming cells of the bone marrow, probably via the production of free-radical oxygen.7 This can lead to the development of bone cancer, leukemia and other malignant neoplasms both directly by damaging the genes, and indirectly by lowering the ability of the immune system to detect and destroy cancer cells.8

An accumulation of radionuclides from the combination of growing uptake and slow excretion, and the consequent mortality also appear to involve deaths from heart diseases, as well as from cancers and other causes. Free-radical oxygen, produced most efficiently by internal beta emitters such as strontium-90, may be a factor in coronary heart disease. The theory is that the free radicals oxidize the

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6. T. Stokke, P. Oftedal, and A. Pappas (1968), "Effects of small doses of Strontium-90 on the ratbone marrow," Acta Radiologica, 7:321-329.

7. Ibid.

8. Peter A. Cerutti (1985), "Prooxidant states and tumor production," Science, 227, 375-381.

low-density cholesterol and cause it to become more readily deposited in arteries, thus blocking the flow of blood and inducing heart attacks.9

To summarize, Petkau and others have demonstrated that the response per additional dose of radiation is greater at low levels of intensity than at higher levels. The correlations of health effects with exposure to ingested low-level radiation that are discussed in detail by Dr. Gould in his testimony regarding the Waste Isolation Pilot Plant (WIPP) can thus be explained by the indirect action of radiation via free radicals damaging the normal function of the hormonal and immune systems of humans and animals alike. Thus the observed significant excess deaths could be the result of exposures to fission products and other radioactive elements such as plutonium, Strontium-90 and Iodine-131 in food, milk, water and air, according to this biochemical mechanism.

These new finding imply that releases of radioactive materials from a nuclear waste storage site are thousands of times more hazardous biologically than assumed on the basis of all existing standards relating to permissible releases to the environment. All such releases result in long term internal low dose-rate exposures of critical hormone-producing organs and the bone marrow over many weeks, months or years.

These standards are all based on the assumption that it is valid to extrapolate from high doses and short exposures such as received from the atomic bomb detonation at Hiroshima and Nagasaki to the very much lower doses and chronic exposures received from radioactive chemicals released into the food supply, the water and the air. As the SEIS for Waste Isolation Pilot Plant points out, "cancer data from the Japanese survivors of nuclear detonations in World War II are used in most of the analyses in the BEIR III report (SEIS, 5-25)." Using the Hiroshima-Nagasaki data to arrive at health risk assessments, however, ignores the more significant danger of protracted internal radioactive exposure, especially in low doses.

Recent laboratory and epidemiological data cited above show that the dose response curve is not linear down to the low doses of environmental radiation, and that instead it rises much more rapidly for the small doses so that the

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9. See Jane E. Brody (1988), "Natural chemicals now called major cause of disease," The New York Times, April 26, and Jean L. Marx (1987), "Oxygen free radicals linked to many diseases," Science, 235, 529-531.

calculated risks of low-dose exposures has been vastly underestimated.

Thus even a small revision of the existing EPA standards that may be proposed to take account of errors in the doses estimated to have been received by the atomic bomb survivors would not be adequate to protect public health.

Because this crucial manner is currently under review and open for public comment, it will not be resolved by the end of 1989, when the Department of Energy proposes to begin introducing radioactive wastes into the WIPP facility according to the proposed plan. It would therefore be impossible to meet the requirements of such existing environmental protection laws such as the RCRA which mandates that hazardous wastes slated for land disposal be treated in such a manner as to "minimize the present and future threat to health and the environment."

Therefore, even the introduction of only ten percent of the total capacity for radiation waste storage as presently proposed would constitute a dangerous action from the point of view of public health, especially in view of the existing problems of water seepage that could endanger the underground water supply and could contaminate local rivers for thousands of years. This would also be the case for potential transportation accidents. All of which now appear to involve much greater health and socio-economic impacts than had been anticipated when the facility was originally designed.

I therefore urge that no precipitate action be taken at this time to transport any radioactive and mixed wastes to the WIPP site, and that instead steps be taken to provide carefully monitored retrievable above-ground storage for the existing transuranic waste at their present locations until all the existing unresolved questions relating to the impact of low-level radiation on human health and the environment can be resolved as required by law.

712 Calle Grillo
Santa Fe, NM 87501
August 24, 1989

RECEIVED
AUG 28 1989 4:55pm
PUBLIC HEALTH DIVISION
DIRECTOR'S OFFICE

Richard Mitzelfelt, Director
Environmental Improvement Division
1190 St. Francis Drive
Santa Fe, NM 87501

Re: Los Alamos National Laboratory (LANL)
Permit to Burn Radioactive and Hazardous Materials

Dear Mr. Mitzelfelt:

The main question I have with regard to LANL's application to burn radioactive and hazardous materials in the existing incinerator is: If LANL is a world class laboratory, why are they not required to meet world class emission standards on the stack such as those regulations adopted in Sweden? The Swedish emission standards include dioxins, furans, mercury, cadium, etc. The 1971 Clean Air Act standards talk about particulate emissions, whereas the Swedish government standards are nine times stricter than U.S. standards! The U.S. has no dioxin limit at all. Dioxins are one of the most toxic substances known to man. While dioxins may be destroyed in the incineration process, they are reformed while leaving the stack!! We must adopt standards equal to or stronger than the Swedish standards.

Other questions and comments which I have are addressed below:

1. What happened to the ash which was produced by previous years of burning in the incinerator? Can we obtain copies of the previous buring records, emissions reports and HEPA filter reports.

2. What type of program does LANL have for recyclying, waste minimization and source reduction of waste at this time and what plans will be included in the permit process? How will these plans

for alternatives to incineration be monitored? I understand that LANL has not done much work in this area and should be required to do so.

3. I also understand that there has been no stack sample for heavy metals done on this incinerator. Please make sure one is done before any type of approval of this permit is allowed.

4. Ambient measurements for stack samples are conjecture. Monitoring on the stack is imperative.

5. If radioactive waste is deregulated as "below regulatory concern" by the Nuclear Regulatory Commission, how will this affect the incinerator process and the resulting ash?

6. How are radionuclides destroyed by fire?

7. How will the Environmental Improvement Division monitor the incinerator? How can we trust LANL to monitor itself in light of the Department of Energy's (DOE) track record of non-compliance, self-regulation and cloak of "national security"?

8. Is waste from other DOE facilities scheduled to be burned in this incinerator? I understand LANL stores waste from Sandia National Laboratory. Is this waste commingled? Who monitors these shipments?

9. I believe that the hearing process should remain open until 60 days after the release to the public of LANL's Environmental Assessment Report. This document is referred to in the permit application, but has not been released yet!! How can the public accurately comment on this permit application to burn radioactive and hazardous materials? What is the reality of this situation? It does not look or feel good at all. It appears and feels as if there is deception of the public faith.

10. What is the worst case senario on the incinerator and has relative risk been included in the calculations? Has the half-life of plutonium been included in these calculations - 240,000 years?

11. Please make sure the half-life of plutonium - 240,000 years - is included in all calculations related to the incinerator so that future generations are included in this process.

Thank you for your time.

Sincerely,

Joni Arends

Joni Arends

John Hawley 8/23/89

Lab has master of Margaret A Rogers map -
Color separation is complete.

MAR theories on tuff emplacement are disputed by DOE
MAR map appears to be geologically sound

Will send EID copy of response to EPA

1" : 400 ft 1" : 4800 scale

STATE OF NEW MEXICO ENVIRONMENT

Date 8-21-89

To Kelley

Building/Room

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number Time Called

MESSAGE John Hawley Bureau of Mines ~~Geol~~ Geol Society? Steve Slaton EPA asked him to respond on one item of Los Alamos permit app. ~~[illegible]~~ John has been working by Margaret Ann Rodgers on her mapping results

From

Building/Room

ADM 030 Issued 5/78

He wants to talk w/ you about ~~[illegible]~~ over

CK Crossman
8/23/89

called. She has
ers, not LANL.
the masters to LANL
contract to

Department of Energy
Albuquerque Operations
Los Alamos Area Office
Los Alamos, New Mexico 87544

AUG. 1 8 1989

RECEIVED
AUG 2 1 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. Kelly Crossman
Hazardous Waste Program
Environmental Improvement Division
1190 St. Francis Drive
Harold Runnels Building
Santa Fe, NM 87503

Dear Mr. Crossman:

It has recently come to the attention of the Department of Energy (DOE) that several modifications need to be made to the Los Alamos National Laboratory's (the Laboratory) hazardous waste Part A permit application. DOE hereby requests approval from the New Mexico Environmental Improvement Division (EID) for these changes under interim status based on the justifications provided in this transmittal. DOE apologizes for any inconvenience associated with the timing of this request but is committed to ensure the accuracy of all documents submitted.

The requested modifications and their associated justifications are as follows:

1. Technical Area (TA) 54, Area L Fenceline. A new layout of TA-54, Area L is being submitted with the Laboratory's comments on the final draft of the hazardous waste permit. One of the major changes in this drawing is the modification of the fenceline. The fenceline is being moved to separate the office trailers from the storage and treatment areas. This will provide stricter control over personnel access to the waste handling areas. Pursuant to a conversation between K. Balo, of the Laboratory's Health, Safety, and Environment Division and yourself, it was agreed that this change should be reflected in both the permit and the Part A application. A map is enclosed as a replacement page in the current Part A on file.

2. Changes to Page 3, Amounts and Treatment Codes. Reevaluation of the amounts and treatment codes on pages 3a through 3q of the Part A application have resulted in the need for modifications. Most of the treatment code changes have already been reflected in Attachment G of the draft hazardous waste permit. Those that have not will be requested in DOE's comments on the permit as well as in this transmittal. Explanations are provided for all amount changes. The modified pages are enclosed for insertion in the current Part A.

D002, 300,000 to 320,000 pounds (lbs). The amount of corrosive waste currently being generated throughout the Laboratory has increased slightly from 300,000 to 320,000 lbs. This is due to increased production at the TA-46 stable isotope production program.

D003, 7,500 to 35,000 lbs. In the past, all high explosive (HE) waste burned at TA-16 was classified as K044 waste. It included scraps of HE that did not meet the description of sludges from the manufacturing of HE (K044), but rather met the description of reactive waste. Since 1988, this waste has been classified with the appropriate code. As a result, the annual generation rate of reactive waste has increased from 7,500 to 35,000 lbs. and K044 has decreased commensurately.

D044, T01. The addition of this treatment code is already reflected in Attachment G of the draft permit. The Laboratory would like the capability to treat all metal wastes.

D005, S02. The addition of this storage code is already reflected in Attachment G of the draft permit. It was added because of the long treatment and incidental storage time in tanks awaiting analytical results currently needed to treat barium contaminated sand.

D008, T01. The addition of this treatment code has already been made in Attachment G of the draft permit. Erroneously, the Laboratory believed that this waste code was listed on the Part A for treatment and treated some of this waste during the past year. That practice has been discontinued until approval to add this code to the Part A has been received from EID.

D009, 5,000 to 15,000 lbs. During 1988, a large amount of mercury in hazardous material inventories throughout the Laboratory was declared a waste and recycled. The Laboratory expects this to continue for several more years and would like to change the amount generated from 5,000 to 15,000 lbs.

D010, T01, 500 to 7,500 lbs. The addition of this treatment code and a change in generation amount has already been made in Attachment G of the draft permit. It is anticipated that an increase from 500 to 7,500 lbs. will be seen due to a new experiment begun this year. Again, the Laboratory believed that all codes for metal waste were listed for interim status treatment. Treatment had occurred but has been discontinued until approval to add this code to the Part A has been received from EID.

D011, 1,250 to 7,500 lbs. The volume of photo waste has been previously underestimated. It was mistakenly believed that because the silver was being recovered in-line, reporting of generation volumes was unnecessary. The increase from 1,250 to 7,500 lbs. reflects correction of this underestimation.

D012, 500 to 1,000 lbs. The Laboratory has determined that waste generated by the annual collection of unused pesticides for disposal is likely to be in excess of the currently allowable 500 lbs. and closer to 1,000 lbs.

F001, 180,000 to 10,000 lbs. In the past, much of the solvent contaminated waste was classified as F001. The Laboratory has made a concerted effort to better differentiate between F001, F002, F003, and F005 wastes. As a result, the inventories of F001 have decreased from 180,000 to 10,000 lbs. and those of F002, F003, and F005 have risen. The generation rate modifications that follow reflect this change.

F002, 5,000 to 75,000 lbs. Pursuant to the discussion provided under F001, this amount should change from 5,000 to 75,000 lbs.

F003, 5,000 to 150,000 lbs. Pursuant to the discussion provided under F001, this amount should change from 5,000 to 150,000 lbs. However, this waste stream has increased in volume due to more waste meeting the definition of F003. In particular, precipitation collected from the storage structures recently used to store organic waste at TA-54, Area L has been shipped offsite for incineration under this waste code. This volume will decrease when a roof is constructed over the sampling pad and the treatment tank area. (An alternative in HWMR-5, Section 261.3(c)(2)(i) may exempt this from the definition of hazardous waste as "precipitation run-off". However, DOE requests that EID confirm the applicability of this provision.) Also, all the water collected from the two surface impoundments at TA-35 was classified as F003. Due to the large volume of precipitation experienced last summer, 637,589 lbs. of this waste was generated. As this was a one time activity, the above annual rate change only reflects ongoing waste generation.

F005, 5,000 to 15,000 lbs. Pursuant to the discussion provided under F001, this amount should change from 5,000 to 15,000 lbs.

K044, 50,000 to 20,000 lbs. Pursuant to the discussion provided under D003, this amount should change from 50,000 to 20,000 lbs.

P043, T03. Reevaluation of this waste stream with regard to the permit conditions does not indicate a problem with incinerating this material. The Laboratory requests this addition to maximize future use of the incinerator.

P054, T03. This change would make the Part A consistent with Attachment G of the draft permit. (Interim status is not requested.)

P092, T03. Discussion provided under P043.

P113, T01. Discussion provided under P054.

P114, T01. Discussion provided under P054.

P115, T01. Discussion provided under P054.

U005, T03. Discussion provided under P043.

U006, T03. Discussion provided under P043.

U019, 500 to 1,000 lbs. The Laboratory is conducting an intensive program over the next several years to eliminate storage of chemicals no longer needed by the user groups. As a result, the annual generation of this commonly used chemical is expected to increase from 500 to 1,000 lbs.

U080, 500 to 1,000 lbs. Discussion provided under U019.

U092, T03. Discussion provided under P043.

U122, 500 to 1,000 lbs. Discussion provided under U019.

U123, T03. Discussion provided under P043.

U135, T01. Discussion provided under P054.

U138, T03. Discussion provided under P043.

U181, T93 to T03. This was a typographical error that has already been changed in Attachment G of the draft permit.

U188, 500 to 1,000 lbs. Discussion provided under U019.

U211, 500 to 1,000 lbs. Discussion provided under U019.

U234, T03. Discussion provided under P043.

The Laboratory anticipates the need for storage and treatment of the following compounds. It is requesting their inclusion in the Part A at this time with the following amounts and storage and treatment codes:

U248, 500 lbs.*, S01, T03;

U249, 500 lbs.*, S01;

U326, 500 lbs.*, S01, T03;

U353, 500 lbs.*, S01, T03;

U359, 500 lbs.*, S01, T03;

(* All entries with an asterisk are generated in small volumes only.)

DOE requests EID's approval for these changes due to the necessity to comply with State regulations. Please notify Mr. James Phoenix of my staff (667-5288) of your decision as soon as possible so the Laboratory's treatment of hazardous waste can resume.

Sincerely,

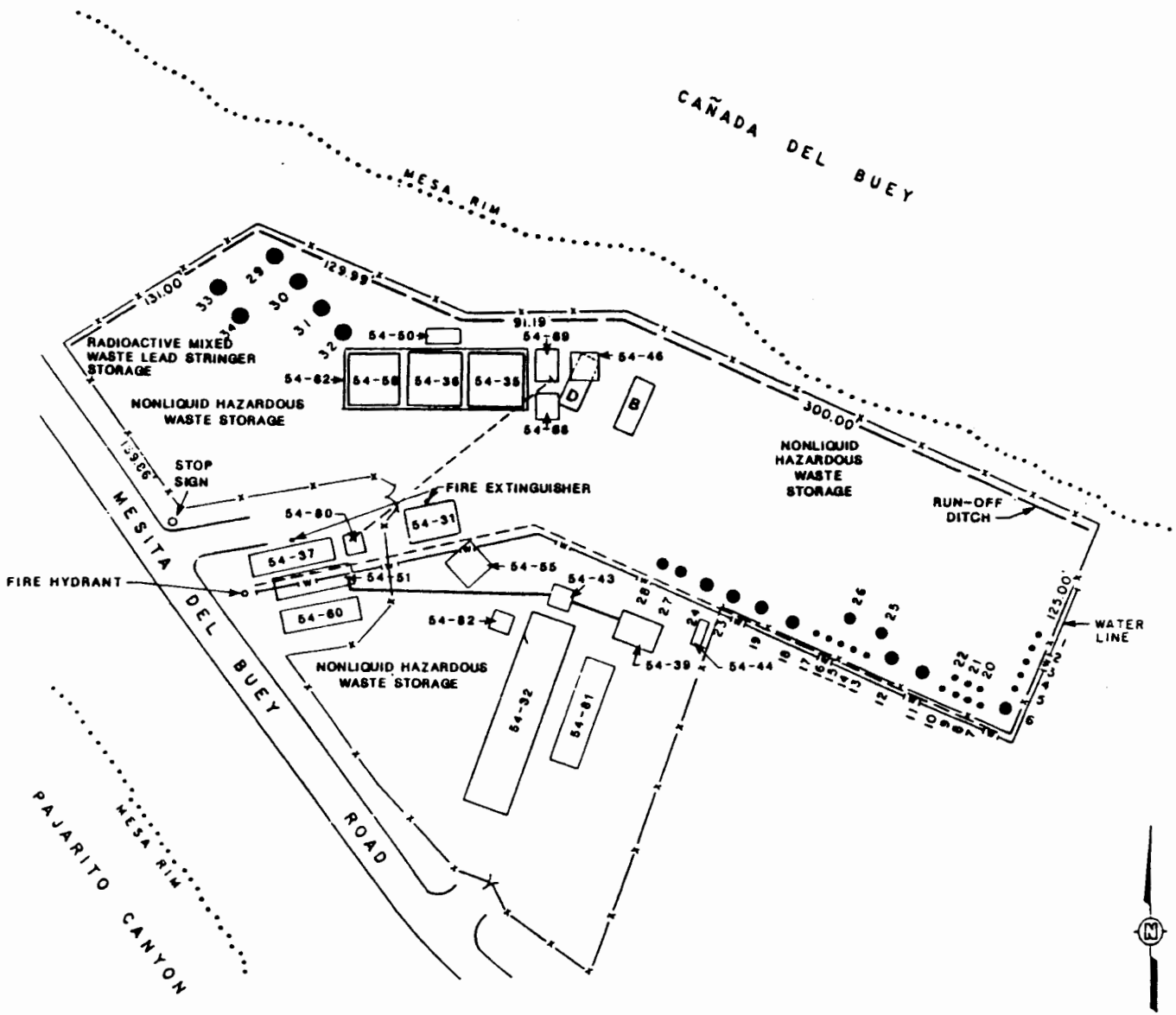
James R. Anderson

James R. Anderson
Acting Area Manager

1JP-367

Enclosures

cc:
J. Puckett, LANL, HSE-DO, MS K491



LEGEND

MATERIAL DISPOSAL UNITS:

54-31 PACKAGING BUILDING
54-32 ROOFED WASTE STORAGE PAD
54-35 TREATMENT PAD
54-36 SAMPLING PAD
54-37 OFFICE TRAILER
54-39 PCB BUILDING
54-43 SEPTIC HOLDING TANK
54-44 PROPANE TANK
54-46 EQUIPMENT STORAGE BUILDING
54-50 EQUIPMENT STORAGE BUILDING
54-51 OFFICE TRAILER
54-55 SAMPLE PREP LAB BUILDING
54-58 TRANSPORT PAD
54-60 OFFICE TRAILER
54-62 CANOPY OVER MD-35,MD-36,MD-58
54-68 MODULAR STORAGE BUILDING
54-69 MODULAR STORAGE BUILDING
54-80 SEPTIC HOLDING TANK
54-81 PCB OIL TANK STORAGE
54-82 DRUM CRUSHER
B SURFACE IMPOUNDMENT
D SURFACE IMPOUNDMENT

● LOCATION OF AREA L INACTIVE SHAFTS

FIGURE 3

TA-54 AREA L
WASTE MANAGEMENT UNITS

PREPARED FOR

LOS ALAMOS
NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

IT ... Creating a Safer Tomorrow

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Do Not Scale This Drawing

DRAWN BY | KCY 10/20/88 | CHECKED BY | APPROVED BY | DRAWING NUMBER 5618 1601 B1

Continued from page 2.
NOTE Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S3CC04

EPA I.D. NUMBER (enter from page 1): NMD989001051 5 1

FOR OFFICIAL USE ONLY: W DUP 1 2 DUP

V DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	D001	100,000	P	S01	T03			
2	D002	320,000	P	S01	T01			
3	D003	35,000	P	S01	T01	T04		Reacted at TA-16 (See III C.)
4	D003	5,000	P	S01		T01		Lithium Hydride only +
5	D004	2,000	P	S01	T01			
6	D005	60,000	P	S01	S02	T01		Sand from cleanout of explosive burn pads.
7	D006	1,000	P	S01	T01			
8	D007	1,500	P	S01	T01			
9	D008	50,000	P	S01	T01			May contain other metals (D004-D011
10	D009	15,000	P	S01	T01			
11	D010	7500	P	S01	T01			
12	D011	7500	P	S01	T01			
13	D012	1000	P	S01	T03			
14	D016	1,000	P	S01	T03			
15		END OF D DESIGNATOR						
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Continued from page 2.
NOTE Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80C04

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M D 8 9 0 0 1 0 5 1 5	W DUP 2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	F001	10,000	P	S01 S02 T03 T04	Solidified if treatment standards are met
2	F002	75,000	P	S01 S02 T03 T04	
3	F003	150,000	P	S01 S02 T03 T04	
4	F004	500#	P	S01 T03	
5	F005	15,000	P	S01 S02 T03 T04	
6	F006	500#	P	S01 T01	
7	F007	12,500	P	S01 T01	
8	F008	1,000	P	S01 T01	
9	F009	6,000	P	S01 T01	
10	F027	700	P	S01 T03	
11	F028	700	P	S01 T03	
12		END OF F DESIGNATOR			
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Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1): W N M 0 8 9 0 0 1 0 5 1 5 — 1

FOR OFFICIAL USE ONLY: W DUP — 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (If a code is not entered in D(1))
1	K044	20,000	P	S01	T04			
2	K047	500*	P	S01	T04			
3	K045	2,000	P	S01	T04			+
4		END. OF DESIGNATOR						
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NOTE. Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY	
NM0890010515 1	W DUP	2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	F029	500*	P	S01	T01			
2	F030	500*	P	S01	T01			
3	F031	500*	P	S01	T04	T03		
4	F033	500*	P	S01	T04	T03		
5	F034	500*	P	S01	T03			
6	F036	500*	P	S01	T03			
7	F037	500*	P	S01	T03			
8	F038	500*	P	S01	T03			
9	F039	500*	P	S01	T03			
10	F040	500*	P	S01	T03			
11	F041	500*	P	S01	T03			
12	F042	500*	P	S01	T03			
13	F043	500*	P	S01	T03			
14	F044	500*	P	S01	T03			
15	F045	500*	P	S01	T03			
16	F046	500*	P	S01	T03			
17	F047	500*	P	S01	T03			
18	F048	500*	P	S01	T03			
19	F049	500*	P	S01	T03			
20	F050	500*	P	S01	T03			
21	F051	500*	P	S01	T03			
22	F054	500*	P	S01	T01	T04	T03	
23	F056	500*	P	S01				
24	F057	500*	P	S01	T03			
25	F058	500*	P	S01				
26	F059	500*	P	S01	T03			

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5 1	W DUP 2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	P060	500#	P	S01	T03			
2	P062	500#	P	S01	T03			
3	P063	500#	P	S01	T03	T04		
4	P064	500#	P	S01	T03	T04		
5	P065	500#	P	S01	T04			
6	P066	500#	P	S01	T03			
7	P067	500#	P	S01	T03			
8	P068	500#	P	S01	T03			
9	P069	500#	P	S01	T03	T04		
10	P070	500#	P	S01	T03			
11	P071	500#	P	S01	T03	T04		
12	P072	500#	P	S01	T03			
13	P073	500#	P	S01	T01	T04		
14	P074	500#	P	S01	T01			
15	P075	500#	P	S01	T03			
16	P076	500#	P	S01	T01	T04		
17	P077	500#	P	S01	T03	T04		
18	P078	500#	P	S01	T01			
19	P081	500#	P	S01	T04			
20	P082	500#	P	S01	T03			
21	P084	500#	P	S01	T03			
22	P085	500#	P	S01	T03			
23	P087	500#	P	S01				
24	P088	500#	P	S01	T03			
25	P089	500#	P	S01	T03			
26	P092	500#	P	S01	T03			

Continued from page 2.
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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY	
NMD980105155	W DUP	2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	F093	500*	P	S01	T03			
2	F094	500*	P	S01	T03			
3	F095	500*	P	S01	T03			
4	F096	500*	P	S01	T03	T04		
5	F097	500*	P	S01	T03			
6	F098	500*	P	S01	T01			
7	F099	500*	P	S01	T01			
8	F101	500*	P	S01	T03			
9	F102	500*	P	S01	T03			
10	F103	500*	P	S01	T03			
11	F104	500*	P	S01	T01			
12	F105	500*	P	S01				
13	F106	500*	P	S01	T01			
14	F107	500*	P	S01	T04			
15	F108	500*	P	S01	T03			
16	F109	500*	P	S01	T03			
17	F110	500*	P	S01	T03			
18	F111	500*	P	S01	T03			
19	F112	500*	P	S01	T03	T04		
20	F113	500*	P	S01	T01			
21	F114	500*	P	S01	T01			
22	F115	500*	P	S01	T01			
23	F116	500*	P	S01	T03			
24	F118	500*	P	S01	T03			
25	F119	500*	P	S01				
26	F120	500*	P	S01				

Continued from page 2.
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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M 0 8 9 0 0 1 0 5 1 5	W DUP DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter codes)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U001	500#	P	S01	T03			
2	U002	1000	P	S01	T03			
3	U003	500#	P	S01	T03			
4	U004	500#	P	S01	T03			
5	U005	500#	P	S01	T03			
6	U006	500#	P	S01	T04	T03		
7	U007	500#	P	S01	T03			
8	U008	500#	P	S01	T03	T04		
9	U009	500#	P	S01	T03			
10	U010	500#	P	S01	T03			
11	U011	500#	P	S01	T03			
12	U012	500#	P	S01	T03			
13	U014	500#	P	S01	T03			
14	U015	500#	P	S01	T03			
15	U016	500#	P	S01	T03			
16	U017	500#	P	S01	T03			
17	U018	500#	P	S01	T03			
18	U019	1000	P	S01	T03			
19	U020	500#	P	S01	T03	T04		
20	U021	500#	P	S01	T03			
21	U022	500#	P	S01	T03			
22	U023	500#	P	S01	T03	T04		
23	U024	500#	P	S01	T03			
24	U025	500#	P	S01	T03			
25	U026	500#	P	S01	T03			
26	U027	500#	P	S01	T03			

Continued from page 2.
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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W N M D 8 9 0 0 1 0 5 1 5 1	W DUP 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U056	500#	P	S01 T03	
2	U057	500#	P	S01 T03	
3	U058	500#	P	S01 T03	
4	U059	500#	P	S01 T03	
5	U060	500#	P	S01 T03	
6	U061	500#	P	S01 T03	
7	U062	500#	P	S01 T03	
8	U063	500#	P	S01 T03	
9	U064	500#	P	S01 T03	
10	U066	500#	P	S01 T03	
11	U067	500#	P	S01 T03	
12	U068	500#	P	S01 T03	
13	U069	500#	P	S01 T03	
14	U070	500#	P	S01 T03	
15	U071	500#	P	S01 T03	
16	U072	500#	P	S01 T03	
17	U073	500#	P	S01 T03	
18	U074	500#	P	S01 T03	
19	U075	500#	P	S01	
20	U076	500#	P	S01 T03	
21	U077	500#	P	S01 T03	
22	U078	500#	P	S01 T03	
23	U079	500#	P	S01 T03	
24	U080	1000	P	S01 T03	
25	U081	500#	P	S01 T03	
26	U082	500#	P	S01 T03	

Continued from page 2.
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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
N M 0 8 9 0 0 1 0 5 1 5 1	W DUP 2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D.1)
1	U083	500#	P	S01	T03			
2	U084	500#	P	S01	T03			
3	U085	500#	P	S01	T03			
4	U086	500#	P	S01	T03			
5	U087	500#	P	S01	T03			
6	U088	500#	P	S01	T03			
7	U089	500#	P	S01	T03			
8	U090	500#	P	S01	T03			
9	U091	500#	P	S01	T03			
10	U092	500#	P	S01	T04	T03		
11	U093	500#	P	S01	T03			
12	U094	500#	P	S01	T03			
13	U095	500#	P	S01	T03			
14	U096	500#	P	S01	T03			
15	U097	500#	P	S01	T03			
16	U098	500#	P	S01	T03			
17	U099	500#	P	S01	T03			
18	U101	500#	P	S01	T03			
19	U102	500#	P	S01	T03			
20	U103	500#	P	S01	T03			
21	U105	500#	P	S01	T03			
22	U106	500#	P	S01	T03			
23	U107	500#	P	S01	T03			
24	U108	500#	P	S01	T03			
25	U109	500#	P	S01	T03			
26	U110	500#	P	S01	T03			

Continued from page 2.
NOTE: If necessary, use this page, before completing it, if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY	
W N M 0 8 9 0 0 1 0 5 1 5	W DUP	2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U 1 1 1	500#	P	S 0 1	T 0 3			
2	U 1 1 2	500#	P	S 0 1	T 0 3	T 0 4		
3	U 1 1 3	500#	P	S 0 1	T 0 3	T 0 4		
4	U 1 1 4	500#	P	S 0 1	T 0 3			
5	U 1 1 5	500#	P	S 0 1	T 0 3	T 0 4		
6	U 1 1 6	500#	P	S 0 1	T 0 3			
7	U 1 1 7	500#	P	S 0 1	T 0 3	T 0 4		
8	U 1 1 8	500#	P	S 0 1	T 0 3	T 0 4		
9	U 1 1 9	500#	P	S 0 1	T 0 3			
10	U 1 2 0	500#	P	S 0 1	T 0 3			
11	U 1 2 1	500#	P	S 0 1				
12	U 1 2 2	1000	P	S 0 1	T 0 3			
13	U 1 2 3	500#	P	S 0 1	T 0 3			
14	U 1 2 4	500#	P	S 0 1	T 0 3			
15	U 1 2 5	500#	P	S 0 1	T 0 3			
16	U 1 2 6	500#	P	S 0 1	T 0 3			
17	U 1 2 7	500#	P	S 0 1	T 0 3			
18	U 1 2 8	500#	P	S 0 1	T 0 3			
19	U 1 2 9	500#	P	S 0 1	T 0 3			
20	U 1 3 0	500#	P	S 0 1	T 0 3			
21	U 1 3 1	500#	P	S 0 1	T 0 3			
22	U 1 3 2	500#	P	S 0 1	T 0 3			
23	U 1 3 3	500#	P	S 0 1	T 0 3	T 0 4		
24	U 1 3 4	10,000	P	S 0 1	T 0 1			
25	U 1 3 5	500#	P	S 0 1	T 0 4	T 0 3	T 0 1	
26	U 1 3 6	500#	P	S 0 1	T 0 3			

Continued from page 2.
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EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY	
W N M 0 8 9 0 0 1 0 5 1 5 1	W DUP 2	DUP

V. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U163	500*	P	S01 T03	
2	U164	500*	P	S01 T03	
3	U165	500*	P	S01 T03	
4	U166	500*	P	S01 T03	
5	U167	500*	P	S01 T03	
6	U168	500*	P	S01 T03	
7	U169	500*	P	S01 T03	
8	U170	500*	P	S01 T03	
9	U171	500*	P	S01 T03	
10	U172	500*	P	S01 T03	
11	U173	500*	P	S01 T03	
12	U174	500*	P	S01 T03	
13	U176	500*	P	S01 T03	
14	U177	500*	P	S01 T03	
15	U178	500*	P	S01 T03	
16	U179	500*	P	S01 T03	
17	U180	500*	P	S01 T03	
18	U181	500*	P	S01 T03	
19	U182	500*	P	S01 T03	
20	U183	500*	P	S01 T03	
21	U184	500*	P	S01 T03	
22	U185	500*	P	S01 T03	
23	U186	500*	P	S01 T03	
24	U187	500*	P	S01 T03	
25	U188	1000	P	S01 T03	
26	U189	500*	P	S01 T04 T03	

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

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EPA I.D. NUMBER (enter from page 1): W N M 0 8 9 0 0 1 0 5 1 5 | 1

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IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U190	500#	P	S01	T03			
2	U191	500#	P	S01	T03			
3	U192	500#	P	S01	T03			
4	U193	500#	P	S01	T03			
5	U194	500#	P	S01	T03			
6	U196	500#	P	S01	T03			
7	U197	500#	P	S01	T03			
8	U200	500#	P	S01	T03			
9	U201	500#	P	S01	T03			
10	U202	500#	P	S01	T03			
11	U203	500#	P	S01	T03			
12	U204	500#	P	S01				
13	U205	500#	P	S01	T04			
14	U206	500#	P	S01	T03			
15	U207	500#	P	S01	T03			
16	U208	500#	P	S01	T03			
17	U209	500#	P	S01	T03			
18	U210	500#	P	S01	T03			
19	U211	1000	P	S01	T03			
20	U212	500#	P	S01	T03			
21	U213	500#	P	S01	T03	T04		
22	U214	500#	P	S01	T03			
23	U215	500#	P	S01				
24	U216	500#	P	S01				
25	U217	500#	P	S01	T04			
26	U218	500#	P	S01	T03			

EPA Form 3510-3 (6-80)

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Continued from page 2.
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EPA I.D. NUMBER (enter from page 1): W N M 0 8 9 0 0 1 0 5 1 5

FOR OFFICIAL USE ONLY: W DUP 2 DUP

IV DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D.1.)
1	U219	500*	P	S01	T03			
2	U220	1000	P	S01	T03			
3	U221	500*	P	S01	T03			
4	U222	500*	P	S01	T03			
5	U223	1000	P	S01	T03			
6	U225	500*	P	S01				
7	U226	1500	P	S01	T03			
8	U227	500*	P	S01	T03			
9	U228	2000	P	S01	T03			
10	U230	500*	P	S01	T03			
11	U231	500*	P	S01	T03			
12	U232	500*	P	S01	T03			
13	U233	500*	P	S01	T03			
14	U234	500*	P	S01	T04	T03		
15	U235	500*	P	S01	T03			
16	U236	500*	P	S01	T03			
17	U237	500*	P	S01	T03			
18	U238	500*	P	S01	T03			
19	U239	1000	P	S01	T03			
20	U240	500*	P	S01	T03			
21	U242	500*	P	S01	T03			
22	U243	500*	P	S01	T03			
23	U244	500*	P	S01	T03			
24	U246	500*	P	S01				
25	U247	500*	P	S01	T03			
26	U248	500*	P	S01	T03			

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EPA I.D. NUMBER (enter from page 1): W N M 0 8 9 0 0 1 0 5 1 5 1

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IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
1	U249	500*	P	S01	
2	U326	500*	P	S01T03	
3	U353	500*	P	S01T03	+
4	U359	500*	P	S01T03	
5					
6					
7					
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New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

August 22, 1989

Mr. James R. Anderson
Acting Area Manager
DOE Area Office
Los Alamos, NM 87544

RE: NM0890010515

Dear Mr. Anderson:

Thank you for your response of August 18, 1989 to our information request of July 25, 1989. We note that your letter does not address question number 6 in our request and does not contain the certification requested in our final paragraph. Please respond to question 6 and provide a certification of accuracy as requested by August 31, 1989.

We note that an Environmental Statement was provided for the TA 50-37 CAI (April 1973, EIS-NM-73-0795-F). This may be the document leading to confusion on existence of an "EIS" as noted in our hearing. Please provide a copy of this document by September 5, 1989.

Please respond directly to my attention on these items. If you have any questions, please call Mr. C. Kelley Crossman on my staff at 827-2923.

Sincerely,

Boyd Hamilton

Boyd Hamilton
Program Manager
Hazardous Waste Program

BH:CKC:aw

cc: Lynn Prince, EPA-Region VI (6H-HS)

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

1989 LANL mod

8/25/89

Department of Energy
Albuquerque Operations
Los Alamos Area Office
Los Alamos, New Mexico 87544

RECEIVED
AUG 21 1989

AUG. 18 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Boyd Hamilton
Program Manager
Hazardous Waste Program
Environmental Improvement Division
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, New Mexico 87504

Dear Mr. Hamilton:

The following is provided to you by the Department of Energy (DOE) pursuant to your letter dated July 25, 1989, requesting information on incinerators at Los Alamos National Laboratory (LANL). There are currently three units that are capable of burning various materials at LANL: the Technical Area (TA) 16 industrial waste incinerator; the TA-50 Controlled Air Incinerator (CAI), and the TA-55 thermal reduction processing unit.

The TA-16 industrial waste incinerator is located on the north side of the TA-16 burning ground. The unit was manufactured by the Spronz Incinerator Corporation of Rochester, New York and will be used for potentially high explosive contaminated materials that are administratively controlled by LANL. The waste stream consists of Incinerator Institute of America Type Zero trash (primarily cardboard boxes, papers, rags, etc.). Existing documentation for this incinerator includes LANL's Resource Conservation and Recovery Act (RCRA) Part B Permit Application (Rev. 4.1), and EID's draft RCRA Operating Permit, both of which are available to the public.

The TA-50 CAI is located at TA-50, Building 37, on the north side of Pajarito Road. The unit was built by Environmental Control Products, Inc. (now known as Joy Energy Systems) and is sold as Model 500-T. Materials to be incinerated will be primarily solids and liquids although the unit is capable of handling gases as well. Classes of materials include transuranic waste (TRU) solids, low-level radioactively contaminated solids, RCRA hazardous and mixed hazardous wastes, and polychlorinated biphenyls (PCB) contaminated materials. Current RCRA documentation includes: RCRA Part B Permit Application for LANL (Rev 4.1); draft RCRA Operating Permit, and the "RCRA Trial Burn Final Report for the Controlled Air Incinerator" (March 1987, 2 vol.). All are available for review by the public. Other documentation includes: (1) a Toxic Substances Control Act (TSCA) Permit for incineration of PCBs; (2) an environmental statement - "Transuranium Solid Waste Development Facility", Los Alamos Scientific Laboratory, NM (April 1973, EIS-NM-73-0795-F); (3) a draft environmental assessment for transuranic waste inventory work-off, which will not be available for public review until approved by the DOE, and (4) an Action Description Memorandum in preparation that addresses anticipated schedule changes.

The TA-55 "Plutonium Recovery Incinerator" resides at the TA-55 Plutonium Processing Facility, Building PF-4, Room 420. This unit was emplaced in the facility when TA-55 was built, approximately 10 years ago.

Its primary function is part of an in-line process to recovery plutonium from rags. Plutonium is initially separated from various compounds through a dissolution process using acids. The gloveboxes in which this recovery process takes place are then wiped clean with cheesecloth rags. This is done in an effort to reduce personnel exposure as well as to reclaim as much plutonium as possible. The rags are then ashed in the unit, and plutonium is extracted from the ash. Off-gas emissions are collected in a scrubber system from which plutonium is also reclaimed, and three stages of filtration by high efficiency particulate air (HEPA) filters. Each stage has a control efficiency of at least 99.95%.

The cheesecloth rags have only infrequently been exposed to solvents; however, the rags would typically be dry before ashing. Wood from HEPA filter cashings and other burnable items such as contaminated paper from the recovery process have also been burned in the past to reclaim plutonium.

This unit was placed on inactive status in June pending determination of the process as it potentially relates to New Mexico House Bill 59. It should be noted, howerver, that this presents a significant safety hazard. The commingling of nitric acid typically used in the separation process and glovebox cleaning process with cheesecloth generates cellulose nitrate. This compound is pyrophoric in nature and can most safely be destroyed through ashing of the rags. Efforts are currently underway to determine the applicability of other substitution processes for the extraction of plutonium from "nitrated" cheesecloth rags as well as the use of other effective compositions for the rags themselves. "Nitrated" rags are now stored submersed in water until some solution can be reached.

Currently, this unit is being evaluated for inclusion in LANL's RCRA Part A permit application for mixed waste. It is anticipated that the process for recovery of plutonium from the above-described materials may be altered in the near future.

Should you require additional information regarding these units, please call Mr. James Phoenix of my staff (667-5288).

Sincerely,

James R. Anderson

James R. Anderson
Acting Area Manager

cc:
A. J. Tiedman, ADO, LANL, MS A120
J. Puckett (HSE-DO AI #154), LANL, MS K491
S. Brown, LANL, MS A187

XC EPA 6H-HS
8/21/89

Journal North welcomes letters from its readers. The letters must be original, should be brief and concern current topics in [illegible] name, [illegible] and city [illegible] dense. [illegible] 328

Incineration Risks Environmental Disaster

By Silvi Solomon

Incineration is a powerful tool for [illegible] radioactive [illegible] Marshal Laboratory [illegible] plan to fire up two [illegible] to burn chemical [illegible] radioactive [illegible] pay the price [illegible] and birth defects [illegible]

Plutonium is [illegible] ingredient [illegible] be changed [illegible] going faster [illegible] wind, causing [illegible] you and [illegible]

Wherever it [illegible] send out alpha [illegible] years because [illegible] takes for plutonium [illegible] lose its explosive [illegible] it can't enter the body [illegible] skin, it's easy enough [illegible] us through the air we [illegible] the food we eat and drink. Once inside, an alpha particle acts like a [illegible] small amounts [illegible] electrons from their orbits in stable atoms, super-charging them. These [illegible]

[illegible] incinerators are designed to also burn radioactive materials. Meanwhile, C. Kelly Crossman, who supervises the paperwork, announced public hearings on the lab's permit for July 18. The radioactive materials already [illegible] chemicals will not [illegible] at the July 18 hearing [illegible] chemical [illegible] discussed.

[illegible] the distinct possibility that the [illegible] process is being [illegible] so as to minimize public input. This is [illegible] the people of Northern New Mexico well as to the [illegible] process. Anyone who [illegible] about protecting his [illegible] safety would do well to call Crossman at 827-2929 or write him at the Pajarito Building, 1480 St. Francis Drive, 87503, asking him to postpone public hearings until they can allow free and open discussion to occur.

Let's be it happen, we deserve what we get!

Solomon is a Santa Fe environmental lobbyist, black belt in Aikido and mother of two children.

Inside Story

The Next Environmental Battleground

It's an incinerator for radioactive wastes at Los Alamos.

by Robin Easthouse

For eight years, from 1979 to 1987, radioactive waste was incinerated at Los Alamos National Laboratory with little public knowledge and little state monitoring.

Now the lab wants to start the burning again. This time it is facing public opposition, and at least some state regulation.

The $3.6 million incinerator is scheduled to fire up its ovens in six months and burn what it did before: plutonium-contaminated boots, gloves and the like, as well as material tainted with toxic chemicals.

The lab scientists interviewed this week say the incinerator poses no hazard to public health—that the amount of radioactivity released into the atmosphere, and carried on the winds to Santa Fe, is minimal. But many citizens, particularly those in Santa Fe, are unconvinced.

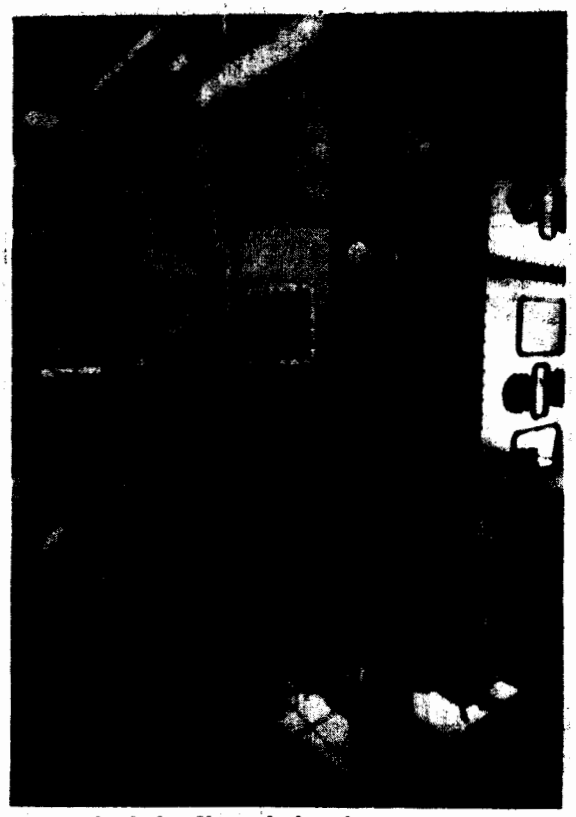
As one person, who asked not to be identified, said: "This is much more serious than WIPP. If there's an accident, how do we clean the air?"

Even without an accidental release, some people think there is a danger because traces of plutonium may routinely escape from the incinerator's smokestacks. Plutonium remains radioactive for 240,000 years and is lethal even in very small doses when inhaled. Some also fear effects from the burning of non-radioactive hazardous chemicals.

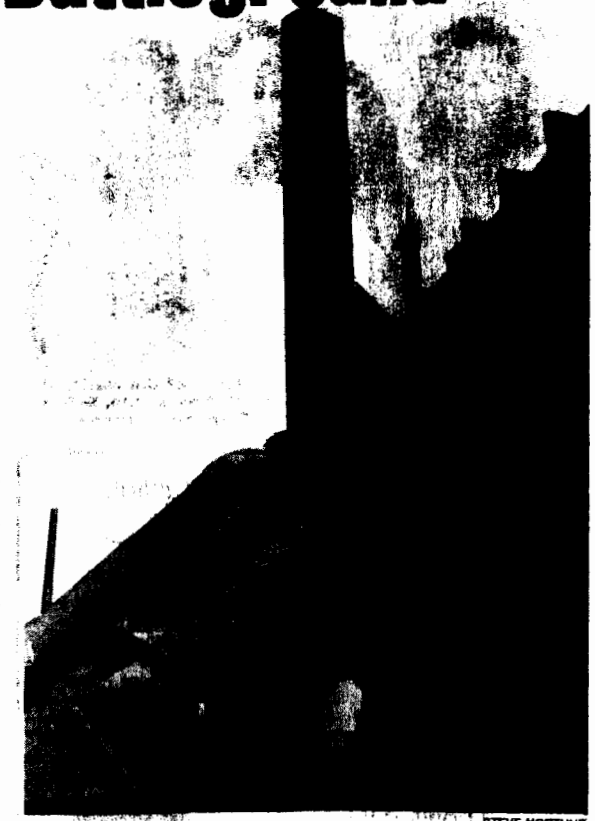
"We just don't think incineration is the right way to deal with plutonium or toxics," Elizabeth Billups, of Concerned Citizens for Nuclear Safety, said.

CCNS and others feel frustrated because the state, the only entity capable of stopping the reopening of the incinerator, or at least delaying it, is so far also [illegible] little inclination to do either.

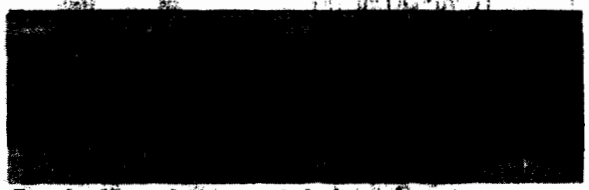
"Unless something [illegible] out of the woodwork, I don't see any valid public health reason that this



Worker checks Los Alamos incinerator.



The smokestack. STEVE NORTHUP



Barrels of hazardous waste to be burned.

vironmental Improvement Division's hazardous waste bureau, said.

State permission was not an issue when the incinerator was operating before. That is because state regulatory laws on hazardous waste incinerators had not yet been developed. Back then, the lab was essentially regulating the incinerator itself. The state merely reviewed the lab's own reports.

According to lab scientists, the incinerator, known as a controlled into the environment in such small amounts that it is harmless. The incinerator was voluntarily shut down by the lab two years ago to replace worn-out parts.

"The amount of radioactivity that the incinerator releases in a year is well below the amount of radioactivity a single person receives from a chest X-ray," Ken Hargis, of the lab's waste management division, said. Hargis said that "99.999 percent" of the radioactive particles end up in the filter system. The incinerator ash is among the materials that are supposed to be buried at the Waste Isolation Pilot Plant at Carlsbad if and when it opens.

No Data on Health Risks

According to the Environmental Protection Agency, there are 14 mixed-waste i[illegible]erators in operation around t[illegible]try. No health studies have [illegible] done regarding any effects of these incinerators on the surrounding populations, an cinerator is very small, capable of burning only 100 to 125 pounds of solid waste per hour. In contrast, commercial hazardous waste incinerators burn tons of toxic material per hour.

"We're not going to be up here burning huge amounts of radioactive material," Hargis said. "It won't even be burning all the time. There'll be stretches when it will

Continued on Page 11

Robert [illegible] n. His

Incinerator

Continued from Page 9

be quiet and not be incinerating anything at all."

Despite such assurances, about 50 letters have poured into the offices of the state Environmental Improvement Division since it was announced last month that EID would hold a public hearing on the incinerator July 18 at the Harold Runnels Building on St. Francis Drive.

Such a response may be a testament to the heightened awareness of radioactive waste in the wake of the WIPP controversy. In the past, few expressed concern about the incinerator, or were even aware of its existence.

But the letters clearly represent something else: dissatisfaction with the way EID plans to run the hearing.

State Lacks Controls

The purpose of the hearing, according to Crossman of EID, is to get public input on whether the state should give the lab a permit to burn toxic chemicals. It is not, Crossman said, about whether the lab should have a permit to burn radioactive materials, because the state does not yet have the authority to grant such a permit.

"I can tell you now that the hearing officer won't allow discussion of radioactive incineration," Crossman warned. "That's not what this hearing is about."

Crossman said radioactive incineration would be discussed at a later hearing, probably sometime next year. That is when the state expects to receive authority from the Environmental Protection Agency to give permit approval for incinerators that burn both radioactive and chemical waste. New Mexico is only one of six states that currently do not have such power.

"Our application [for such authority] is in, but the EPA just hasn't acted on it yet," Crossman said.

Because participants in the hearing will not be allowed to talk about their main concern—radioactive incineration—some have called for the hearing to be delayed.

"We shouldn't even be having hearings on this [the incinerator] until all the state regulations are in place," Billups, of CCNS, said. "This is absurd."

Billups also argued that giving the incinerator a state permit would violate the spirit of a moratorium on hazardous waste incinerators passed by the Legislature. The moratorium doesn't apply to the Los Alamos incinerator because the law exempts incinerators that have already been built.

When asked for an alternative to incinerating radioactive waste, Billups cited "super compaction." She said it is cheaper, safer and accomplishes the same goal as incineration: reduction of volume.

Any alternative would be preferable, according to people like Michael Kaye. Kaye owns six acres of land 20 miles due east, and downwind, of the lab.

"This is horrible," Kaye said. "I came out here from L.A. to get away from the smog, and now I find out about this. It's like trouble in paradise."

His wife, Carrie Kaye, added: "It makes me sick. I don't want to be an alarmist, but my reaction is that we have to sell our land quick and get out."

TESTIMONY PRESENTED TO U.S. EPA BY ROBERT VOCKE, PH.D.
REPRESENTING LOS ALAMOS NATIONAL LABORATORY
DURING PUBLIC REVIEW OF THE LABORATORY'S RCRA PERMIT

(AUGUST 7, 1989)

ENVIRONMENTAL RESTORATION PROGRAM
LOS ALAMOS NATIONAL LABORATORY

The Laboratory will meet requirements of the RCRA permit. -- Los Alamos National Laboratory and the Department of Energy (DOE) are committed to continuing to work with the State of New Mexico Environmental Improvement Division (NMEID) and the U.S. Environmental Protection Agency (EPA) to meet Laboratory requirements under the Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA).

The Laboratory and the DOE initiated HSWA-related activities in 1984. -- In the field of environmental protection, past practices can cause present concerns. Los Alamos National Laboratory was evaluated under Phase 1 of the DOE Comprehensive Environmental Assessment and Response Program (CEARP), which was initiated in 1984. A major CEARP objective was to determine whether waste disposal practices followed in the past -- before recognition of environmental hazards and passage of extensive environmental legislation -- resulted in environmental concerns that require remedial action today.

The CEARP Phase 1 report documented DOE and Laboratory preliminary assessment and site inspection activities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or "Superfund" and preliminary activities under RCRA. The CEARP Phase 1 report is a public document and was [illegible] to NMEID and EPA during October 1987.

Potential [illegible] sites, which are [illegible] sites identified during [illegible] have received [illegible]

Identification [illegible] Next [illegible] CEARP Phase 2 [illegible] CEARP [illegible] analysis) to fulfill the Laboratory [illegible] obligations [illegible] Prior to initiation of CEARP [illegible] potential [illegible] according to (1) contamination levels [illegible] exposure [illegible] public, (2) potential [illegible] investigation [illegible] potential [illegible] health risk under current conditions and none is proposed for the Superfund Priorities List.

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

As CEARP Phase 2 was being implemented, CEARP was replaced by the DOE-wide Environmental Restoration (ER) Program in 1988. Although the two programs differ somewhat in scope, the intent to fulfill the Laboratory's and DOE's obligations under CERCLA and RCRA for assessment and remediation of potential hazardous waste sites has not changed. The Laboratory and DOE have continued to investigate potential release sites to fulfill obligations under RCRA and CERCLA.

The NMEID and EPA plan to act on the RCRA operating permit for the Laboratory during November 1989. The RCRA permit will require the Laboratory to follow procedural requirements set forth in the HSWA portion of the permit for assessing and remediating potential release sites, which meet the definition of solid waste management units (SWMUs). The EPA has currently identified approximately 600 potential SWMUs requiring further corrective action investigation based on EPA site inspections and review of documents prepared by the Laboratory.

The 600 SWMUs identified by EPA are a subset of the approximately 1100 SWMUs identified by the Laboratory. -- The Laboratory submitted to EPA and NMEID Laboratory's listing of SWMUs in a December 1988 SWMU Report. Just because a unit is identified as a SWMU does not indicate that corrective action is required. Many SWMUs are operated in conformance with regulations without corrective action. Additionally, SWMUs in many cases do not contain hazardous wastes and are not subject to corrective action requirements (e.g., recycling units, container storage areas, and solid waste landfills). Potential SWMUs requiring corrective action investigation range from septic tanks to managed material disposal areas. Additionally, it is anticipated that many of the sites will be delisted by the regulating agency during the investigation process because they do not exist or are not of environmental concern. Given the uncertainty of potential site remediation requirements, projected costs for completing remedial activities currently varies from approximately 0.5 to 2 billion dollars.

The HSWA corrective action process involves regulatory approval and public review and comment. -- Most of the SWMUs identified by EPA in the HSWA part of the permit are already included in the DOE ER Program. Therefore, the Laboratory and DOE plan to modify procedural requirements within the ongoing ER Program to achieve obligations under the RCRA operating permit when it is issued. This includes continued approval and oversight by the regulating agency and public review and comment, as appropriate, during RCRA facility investigation activities (site characterization activities), corrective measures studies (selection of the most appropriate remedial alternative), and corrective measures implementation (remedial action). The Laboratory and DOE will also comply with requirements of the National Environmental Policy Act.

The complex process of assessment and remediation of all sites may require another 20 to 30 years. -- Continued environmental surveillance at the Laboratory will ensure that none of the potential release sites pose an unacceptable public health risk during this process. Results of the environmental surveillance program are made available to the public by issuing an annual surveillance report.

Final Decision on Los Alamos Incinerator Due in July

JOURNAL NORTH / FRIDAY / JUNE 16, 1989

By Ben Neary

JOURNAL STAFF WRITER

New Mexico's Environmental Improvement Division will decide next month whether to give final approval to a Los Alamos National Laboratory incinerator that already has interim state and federal permission to burn radioactive and hazardous waste.

C. Kelley Crossman, supervisor of the EID's hazardous waste bureau, said this week the incinerator has passed controlled burn tests. "There is no doubt in my mind that this incinerator, as it's designed and operated, meets all the standards as they exist," he said.

The state Legislature passed a law this year prohibiting disposal of solid waste by incineration until the state adopts discharge emission limits. However, the law exempts the Los Alamos incinerator and others submitted to the EID before the start of the year.

The U.S. Department of Energy built the incinerator early this decade to conduct experiments on the efficiency of incineration of mixed radioactive and hazardous waste. For the last two years, the incinerator has sat ilde.

"It was a test vehicle that they started adding to," Crossman said. "To make use of a tool that was sitting there idle, they started adding some things." He said the incinerator was originally designed to burn for short periods but that it is being upgraded to operate for long stretches.

The incinerator can burn about 100 pounds of waste an hour, Crossman said. He said the resulting ash must be buried elsewhere at a proper hazardous waste plant.

The July 18 hearing at the Harold Runnels Building auditorium will begin at 9 a.m. The EID will only consider [illegible] ous waste [illegible] ator, while the [illegible] nental Protection [illegible] decide after that [illegible] federal standards concerning radioactivity.

Harold Valencia, area manager for the DOE in Los Alamos, said on Wednesday that his office is in the process of selecting a scientist from the lab to answer questions about the incinerator. Someone else from the DOE will attend the hearing to answer questions about the administrative process, he said.

Valencia said he [illegible] incinerator is safe and will get [illegible] approval. "When we request for an incinerator, we have the wherewithal to meet all the standards set up by the EPA [illegible]" he said.

[illegible] applied for [illegible] a new [illegible] mixed [illegible] and hazardous waste. Bruce Nicholson of state EID wrote to the federal agency this month stating his agency won't consider the application until the new state regulations are in place.

[redacted]

LANL Permitting (red) file 1989

Folder #1: Correspondence prior to public comment period for LANL permit (pre May 10, 1989) plus correspondence after May 10 to December 31 that does not pertain to the LANL permit

Folder #2-5: Correspondence relating to the LANL permit; includes correspondence establishing the public comment period for the draft permit, correspondence received during the public comment period from May 10 to August 24, 1989 (everything between the two purple sheets of paper), correspondence regarding the LANL permit from August 25 to December 31, 1989.

All of this file ['89 (3)] was copied for the LANL permit-appeal administrative record.

AE Gordon
01/09/90

THIS FILEFOLDER IS FULL

SEE THE SUBSEQUENT FILEFOLDER

FILE NAME LANL

YEAR 1989

FILE NUMBER Red - 3

[illegible]

RECEIVED
AUG 18 1989

P.O. Box 2262
Taos, New Mexico 87571-2262
16 August, 1989

Bill Gallagher, Chief
ALONM Permits Section
U.S. EPA
1445 Ross Ave.
Dallas, TX. 75202-2733

SUMMARY COMMENTS
LANL TA-50 AREA CONTROLLED AIR TRU WASTES
INCINERATOR
EPA I.D. #0890010515

This will summarize my comments to date on the LANL TA-50 area controlled air Tru Wastes incinerator. Also enclosed are two technical exhibits and a letter from U.C. Berkeley for inclusion in the formal hearing record:

PARTICULATE EMISSIONS

From the DRE test burn, the LANL particulate emissions, corrected to 7% O_2 were: 0.0110, 0.0066, 0.0103, 0.0137, 0.0114, and 0.0153 gr/dscf.

These exceed the State of California sub-micron PM_2 particulates limit of 0.008 gr/dscf @ 12 % CO_2 dry gas for MWCs. However, please note carefully that Sweden uses the sames emissions limits for MWCs as for hazardous waste incinerators.

The LANL particulate emissions also exceed emissions limits on current world wide BACT and LAER for hazardous waste incinerators. At Bayer, Leverkusen, FRG, particulate emissions are 10-15 mg/m^3 or 0.004-0.006 gr/dscf. Please see as evidence enclosed letter dated June 21, 1989 from Dr. Richard Denison, Environmental Defense Fund to Bob Holloway, OSW, U.S. EPA, Washington, D.C.

8/17/89 correction

Please note also the new German developmental limit for particulates of 100mg/m^3 ~~or 0.004 gr/dscf~~.

Thanks to Shiva Garg, Dwight Hlustick and Sonja Stellmack at U.S. EPA, OSW, Wash., D.C. for providing this evidence.

MAINTENANCE REQUIREMENTS

Operating permit should include the CH_2M Hill recommended maintenance inspection procedures and schedule, or the U.S. EPA recommended inspections in their March 1989, U.S. EPA Emissions Guidances for HCl and

100% Recycled Paper

LANL TA-50 Controlled Air
TRU Wastes Incinerator (cont.)

Many thanks to Shiva Garg at U.S. EPA, OSW, Wash., D.C. tel: (202) 382-7924 and to Dwight Hlustick at U.S. EPA, OSW for providing the SAKAB paper. I have also hand delivered it to DOE at Los Alamos for Ralph Koenig, Waste Management section, LANL.

Please note carefully the interesting hazardous waste controlled landfill construction detail in the SAKAB paper.

CLEAN AIR. A NEW MEXICO HERITAGE! LET'S PRESERVE IT!*

* motto of NM EID Air Quality Bureau

Yours sincerely,

Michael Horan
Bicycle Mechanic
Taos, NM

tel: (505) 758-3522

Encls: (1) exhibit letter of Environmental Defense Fund to U.S. EPA
(2) exhibit paper on the Swedish SAKAB hazardous wastes incinerator
(3) exhibit, letter from U.C. Berkeley, Office of Laboratory Affairs re the EA.

cc: Bill Gallagher, U.S. EPA, Dallas

Ralph Koenig, P.O. 1663, LANL, E518, Los Alamos 87545

AUG 18 1989

P.O. Box 2262
Taos, New Mexico 87571-2262
16 August, 1989

Bill Gallagher, Chief
ALONM Permits Section
U.S. EPA
1445 Ross Ave.
Dallas, TX. 75202-2733

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INCINERATOR
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100% Recycled Paper

My argument is to go with a straight LAER & BACT technology based stack gas emissions limit and let the vendor companies fight it out in the marketplace as to who has the cleanest equipment.

I mean NO_x automobile emissions are limited at the exhaust pipe, right? So why can't you limit heavy metals and radionuclides at the stack on the TA-50 TRU waste incinerator?

I sincerely can't imagine the EPA Heavy Metals and HCl guidance feed material calculations ever being done anywhere except perhaps in an EPA workshop.

The EPA sampling protocols are child's play by comparison, so why not assign the stack gas limit and the corresponding sampling protocol and be done with it?

Sincerely,

Michael Horan

Michael Horan
tel: 758-3522
Taos

Encls: complete copies
U.S. EPA Guidances on Heavy Metals, HC and PIC

8/1/89

to: Bob Kirkpartick
Bill Blankenship
NM EID Air Quality Bureau

C. Kelly Crossman
NM EID Hazardous Waste Bureau

from: Michael Horan
Taos tel: 758-3522

Gentlemen:

Enclosed, please find complete copies of the new U.S. EPA Guidances on Emissions for Heavy Metals, Hydrogen Chloride and for PIC (Products of Incomplete Combustion).

My comment is that I think the Heavy Metals and HCl guidance is bewildering in its complexity and will never be put into practical application anywhere. Also, it provides too many loopholes by allowing calculation of emissions from the feed material.

I much prefer a technology based BACT and LAER derived stack gas volume concentration emissions limit such as Shiva Garg has done with the PIC emissions limit.

Surprisingly, there have been -0- BACT determinations by U.S. EPA for hazardous waste incinerators. I also understand that EPA Region6 has never ordered a stack gas simple for heavy metals on any incinerator in their region.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 27 1989

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: Use of Omnibus Authority to Control Emissions of Metals, HCl, and PICs from Hazardous Waste Incinerators

FROM: Sylvia K. Lowrance, Director
Office of Solid Waste

TO: Hazardous Waste Division Directors, Regions I-X

Questions have recurred regarding the implementation under omnibus authority of the forthcoming proposed amendments to the hazardous waste incinerator standards, and the relationship between implementing the controls and meeting the November 8, 1989, permitting deadline. This memorandum provides OSW's policy on these issues.

We are concerned that the existing standards for hazardous waste incinerators under 40 CFR 264.340 may not be fully protective for all facilities with respect to emissions of toxic metals, hydrogen chloride (HCl) and products of incomplete combustion (PICs). We have developed proposed amendments to the standards to better address the hazards posed by these emissions. The proposed rules have completed the internal Agency review process and are under review by the Office of Management and Budget. We anticipate that the proposed rules will be published for public comment in the spring of 1989.

In the interim, until the rules are promulgated, EPA permit writers should use the authority provided under Section 3005(c)(3) of the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), to apply additional permit conditions as necessary to adequately control these emissions. This provision, often called the "omnibus" authority, gives permit writers the authority to apply additional permit conditions as necessary to adequately protect human health and the environment. Thus, EPA permit writers have the authority and the responsibility to consider, on a case-by-case basis during the permit process, whether controls based on the current regulations are fully protective, and, if not, to establish additional permit conditions as necessary to protect human health and the environment.

The use of the omnibus authority is clearly within the initial intent of Congress in including the omnibus provision in the statute, as evidenced by the legislative history at S. Rep No. 284, 98th Cong., 1st Sess. 31 (1983), which states:

> "[the omnibus authority] can also be used to incorporate new or better technologies or other new requirements in permits, where EPA intends to add such technologies or requirements to the regulations but has not yet issued a final regulatory amendment."

Guidance Documents

To assist permit writers, we have developed two guidance documents: Guidance on Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators, December 29, 1988 (Draft final report); and Guidance on PIC Controls for Hazardous Waste Incinerators, December 30, 1988 (Draft final report). These guidance documents recommend a step-by-step approach to develop permit conditions consistent with the regulatory requirements the Agency plans to propose. We recommend that permit writers use the guidance documents to develop appropriate permit conditions. However, in using the guidance documents or other information to establish permit conditions under the omnibus authority, the permit writer must provide the applicant and other interested parties due process. The permit writer must explain and document what the concern is, and thoroughly discuss why the additional permit conditions are needed to ensure protection of the public health and the environment. Through the permit process, he must provide the time and opportunity for comment, he must fully respond to those comments, and he must include the responses in the administrative record of the permit. In short, the permit writer must provide a sound technical basis for inclusion of the permit conditions under the omnibus authority.

Permit writers need not wait to use OSW's guidance documents until the documents have been issued in final form. Like the proposed rules, the guidance documents have completed the internal Agency review process. We anticipate that the documents will be published in the spring of 1989, and made available through the National Technical Information Service. Permit writers should use the guidance notwithstanding its draft status because, as indicated above, the permit writer must justify thoroughly and, in writing, any requirements applied under the omnibus authority.

The permit writer cannot simply refer to the guidance document to support the conditions included in the permit. Moreover, we anticipate that the guidance may change over time as permit writers and applicants gain experience dealing with the issues and as additional information becomes available (e.g., health effects data; improvements in dispersion models). We plan to revise the documents as needed after publication and to provide notice in the Federal Register of the availability of subsequent editions.

By considering the need for additional controls under the omnibus authority on a case-by-case basis, permit writers can avoid petitions from interested parties asserting that the permit is not adequately protective. The Administrator has already ruled in favor of a petition for review of a RCRA incineration permit that argued, in part, that adequate controls on metals and PIC emissions were not provided in the permit. The Administrator subsequently directed the Region to consider adding permit conditions addressing PICs and metals.

State Permit Writers

We encourage State permit writers to implement the guidance if the State has an omnibus authority in its statute. EPA permit writers should review the draft State permit to determine if it adequately protects human health and the environment, particularly with respect to emissions of metals, hydrogen chloride, and PICs. If the State permit does not provide adequate controls, the EPA permit writer should provide these controls in the HSWA portion of the permit, given that the omnibus authority is a HSWA provision. HSWA provisions must be implemented by EPA in authorized States until the State obtains authorization for HSWA provisions as well. To date, only one State, Georgia, has been authorized under HSWA.

Impact on Permitting Deadline

We do not believe that considering the need for additional controls for metals, HCl, and PIC emissions during the permit process will cause the Regions or States to miss the November 8, 1989, permitting deadline established by HSWA. We developed the guidance documents to enable the permit writer to apply appropriate controls on a site-specific basis and to explain to interested parties the need for those controls. In addition, we have conducted four training workshops for Regional and State permit writers on how to use the guidance documents. Finally, Headquarters staff in the Combustion Section, WMD, and the Alternate Technology and Support Section, PSPD, are available to assist permit writers as necessary. Limited contractor funds are also available to handle special problems that may arise.

Some permits, however, may have already progressed to a stage where issuance of the permit would be substantially delayed if a trial burn was required to demonstrate conformance with the metals and PIC controls recommended by the guidance documents. Examples are when the trial burn has already been conducted or where the trial burn plan has been approved. In these cases, the guidance documents recommend that permit writers establish conservative, but reasonable, interim controls until the owner or operator conducts a trial burn to demonstrate that the interim requirements (or less stringent requirements) will not result in an exceedance of the limits recommended by the guidance documents. Methods for determining these interim limits are presented in the guidance documents. In applying these interim controls, however, the permit writer must still thoroughly explain in writing the basis for imposing such conditions and provide interested parties due process through the RCRA permit procedures.

Nonetheless, if a State believes that it may not be able to meet the November 8, 1989, permitting deadline because of the policy on implementing controls on metals, HCl, and PIC emissions, the State should discuss the situation with the Regional Office. If site-specific guidance is needed, the Regional Office may discuss the situation further with Joseph Carra, Director, Permits and State Programs Division.

cc: State Hazardous Waste Division Directors
Incinerator Permit Writers' Workgroup
Jeffery H. Denit
David Bussard
Robert Tonetti
Joseph Carra
Steven Silverman
James Berlow
Bob Holloway

Environmental Protection Agency
Solid Waste
Washington, DC 20460
March 1989

EPA

Guidance on Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators

Volume IV of the Hazardous Waste Incineration Guidance Series

DRAFT

D-1 D-3

Aug. 21, 1989

Hello:

This is submitted for the public record of testimony in re the RCRA hazardous waste incinerator permit under consideration by Mr. C. Kelley Crossman and Mr. Richard Mitzelfelt of the NM EID.

Submitted by:

Frank W. Walker
P.O. Box 19
Ojo Sarco, NM 87550
(505-689-2322)

[Cf. next page.]

RECEIVED
AUG 22 1989
PUBLIC HEALTH DIVISION
DIRECTOR'S OFFICE

GARBAGE MANAGEMENT IN JAPAN:

LEADING THE WAY

by

ALLEN HERSHKOWITZ, PH.D.

and

EUGENE SALERNI, PH.D.

PREFACE BY MAURICE HINCHEY

Hello. Could you please add this information to the public input of testimony on the proposed RCRA permit for the incinerator (which would burn purely chemical, hazardous waste) at Los Alamos, on which topic EID hearings were held for three days approximately 4 1/2 weeks ago. ¶ Personally, I'd like there not to be an incinerator. If the permit must be granted (and I am not saying I believe it should be granted), then please at least consider additional monitoring options, above and beyond the O_2 and CO_2 levels. Please reread the telling cross-examination by David Bates. * I feel strongly you need more information. Thanks! and God bless. Sincerely, Frank Walker.

My address: P.O. Box 19 Ojo Sarco, NM 87550

* July 18 pp. 89-115

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About the Author

Regional Regulations

A 1974 amendment to the Basic Law for Environmental Pollution Control required that sulfur oxide emissions from municipal solid waste incinerators be established on the basis of "area regulation." The same system was applied in 1981 to emissions of nitrogen oxides. There are 24 regulated regions in Japan for SO_x and three area regulated regions for NO_x.

An "area" is a jurisdiction comprising territory from within a prefecture, and sometimes from more than one prefecture, established by the Japan Environmental Agency for the specific regulatory purpose of controlling SO_x and NO_x. Applicable regions, according to the Environmental Agency are "those [areas] where plants and businesses are clustered and it is recognized that the ambient air quality standards will not be attained by application of existing regulations alone." Area regulation requires prefectural governors, after considering health effects and technological feasibility, to establish SO_x and NO_x regulations for each of their municipal solid waste incinerators by establishing an area SO_x and NO_x limit in consultation with other governors or mayors in the area.

Area regulation was established because in some political jurisdictions the emissions standards were not sufficient to ensure air quality standards set by the national government. For facilities within an area, allowable SO_x and NO_x emissions are computed by assessing total emission sources as well as the area's meteorological and topographic features.

because "the politics are more intense." And according to JICA:

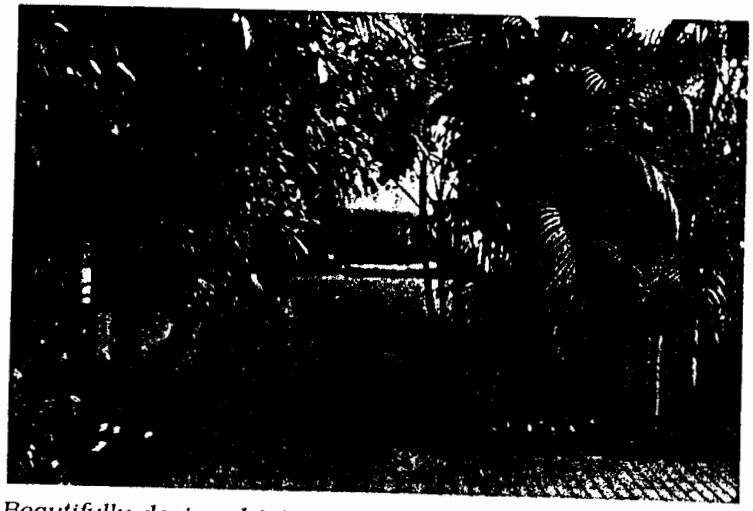
> Except in the case of sulfur oxides, the prefectural government is authorized to establish more stringent emission standards instead of the national emission standards ... [when] national ... standards are recognized to be insufficient in the specific area.

Although the national regulations for municipal solid waste incinerators include only HCl, particulates, SO_x, NO_x, and wastewater (see Table 29, page 97), the latitude that prefectures enjoy in making more stringent regulations has resulted in some incinerators being regulated for heavy metals as well. According to Mr. Kato, of the Ministry of Health and Welfare, "prefectural governments have their own, more strict regulations and so in some places more pollutants are controlled, for example, metals

Maybe we can take a hint from these people who have much more experience with this problem.

Photo: Kawasaki Industries

Citizens' concerns about permit violations are now alleviated by continuous outdoor public displays of emissions data recorded by garbage burning plants, such as the data shown on this billboard outside Kawaski's plant in Kyoto.



Beautifully designed interiors of garbage-burning plants encourage citizens to accept these facilities.

TABLE 25 Continuous Monitoring of Pollutants and Combustion at Plants Visited by INFORM

Machida City	Temperature (calculated by 5 sensors in each furnace); O_2; NO_x; SO_x; HCl; stack opacity; ESP pressure; color TV screens continuously display inside of furnace and stack exit
Kumamoto City/ Western Plant	Temperature; O_2; NO_x*; SO_x*; HCl**; color TV continuously display inside of furnace and stack exit; automatic combustion control***
Sohka City	Temperature (2 areas of furnace); O_2; NO_x; SO_x; HCl**; Ph monitor for scrubber; color TV screens continuously display inside of furnace and stack exit; automatic combustion control***
Fukuoka City/ Eastern Plant	Temperature (3 areas of furnace); CO_2;NO_x; SO_x; HCl; color TV screens continuously display inside of furnace and stack exit
Mitaka City	Temperature (2 areas of furnace); CO_2; O_2; NO_x; SO_x; HCl**, color TV screens continuously display inside of furnace and stack exit
Ohmiya City	Temperature (2 areas of furnace); O_2; NO_x; SO_x; HCl; color TV screens continuously display inside of furnace and stack exit
Fuji City	Temperature (2 areas of furnace); O_2; NO_x; SO_x; HCl; color TV screens continuously display inside of furnace and stack exit
Yokohama Hokubu	Temperature, O_2; HCl; SO_x; NO_x; color TV screens continuously display inside of furnace and stack exit.

* Continuously displayed outside of control room because plant management states that these emissions are too low to be significant, usually being emitted at levels that are well below regulatory requirements.

** Monitor indicated "non-detectable" emissions of HCl at time of visit.

*** ACC is employed to maintain a constant steam temperature and pressure despite the temperature fluctuations that inevitably occur when burning a heterogenous fuel such as garbage. It does so by adjusting the garbage feed rate based on data provided by a "finishing-line sensor." Through the use of "burn out" weight measurements the "finishing-line sensor" calculates the average caloric value of the garbage being burned and then adjusts the garbage feed rate.

The Japanese routinely monitor all these emissions. Why can't we?

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

ENVIRONMENTAL IMPROVEMENT DIVISION
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Richard Mitzelfelt
Director

GARREY CARRUTHERS
GOVERNOR
CARLA L. MUTH
DEPUTY SECRETARY
MICHAEL J. BURKHART
DEPUTY SECRETARY

MEMORANDUM

August 17, 1989

TO: EID staff involved with the LANL incinerator

FROM: Susan Martin SM

RE: Congressional debate and vote in the DOD authorization bill

Enclosed is a copy of the Congressional debate and vote on Congressman Richardson's amendment to the Dept. of Defense authorization bill. The amendment concerns the incinerator at Los Alamos National Laboratory and states that:

> The Los Alamos National Laboratory is prohibited from incinerating radioactive waste until the State of New Mexico adopts regulations on the incineration of radioactive waste.

Please call me at X2843 if you have questions.

Armed Services Committee recognize these facts and have wisely provided funds for continued development of both programs. The short-term political gains from terminating either of these programs do not even come close to offsetting the long-term national security losses. I urge my colleagues to join me in supporting the committee's position and opposing these amendments.

The CHAIRMAN pro tempore (Mr. DURBIN). It is now in order to consider amendments printed in part two of the House report.

LEGISLATIVE PROGRAM

Mr. ASPIN. Mr. Chairman, I ask unanimous consent to strike the last word.

The CHAIRMAN pro tempore. Without objection, the gentleman from Wisconsin [Mr. ASPIN] will be recognized for 5 minutes.

There was no objection.

Mr. ASPIN. Mr. Chairman, I would just like to take a moment to announce the order in which we are going to proceed now for the rest of this evening.

We have finished our votes for tonight, and according to the agreement laid out by the majority leader before we began the debate on the ICBM's, what we have now is a series of seven smaller class two amendments, category two amendments. There will be two of them. We will start out with two amendments by the gentleman from New Mexico [Mr. RICHARDSON].

The third is an amendment of the gentleman from Texas [Mr. LEATH].

The fourth is an amendment by the gentlewoman from Maryland [Mrs. BYRON].

The fifth is an amendment of the gentleman from Texas [Mr. BUSTAMANTE].

The sixth is an amendment by the gentleman from Rhode Island [Mr. MACHTLEY], and the seventh is an amendment by the gentleman from Louisiana [Mr. MCCRERY].

If all those are offered, there would be 5 minutes allowed on each side for debate and a vote. Any votes on these, according to the agreement of the majority leader, would be rolled over until tomorrow.

I would anticipate that some of these will not be offered. Others will be settled by a voice vote and will not have a vote. We may have two or three votes tomorrow.

AMENDMENT OFFERED BY MR. RICHARDSON

Mr. RICHARDSON. Mr. Chairman, I offer an amendment.

The CHAIRMAN. The Clerk will designate the amendment.

The text of the amendment is as follows:

Amendment offered by Mr. RICHARDSON: Page 350, after line 3, add the following new section:

SEC. 3137. LOS ALAMOS NATIONAL LABORATORY SECURITY CONTRACT.

The Secretary of Energy shall prohibit the contractor operating the Los Alamos National Laboratory from entering into any security services subcontract that lasts for a period in excess of 1 year.

The CHAIRMAN pro tempore. Pursuant to the rule, the gentleman from New Mexico [Mr. RICHARDSON] will be recognized for 5 minutes, and a Member in opposition will be recognized for 5 minutes.

The Chair recognizes the gentleman from New Mexico [Mr. RICHARDSON].

(Mr. RICHARDSON asked and was given permission to revise and extend his remarks.)

Mr. RICHARDSON. Mr. Chairman, this amendment would prohibit a protective services contract from being signed by the Los Alamos National Laboratory for a period to exceed 1 year.

Earlier this year there was an extended strike against Mason and Hanger, a subcontractor responsible for providing security for the Los Alamos National Laboratory—one of the most critical facilities in the entire nuclear weapons complex. As a result of the strike, numerous questions have been raised about the adequacy of safeguards and security at the Los Alamos facility as well as other nuclear weapons facilities.

The Energy and Commerce Committee is currently reviewing security operations in the nuclear weapons complex. A hearing before the Oversight and Investigations Subcommittee is scheduled for Thursday of this week. In addition, the General Accounting Office is conducting a review of the security programs for the nuclear facilities. The findings of the study are not expected until later this year.

Mason and Hanger's contract for security services expires in September of this year. I believe any new multi-year contract should reflect the findings of both the Energy and Commerce Committee and the General Accounting Office.

Accordingly, Mr. Chairman, and in consultation with the Director of the Los Alamos Laboratories, the lab has promised to review the issue of competitive bidding as they look toward the next contract that this subcontractor is going to be pursuing.

My concern is very simple. I want the best security at Los Alamos Laboratories, and because of the strike that took place, the fact that there was a force that was not properly trained in the interim, I think security at the labs was compromised, and I regret it.

I will be withdrawing this amendment simply because the Director of the laboratories has assured me, Mr. Sid Hecker, that he is going to have an open mind in terms of how he proceeds with the contract of Mason and Hanger.

Mr. Chairman, after consultation with both the majority and the minority, I ask unanimous consent to withdraw the amendment.

The CHAIRMAN pro tempore. Is there objection to the request of the gentleman from New Mexico [Mr. RICHARDSON]?

Mr. KYL. Reserving the right to object, Mr. Chairman, I just want to compliment the gentleman on trying to get into an issue that deserves some attention and to look after the interests of his constituents in this matter and the State of New Mexico, the Los Alamos laboratories, the issues that he raised, and I think it is appropriate for him to raise them, and also for him to withdraw the amendment.

Mr. RICHARDSON. Mr. Chairman, I thank the gentleman.

Mr. KYL. Mr. Chairman, I withdraw my reservation of objection.

The CHAIRMAN pro tempore. Is there objection to the request of the gentleman from New Mexico [Mr. RICHARDSON] to withdraw his amendment?

There was no objection.

The CHAIRMAN pro tempore. The amendment is withdrawn.

AMENDMENT OFFERED BY MR. RICHARDSON

Mr. RICHARDSON. Mr. Chairman, I offer an amendment.

The CHAIRMAN. The Clerk will designate the amendment.

The text of the amendment is as follows:

Amendment offered by Mr. RICHARDSON: Page 350, after line 3, add the following new section:

SEC. 3137. MORATORIUM ON LOS ALAMOS NATIONAL LABORATORY RADIOACTIVE WASTE INCINERATOR.

The Los Alamos National Laboratory is prohibited from incinerating radioactive waste until the State of New Mexico adopts regulations on the incineration of radioactive waste.

The CHAIRMAN pro tempore. Under the rule, the gentleman from New Mexico [Mr. RICHARDSON] will be recognized for 5 minutes, and a Member in opposition will be recognized for 5 minutes.

The Chair recognizes the gentleman from New Mexico [Mr. RICHARDSON].

Mr. RICHARDSON. Mr. Chairman, this amendment is very important to me and my congressional district. It is an amendment that is also supported by the State of New Mexico, and I will be attaching for the RECORD a statement of the Environmental Improvment Division of the State of New Mexico in support of my amendment.

This is what the amendment does: This amendment simply does the following: It prohibits the Los Alamos National Laboratories from incinerating radioactive wastes until the State of New Mexico adopts regulations on the incineration of radioactive wastes.

The original Los Alamos Laboratories plan was to build an incinerator for research purposes only in the 1970's. This incinerator was constructed to handle two types of wastes, chemical wastes and mixed wastes.

The incinerator has been closed for the last 2 years for remodeling to bring it up to full-scale capabilities. Prior to this temporary shutdown, the incinerator was operating for 9 years under interim RCRA regulations.

The State legislature is also in support of this amendment. They passed H.B. 59, which puts a moratorium on incinerators until the State EID, the Environmental Improvement Division, implements regulations on incinerators.

What I am simply doing is this, and I have discussed this with the Los Alamos Laboratory. I would like to proceed with a moratorium of approximately 1 year in which the Los Alamos Laboratory proceeds with plans for this incinerator, and does not burn some of this waste until the State of New Mexico has their regulations. The State of New Mexico has a legislative session in January and February of next year. My amendment simply puts a moratorium that says the following, that until all safety regulations are applied, Federal and State, the burning of this radioactive waste will not take place.

On the side of my constituents in the Santa Fe area, the Los Alamos area, I have had numerous calls. There have been numerous public sessions in which my constituents have appealed to me and said:

We do not necessarily want to stop this incinerator. We want it to proceed simply according to State law. We want to wait and make sure that radioactive wastes are stored properly, and we want to make sure that it is absolutely safe.

All I am saying is let us wait until the State of New Mexico adopts regulations. Again, the State of New Mexico supports this amendment. This is an important amendment for my constituents. It simply says the following: There will be no burning, no burning of radioactive wastes at the Los Alamos Laboratory until the State of New Mexico, and the State's EID division, Environmental Improvement Division, recognizant of the problem, adopts some regulations. They currently do not have regulations that deal with this issue. This will be an incentive for them to proceed.

To further clarify what the amendment does:

First, prohibits the Los Alamos National Laboratory from incinerating radioactive waste, including any waste containing radioactive constituents, until the earlier of the following occurs: first, a period of 1 year elapses after the date of the enactment of this act; and second, the State of New Mexico adopts regulations on emissions resulting from the incineration of radioactive waste.

This alternative to our original amendment improved in the following ways:

First it establishes a 1-year moratorium unless the State adopts regulations before this period. This will allow the State time to adopt emissions regulations without delaying operation of the incinerator for an unreasonable amount of time.

Our original amendment has no moratorium so the incinerator could be held up indefinitely until the State adopts regulations.

Second, this amendment deals only with emission standards under the Clean Air Act. States have the authority to implement such regulations.

Our original amendment deal both with RCRA and Clean Air. Before the State could adopt RCRA regulations a change in the Federal RCRA law would be required—this could hold up operation of the incinerator indefinitely

BACKGROUND

LANL originally built an incinerator for research purposes only in the 1970's. This incinerator was constructed to handle two types of waste: Chemical waste and mixed waste. Mixed wastes has both chemical and radioactive components.

The incinerator has been closed for the last 2 years for remodeling to bring it up to full-scale capabilities. Prior to this temporary shutdown, however, the incinerator was operating for 9 years under interim RCRA [Resource Conservation and Recovery Act] status, a temporary permit which currently allows LANL to burn radioactive and hazardous waste without any environmental assessment ever being done and without any opportunity for public comment.

Transuranic waste, the same plutonium-contaminated waste that is designated for WIPP, will comprise the bulk of the waste stream destined for the incinerator.

The State environmental improvement division does not have the authority under the State Hazadous Waste Act, or any other act, to regulate radioactive waste. The Hazardous Waste Act does not apply to radioactive waste, it only applies to applies to wastes that meet the legal definition of "hazardous waste", and these are basically chemical wastes.

The Federal Atomic Energy Act authorizes DOE to develop and effectuate its own regulations controlling DOE's management of its own radioactive wastes. Thus, DOE essentially has the right to permit themselves for radioactive substances.

The State legislature passed H.B. 59 this year that puts a moratorium on incinerators until EID implements regulations on incinerators. H.B. 59 however, includes an exemption for incinerators that were constructed before a certain date—since this incinerator was constructed in the 1970's it is exempted from the moratorium and can operate without EID regulation on incinerators.

EID is reviewing LANL's application for this incinerator and has proposed a draft permit. The permit only focuses on chemical waste—not radioactive waste—since chemical waste is the only waste the State has authorization to regulate. EID says the permit will probably be issued in November.

All we wish to do is delay operation of the incinerator until the State adopts regulations on the incineration of radioactive wastes.

Mr. Chairman, I yield the remainder of my time to the chairman of the subcommittee, the gentleman from South Carolina [Mr. SPRATT], who has examined this amendment, and I ask for his response and hopeful support.

Mr. KYL. Mr. Chairman, I yield 1 minute to the gentleman from South Carolina [Mr. SPRATT].

Mr. SPRATT. Mr. Chairman, I would like to address the amendment, and I would like to, in turn, either have the ranking minority member on our panel, the Committee on Armed Services, recognized or time yielded to him.

Mr. Chairman, the gentleman from New Mexico [Mr. RICHARDSON] brought before our panel two amendments, one which he has just pulled from consideration, and the other was this amendment.

We received the amendments only at approximately the time that we were beginning the markup of the Department of Energy segment of the defense authorization bill. The panel itself, having not had the opportunity to hold hearings on the proposal he made, did not approve the amendment as it was submitted, not so much on the merits or demerits of it, just because we simply did not have the information or answers to the questiosn that were raised in our minds.

There was another deficiency in the amendment as presented to us, and that is it is open ended. It does not have a termination date. It says basically that the Los Alamos Laboratory cannot incinerate mixed or radioactive waste until the State of New Mexico develops regulations that apply to radioactive waste. I think that that kind of an open-ended provision is something that we simply cannot agree to.

The rule made this amendment in order, and I had a number of discussions along with the gentleman from Arizona [Mr. KYL], the ranking member. We asked several questions to be clarified, first of all, if this moratorium is granted, can we establish a date certain on it, can we have an understanding, and I had one with the gentleman from New Mexico [Mr. RICHARDSON] that August 1 would be acceptable to him, August 1, 1990. We wanted to find out if this would present an intolerable situation in terms of accumulation of radioactive waste that could not be incinerated pending this ban, and we found it will cause some to be accumulated. There will be some storage costs, but it is not an overwhelming burden monetarily or otherwise for the Laboratory.

Finally, we found that the situation there at Los Alamos is in good condition in the sense that the waste incineration facilities are in compliance with EPA regulations and then some.

I have told the gentleman from New Mexico [Mr. RICHARDSON] that I personally will vote for his bill with the understanding that in conference the date certain has to be cleaned up. There has to be a reasonable timeframe for the State to adopt regulations. I will vote for it because I am sensitive to his concern about the incineration of radioactive waste, but I cannot approve it in its present form. We have to have the understanding that it is cleaned up in conference.

Mr. KYL. Mr. Chairman, I yield 15 seconds to my friend, the gentleman from New Mexico [Mr. RICHARDSON].

Mr. RICHARDSON. Mr. Chairman, I stress to the gentleman, as the gentleman knows, I would have offered this amendment on unanimous consent with the August date, but the

gentleman had some concerns, and I remain very firm in that view, that a date of August 1 is find with me. I appreciate the way the gentleman has conducted himself in this.

Mr. KYL. Mr. Chairman, I yield myself such time as I may consume.

Mr. Chairman, I appreciate the comments of both of my friends and, again, my colleague from New Mexico being very concerned about the situation in his district, but, very frankly, Mr. Chairman, the reason that these concerns are being expressed is because there are problems with this bill, technical problems, if not other kinds of problems.

There is a third technical problem that has not been mentioned, and that is the fact that States have the authority under the Clean Air Act to regulate radioactive emissions, but this bill is not written in that fashion. This bill is written to adopt regulations on the incineration of radioactive waste, which means it would be a meaningless exercise.

The reason I have not agreed to a unanimous-consent request to improve the language of the bill is because it is a bad bill. It should not be adopted by this body. It is not needed.

If my colleagues would just listen to this one statistic, it is, I think, agreed, and in any event, the laboratory has confirmed through their analysis that the incineration of radioactive wastes here meets the Clean Air Act requirements by a factor of 25,000. In other words, it is not even close.

It is very clear that the atmosphere here is protected by a factor of 25,000.

My colleague from New Mexico has said, "But I have some constituents every concerned about this." I do not doubt that. Our obligation is to explain to them that they have no reason for concern, and that were we to agree to this amendment, what it would require is the Los Alamos Laboratory spend an additional $30,000 to build a storage facility to put the stuff in it until it can be incinerated, and nothing would have changed in the meantime, because the State of New Mexico is not going to adopt a standard which is 25,000 times more stringent than the Clean Air Act. So the amendment is not necessary. That is why I have refused to agree to the technical amendments that would make the amendment proper.

Mr. RICHARDSON. Mr. Chairman, will the gentleman yield,

Mr. KYL. I am happy to yield to the gentleman from New Mexico.

Mr. RICHARDSON. Mr. Chairman, I just want to stress to my colleague, and I appreciate his concern, but let me just quote to him what the State of New Mexico has sent me.

Mr. KYL. Reclaiming my time and interrupting my colleague, Mr. Chairman, may I inquire how much time I have remaining?

The CHAIRMAN. The gentleman from Arizona [Mr. KYL] has 2 minutes remaining.

Mr. KYL. Mr. Chairman, I yield the remainder of my time, 2 minutes, to the gentleman from New Mexico [Mr. SKEEN].

Mr. SKEEN. Mr. Chairman, with all due deference to my colleague from New Mexico, I have a concern after reading this place of legislation, because it is totally unnecessary.

What is being done follows the spirit of the request being made in this piece of legislation; that is, that is being done between the State of New Mexico and Los Alamos National Laboratories right now. Los Alamos National Laboratory is the progenitor, or the place in which the whole technology of incineration of these kinds of wastes has come from. If New Mexico is going to have an oversight committee, Los Alamos is going to have to tell them how to do it, and they are already working in cooperation with one another. I think it is an unnecessary burden both on the State and on Los Alamos National Laboratory, because if we put this moratorium on there, we are going to require them to build storage space that puts the waste in a riskier position now than it would be if it were incinerated.

Mr. Chairman, that is the whole answer to this question. We have these environmental questions to resolve, and the laboratory is trying to help do that. I think that what we are doing is we are imposing something on the national laboratory that is totally unnecessary, because there is a spirit of cooperation and oversight that takes place between the State of New Mexico and Los Alamos at the present time.

□ 1920

I do not believe that the State of New Mexico is asking for this.

Individuals, maybe so. But who speaks for the State of New Mexico?

Mr. RICHARDSON. Mr. Chairman, will the gentleman yield?

Mr. SKEEN. Yes, I yield to the gentleman from New Mexico.

Mr. RICHARDSON. Mr. Chairman, I have a letter from the Director of the New Mexico Environmental Improvement Division, Mr. Richard Mitzelfelt. That is not the issue. The State of New Mexico wants this amendment.

The letter referred to follows:

NEW MEXICO HEALTH AND ENVIRONMENT DEPARTMENT,
July 25, 1989.

MEMORANDUM

To: Congressman Bill Richardson.
Attention: Steve Crout.
From: Richard Mitzelfelt, Director, New Mexico Environmental Improvement Division.
Re: Incinerator Amendment—Nmeid Comments.
Date: July 25, 1989.

The Division supports this amendment for the following reasons:

1. The amendment would prevent the burning of mixed waste *and* radioactive waste without a RCRA component at the only facility in the state exempt from state moratorium, H.B. 59.

2. This amendment would enable the Division to move from a position of uncertainty regarding public health impacts to one of protection. The health impacts of this activity would then be discussed in a public hearing through the adoption of new air regulations before the activity could resume.

3. The Air Quality Bureau which develops regulations would be given more time to address this type of incineration along with municipal and medical waste incineration. This would also alleviate the potential to act too burriedly.

Although we support this moratorium, one question needs to be researched. Does this moratorium as currently proposed create a conflict by preventing activities currently authorized by the Resource Conservation and Recovery Act? The incineration of mixed waste being one such activity.

NEW MEXICO HEALTH AND ENVIRONMENT DEPARTMENT,
July 26, 1989.

Congressman BILL RICHARDSON,
Cannon House Office Building,
Washington, DC.

DEAR CONGRESSMAN RICHARDSON: This letter concerns your proposed amendment to the Department of Defense Authorization Bill regarding a moratorium on the incineration of radioactive waste at Los Alamos National Laboratory. My comments below are in response to questions raised by the memorandum I sent to your office yesterday, July 25, 1989, regarding the proposed amendment.

The Environmental Improvement Division's priorities in developing new regulations for incineration have been set primarily by citizens and our state legislature reacting to new or proposed facilities in the state. In the spring of 1988, public concern was focused on a proposed municipal waste incinerator at Los Alamos. This concern resulted in our state moratorium bill on incineration. Although this bill covers other classes of incineration besides municipal waste, its primary focus was on municipal waste and we have put our efforts into this area first. We have also begun to address the incineration of medical waste at this time primarily because of a large uncontrolled facility in the southern part of the state. We do not have the staff to concurrently address radioactive waste along with these other categories. We would consider the assistance of a third party in developing such regulations if funding were available.

There are a number of reasons why our interest in incineration of radioactive waste was not expressed as strongly in the past as it is today. The Los Alamos incinerator is to our knowledge the only unit in the state conducting this activity. In the past, this facility was represented as a research unit. Today, it will be used on a larger scale as an integral part of the Laboratory's waste management effort. Potential impacts to human health are therefore much greater. In addition, most of our citizens only became aware of this facility recently and public concern has been very high.

We are confident the state has adequate statutory authority to address the incineration of radioactive waste. Under the New Mexico Air Quality Control Act, "radioactive material" is listed as a substance for which the New Mexico Environmental Board clearly has the right to control through the adoption of regulations. In addition, the state legislature has further directed the EID to develop new regulations with stringent emission limitations for all classes of incineration. This language is

within the recently enacted H.B. 59 which is a state bill addressing incineration. Although EPA has not yet delegated authority for mixed waste under the Resource Conservation and Recovery Act to the state, we do not believe this in any way precludes the development of new air quality regulations for this type of waste.

I hope this answers your recent questions. Please contact me again if additional concerns arise.

Sincerely,

RICHARD MITZELFELT,
Director.

Mr. SKEEN. Taking back my time, I do not think that the State of New Mexico does want this amendment. I do not think that they have had a chance to see this part of it, and I do not think they want it or do not think we need it, and we are just as dedicated to that laboratory as anybody else.

Mr. RICHARDSON. I would like to point out to my colleague that we are talking about a facility in my district.

Mr. SKEEN. The gentleman from New Mexico was also talking about one in my district when we were talking about WIPP, and the gentleman certainly had a lot to say about that, so I certainly think I should return the favor.

The CHAIRMAN pro tempore (Mr. DURBIN). All time has expired.

The question is on the amendment offered by the gentleman from New Mexico [Mr. RICHARDSON].

The question was taken; and the Chairman pro tempore announced that the noes appeared to have it.

RECORDED VOTE

Mr. RICHARDSON. Mr. Chairman, I demand a recorded vote.

A recorded vote was ordered.

The CHAIRMAN pro tempore. Pursuant to the provisions of paragraph (5) of section 2, House Resolution 211, and the Chair's prior announcement, the vote on the amendment offered by the gentleman from New Mexico [Mr. RICHARDSON] will be postponed until tomorrow following the vote on the amendment on plutonium production.

AMENDMENT OFFERED BY MR. LEATH OF TEXAS

Mr. LEATH of Texas. Mr. Chairman, I offer an amendment.

The CHAIRMAN pro tempore. The Clerk will designate the amendment.

The text of the amendment is as follows:

Amendment offered by Mr. LEATH of Texas: Page 36, after line 16, insert the following new section:

SEC. 128. FUNDING FOR AHIP PROGRAM.

(a) AUTHORIZATION FOR AHIP PROGRAM.—Of the amount appropriated for fiscal year 1990 for procurement of aircraft for the Army, the amount of $276,400,000 shall be available for the Army Helicopter Improvement Program (AHIP).

(b) FUNDING.—Of the amounts provided in section 101 for procurement for the Army—

(1) the amount provided for procurement of aircraft is hereby increased by $226,400,000;

(2) the amount provided for procurement of Weapons and Tracked Combat Vehicles is hereby reduced by $61,500,00; and

(3) the amount provided for other procurement is hereby reduced by $164,800,000.

MODIFICATION TO AMENDMENT OFFERED BY MR. LEATH OF TEXAS

Mr. LEATH of Texas. Mr. Chairman, I offer a modification to the amendment.

The CHAIRMAN pro tempore. The Clerk will report the amendment, as modified.

The Clerk read as follows:

Amendment, as modified, offered by Mr. LEATH of Texas: Page 36, after line 16, insert the following new section:

SEC. 128. FUNDING FOR AHIP PROGRAM.

(a) AUTHORIZATION FOR AHIP PROGRAM—Of the amount appropriated for fiscal year 1990 for procurement of aircraft for the Army, the amount of $276,400,000 shall be available for the Army Helicopter Improvement Program (AHIP).

(b) FUNDING—Of the amounts provided in section 101 for procurement for the Army—

(1) the amount provided for procurement of aircraft is hereby increased by $226,400,000;

(2) the amount provided for procurement of Weapons and Tracked Combat Vehicles is hereby reduced by $61,500,000; and

(3) the amount provided for Other Procurement is hereby reduced by $164,800,000, of which not more than $24,400,000 shall be from for the Enhanced Position Location Reporting System.

Mr. LEATH of Texas (during the reading). Mr. Chairman, I ask unanimous consent that the amendment, as modified, be considered as read and printed in the RECORD.

The CHAIRMAN pro tempore. Is there objection to the request of the gentleman from Texas?

There was no objection.

Mr. LEATH of Texas. Mr. Chairman, I have cleared this with both sides, and I ask unanimous consent to have the modification agreed to so that I may give a brief explanation at this point.

The CHAIRMAN pro tempore. Without objection, the modification is agreed to.

There was no objection.

The CHAIRMAN pro tempore. The gentleman from Texas [Mr. LEATH] is recognized for 5 minutes.

(Mr. LEATH of Texas asked and was given permission to revise and extend his remarks.)

Mr. LEATH of Texas. Mr. Chairman, I yield myself such time as I may consume.

Mr. Chairman, my amendment would reinstate the Army's Helicopter Improvement Program, or AHIP, that was originally included in the budget submitted by President Reagan but deleted in the revision submitted by President Bush. The AHIP is an upgrade of the OH-58 Scout helicopter with state-of-the-art target detection-designation, navigation, communications, and air vehicle performance improvements. Most importantly—it works. It works very well. The Army recently produced an armed version of AHIP that performed some amazing feats at night in the Persian Gulf. In the opinion of the Secretary of the Army, the AHIP is essential in meeting the Army's day and night armed Scout helicopter requirement through the end of the next decade when follow-on aircraft are anticipated to become available.

This helicopter is a combat proven asset to our conventional force structure and satisfies a critical deficiency in our Army aviation inventory.

The program is the Army's highest unfunded priority. The Secretary of the Army unsuccessfully attempted to "buy back" the program from the Secretary of Defense when it was cut due to budget constraints.

The program is one of the most successful, cost-efficient systems we have ever developed.

The amendment is revenue neutral. I have identified programs within Army procurement accounts to cover the cost of this initiative that have been coordinated with the Army's leadership and with the committee staff.

I urge an affirmative vote on this amendment.

Mr. ASPIN. Mr. Chairman, I rise in opposition to the amendment.

The CHAIRMAN pro tempore. The gentleman from Wisconsin [Mr. ASPIN] is recognized for 5 minutes.

Mr. ASPIN. Mr. Chairman, I yield myself such time as I may consume.

Mr. Chairman, I am happy to yield to other Members who wish to talk about this amendment one way or the other, but let me just point out why I am in opposition to this amendment.

I believe basically what we are dealing with is another add-on to the Cheney budget. Last night we had the big fight over the Cheney budget. We have had a continual struggle throughout the process of hearing this before the Procurement Subcommittee, before the full committee about the Cheney budget, and we have managed to come through the whole process, I would say, relatively unscathed.

We have added too much money for the Guard and Reserve, and that is too bad. We have added money for the V-22 and that is too bad. We have added money for the F-14, and that is too bad. But we have not added a lot of money, and we have not done what we have done in other years.

I would hope in the process of dealing with these small amendments toward the end of the bill that we do not let the whole dam burst loose and we end up with a lot of add-ons.

I know there is an awful lot of support for the AHIP, and I understand the gentleman from Texas's interest in it. I think there is a lot of interest on that side for the AHIP, and I have no problem with the funding that the gentleman has and the amendment, and the changes in his amendment by which he now funds the AHIP.

But I would point out that the right vote was the either-or vote on the LHX or the AHIP, which we had yesterday, which was the amendment offered by the gentleman from Kentucky, Mr. HOPKINS, to fund the AHIP by taking the money out of the LHX.

Mr. THOMAS of California. Reserving the right to object, Mr. Chairman, I would like to object, but as I recall, earlier the gentleman from New Mexico [Mr. SKEEN] requested 1 minute and was denied. I feel compelled to hope that from the other side of the aisle, when the gentleman from New Mexico asks unanimous consent for 1 minute, we do not hear an objection. I reserve my right and will not object.

Mr. Chairman, I withdraw my reservation of objection.

The CHAIRMAN pro tempore. Is there objection to the request of the gentleman from Texas?

There was no objection.

The CHAIRMAN pro tempore. The gentleman from Texas [Mr. BUSTAMANTE] is recognized for 1 minute.

Mr. BUSTAMANTE. Mr. Chairman, let me explain my position. These are not executive jets. These are National Guard planes that will be used to mobilize the National Guard people who are just not like the Army. They are just not in one place, they are all over the country. There are six of them.

But the main thing also is that we are also using some of these moneys, if they are not used, if the money is not used by the chemical weapons, and I want to identify the areas that they can be used.

□ 1140

They can be used for the National Guard to also retrofit F-15 and F-16 planes.

So it is not only the planes, it is also the readiness of the National Guard.

Mr. SKEEN. Mr. Chairman, I ask unanimous consent to address the committee for 1 minute.

The CHAIRMAN pro tempore (Mr. DURBIN). Is there objection to the request of the gentleman from New Mexico?

Mr. ROSTENKOWSKI. Mr. Chairman, I object.

The CHAIRMAN pro tempore. Objection is heard.

ANNOUNCEMENT BY THE CHAIRMAN PRO TEMPORE

The CHAIRMAN pro tempore. Pursuant to the provisions of paragraph (5) of section 2, House Resolution 211, the Committee will now resume proceedings postponed on Wednesday, July 26, 1989, on which recorded votes were ordered on part two amendments. Votes will be taken in the following order:

First, amendment No. 27 offered by the gentleman from New Mexico [Mr. RICHARDSON]; and

Second, amendment No. 3 offered by the gentleman from Texas [Mr. BUSTAMANTE].

The Chair will reduce to 5 minutes the time for the electronic vote after the first vote in this series.

PREFERENTIAL MOTION OFFERED BY MR. SKEEN

Mr. SKEEN. Mr. Chairman, I offer a preferential motion.

The Clerk read as follows:

Mr. SKEEN moves that the Committee do now rise and report the bill to the House with the recommendation that the enacting clause be stricken out.

The CHAIRMAN pro tempore. The gentleman from New Mexico [Mr. SKEEN] is recognized for 5 minutes in support of his preferential motion.

Mr. SKEEN. Mr. Chairman, I regret I have to use this parliamentary procedure to get a little time, but I think this is essential because we were cut off in debate. I do not want to prolong it. I would like to get to the vote just as much as anybody else does.

But I want to say this: Mr. Chairman, with due deference to my colleague from New Mexico, this is not—on his amendment, it is not the State position, it is not the citizens' position, it has not been and has never been and never will be.

This amendment he has offered is flawed and superfluous. I am sorry to have to oppose him on it, but I think it is important for the smooth and stable operation of the Los Alamos National Laboratory that we do not have this moratorium, which is a flawed amendment, has no expiration date whatsoever.

With that I would suggest, Mr. Chairman, a "no" vote on the Richardson amendment.

Mr. Chairman, I ask unanimous consent that I be permitted to withdraw my preferential motion.

The CHAIRMAN pro tempore. Is there objection to the request of the gentleman from New Mexico?

There was no objection.

The CHAIRMAN pro tempore. The Chair would like to remind members of the committee that the first vote is a 15-minute vote and the subsequent vote 5 minutes.

AMENDMENT NO. 27 OFFERED BY MR. RICHARDSON

The CHAIRMAN pro tempore. The Clerk will designate the amendment offered by the gentleman from New Mexico [Mr. RICHARDSON].

The Clerk designated the amendment.

The CHAIRMAN pro tempore. The unfinished business is the vote on the amendment offered by the gentleman from New Mexico [Mr. RICHARDSON] on which a recorded vote is ordered.

The vote was taken by electronic device, and there were—ayes 245, noes 177, answered "present" 1, not voting 8, as follows:

[Roll No. 175]

AYES—245

Ackerman
Akaka
Anderson
Andrews
Annunzio
Applegate
Aspin
Atkins
AuCoin
Bates
Bellenson
Bennett
Berman
Bilbray
Boehlert
Boggs
Bonior
Borski
Bosco
Boucher
Boxer
Brennan
Brooks
Browder
Brown (CA)
Bruce
Bryant
Bustamante
Campbell (CA)
Campbell (CO)
Cardin
Carper
Carr
Chapman
Clarke
Clay
Coleman (TX)
Conyers
Cooper
Costello
Courter
Coyne
Crockett
Darden
Davis
de la Garza
DeFazio
Dellums
Derrick
Dicks
Dingell
Dixon
Donnelly
Dorgan (ND)
Douglas
Downey
Durbin
Dwyer
Dymally
Dyson
Early
Eckart
Edwards (CA)
Engel
English
Erdreich
Espy
Evans
Fascell
Fazio
Feighan
Flake
Flippo
Foglietta
Ford (MI)
Ford (TN)
Frank
Frost
Garcia
Gaydos
Gejdenson
Gephardt
Gibbons
Gilman
Glickman
Gordon
Gray
Guarini
Hall (OH)
Harris
Hatcher
Hawkins
Hayes (IL)
Hayes (LA)
Hefley
Hefner
Hertel
Hoagland
Hochbrueckner
Hoyer
Hubbard
Huckaby
Hughes
Jacobs
Jenkins
Johnson (SD)
Johnston
Jones (GA)
Jones (NC)
Jontz
Kanjorski
Kaptur
Kastenmeier
Kennedy
Kennelly
Kildee
Kleczka
Kolter
Kostmayer
LaFalce
Lagomarsino
Lancaster
Lantos
Laughlin
Lehman (CA)
Lehman (FL)
Levin (MI)
Levine (CA)
Lewis (GA)
Lloyd
Long
Lowey (NY)
Luken, Thomas
Lukens, Donald
Manton
Markey
Martinez
Matsui
Mavroules
McCurdy
McDermott
McHugh
McMillen (MD)
McNulty
Mfume
Miller (CA)
Miller (WA)
Mineta
Moakley
Mollohan
Montgomery
Moody
Morella
Morrison (CT)
Mrazek
Murtha
Nagle
Natcher
Neal (MA)
Neal (NC)
Nelson
Nowak
Oakar
Oberstar
Obey
Olin
Ortiz
Owens (NY)
Owens (UT)
Pallone
Panetta
Parker
Payne (NJ)
Payne (VA)
Pelosi
Penny
Perkins
Pickle
Poshard
Price
Rahall
Rangel
Richardson
Rinaldo
Roe
Rose
Rostenkowski
Roukema
Rowland (CT)
Rowland (GA)
Roybal
Russo
Sabo
Sangmeister
Savage
Sawyer
Scheuer
Schneider
Schroeder
Schumer
Sharp
Shays
Sikorski
Skaggs
Skelton
Slattery
Slaughter (NY)
Smith (FL)
Smith (NJ)
Smith (VT)
Snowe
Solarz
Spratt
Staggers
Stallings
Stark
Studds
Synar
Tallon
Tanner
Tauzin
Torres
Torricelli
Towns
Traficant
Traxler
Udall
Unsoeld
Valentine
Vento
Visclosky
Volkmer
Walgren
Watkins
Waxman
Weiss
Wheat
Whitten
Williams
Wilson
Wise
Wolpe
Wyden
Yates
Yatron

NOES—177

Alexander
Archer
Armey
Baker
Ballenger
Barnard
Bartlett
Barton
Bateman
Bentley
Bereuter
Bevill
Bilirakis
Bliley
Broomfield
Brown (CO)
Buechner
Bunning
Burton
Byron
Callahan
Chandler
Clement
Clinger
Coble
Coleman (MO)
Combest
Conte
Coughlin
Cox
Craig
Crane
DeLay
DeWine
Dickinson
Dornan (CA)
Dreier
Duncan
Edwards (OK)
Emerson
Fawell
Fields
Fish
Frenzel
Gallegly
Gallo
Gekas
Gillmor
Gingrich
Goodling
Goss
Grandison
Grandy
Grant
Green
Gunderson
Hall (TX)
Hamilton
Hammerschmidt
Hancock
Hansen
Hastert
Henry
Herger
Hiler
Holloway
Hopkins
Horton
Houghton
Hunter
Hutto
Inhofe
Ireland
James
Johnson (CT)
Kasich
Kolbe
Kyl
Leach (IA)
Leath (TX)
Lent
Lewis (CA)
Lewis (FL)
Lightfoot
Livingston
Lowery (CA)
Machtley
Madigan
Marlenee
Martin (IL)

Martin (NY)
Mazzoli
McCandless
McCloskey
McCollum
McCrery
McDade
McEwen
McGrath
McMillan (NC)
Meyers
Michel
Miller (OH)
Molinari
Moorhead
Morrison (WA)
Murphy
Myers
Nielson
Oxley
Packard
Parris
Pashayan
Patterson
Paxon
Pease
Petri
Pickett
Porter
Purselll
Quillen
Ravenel
Ray
Regula
Rhodes
Ridge
Ritter
Roberts
Robinson
Rogers
Rohrabacher
Roth
Saiki
Sarpalius
Saxton
Schaefer
Schiff
Schuette
Schulze
Sensenbrenner
Shaw
Shumway
Shuster
Sisisky
Skeen
Slaughter (VA)
Smith (IA)
Smith (MS)
Smith (NE)
Smith (TX)
Smith, Denny (OR)
Smith, Robert (NH)
Smith, Robert (OR)
Solomon
Spence
Stangeland
Stearns
Stenholm
Stump
Sundquist
Swift
Tauke
Thomas (CA)
Thomas (GA)
Thomas (WY)
Upton
Vander Jagt
Vucanovich
Walker
Walsh
Weber
Weldon
Whittaker
Wolf
Wylie
Young (AK)
Young (FL)

ANSWERED "PRESENT"—1

Gonzalez

NOT VOTING—8

Anthony
Collins
Dannemeyer
Florio
Hyde
Leland
Lipinski
Stokes

□ 1202

Mr. SMITH of New Hampshire changed his vote from "aye" to "no."

Mr. BOSCO and Mr. JENKINS changed their vote from "no" to "aye."

So the amendment was agreed to.

The result of the vote was announced as above recorded.

AMENDMENT NO. 3 OFFERED BY MR. BUSTAMANTE

The CHAIRMAN pro tempore. The Clerk will designate the amendment offered by the gentleman from Texas [Mr. BUSTAMANTE].

The Clerk designated the amendment.

The CHAIRMAN pro tempore. The unfinished business is the vote on the amendment offered by the gentleman from Texas [Mr. BUSTAMANTE] on which a recorded vote is ordered.

This will be a 5-minute vote.

The vote was taken by electronic device, and there were—ayes 160, noes 260, answered "present" 1, not voting 10, as follows:

[Roll No. 176]

AYES—160

Ackerman
Akaka
Andrews
Applegate
Atkins
Bates
Bennett
Berman
Bilbray
Boggs
Bonior
Borski
Bosco
Boucher
Boxer
Brennan
Brooks
Bruce
Bryant
Bustamante
Campbell (CA)
Carper
Carr
Chapman
Clay
Clement
Coleman (TX)
Conte
Conyers
Costello
Coyne
Crockett
Darden
de la Garza
Dellums
Dingell
Donnelly
Dorgan (ND)
Downey
Duncan
Durbin
Dwyer
Dymally
Dyson
Eckart
Engel
Evans
Fascell
Flippo
Foglietta
Ford (MI)
Ford (TN)
Frank
Frost
Garcia
Gaydos
Gejdenson
Gephardt
Gordon
Gray
Green
Hall (OH)
Hall (TX)
Hawkins
Hayes (IL)
Hertel
Hochbrueckner
Huckaby
Hutto
Jacobs
Jenkins
Jones (GA)
Jones (NC)
Kanjorski
Kaptur
Kastenmeier
Kennedy
Kennelly
Kildee
Kleczka
Kolter
Kostmayer
LaFalce
Laughlin
Leach (IA)
Leath (TX)
Lehman (CA)
Lehman (FL)
Levine (CA)
Lewis (GA)
Markey
Marlenee
Martinez
Matsui
Mazzoli
McDermott
McHugh
McMillen (MD)
Moakley
Mollohan
Moody
Morella
Morrison (CT)
Mrazek
Murphy
Murtha
Nagle
Neal (MA)
Nowak
Oakar
Oberstar
Ortiz
Owens (NY)
Owens (UT)
Payne (NJ)
Payne (VA)
Penny
Perkins
Pickle
Porter
Poshard
Purselll
Rahall
Rangel
Richardson
Rose
Rowland (GA)
Roybal
Sabo
Sangmeister
Sarpalius
Savage
Schneider
Schumer
Sensenbrenner
Shays
Sikorski
Slaughter (VA)
Smith (FL)
Smith (TX)
Smith, Robert (OR)
Staggers
Stark
Stenholm
Studds
Synar
Tauzin
Torres
Torricelli
Towns
Traficant
Udall
Vento
Visclosky
Walgren
Waxman
Wilson
Wise
Wyden
Yatron

NOES—260

Anderson
Annunzio
Archer
Armey
Aspin
AuCoin
Baker
Ballenger
Bartlett
Barton
Bateman
Bellenson
Bentley
Bereuter
Bevill
Bilirakis
Bliley
Boehlert
Broomfield
Browder
Brown (CA)
Brown (CO)
Buechner
Bunning
Burton
Byron
Callahan
Campbell (CO)
Cardin
Chandler
Clarke
Clinger
Coble
Coleman (MO)
Combest
Cooper
Coughlin
Courter
Cox
Craig
Crane
Davis
DeFazio
DeLay
Derrick
DeWine
Dickinson
Dicks
Dixon
Dornan (CA)
Douglas
Dreier
Early
Edwards (CA)
Edwards (OK)
Emerson
English
Erdreich
Espy
Fawell
Fazio
Feighan
Fields
Fish
Flake
Frenzel
Gallegly
Gallo
Gekas
Gibbons
Gillmor
Gilman
Gingrich
Glickman
Goodling
Goss
Gradison
Grandy
Grant
Guarini
Gunderson
Hamilton
Hammerschmidt
Hancock
Hansen
Harris
Hastert
Hatcher
Hayes (LA)
Hefley
Hefner
Henry
Herger
Hiler
Hoagland
Holloway
Hopkins
Horton
Houghton
Hoyer
Hubbard
Hughes
Hunter
Inhofe
Ireland
James
Johnson (CT)
Johnson (SD)
Johnston
Jontz
Kasich
Kolbe
Kyl
Lagomarsino
Lancaster
Lantos
Lent
Levin (MI)
Lewis (CA)
Lewis (FL)
Lightfoot
Livingston
Lloyd
Long
Lowery (CA)
Lowey (NY)
Luken, Thomas
Lukens, Donald
Machtley
Madigan
Manton
Martin (IL)
Martin (NY)
Matsui
McCandless
McCloskey
McCollum
McCrery
McCurdy
McDade
McEwen
McGrath
McMillan (NC)
McNulty
Meyers
Mfume
Michel
Miller (CA)
Miller (OH)
Miller (WA)
Mineta
Molinari
Montgomery
Moorhead
Morrison (WA)
Myers
Natcher
Neal (NC)
Nelson
Nielson
Obey
Olin
Oxley
Packard
Pallone
Panetta
Parker
Parris
Pashayan
Patterson
Paxon
Pease
Pelosi
Petri
Pickett
Price
Quillen
Ravenel
Ray
Regula
Rhodes
Ridge
Rinaldo
Ritter
Roberts
Robinson
Roe
Rogers
Rohrabacher
Rostenkowski
Roth
Roukema
Rowland (CT)
Russo
Saiki
Sawyer
Saxton
Schaefer
Scheuer
Schiff
Schroeder
Schuette
Schulze
Sharp
Shaw
Shumway
Shuster
Sisisky
Skaggs
Skeen
Skelton
Slattery
Slaughter (NY)
Smith (IA)
Smith (MS)
Smith (NE)
Smith (NJ)
Smith (VT)
Smith, Denny (OR)
Smith, Robert (NH)
Snowe
Solarz
Solomon
Spence
Spratt
Stallings
Stangeland
Stearns
Stump
Sundquist
Swift
Tallon
Tanner
Tauke
Thomas (CA)
Thomas (GA)
Thomas (WY)
Traxler
Unsoeld
Upton
Valentine
Vander Jagt
Volkmer
Vucanovich
Walker
Walsh
Watkins
Weber
Weiss
Weldon
Wheat
Whittaker
Whitten
Williams
Wolf
Wolpe
Wylie
Yates
Young (AK)
Young (FL)

ANSWERED "PRESENT"—1

Gonzalez

NOT VOTING—10

Alexander
Anthony
Barnard
Collins
Dannemeyer
Florio
Hyde
Leland
Lipinski
Stokes

□ 1209

So the amendment was rejected.

The result of the vote was announced as above recorded.

ANTISATELLITE WEAPONS

The CHAIRMAN pro tempore (Mr. DURBIN). It is now in order to consider amendment No. 20 relating to antisatellite weapons printed in part 1 of House Report 101-168, by, and if offered by, the gentleman from California [Mr. BROWN] or his designee.

For what purpose does the gentleman from California rise?

AMENDMENT OFFERED BY MR. BROWN OF CALIFORNIA

Mr. BROWN of California. Mr. Chairman, I offer an amendment.

The CHAIRMAN pro tempore. The Clerk will designate the amendment.

The text of the amendment is as follows:

Amendment offered by Mr. BROWN of California: At the end of title II (page 55, after line 8) insert the following new section:

SEC. 255. SATELLITE SURVIVABILITY.

(a) SENSE OF CONGRESS CONCERNING TREATY LIMITATIONS ON ANTISATELLITE WEAPONS.—It is the sense of Congress—

(1) that the President should seek the dismantlement of the ground-launched co-orbital antisatellite weapon deployed by the Soviet Union and should seek to achieve with the Soviet Union a mutual verifiable treaty which places the strictest possible limitations on antisatellite weapons; and

(2) that, in pursuit of strict negotiated limitations on antisatellite weapons, the United States should explore with the Soviet Union cooperative verification procedures such as—

(A) mutual, on-site inspections of known and suspected antisatellite weapons facilities;

(B) mutual, on-site emplacement near known and suspected high-energy laser facilities of devices capable of detecting and monitoring laser tests in the atmosphere; and

(C) mutual advance notification of all space launch activities.

(b) REPORT.—The President shall submit to Congress a comprehensive report on United States antisatellite weapons activi-

Bond J. Ellwanger

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHAR
Deputy Secretary

RICHARD MITZELFELT
Director

August 16, 1989

The Honorable Jeff Bingaman
U.S. Senator
Hart Building, Room 502
Washington, D.C. 20510

Dear Senator Bingaman:

I am writing to ask your support for an amendment to the Department of Defense authorization bill regarding the incineration of radioactive waste at Los Alamos National Laboratory. This amendment was offered by Congressman Bill Richardson, and it was passed by the House of Representatives on July 27, 1989. The amendment would prohibit the incineration of radioactive waste until new regulations controlling this activity are adopted by the New Mexico Environmental Improvement Board. As described below, I feel the amendment would benefit the citizens of our state, and I hope you will support it in the Senate.

As you may know, the incineration of municipal and industrial waste as a disposal option has become a national issue. Here in New Mexico, we have responded to planned municipal and medical waste incinerators by drafting new air quality regulations. We are confident these regulations will be in effect long before the U.S. EPA revises or adopts new air quality requirements for these source categories. I would like to note here that the New Mexico Air Quality Bureau receives no funding from the U.S. EPA to develop incineration regulations.

However, there is another category of waste incineration which we have not yet begun writing new requirements, and that is radioactive waste. We simply do not have the manpower to develop new regulations at this time for radioactive waste incineration. At the same time, the Los Alamos National Laboratory has an existing incinerator in which radioactive waste will be burned as part of the Laboratory's overall waste management plan. Under the permit requirements of the Resource Conservation and Recovery Act which apply to this incinerator, the Division may only consider chemical waste which is burned in the incinerator and not radioactive waste. Most of our citizens who have expressed a concern regarding this facility have been primarily concerned with the radioactive component of the waste. At this time, the State does not have a regulation governing the air emissions from this type of activity.

I believe it would be in the best interest of our citizens and the Laboratory to cease the incineration of radioactive materials until the Division can guarantee the safety of this operation. This can be accomplished by adopting new air quality regulations in a public hearing where potential health impacts can be discussed. The public is not going to accept waste incineration in general, and

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

this facility in particular, unless we demonstrate public health is not at risk and the State has enforceable regulations which ensure this activity will always remain safe.

Your support for this amendment during Senate deliberations on this bill would be greatly appreciated. We would support additional language in the amendment requiring new regulations to be developed and adopted within a period of one year. Thank you for your consideration of this matter.

Sincerely

Richard Mitzelfelt
Director

RM:BB:cg

New Mexico Health and Environment Department

MARALYN BUCKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

August 16, 1989

The Honorable Pete Domenici
U.S. Senator
434 Dirksen Building
Washington, D.C. 20510

Dear Senator Domenici:

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Sincerely

Richard Mitzelfelt
Director

RM:BB:cg

MICHAEL HORAN

P.O. Box 2262
Taos, New Mexico 87571-2262
24 July, 1989

Dr. Jim Kane
University of California Berkeley
Laboratory Affairs
731 University Hall
2199 Addison St.
Berkeley, CA. 94720

Dear Sir:

FOIA FREEDOM OF INFORMATION ACT REQUEST
ENVIRONMENTAL ASSESSMENT EA
LANL TA-50 AREA
CONTROLLED AIR TRU WASTES INCINERATOR

Pursuant to FOIA, this is to request a copy of the following document:

The current Environment Assessment EA Draft specific to the U.C./DOE Los Alamos National Scientific Laboratory TA-50 Area Controlled Air Transuranic Wastes Incinerator. Operator: Regents of the University of California

---

I note that a full EIS (DOE/EIS-0133-D) has been made available to the public for the U.C. operated Lawrence Livermore Lab Tru Wastes Incinerator.

I am especially interested to see how the EA addresses waste minimization strategies and recycling of some of these wastes.

Sincerely,

Michael Horan
Bicycle Mechanic
Taos, NM
tel: (505) 758-3522

cc: C. Kelley Crossman, NM EID Haz. Wastes Bureau
Richard Mayer, U.S. EPA, Region 6, Dallas
Hon. Pete Domenici, U.S. Senate
Hon. Jeff Bingaman, U.S. Senate

RECEIVED
AUG 18 1989

P.O. Box 2262
Taos, New Mexico 87571-2262
16 August, 1989

Bill Gallagher, Chief
ALONM Permits Section
U.S. EPA
1445 Ross Ave.
Dallas, TX. 75202-2733

SUMMARY COMMENTS
LANL TA-50 AREA CONTROLLED AIR TRU WASTES
INCINERATOR
EPA I.D. #0890010515

This will summarize my comments to date on the LANL TA-50 area controlled air Tru Wastes incinerator. Also enclosed are two technical exhibits and a letter from U.C. Berkeley for inclusion in the formal hearing record:

PARTICULATE EMISSIONS

From the DRE test burn, the LANL particulate emissions, corrected to 7% O_2 were: 0.0110, 0.0066, 0.0103, 0.0137, 0.0114, and 0.0153 gr/dscf.

These exceed the State of California sub-micron PM_2 particulates limit of 0.008 gr/dscf @ 12 % CO_2 dry gas for MWCs. However, please note carefully that Sweden uses the sames emissions limits for MWCs as for hazardous waste incinerators.

The LANL particulate emissions also exceed emissions limits on current world wide BACT and LAER for hazardous waste incinerators. At Bayer, Leverkusen, FRG, particulate emissions are 10-15 mg/m^3 or 0.004-0.006 gr/dscf. Please see as evidence enclosed letter dated June 21, 1989 from Dr. Richard Denison, Environmental Defense Fund to Bob Holloway, OSW, U.S. EPA, Washington, D.C.

Please note also the new German developmental limit for particulates of 10 mg/m^3 or 0.004 gr/dscf.

Thanks to Shiva Garg, Dwight Hlustick and Sonja Stellmack at U.S. EPA, OSW, Wash., D.C. for providing this evidence.

MAINTENANCE REQUIREMENTS

Operating permit should include the CH_2M Hill recommended maintenance inspection procedures and schedule, or the U.S. EPA recommended inspections in their March 1989, U.S. EPA Emissions Guidances for HCl and

100% Recycled Paper

LANL TA-50 Controlled Air
Tru Wastes Incinerator (cont.)

Heavy Metals.

According to Rich Mayer of U.S. EPA, Dallas, EPA never actually inspected the incinerator when it was operating, except during the start-up controlled test burn. They never checked the pressure drop across the filters to see if the filters were operating correctly. This is important as the filters may have been blinded, plugged or blown out.

Suggest chart recording for the pressure filter drop as an indicator of when they need replacement/purging.

WASTE MINIMIZATION

LANL has not provided statement of efforts to reduce volume and toxicity of the wastes pursuant to 40 CFR. This includes materials substitutes.

ENVIRONMENTAL ASSESSMENT

EA, quantifying the emissions characteristics and describing alternative control strategies such as waste minimization and recycling not provided by DOE. Please see enclosed letter of response from U.C. Berkeley, Laboratory Affairs.

PCDDs and PCDFs Dioxins

A stack sample has never been done for PCDDs and PCDFs on the incinerator. So, will LANL meet the proposed State of New Mexico limit of 0.1 ng/m^3 @ 7% O_2 which parallels the Swedish [redacted] dioxins limits. Please see as evidence enclosed letter from Dr. Denison, EDF to U.S. EPA.

Exhibit, SWEDEN SAKAB HAZARDOUS WASTES INCINERATOR PAPER

Please enter as exhibit enclosed interesting paper presented at New Jersey Institute of Technology, Oct. 26, 1988 on the Swedish SAKAB hazardous wastes incinerator

LANL TA-50 Controlled Air
TRU Wastes Incinerator (cont.)

Many thanks to Shiva Garg at U.S. EPA, OSW, Wash., D.C. tel: (202) 382-7924 and to Dwight Hlustick at U.S. EPA, OSW for providing the SAKAB paper. I have also hand delivered it to DOE at Los Alamos for Ralph Koenig, Waste Management section, LANL.

Please note carefully the interesting hazardous waste controlled landfill construction detail in the SAKAB paper.

CLEAN AIR. A NEW MEXICO HERITAGE! LET'S PRESERVE IT!*

* motto of NM EID Air Quality Bureau

Yours sincerely,

Michael Horan
Bicycle Mechanic
Taos, NM

tel: (505) 758-3522

Encls: (1) exhibit letter of Environmental Defense Fund to U.S. EPA
(2) exhibit paper on the Swedish SAKAB hazardous wastes incinerator
(3) exhibit, letter from U.C. Berkeley, Office of Laboratory Affairs re the EA.

cc: Bill Gallagher, U.S. EPA, Dallas

Ralph Koenig, P.O. 1663, LANL, E518, Los Alamos 87545

FROM: MICHAEL HORAN
P.O. BOX 2262
TAOS, NEW MEXICO 87571-2262

PLEASE RETURN TO

SAKAB

TO: RALPH KOENIG
LANL WASTE MANAGEMENT

E-518

New Jersey Institute of Technology

Presents

Sweden Works: Industry in Transition

Environmental Issues

PLEASE RETURN TO:

MICHAEL HORAN
P.O. BOX 2262
TAOS, NEW MEXICO 87571-2262
TEL. 758-3522

One in a series of presentations
being made throughout the United States
in recognition of Swedish heritage

Wednesday, October 26, 1988

2 p.m.

A.J.J.A. Wilson Alumni Center

New Jersey
Institute of
Technology

Managing Hazardous Waste Through a Central Offsite Industry *)

J. A. Smedstam, President, SAKAB, S-692 00 Kumla, Sweden.

SAKAB is a Swedish company working under a government mandate for final disposal of hazardous waste, collected within the country.

Thus, today SAKAB has a central plant for final disposal of hazardous waste at Kumla, in the central part of Sweden.

SAKAB aims at covering its own costs by charging for services rendered, sale of energy and certain biproducts recovered and consultant services.

Swedish legislation on hazardous waste

Under Swedish legislation hazardous waste may be finally disposed of by:

1. SAKAB
2. Government authorised companies.

Hazardous waste can also be finally disposed locally by the industrial outfit where the waste is produced.

Collection and transport of hazardous waste is the responsibility of the municipalities and may be undertaken directly by themselves or through sub-contractors.

Hazardous Waste (HW)

Hazardous waste is defined in Sweden as materials, raw materials, products or auxiliary chemicals which have been contaminated, destroyed or forbidden or cannot, for some reason, be used for their original purpose.

---

*) Paper presented at a SWEDEN WORKS seminar on October 26th, 1988 at the Center for Hazardous and Toxic Substance Management, New Jersey Institute of Technology, Newark, New Jersey 07102, USA.

Hazardous waste can be divided into 12 main groups:

1. OIL WASTE
2. SOLVENT WASTE
3. PAINT or VARNISH WASTE
4. ADHESIVE WASTE
5. ACIDIC or ALKALINE WASTE
6. WASTE containing CADMIUM
7. WASTE containing MERCURY
8. WASTE containing ANTIMONY, ARSENIC, BARIUM, BERYLLIUM, LEAD, COBALT, COPPER, CHROMIUM, NICKEL, SELENIUM, SILVER, THALLIUM, TIN, VANADIUM or ZINC
9. WASTE containing CYANIDE
10. WASTE containing PCB
11. WASTE containing PESTICIDES, HERBICIDES, FUNGICIDES
12. LABORATORY WASTE

In addition, by special legislation CFC and BATTERIES CONTAINING MERCURY AND CADMIUM have been classified as hazardous waste.

In 1980 a survey was carried out by the National Environment Protection Board of Sweden regarding the Swedish production of hazardous waste. Thus, according to their analysis the production amounted to approximately 500 000 metric tonnes per annum, which corresponds to approximately 60 kg/person.

The relative distribution of that amount of hazardous waste was:

Oil waste	38 %
Solvent waste	7 %
Paint and varnish waste	6 %
Acidic and alkaline waste	15 %
Waste containing metals	25 %
Chemical waste	8 %
Other waste	1 %

Approximately 200 000 t/a of the produced waste could be considered as having been treated onsite by the producers. In comparison only about 40 000 t/a is currently treated by SAKAB. In addition certain special portions of the remaining amount are treated by the about 30 government authorised companies. However, unacceptable amounts of primarily energy containing HW:s still seem to disappear in an unaccountable way.

The National Environment Protection Board intends to conduct a second inquiry regarding the production of HW during 1990.

SAKAB - The procedure to undergo before start-up

The present SAKAB was established in **1976** as a result of the Government's decision to take responsibility for providing resources for final treatment of hazardous waste.

SAKAB is a joint stock company where the state owns 96% of the shares. The remaining shares are owned by the Swedish Association of Municipalities and the Industrial Foundation for Waste Treatment.

In **1978** the SAKAB Board decided to build a central plant for final treatment of hazardous waste near the township of Kumla, where SAKAB had previously in **1976** acquired 53 acres of land. Permit for the plant at Kumla was granted by the National Franchise Board for Environment Protection in December 1978.

1979 was characterized by great uncertainty. An appeal against the permit was lodged to the Government, which initiated a further investigation into alternative locations. SAKAB also applied for a permit for an alternative site on the Northern coast of Sweden.

In **1981** the Government ruled that the plant was to be sited at Kumla and concstruction could commence. The plant was brought into operation in **1983**, and the final conditions and restrictions governing operation of the plant will be set in November 1988 by the National Franchise Board for Environment Protection.

Prior to **1988** the operation has been subject to provisional conditions and has been under special supervision by the National Franchise Board for Environment Protection.

The SAKAB plant for final treatment of hazardous waste

SAKAB is situated close to the geographical centre of HW production in Sweden and benefits from good communications by road and rail. The industrial area, that surrounds SAKAB is occupied by mainly rather heavy industries. The nearest population center, the town of Kumla with about 15 000 inhabitants, is situated at a distance of 7 km.

Between 1940 and 1965 shale oil was extracted in the area. These activities have left traces in the landscape and given the local population a bad experience of industrial activities. The recipients for outgoing water are very poor. This has lead to the choice of a semi-dry method for flue-gas cleaning. After 5 years experience SAKAB has found that the available acerage for landfilling is too small and needs to be doubled.

The main units of the SAKAB plant

The SAKAB plant at Kumla consists of the following units for treatment of hazardous waste:

- Reception and storage of HW in barrels
- Unit for pre-treatment of HW in barrels

- Unit for reception and pre-treatment of HW received in tank cars and rail tank cars.
- Tank storage for pre-treated HW with tanks for blending and water separation. The tank farm contains 21 tanks on 120 m^3 each.
- The combustion plant, which consists of the feeding system for HW, the rotary kiln, the secondary combustion chamber, the flue-gas boiler and the flue-gas cleaning system.
- The plant for wet-chemical treatment of inorganic HW.
- Controlled landfills for dry metal hydroxides and slag, dust and ash from the combustion plant.
- Long-term storages for HW that has to be treated in larger batches or which has to wait for future known or today unknown treatment methods.

There are also a number of service units onsite:

- SAKABs headoffice
- Weighing station
- Unit for tank car cleaning
- Laboratory
- Workshop and garage
- District heating plant for the town of Kumla.

SAKAB is presently constructing:

- A unit for waste water treatment
- A destillation unit for solvent recovery.

Up to mid 1988 totally approx. US$ 45 millions have been invested in the plant.

Control of Hazardous Wasted received

HW RECEIVED BY SAKAB IN 1987

1.	OIL WASTE	10 508 metric tons
2.	SOLVENT WASTE	6 683 "
3.	PAINT and VARNISH WASTE	7 853 "
4.	ADHESIVE WASTE	204 "
5.	ACIDIC and ALKALINE WASTE	1 723 "
6.	WASTE containing CADMIUM	22 "
7.	WASTE containing MERCURY	143 "
8.	WASTE containing HEAVY METALS	8 317 "
9.	WASTE containing CYANIDE	121 "
10.	WASTE containing PCB	478 "
11.	WASTE containing PESTICIDES, etc	535 "
12.	LABORATORY WASTE	43 "
13.	OTHER HW:s	1 084 "
	TOTAL	37 714 metric tons

All incoming HW is weighed and checked in comparison with previously submitted declaration reports. In 1987 SAKAB handled 25 000 individual declaration reports. At arrival HW for incineration is first of all tested in the laboratory. This compulsory test includes e.g.: effective thermal value, water-content, sulphur, chlorine, fluor, sodium, potassium, PCB, chlorphenols and the sum of organic compounds.

Furthermore should be noted that incineration clearance can only be issued by a qualified chemist well acquainted with the combustion process.

Control of drums occurs by a statistical sampling procedure. In 1987 SAKAB received 41 000 drums containing HW. Sampling and analysis are done on all HW received by bulk transport.

Pre-treatment of HW in barrels

All HW intended for incineration and delivered in barrels must be pre-treated. Liquid HW is removed by suction and transferred to holding tanks. If only a small amount of sediment remains at the bottom of the barrel, the drum will be transported onto storage lines prior to incineration. The empty barrels are used as load carriers for minor packages or containers that can be incinerated without emptying. Barrels containing sediment or semi-solid HW can be emptied into a dispersion unit where the HW undergoes mechanical treatment and is dispensed in warm waste oil. The resulting sludge is then pumped into holding tanks.

During the winter time the majority of the barrels have to be heated prior to emptying. This can be done in five heating chambers with a total holding capacity of 600 barrels.

The incineration unit

Hazardous Waste which is incinerated consists mainly of the following types:

- Oil waste
- Solvent waste
- Paint and varnish waste
- Adhesive waste
- Waste containing PCB
- Waste containing pesticides, herbicides, etc.
- Hazardous chemical residues

The incineration plant is designed to handle about 33 000 metric tons of HW per year.

The three most important requirements for efficient and environmentally safe incineration are:

- High and well controlled combustion temperature
- Sufficiently long gas detention time at a high temperature
- Well mixed excess air, i.e. well developed turbulence.

Our combustion system is specially designed to meet these requirements. Thus, the system is composed of:

- Feeding system
- Control unit
- Rotary kiln
- Secondary combustion chamber
- Exhaust gas boiler
- Flue gas cleaning system
- Chimney stack

The HW is introduced through the fixed front wall adjacent to the rotary kiln by means of burners and lances for waste oil, solvents, waste water, sludge and PCB as well as feeding locks for drums and solid HW. The primary air-intake is also located in the front wall. The rotary kiln is 12 m long and has an internal diameter of 4.5 m. The inside of the rotary kiln and secondary combustion chamber is coated with refractory bricks.

The combustion temperature in the rotary kiln, as measured on the infrared pyrometer is a minimum of 1200°C - 1400°C. Combustion must result in a molten slag formed at the outlet of the rotary furnace. The melted slag is poured out down to the bottom of the secondary combustion chamber into a slag-quenching basin. It is then transported by belt into containers and further to a controlled lime-enriched landfill.

From the rotary kiln the gases are diverted to the secondary combustion chamber, where secondary and tertiary air are admitted in order to provide complete combustion. The temperature in the secondary combustion chamber is controlled by using oil burners.

The flue gases then pass through the exhaust gas boiler, where some of the heat contained in the exhaust gases is utilized for the generation of steam. This steam (approx. 20 t/h) is used in the generation of electricity in a back-pressure turbine, for heating our own buildings and as an energy supply source (approx. 50 GWh/a) for Kumla's district heating plant.

Having passed through the steam generator, the flue gases are first cleaned in a scrubber and then in the following electrostatic precipitator. The process involves leading the flue gases into a reaction tower, where lime wash is added and atomized by a rotating spreader disc. The contents of HCl, HF and SO_2/SO_3 in the hot flue gases react with the drops of lime solution at the same time as the water evaporates. The reaction product is balanced to come out dry. It is partly removed at the bottom of the reaction tower and partly in the electrostatic precipitator.

The cleaned flue gas is diverted into a 60 m high chimney stack.

The dust which has been removed is stored temporarily in a residual products' silo before it is taken to a special landfill. The flue gas cleaning has been designed so as to meet the following values of emission to the air (monthly values):

Dust	<20 mg/Nm^3
HCl	<100 mg/Nm^3
HF	<5 mg/Nm^3

These values refer to dry flue gases containing 10% of CO_2. The efficiency of combustion is decided to be minimum 99,9%.

The efficiency of combustion is defined as:

$$EC = \left(1 - \frac{CO}{CO_2} \right) \cdot 100$$

The values of emission are monitored on two independent systems due to the requirements of the National Franchise Board of Environment Protection. The values which are logged in a computer are regularly reported to the authorities.

Wet-chemical treatment

SAKAB treats spent acids, liquids from surface treatment baths, liquids containing heavy metals, and salts in the wet-chemical plant.

The purpose of this treatment is to neutralize the HW and transform the heavy metals into insoluble forms to be separated from the water through a filtering process. The end products consist of purified water which normally is released into the recipient and filter cakes containing heavy metals subsequently placed in controlled landfills.

Controlled landfills

Since 1978 SAKAB has landfilled HW containing heavy metals as solid metal hydroxides and, since 1983, ashes and dust originating from high temperature incineration of HW as well. Our controlled landfills consist of sealed cells above ground level. The reasons for using this type of landfill are that it is easy to repair and control, and also that it facilitates any future recovery of components in the waste.

SAKAB landfills 4000 m^3 of ashes and 7000 m^3 of metal hydroxides per year. The metal hydroxides are, besides at Kumla, landfilled on three different sites in the country.

E.g. SAKAB received rather negative press-coverage during the period of establishment of the plant. Out of approx. 1400 newspaper articles published in 1979 only 10 were positive to SAKAB's establishment.

Active local action groups were accordingly formed that opposed SAKAB during the establishment stage. The debate was often aggresive. It was also sometimes directed against individuals. With increasing environmental concern and understanding for the problems that improper handling of HW can cause, the attitude of the press towards SAKAB has nowadays changed, though. Most of the attention today given to SAKAB is less negative, although, not particularly positive.

The fact that the operation of the plant has not brought the devastating consequences to the surrounding area that was predicted has also made the local opposition less intense. During the establishment period the combustion of, among other things, PCB was associated to the forming of dioxines and furanes, the presence of which in many combustion processes then were only vaguely known by researchers. It used to be a frequent and general phenomenon in those early days to associate SAKAB with dioxines. We have slowly managed to improve our image by now.

There is still a local action group opposed to SAKAB , whose objective of which is that the activity of the plant must be gradually decreased and established elsewhere.

To ensure that the general public has the opportunity to discuss SAKAB's activity and obtain information direct from us two groups have been formed:

- a consultative group
- a local neighbourhood group.

The following organizations are represented in the consultative group:

- The Örebro County Branch of the Farmers' Association
- The Hjälmaren Fishermens' Association
- The Sports Fishermen of the Örebro County
- The Hjälmaren Water Conservancy
- The Örebro County Property Owners' Association
- The Örebro Tennants' Association
- The Närke-province Environment Protection Organization *)
- The Working Group Against SAKAB at Kumla
- The Örebro County branch of the Swedish Trade Union Confederation
- The Örebro County branch of the Swedish Central Organization of Salaried Employees
- The Swedish Confederation of Professional Associations-/The National Federation of Government Officers
- The Swedish Employers' Confederation

Economy

SAKAB's activity is financed through service payments from the HW-producer entrusting his HW to SAKAB for destruction. The fee for e.g. the combustible products depends on their consistency, heat value and contents of halogens and sulphur. Toxic waste, which must be handled using extra precaution is subject to surcharge.

To exemplify, some current price levels are:

Waste oil	US$ 7 - 100 /T
Solvents. paints, varnishes, etc.	" 300 - 700/T
PCB	" 3000 - 5000/T
Pesticides	" 3000/T

---

*) Note. The Örebro County is approx. = the Närke province. The city Örebro, 17 km from SAKAB, has 120.000 inhabitants. It is the capital of the county.

The total income for 1988 is estimated to US$ 16 million. This exceeds slightly the sum of the capital and operation costs of the plant plus some development expenditures.

SAKAB from today to the year 2000

A project aimed at producing a reliable estimate regarding resources needed for qualified treatment of the in-flow of HW during the next ten years was launched by SAKAB, early 1987. According to statements by Swedish Industry, we were told that production of Hazardous Waste is unlikely to increase appreciably during this period. As the demands for environmentally safe treatment increase, the costs for getting rid of the HW will increase simultanously. This will undoubtedly stimulate measures to minimize the production of HW. However, on the other hand stricter requirements by the authorities, intensified control, as well as increased environmental concern, are expected to render still larger HW-volumes collected and, thus, a further potential for environmentally safe treatment. The landfill of HW should for example decrease in favour of high temperature incineration. Improved treatment of industrial outlets to air and water should produce more concentrated waste, which will be classified as hazardous.

Legislation in order to limit or prevent the use of some chemicals will probably create new needs of treatment.

Sweden has few known old dumps or landfills, which need to be cleaned up. Increased environmental concern, media exposure and control by the authorities may necessitate, however, the establishment of additional resources for treatment of soil and sludge containing creosote, pesticides, mercury and arsenic.

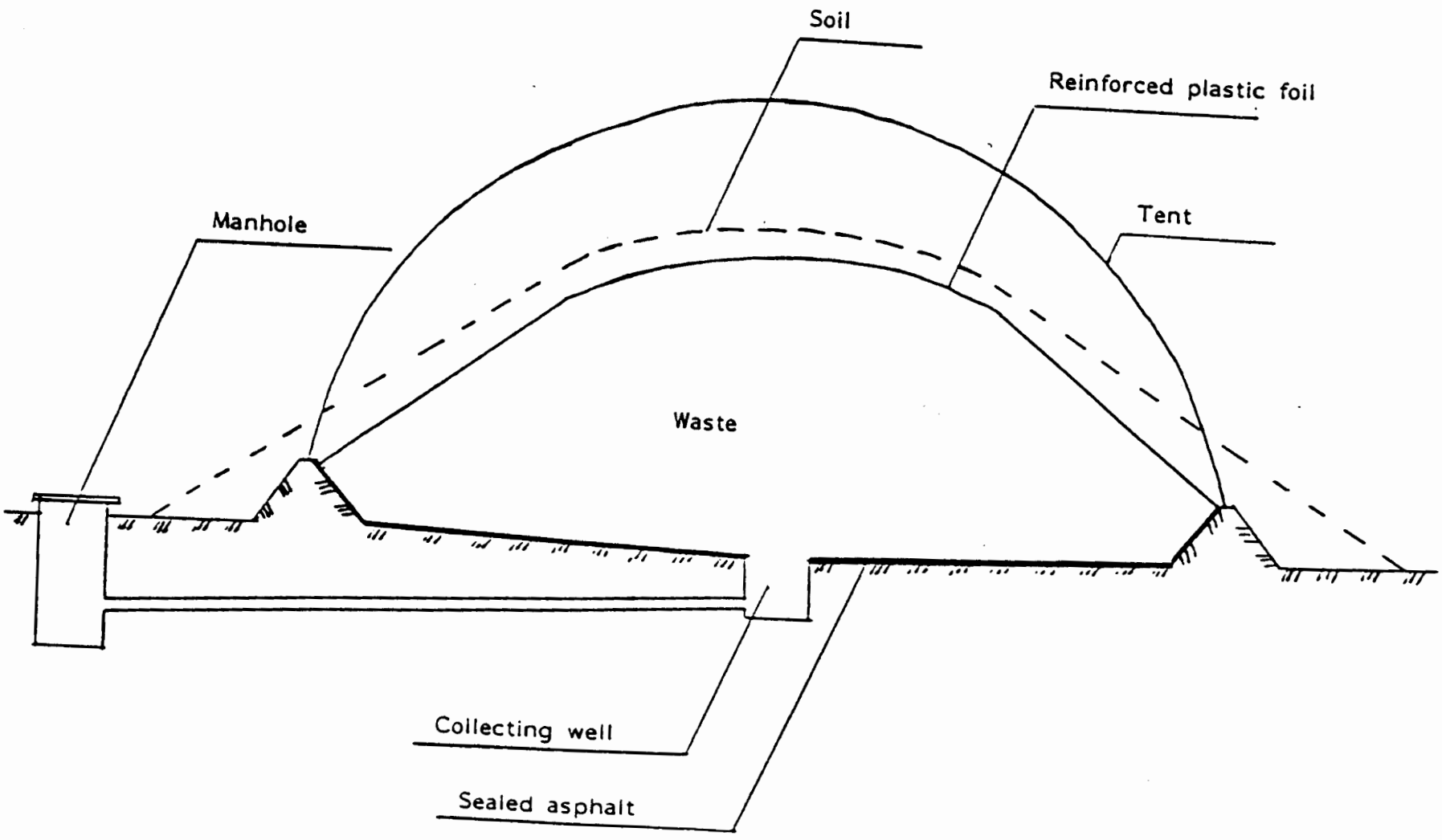
The SAKAB project previously mentioned concluded that it will shortly be necessary to double our current incineration capacity.

In October this year the Board of SAKAB recognized this need and therefore entrusted the company president with preparing an application for permit for an additional incineration unit of at least the same capacity as the existing one. Thus, a second new unit could possibly be taken into operation by 1993. Taking into account our exhaustive and positive experiences from production and tests in our existing plant, the No. 2 combustion system will also be based on a rotatary furnace. The design of the pre-treatment and flue-gas cleaning systems will, however, both have to differ considerably from their present designs.

The emission conditions laid down by the authorities are expected to become stricter. For example, the maximum emission level of dioxines will probably have to be <0,1 ng/Nm^3 flue gas. Through SAKAB's knowledge of running an operation of this nature, we envisage no problems, however, in adhering to these new conditions.

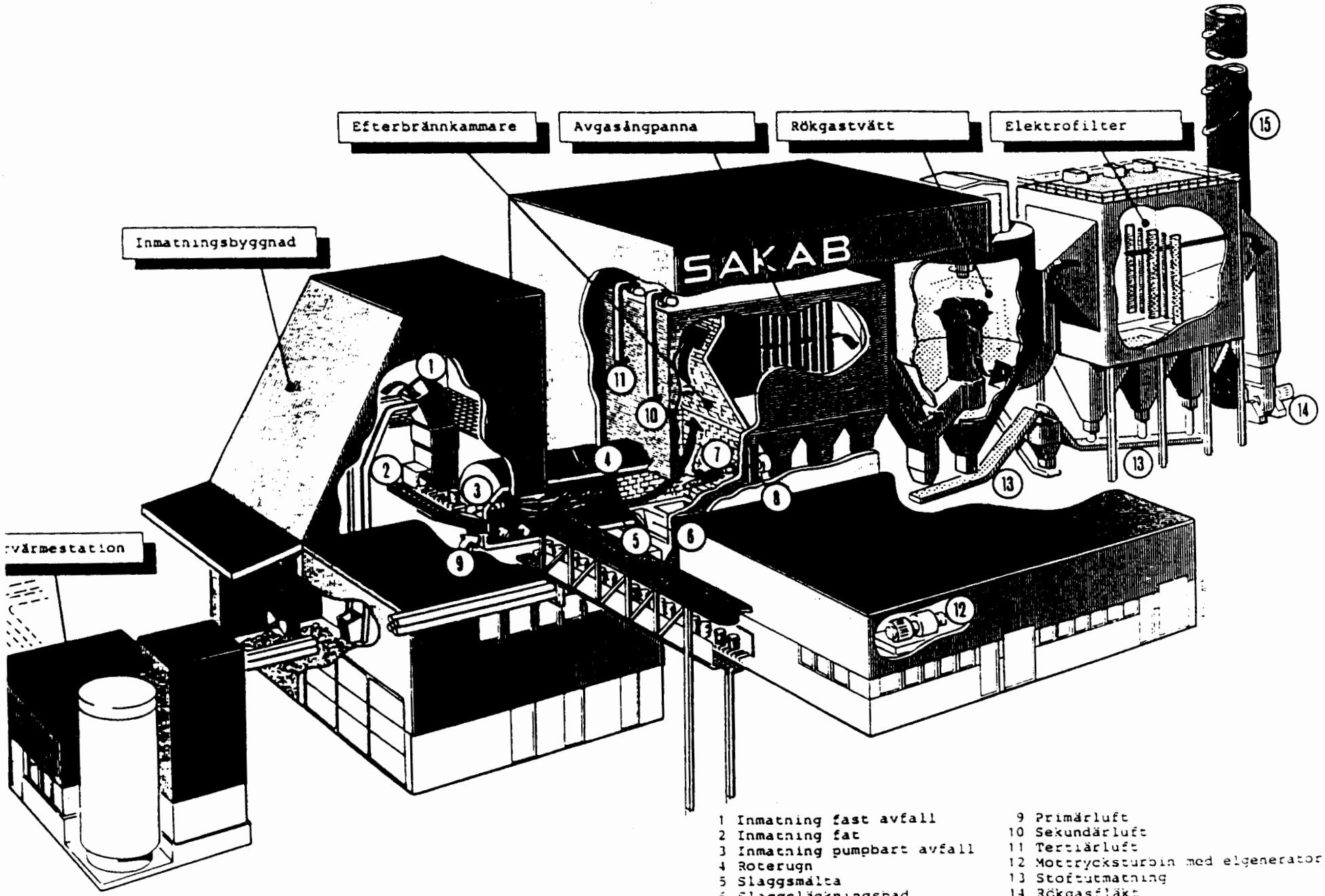
E N D

The "SAKAB" landfill"



Fjärrvärmestation	=	District heating station
Inmatningsbyggnad	=	Input building
Efterbrännkammare	=	Post-combustion chamber
Avgasångpanna	=	Exhaust gas boiler
Rökgastvätt	=	Flue gas cleaning
Elektrofilter	=	Electrostatic precipitator

1 Solid waste input
2 Drum input
3 Pumpable waste input
4 Rotary kiln
5 Slag smelter
6 Slag quenching bath
7 Oil burner
8 Contaminated water input
9 Primary air
10 Secondary air
11 Tertiary air
12 Back-pressure turbine
13 Dust discharge
14 Flue gas fan
15 Chimney stack



1 Inmatning fast avfall
2 Inmatning fat
3 Inmatning pumpbart avfall
4 Roterugn
5 Slaggsmälta
6 Slaggsläckningsbad
7 Oljebrännare
8 Inmatning förorenat vatten
9 Primärluft
10 Sekundärluft
11 Tertiärluft
12 Mottrycksturbin med elgenerator
13 Stoftutmatning
14 Rökgasfläkt
15 Skorsten

ATTACHMENT 2

ENVIRONMENTAL DEFENSE FUND

1616 P Street, NW
Washington, DC 20036
(202) 387-3500

June 21, 1989

Bob Holloway
Waste Combustion Section
OS-322
USEPA
401 M Street, SW
Washington, DC 20460

Dear Bob:

As you probably know, a diverse group of people interested in hazardous waste management, particularly incineration, went on a tour of hazardous waste facilities in Switzerland, Germany, and Denmark earlier this month. I was lucky enough to be included, as was Joe Carra from EPA and K.C. Lee from Union Carbide. The tour was arranged under the auspices of the New Jersey Institute of Technology.

I am writing to let you know a few things we learned on the tour pertaining to issues that have arisen around EPA's developing hazardous waste incinerator rule.

We visited the following facilities:

1) the Ciba-Geigy 4000 ton-per-year (tpy) rotary kiln at their Basel, Switzerland plant;

2) the Hessische Industriemull (HIM) facility in Biebesheim, West Germany, a 60,000 tpy rotary kiln that is a joint industry-government venture in the German state of Hessen;

3) the Bayer Company's complex in Leverkusen, West Germany, which includes 4 incinerators, one a multiple hearth fluid bed incinerator for sludges, the others rotary kilns, with capacity about 100,000 tpy;

4) Kommunekemi, the Danish national chemical waste treatment facility in Nyborg, which includes a 90,000 tpy rotary kiln, with an expansion planned to 140,000 tpy.

We also met with operators of the Swedish SAKAB facility (40,000 tpy rotary kiln), although we didn't visit this site. What follows is an assortment of things we learned along the way which may be of interest to you in developing the incinerator rule.

National Headquarters
257 Park Avenue South
New York, NY 10010
(212) 505-2100

1405 Arapahoe Avenue
Boulder, CO 80302
(303) 440-4901

5655 College Avenue
Oakland, CA 94618
(415) 658-8008

1108 East Main Street
Richmond, VA 23219
(804) 780-1297

128 East Hargett Street
Raleigh, NC 27601
(919 [illegible] 793

Technology employed for air pollution control:

All of these facilities had or were installing both particulate removal devices and gas scrubbing devices (usually multi-stage) for acid gases. Several of the facilities had continuous emission monitors (CEM) for hydrocarbons and HCl, as well as other traditional parameters, as detailed below.

At Ciba-Geigy, thermal de-NO_x will be employed soon, using selective catalytic reduction (SCR). With SCR, they expect to meet the soon-to-be-promulgated Swiss federal NO_x standard of 100 mg/m^3.

At Bayer, a 3-stage scrubber is employed, which cools the gases entering the downstream ESP to 60°C, allowing for very efficient condensation of volatile organics or metals onto particles before their removal in the ESP. This system also allows them to routinely achieve a particulate matter (dust) level of 10-15 mg/m^3 (i.e., 0.004-0.006 grains per dscf)!!

At SAKAB, the new unit they are installing will probably have a scrubber, a baghouse, and an ESP, in order to meet the Swedish 0.1 ng/m^3 dioxin standard. They also intend to utilize extensive cooling prior to particualte removal to condense dioxins and mercury onto particles.

At Kommunekemi, one of the units has 2 ESPs, the newest one has a baghouse. Both are achieving about 8 mg/m^3 particulate matter emissions, but the baghouse system has a significant reduction in fine particles compared to the ESP system..

Continuous emissions monitoring (CEM):

* Ciba-Geigy used CEM for dust, CO, SO_2, NO_x, O_2, and THC. They used an FID C_1 detector for THC, and reported no major problems with routine (daily) maintenance. The CEM values reading out while we were in the control room were as follows (for what it's worth):

CO:	2-3 mg/m^3
SO_2:	175 "
NO_x:	218 "
O_2:	11.9 vol %
THC:	2.8-3.1 mg/m^3

* HIM used CEM for dust, CO, HCl, HF, and O_2. They report no problems with their CEM devices, but have a rigorous routine maintenance program.

They use a 30-minute averaging system, in which 48 30-minute values are calculated and recorded into a computer each day. These 30-minute values are adjusted during the 30-minute period by taking measurements every 90 seconds. The values are compared to emissions standards as follows:

- no more than one of the 30-minute values in a given day (and no more than 3% in a given year) can exceed 120% of the standard;

- none of the 30-minute values can exceed 200% (i.e., twice the standard);

- all 24-hour values (calculating by averaging the 48 30-minute values each day) must be below the standard.

* Bayer uses CEM for dust, CO, HCL, HF, THC, SO_2, NO_x, and O_2. No problems under a system of daily maintenance.

* Kommunekemi uses CEM for CO, O_2, CO_2, SO_2, and HCl. Typicaly CO values were reported to be about 50 mg/m^3.

<u>Other monitoring</u>:

* Stack testing for metals is done once a year at Ciba-Geigy.

* In contrast, at HIM, a 6-hour sample of stack gases is isokinetically collected and analyzed <u>every day</u> for the whole range of heavy metals in their on-site laboratory. Workers are monitored twice a year, but we did not find out what was measured.

* Metals and dioxins are measured once a year at Bayer.

* At SAKAB, a 99.9% minimum combustion efficiency is required, based on CEM.

SWEDEN
DUST < 20 mg/Nm³ @ 10% CO_2
HCL < 100 mg/Nm³ @ 10% CO_2
HF < 5 mg/Nm³ @ 10% CO_2

Emission standards:

Swiss federal emission standards for all incinerators are as follows (all in mg/m^3 at 11% O_2):

dust	50
HCL	30
HF	5
NO_x	500 (to be lowered to 100)
Cd	0.1
Hg	0.1
Pb + Zn	5 (for the sum)

Officials of the Swiss EPA said these standards are required to be met 90-95% of the operating time, but that there are not currently any limits on the magnitude or duration of excursions above these standards. Emissions from the newest plants are generally an order of magnitude below these standards.

New German standards under development include a standard for THC, and are as follows (in mg/m^3):

dust	10
CO	50
THC	10
HCl	10
HF	1
SO_2	50
NO_x	100
Cd	0.1
Hg	0.1

Controls (unspecified) on metal content of incinerated wastes are employed at HIM; mercury-containing waste cannot be incinerated at Kommunekemi.

I hope you find this information useful. If you have more questions or want contacts in Europe, please feel free to given me a call.

Regards,

Richard

Richard A. Denison, Ph.D.
Senior Scientist

UNIVERSITY OF CALIFORNIA

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DAVID PIERPONT GARDNER
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Senior Vice President—
Academic Affairs

OFFICE OF THE PRESIDENT
BERKELEY, CALIFORNIA 94720

August 7, 1989

Mr. Michael Horan
Bicycle Mechanic
P.O. Box 2262
Taos, New Mexico 87571-2262

Dear Mr. Horan:

I have received your request for information concerning activities at the Los Alamos National Laboratory. I am informed that the Freedom of Information Act applies only to federal organizations. The University of California is a state institution.

Nevertheless, I have asked Los Alamos to supply you with the information that you requested. I have sent them your letter, and you should hear from them directly.

Sincerely,

James S. Kane

James S. Kane
Special Assistant

cc: Mr. Ed Waltersheid, LANL
Senior Vice President Frazer

8/1/89

to: Bob Kirkpartick
Bill Blankenship
NM EID Air Quality Bureau

C. Kelly Crossman
NM EID Hazardous Waste Bureau

from: Michael Horan
Taos tel: 758-3522

Gentlemen:

Enclosed, please find complete copies of the new U.S. EPA Guidances on Emissions for Heavy Metals, Hydrogen Chloride and for PIC (Products of Incomplete Combustion).

My comment is that I think the Heavy Metals and HCl guidance is bewildering in its complexity and will never be put into practical application anywhere. Also, it provides too many loopholes by allowing calculation of emissions from the feed material.

and LAER

I much prefer a technology based BACT derived stack gas volume concentration emissions limit such as Shiva Garg has done with the PIC emissions limit.

Surprisingly, there have been -0- BACT determinations by U.S. EPA for hazardous waste incinerators. I also understand that EPA Region6 has never ordered a stack gas simple for heavy metals on any incinerator in their region.

NUTS
STORAGE & HARVESTING
ALMONDS

My argument is to go with a straight LAER & BACT technology based stack gas emissions limit and let the vendor companies fight it out in the marketplace as to who has the cleanest equipment.

I mean NO_x automobile emissions are limited at the exhaust pipe, right? So why can't you limit heavy metals and radionuclides at the stack on the TA-50 TRU waste incinerator?

I sincerely can't imagine the EPA Heavy Metals and HC guidance feed material calculations even being done anywhere except perhaps in an EPA workshop.

The EPA sampling protocols are child's play by comparison, so why not assign the stack gas limit and the corresponding sampling protocol and be done with it?

Sincerely,

Michael Horan

Michael Horan
tel: 758-3522
Taos

Encls: complete copies
U.S. EPA Guidances on Heavy Metals, HC and PIC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 27 1989

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: Use of Omnibus Authority to Control Emissions of Metals, HCl, and PICs from Hazardous Waste Incinerators

FROM: Sylvia K. Lowrance, Director
Office of Solid Waste

TO: Hazardous Waste Division Directors, Regions I-X

Questions have recurred regarding the implementation under omnibus authority of the forthcoming proposed amendments to the hazardous waste incinerator standards, and the relationship between implementing the controls and meeting the November 8, 1989, permitting deadline. This memorandum provides OSW's policy on these issues.

We are concerned that the existing standards for hazardous waste incinerators under 40 CFR 264.340 may not be fully protective for all facilities with respect to emissions of toxic metals, hydrogen chloride (HCl) and products of incomplete combustion (PICs). We have developed proposed amendments to the standards to better address the hazards posed by these emissions. The proposed rules have completed the internal Agency review process and are under review by the Office of Management and Budget. We anticipate that the proposed rules will be published for public comment in the spring of 1989.

In the interim, until the rules are promulgated, EPA permit writers should use the authority provided under Section 3005(c)(3) of the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), to apply additional permit conditions as necessary to adequately control these emissions. This provision, often called the "omnibus" authority, gives permit writers the authority to apply additional permit conditions as necessary to adequately protect human health and the environment. Thus, EPA permit writers have the authority and the responsibility to consider, on a case-by-case basis during the permit process, whether controls based on the current regulations are fully protective, and, if not, to establish additional permit conditions as necessary to protect human health and the environment.

The use of the omnibus authority is clearly within the initial intent of Congress in including the omnibus provision in the statute, as evidenced by the legislative history at S. Rep No. 284, 98th Cong., 1st Sess. 31 (1983), which states:

> "[the omnibus authority] can also be used to incorporate new or better technologies or other new requirements in permits, where EPA intends to add such technologies or requirements to the regulations but has not yet issued a final regulatory amendment."

Guidance Documents

To assist permit writers, we have developed two guidance documents: Guidance on Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators, December 29, 1988 (Draft final report); and Guidance on PIC Controls for Hazardous Waste Incinerators, December 30, 1988 (Draft final report). These guidance documents recommend a step-by-step approach to develop permit conditions consistent with the regulatory requirements the Agency plans to propose. We recommend that permit writers use the guidance documents to develop appropriate permit conditions. However, in using the guidance documents or other information to establish permit conditions under the omnibus authority, the permit writer must provide the applicant and other interested parties due process. The permit writer must explain and document what the concern is, and thoroughly discuss why the additional permit conditions are needed to ensure protection of the public health and the environment. Through the permit process, he must provide the time and opportunity for comment, he must fully respond to those comments, and he must include the responses in the administrative record of the permit. In short, the permit writer must provide a sound technical basis for inclusion of the permit conditions under the omnibus authority.

Permit writers need not wait to use OSW's guidance documents until the documents have been issued in final form. Like the proposed rules, the guidance documents have completed the internal Agency review process. We anticipate that the documents will be published in the spring of 1989, and made available through the National Technical Information Service. Permit writers should use the guidance notwithstanding its draft status because, as indicated above, the permit writer must justify thoroughly and, in writing, any requirements applied under the omnibus authority.

The permit writer cannot simply refer to the guidance document to support the conditions included in the permit. Moreover, we anticipate that the guidance may change over time as permit writers and applicants gain experience dealing with the issues and as additional information becomes available (e.g., health effects data; improvements in dispersion models). We plan to revise the documents as needed after publication and to provide notice in the Federal Register of the availability of subsequent editions.

By considering the need for additional controls under the omnibus authority on a case-by-case basis, permit writers can avoid petitions from interested parties asserting that the permit is not adequately protective. The Administrator has already ruled in favor of a petition for review of a RCRA incineration permit that argued, in part, that adequate controls on metals and PIC emissions were not provided in the permit. The Administrator subsequently directed the Region to consider adding permit conditions addressing PICs and metals.

State Permit Writers

We encourage State permit writers to implement the guidance if the State has an omnibus authority in its statute. EPA permit writers should review the draft State permit to determine if it adequately protects human health and the environment, particularly with respect to emissions of metals, hydrogen chloride, and PICs. If the State permit does not provide adequate controls, the EPA permit writer should provide these controls in the HSWA portion of the permit, given that the omnibus authority is a HSWA provision. HSWA provisions must be implemented by EPA in authorized States until the State obtains authorization for HSWA provisions as well. To date, only one State, Georgia, has been authorized under HSWA.

Impact on Permitting Deadline

We do not believe that considering the need for additional controls for metals, HCl, and PIC emissions during the permit process will cause the Regions or States to miss the November 8, 1989, permitting deadline established by HSWA. We developed the guidance documents to enable the permit writer to apply appropriate controls on a site-specific basis and to explain to interested parties the need for those controls. In addition, we have conducted four training workshops for Regional and State permit writers on how to use the guidance documents. Finally, Headquarters staff in the Combustion Section, WMD, and the Alternate Technology and Support Section, PSPD, are available to assist permit writers as necessary. Limited contractor funds are also available to handle special problems that may arise.

Some permits, however, may have already progressed to a stage where issuance of the permit would be substantially delayed if a trial burn was required to demonstrate conformance with the metals and PIC controls recommended by the guidance documents. Examples are when the trial burn has already been conducted or where the trial burn plan has been approved. In these cases, the guidance documents recommend that permit writers establish conservative, but reasonable, interim controls until the owner or operator conducts a trial burn to demonstrate that the interim requirements (or less stringent requirements) will not result in an exceedance of the limits recommended by the guidance documents. Methods for determining these interim limits are presented in the guidance documents. In applying these interim controls, however, the permit writer must still thoroughly explain in writing the basis for imposing such conditions and provide interested parties due process through the RCRA permit procedures.

Nonetheless, if a State believes that it may not be able to meet the November 8, 1989, permitting deadline because of the policy on implementing controls on metals, HCl, and PIC emissions, the State should discuss the situation with the Regional Office. If site-specific guidance is needed, the Regional Office may discuss the situation further with Joseph Carra, Director, Permits and State Programs Division.

cc: State Hazardous Waste Division Directors
Incinerator Permit Writers' Workgroup
Jeffery H. Denit
David Bussard
Robert Tonetti
Joseph Carra
Steven Silverman
James Berlow
Bob Holloway

August 4, 1989

Mr. C. Kelley Crossman
EID
1190 St. Francis Dr.
Santa Fe, NM 87503

Dear Mr. Crossman:

I am writing you to express my concern about the licensing of the hazardous waste incinerator in Los Alamos. I am very worried about its possible negative effects on peoples' health, as a result of long-term breathing of hazardous fine particles (see attached).

Please read the enclosed article and please, please don't compromise the health of the people of this wonderful state. The risk of doing so by licensing this incinerator is a risk that simply should not be taken.

Thank you for your time and consideration.

Sincerely,

Diane Forsdale

Diane Forsdale

Encl. (1)

RECEIVED
AUG 5 1989

D I A N E F O R S D A L E
rt 9 box 90-20 santa fé new mexico 87505

RACHEL'S HAZARDOUS WASTE NEWS #131

Providing news and resources to the Movement for Environmental Justice -- May 30, 1989

FINE PARTICLES--PART 1
THE DANGERS OF INCINERATION

Incineration of anything, including garbage and hazardous chemical wastes, produces a kind of pollution that is uniquely dangerous to humans: fine particles.

In this series, we will first discuss the characteristics of fine particles, and later we will discuss health studies showing the consequences of breathing fine particles.

The process of incineration turns solids and liquids partly into gases and partly into tiny particles of soot or ash. As the gases rise in the smoke stack, they cool and some of the gas molecules come together to form additional fine particles. The resulting particles are exceedingly small when they are emitted into the environment. Scientists who study particles make a distinction between coarse (large) particles and fine (small) particles. Fine particles behave entirely differently from coarse particles and, as we will see, are much more dangerous to humans. Fine particles are also much more difficult and expensive to control. They are also invisible, so when they are not controlled, there is no way to know it except by monitoring with the proper instruments.

Coarse particles are those with a diameter larger than 2 micrometers (um); fine particles are those with a diameter less than 2 micrometers. A micrometer (um) is a millionth of a meter and a meter is about a yard. (An older term for micrometer is micron.)

Incinerators emit large numbers of particles, despite the best available control technology. Half of all the particles emitted will have a diameter less that 2 um, and the majority of these will have a diameter of 0.3 um.

It is difficult to imagine how small these particles are. To help understand what we're talking about, look at the dot over the letter i in this newsletter; that dot measures about 400 micrometers in diameter. You could fit 1590 coarse particles (with a diameter of 10 micrometers) on that dot. In the case of fine particles with a diameter of 2 um, you could fit 40,000 particles on the dot. When the particles have a diameter of 0.3 um, you can fit 1,777,780 (nearly 2 million) particles on the dot over the i.

Unfortunately, U.S. EPA [Environmental Protection Agency] regulations do not take into consideration the sizes of the particles emitted by an incinerator. For regulatory purposes, coarse particles are considered to be the same as fine particles, as if they were all equivalent. The regulations issued as part of the Resource Conservation and Recovery Act (RCRA) allow the emission of 180 milligrams (mg) of particles per dry standard cubic meter of stack gas. Measurements show that half these particles will have a diameter larger that 2.5 micrometers. The remaining 90 mg of particles, however, will have diameters ranging from 2.5 down to 0.1 micrometers. A majority will have a diameter of 0.3 micrometers. If we assume that 25% are 2 um, 25% are 1 um, 35% are 0.3 um and 15% are 0.1 um in diameter, we can develop a general picture of the typical fine particle emissions from an incinerator.

Each gram of fine particles emitted from an incinerator will consist of 311 trillion (3.1×10^{14}) individual particles. There are 28 grams in an ounce and 454 grams in a pound. A trillion (10^{12}) is a thousand billion (or a million million). Over a year's time, an incinerator meeting the federal standards will legally emit anywhere from 10 to 1000 <u>tons</u> of fine particles, depending on the size of the incinerator. One ton of fine particles will be made up of 280,000,000,000,000,000,000 (280 million trillion) individual particles.

Breaking things into fine particles has the effect of vastly increasing their surface area. A single particle weighing a gram (and having the same density as water) would have a surface area of about 5 square centimeters (the size of a small U.S. postage stamp). But when that same gram is broken into 311 trillion fine particles, its combined surface area grows to 8958 square meters (the area of two football fields).

This is important for several reasons: as

these fine particles move upward in the smoke stack, they are immersed in a bath of gaseous chemicals that are cooling and are "looking" for a place to turn from a gaseous to a solid state. Fine particles, with their large surface area, provide an inviting place, and so the surfaces of fine particles become covered with pollutants ("enriched" is the technical term for this) before they are released into the local air. In particular, fine particles become coated with toxic metals (lead, cadmium, arsenic, chromium, and zinc, and with sulfur and polycyclic aromatic hydrocarbons--or with whatever else is in the smoke stack at the time).

As the human body evolved throughout its long history, it adapted to the environment. One factor in the environment has always been dust, principally from dust storms. Dust from storms is all larger than 10 um in diameter and the human body evolved mechanisms for protection against such large particles. The hairs inside the nose, the mucous membranes lining the nose, throat and lungs, and even the shape of the throat, help to trap dust. As air is inhaled, the shape of the throat causes the air to swirl, so heavy dust particles are thrown outward by centrifugal force, where they strike the mucous-lined walls. As the tubes and passageways leading to the lungs twist and branch, they provide many opportunities for particles to collide with sticky walls and become trapped before they enter the lungs. Once trapped by mucous, coarse particles are coughed up and excreted.

Nature has gone to great lengths to protect the lungs because the deepest regions of the lung provide places (called alveolar sacs, or alveoli) where oxygen passes into the blood and carbon dioxide passes out of the blood. Thus, the deep regions of the lung provide direct access to the blood stream and, by this means, to every part of the body.

Unfortunately, humans now produce huge numbers of fine particles that elude the body's protective mechanisms entirely. Fine particles pass easily into the deepest regions of the lungs. There they remain indefinitely because no clearance mechanisms effectively remove them.

Once lodged in the deep regions of the lung, fine particles, with their enormous surface area enriched with toxics, provide a particularly efficient means for delivering metals and organic pollutants directly into the blood stream. Their large surface area provides effective contact with moist tissue and the opportunity for dissolving or for other chemical reactions, putting pollutants directly into the victim's blood. Once in the circulatory system, toxics are then distributed throughout the body.

[To be continued.]

The best books on fine particles are those of the National Research Council, National Academy of Sciences: Airborne Particles (Baltimore, MD: University Park Press, 1979) and Controlling Airborne Particles (Washington, DC: National Academy of Sciences, 1980); a short summary appears in Fine Particulate Pollution, a Report of the United Nations Economic Commission for Europe (London and NY: Pergamon Press, 1979). A good, though very technical, introduction is William Hinds, Aerosol Technology; Properties, Behavior and Measurement of Airborne Particles (NY: John Wiley and Sons, 1982).

Rachel's Hazardous Waste News is published weekly by Environmental Research Foundation, P.O. Box 3541, Princeton, NJ 08543. Editor: Peter Montague, Ph.D.; Associate Editor: Maria B. Pellerano; Assistant Editor: Annette Eubank; West Coast Editor: Tim Montague; subscriptions: Abigail Allen, Office Manager. Subscription rates: $25 per year for individuals and citizen groups, $50 for government agencies, $8 for students and seniors, $250 for businesses and professionals. In Canada, add $4.00; in Europe, add $11.00.

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RACHEL'S HAZARDOUS WASTE NEWS #132

Providing news and resources to the Movement for Environmental Justice -- June 6, 1989

FINE PARTICLES--PART 2
INCINERATION'S TINY BYPRODUCTS AGGRAVATE ASTHMA, BRONCHITIS

The most dangerous products of incineration are tiny, invisible, pollution-coated particles released into the atmosphere. In the air pollution business, these are known as "fine particles." Despite the best available control technology, incinerators emit large quantities of such particles, which typically measure two micrometers or less in diameter. A micrometer is a millionth of a meter and a meter is 39 inches. Pollution control devices like Venturi scrubbers and baghouse filters are not very efficient at trapping these small particles, so to save money for incinerator operators (and thus encourage incineration, which is the stated goal of the EPA), the U.S. Environmental Protection Agency has declared it "OK" for incinerators to emit large quantities of the smallest particles.

Federal law says that an incinerator is allowed to emit 180 milligrams of particles with each cubic meter of air (or 0.08 grains with each cubic foot of air). There are 437.5 grains in an ounce. One large incinerator smoke stack may emit 100,000 cubic feet of air every minute, day in and day out, or 52 billion cubic feet per year. It would be legal for such an incinerator to emit 300 tons of particles yearly. Typically, half of these particles will measure 2 micrometers or less in diameter and thus will be "respirable," which means that you and I can breathe them into the very bottom of our lungs because nature has provided us with no defense against particles this small. From our lungs, they can pass directly into our blood. (See RHWN #131, where we discussed the penetration of these fine particles into human lungs.)

The National Academy of Sciences, in Airborne Particles (Baltimore: University Park Press, 1979), discussed the health dangers of fine particles from many points of view. The "background level" of these fine particles in uninhabited regions of Canada is 1 to 3 micrograms in each cubic meter of air; in the rural Midwest, you'll find 5 to 12 micrograms in each cubic meter of air. This is not a "natural" background level; it represents pollution created by humans. Nevertheless, this background level is a good standard against which to judge the allowable emission of particles from incinerators. The allowable emissions from an incinerator exceed background concentrations by anywhere from a factor of 15,000 to a factor of 180,000. The EPA is relying upon dilution to protect you. They will argue that, by the time those particles reach your lungs, they will be diluted in a lot of fresh air and thus won't be quite so far above background levels when you breathe them. But this, of course, depends upon how close you live to an incinerator, how the wind currents go, whether there are thermal inversion conditions in your local atmosphere, and so forth. There is growing evidence (to be presented next week) that the EPA's dilution strategy isn't safe.

Fine particles remain airborne for long periods of time, and before they fall to earth they can travel several hundred miles or even farther. They can present a danger to humans all along their route. Fine particles weigh so little that they do not respond predictably to the pull of gravity. The smallest air current keeps them aloft. These particles are so small that rain drops do not wash them from the atmosphere. You are no doubt familiar with the force of air being pushed ahead of a truck barreling down the highway; it gives your car a push as it goes by. In the same way, raindrops (which measure 500 to 9000 micrometers in diameter) push air ahead of them as they fall, and they knock fine particles aside instead of washing them to earth.

Increasing the concentration of fine particles in the atmosphere is not good for people. Hardest hit are those with bronchitis and asthma, those who are very young or old, and those who exercise outdoors. Breathing through your mouth (which is one of the first things people do when they exercise, play sports, or jog) increases the intake of fine particles into the lungs. In addition, some healthy people

absorb 50% more fine particles into their lungs than the average. The reasons for this are not understood.

One particularly important aspect of fine particles is that they carry into our lungs pollutants that could not otherwise get there. In this sense, fine particles have synergistic (multiplier) effects with other pollutants. The Academy said, "The generally accepted view of synergism extends beyond potentiation [increasing a pollutant's power] to include the role of toxic vector [carrier]. Such gases as sulfur dioxide are probably either adsorbed to the particulate surface or absorbed into the particles, and thereby transported into the alveolar regions [in the deep lung], where they exist in high, localized concentrations. These localized high concentrations [in the lung] could not be produced without particles. Accordingly, sulfur dioxide sorption to particulate matter might effectively allow sulfur dioxide penetration into the alveolar regions at even nominal environmental concentrations of the gaseous pollutant." In other words, "normal" or "acceptable" levels of sulfur dioxide may be made dangerous by the presence of fine particles.

"In summary," said the National Academy, "particulate atmospheric pollutants may be involved in chronic lung disease pathogenesis as causal factors in chronic bronchitis, as predisposing factors to acute bacterial and viral bronchitis, especially in children and cigarette smokers, and as aggravating factors for acute bronchial asthma and the terminal stages of oxygen deficiency (hypoxia) associated with chronic bronchitis and/or emphysema and its characteristic form of heart failure (cor pulmonale)."

CORRECTION: RHWN #131 TO BE REVISED, REISSUED

Last week's issue, Rachel's Hazardous Waste News #131, contained errors, so we have printed a revised version, which will reach you in a day or two. Please destroy copies of the original #131. If you sent #131 to friends, please be sure to send them the revised #131.

We regret the errors and any inconvenience we may have caused our readers.

'FRONTLINE' TV BROADCAST WILL FEATURE A NOTORIOUS INCINERATOR IN *WHO'S KILLING CALVERT CITY?*

PBS (the Public Broadcasting System) will air a program about Calvert City, Kentucky June 20. Called *Who's Killing Calvert City?*, the program is part of the network's regular "Frontline" series. This story focuses attention on one of the most shameful and dangerous polluters in America--the LWD Incinerator--and its neighbors (GAF, BF Goodrich and others).

Like many places in the Midwest and South, Calvert City is dominated by good old boys who bristle when anyone suggests there's something wrong with a town that has allowed itself to be victimized by predatory businessmen whose smoke stacks belch tons of poisonous chemicals into the public's airspace. But there is something wrong with towns like Calvert City.

This is a heroic story of grass roots struggle by the Coalition for Health Concern as they battle the poisoners and try to save the children of Calvert City from a legacy of danger and disease.

Rachel's Hazardous Waste News is published weekly by Environmental Research Foundation, P.O. Box 3541, Princeton, NJ 08543. Editor: Peter Montague, Ph.D.; Associate Editor: Maria B. Pellerano; Assistant Editor: Annette Eubank; West Coast Editor: Tim Montague; subscriptions: Abigail Allen, Office Manager. Subscription rates: $25 per year for individuals and citizen groups, $50 for government agencies, $8 for students and seniors, $250 for businesses and professionals. In Canada, add $4.00; in Europe, add $11.00.

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August 4, 1989

Mr. Peter Strong
1227 Camino Santa Ana
Santa Fe, New Mexico 87501

Re: LANL hearing July 20th 1989

Dear Mr. Strong

At the conclusion of preparing the transcript and attempting to get all materials rounded up I find that I did not receive a copy of your marked Exhibit 1, the Sternglass report.

In order to not hold up the transcript, I have gone ahead and forwarded it to the EID, but if you would like a copy of that paper to be included, would you please send it to the EID in care of Mr. Crossman, 1190 St. Francis Drive, Harold Runnells Building, Santa Fe 87503.

Thank you.

HOWARD W. HENRY & COMPANY

Howard W. Henry, CSR

cc Kelley Crossman

Legions of I ing Light

Box 351, El Prado, N.M. 87529

Kelly Crossman

N.M. State EID

Howdy, First I'd like to complain about the procedures of this process. Usually there is a time lapse of several weeks after a hearing before the deadline on written comments. The idea that all comments must be rendered by the day of the hearing means that nothing learned at this event can be digested or studied by the public. Please issue a one month or three week extension of this deadline! Your public notice #29 indicates that our comments must be submitted to both Mr. Crossman and Bill Honker in Dallas to be considered in a final decision. Does this mean i should have sent a copy of my comments to Texas, but it's already too late?

Also I Question the intra-agency communication about this situation. Twice i called Mr. Crossman's office and twice it was hard to find anyone who knew anything about this hearing. The second time a nice lady at Taos EID offices made the call for me and did connect Mr. Robert Kirkpatrick, head of the EID's Air Quality Division. He assured me the incinerator moritorium coveres this plant. And said he wrote Los Alamos Labs to inform them that the incinerator project could not re-open until the new regulations are implaced. * Mr. Kirkpatrick thinks this hearing is about disposal of fly-ash. Yet after several hours of study of the draft premit, i didn't see the word "fly-ash". Was this subject addressed in that document? Obviously, the soon to be, state incinerator regulations, should require a complete Environmental Impact Statement for each plant.

* Please get a copy of this letter from Mr Kirkpatrick and put it into the record of this hearing. Thank

Is it true ~~Heard on the radio~~ that this hearing is for a "final operating permit". ~~and~~ I must question the propriety of bypassing the Air Quality Division of the EID. The "draft permit" reads more like a LANL operations manual than an informative document. One section labels unnamed wastes into catigories of code designations like D, F, K, P, & U. Another, unnamed semi-solid metalic, free liquid, gas, corrosive acid and reactive.* Some of these have earned the repute of "established explosives". Were some established in this very firey furnace? Why did the thing shut down and when? Were there any improvements or renovations during the closure? Have we any assurance that none of these hundreds of agents contain traces of radioactive contamination? The Labs have an established "safe background level" yet if enough of this is air-borne and migrates a distant mountain face, surely the danger will multiply with accumulation. Though the levels leaving the lab may register as safe, or even insignificant, thay can pile up somewhere else and create significant, unsafe conditions.

If this permit is for solid waste managment, why does it not deal with the solid waste created by the incinerator, i.e. fly-ash? Can you ignore both air quality and solid waste disopsal to discuss only operational procedured at the plant? Under "spill kits" the permit does not designate Quality specifications or quantity required, but monthly inspections to verify location, type, presence, etc. Of course, such inspections are important, but what can be done to clean up "spills" of toxic gases? It was shocking to read that only one in each 2,000 containers would be tested by chemical analysis to verify content. And it would take variations of greater than 25% to warrant

---

* Do these designations have any cross-reference? Investigate

According to a HED press release, "The draft permit specifies which chemicals..." And there is a heading in the table of contents called "description of hazardous waste", however the names of the specific chemicals are never itemized. Attachment G is called "Authorized Waste Identification" but instead of obscure latin names, there is a list of code numbers and the over 360 substances remain a mystery. When I asked the lady at Taos EID if this was standard code and if she had a reference to the system, she called Santa Fe. Mr. Kirkpatrick was not familiar with this chemical code either. Is it top secret? Are there many PCB's?

The draft permit says the waste will be in 1,660 gallon tanks with a maximum 5,720 gallons of any waste. There's some funny math here since it says 5,720 would be four 1,660 gallon tanks. Really it's four 1430 tanks for 5,720 and four times 1660 is 6640. But this is minor compared to Attachment G which lists most quantities at exactly 1,000 gallons, yet some run as high as 25,000, 50,000, 100,000 and up to 300,000 gallons of two toxins described as D001 and D002. Page A-4 states that there is less than 55 gallons of many substances. None of these are itemized in Attachment G so one must assume that there are many more than the 360 unnamed hazardous wastes it suggests. How many barrels are there of the less than 55 gallon experimental refuse?

Did notice that Figure A-2 was labeled "Waste Compatability" chart, but it was impossible to read because the print was so small. It seemed to have two crossing columns of toxins, one horizontal and one vertical. But there were not 360 + elements in either column. Only 30, or so. Obviously many of these agents will have nasty effects when they contact. Some of the less than 55 gallon collection may be nearly unknown. How is waste compatability assessed?

Will there be any attempt to breakdown a detailed analysis of each and any chemicals, gases, particals, elements and agents released into the air or earth? How will these materials be effected by percipitation, humidity or other natural phenomenon? They should each be studied to determine the effect aquatic life, the food chain, the human respiratory and digestive systems. Could the cumulative effect of so many toxins be ~~so easily~~ dismissed? Of course it is reassuring to know that a prominent Lab scientist and his daughter and grandchildren will be camping on top the smokestack for several months or years to prove it's ~~benificial health effects.~~ healthful benefits. But, ~~don't you know that~~ some problems may not become evident until the third generation beyond the experiment? When I mentioned this at last year's garbage incinerator hearings, scientists agreed that such third generation research could be valuable, but they wanted funding. The EID should require third generation studies on all known toxins as a prerequisit to incinerator license.

Read that notice will be required to burn off-site wastes from other than the permittee or it's contractors. If the permittee is DOE and it's contractor the U. of Cal. Regents, may they introduce garbage from outside LANA? Have they ~~already~~ already shipped any off-site waste to Los Alamos? Will such notice require public scrutiny or merely be an agency memorandum?

The circular flow charts that clock emissions, ~~you~~ need a trip switch that sets off lights and bells to warn operators when guages indicate danger. Please take seriously the many questions raised ~~today~~ and need for further research which this proposal leaves unanswered.

Yours in peace and light, Bonnie Bonneau

bonnie bonneau

p.s. Sorry i did not date the opening section. It was one page a night, July 14-17. Now it's the 24th.

How strange it is that health and environment were not subjects addressed by those hearing officials who represent the Health and Environment Division. Conservation and recovery of any refuse sounds great and ~~they~~ should be discussed lucidly. They may embody the techniques needed to rectify the trash crisis. The disposable pen,plus the disposable diaper, plus the disposable cup and spoon, ad infinitum, leads to the disposable earth. The poisoning of the planet must end. Could there possibly be any evidence that emmissions from LANL's Controlled Air Incinerator, or Industrial Incinerator, are benificial to either health or environment?

Was a toxicologic study ever done on either incinerator? With over 350 chemical agents assigned to the CAI, would separate tests be required to evaluate each? How frightening to realize that the State of New Mexico, Health and Environment Division, seems to care "not one bit" about such details. In the EID hearing it was suggested that incineration may reduce the size and enhance the poignancy of hazardous elements. Hopefully the brilliant chemists and other scientists at LANL will decide to show sincere intrest in health. Imagine the research possibilities if standards shift from destruction efficiency to environmantal protection. Please refer to the first paragraph on page 4 of this comment for some desirable research projects.

Horror, dread! Horror, dread! Not only does Los Alamos have one incinerator already burning radioactive and hazardous waste, but they want to have five incineratior burning the refuse of modern American civilization. Surely multiple stack emmissions would have a significant impact to warrent an environmental analysis. I wonder if our "environmental president's Clean Air Laws" will

have any application. Are their any laws proposed to limit point source radioactive releases into the air, earth or water? What if chemical emmissions from one plant react with that of another? The cumulative impact of the two existing incinerators must by studied, then extended to consider the effects of three, or more.

Is there a connection between burning corrosive acids and acid rain? Will the Labs dispose of sulfates and other known creators of acid rain in less destructive manners? What about all the oxygen these ~~plants might~~ incinerators destroy? Where does it come from? Can ~~they~~ the Lab make it from scratch? Does someone need this air to survive? Is it truely dispensable? There are some sick looking Ponderosa pines around Los Alamos. Though some may say it's from an iron deficency in the soil, have studies been completed to analyze the effects of incinerated toxins on the plants? Can LANL be persuaded to preform some of this important research?

A study of prominent wind currents and dispersal of fine particulates seems vital to any real environmental assessment. I fail to understand how a document resembling an operations manual can be reguarded as a functional equivalent of an EIS when the permit does not address environmental impact. ~~Having~~ Have studied a few EIS's and though they never address all of the possible environmental impacts they do at least pretend to try. The only way this seems to be a functional equivalent is the volume of hot air. It's like the government can say anything and in fact do anything because they make the rules. Public comment is taken with a grain of salt. Incineration of hazardous chemical or radioactive waste is not an environmentally sound practice and should not be represented as such. Please cease! Thanks a lot. Bonnie Bonneau

Bonnie Bonneau

PPS: Hi, It would be really great to see a 300 to 500 page document that analyzed environmental impact of incineration and other methods of waste managment. What are other options? I do believe that a well planned fertilizer plant could separate radioactive elements and recycle much hazardous waste. Am not sure it could digest gases and corrosive acids, but anyway an EIS is in order. Last year there were incinerator hearings and LANL offered the public several shelves of material to study. It was rediculous to be offered so much more than anyone had the time to look into, Now they offer us next to nothing. Is it possible we could get a tightly edited, non redundant, mathmatically sound document? Perhaps there should be three sections, one for each incinerator and one for the greater cleanup. Please include a list of the chemical agents involved and descriptions of known effects. Also include radioactive materials as they are hazardous, even if as yet you have no regulatory power, their dangers need analysis and research data.

So far i've never seen an Environmental Impact Statement that was very readable. Often they seemed designed to obscure and mis-represent what little is known, and innumerable unknowns. The Forest Service gives away EIS's at request and allows folks to study them for months. They discuss managment practices, and consider impacts on various aspects of environment. However they seem bent on killing trees. Instead of funding loggers and destruction of woodlands, please recycly paper from government offices, agencies and contractors. Sponsor research of various methods for producing cost effective recycled paper products. Stop using dioxin and other toxins in the new studies. Make it naturally.

Yours T. Lowe Kennedy

Proceedings of the 34th INDUSTRIAL WASTE CONFERENCE May 8, 9 and 10, 1979

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WET OXIDATION OF TOXIC ORGANIC SUBSTANCES

C. Robert Baillod, Professor
Richard A. Lamparter, Research Engineer
David G. Leddy, Associate Professor
Michigan Technological University
Houghton, Michigan 49931

INTRODUCTION

The treatment and safe disposal of hazardous organic waste material in an environmentally acceptable manner and at a reasonable cost is a topic of great national importance. Many toxic organics are long lived in the natural environment and resistant to biological breakdown. Destruction of these organic waste materials can be achieved by oxidation to carbon dioxide, water and inorganic forms of nitrogen sulfur and chlorine. There are several processes that may be employed to achieve oxidation of waste organic materials. These are: (a) Chemical Oxidation (using oxidizing agents such as ozone); (b) Biological Oxidation; (c) Wet Oxidation; and (d) Incineration.

The choice of which process is best suited to a waste stream will depend upon the nature of the particular waste, and the concentration of the stream. Figure 1 shows a conceptual relationship between process cost and concentration of organic pollutant [1]. For low concentrations of labile organics, chemical oxidation may be suitable. For higher concentrations of biodegradable organic compounds, biological oxidation processes such as activated

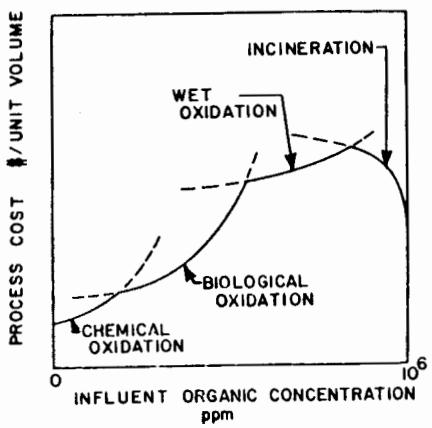

Figure 1. Conceptual relationship between process costs and influent organic concentration.

sludge may be most cost effective. As the concentration of organic material increases beyond 30%, high temperature incineration becomes practical. Wet oxidation is ideally suited to liquid wastes which are too dilute to incinerate by dry combustion and two refractory to handle by chemical and biological oxidation. Many of the toxic organic substances regulated by Section 307 of the 1977 Amendments to the Federal Water Pollution Control Act (PL95-217) are resistant to biological degradation and may be present i[illegible]rious industrial waste streams. The objective of this research was to investigate the u[illegible]ity of the wet oxidation process in the destruction of typical priority pollutants.

WET OXIDATION

The wet oxidation process relies on conditions of elevated temperature and pressure to oxidize organic substances in aqueous solution. Temperature is recognized as the most important process parameter [2]. Pressure is required to maintain water in the liquid state and to provide a minimum overpressure of oxygen. Figure 2 shows the well-known relation between water vapor pressure and temperature. At any given temperature, the reactor pressure must exceed the stream pressure by an amount sufficient to provide a satisfactory oxygen overpressure. The oxygen overpressure required will depend on the rate of the wet oxidation reaction and on the mass transfer characteristics of the reactor.

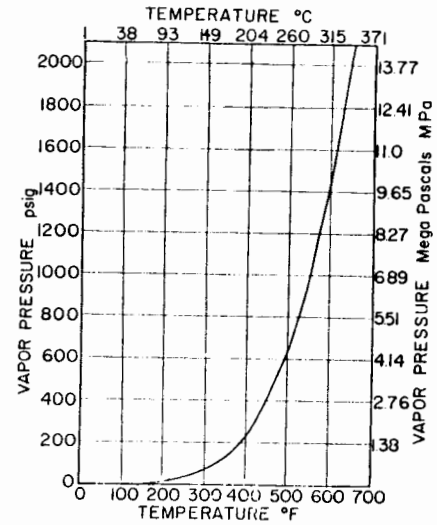

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Figure 2. Vapor pressure of water.

Wet oxidation is not a new process. Its origins can be traced to the Strehlenert Process of wood technology [3] patented in 1915 and to the zinc sulfide oxidation process of hydrometallurgy patented in 1927 [4]. Figure 3 shows two typical wet oxidation reactors, the bubble tower and the stirred tank cascade system. The tower system has been applied to several full scale installations [2] and the cascade system has been employed on a more limited basis to treat sludges [5] and munitions waste [6].

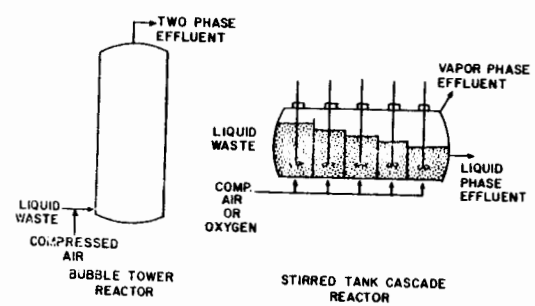

Figure 3. Typical wet oxidation reactors.

Considerable research has been done on wet oxidation of common waste materials and sewage sludges. However, many of the literature reports relate to propri[illegible] wet oxidation processes and are difficult to interpret. Teletzke *et al.* [7] studied the w[illegible]r oxidation products of sewage sludge and determined that the complex polymeric organic fraction of sludge was initially degraded to simpl[illegible]

degraded. At temperatures below 190 C, starch was degraded most extensively whereas lipids were the most resistant and protein and crude fiber were intermediate. Hydrolysis as well as oxidation played an important role in the destruction of the complex polymeric organic compounds initially present. Nearly all known amino acids were found free or as polypeptides in raw sludge. At intermediate degrees of oxidation, most known amino acids were formed while under more severe conditions, only glycine, beta alanine and gamma aminobutyric remained.

Fassell [5] also reported on the wet oxidation products produced from sludge. He found that the residual organics remaining in the liquid effluent consisted primarily of acetic acid with lesser amounts of propionic acid, formic acid, and acetone. The vapor phase condensate also contained acetic and propionic acid with trace amounts of butyric acid, acetaldehyde, acetone, formic acid, methanol and ethanol. Fassell indicated that the cascade reactor system which he studied had the potential to greatly reduce the cost of sludge processing through the recovery of ammonia, acetate and possibly metals.

Others have studied the wet oxidation of phenol [8], glucose [9, 10], shipboard wastes [11], brewery wastes [12] and propionic acid [13]. More recently, Randall and Knopp [14] used Daphnia bioassays to study detoxification of specific organic substances by wet oxidation and found the process to be very effective.

MATERIALS AND METHODS

Batch wet oxidation experiments were conducted using a one-gallon stirred autoclave. Figure 4 shows a schematic diagram of this unit including the injection and sampling systems. At the outset of each experiment, the reactor was charged with 1.40 liters of distilled water and pressurized with oxygen (approximately 150 psig (1.03 MPa)) depending on the quantity of reactant to the injected. The body of the reactor was surrounded by electrical heaters which were employed to heat the liquid and oxygen charge to the desired point. The temperatures of both the reactor and heating furnace were monitored and the reactor temperature was controlled to within ± 5 F by adjusting the heater power.

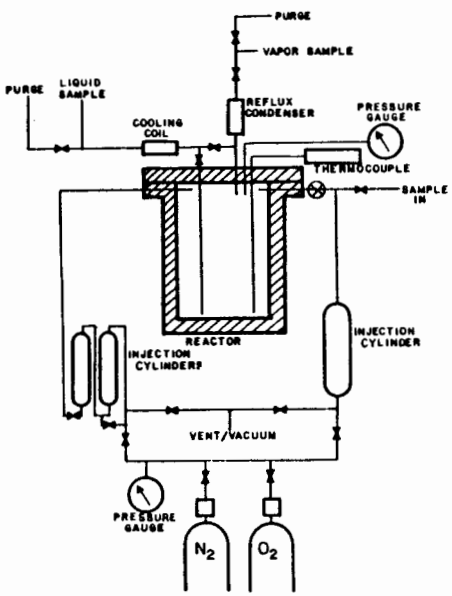

Figure 4. Diagram of batch reactor.

When the desired temperature was attained, the organic charge was placed in one of the two injection systems (Figure 4). The right injection system consisted of a single vessel which was charged with 100 ml of an aqueous solution of the organic substance and pressurized to a level which would not only inject the contents into the reactor but also provide the desired oxygen pressure in the reactor (800 to 1200 psig) (5.51 to 8.27 MPa). The left

charging system consisted of two charging tubes arranged in series. The organic substance (either as pure liquid or as a concentrated aqueous solution) was placed in the tube closest to the reactor and approximately 100 ml of water "chaser" was placed into the second tube. After pressurization to the desired level, the injection valve was opened and the water chaser ensured that the entire charge entered the reactor at time zero.

The total quantity of oxygen injected was designed to provide for complete stoichiometric oxidation of the feed charge and still maintain a 50 psig (0.34 MPa) oxygen pressure.

At appropriate times, liquid samples were withdrawn through the cooling coil and "dry" gas samples were withdrawn through the reflex condenser. Composite wet gas samples were occasionally collected through the cooling coil.

Products of wet oxidation were analyzed qualitatively and quantitatively using a Hewlett Packard 5840-A gas chromatograph equipped with dual flame ionization detectors. Separation of products was achieved using a pair of one-eighth inch by 6 foot columns packed with uncoated Porapak QS, 50-80 mesh.

The substances selected as typical of aromatic, nitrogenous and aliphatic toxic organics are given in Table I. Preliminary experiments have indicated that substantial destruction of toluene, dichloroethane and various cyanide species was attained. This paper deals chiefly with the results obtained to date from more extensive experiments using phenol and oro-phenol.

Table I. Typical Toxic Organic Substance

Aromatics
Substituted: Phenol
Halogenated: Orthochlorophenol
Unsubstituted: Toluene
Nitrogenous
Diphenylhdrazine
Cyanides
Aliphatic
Halogenated: 1,2-Dichloroethane

RESULTS

Typical data on reactor temperature, pressure and phase composition are given in Figure 5. Figures 6 and 7 show profiles of Total Organic Carbon (TOC) and specific organic substances during wet oxidation of phenol at 450 F (232 C). Appreciable conversion of organic carbon was obtained in each case. The organic carbon remaining at the conclusion of each run consisted almost entirely of acetic acid. Phenol disappeared rapidly in each run and small, but detectable quantities of acetone and acetaldehyde were produced. Increasing the reaction temperature from 232 C (450 F) to 260 C (500 F) nearly halved the TOC remaining at 60 minutes. Nearly all of the liquid phase TOC could be accounted for by phenol, acetone, acetaldehyde and acetic acid at the beginning and conclusion of each run. However, during the time span from 3 to 10 minutes, the reactor samples showed appreciable brown color and roughly 50% of the TOC could not be accounted for by the products found on the chromatograms. Presumably some polymeric species or humic acids were formed during this period. These substances would not have been detected by the gas chromatographic procedure employed.

Comparison of Figures 6 and 7 clearly shows the influence of copper catalyst. The catalyst reduced the final TOC from 450 mg/l to less than 100 mg/l. Accelerated reaction rates are clearly evidenced by difference in the profiles of the reaction intermediates.

Figure 8 shows results typical of batch experiments conducted to study the influence of

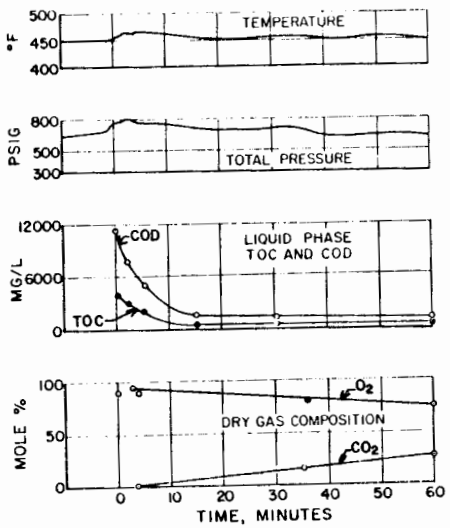

Figure 5. Wet oxidation of phenol at 232 C (450 F).

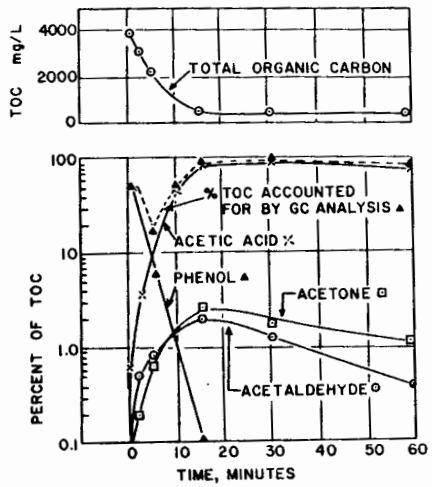

Figure 6. Wet oxidation of phenol at 232 C (450 F).

The treatments employed in these experiments consisted of:

A. Alkaline: Addition of twice the stoichiometric amount of NaOH required to neutralize the HCl that would have been generated by complete conversion.
B. Copper Catalyst: 100 mg/l Cu^{++} added as $CuSO_4$.
C. Anoxic Pretreatment: In this treatment, the reactor was operated for one hr without oxygen. The gas phase consisted of steam and nitrogen. After one hr, the usual amount (stoichiometric plus 50 psig) of oxygen was added and the experiment proceeded as usual.

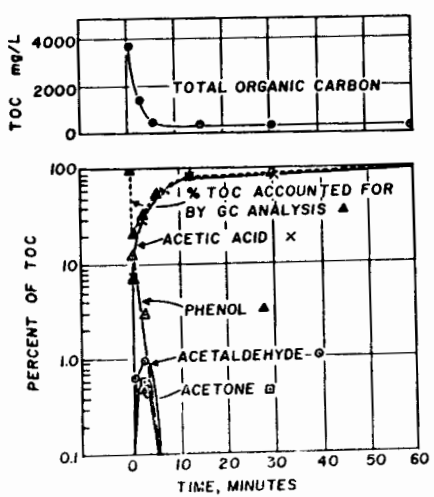

Figure 7. Wet oxidation of phenol at 232 C (450 F) with 100 mg/l copper catalyst.

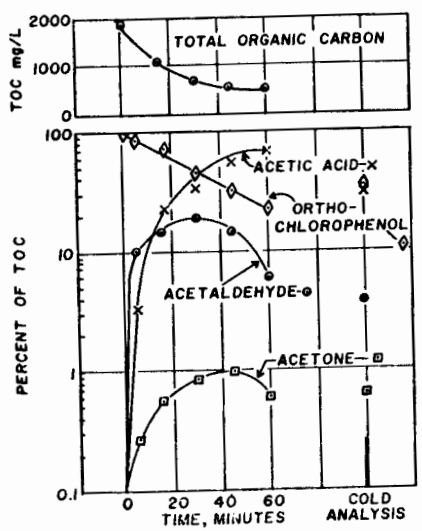

Figure 8. Wet oxidation of orthochlorophenol at 232 C (450 F).

The rationale for investigating these treatments follows. It is well established that, at high temperature and pressure (350 C, 31 MPa), strong alkaline conditions (6% NaOH) promote the substitution of OH^- for Cl^-. Furthermore, comparison of the phenol and orthochlorophenol data suggested that the dechlorination step might be rate limiting. If this were so, the overall kinetics of o-chlorophenol oxidation might be improved by employing alkaline dechlorination prior to oxidation.

Table II summarizes the experimental conditions employed and results obtained after 20 minutes of oxidation. The percent total organic carbon (TOC) removed is a measure of the oxidation rate whereas the percent of the theoretical chloride generated is a measure of the dechlorination rate. The data show that alkaline treatment improved the kinetics of both the dechlorination and oxidation reactions. Generally, it has been observed that acidic conditions facilitate the wet oxidation of organic materials. However, in the case of o-chlorophenol, it appears that the alkali improved the kinetics of the rate-limiting dechlorination step enough to offset any adverse effects that it may produce on the oxidation step.

Table II. Summary of o-chlorophenol Results

		20 minute results		
Temperature (F)	Treatment	% TOC Removal	% Cl Generated	% o-chlorophenol Removed
450	None	41%	41%	65%
450	alkaline	71%	98%	96%
450	Cu^{++} catalyst	71%	85%	
450	Anoxic Pretrt.	1%		
450	Alkaline, Anoxic Pretreatment	10%	84%	
400	Alkaline	48%	86%	

Anoxic pretreatment in itself improved neither the dechlorination nor the oxidation steps. Moreover, it appears that products resistant to oxidation may have been formed during anoxic pretreatment as the 20 minute results indicate low TOC removals. In a continuous flow wet oxidation process, the influent would normally pass through a heat exchanger prior to entering the reactor itself. These data suggest that special attention should be given to both the oxygen pressure and residence time in the heat exchanger.

In the case of the phenol runs, it was possible to strike material balances for water, O_2, COD, TOC, and CO_2 as follows:

(A) Initial Inventory at t = 0, hot	-	(B) Amount Removed by Sampling	-	(C) Amount Utilized	=	(D) Final Inventory at t = 1 hr. hot

The balances resulting from the experiment described in Figure 6 given below:

Water

(A)		(B)		(C)		(D)
1430 g	-	310g	-	0	=	1120 g

Oxygen

(A)		(B)		(C)		(D)
1.537 mol	-	0.43 mol	-	x_O	=	0.614 mol

x_O = 0.493 mol O_2 used = 15.78 g. O_2 used

Carbon Dioxide

(A)		(B)		(C)		(D)
0 mol	-	0.06 mol	+	x_C	=	0.247 mol

x_C = 0.306 mol CO_2 produced = 3.68 g organic C

Total Organic Carbon

(A)		(B)		(C)		(D)
5.57 g.	-	0.544 g.	-	x_{toc}	=	0.48 g + 0.514 g. (vapor, liquid)

x_{toc} = 4.04 g. TOC utilized

Chemical Oxygen Demand

(A)		(B)		(C)		(D)
17.3 g	-	1.45 g.	-	x_{cod}	=	1.16 g + 1.06 g. (liquid, vapor)

x_{cod} = 13.63 g. COD utilized

Good agreement between the carbon dioxide - TOC balances and COD-O_2 balances is evidenced by the ratios:

$$\frac{\text{Carbon dioxide produced}}{\text{TOC utilized}} = \frac{3.68}{4.04} = 0.91$$

and

$$\frac{\text{COD utilized}}{O_2 \text{ utilized}} = \frac{13.63}{15.78} = 0.86$$

DISCUSSION

Much of the published literature on wet oxidation has been focused on the destruction of some starting material such as sewage sludge. In the case of wet oxidation of specific (toxic) pollutants, the generation of intermediate and end products is also of interest. It is conceivable that intermediate or end products may be toxic in themselves. However, in this study the end products consisted primarily of biodegradable acetic acid. In addition, the bioassay results of others [14] indicate that wet oxidation achieves effective detoxification of typical priority pollutants.

It is generally recognized that the wet oxidation reaction does not proceed in a single step but rather in a stepwise fashion with initial hydrolytic and substitution reactions being followed by oxidative reactions based on a free radical mechanism as indicated below [13]:

Initiation Reaction:

$$\underset{\text{organic compound}}{RH} + O_2 \rightarrow \underset{\text{free radicals}}{R^{\cdot} + HO_2^{\cdot}}$$

Propagation Reactions:

$$R^{\cdot} + O_2 \rightarrow ROO^{\cdot}$$

$$ROO^{\cdot} + RH \rightarrow R^{\cdot} + ROOH$$

Terminal Reactions:

$$\left.\begin{array}{l} R^{\cdot} + ROO^{\cdot} \rightarrow \\ 2\,ROO^{\cdot} \rightarrow \end{array}\right\} \text{Non radical products}$$

As far as practical application to treatment of waste streams containing specific (toxic) pollutants is concerned, an experimental and economic evaluation of a continuous flow wet oxidation process based on the CSTR cascade reactor system shown in Figure 9 is currently underway. In this process, the influent waste is pressurized by a blow-case or other suitable pump and passed through a counter current heat exchanger and into the first chamber of the cascade. The reactor operates at a constant liquid volume and pressure is controlled by a constant pressure valve on the vapor phase effluent line following the vapor phase heat exchanger. The operating point of the system, *i.e.*, the water split between the liquid and vapor phase effluents, is determined by simultaneous solution of the mass and energy balances.

A continuous flow pilot plant with a nominal capacity of one liter/minute is presently set up in the Center for Waste Management Programs laboratory at Michigan Tech. This unit has the potential to be truck mounted and adapted to on-site studies of waste streams. It may be possible to employ small units of this type to treat small volume, "problem" waste and sludge streams, perhaps on an intermittent basis.

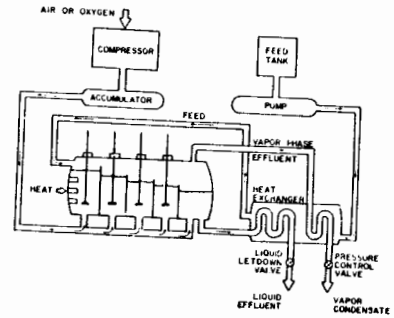

Figure 9. Schematic of continuo wet oxidation system.

CONCLUSIONS

Based on the initial results of this ongoing research, it can be concluded that the wet oxidation process can destroy several typical specific (toxic) organic substances. The wet oxidation reaction is catalyzed by cupric ion and, in the case of o-chlorophenol, the reaction rate is enhanced by alkaline pretreatment.

ACKNOWLEDGEMENTS

This research was partially supported by U.S. Environmental Protection Agency R ch Grant R805565-010 and by the Center for Waste Management Programs at Michigan Technological University.

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August 3, 1989

New Mexico Health and Environment Dept.
Environmental Improvement Division
Hazardous Waste Program
Santa Fe, New Mexico

Dear Mr. Youngblood,

I would like to begin by thanking you for holding the public comment period open until August 24. This ensures that the public will have time to review the recently submitted comments on the incineration permit by Los Alamos National Labs.

The concerned citizens of New Mexico are very happy about the recently passed amendment introduced by Bill Richardson in the House for a 1 year moratorium on burning at Los Alamos. Apparently Mr. Richardson is as alarmed as I was about the non-existent regulations and standards for the burning of hazardous chemical and nuclear waste in New Mexico.

After attending the July 18 & 19 hearings in Santa Fe and reading the comments of the DOE and the University of California regents on the permit, I would have to surmise that Los Alamos National Laboratories has special status, in that they:

1. May continue to burn without a permit under RCRA interim status.
2. They are not subject to permit fees.
3. Elect to remain free from questions and cross examination.
4. Test for levels of only carbon monoxide and oxygen, with no testing for hazardous emissions such as plutonium, PCB's and dioxins.
5. Under the Atomic Energy Act, there is no independent monitoring for Los Alamos. They are apparently self-regulating, as is the Dept. of Energy.
6. LANL does not have regular inspections. EPA inspects LANL only once a year; as does the regional EPA office in Dallas.

Furthermore, the comments submitted by Los Alamos were submitted only few minutes before public testimony at the July 18 & 19 hearings in Santa Fe. Clearly insufficient time to be reviewed, commented on or read carefully.

Many of the most important pages in the LANL document are illegible, specifically; beginning with Exhibit 3 - pages D3- thru D-42 - concerning emergency procedures and accidental releases. There is also insufficent information on ash testing and disposal; leaving open the possibility of landfill dumping. Los Alamos must be held accountable for it's actions. (See Journal North, Aug. 3, 89 -"EPA Triples Number of LANL Waste Sites").

2/3/89
Los Alamos Incineration Permit

The permit process and the permit itself do not meet any environmental criteria for incineration, reclamation, or dumping. We still do not know where ash is or goes.

Also questionable is the omission of the possibility of human error by choosing to put one person (LEDO) in charge of assessing and controling emergency situations at LANL.

In general, the standards and regulations on the federal, state and county levels are not adequate to ensure safety to the public and the EPD has no power to enforce any existing regulations.

In further regards to self-regulation, it states in Module VII, Section VII C.2. that there is no authority for the EPD to include compliance with requirements for the Federal Clean Air Act and the New Mexico Air Quality Control Act due to penalities that LANL would be subject to under both acts.

The self regulation exhibited in the past by the DOE at Rocky Flats and other nuclear sites is unacceptable. There must be a non-partisan committee to see that health and safety is assured.

I sincerely hope that the input, concerns and comments of concerned citizens will be considered.

Sincerely,

Barbara Jaramillo Bircheff
Lamy, N.M. 87540

cc: William Reilly, EPA Director
Governor Garrey Carruthers
Rep. Bill Richardson
Sen. James Lathins

COPY OF STATEMENT GIVEN TO BILL GALLAGHER AT TAOS 8/2/89
PRE-HEARING. PLEASE ENTER IN THE FORMAL
HEARING RECORD. THE TECHNICAL PROSPECTUS WAS GIVEN TO GALLAGH.
THANK YOU. M. Horan

TO NICK VAN CLEEF, EID 8/2/89. TAOS.
NICK, PLEASE GIVE THIS
TO WALTER YOUNGBLOOD, HEARING OFFICER.
M. Horan

P.O. Box 2262
Taos, New Mexico 87571-2262
2 August, 1989

Bill Gallagher, Chief
ALOMN Permits Section
U.S. EPA
1445 Ross Ave.
Dallas, TX. 75202-2733

c/o Walter Youngblood
Hearing Officer
NM EID/PHS
1190 St. Francis Drive
Santa Fe, NM 87503

RECEIVED
AUG 3 1989
8:40 pm
PUBLIC HEALTH DIVISION
DIRECTOR'S OFFICE

PUBLIC COMMENT
LANL RCRA Permit
U.S. EPA Module VIII

ref: Module VIII
p. 2 Waste Minimization

add: (c) The permittee shall describe the efforts undertaken during the year to reduce the volume and toxicity of waste generated. 40 CFR Part 262.42 §7-1-87 Ed.) (6) applies

(d) The permittee shall describe the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent such information is available for years prior to 1984. 40 CFR Part 262.42 (7-1-87 Ed.) (7) applies

U.S. EPA should incorporate these CFR requirements in the permit Module VIII.

Biodegradeable and/or non-hazardous citrus terpene based solvent substitutes for chlorinated halogenated ozone destroying solvents and biodegradeable solvent substitutes for toluene (methylbenzene) and for xylene (dimethylbenzene) are available now. AT&T is using a citrus terpene solvent substitute for CFC-113 chlorofluorocarbon solvent.

Would you please direct the enclosed technical prospectus (Petroferm, Inc.) on non-hazardous and biodegradeable terpene and other non-hazardous solvent substitutes to the Waste Minimization Dept. of Waste Management at LANL for review. Dr. Stephen Anderson of U.S. EPA Global Change Divison and AT&T Engineering advised me about the BIOACT orange peel solvent substitutes.

I have been using Bioact DG-1 in my own business for degreasing bicycle parts. The results are superior to cleaning with Chevron 325 Parts Thinner.

100% Recycled Paper

I am suggesting BIOACT VS-5 as a replacement for toluene and for zxlene at LANL .

Apparently, someone at DOE/LANL commented to U.S. EPA Region Dallas that the citrus terpene based BIOACT is classified as hazardous because of its flash point. That is correct. The citrus based bioact is classed as hazardous only because it is ignitable, with a flash point below 141°F. However, it is still biodegradeable and a substitute for ozone destroying chlorinated solvents.

As a substitute for toluene and xylene, BIOACT VS-5 is non-hazardous by any criteria.

While toluene and xylene are not chlorinated halogenated solvents, substitution of Bioact VS-5 would reduce toxicity and is biodegradeable. Following is a comparison of flash points:

		Flash Point
BIOACT EC-7	(citrus terpene based)biodegradeable	117°F
BIOACT DG-1	" " " "	117°F
BIOACT MC-1	(pine terpene based) biodegradeable	120°F
BIOACT MC-2	" " " "	120°F
BIOACT VS-5	(proprietary) biodegradeable	200°F+
Toluene	(methylbenzene)	40°F
Xylene	(dimethylbenzene)	84°F

So, as you see above, the flash point of the citrus and pine terpene based BIOACTS are in the order of 3X that of toluene and BIOACT VS-5 is classed as non-hazardous and is also biodegradeable.

The bottom line is that since U.S. EPA Global Change Divison is working hard to bring these new chlorofluorocarbon substitutes to the attention of the marketplace, why can't DOE/LANL experiment with them as part of their waste minimization programme?

Sincerely,

Michael Horan
tel: (505) 758-3522
Taos, NM

Encl: Technical submittal
BIOACT solvent replacements
Waste Minimization, U.S. EPA #EPA530-SW-87-026

8/1/89

to: Bob Kirkpartick
Bill Blankenship
NM EID Air Quality Bureau

C. Kelly Crossman
NM EID Hazardous Waste Bureau

from: Michael Horan
Taos tel: 758-3522

Gentlemen:

Enclosed, please find complete copies of the new U.S. EPA Guidances on Emissions for Heavy Metals, Hydrogen Chloride and for PIC (Products of Incomplete Combustion).

My comment is that I think the Heavy Metals and HCL guidance is bewildering in its complexity and will never be put into practical application anywhere. Also, it provides too many loopholes by allowing calculation of emissions from the feed material.

and LAER

I much prefer a technology based BACT derived stack gas volume concentration emissions limit such as Shiva Garg has done with the PIC emissions limit.

Surprisingly, there have been -0- BACT determinations by U.S. EPA for hazardous waste incinerators. I also understand that EPA Region6 has never ordered a stack gas simple for heavy metals on any incinerator in their region.

My argument is to go with a straight LAER & BACT technology based stack gas emissions limit and let the vendor companies fight it out in the marketplace as to who has the cleanest equipment.

I mean NO_x automobile emissions are limited at the exhaust pipe, right? So why can't you limit heavy metals and radionuclides at the stack on the TA-50 TRU waste incinerator?

I sincerely can't imagine the EPA Heavy Metals and HCl guidance feed material calculations ever being done anywhere except perhaps in an EPA workshop.

The EPA sampling protocols are child's play by comparison, so why not assign the stack gas limit and the corresponding sampling protocol and be done with it?

Sincerely,

Michael Horan

Michael Horan
tel: 758-3522
Taos

Encls: complete copies
U.S. EPA Guidances on Heavy Metals, HC and PIC

Kelly

Joe
PS, handle

7/31/88

Mark Seaton
HC-33 Box 444A
Flagstaff, Arizona 86004

RECEIVED
AUG 04 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt
1190 St. Francis Drive
Sante Fe, NM 87503

Mr. Mitzelfelt,

As a long time Nothern New Mexico resident and property owner, temporarily living in Arizona, I am concerned about the Los Alamos National Laboratories incinerator operations.

I have several family members living in the Santa Fe area and was, up to this point, looking for property North of Santa Fe. I have asked my realtor to put all business on hold pending a decision on LANL's permission to burn toxic and radioactive waste.

I am requesting that the EID issue an emergency order to prevent the burning of toxic and radioactive waste at the Los Alamos incinerator. Any hearings relating to the incinerator should include both hazardous waste and radioactive waste permits.

I feel that LANL should not be given permits for the incinerator because:

-Monitoring of CO_2 and O_2 by the EID hardly seems sufficient for this type operation.
-One inspection per year is not nearly adequate.
-LANL is taking advantage of NM state regulations. There are no state regulations to protect people from harmful emittants produced by the incinerator.
-Safer, cheaper alternatives should be considered i.e. super compaction.

Until this issue is settled the LANL incinerator should not be allowed to operate!

Thank you for your time.

Mark Seaton

July 31, 1989

Dear Mr. Youngblood:

Congratulations on your excellent work as being the moderator at the recent Santa Fe public hearings concerning the Los Alamos incinerator start-up.

The recent reports of the Environmental Improvement Division of the State of New Mexico and the efforts of Rep. Bill Richardson in getting a bill through Congress to delay the start-up until proper safety regulations are met led me to believe that you made sure that the "powers that be" were given the statements of Santa Fe residents concerns about this LANL procedure.

As a recent listener and observer at these hearing I was able to detect the sincerity and personal integrity of those who conducted the meeting. And a thank you for your efforts in trying to protect the health and well-being of people in this area. Terrel Sheehan

Mark Seaton
HC-33 Box 444A
Flagstaff, Arizona 86004

7/31/88

Mr. Crossman
Hazardous Waste Bureau (EID)
1190 St. Francis Dr.
Santa Fe, NM 87503

Mr. Crossman,

As a long time Nothern New Mexico resident and property owner, temporarily living in Arizona, I am concerned about the Los Alamos National Laboratories incinerator operations.

I have several family members living in the Santa Fe area and was, up to this point, looking for property North of Santa Fe. I have asked my realtor to put all business on hold pending a decision on LANL's permission to burn toxic and radioactive waste.

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-Safer, cheaper alternatives should be considered i.e. super compaction.

Until this issue is settled the LANL incinerator should not be allowed to operate!

Thank you for your time.

RECEIVED
AUG 4 1989
HAZARDOUS WASTE SECTION

Dear Mr. Crossman,

I am writing because I am a concerned citizen who lives too close to the Los Alamos Incinerators. As a resident of Santa Fe, I'm sure I speak for many people here as well as the rest of our Land of Enchantment (not for long if the incinerators kick up spewing radioactive & dangerous chemical wastes) against granting permits for poisoning our people, animals, land, air & water.

Sincerely,

Lisa K. F

LISA K. FLYNN

RECEIVED
JUL 31 1989

AMPAD 22-141 50 SHEETS 22-142 100 SHEETS 22-144 200 SHEETS

2

7/28/89

Kelly Crossman
EID
Harold Runnels Building
Santa Fe, NM 87501

Dear Mr. Crossman,

I greatly appreciated your patience and concern in your recent EID hearings on the proposed LANL rad waste incinerator. To be the position for taking the heat for LANL is not easy. To me it indicates a problem in the system that allows the protagonist, LANL, to get off scot free without having to responsibly address the concerns that their activities generate.

I am sending you my testimony, along with some supporting documents relating to the health effects of low dose radiation and it's effect on ozone depletion. The Gary null interview is particularly revealing in terms of the cover-ups and deceptions of the proponents of the safety of radiation in our environment.

I hope that you will personally read all of this material and then pass it on to the appropriate people who will take some action on it.

Thank You,

In Health and Light,

Robert

Dr. Robert C. March

RECEIVED
AUG 1 1989

EPA / EID / LANL Solid Waste Disposal and Hazardous Waste Incineration Hearings

Starting off on a positive note, I want to thank the Democratic System that allows its citizenry the opportunity to tell our government what we think of the job they are doing for us paid for by our tax dollars.

I do not choose to be bound by the narrow minded, separatist thinking, that in my opinion has contributed to the huge environmental problems that humanity is facing today. Therefore I have not chosen to stick exclusively to the separatist guidelines of considering only the hazardous waste portion being considered at this hearing (I hope that this hearing is not merely a formality that pays only lip-service to democracy, having already arrived at the foregone conclusion promoted by the seemingly powerful religion on the hill, which continually assures the EID and the general public that technology is protecting us from harm?)

Not to have the opportunity to talk to and hear from the protagonists, namely the devotees of the religion on the hill, and to be limited to expressing my wrath to the "victims" of the hearing process, namely, Kelly Crossman and the EID, is to me, another example of the bitter, unwholesome fruit of separatist, narrow minded thinking!

These indeed are trying times that we live in. Some have said that we may not have a long time to begin to make the right choices, the truthful choices.

Is burning hazardous waste, is burning radioactive waste, is burning mixed waste the best choice? LANL seems to think that it is. They have not convinced me that it is the best choice, or even a partially correct choice. Why, in my mind, is it the wrong choice?

First of all, you can't hide from air. If toxic pollutants are added to the air, eventually, we all ingest them, either through inhalation, drinking or eating. Accidents do happen. People and the machines people create are not infallible, no matter what the proponents of the religion on the hill would like to assure us to the contrary.

Second of all, as a society, we are dis-eased from the imbalance that the process of exploding and burning have already created. We do not need more of it. Burning and exploding are part of the problem, they can not be the solution. Burning and exploding destroy oxygen. Burning hazardous, radioactive and mixed wastes destroys oxygen and simultaneously adds toxic pollutants, some that live as long as 240,000 years, to the air, the very air that sustains all aerobic life on the planet. Adding these pollutants to the atmosphere leads,eventually, to the price that must be paid, the burden of compromising the gene pool and compromising the food chain that creates and sustains life as we know it.

Thirdly, there is too much secrecy on the hill. The deck is stacked too heavily in your favor. LANL has itself too greatly influenced the rules. And you assess whether or not

you are complying with the rules. The EPA and the EID have relatively few resources at their disposal to keep a much needed, ever present watchful eye on the religion on the hill.

How many times has LANL lied to the public, hidden your mistakes, denied your problems, and hidden behind the veils of national security and top secret classification? How many times has LANL leaked radiation into the atmosphere under the cover of Chernobyl, Three Mile Island or Nevada Test Site releases?

At what price does the madness stop? How many immune systems will be compromised, damaged, or destroyed, how much ozone will be destroyed, how much of humanities gene pool will be experimented with, how many people will die as a result of the fear that drives the religion on the hill, and the fear that fuels the publics' acceptance of the actions of the religion on the hill?

What is the effect of hazardous chemical and radioactive releases into the atmosphere on ozone depletion?

Why has information on the Petkau Effect been suppressed since 1972?

Why was there an increase in radionuclides released into the environment in Santa Fe around the time of Chernobyl?

What role did Los Alamos play in determining the acceptable levels of radiation for workers and for the general public? Why should workers be allowed to receive more radiation than the general public? Are their immune systems stronger? Are their gametes more resistant to radiation? Does Los Alamos make the health data on their workers available to those workers and to the general public?

These questions that I have raised throughout this testimony are not the paranoid delusions of a communist new age thinker. I am your brother. I am concerned for our future, and the future of our children's children's children, down through the next 3,500 generations. These questions deserve your utmost careful consideration and your honest answers.

The price we pay for our nuclear gamble needs to be accurately assessed without any more lying, denying and suppressing any information concerning any part of the nuclear cycle. Generalist thinking needs equal billing along with separatist thinking. We all have two brain hemispheres. Let's begin to acknowledge the value of the more wholistic, right brain activity and use both hemispheres in decision making, as we seek to arrive at more than just partial and expedient solutions.

Thank you.

In Health, Safety and Balance,
Dr. Robert Chamberlain March, BS, MsT, ND

April, 1988 **World Crisis Solutions Foundation Newsletter** Volume 1, Number 3

The World Opportunity To Establish Universal Health, Peace, Prosperity, and Security, through Understanding and Applying Universal Principles and Natural Law to Solve our World Crises.

To all supporters and friends:

This third newsletter should prove to be an important one; so much has happened that I want you to be aware of. I will fill you in on my direct attempts to alert the scientific establishment and general populace of the radiation/ozone destruction connection, that you might do better in your areas to do the same; a presidential candidate worth supporting; updates on Chernobyl's aftermath; ongoing weather patterns; a perspective on AIDS and other viral diseases, causes, and natural treatments; the amazing Rife microscope, and the electronic treatment of disease; and other issues.

Disclaimer

As the FDA requires to be stated, none of the information in this newsletter is to be construed as medical treatment, diagnosis or prescription. Individuals are thus ordered to contact a doctor of their choice for such; everything in this newsletter is presented for informational and historical purposes only. No responsibility is assumed by the publisher and author for anything any individual chooses to do with the information herein. Read and act at your own risk.

Ozone Depletion, Chapter 1

In March, I went to Denver-Boulder CO to alert as many key people as I could to the ozone destruction/radiation connection. I chose this area because the National Center for Atmospheric Research (NCAR) and National Oceanographic and Atmospheric Administration (NOAA) are both located there. I have friends there and am familiar with the area; having lived there many years, I figured it would help open some doors. The day I left, both the *Missoulian* in Montana and the *Rocky Mountain News* in Denver carried stories headlining "OZONE LOSS GREATER THAN FEARED." An international panel of scientists reported that the *protective* [not just protective against skin cancer, but in *all* ways] ozone layer is thinning significantly. They state that upper atmospheric ozone has decreased by anywhere from 1.7% to 3% on the average over most of the northern hemisphere, and an average of 5% over the southern hemisphere, since 1969. (It was declining before then, as you will see — a 2% decline during the bomb tests in the sixties.) Robert Watson of NASA said, "Things are worse than we thought."

At this time scientists place virtually all the blame on Chlorinated Fluorocarbons, or CFCs. The *News* cites Sherwood Rowland, a chemist at the University of California at Irvine, who in the early 70's pioneered this theory as follows, "At this point there is really no other culprit to blame." Watson of NASA, and the over 100 US and UN scientists issuing the report carried in the *News*, say there is little doubt that the destruction is due to CFCs and other man-made chemicals that destroy ozone in the stratosphere. As you will see, there is definitely another culprit that has been ignored, deliberately or not, to humanity's grave peril. Yes indeed, *radiation* is that culprit. Why has it not been considered? This question becomes even more obvious with more evidence as I complete this story. But first, let's look at more from the *News*. The *News* goes on to state two significant things the scientists are unable to explain: first, they don't know why the loss of ozone is greater over the southern hemisphere, and second, the losses everywhere were greater than predicted by the past models of how CFCs work in the atmosphere.

The establishment seems to be incapable of considering these questions, either through ignorance, deliberate turning away, or simply the result of a left-brained adolescent intellect. This is characteristic of our present educational system, science, yea even our entire modern civilization — it appears incapable of truly Universal thinking that includes whole pictures and intuition, as well as intellect, to move the latter off its preoccupation with dogmatic details into comprehensive vision.

At this point I would like to state that I am not denying that CFCs destroy ozone. I'm of the opinion that they are a factor, as most likely are other chemical contaminants. They simply are not the only cause. While CFCs are purported to be capable of persisting in the atmosphere for perhaps a hundred years, that pales in comparison to the 24,000 year *half-life* of plutonium, deadliest of the radioactive elements/oxygen destroyers, according to Dr. Walter Russell.

A study of the work of either Dr. Russell or the unique principle of the far east, yin and yang dialectics, will give the answer to the greater ozone loss over the southern hemisphere. I am not aware that the Russells predicted this hemispheric difference in their work, but an understanding of the Universal mechanics that Russell so intelligently portrayed will allow anyone to understand how, and predict that it *had* to occur, as it is happening now. Familiarity with the unique principle and the dialectics of yin and yang are also helpful in understanding this. Briefly let us consider the mechanics, next page.

World Crisis Solutions Foundation
406-363-4041

NW 169 Blodgett Camp Road
Hamilton MT 59840

Please copy this newsletter in its entirety and pass it along to your friends and associates to ensure the widest possible circulation. Thank you!

The Unique Principle: Yin and Yang Dialectics

Like attracts like, and opposites appear to attract as they seek balance through each other. Thus, elements of the same kind don't fly apart, but coalesce. The north and south poles of a magnet are as far apart from each other as they can possibly be. If opposites really attracted, they would meet in the center of the magnet, not be polarized at the poles. Their attempt to [illegible] their imbalanced polarity causes them to align as they do, and the illusion of attraction/repulsion appears.

The poles of the planet are like two magnets placed with north and south poles facing each other and are the place of "plug in" for two great electrical vortices. These are the great centripetal spirals of generoactive "winding up" rivers of male and female light waves that start 'way out in space and meet to form the planet. One is female, yin or south; the other is male, yang or north. In their polarized condition they are forced to seek balance through each other; thus the union of opposites and the creation of the earth through their interchange.

The yin is the expansive principle, so also is radiation the manifestation of the expansive principle. While everything is both yin and yang or varying amounts of male/female, centripetal/centrifugal, generative/radiative, one is always more predominant than the other. So the south pole is the predominantly yin, radiative, expansive pole; all yin toxins of the planet will tend to accumulate at that pole more than at the north, male pole, in accordance with "like attracts like." Nuclear radiation is the ultimate yin toxin and so could be expected to predominate at the south pole.

Unfortunately I don't think that type of thinking will convince the majority of scientists. It needs to be done in the language they are more used to [illegible], and the job I've done here in unfamiliar language is admittedly sketchy. If they [illegible] to start thinking in more comprehensive terms, it will have [illegible] include this type of broad comprehensive generalization [illegible]. They will have to examine their basic principles, many [illegible] which are seriously flawed. I have briefly hinted that the [illegible]ished concept of magnetism is incomplete; so is the [illegible]nt concept of the atom, and many other fundamentals. A newsletter is not the place to do that job; if there are any scientists who read this and have your curiosity piqued, I refer you to the complete works of the Russells, and *Universe* by Scudder Klyce, with introductions by John Dewey of Columbia University, and David Starr Jordan, who was a Chancellor Emeritus at Stanford. Both these sources will do the job and are available through the WCSF. Send a self-addressed, stamped envelope (SASE) for booklist.

The scientists know ozone destruction is occurring; they simply don't understand why (or at least say they don't). It is noteworthy that Russell's work and the unique principle *do* offer an explanation in their terms for this.

The second thing the scientists are puzzled about, the ozone loss so much greater than their "models" (read this as incomplete mechanics or understanding) predicted, is perhaps explained by their not accounting for nuclear radiation. Chernobyl released 200 to 400 Hiroshima-type bombs' worth of radiation; unofficially 38 tons of high-level radiation. If radiation *is* a factor, then we can expect to see an ongoing increase in ozone destruction due to this calamity.

Ozone Depletion, Chapter 2

My adventure took me to NCAR in Boulder, where I briefly talked with Edward A. Martell. After reading the cover and paragraph summaries of the first two chapters of *"Atomic Suicide?,"* he said, "This is not science, this is garbage." He also said he knew of no way that radiation could destroy Oxygen and that the only thing he could conceive of was that it would "cause the oxygen to disassociate into free atoms of oxygen and more ozone and then revert back to regular oxygen." He also said that he didn't see how it would make the oxygen radioactive either, or in any way affect it, other than as he said.

Previously I had asked him if he had heard of Nikola Tesla, as he had not heard of Russell and bristled at my stating that it was the publication of Russell's charts, and three years of his lectures, that led (unfortunately, it seems) to the creation of the bomb and atomic energy. He said it was a pet interest of his to study and know all about the early history of atomic energy. He had never heard of Russell and was suspicious of my claims. I thought that it would lend some authority to my claims to tell him that no less a genius than Nikola Tesla had told Russell to "Take your ideas and bury them in a vault for a thousand years — you are so far ahead of your time." I was wrong; alas, he also had never heard of Tesla. When I finished a few words about his many inventions and accomplishments with the statement that he had a laboratory nearby in Colorado Springs at the turn of the century, and that Tesla Drive in that city was named after him, he said, "Well, no one outside of Colorado Springs must have ever heard of him."

I figure you can't judge a book by its cover (or by reading a one-paragraph summary of each of the first two chapters), nor judge a man's work in this fashion. You have to study all of Russell's work to understand his science, and then judge it. The trouble for Mr. Martell was that *"Atomic Suicide?"* is a popular book written for both the average educated individual and the scientist. Most scientists can't handle it when they see words like 'love,' 'God,' and 'cosmic consciousness' in a book with science, and react as did Martell. We can't let people with that mindset run our world any longer; we need comprehensive thinkers who are open to seeing the truth in whatever dress it appears, we must take more responsibility for the course our civilization takes.

I can't defend Mr. Martell's thinking in this matter, especially since he is an educated man with degrees in nuclear science and, I think, biology. He is a respected man in his field; I also respect him for the work he has done in his field, and even more because he is in my camp, as far as not being for nuclear power, as he told me. He has documented the dangers of low-level radiation that the government and rest of the nuclear cartel have ignored in their statements that it won't hurt us. Also he has shown the

connection between modern chemical farming methods of tobacco cultivation resulting in ultimately radioactive contamination of the smoke and thus smokers' lungs, a noteworthy accomplishment. But, his cup was obviously full regarding the information I presented him. This incident with Martell at NCAR takes on more meaning as I finish the whole story.

I was not surprised that Martell had not heard of Russell. Most scientists have not, in spite of his accomplishments and scope of work, but I was surprised that he had not heard of Tesla, who, among many accomplishments, invented the electric motor, our entire system of energy transmission, and so many other things. But then, it appears our modern education is designed to develop specialists rather than comprehensive generalists, or renaissance people. Such outstanding examples of generalists as Tesla and Russell were, and still are, threats to the established interests that don't want this. This is outlined in Bucky Fuller's "Critical Path" and "GRUNCH of Giants" (Gross Universal Cash Heist), both available through WCSF. Bucky of course was another renaissance man. I thanked him for his time and left, not wanting to waste more of mine.

Ozone Depletion, Chapter 3

I next called NOAA, also in Boulder, and talked to George Mount, a scientist there, who, upon hearing of my attempts to alert the scientific community to Russell's thesis and the radiation/ozone connection, said, "We know that radiation destroys ozone, but don't consider it significant." Trying to tell them to look at something they already know made me feel a little like Don Quixote. I carried on in spite of this and found out more. He said that during the bomb tests in the 60's they found a 2% reduction in ozone; the data is currently being reviewed although they considered it insignificant. He said he would send me the pertinent data on this in May when the government printing office has it out.

(Since returning to Montana I received a copy from NOAA of an Oxford Science Publication dated 1985, entitled "Chemistry of Atmospheres," that has some discussion of the immediate effects of nuclear explosions on ozone. This report appears to contradict Mr. Mount's statement that radiation destroys ozone. It states that following the 1961–1962 nuclear tests there was a substantial increase in ozone in 1962–1970. I'm awaiting the further government reports to see what they say. If this is true, then perhaps the Russells' contention is wrong. If so, were CFCs in use during this period as well as now; if so, then if they are the sole or main cause, why did ozone *increase* between 1962 and 1970 and only *decrease* since then? Perhaps the report is inaccurate, a lie, the effects take time (not likely that much time), or there is some other unknown cause at work. It seems to me the radiation/ozone destruction thesis should not be ignored until it is thoroughly investigated. Personally, I'd be glad if it were shown to be some other cause, as the nuclear connection, if it is true, would most likely be the longest-acting and most difficult to rectify.

The scientific community is concerned about a 1.7% to 3% loss over the northern, and a 5% loss over the southern hemispheres. It sounds like the 2% loss was considered insignificant only because to consider it otherwise would have jeopardized our ongoing nuclear power and weapons-production program. As the government is now reviewing the old data on the 60's testing, it sounds like they are reconsidering the nuclear connection to ozone destruction, but don't want to tell the people about it yet, if ever.

If you caught Secretary-General Gorbachev's farewell speech live on radio as he was returning to Russia, you would have heard him say, "President Reagan and I had many fruitful talks... we talked about the climate and radioactivity." To my knowledge, this was never mentioned in any of the news, radio, or TV reports other than in this live speech. While extremely important, it was *ignored* by the media in this country. Why? It seems the establishment does not want you thinking about "nuclear *anything* and climate *anything*." To hear Gorbachev's remarks made me feel that my efforts in Russia and here, and those of the many others working to save the planet from nuclear power-weapons destruction in whatever way we see we can, are bearing fruit.

Although the government appears to be at least *considering* the nuclear connection to ozone destruction through reviewing the old literature on it from the bomb tests, we need to get the process accelerated by bringing more public awareness to it and by getting them to consider the experiment suggested in the last issue of this newsletter. That experiment would prove or disprove the contention that nuclear plants are destroying oxygen and ozone even when operating normally and supposedly safely. This thought does not seem to have occurred to the scientific community or, if it has, it has been ignored. All of us need to call on our local and national government representatives to investigate this connection and get somebody to set up the experiment and have all phases of it open to public scrutiny.

Call to Action

Readers of this newsletter should contact your local news media and tell them that the ozone destruction was predicted as early as 1954, in a newsletter that the Russells published, and again in 1957, when they published *"Atomic Suicide?."* Both predictions were based on the premise that nuclear power and weapons testing, or use, would be the cause; and that if nothing else, the coincidence of this prediction and what we are now witnessing is too great to ignore. Copies of the original newsletter are available for $1, and *"Atomic Suicide?"* for $38, both postpaid. The book and newsletter can act as proof and authority for your contention. I don't think you have to feel that you can't work for saving your children, the planet, and all life because you are not an "expert" in the field of nuclear energy. The "experts" don't know what they are doing! Further, as I have shown in the recounting of my recent adventure in Boulder, the "experts" don't agree with each other either. From my point of view they can

exhibit a considerable amount of ignorance, as well as arrogance, on this subject. The bottom line is, if you feel you are correct in your estimations of this question, the implications are so devastatingly great that you *have to* act. Also, ask them why have the nuclear/climate aspects of the Reagan/Gorbachev meeting not been reported on?

Ozone Depletion, Conclusion

The last thing to report on my efforts in Boulder-Denver is that I did an interview with the *Rocky Mountain News*. Whether or not it has passed editorial scrutiny and been published, I don't know. Also, I did an interview on the Boulder public radio station (KGNU, I believe) that definitely *was* aired. I contacted Governor Romer of Colorado, who would have seen me the week *after* I was scheduled to leave, so I met with his air pollution experts instead. They were attentive to the message, but did not see how they could set up an experiment to prove or disprove a thesis that the scientific community did not believe was worth pursuing. They did say they would pass the information on to scientists they knew who might be able to do something to investigate it. I plan to meet with the Governor this summer and pursue the matter further; I think they would do something if they could be convinced of the possible truth and urgency of the message. I also plan to make similar efforts with senators, representatives, the Governor, and local news media in Montana. You can do the same in your areas.

Little-Reported Effects of Chernobyl Disaster

The information in this section was mainly gathered from issue number 9 of *Solstice*, a 6-issue-per-year newsletter dealing with perspectives on health and the environment. This is a great newsletter that is also dealing with the climate crisis and the nuclear energy-weapons debacle. The writing and information are excellent. The editor, John Mann, has a grasp of fundamentals and approaches the subjects from a comprehensive perspective. He is a student of macrobiotics, yin/yang and the way of change, and recently has been introduced to the work of the Russells. Subscriptions are $5 for 6 issues ($1 for back issues); write to *Solstice*, PO Box 4813, Charlottesville VA 22905.

The Soviets have estimated 5300 cancer deaths, with 2000 occurring in Europe, over the years from Chernobyl. The US's NRC has doubled that estimate and a report in the *Washington Post* says even *that* may be unrealistic and maybe it should be three times higher.

The NRC has only predicted *two* (?!) cases of thyroid cancer for the US, but the facts present a more sober picture. A controversial report presented by Doctors Earnest Sternglass and Jay Gould at the first *Global Radiation Victims Conference* in NY implicates Chernobyl fallout in significantly-elevated death rates throughout the US Pacific coast, especially in Washington state. Using only government data in their studies, they cited statistics showing the following:

1) The Washington infant mortality rate of June 1986 increased 245% over the same period in 1985.

2) Total deaths in Washington in July 1986 showed a 40% increase over April 1986, while the month of July usually shows the lowest mortality.

3) Approximately 35,000 more deaths occurred in the US during the eight months after the Chernobyl fallout than in the same period in 1985.

4) Total US mortality increased 3% between May and August 1986; in the four months preceding the disaster, the rate had *decreased* by 7/10 of 1%.

5) Deaths from infectious diseases also increased 15% in this same time period over 1985 figures.

6) Deaths for 25– to 34–year–olds showed a 14% increase over 1985 figures for this same period.

7) Europe received much greater amounts of fallout than did the US, generally up to 100 times more, but levels in the US were still hundreds of times greater than normal; the Pacific northwest and Atlantic northeast received the greatest amounts in the US.

Dr. Sternglass's research indicates that up to 600,000 deaths from cancer alone may result from the accident, and another 600,000 deaths from non-cancer causes, in Europe alone. The toll could reach the millions when you consider the entire planet and the fact that many of the radioactive isotopes released have half-lives from 30 and 60, to 1,500 – 24,000 years. Their destructive effects can continue for generations, if indeed, we can even survive in such a nuclear-contaminated planet.

Whitewash: Chernobyl and Entire Nuclear Industry

In light of the above facts, consider the following quotes from normal news sources: A *Newsweek* magazine article on the Chernobyl effects, in an issue on the major events of 1986, stated ridiculously, "as many as 4,000 lives" may be ultimately claimed by the disaster. Four months after the disaster, an article in the *Washington Post* stated, "the amount of radiation released from the accident is at least equivalent to, if not greater than, the amount of radiation released by the bombs of Hiroshima and Nagasaki." (Since it is estimated that the accident released 200 to 400 Hiroshima-type bombs' worth of radiation, it hardly seems appropriate to say the accident was *at least* equivalent to, if not greater than, the Hiroshima bombing.) In my own small Bitterroot valley of Montana, we were told, via the government through the news media, that the background radiation was normal during the fallout from the accident. I knew this could not be true and was able to contact the people who were taking

the actual counts at the various stations. They told me that normal levels are 0 to 0.1 and they were recording levels of up to 0.6. That is 6 to 7 times normal levels and should hardly be construed as normal levels! (Realize that even before Chernobyl, background levels have never been *normal* since the advent of the Atomic Age.)

John Mann, the editor of the newsletter mentioned above, spoke with Dr. Sternglass about the time of publication of the January 1987 issue of *Solstice*, and asked him if there was anything he especially wanted to tell the readers. His reply was, "Your readers should know — everyone should know — that someone high up in the government is lying. We recently discovered that the same degree of falsification as for the Maryland figures has also occurred with the figures for the state of Pennsylvania. They are falsifying the infant mortality figures to cover up the truth about the effects of the fallout from our nuclear industry." (These statements refer to false figures given for infant mortality rates in certain areas of the country to keep the gory truth of the death-dealing effects of *our* nuclear industry's effects on our *own* population long before Chernobyl magnified the scenario.) To again quote from Mann's article, "What does this all teach us about Chernobyl? Very simply that its real lessons are still hidden, blanketed by a timid *[or **controlled**, in my estimation: Dr. Tim]* press, self-interested industry, and recalcitrant government. As long as the dangers and devastations issuing from our world's nuclear facilities are diluted by factors of hundreds and even thousands, nothing will be done to change the suicidal course we've presently taken. Only when we know just how huge this Pandora's box is, are we likely to be galvanized into doing something to close it again."

And so the battle rages! On a positive note, a *New York Times* article stated that the Soviets have cancelled construction of a nuclear plant near the Black Sea in the face of public opposition over the Chernobyl tragedy. The *Komsomolskaya Pravda* also said all of the 20 operating nuclear plants in the USSR and those under construction were now bitterly opposed by nearby residents. The cancelled plant was already $41 million underway, and yet the government bowed to the flood of protest over it. If the Russian people can do that with their government... — if we can't do at least ten times more, it is simply because we are too complacent, too absorbed with our TV, sports events, movies, jobs, or other diversions to have enough intelligence and wisdom, guided by will, to act to turn the tide against Atomic Suicide. Get on the phone, pick up your pen, open your mouths, hearts, minds, and pocketbooks to fight the good fight, fellow Americans, or be willing to see your loved ones, yes, even all life on the planet, go to the worst hell you can imagine, and soon!

The nation's and world's weather has continued being punishing, with another brutal winter with snow and freezing down to the Texas/Mexico border winter-produce-growing areas; Europe alternately freezing, and then too warm to have skiing; and England being almost blown away by the greatest storms in over a century. Expect more of the same. Blistering drought in the summers, out of place, too much rain in places, high winds, and increasing earthquake activity. It truly is a time of changes. The trick is to turn it into an opportunity for yourself and humanity, by solving these crises on whatever level you can. Perform an Aikido, Judo, or martial arts move on all this. Use the negative energy against itself. The first step, then, is to live so as to secure your health and spiritual serenity as best you can, and then spread that out to everyone you contact on every level; even, and maybe most importantly, on the everyday exchanges that you have with family, friends, and business associates. From there let your intuition guide you to act on the greater world situation. The information in this, previous, and forthcoming newsletters, and the petitions, will give you scalpels to remove some of the cancers from our world. Let's consider some practical steps for securing our health in a world that is obviously adversely affecting everyone's immune system right now.

Oxygen Treatments for Cancer, AIDS, Infectious and Degenerative Illness

In the last few years there has been a mounting interest by the alternative health movement in the use of Hydrogen Peroxide and other forms of oxygen products to treat disease. The establishment medical profession, with its pharmaceutical industry's backing, is not about to look into this; it has no way to patent, mark up, and profit on this modality, even though there have been many medical articles published over the last 40 or so years on the efficacy of Hydrogen Peroxide and other forms of Oxygen in treating illness. For a package of 26 such articles, send $25 postpaid, or get a listing of the articles with SASE. Father Richard Wilhelm, a Catholic priest, and Walter Grotz, a retired postmaster who has been helped by Hydrogen Peroxide therapy for arthritis, have both been instrumental in disseminating information on this therapy. I will summarize my own conclusions after having worked with Hydrogen Peroxide and other oxygen therapies with my patients and myself for some years.

It is interesting that the element that we need more constantly in time than apparently any other, namely Oxygen, is the very one we are destroying with our nuclear industries, forest and soil destruction, and chemical industries, in short, with most of our "civilization." Concomitant to this oxygen depletion we see an astronomical increase in cancer, infectious diseases (e.g., AIDS) and degeneration generally. The white blood cells, our main immune defenders, as well as platelets and other blood components, use oxygen to kill pathogens and generally detoxify our systems. Most folks don't realize it, but pathogenic bacteria, viruses, and cancer cells are all killed by oxygen. In a sense, this is the potential miracle cure, in that it is a normal physiologic component, kills pathogens, and has little potential for harm in the normally functioning body. I know some of you right now are saying, "but what about free radical formation?" The free oxygen radical is a destructive element and itself is thus implicated as a cause for cancer and degenerative conditions, but I postulate this is only so when, due to faulty diet and agriculture, we do not have the balancing enzymes present in our systems to keep the oxygen radical in healthy balance. The SOD and glutathione peroxidase enzymes appear to negate the toxic effects of the free oxygen radical. The answer in therapeutics lies, at least from the present perspective, in supplementing the body's stores of these enzymes whenever using oxygen therapies.

While free oxygen can harm body cell membranes just as it does cancer cells, viruses, and bacteria, these enzymes mentioned above appear to protect the cell from the superoxide free oxygen effect, and in a normally vigorous body, these enzymes are sufficient to protect us from the normal immune defense use of it. Due to our present lifestyle and devitalized food, as well as increasing free radical burden from radiation (radiation produces its toxic effects on us in large part through free radical formation), we generally lack sufficient of these enzymes, and thus get diseased, and age quickly. We should supplement our diet with these free-radical scavengers, especially if we are using oxygen therapies, in my estimation, and to protect against radiation contamination as well.

Therefore, whenever oxygen therapies are given, the patient should be checked via muscle testing, which is the only way I know for the average individual to determine whether he/she needs the enzyme. Indeed, even for physicians, short of blood testing for the enzyme levels, and I am not aware of any such tests, this enzyme need is difficult to judge. Muscle testing is more of an art than a science at our present state of use, in my opinion, and should be learned from someone skilled in it. In my book on traditional-natural healing methods, scheduled for publication later this year, there will be sections on muscle testing and psychic methods of diagnosis. I intend to teach seminars here and at various locations around the country in these methods. For those interested in learning the details, send a SASE with your request to be notified of publication, seminars, or arranging a seminar in your area.

The best enzymes I've found for use in conjunction with oxygen therapy are Biomed Foods' AOXplex SOD, glutathione peroxidase, catalases, and methionine reductase enzymes. According to the company, these contain 1,800,000 units per tablet, which is the largest of any I know of, by factors of 100. These enzymes can be purchased from Dr. Tim for $25 postpaid for 100 tablets.

The best food sources for these enzymes are found in fresh fruits and vegetables and especially wheat or barley grass juice from the youngest sprouts possible. The tablets are prepared from wheat grass sprouts, prepared a special way to enhance the enzyme production, and harvested before they have sprouted to the point of contacting light. As they mature more the enzyme content decreases. The best food source of hydrogen peroxide is also fresh fruits and vegetables. So, it seems nature will take care of us if we will simply take care of her.

Since we have not taken care of nature and collectively are in a weakened state, the use of the enzymes and food grade hydrogen peroxide, and Aerobic O7, is a way to treat ourselves for various maladies. Food grade peroxide has no preservatives in it and needs to be kept refrigerated at least below approximately 50 degrees. If it is not, the extra oxygen will escape, blow the top off your container, and you will be left with water. If food grade is unavailable, regular drugstore variety will work, but we don't know what the preservative's effects will be for certain. I would not use that unless a desperate situation existed with no other choice. I did so on my Russian trip and apparently was none the worse for it, but still caution you to get the pure stuff.

Generally 5 to 50 drops of 3% peroxide in 1/4 glass of water on an empty stomach, with a little water or aloe juice to wash it down, will help any infection. Test the dosage on your ability to tolerate it. Take 1 to 3 times a day before meals and wait 15 to 30 minutes before eating. Take 1 to 3 enzyme tablets 5 minutes after swallowing the oxygen.

An alternate form of Oxygen that is easier for most people to tolerate is a saline form in which the oxygen displaces the chlorine atom. On entering the body, the oxygen dissociates from the sodium and can act to kill pathogens. This is a product called Aerobic O7 and can be purchased from Dr. Tim for $12 for a 30 ml. or $22 for 70 ml. size, postpaid. This is also distributed through a multilevel company and you can become a distributor at any time simply by requesting the necessary application papers from me. This is taken 5 to 50 drops with 1/4 glass of water or aloe juice 15 minutes before meals and washing down with a swallow of water 1 to 3 times a day and taking an enzyme tablet 5 minutes after this. This form, as indicated above, is truly easier to swallow than the peroxide.

I have found these oral forms of oxygen good for persistent viruses, e.g., mono, herpes, flu, and colds, and they should also kill the AIDS virus as easily as any other. They also can be used for bacterial or protozoan infections such as staph, strep, giardia, and trichomonas infections. For a vaginal infection, they can be used as a douche 25 drops in a pint of water once a day.

Another exciting use of oxygen I use in my clinic is "Aethozone," an allotrope of oxygen thought to be O_8 and straight Ozone. The Aethozone can be breathed, to help lung infections, or to saturate the blood via the lungs with this superoxygen, to treat any infectious or degenerative disease. It is not so irritating to the lungs as is straight ozone. The pure ozone can be injected, under the right circumstances, into muscles, to be slowly absorbed into the blood stream, or into a vein. Either use stimulates the immune system for any of the conditions mentioned. It can be directly injected into palpable cancerous tumors to assist their destruction. Malignancies, being generally anaerobic, cannot tolerate oxygen, and begin to shrink under this exposure to superoxygen. A contraindication to the injection in any form is if any inorganic drugs are in the system, as they are potentiated up to a hundred times, so that one aspirin, for instance, could act like 100 aspirin. There is no such contraindication with herbal, homeopathic, or vitamin mineral therapies.

This is an exciting addition to the armamentarium of alternate approaches to cancer and other diseases. There is a special machine to produce this and interested doctors can contact Dr. Tim about purchase and training in its use. Needless to say, except that in the present times it seems to me it *is* necessary to say it over and over, no "treatment" should be given or used for any condition without considering and implementing the basic fundamentals of natural therapies; i.e., pure food, water, air, sunshine, exercise, work, thoughts, attitudes, and beliefs. These are all more-or-less necessary in considering a "treatment" regime for any condition from the traditional-natural point of view.

Medical Conspiracy: Rife Microscopes and "Ray Gun"

Almost 20 years ago I came into possession of an article originally published by the *Journal of the Franklin Institute*, an old, respected scientific society in Philadelphia PA. This article, dated February 1944, Volume 237 Number 2, entitled "The New Microscopes," by R.E. Seidel, M.D., and M. Elizabeth Winter, had a discussion about the Rife microscope, as well as the (then new) electron microscope. The article describes the operation and use of these 'scopes, how they work, including how the Rife scope is able to go beyond the theoretical limits of resolution, even up to 31,000 diameters and magnification up to 60,000 power. (Other sources state that up to 160,000 magnification is possible, see video.)

The article details Rife's work with his scopes with Dr. Arthur Isaac Kendall of Northwestern University Medical School, Dr. Edward Rosenow of the Mayo Foundation, and others, including Dr. J.H. Renner of California, who I have met and is still alive at about 95 years of age. There are approximately 80 references at the end of the article and I'd guess at least 20 directly concern Rife's work.

Rife was able to study living cells at high magnification, whereas the electron microscope can't see living cells; they are automatically killed when being in the environment. He came to several startling conclusions that would elevate medical science to a truly helpful role if their suppression could end. Among these were the following:

1) There are about 10 classes of micro-organisms; as you change their environment, they will change to different forms. This gave authority to the importance of nutrition, as, for example, if you change the intestinal environment, you can change ordinarily non-pathogenic E. coli bacteria into pathogenic B. typhosus, as was demonstrated.

2) He showed the change of an organism, from a virus, to bacterial, to a cryptomyces pleomorphia fungi form that accompanies cancers.

3) Alteration in tissue metabolism as well as environment (really a part of the same thing) will induce an organism to change to any of the other forms included in that same group of the 10 main groups. These changes can be carried to the point where the organism will no longer respond to the usual lab method of diagnosis.

4) That the incubation period for a micro-organism is really the time required for it to go through the cycle of reversion. The bacteria in the system feed upon the chemicals available to them; if this is altered, they also change and form what appear to be completely new entities but which are, in fact, simply appropriate forms for the new environment. In the case of pathogens, these new forms are not compatible with health or life of the body.

5) Under visualization, Rife was able to observe that disease organisms would succumb when exposed to an appropriate resonating electrical-sound frequency. He used a radio tuner with a sound wave to modulate and "carry" the right frequency from the beam of an x-ray tube to kill all such resonating pathogens within an area of approximately 1000 square feet. It is my estimation from studying this, that with the scope he could by trial and error use different frequencies while observing the pathogen and see when he hit the resonant shattering one that destroyed the pathogen.

Of course, all of this got Dr. Rife into a heap of trouble. The medical drug interests prevailed upon his backer, Mr. Timken of the Timken ball bearing fortune, to withdraw his support. The FDA seized his scope and "ray guns;" his work was terminated. Rife had his spirit broken by all this and is reported to have died an alcoholic in the 70's. May his soul rest in peace and come upon better times.

He would have opened up the era of electronic medicine and, of course, did provide experimental evidence and new extensions of germ theory knowledge that completed it. He embellished, experimentally, the rationale behind the non-toxic, non-drug-cartel-controlled traditional-natural therapies of the alternate healers. Some of these are homeopathy, which works on an electrical, vibrational resonant principle; acupuncture; nutrition; organic whole agriculture, as opposed to piecemeal chemical agriculture; herbal medicine; and even physical manipulative medicine and mental attitudinal medicine or non-drug psychiatry.

To extend my adventure in this area, a couple of years ago one of my patients, who is a very interesting and informed gentleman, brought me a home video that was produced by a man who had known and worked with Dr. Rife for many years. This document has early 16mm film footage of Dr. Rife in his laboratory, shows the scope and the "ray gun" being used to destroy the cancer virus, and volumes of old newspaper articles and scientific articles about Rife and his microscopes! You can see all this as further proof of this entire exposé! I was amazed that his work at one time was so well published and known and yet had been so thoroughly kept from not only the general public, but the scientific establishment as well. Truly there is an entrenched conspiracy to keep us, the public, from being informed about matters life-saving and -maintaining, and that support the alternative non-drug, non-knife, non-radiation, treatment modalities.

The value of this report to you can be considerable. First, if you have had faith that the modern medical profession is truly scientific, that its therapies are consistent with the true nature of health and disease, in short, truly effective and harmless, that this profession is really motivated out of concern and care for the sick, foremost over profit and self-gain, then this should awaken you to the fact that this is not always so, perhaps even almost never so. Second, it is of theoretical and inspirational interest to those investigating new (and old) therapies, healing devices, etc. It may assist in the creation of new and better "ray guns." It is documentation that you can reproduce and use as facts to inform your representatives in Washington and at the local level that you want freedom of choice in health care, and government efforts must be in these alternate areas too, if there is going to continue to be monies from the public trough used in "medical

research." The "medical research" business should be broadened to include the alternative approaches if it is going to do it at all.

I want to go on record as stating that although I have little respect for the medical profession as a whole, I do recognize there are many fine individual doctors who *do care* about their patients' welfare, and are doing what they can to heal them as they best see fit. Unfortunately, all too often the medical board will take their license, throw them in jail, and in any other way possible harass the poor doctors if they attempt anything other than the accepted dogma.

For copies of the Franklin Institute article, send $5 postpaid, and for copies of the video, send $39 postpaid.

Russia Trip Postponed

I'm putting the Russia trip on ice for several reasons. I have already given them the information I feel is most pressing, the climate crisis causes and solutions, alternatives to atomic suicide, etc. I believe that their government is really controlled by the same forces that control ours, the hidden, inconceivably-wealthy individuals of the world; and that the polarity they have made between us is simply to create the chaos they feel is necessary to change the form of government in this country so that they can create the one world state over which they want total control, ostensibly to create a utopian situation through such total control. It's the same old dream of madmen lost in the mists of time. It was evident to me in conversations there, that they are only interested in centralized power sources — nothing that would make the average person free of centralization. It seems fruitless to attempt to get the patent book to them, and they probably already have the inventions it describes. It would also be expensive to go there again. If I thought it would really make a difference I would, but in this case don't feel it to be so. Finally, there is so much work for me to do here.

Daryl Kollman's Flight for the Presidency

Perhaps, like me, you feel there is no real choice in the candidates on tap from either party for this election. You may have decided, as I was going to do, to not vote in that election, to give our economic masters the message that we know there is no choice. In the last election most folks did just that in the national elections, which bore testament that they did not believe they had a real choice. (They did vote in their local elections.) Well, there is a candidate who is admittedly a long shot, but seems to me the only shot worth taking. Daryl Kollman of Klamath Falls, Oregon, a successful businessman and owner of the Blue Green Algae food supplement company, is the man. Daryl decided he could not face the children of the world if he did not do everything in his power possible to help set our world on a non-destruct course. In the time we have left, he felt a bid for the presidency is the best way.

His platform includes the messages from *"Atomic Suicide?"* and *The Survival of Civilization*; that we must stop our pollution and destruction of the planet *now*, while we might have a chance to survive what we have created. He has no strings tied to him other than his convictions. He is well aware of what time it is, and I have no doubt he will do everything he can to right our ship of state regardless of the possible personal consequences. He is also aware of the root causes of our economic troubles and has solutions in his platform. Obviously, the planetary situation demands full employment in restoring the earth if we are to survive, so no one need be out of work, food, clothing, or shelter, *if* we will use our wisdom to guide our will to act now to implement these measures to restore planetary and human wholeness.

If one person who hears this message passes it on within 24 hours to another, who in turn does the same, in as short a period as 28 days *everyone* in the country will hear it. Write to Kollman For President, PO Box 1888, Klamath Falls OR 97601, for information, posters, to make a campaign contribution, etc.

Incidentally, Daryl's Super Blue Green Algae, which is harvested from Klamath Lake, is loaded with trace minerals and other goodies that help the human body remain coherent, well, and vital. I believe that many people are actually hurting themselves using vitamin and mineral supplements. They do what most doctors also do, which is simply guessing that they need them and fail to consider that they all interact and affect each other and their own unique pattern. It's safest to use "whole food" food supplements, or what I call "super food" medicines, when you don't know how to intelligently determine what vitamins or minerals you might uniquely need. His algae is one such "super food" medicine. It appears to be relatively expensive, but not much is required and is a safe super supplement. Send SASE with $1 for further information, price lists, and, as it is a multi level company, application forms, if you think you might want to become a distributor after being convinced of its value.

Correction of Error in Last Issue

In the last issue, I mistakenly stated the "Earth Regeneration Society" receives a percentage of profits from sale of rock grinders and that they are looking for someone to donate land for an earth regeneration project, preferably worn out land. This should have read "Earth Regeneration Centers."

There is an "Earth Regeneration Society" that has the same basic goals as the "Earth Regeneration Centers," namely to alert humanity to the present climate changes, destruction of the planet, and solutions to change this; but they are different organizations doing different work. The "Earth Regeneration Centers" is connected with the stone grinders and worn out land project; you can contact them in care of Don Weaver, PO Box 1961, Burlingame CA 94010. He did the annotations in *The Survival of Civilization*, by Hamaker and Weaver. Available from WCSF, the postpaid price is $14, and it is a book that

everyone should read to realize what time it is and what are appropriate actions in light of the evidence presented.

The Earth Regeneration Society Inc. (ERS), 470 Vassar Ave, Berkeley CA 94708, is working through the political process to stop the climate crisis; it is a national organization dealing with the effects of carbon dioxide on the environment. Alden Bryant is the president of the society; he contacted me shortly after the last issue of this newsletter was published. People connected with the society had seen the newsletter and were unaware that the society was engaged in the stone grinder project and the search for possible donation of worn out land to set up as an experimental project to demonstrate the principles of correct agriculture as outlined in the book *TSOC*. The society, of course, was not doing this, hence this correction.

The ERS in Berkeley has worked with the Eastern Bloc countries to attempt cooperation to restore the earth, stop the destructive climate changes in process, and lower global atmospheric CO_2. They have also worked with the AFL-CIO national labor unions in this country, who adopted in October of 1987 a large part of the ERS program to lower CO_2 levels and create food and jobs at the same time. The society offers further information. Alden and the rest of the ERS are "doers" in this fight to save our civilization and planet, and perhaps you can assist them in their efforts in some way. If any of you are in any type of union I suggest that you get copies of the AFL-CIO resolution from ERS, and get your group to also adopt it. Contacting your state legislators and federal representatives is the next step.

Video Available on "Stopping the Coming Ice Age"

Don Weaver sent me a draft copy of a video he and others have completed. I have not seen the finished copy yet, but the rough draft was impressive. It is scientifically sound in presentation, beautiful to see, offers practical solutions, and is emotionally inspiring. Contact Don Weaver for purchase price, E.R.C., PO Box 1961, Burlingame CA 94010.

International Uranium Congress

Currently over 75 endorsing groups, 50 from seven Canadian provinces, and 25 from twelve other countries (and still gaining strength), are meeting in Saskatoon, Saskatchewan, Canada, June 16–21 to unite in efforts to stop the source of global atomic power and weapons madness. A great deal of the world's uranium mining occurs in Canada; hence the international effort to address alternatives to atomic energy is being held there. I will be there if there is a chance to make a presentation or contribution in any way. I just became aware of this a few days ago, and feel it should be helped in publicizing the event. For more information, contact the International Uranium Congress, Program Committee, 2138 McIntyre Street, Regina, Saskatchewan, Canada S4P 2R7, or telephone 306–522–4168.

"Amazing Grace and Chuck"

If you have access to a video system, rent this movie and get a group to watch it. I've heard that the movie was more or less ostracized because of the anti-nuclear message. While a little shaky in some aspects, it is not only entertaining, but an inspirational film about how the children of the earth could help break the nuclear arms race through one kid taking action to do something about it.

Love and Political Systems

I want to share a thought with you that came to me some months ago while meditating. It went like this, *"any political system will work if it is based on love, and no system will work if it is not based on love."*

We humans have proven this over and over again, mostly from the negative aspect. It is time for us to prove it from the positive one. The Communist or Socialist system, and the Debt capitalist system both have proven failures because the individuals in it have not loved, and let their love encompass all their relationships — out to the whole earth and everything upon it. I believe either of these systems would work, would find the truth that encompasseth all understanding, would make a just, peaceful, and healthy world for all if, *if*, they would love and let *love* be the light behind their wisdom that would guide their will and action. When we do this we will have discovered fire for the second time, as Teilhard de Chardin prophesied and we will make heaven appear on earth for all practical purposes.

Coming Up

This does it for this issue, I intend to have the next one out by July. Look for in-depth article on AIDS, its probable origins, a total traditional-natural approach including herbs, that used alone — and the same protocols on everybody — has resulted in 60% reported cure rate. This rate should increase considerably when naturopathic protocols are adopted; treating each patient as an individual case, instead of following the modern medical model of giving the same regime to every patient. Also, information on a whole new communication system that a man, who has several patents for different inventions, wrote me about that has been ignored because it would make phone bills about $1 a month. An update on Joe Newman's energy machine and antigravity propulsion system, with an explanation of how these both work in brief principle. An article on the results of Mr. Lloyd B. Zirbes' experiments: how he may have shown some of our scientific assumptions to be wrong. You will remember

from the last issue that he suggested the experiment to prove that nuclear reactors are destroying oxygen even when operating "normally and safely." Also, an essay-exercise on "the mind as will" in human affairs.

A belated *thank you* to Kevin Binder for creating the graphics in the last issue. In this issue, like the previous one, my prose was untangled and formatted by Al Anway, of Rare Earth Services, Inc. in Roanoke VA. Al is available for computer consulting & production of technical manuals. (716) 544-6147 in Rochester N.Y. and (703) 982-1567 or (703) 343-4565 in Roanoke VA.

Please pass this issue on to friends. Those who receive it and want to get future issues, remember to send $20 for a year's subscription. Following this page is a list of the many different items mentioned in this issue that you can order.

I discovered that the person who set up the World Crisis Solutions Foundation for me neglected to qualify it for federal tax-exempt status, although it *does* have the state exemption. While this is being corrected, please make checks payable to Dr. Tim Binder rather than WCSF for these items.

Wishing you the best for a peaceful, happy, and wholesome world, I remain,

Faithfully,

Dr. Tim Binder

Short List of Materials Available from WCSF

"Atomic Suicide?" $38

"Universe" $38

1954 Newsletter $1

Collection on Medical and other Uses of Various Forms of Oxygen $25

Listing of Above Articles ..... Free with SASE

Biomed. Anti-Free Radical Enzymes $25

Aerobic 07 30 ml/70 ml ..... $12/$22 each
(Request Distributor Application with Order)

Franklin Institute Article $5

Dr. Rife's Microscope/"Ray Gun" Video $39

Super Blue-Green Algae $1
(Information, Price List, Dist. Application)

"The Survival of Civilization" $14

WCSF Newsletter, 1-year subscription $20

A complete book list is available by sending your request to WCSF along with a self-addressed, stamped envelope.

World Crisis Solutions Foundation
NW 169 Blodgett Camp Road
Hamilton MT 59840
406-363-4041

Address Correction Requested

University of Pittsburgh

June 8, 1989

Hearing Officer
DOE-SEIS Project
P.O. Box 5400
Albuquerque, NM 87115

Sir:

Please enter the attached comment relating to the Special Environmental Impact Statement for the WIPP site into the public record of the June 15-16 public hearings.

Sincerely yours,

Ernest J. Sternglass, Ph.D.
Professor Emeritus of
Radiological Physics

Home address:
170 West End Avenue
Apt. 27H
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Statement of Dr. Ernest J. Sternglass

My name is Dr. Ernest J. Sternglass and I am Professor Emeritus of Radiological Physics at the University of Pittsburgh School of Medicine where I have carried out extensive research in the area of radiological instrumentation and the biological effects of low-level radiation since 1967. I have published two books and a series of scientific papers covering my research works.

The purpose of my testimony is to explain why it would be dangerous to proceed with the proposed plan discussed in the Supplementary Environmental Impact Statement (SEIS) to begin immediate emplacement of radioactive and mixed wastes at the Waste Isolation Pilot Plant (WIPP) facility. Others have commented on the pathways by which transuranic (TRU) waste might be released into the outer environment, exposing humans, and of course all other forms of life, to the waste. I would like to focus my comments on the health effects of such radioactive releases.

The principle reason is that existing EPA radiation standards are grossly inadequate to protect the health of the workers and the public from low-levels of ingested or inhaled radioactive substances of all types, but particularly those man-made isotopes that are produced in the course of the manufacture of nuclear weapons, such as strontium-90, plutonium, and other transuranic elements.

This has become evident only in the last fifteen to twenty years when unexpected large increases in childhood leukemia, cancer, congenital defects, premature births, as well as infant and total mortality of all ages, was found to be associated with the release of nuclear weapons fallout and transuranic waste.

This has come to light only in recent decades as discussed in detail in my book Secret Fallout published by McGraw Hill in 1981, and also summarized in the statement submitted in this WIPP hearing by Dr. Jay Gould.1 In the course of the last 15 years a new discovery was made that allows one to understand why such unexpectedly large effects

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1. See also my attached article "The Implications of Chernobyl for Human Health." International Journal of Biosocial Research. Volume 8(1): 7-36,1986.

of low-dose radiation that enter the body through he drinking water, the air, and the diet occurred at rates thousands of times greater than expected on the basis of all our earlier experience with medical X-rays and the studies of the Hiroshima-Nagasaki survivors.

It now appears that these unexpected health effects were produced by an indirect chemically-mediated action of radiation, whereby ingested fission products promote the formation of "free radicals" that damage the immune system. This mechanism was discovered in 1972 by Abram Petkau.2

Dr. Abram Petkau is a Canadian physician and biophysicist who currently manages the Medical Biophysics Branch of the Whiteshell Nuclear Research Establishment, located in Pinawa, Manitoba. While studying the action of radiation on cell membranes in 1971, Dr. Petkau conducted an experiment never done before. He added a small amount of radioactive sodium-22 to water containing model lipid membranes extracted from fresh beef brain. To his surprise, the membranes burst from exposure to just one "rad" (a measure of the amount of radiation absorbed) over a long period of time. Conversely, Dr. Petkau had previously found that 3,500 rads were required to break the cell membrane when X-rays were applied for a short period of only a few minutes. He concluded that the longer the exposure, the smaller the dose needed to damage cells.

After several more experiments, he discovered the cause of this surprising effect from low-level radiation. The irradiation process was liberating electrons, which were then captured by the dissolved oxygen in the water, forming a toxic negative ion known as a free-radical molecule. The negatively charged free-radical molecule is attracted to the electrically polarized cell membrane. This causes a chemical chain reaction that dissolves the lipid molecules, which are the principal structural components of all membranes in cells. The wounded and leaking cell, if unable to repair the damage, soon dies. If the free radicals are formed near the genetic material of the cell nucleus, the damaged cell may survive, but in mutated form. Subsequent research by Dr. Petkau and other scientists ultimately demonstrated that this process occurs even at background

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2. A. Petkau (1972), "Effect of 22 Na+ on a phospholid membrane," Health Physics, 22:239. See also A. Petkau (1980), "A Radiation carcinogenesis from a membrane perspective," Acta Physiologica Scandinavia, Suppl. 492:81-90.

radiation levels.3 At high levels of radiation, Petkau found less cellular damage from free-radical production per unit of energy absorbed than at low levels of radiation.

Free radicals are so dangerous to living systems because they form in water, and water comprises 80 percent of a cell. Free radicals not only destroy healthy cells, but also affect normal cell function in a way believed to speed the aging process.

Nature has provided some protection from free radicals, probably because they are naturally produced by the oxygen metabolism within the cell. The protector, superoxide dismutase, quenches the chain reaction.4

It is now believed that superoxide dismutase is found in all cells which use oxygen in their life processes. For example, human tissues that contain naturally high levels of superoxide dismutase, such as the brain, liver, thyroid, and pituitary, are more resistant to the effects of radiation than tissues low in superoxide dismutase content, such as the spleen and bone marrow. Apparently this enzyme evolved to protect biological systems from superoxide, or free-radical, damage caused by ultraviolet light, background radiation, and the result of normal energy production in the cell. However, radiation which is produced by fission products and other radioactive isotopes such as the

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3. A. Petkau and W.S. Chelack (1976), "Radioprotective effect of superoxide dismutase on model phospholipid membranes," Biochemica et Biophysica Acta, 433:445-456. See also A. Petkau, W. Kelly, W.S. Chelack, S.D. Pleskach, C. Barefoot, and B.E. Meeker (1975), "Radioprotection of bone marrow stem cells by superoxide dismutase," Biochemical and Biophysical Research Communications, 67, 3:1167-1174, A. Petkau, W.S. Chelack and S.D. Pleskach (1976), "Protection of post-irradiated mice by superoxide dismutase," International Journal of Radiation Biology, 29, 2:297-299, A. Petkau (1978), "Radiation protection by superoxide dismutase," Photochemistry and Photobiology, 28, 765-774, A. Petkau (1986), "Protection and repair of irradiated membranes," in Free Radicals, Aging, and Degenerative Diseases, Alan R. Liss, Inc., pp. 481-508, and A. Petkau (1987), "Role of superoxide dismutase in modification of radiation injury," British Journal of Cancer, 55, Suppl. VIII, 87-95.

4. Irwin Fridovich (1978), "The biology of oxygen radicals: the superoxide radical is an agent of oxygen toxicity; superoxide dismutases provide an important defense," Science, 201, 875-880.

transuranic elements ingested through the food chain, or applied externally, can produce more free radicals than the body can deactivate (or "dismutate"), resulting in gross damage that may be irreparable. Furthermore, Dr. Petkau and others have found that only 10 to 20 millirads will destroy a cell membrane, in the absence of the protective superoxide dismutase.

The free-radical reaction can be quenched in another way. At higher intensities of radiation, the free-radicals become so concentrated that they tend to deactivate each other. If this were not so medical X-rays would cause far greater biological damage than they do. A simple analogy can explain this phenomenon. Think of the free radicals as individuals in a crowded room. A fire starts and everyone tries to get out at the same time. As a result, everyone bumps into each other and very few escape. If only a few people are in the room when the fire occurs, however, everyone leaves easily through the door. Escape is very efficient.

Thus, chronic exposure to low-level radiation produces only a few free radicals at a time that can reach and penetrate the membranes of blood cells with great efficiency, thus damaging the integrity of the entire immune system with very little radiation absorbed. In contrast, short, intense exposures to radiation, as with medical X-rays, form so many free radicals that they bump into each other and become harmless ordinary oxygen molecules. Short exposures thus produce much less membrane damage than the same dose given slowly over a period of days, months, or years. However, existing radiation standards are based on our experience with short, high-dose rate exposures such as from medical X-rays or the direct flash of gamma rays from the atomic bomb detonations.

More recently, Charles Waldren and co-researchers have found that when a single human chromosome is placed in a hybrid cell and irradiated, the ionizing radiation produces mutations much more efficiently at low than at high doses, as is the case of cell membrane damage.5 They found that very low levels of ionizing radiation produce mutations 200 times more efficiently than the conventional method of using high dose-rates, or brief bursts from X-ray machines. They found that the dose-response curve exhibits a downward

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5. Charles Waldren, Laura Correll, Marguerite A. Sognier and Theodore T. Puck (1986), "Measurement of low levels of X-ray mutagenesis in relation to human disease," The Proceedings of the National Academy of Sciences, 83, 4839-4843.

concavity (logarithmic or supra-linear relationship) in mammalian cells, so that the mutational efficiency of x-radiation is maximal at low doses, exactly was found by Petkau for free-radical mediated biological damage. Thus, their findings contradict the conventional scientific dogma that the dose-response curve is linear, and that a straight line can be used to estimate low-dose effects from studies of high doses, which is the basis of our existing radiation risk estimates.

A protracted exposure to ingested beta emitters can be 1,000 times more harmful to cell membranes than a brief external exposure to X-rays, because DNA repairs itself relatively efficiently after an X-ray hit compared to the damage caused by oxygen free-radicals at very low doses.6 This type of exposure may thus account for the jump observed in mortality immediately after every nuclear plant accident, or after fallout from atmospheric bomb tests.

Strontium-90 and many of the transuranic elements are chemically similar to calcium and, therefore, concentrates in the bone of the developing infant, child, and adolescent. Once in the bone, these elements irradiate the marrow where the cells of the immune system originate at a low rate over a period of many years. As first discovered by Stokke and his co-workers at the Oslo Cancer Hospital in 1968, extremely small doses of only 10 to 20 millirads of protracted dose from internal emitters can produce visible damage to the blood forming cells of the bone marrow, probably via the production of free-radical oxygen.7 This can lead to the development of bone cancer, leukemia and other malignant neoplasms both directly by damaging the genes, and indirectly by lowering the ability of the immune system to detect and destroy cancer cells.8

An accumulation of radionuclides from the combination of growing uptake and slow excretion, and the consequent mortality also appear to involve deaths from heart diseases, as well as from cancers and other causes. Free-radical oxygen, produced most efficiently by internal beta emitters such as strontium-90, may be a factor in coronary heart disease. The theory is that the free radicals oxidize the

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6. T. Stokke, P. Oftedal, and A. Pappas (1968), "Effects of small doses of Strontium-90 on the ratbone marrow," Acta Radiologica, 7:321-329.

7. Ibid.

8. Peter A. Cerutti (1985), "Prooxidant states and tumor production," Science, 227, 375-381.

low-density cholesterol and cause it to become more readily deposited in arteries, thus blocking the flow of blood and inducing heart attacks.9

To summarize, Petkau and others have demonstrated that the response per additional dose of radiation is greater at low levels of intensity than at higher levels. The correlations of health effects with exposure to ingested low-level radiation that are discussed in detail by Dr. Gould in his testimony regarding the Waste Isolation Pilot Plant (WIPP) can thus be explained by the indirect action of radiation via free radicals damaging the normal function of the hormonal and immune systems of humans and animals alike. Thus the observed significant excess deaths could be the result of exposures to fission products and other radioactive elements such as plutonium, Strontium-90 and Iodine-131 in food, milk, water and air, according to this biochemical mechanism.

These new finding imply that releases of radioactive materials from a nuclear waste storage site are thousands of times more hazardous biologically than assumed on the basis of all existing standards relating to permissible releases to the environment. All such releases result in long term internal low dose-rate exposures of critical hormone-producing organs and the bone marrow over many weeks, months or years.

These standards are all based on the assumption that it is valid to extrapolate from high doses and short exposures such as received from the atomic bomb detonation at Hiroshima and Nagasaki to the very much lower doses and chronic exposures received from radioactive chemicals released into the food supply, the water and the air. As the SEIS for Waste Isolation Pilot Plant points out, "cancer data from the Japanese survivors of nuclear detonations in World War II are used in most of the analyses in the BEIR III report (SEIS, 5-25)." Using the Hiroshima-Nagasaki data to arrive at health risk assessments, however, ignores the more significant danger of protracted internal radioactive exposure, especially in low doses.

Recent laboratory and epidemiological data cited above show that the dose response curve is not linear down to the low doses of environmental radiation, and that instead it rises much more rapidly for the small doses so that the

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9. See Jane E. Brody (1988), "Natural chemicals now called major cause of disease," The New York Times, April 26, and Jean L. Marx (1987), "Oxygen free radicals linked to many diseases," Science, 235, 529-531.

calculated risks of low-dose exposures has been vastly underestimated.

Thus even a small revision of the existing EPA standards that may be proposed to take account of errors in the doses estimated to have been received by the atomic bomb survivors would not be adequate to protect public health.

Because this crucial manner is currently under review and open for public comment, it will not be resolved by the end of 1989, when the Department of Energy proposes to begin introducing radioactive wastes into the WIPP facility according to the proposed plan. It would therefore be impossible to meet the requirements of such existing environmental protection laws such as the RCRA which mandates that hazardous wastes slated for land disposal be treated in such a manner as to "minimize the present and future threat to health and the environment."

Therefore, even the introduction of only ten percent of the total capacity for radiation waste storage as presently proposed would constitute a dangerous action from the point of view of public health, especially in view of the existing problems of water seepage that could endanger the underground water supply and could contaminate local rivers for thousands of years. This would also be the case for potential transportation accidents. All of which now appear to involve much greater health and socio-economic impacts than had been anticipated when the facility was originally designed.

I therefore urge that no precipitate action be taken at this time to transport any radioactive and mixed wastes to the WIPP site, and that instead steps be taken to provide carefully monitored retrievable above-ground storage for the existing transuranic waste at their present locations until all the existing unresolved questions relating to the impact of low-level radiation on human health and the environment can be resolved as required by law.

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The Health Effects of the WIPP Waste Repository
Statement By Dr. Jay M. Gould, Director,
Radiation and Public Health Project (RPHP)

The proposed action of the Final Environmental Impact Statement for the Waste Isolation Pilot Plant greatly underestimates, by a factor of 1000 or more, the radiological risks to the public of both the operation of truck and rail transport facilities and of the operation of the WIPP facilities in the testing phase, both before and after final emplacement of radioactive waste.

The purpose of my testimony today is to show that there are many indications that the current radiation standards are inaccurate and inadequate as guidelines for the safe siting of transuranic and mixed waste. The Waste Isolation Pilot Plant FEIS radiological risk estimates focus only on carcinogenic risks and ignores the far greater risks from the possible release into the atmosphere and water supplies of long-lived radionuclides. These radionuclides, once ingested, attack the immune system and accelerate deaths from a wide range of illnesses. I shall review recent statistical and biochemical laboratory studies which reveal the actual dangers from ingested radioactive particles, and demonstrate that the current standards used by the Department of Energy are woefully understated.

Professor Sternglass, in a separate statement, has reviewed in some detail the biochemical mechanism by which Strontium-90 and many of the transuranics, products of reprocessing and fabrication operations of Department of Energy (DOE) facilities, do biological damage after entering the food chain. Once ingested, the radionuclides become heavily concentrated in certain organs such as the bone marrow, where the blood cells that make up our immune systems originate. As many researchers have established in the past 20 years, in particular Dr. Abram Petkau of the Canadian Atomic Energy Commission, constant emissions at extremely low radiation levels from ingested radionuclei promote the formation of "free radicals." These free radicals then most efficiently are drawn to blood cells, and penetrate and destroy them. At higher levels of radiation the larger number of "free radicals" tend to negate each other so that this process is perversely most efficient at low radiation levels.

These findings of Dr. Petkau support the position that there is no safe lower limit of exposure to radioactivity. Even the smallest releases of long-lived radionuclei from

the treatment and storage operations at the WIPP present some possibility of effecting human health. It would be far better at present to keep all radioactive waste in place until the DOE more fully comprehends the actual health risks involved, and can then accurately estimate health and environmental risks.

Furthermore, there is substantial evidence to show that all large-scale radioactive releases since the invention of nuclear technology have been associated with immediate excess mortality effects which cannot be attributed to chance.

The Radiation and Public Health Project (RPHP) has performed analyses of official U.S. mortality data going back to 1945, and has found massive evidence of excess mortality associated with a number of major nuclear releases:

Atmospheric bomb testing.

The Savannah River accident of 1970 (only recently revealed after nearly two decades of concealment).

Accidental releases from the Millstone, Connecticut reactor in 1975.

The Three Mile Island (TMI) releases of 1979 and 1980.

Recurrent recent releases from the Pilgrim Massachusetts and Peach Bottom Pennsylvania reactors.

But by far the most revealing evidence comes from our findings, recently published by the American Chemical Society, that fallout from Chernobyl reached the United States early in May of 1986 and accelerated the deaths of some 40,000 Americans.1

Our Chernobyl findings that the deaths of some 40,000 Americans were accelerated in the Summer of 1986 in the wake

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1. We include this article in the Appendix to this Statement along with a Dec. 1986 publication entitled " Nuclear Emissions Take their Toll," in which we first found evidence that after 1975 statistically significant excess mortality could be found in areas downwind of nuclear reactors. A later study offered to Senator Kennedy's Public Health Committee in 1987 indicated that most of the post 1975 excess mortality was associated with TMI in the years 1979-82, totalling as much as 50 000 excess deaths concentrated in Upper New York State, Pennsylvania and Maryland.

of the arrival of Chernobyl radioactivity on or about May 9 1986, indicate that the excess mortality was concentrated among the very young, the very old, and those suffering from pneumonia and from infectious diseases, especially those related to AIDS--in short those with vulnerable immune systems, in accordance with the Petkau "free radical" discoveries.

That these excess deaths were a result of Chernobyl was further substantiated by unexpected mortality excesses being most pronounced in heavy rainfall regions with above average concentrations of radioactive iodine in the milk. Further support came from the fact that in the very same time period--mid May to mid August 1986--excess mortality in the heavily irradiated southern provinces of West Germany was an order of magnitude higher than in the U.S. although its radiation exposure to Chernobyl fallout was two or three times higher, thus confirming also the expected logarithmic shape of the dose response curve to radiation levels.234

Still further confirmation that ingested radioactive particles from Chernobyl fallout could damage the immune system came from ornithologists, in particular Dr. DeSante,

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2. The dose response curve was logarithmic or "supralinear", which is to say that per unit of radiation the response in terms of mortality rises most steeply at low levels of radiation.

3. Technically speaking, calculations performed on the post-Chernobyl health data show that the dose-response curve at low doses is neither a quadratic, upward curving one, nor a straight line (linear) relationship. It is rather a <u>supra-linear or logarithmic</u> function that rises more rapidly at low doses than at high doses. This logarithmic form of the dose-response curve is consistent with the laboratory results of Petkau and others, on the form of relationship for the <u>indirect, free-radical mediated effect</u> of radiation on cell membranes, particularly the oxygen "free radical" now known to be involved in a wide range of immune deficiency diseases.

4. The logarithmic form of the dose-response also means that there is actually no conflict between our conclusions about the serious effects of very low protracted exposures and the results of studies done on high dose-rate exposures in laboratory animal studies, and observations of A-bomb survivors. It is simply the case that the effect <u>per unit dose</u> is much lower at high intensity and short exposures than at low dose-rate exposures due to the lower efficiency of free radical damage at high intensities, when large number of free radicals tend to negate each other.

who found that in this same period there was a catastrophic reproductive failure among land birds, who fed their young insects contaminated by radioactive rainfall. Such findings gives us reason believe that the free-radical effect of low level radiation affects many if not all forms of life.5

The Chernobyl accident, for all its tragic consequences, offers an opportunity to reassess whether the price we pay for the continued operation of nuclear reactors is too great for society. Let us list separately here some the special characteristics of the Chernobyl accident which makes such a reassessment absolutely imperative:

It involved a much larger population than any earlier studies of exposed populations.

It involved a normal population, not hospital patients, workers of a limited age range of 18-65, or survivors of a traumatic event such as the destruction of Hiroshima and Nagasaki.

It involved extremely low doses of radiation, comparable to those received from distant nuclear detonations, or to the permissible releases from nuclear reactors and plutonium separation facilities. There is, therefore, no need to make any assumptions as to how best to extrapolate theoretically the effects expected at very low doses.

It involved accurately measured amounts of radioactivity in the diet, including milk, over a wide range of concentrations, especially when European data are taken into account. No such accurate measures of dose were available in any earlier studies of environmental radiation exposures or direct radiation exposure at Hiroshima or Nagasaki.

It involved internal radiation exposure as a result of inhalation and ingestion of radioactive nuclei involving alpha and beta emitters--as distinguished from the external radiation exposure from normal background levels, diagnostic or therapeutic X-rays, or gamma exposure in the cases of Hiroshima and Nagasaki.

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5. The probability that the observed mortality excess among humans in the U.S. West Germany and among newly hatched land birds could be simultaneously the product of chance during the time of the Chernobyl fallout is infinitesimal (i.e. of the order of one out of 10^{30}).

The statistics emerging from the Chernobyl disaster permit for the first time ever, the establishment of a dose response relationship at extremely low doses in a normal human population, down to a small fraction of the doses encountered in the normal environment. Our studies show that protracted internal exposures at low doses do not lead to a reduced effect, but rather to an increased effect, as compared to brief but high dose-rate exposures. They show, also, that there is no safe threshold for small exposures comparable to those from normal background radiation sources, and certainly there is no "beneficial" effect as has recently been argued by nuclear proponents.

To the extent that normal background radiation enters the food chain, it is, and always has been, a human health risk. Low-level radioactivity from man-made radionuclei is an additional very new and present danger. It would indeed be foolish to contribute further to the possibility of radioactive ills by siting radioactive waste at the Waste Isolation Pilot Plant facility without first being clear that there are no increased health or environmental risks associated with this action. Yet the WIPP facility's Supplementary Environmental Impact Statement and the Final Environmental Impact Statement (FEIS) does not consider the Petkau Effect, nor does the Department of Energy acknowledge the substantial health effects of protracted low-level internal exposure to radiation. Instead the DOE relies on erroneous extrapolations from external dose data.

We would suggest that the Department of Energy examine much more carefully their assumptions regarding the health effects of low-level radiation exposure before siting any waste at the WIPP facility. We would also suggest that they take a serious look at other governmental data regarding adverse radioactive health effects. We speculate that the Department of Energy knows more than they are telling.

Our Chernobyl findings clearly demonstrate the health risks of protracted low-level radiation internal exposure. Perhaps the most disturbing of our Chernobyl findings is the special vulnerability of persons aged 25-34. Along with the astonishing increase of AIDS-related deaths in May of 1986, this suggests that perhaps the primary insult to human immune systems came in the peak years of atmospheric bomb testing.

Both Linus Pauling and Andrei Sakharov had predicted in 1958 that millions of persons worldwide would be mortally affected by fission products released into the biosphere by the atmospheric bomb tests which began in 1945. According to recent estimates by the time the partial test ban was signed in 1963, the superpowers had released the equivalent of

approximately 40,000 Hiroshima bombs. Sakharov's prediction that this would result in some 12 million deaths worldwide has since been supported by the flattening out of mortality rates in the fifties, after steady improvement since 1900. This flattening out indicates that about 9 million excess deaths occurred in the U.S. alone in the period 1950-1962, along with immune damage sustained by millions of the baby boom generation born in the years of atmospheric fallout.

The potential dangers of low level radiation from ingested fission products have long been known to the Department of Energy and its predecessor, the Atomic Energy Commission (AEC), even before the development of the atomic bomb.6

Dr. John Gofman, one of the participants in the development of the bomb and one time Director of the Biomedical Division of the Livermore Laboratory has made the most impassioned attack on the callousness of his colleagues in 1979, suggesting they have committed the most serious crime:

> There is no way I can justify my failure to help sound an alarm over these activities many years sooner than I did. I feel that at least several hundred scientists trained in the biomedical aspect of atomic energy--myself definitely included--are candidates for Nuremberg-type trials for crimes against humanity for our gross negligence and irresponsibility. Now that we

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6. Richard Rhodes, in his classic The Making of the Atomic Bomb, relates that early in 1943, Enrico Fermi told Oppenheimer that in the event that it was not possible to build a fast-fission bomb "...radioactive fission products bred in a chain-reacting pile might be used to poison the German food supply...Oppenheimer had also discussed Fermi's idea with Edward Teller. The isotope the men identified that 'appears to have the most promise' was strontium, probably strontium-90, which the human body takes up in place of calcium and deposits dangerously and irretrievably in bone."

Rhodes states that Oppenheimer decided to wait before passing this suggestion on, summarizing Fermi's suggestion as follows: "In this connection I think we should not attempt a plan unless we can poison food sufficient to kill half a million men, since there is no doubt that the actual number affected will, because of non-uniform distribution, be much smaller than this" (Richard Rhodes, *The Making of the Atomic Bomb*, Simon and Schuester, New York, 1986, p. 511).

know the hazard of low-dose radiation, the crime is not experimentation--it's murder7.

Furthermore, there seems to be little doubt that the health problems resulting from atmospheric testing were specifically covered up by nuclear policy-makers. For example here is an account of the cover-up published in the Washington Post::

"Officials involved in U.S. bomb tests feared in 1965 that disclosures of a secret study linking leukemia to radioactive fallout from the bombs could jeopardize further testing and result in costly damage claims...That study, as well as a proposal to examine thyroid cancer rates in Utah, touched off a series of top-level meetings within the old Atomic Energy Commission over how to influence or change the two studies. The document also indicates that the Public Health Service, which conducted the studies, joined the AEC in reassuring the public about any possible danger from fallout (Bill Curry in The Washington Post: April 14,1979)."

It now appears clear that the bomb tests not only tested bombs, but they also experimented with human lives. The Department of Energy in the SEIS for WIPP want a Test Phase "...to gather data in order to assess the long-term performance of the repository and demonstrate safe waste management system operations (SEIS, S-2,3)." We suggest that there be no more tests or experiments that threaten the human health and the health of the environment.

We suggest instead that the Department of Energy now use its energy to look very very seriously at the consequences of its own previous nuclear experiments, that it instead develop approaches to waste siting that place health and the environment first and foremost, and that it establish risk assessment models based upon its commitment to these new values, re-siting radioactive waste only when there is absolutely no doubt that all aspects of the siting are proven safe. To transport and site transuranic and mixed waste now at the WIPP facility, a leaking facility, using inappropriate health-risk standards is irresponsible should definitely not take place.

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7. John Gofman, *An Irreverent, Illustrated View of Nuclear Power*, San Francisco, CA: Committee for Nuclear Responsibility. 1979. pp. 227-228.

GUEST EDITORIAL

Jay M. Gould
Ernest J. Sternglass

THE PETKAU EFFECT

Low-level radiation and mortality

The Chernobyl accident was the largest disaster ever created by humans. Within a few days it released into the biosphere nuclear fission products equal to about a tenth of the amount released by all bomb tests since 1945.

Low-level radiation from the Chernobyl accident arrived in the United States by about May 9, 1986. An increase in mortality followed almost immediately (*1*). Deaths of 20,000 to 40,000 Americans appear to have been accelerated in the four summer months of 1986, according to evidence drawn from many disciplines: biochemistry, medicine, radiation physics, statistics, epidemiology, and even ornithology.

In May 1987, we attended a conference in Amsterdam on health effects of radiation. There we heard, from many parts of Europe, chilling stories of the effects of the high radiation levels from Chernobyl, accompanied by anecdotal evidence of human and animal miscarriages; but no firm statistical data on human mortality or morbidity were presented. We wondered whether sufficient radiation had reached the United States to produce detectable effects on health. We found that there was, indeed, a 5.3 % increase in mortality in the United States in May 1986 over May 1985. That increase, the highest since 1934, has a probability of less than 1 out of 1000 of being a chance event.

For earlier studies we had assembled, from official sources, comprehensive data bases on radiation and mortality. These permit the quantification of deaths associated with low-level radioactivity at specific times and specific places in ways not possible before. The data base information allows us to separate the effects of radioactivity from those of other, more slowly varying, environmental and socioeconomic factors.

As Figure 1 illustrates, the arrival of low-level radiation from Chernobyl was recorded and so identified by EPA milk-monitoring stations in each state (*2*). The concentration of I-131, which has a short half-life, peaked in mid-May. Other radioactive isotopes like cesium-137, strontium-90, strontium-89, and barium-140 were also identified.

Changes in infant mortality rates in the South Atlantic states in June and July of 1986 over the corresponding months of 1985 were recorded (Figure 2). There were also significant declines in the number of live births in this and other regions of the United States in this period.

In Figure 3 we display the change from May 1986 over May 1985 for the total number of deaths as well as for two selected age groups and for three selected causes of death. All of these increases are statistically significant, at less than the 0.001 level. This figure also shows the much smaller percentage changes for May 1985 over May 1984. Unusual increases in mortality were recorded for people 25–34 years old. The number of deaths on which our statistical significance tests were based come from the provisional 10% sample of all death certificates analyzed in detail by age and cause of death by the U.S. National Center for Health Statistics (NCHS).

A similar chart can be prepared for the four-month period May–August 1986. The latest NCHS estimate of the number of deaths in those months is 672,000, a 2.7% gain over 1985, which because of the large number involved is statistically significant ($P < 0.001$). Although most of the additional deaths occurred in May, there was also a statistically significant decline in the number of

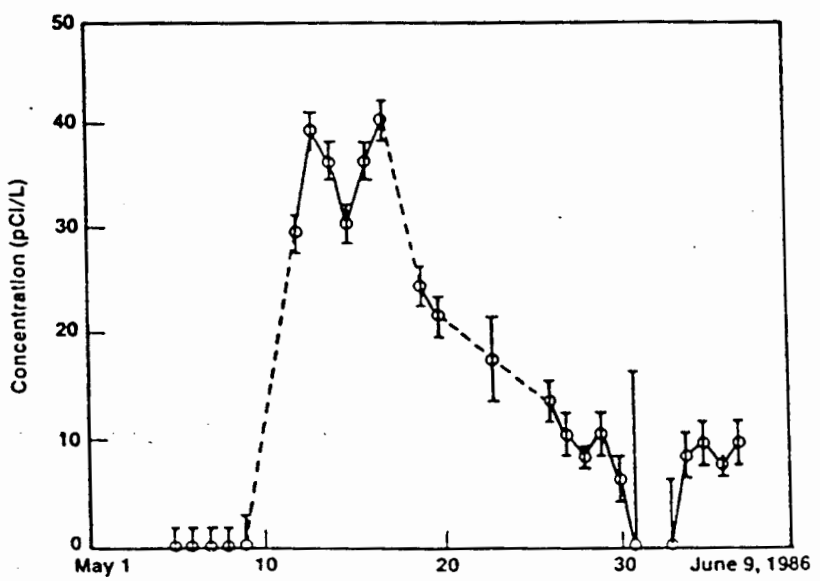

Figure 1. **Concentration of I-131 in fresh farm milk, May–June 1986 in the New York metropolitan area. (Recorded by the Environmental Measurement Laboratory of the Department of Energy)**

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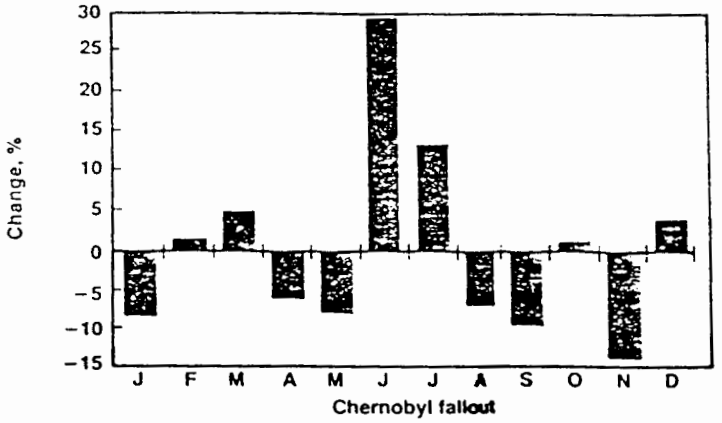


Figure 2. C. .nge in infant mortality in the South Atlantic states in 1986 relative to 1985

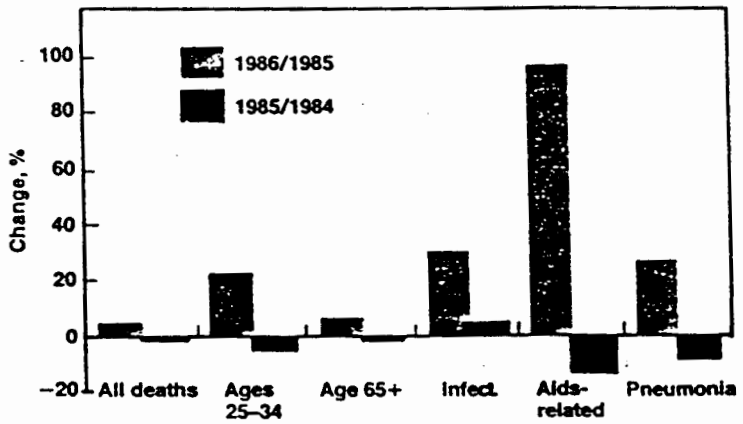


Figure 3. Changes in mortality rates, May 1986 vs. May 1985, compared with May 1985 vs. May 1984

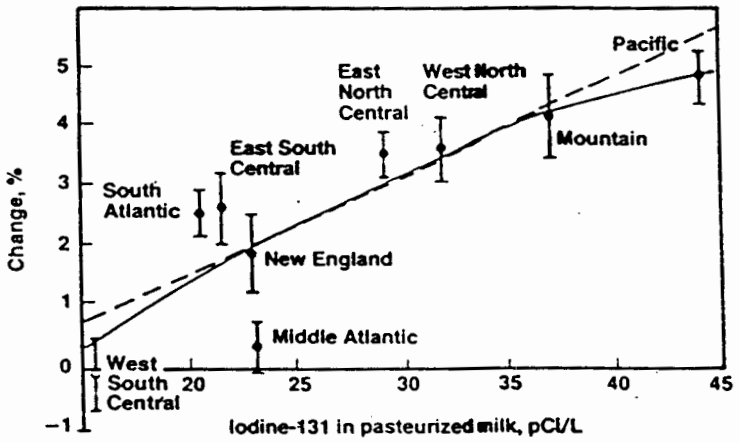


Figure 4. Regional percent change in mortality, May–August 1986 over May–August 1985. (Source: EPA and NCHS)

live births in June of 1986 and a sharp increase of 8% in the national infant mortality rate. By September of 1986, most of the immediate mortality effects appeared to have diminished.

In Figure 4 we show the percentage change in the total mortality of the nine U.S. census regions of the United States for May–August 1986 compared with May–August 1985, vs. the values of the I-131 levels in pasteurized milk as reported by EPA. The points shown represent the population-weighted averages of the peak concentrations of I-131 in May and June of 1986 in each state and region. The dotted line is a linear fit to the data and the solid line is the logarithmic fit that best represents the trend of the data. The error bars represent one standard deviation. The regression analysis yields a highly significant correlation coefficient of 0.87 ($P < 0.001$) for the log values, which increases to 0.94 if the Middle Atlantic division is omitted.

For the United States as a whole, the largest monthly increase in the infant mortality rate (IMR) came in June 1986, with an 8.2% increase over June 1985. In the Middle Atlantic region, which comprises New York, New

Figure 5. Dose-response curve
Percent increase in mortality as a function of I-131 levels (*6*)

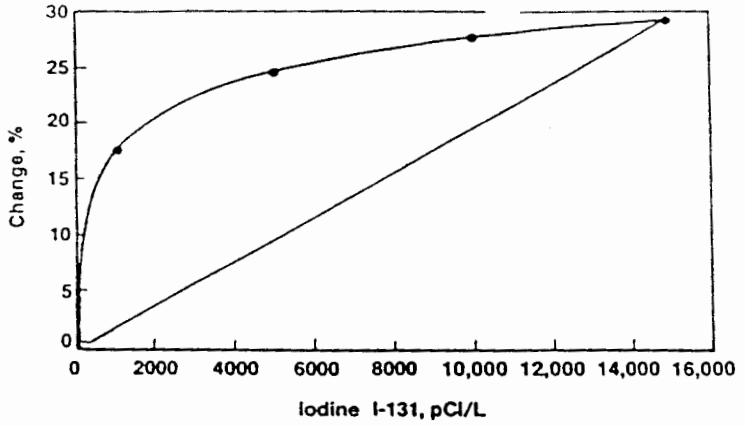
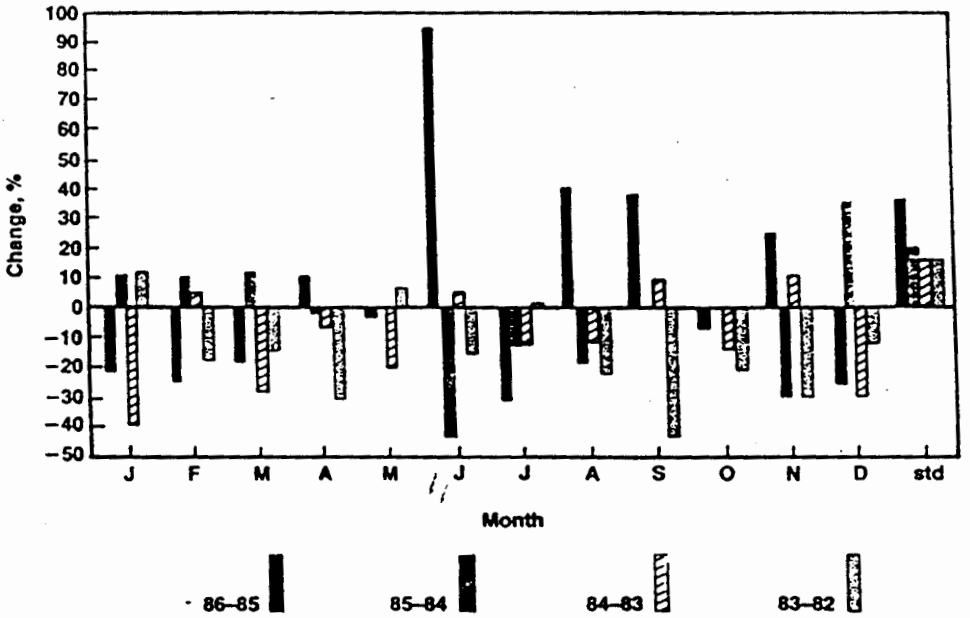


Figure 6. Infant mortality, Baden-Württemberg a year-to-year comparison



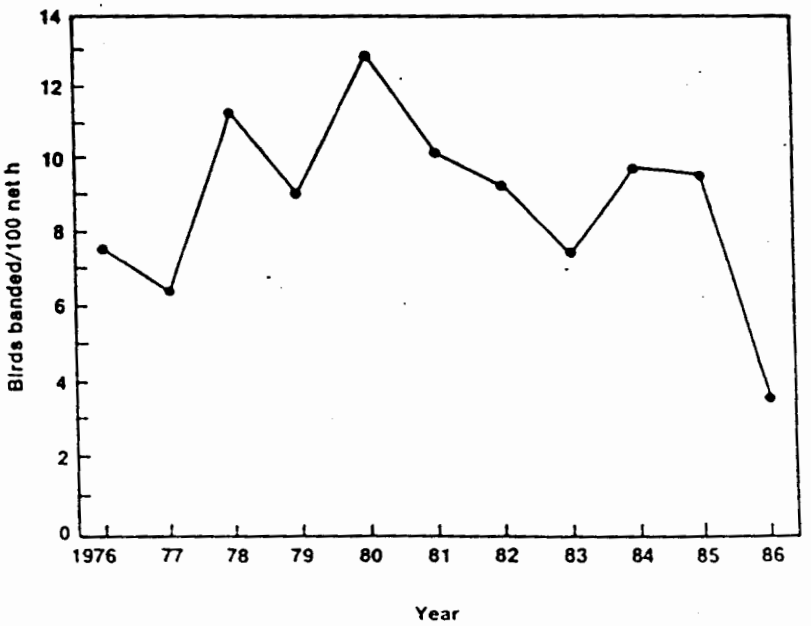


Figure 7. Number of newly hatched landbirds in the period May 10 to Aug. 17, 1976–86

Jersey, and Pennsylvania, New York environmental groups warned residents not to drink fresh milk, which may explain why the experience in that region lies four standard errors below the regression line. The New York state IMR *declined* by 7.9 % from June 1985, and in New York City it *declined* by an amazing 19.6%. Milk consumption declined in New York in May 1986 but not in New Jersey or Pennsylvania, further implicating the milk.

Causes?

The biochemical mechanism underlying the destructive impact of low-level radiation has been proposed by A. Petkau (3) and others (4) and can be summarized as follows: Low-level emissions from ingested radionuclides promote the formation of oxygen free radicals which, in a chain reaction, can quickly destroy the membranes of cells, such as those of the immune system. At higher intensities of radiation, the free-radical concentrations increase and radicals quench each other. As a result, per unit of radiation absorbed in tissue, the process is perversely more efficient at lower rather than at higher doses or intensities.

Figure 5 indicates the shape of the logarithmic dose–response curve, taken from Figure 4 and extended to the higher concentrations measured in Europe (5). The straight line represents the expected effect based on the assumption made by physicists that the dose–response curve obeys a linear law. This assumption is based on our experience with short bursts of very high intensities, as in the case of medical therapeutic uses, or as in the case of the brief flash from an atomic bomb. The Chernobyl data are the first direct evidence for a large human population that the shape of the dose–response curve at the very low dose rates of fallout radiation exposures is in fact logarithmic and not linear.

Further confirmation of the logarithmic nature of the dose–response curve comes from Jens Scheer of the University of Bremen, who is now assembling monthly mortality data for areas in Europe that were heavily exposed to radiation from Chernobyl in 1986 (6). Figure 6 shows that in Baden-Württemberg a peak increase in the infant mortality rate was reached in June just as in the case of the South Atlantic states (Figure 2), but with an increase of 95% over 1985, vs. 8.2% for the South Atlantic states. This was the highest increase registered by any West German state.

Radiation levels in Europe were 100 to 1000 times greater than those in the United States, but the summertime increase in European mortality was higher by only about a factor of 10. This would be further evidence for the logarithmic nature of the dose–response curve for low-level radiation. It is to be remembered, however, that warnings not to drink milk were widely heeded in Europe and oubtedly reduced exposures to fetuses.

The strong effect of low-level radiation on reproduction is supported by observations by David DeSante, who documented a massive and unprecedented reproductive failure of landbirds at the Point Reyes Bird Observatory some 25 miles north of San Francisco, in the period May 15–Aug. 15, 1986 (7). Figure 7 indicates that the number of newly hatched birds captured in the mist-netting program in this three-month period dropped 62% from the mean of the preceding 10 years (a drop of 9.4 standard errors).

The medical and scientific community has long believed, on the basis of linear extrapolations from high doses, that low-level radiation from fallout and nuclear plant releases can be dismissed as posing a negligibly small danger. This is the principal assumption that scientists must now reevaluate: It underestimates the effect of low doses for the most sensitive members of the population by a factor of about 1000.

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Jay M. Gould (Public Data Access, 30 Irving Place, New York, NY 10003), an economist and statistician, is currently the principal investigator of a Radiation and Public Health Research Project. He was founder of Economic Information Systems, a data base company absorbed by Control Data Corporation in 1981. Gould served on the EPA's Science Advisory Board from 1977 to 1980 and has since written several articles and a book on environmental problems.

Ernest J. Sternglass is Emeritus Professor of Radiological Physics in the Department of Radiology, University of Pittsburgh School of Medicine. While there he was director of the Radiological Physics and Engineering Laboratory. He has carried out extensive studies on the health effects of low-level radiation and is the author of *Secret Fallout* published by McGraw-Hill in 1981.

CEP
COUNCIL ON ECONOMIC PRIORITIES

NEWSLETTER

December, 1986 CEP Publication N86 - 12

Public Health

Nuclear Emissions Take Their Toll

By Jay M. Gould with Brian Jacobs, Celia Chen and Steven Cea

Chernobyl has raised the universal question of what is the true impact on public health of nuclear emissions. This newsletter, the fifth in a series of reports and publications by the Council on Economic Priorities on the geographic dangers of toxic waste, will review some of the evidence linking nuclear emissions in the US to increases in mortality rates.

A state is often too crude a geographic unit for the measurement of environmental dangers since these dangers are generally local and seldom impact to the same degree on all or most localities in a state. As a preliminary effort, however, statewide and county variations in total infant and cancer mortality rates can be used to appraise current regional variations in public health.

Economy Determines Mortality

The advance of any modern industrial society can be traced in terms of the systematic decline in its mortality rates over time and the consequent increase in the longevity of its population. This is true of the US over the past two hundred years or more, and certainly so in the 20th Century when the official mortality statistics became representative of the total population. The US total mortality rate stood at 17.2 deaths per 1,000 persons in 1900 and declined at an average annual rate of one percent to stand at 8.7 deaths per 1,000 persons in 1980. The annual decline in mortality rates can, of course, be expected to slow as the population ages over time. Thus the mortality rate, when adjusted for differ-

The Calculation of Excess Mortality

Insight into the probable consequences of the Chernobyl disaster can be gained through US Mortality data for areas exposed to nuclear emissions, provided the total volume of curies of radioactive materials released is known. This newsletter explores the impact on public health of the release (routine and accidental) of some 35 million curies of all noble gases and radioactive particulates emitted from all civilian nuclear power reactors in the US in the years 1974–1981, as tracked by the Brookhaven National Laboratory. Our analysis indicates that such releases (detailed in Table 4) based on mortality data for states most directly affected by such emissions, are associated with nearly 9,000 excess deaths each year.

Brookhaven emissions surveys are extremely conservative. They do not cover emissions from the plutonium producing Hanford and Savannah River military reactors. The Atomic Energy Commission has been extremely sanguine about possible nuclear contamination of communities situated downwind from military reactors.

The Portland Oregonian (on May 11 and 12, 1986) revealed, on the basis of some 19,000 pages of classified data obtained as the result of FOIA, that the Hanford military reactors in Benton County, Washington, apparently released into the air 446,700 curies of radioactive Iodine-131 in the years 1945 to 1950, and an additional 7,616 curies in the years 1951–1961. This represents staggeringly high radiation levels—only 14 curies of radioactive Iodine were reported to have been released by the Three Mile Island disaster in 1979. For example, in an experiment "related to the development of a monitoring methodology for intelligence regarding the emerging Soviet nuclear program," Hanford purposely released 5000 curies of radioactive Iodine on Dec. 2-3, 1949. One particular stretch of farmland, lying just downwind of Hanford, came to be known as "Death Mile." Nine of its ten families have been stricken with cancer since 1950. The full impact of these emissions on the area affected has never been estimated. It is time for private citizens in the US as well as the USSR and Europe to demand official evaluations of the loss of life from nuclear emissions. It is CEP's hope that the findings and methodology offered in this newsletter receive the critical attention of radiation physicists, epidemiologists, and public health officials. ■

Continued from page 1
ences due to age, declined somewhat more—from 17.8 in 1900 to 5.9 deaths per 1,000 in 1980.

The infant mortality rate (IMR)—defined as the number of deaths within the first year per 1,000 live births—does not require age adjustment and has declined much more rapidly. Over time, the IMR is very much affected by the change in relative health standards of nonwhites since the IMR for nonwhites generally has been about 50 percent higher than the IMR for all babies. In 1915, the first year in which the official infant mortality rate was considered accurate, the IMR was 99.8. The 1980 figure, at 12.6, represents an average annual decline of 3.2 percent over a 65-year period. The average annual decline in the IMR usually ranged between two and four percent in accordance with the degree to which nonwhites and poor whites enjoyed better health and nutrition in periods of economic expansion.

This fact is indicated by Table 1 which summarizes trends in infant mortality by five-year periods since 1915. Annual declines are seen to average below three percent in depression years and over four percent in the "prosperous" full employment war years. In the decade 1955–1964, the years when atmospheric bomb testing produced peak fallout levels, the average annual decline slowed to one percent, however. The signing of the test ban treaty in 1963 saw fallout levels dropping sharply, and the average rate of decline in the 1965–1979 period was again well over four percent.

Cancer Rates Steadily Increasing

As the overall US mortality rate reflects the gradual aging of Americans, so does the cancer mortality rate—it has been increasing for decades. But the cancer rate is increasing even after adjustment for age and now accounts for about 22 percent of all deaths.

These mortality rates, used to evaluate public health standards, are closely intertwined. Historically, modern industrial technology, along with advancing medical technology, has elevated nutrition and health standards. It has also contributed greatly to the systematic lowering of mortality rates. But over the past three decades, increasing cancer rates, even after age adjustment, represent the grim side of that equation. They reflect in large part the environmental deterioration accompanying modern industrial technology. CEP is committed to the exploration of these complex and often contradictory economic, environmental, and public health issues.

Infant Mortality Linked To Fallout

Of the three mortality rates, the IMR is by far the most sensitive to both economic and environmental change. It can respond to a major environmental change within months. Let us again refer to Table 1 that summarizes official US IMR data by five-year periods since 1915. The necessity of including nuclear radiation in measures of environmental degradation is indicated by the flattening out of the long secular decline in the average annual IMR that occurred in the bomb test years.

When attention was first drawn to this ominous change in the late sixties, pronuclear proponents asserted this flattening out in the annual rate of the declining IMR merely reflected the natural limits of medical technology and the possible exhaustion of the powers of antibiotics. This argument was called into question after the ban on atmospheric bomb testing by the immediate resumption of the average annual four percent decline in the US IMR. That there are such cities as Amsterdam and Yokohama today with IMR ratios of the order of four or five, as against the current US IMR of 11, indicates we are still far from reaching any "natural" limit.

A 1986 publication of the Children's Defense Fund has, however, just warned that another ominous alteration in infant mortality rates has occurred in the period 1981 to 1984—when "the annual rate of decline has slowed to approximately three percent." In this period, the black infant mortality rate was also twice that of white infants, the greatest disparity in 23 years. (Table 1 shows that nonwhite infant mortality rates have historically been most responsive to both economic and environmental changes. Average annual declines were close to six percent in prosperous periods such as 1945–49 and average annual declines less than one percent in the peak bomb test years.) The Children's Defense Fund offers much evidence that these recent changes can be attributed to cutbacks in Federal health, nutrition, and service programs. The hypothesis that emissions from nuclear reactors are also adversely affecting infant mortality rates for both white and black babies shall be explored below.

Most of the nation's civilian power reactors came on line in the seventies, particularly in 1974 and subsequent years. Routine and accidental emissions from these reactors have been tracked by the Brookhaven National Laboratory.

The following is a summary of the latest Brookhaven Report:

Emissions, All Noble Gases, Million Curies

	1974–1981	Total 1970–1981
Boiling Water Reactors	23.732	40.252
Pressurized Water Reactors	11.687	11.719
Totals	35.419	51.971

This newsletter investigates the statis-

Continued page 4

TABLE 1: INFANT MORTALITY RATES IN THE US, 1915-1979

Five Year period	Av. # Deaths per 1,000 Births All Babies	Nonwhite	Annual % Rates of Change All Babies	Nonwhite
1975–1979	14.4	22.1	-4.9	-4.6
1970–1974	18.4	27.6	-4.2	-5.7
1965–1969	22.7	36.5	-2.2	-2.7
1960–1964	25.3	41.6	-0.9	-1.0
1955–1959	26.4	43.7	-1.3	-0.5
1950–1954	28.1	44.8	-3.6	-2.2
1945–1949	33.5	49.8	-4.9	-6.2
1940–1944	42.6	67.2	-4.6	-3.9
1935–1939	53.2	81.3	-2.6	-3.9
1930–1934	60.4	98.6	-2.7	-1.4
1925–1929	69.0	105.4	-2.2	-1.8
1920–1924	76.7	115.3	-4.7	-5.3
1915–1919	95.7	149.7	—	—

Source: *Vital Statistics of the U.S., 1980, Vol. ii, Mortality, Part A, Section 2, Infant Mortality, page 1.*

TABLE 2: AVERAGE ANNUAL MORTALITY RATES, 1965-69 AND 1975-82 BY STATE AND REGION

	ANNUAL AVERAGE 1965-1969								ANNUAL AVERAGE 1975-1982								RATIOS OF CHANGE		
	BIRTHS	INFANT DEATHS	IMR	POP (TH)	DEATHS	MR	CANCER DEATHS	CMR	BIRTHS	INFANT DEATHS	IMR	POP (TH)	DEATHS	MR	CANCER DEATHS	CMR	IMR RATIO	MR RATIO	CMR RATIO
US	3571707	80399	22.5	196844	1870238	9.5	309907	157.4	3394435	45561	13.4	222093	1931224	8.7	399011	179.7	0.596	0.915	1.141
REGION																			
STATES																			
NEW ENGLAND	203572	4045	19.9	11329	117450	10.4	20753	183.2	156025	1738	11.1	12325	110743	9.0	25121	203.8	0.561	0.867	1.113
*ME	17802	339	19.0	984	10868	11.0	1819	184.9	15647	155	9.9	1112	10307	9.3	2245	201.8	0.519	0.839	1.092
NH	12152	241	19.8	692	7260	10.5	1282	185.2	12589	116	9.2	896	7356	8.2	1661	185.4	0.464	0.783	1.001
*VT	7759	154	19.8	421	4584	10.9	727	172.5	7157	70	9.8	501	4380	8.8	912	182.3	0.493	0.804	1.057
*MA	99179	1976	19.9	5408	59304	11.0	10315	190.7	71961	793	11.0	5755	53481	9.3	12001	208.5	0.553	0.847	1.093
*RI	16493	341	20.7	901	9499	10.5	1778	197.3	11986	170	14.2	953	9221	9.7	2151	225.6	0.685	0.918	1.143
*CT	50188	995	19.8	2922	25935	8.9	4832	165.3	36685	435	11.9	3107	25997	8.4	6152	198.0	0.598	0.943	1.197
MIDDLE ATLANTIC	624612	13720	22.0	36746	379695	10.3	67948	184.9	485919	6710	13.8	37008	352678	9.5	76788	207.5	0.629	0.922	1.122
*NY	316768	7048	22.3	18064	187700	10.4	34171	189.2	238206	3446	14.5	17756	167766	9.4	36670	206.5	0.650	0.909	1.092
*NJ	114861	2402	20.9	6978	65102	9.3	12405	177.8	91542	1129	12.3	7374	64995	8.8	14977	203.1	0.590	0.945	1.143
*PA	192983	4270	22.1	11704	126893	10.8	21372	182.6	156172	2134	13.7	11878	119917	10.1	25141	211.7	0.618	0.931	1.159
EAST NORTH CENTRAL	717885	15682	21.8	39166	371057	9.5	62907	160.6	632173	8464	13.4	41467	358145	8.6	74396	179.4	0.613	0.912	1.117
*OH	187946	3860	20.5	10503	99262	9.5	16931	161.2	163209	2124	13.0	10784	96324	8.9	20184	187.2	0.634	0.945	1.161
*IN	93432	2050	21.9	5018	47728	9.5	7800	155.4	84485	1066	12.6	5437	47044	8.7	9520	175.1	0.575	0.910	1.126
*IL	196649	4702	23.9	10870	108827	10.0	18354	168.9	176708	2677	15.1	11407	100418	8.8	20961	183.8	0.633	0.879	1.088
*MI	162703	3585	22.0	8581	74845	8.7	12877	150.1	137566	1878	13.7	9177	74149	8.1	15421	168.1	0.620	0.926	1.120
*WI	77154	1484	19.2	4194	40394	9.6	6947	165.6	70205	719	10.2	4662	40210	8.6	8309	178.2	0.532	0.896	1.076
WEST NORTH CENTRAL	279660	5543	19.8	16008	163935	10.2	26805	167.4	271081	3428	12.6	17063	157578	9.2	31482	184.5	0.638	0.902	1.102
*MN	66301	1235	18.6	3629	33527	9.2	5767	158.9	63172	728	11.5	4029	33010	8.2	6791	168.5	0.619	0.887	1.061
*IA	48902	943	19.3	2771	29521	10.7	4838	174.3	45090	507	11.3	2908	27048	9.3	5518	189.7	0.584	0.873	1.088
MO	80220	1757	21.9	4575	52026	11.4	8171	178.6	75737	1148	15.2	4880	49789	10.2	9809	201.0	0.692	0.897	1.125
ND	11902	227	19.1	633	5639	8.9	922	145.6	12347	162	13.1	652	5664	8.7	1088	166.8	0.688	0.975	1.146
SD	12009	261	21.7	673	6509	9.7	1072	159.3	12219	151	12.4	688	6396	9.3	1212	176.1	0.569	0.961	1.106
*NB	25176	410	16.3	1449	14898	10.3	2518	173.7	25871	323	12.5	1563	14546	9.3	2893	185.1	0.768	0.905	1.066
KS	35149	710	20.2	2278	21814	9.6	3525	154.7	36645	407	11.1	2342	21133	9.0	4170	178.0	0.550	0.942	1.151
SOUTH ATLANTIC	549057	13976	25.5	29637	276055	9.3	42176	142.3	520991	7919	15.2	36248	320918	8.9	65682	181.2	0.597	0.951	1.273
*DE	10213	223	21.8	524	4904	9.4	788	148.9	8963	118	13.1	596	5040	8.5	1118	187.5	0.603	0.903	1.259
*MD	62382	1426	22.9	3660	31342	8.6	5565	152.0	51019	687	13.5	4214	32425	7.7	7551	179.2	0.589	0.899	1.179
*DC	28530	673	23.6	804	10513	13.1	1488	184.1	18163	442	24.3	664	8715	13.1	1764	265.6	1.031	1.003	1.443
*VA	79611	1965	24.7	4547	37396	8.2	5848	128.4	72084	1036	14.2	5285	40453	7.7	8381	158.6	0.576	0.931	1.235
WV	30526	752	24.6	1819	19607	10.8	2958	162.2	29080	426	14.6	1916	19440	10.1	3621	189.0	0.594	0.941	1.165
*NC	93958	2607	27.7	5068	43458	8.6	5804	114.5	83625	1307	15.6	5775	47644	8.3	9085	157.3	0.563	0.962	1.374
*SC	50123	1398	27.9	2634	22066	8.4	2919	110.8	48484	830	17.1	3057	23853	7.8	4394	143.7	0.614	0.931	1.297
*GA	90399	2320	25.7	4510	39555	8.8	5423	120.2	87781	1294	14.7	5345	43667	8.2	7890	147.6	0.574	0.932	1.228
*FL	103316	2612	25.3	6071	67215	11.1	11415	188.0	120994	1780	14.7	9396	99682	10.6	21879	232.9	0.582	0.958	1.238
EAST SOUTH CENTRAL	245812	6768	27.5	12988	126134	9.7	17963	138.3	232995	3567	15.3	14405	132058	9.2	24997	173.5	0.556	0.944	1.255
KY	59054	1391	23.6	3205	31989	10.0	4817	150.3	58376	727	12.5	3603	32962	9.1	6448	179.0	0.529	0.917	1.191
*TN	73603	1858	25.2	3919	38466	9.8	5439	138.8	69524	1078	15.5	4482	41673	9.3	7928	176.9	0.614	0.947	1.274
*AL	65319	1839	28.2	3521	32862	9.3	4584	130.2	59996	971	16.2	3833	34588	9.0	6567	171.3	0.575	0.967	1.316
MS	47836	1680	35.1	2343	22817	9.7	3126	133.4	45099	792	17.6	2487	22834	9.2	4054	163.0	0.500	0.943	1.222
WEST SOUTH CENTRAL	363118	8633	23.8	19010	165622	8.7	26383	138.8	415029	5753	13.9	23114	190373	8.2	36606	158.4	0.583	0.945	1.141
*AR	34128	758	22.2	1973	19848	10.1	2998	151.5	34761	461	13.3	2241	21712	9.7	4226	188.6	0.596	0.963	1.245
LA	76263	2104	27.6	3663	33107	9.0	5094	139.1	76743	1234	16.1	4118	35235	8.6	6793	164.9	0.583	0.947	1.186
OK	40468	869	21.5	2514	24370	9.7	3985	158.6	47463	620	13.1	2958	27290	9.2	5297	179.1	0.608	0.952	1.129
TX	212259	4902	23.1	10861	88297	8.1	14314	131.8	256062	3438	13.4	13797	106136	7.7	20291	147.1	0.581	0.946	1.116
MOUNTAIN	155932	3447	22.1	7846	63311	8.1	9287	118.4	208613	2487	11.9	10917	77254	7.1	14425	132.1	0.539	0.877	1.116
MT	12346	269	21.8	699	6591	9.4	1004	143.6	13337	148	11.1	780	6519	8.4	1227	157.4	0.510	0.887	1.096
ID	12782	251	19.6	705	5786	8.2	893	126.7	18511	167	9.0	911	6362	7.0	1207	132.5	0.468	0.851	1.046
WY	5823	128	21.9	323	2822	8.7	393	121.7	8636	84	9.7	442	3033	6.9	530	119.8	0.443	0.786	0.984
CO	38034	838	22.0	2019	17256	8.5	2459	123.7	46947	560	11.9	2807	19034	6.8	3478	123.9	0.542	0.794	1.002
NM	21933	557	25.4	1004	7007	7.0	985	98.1	24450	299	12.2	1264	8441	6.7	1540	121.8	0.482	0.957	1.242
AZ	32610	765	23.5	1634	13204	8.1	2043	125.0	45519	614	13.5	2575	19983	7.8	4001	155.4	0.575	0.960	1.243
UT	23661	432	18.2	1020	7023	6.9	939	92.1	39592	469	11.8	1393	8217	5.9	1327	95.2	0.649	0.856	1.034
NV	8744	207	23.7	442	3623	8.2	533	120.4	11622	147	12.6	745	5666	7.6	1115	149.6	0.531	0.928	1.242
PACIFIC	432059	8585	19.9	24114	206979	8.6	35682	148.0	471609	5496	11.7	29549	231479	7.8	49515	167.6	0.586	0.913	1.132
*WA	53940	1071	19.9	3190	29404	9.2	4833	151.5	60195	731	12.1	3949	31298	7.9	6602	167.2	0.611	0.860	1.104
*OR	33100	650	19.6	1983	18923	9.5	3126	157.6	40104	494	12.3	2522	21077	8.4	4385	173.9	0.627	0.876	1.103
*CA	345019	6864	19.9	18941	158651	8.4	27724	146.4	371310	4271	11.5	23078	179104	7.8	38528	166.9	0.578	0.927	1.141

*NUCLEAR STATES

IMR : INFANT MORTALITY RATE (DEATHS/1000 BIRTHS)

MR : MORTALITY RATE (DEATHS/1,000 PERSONS)

CMR : CANCER MORTALITY RATE (DEATHS/100,000 PERSONS)

tical relationship between the 35.4 million curies emitted in the years 1974–1981 and infant and other mortality rates in the years 1975–1982 in states most directly affected.

For the purpose of this inquiry, the contiguous states (excluding Alaska and Hawaii) are divided into two groups—*nuclear states* (those with power or military reactors) and *nonnuclear states* (those without). Actually, the geographic distribution of reactors in the US is so wide that only 19 states can be regarded *nonnuclear*. Small states, like the District of Columbia or Rhode Island, lying directly downwind from reactors in adjoining states are included in the *nuclear* group.

Our definition of *nuclear* states (designated by an asterisk in Table 2) must of necessity include Washington and South Carolina, home of the Hanford and Savannah River military reactors. Emissions from these reactors are not reported by Brookhaven, and cannot be assumed to have reached peak levels in the late seventies as is the case of civilian power reactors. Again, Brookhaven does not report on emissions from the hundreds of small experimental reactors located at research institutes, universities, and large hospitals. Most of these can be found in the states designated in Table 2 as *nuclear*.

The years 1965–69 were chosen as the most suitable control time period—radiation from bomb test fallout was at very low levels. Both Nevada and Utah, which have no nuclear reactors, were included in our *nonnuclear* states. Some residents of both these states, however, might have been affected by occasional accidental emissions from underground tests in the Nevada desert. These tests continued without interruption after the atmospheric test ban in 1963. In fact, these tests are continued today with as yet unknown public health consequences.

The average annual mortality rates have been calculated in both time periods for these two groups of states. The results are summarized in Tables 3 and 4. The tables suggest that emissions from nuclear reactors in the *nuclear* states may have had a small but statistically significant adverse impact on mortality rates in the 1975–1982 period, when such emissions reached high levels.

Thus, according to Table 3, which summarizes the rate in the *nuclear* and *nonnuclear* states, the infant mortality rate in the *nuclear* states was 22.2 per thousand births in the 1965–69 period, somewhat lower than the national IMR in those years of 22.5 (not a statistically significant difference). In that same period, however, the IMR for *nonnuclear* states was much higher than the *nuclear* IMR, but ended somewhat lower in the later period. Its decline, over these years, was at the annual rate of 0.89 percent, as against 0.83 percent for the *nuclear* states.

While these differences appear small, in Table 4 they translate into disturbingly large annual estimates of *excess* deaths. This calculation yields what the observed deaths would have been in the *nuclear* states if they had had the same percentage change in mortality rates experienced by the *nonnuclear* states.

A surprisingly similar difference is arrived at between the two groups of states with respect to cancer mortality. While the cancer mortality rate in the *nuclear* states was somewhat below that of the nation in the early period, it was considerably higher in the later period.

At first glance, this appears surprising because we would expect at least a five-year lag of cancer mortality from the year of exposure, suggesting that emissions in the 1974–81 period should lead to elevated cancer mortality levels in the eighties and nineties. The elevated cancer rates in the late seventies may reflect the much higher but earlier and yet unknown emission levels from military reactors. They may also reflect the emissions from some civilian reactors in the 1970–74 years.

Indeed the impact on public health of military reactor emissions deserves separate study (See front page box) both because the time period of operation spans several decades, and because the cumulated volume of emissions may be higher than that of civilian reactors. However, so much is *not* known about the treatment and disposal of the huge stockpiles of military waste, we must

TABLE 3: SUMMARY OF CHANGES IN MORTALITY RATES, 1965–69, 1975–82, US, NUCLEAR AND NON-NUCLEAR STATES

	US	NUCLEAR STATES	NON-NUCLEAR STATES
1965–69			
Total # Infant Deaths	401995	310289	91706
Total # Live Births	17858535	13989682	3868853
Average Annual IMR (Deaths Per 1000 Live Births)	22.510	22.180	23.704
Total # of Deaths	9351192	7467466	1883726
Average Annual Population	196844	155742	41103
Average Annual Mortality Rate (Deaths Per 100,000)	950.11	958.96	916.60
Total # Cancer Deaths	1549534	1256809	292725
Average Annual Cancer Rate (Deaths Per 100,000)	157.44	161.40	142.44
1975–82			
Total # Infant Deaths	364490	270823	93667
Total # Live Births	27155479	20187695	6967784
Average Annual IMR (Deaths Per 1000 Live Births)	13.422	13.415	13.443
Total # of Deaths	15449794	12157892	3291902
Average Annual Population	222093	172840	49253
Average Annual Mortality Rate (Deaths Per 100,000)	869.56	879.27	835.45
Total # Cancer Deaths	3192087	2561141	630946
Average Annual Cancer Rate (Deaths Per 100,000)	179.66	185.22	160.13
Ratios of Change, 1975–82/1965–69			
Infant Mortality Rate	0.5963	0.6048	0.5671
Total Mortality Rate	0.9152	0.9169	0.9115
Cancer Mortality Rate	1.1411	1.1476	1.1242
Annual Percent Rates of Change			
Infant Mortality Rate	−4.04	−3.95	−4.33
Total Mortality Rate	−0.85	−0.83	−0.89
Cancer Mortality Rate	1.41	1.48	1.24

assume that the associated public health problems may be of the same order of magnitude as those of the civilian reactors.

Unlike infant and total mortality rates that are steadily declining, cancer mortality rates have been rising for several decades. The causes of this increase involve a complex mix of environmental and demographic factors for which total cancer mortality rates, unadjusted for sex, race, or age, require considerable further research.

Differences in Mortality

What do these results signify? First, the small differences between the mortality changes of the two groups of states *cannot* be attributed to chance. On the other hand, can these differences be attributed to different nuclear emissions levels? There is no clearly defined tendency evident in Table 2 among *each* of the so-called *nuclear* states to have increases in mortality that exceed those of the nation. This becomes evident by considering the ratios of change for each state for the three different mortality rates shown in Table 2. It can be said that a state does *worse* than the nation if the decline in its infant or total mortality rate was less than that of the nation or if the gain in its cancer mortality rates was greater than that of the nation. Thus, the 30 *nuclear* states have 90 opportunities to be measured against the national performance, and the 19 *nonnuclear* states have 57 such opportunities. (As examples, the *nuclear* state of Connecticut performed *worse* than the nation with respect to all three mortality rates, and the *nonnuclear* state of Wyoming performed *better* on all three counts.)

But the *nonnuclear* states can be seen to do *better* than the nation in only 54 percent of all cases, and the *nuclear* states do *better* in about 52 percent of all cases. Thus, it cannot be said that *nonnuclear* states have a tendency to perform significantly *better* than *nuclear* states. How can these apparently contradictory results be reconciled with the results of Tables 3 and 4? Can it be that the statistically significant differences between the two groups of states shown by Table 3 reflect factors other than nuclear emissions? There is a simple explanation of this paradox.

There are a total of about 90 civilian and military reactors that released emissions of varying volumes in the most recent time period. The effects of these emissions will be primarily found in residents of those relatively few counties most directly impacted by the releases. The vital statistics for these counties should then show up in these counties and not in the far more numerous remaining counties that make up the United States.

We do not have emissions data as yet for military reactors, which, in any case, were in continuous operation in both the two time periods we are considering. We can, however, attempt to de-

Continued page 6

TABLE 4: CALCULATION OF ANNUAL EXCESS MORTALITY IN NUCLEAR STATES 1975–82

	NUCLEAR STATES	NON-NUCLEAR STATES
1965–69		
Average Annual IMR (Deaths Per 1000 Live Births)	22.18	23.70
Average Annual Mortality Rate (Deaths Per 100,000)	958.96	916.60
Average Annual Cancer Rate (Deaths Per 100,000)	161.40	142.44
1975–82		
Average Annual IMR (Deaths Per 1000 Live Births)	12.58	13.44
Average Annual Mortality Rate (Deaths Per 100,000)	874.09	835.45
Average Annual Cancer Rate (Deaths Per 100,000)	181.45	160.10
Actual Avg. Annual Infant Deaths	33853	11708
Actual Avg. Annual Live Births	2523462	870973
Actual Avg. Annual Deaths	1519737	411488
Actual Avg. Annual Population	172840	49253
Actual Avg. Annual Cancer Deaths	320143	78868
Estimated Avg. Annual Infant Deaths	31740	—
Estimated Avg. Annual Deaths	1510780	—
Estimated Avg. Annual Cancer Deaths	313611	—
Excess Annual Infant Deaths	2113	—
Excess Annual Total Deaths	8957	—
Excess Annual Cancer Deaths	6532	—

In this table we have calculated the "excess" in mortality in the nuclear states as the difference in the number of expected deaths if these states had the same change in mortality since 1965–69 as was experienced by the nonnuclear states. These calculations are warranted by the fact that this assumption yields differences that are highly unlikely to be attributed to chance. The standard deviation (σ) of the difference between the observed mortality rate and an expected rate is given by the formula:

$$\sigma_{r_o - r_e} = \sqrt{\frac{(r_o)(1-r_o)}{N} + \frac{(r_e)(1-r_e)}{N}}$$

where r_o and r_e are the observed and expected mortality rates expressed to six decimals on a per capita basis, and N represents the number of deaths in the 1975–82 period. The results can be tabulated as follows:

	IMR	CMR	TMR
1. r_o	.01342	.001852	.008793
2. r_e	.01258	.001814	.008741
3. $r_o - r_e$	.00084	.000038	.000052
4. $\sigma_{r_o - r_e}$	.00031	.000037	.000037
5. Line 3/Line 4	2.72	1.01	1.38
6. Chance Probability	.004	.156	.084

Line 6 indicates the probabilities of securing the observed difference on line 3 purely by chance. The difference in infant mortality rates is most significant, for the probability of getting as large a difference as was observed is only four out of 1000. (A probability ratio of 50 times out of 1000 is generally taken as indicative of a highly improbable result of chance.) The observed difference in cancer mortality rates lies at the borderline of chance. The probability that both the observed differences in the infant and cancer mortality could simultaneously be the result of chance could be calculated by multiplying .004 by .156 to yield .0006, because these two mortality rates are completely independent. The p value for total mortality—.084—lies at the borderline of chance probability, but since total mortality includes both infant and cancer deaths (with a joint p of only .0006), it is hard to believe that all other deaths would not be affected by the same extra force of mortality that affected infants and cancer victims.

fine a *nuclear* county for the 50 civilian power reactors for which we do have emissions data for recent years.

Some 175 counties have been chosen as a first step to defining a *nuclear* county, one that would be more directly exposed to recent radioactive emissions from civilian reactors. These include, in addition to the county in which the reactor is located, an average of two or three counties lying within 25 or 30 miles from the reactor. Those adjacent counties lying to the north and east are favored in accordance with the prevailing wind patterns in the US. (For example, it has been suggested that such wind patterns account for the severity of acid rain in the Northeastern region of the US.)

This too is a highly simplistic definition. Windborne emissions by no means represent the most important way in which nearby residents can be affected. For example, rainfall affecting adjacent counties probably determines the ulti-

TABLE 5: NUCLEAR COUNTIES: SUMMARY OF CHANGES IN PUBLIC HEALTH MEASURES, 1965-69 AND 1975-82

	NUCLEAR COUNTIES				
	BOILING WATER REACTORS	PRESSURIZED WATER REACTORS	ALL REACTORS COUNTIES	NONNUCLEAR COUNTIES	US TOTALS
1965-69					
Number of Counties	71	114	175	2968	3143
Number of Births	1325248	1498874	2730406	15258955	17989361
Number of Infant Deaths	30524	32060	60723	348023	408746
IMR (Deaths per 1000 Births)	23.0	21.4	22.2	22.8	22.7
Number of Fetal Deaths	19185	21256	39226	239246	278472
FMR (Deaths per 1000 Births)	14.5	14.2	14.4	15.7	15.5
Population, 1970	14552937	17508052	31072244	172232619	203304863
Number of Deaths	693005	737496	1387843	8006837	9394680
MR (Deaths per 1000 Persons)	9.5	8.4	8.9	9.3	9.2
Number of Cancer Deaths	117589	126722	237103	1316843	1553946
CMR (Deaths per 100,000 Persons)	161.6	144.8	152.6	152.9	152.9
1975-82					
Th. Curies Emitted, 1974-81	2.37E+07	1.17E+07	3.54E+07		
Emission Per Capita	1.583	0.577	1.035		
Number of Births	1809882	2305116	3975794	23412534	27388328
Number of Infant Deaths	26331	29542	54210	314397	368607
IMR (Deaths per 1000 Births)	14.5	12.8	13.6	13.4	13.5
*Number of Births	1572114	1987858	3439066	20268725	23707791
*Number of Fetal Deaths	15645	18412	33071	198107	231178
*FMR (Deaths per 1000 Births)	10.0	9.3	9.6	9.8	9.8
Population, 1980	14975515	20292643	34186432	192359373	226545805
Number of Deaths	1037764	1331493	2300973	13185191	15486164
MR (Deaths per 1000 Persons)	8.7	8.2	8.4	8.6	8.5
Number of Cancer Deaths	220776	289143	495352	2707124	3202476
CMR (Deaths per 100,000 Persons)	184.3	178.1	181.1	175.9	176.7
RATIOS OF CHANGE					
IMR	0.632	0.599	0.613	0.589	0.592
FMR	0.687	0.653	0.669	0.623	0.630
MR	0.910	0.974	0.942	0.922	0.925
CMR	1.140	1.230	1.187	1.150	1.156

*Fetal Death data relates to the period 1975-81. As of this writing, 1982 data are unavailable

mate destination of most emitted radioactive particulates and effluents. Nearby residents can also be affected by the possible contamination of water, milk, and produce from counties even further removed from the point source of the emissions. Each reactor represents a unique geographic situation that deserves a careful examination of wind, precipitation and fresh food transportation patterns. This examination will offer a more complete definition of those adjacent counties vulnerable to local emissions.

Nevertheless, it turns out that even with the admittedly restricted definition of the 175 nuclear counties used here, results indicate adverse impacts on measures of infant mortality, fetal mortality, total mortality, and cancer mortality in the late seventies as compared with the earlier period. These results are summarized in Table 5 which replicates the methodology of Table 3. Now, however, the change in mortality rates of *nuclear* counties are compared with *nonnuclear* counties.

In addition, the nuclear counties are separated into two groups; those close to boiling water reactors and those close to pressurized water reactors. For all *nuclear and nonnuclear* counties, the rates for infant, fetal, and total mortality are seen to decline over the selected time period. It will be seen, however, that the declines in *nuclear* counties in each case fell short of the declines in *nonnuclear* counties. With respect to cancer mortality, which has been rising over these years, the 19 percent gain in *nuclear* counties exceeded the 15 percent gain in *nonnuclear* counties.

Could such results be the product of chance? If the answer is yes, then we would expect a 50 percent probability for each change in mortality in *nuclear* counties to be worse than the change in *nonnuclear* counties. The chance of then getting four such results at the same time would be equal to a coin tosser getting four heads in a row, i.e., $(.50)^4 = .0525$, or about one in twenty. Actually, the probability of obtaining all four observed changes in mortality rates by chance is less than 2 out of 100 as evident in the caption to Table 6.

Given the fact (demonstrated in the caption to Table 6) that the difference in the mortality experience of the two groups of counties is significant, we can speculate that there may be two ways to increase the statistical significance of our findings. The time periods studied should be extended and additional *nuclear* counties included. Extending the definition of *nuclear* counties possibly affected by radioactive rainfall might, for example, double the number of deaths involved. If the divergence between observed and expected rates remained the same, the significance of the results would be increased by 40 percent (i.e., by $\sqrt{2}$).

If the more current experience in the eighties is included, more significant divergences in the cancer rates can be expected. Based on only a few years in the early seventies, the cancer rate divergence in Table 6 is seen to be the least significant. If nuclear emissions in the seventies do result in elevated cancer rates, such effects will more likely be seen in the next twenty years.

A more detailed, properly financed study would, of course, try to account for other environmental factors and allow for adjustments for changes in age, sex, and race required by proper biostatistical procedures. These results, in CEP's opinion, would illuminate the main thrust of these findings.

It is clear that emissions in the *nuclear* counties have had an adverse impact on mortality, particularly on the very young and very old. It will be noted that the total mortality rate (TMR) registered in the *nuclear* counties had the smallest likelihood of being due to chance. This rate mainly reflects the deaths of persons over 65 years of age. But infant and fetal deaths are almost

Continued page 9

TABLE 6: THE STATISTICAL SIGNIFICANCE OF CHANGING MORTALITY RATES

	IMR	FMR	TMR	CMR
1. Mortality Rate, Nuclear Counties 1965–69	0.02224	0.014366	0.008933	0.001526
2. Ratio of Change in Nonnuclear Counties	0.5888	0.6234	0.9215	1.1504
3. Expected Mortality Rate, Nuclear Counties, 1975–82 (1×2)	0.013095	0.008956	0.008232	0.001756
4. Observed Mortality Rate, Nuclear Counties, 1975–82	0.013635	0.009616	0.008413	0.001811
5. Difference (4–3)	0.000540	0.000660	0.000181	0.000055
6. Standard Deviation of the Difference	0.000697	0.000745	0.000084	0.000084
7. 5/6	0.77	0.89	2.14	0.65
8. Chance Probability	0.2207	0.1867	0.0162	0.2579

In this table, we are testing the differences between a mortality rate registered in the combined group of 175 nuclear counties in 1975–82 with what would have been expected if these counties had the same change in mortality experienced by all the nonnuclear counties. We know from Table 5 that these counties had a somewhat better performance with respect to all four mortality rates.

For the sake of precision, we have expressed all rates on a per-capita basis to six decimals. For example the IMR of the nuclear counties would have been .013095 instead of .013635 if its 1965–69 rate had undergone the same ratio of change (.5888) reported for the nonnuclear counties. Is the difference between this "expected" rate and the observed actual rate (.000540) significant? The answer is given by the formula for the standard deviation (σ) of the difference between two sample rates:

$$\sigma_{r_1 - r_2} = \sqrt{\frac{(r_1)(1-r_1)}{n} + \frac{(r_2)(1-r_2)}{n}}$$

where r_2 is the expected rate, r_1 is the observed rate, and n is the number of deaths involved in the calculation of the mortality rate.

We see from rows 6, 7 and 8 above that the probability of securing by chance alone a divergence between the expected and observed IMR as great or greater than .000540 is about 22 percent. By itself, this cannot be regarded as a significant divergence. Similarly, the "chance" probabilities of securing the observed divergences in the fetal and cancer mortality rates are respectively 19 percent and 26 percent, each being high enough to be regarded as the possible product of chance. But since each of these three rates are completely independent, we can ask what is the probability that all three divergences are simultaneously the product of chance? The answer, given by multiplying the three independent probabilities is .0106, which is about one chance in one hundred.

This is in agreement with the very low chance probability (.0162) of securing the observed divergence in the total mortality rate, which of course includes infant, fetal, and cancer deaths. Thus, we have two pieces of evidence to suggest that there are less than two chances out of one hundred for the following statement to be false: In the period 1975–82 there was some extra force of mortality present in the nuclear counties not operating in the nonnuclear counties.

TABLE 7: REACTORS AND LOCATIONS

REACTOR	B/P	TOTAL EMISSIONS 1974-81	LOCATION	COUNTIES INCLUDED
Big Rock Point	B	3.34E+05	4 miles NE of Charlevoix, MI	MI: Charlevoix, Cheboygan, Emmett
Brown's Ferry	B	1.04E+06	10 miles NW of Decatur, AL	AL: Lawrence, Madison, Morgan TN: Franklin, Lincoln
Brunswick	B	1.06E+06	20 miles S of Wilmington, NC	NC: Duplin, New Hanover, Onslow, Pender
Cooper	B	1.03E+05	70 miles S of Omaha, NB	IA: Fremont, Mills NB: Cass, *Douglas, Lancaster, *Sarpy, *Washington
Dresden 1, 2 & 3	B	3.97E+06	14 miles SW of Joliet, IL	IL: Cook, DuPage, Kendall, Will IN: Lake
Duane Arnold	B	2.42E+04	8 miles NW of Cedar Rapids, IA	IA: Benton, Buchanan, Delaware, Dubuque, Linn
Edwin I. Hatch 1 & 2	B	7.47E+04	11 miles N of Baxley, GA	GA: Appling, Candler, Tatnall, Toombs
Humboldt Bay	B	9.62E+05	4 miles SW of Eureka, CA	CA: Del Norte, Humboldt, Siskiyou, Trinity
James A. Fitzpatrick	B	3.58E+05	36 miles N of Syracuse, NY	NY: Jefferson, *Oswego, St. Laurence
La Crosse	B	3.01E+05	19 miles S of La Crosse, WI	WI: Buffalo, Jackson, La Crosse, Monroe, Trempealeau
Millstone N1 & 2	B/P	5.63E+06	3.2 miles WSW New London, CT	CT: New London RI: Kent, Providence, Washington
Monticello	B	1.76E+06	23 miles SE of St. Cloud, MN	MN: Benton, Isanti, Morrison, Sherburne
Nine Mile Point	B	2.04E+06	8 miles NE of Oswego, NY	NY: Lewis, *Oswego
Oyster Creek	B	2.92E+06	9 miles S of Toms River, NJ	NJ: Middlesex, Monmouth
Peach Bottom	B	5.53E+05	17.9 miles S of Lancaster, PA	PA: Berkes, Lancaster, *Lebanon
Pilgrim	B	1.27E+06	25 miles SE of Boston, MA	MA: Norfolk, Suffolk
Quad Cities	B	1.24E+06	20 miles NE of Moline, IL	IL: Carroll, Whiteside IA: Clinton
Vermont Yankee	B	9.23E+04	5 miles S of Brattleboro, VT	NH: Cheshire, Sullivan VT: Windham
Fort St. Vrain	B	2.28E+02	35 miles N of Denver, CO	CO: Adams, Boulder, Denver
Arkansas 1 & 2	P	9.68E+04	6 miles WNW Russellville, AR	AR: Conway, Johnson, Newton, Pope, Van Buren
Beaver Valley	P	3.08E+03	Shippingport, PA	PA: Beaver, Butler, Lawrence
Calvert Cliffs	P	8.24E+04	45 miles SE of Washington, DC	MD: Calvert, Charles, Dorchester, Prince Georges, St. Marys Talbot
Crystal River	P	1.59E+05	70 miles N of Tampa, FL	FL: Alachua, Gilchrist, Marion, Putnam
Davis Besse	P	9.41E+03	21 miles E of Toledo, OH	MI: Monroe OH: Lucas, Ottowa
Donald C. Cook	P	7.34E+04	11 miles SSW of St. Joseph, MI	IN: La Porte, St. Joseph MI: Berrien, *Van Buren
Fort Calhoun	P	1.01E+04	19 miles N of Omaha, NB	IA: Harrison, Pottawattamie NB: *Douglas, *Sarpy, Saunders, *Washington
H.B. Robinson	P	8.10E+03	4.5 miles WNW of Hartsville, SC	NC: Anson SC: Chesterfield, Darlington, Marlboro
Haddam Neck	P	1.62E+04	10 miles SE of Middletown, CT	CT: Middlesex
Indian Point 1, 2 & 3	P	9.18E+04	3 miles SW of Peekskill, NY	NY: Rockland, Westchester
Joseph M. Farley	P	2.61E+04	Dothan, AL	AL: Barbour, Geneva, Henry, Houston GA: Early
Kewaunee	P	1.05E+04	27 miles ESE of Green Bay, WI	WI: *Brown, Door, *Kewaunee
Maine Yankee	P	1.96E+04	3.9 miles S of Wicassett, ME	ME: Kennebec, Knox, Lincoln, Waldo
McGuire	P	0.00E+00	17 miles N of Charlotte, NC	NC: Cabarrus, Catawaba, Gaston, Mecklenberg, Rowan, Union SC: York
North Anna	P	3.02E+04	40 miles NW of Richmond, VA	VA: Caroline, Hanover, Henrico, King William
Oconee	P	2.41E+05	30 miles W of Greenville, SC	SC: Greenville, Oconee, Pickens
Palisades	P	6.23E+03	5 miles S of South Haven, MI	MI: Allegan, Cass, Kalamazoo, *Van Buren
Point Beach	P	5.94E+04	15 miles N of Manitowoc, WI	WI: *Brown, *Kewaunee, Manitowac
Prairie Island	P	7.21E+03	26 miles SE of Minneapolis, MN	MN: Dakota, Goodhue, Hennepin, Ramsey, Scott, Washington WI: Pierce, St. Croix
R.E. Ginna	P	2.30E+04	16 miles NE of Rochester, NY	NY: Monroe, Wayne
Rancho Seco	P	2.11E+04	25 miles SE of Sacramento, CA	CA: Amador, El Dorado, Sacramento
Salem 1, 2	P	2.03E+03	20 miles S of Wilmington, DE	DE: New Castle NJ: Cumberland, Salem
San Onofre	P	7.37E+03	2.5 miles S of San Clemente, CA	CA: Orange, Riverside
Sequoyah	P	1.20E+04	Daisy, TN	TN: Hamilton, Meigs, Rhea
St. Lucie	P	1.04E+05	8 miles S of Ft. Pierce, FL	FL: Indian River, Okeechobee, St. Lucie
Surry	P	7.94E+04	19 miles NW of Newport News, VA	VA: Charles City, Surry, York
Three Mile Island 1,2	P	1.01E+07	10 miles SE of Harrisburg, PA	PA: Schuykill, Dauphin, *Lebanon, Northumberland
Trojan	P	6.52E+03	35 miles NW of Portland, OR	OR: Columbia, Multanomah WA: Clark, Cowlitz
Turkey Point	P	9.96E+04	10 miles E of Florida City, FL	FL: Broward, Dade
Yankee Rowe	P	1.29E+03	20 miles NW of Greenfield, MA	MA: Franklin NH: *Cheshire VT: *Windham
Zion	P	3.12E+05	6 miles N of Waukegan, IL	IL: Lake WI: Kenosha, Racine

*Counties close to more than one reactor.

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Council on Economic Priorities
NEWSLETTER

Editor-in-chief: Alice Tepper Marlin **Editor:** Paula Lippin

The Council on Economic Priorities is a non-profit organization established to disseminate unbiased and detailed information on the practices of U.S. corporations. These practices have a profound impact on the quality of American life. CEP was established so that the American public could become aware of this impact and work to ensure corporate social responsibility. CEP publishes 3-6 Studies and/or Reports per year, and a Monthly Newsletter. Memberships and contributions are tax-deductible. Indexed in Public Affairs Information Service Bulletin. Excerpts welcomed. Please credit the Council on Economic Priorities, 30 Irving Place, New York, New York 10003, and send us a copy.

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For Further Reading

Quality Of Life In American Neighborhoods: Levels of Affluence, Toxic Waste and Cancer Mortality In Residential Zip Code Areas, Jay M. Gould, Westview Press, 1986. See also CEP Newsletters "Toxic Waste and Cancer: The Link is Getting Stronger," Sept. 1984; "Freedom of Information Act: Breaking the Federal Barrier," June 1985; "Toxic Waste in Chesapeake Bay: Bad for People as Well as for Fish," Nov. 1985.

Maternal and Child Health Data Book, Children's Defense Fund, Washington, D.C. 1986.

Radioactive Materials Released From Nuclear Power Plants, 1981, J. Tichler and C. Benkovitz, Brookhaven National Laboratory, 1984.

Measurement of Low Levels of X-ray Mutagenesis in Relation to Human Disease, C. Waldren, L. Correll, M.A. Sognier, T.T. Puck, July, 1986, Proc. U.S. Natl Academy of Science. The data obtained by these investigators, using a new laboratory technique involving individual human chromosones implanted in animal cells, show that the effect of low dose radiation exposures is more than 200 times greater than had previously been assumed on the basis of high dose studies.

This is a part of a rapidly growing body of clinical literature on ionizing radiation effects which can be secured from the **Health and Energy Institute** in Washington, D.C. The detailed annual mortality date for the 175 counties studied here can be obtained on a personal computer diskette from Public Data Access Inc., 30 Irving Place, New York, NY 10003. (212-529-0890). PDA can assemble diskettes with mortality rates for any desired group of states or counties in great detail, and in any desired mode, such as Wordstar, Lotus, or D-Base III.

immediately responsive to the lethal effects of radioactive iodine included in the emissions. Table 5 shows that the greatest adverse change in the infant and fetal mortality rates was registered by those counties close to boiling water reactors. These counties had emission rates of 1.6 curies per capita as against 0.6 curies per capita for the pressurized water reactor counties in the 1975-82 period.

There is little point at this early stage in the investigation to attempt to quantify the extent of the adverse impact since we do not yet have a satisfactory delineation of all the *nuclear* counties affected by both civilian and military reactors. In Table 7, the 175 counties adjacent to each civilian reactor which we have chosen as *nuclear* counties for this Newsletter are listed. Almost certainly, there are several hundred more that could be included among those directly or indirectly affected by emissions from both civilian and military reactors. It is CEP's hope that environmental organizations around each reactor will, on reading this Newsletter, share with us their knowledge or even suspicions about those counties omitted from our preliminary definitions. By adding counties with a lesser impact, the average divergence in mortality rates from those in *nonnuclear* areas will be narrowed. The additional deaths, however, will make our findings more significant statistically and can lead to a more precise quantification of the number of excess deaths to be attributed to emissions. Until then, the estimate of an excess 9000 deaths per year derived from this analysis of *nuclear* states can stand as a preliminary overall estimate.

It is also clear that CEP's estimates of the public health impact of radioactivity and other environmental abuses such as toxic waste can be made far more precise by allowing for differences due to age, sex, and race. Computer tapes from the National Center for Health Statistics are now in CEP's possession. From these tapes, the mortality rates for each county, since 1968, for all white and nonwhite males and females, by age group and for several hundred detailed causes of death can be calculated. Use of this extraordinary database, a tribute to the work of statisticians and epidemiologists of the National Center, will make it possible to pinpoint those groups in our population bearing the brunt of the loss of lives from all environmental abuses. ■

: Hi, everyone, I'm Gary Null. We take on a lot of issues on this program, and with every program that we do we try to influence at some point a person's behavior concerning their health. Yes, we talk about diet and exercise and behavior, and the nature of pollution within our city and our counties, in fact, we've done more on environmental health issues than any other radio program, or television program in the United States. More hard hitting investigative reporting than any other show. Sometimes we do shows that are not originated as investigative reports, but rather as commentaries. One such show was recently completed where we spoke about the potential for many Americans to be adversely affected by low level radiation fall out from Three Mile Island. After that program I received numerous letters from scientists in our audience claiming that the specialists that we had in our program were not specialists, had no evidence really outside of their own opinion, and therefore it was an irresponsible program and that we should not alarm the public after all, making a claim that low level radiation was dangerous when there's no proof that it's dangerous is not responsible. And that it's only high level radiation that we should concern ourselves with. Fine. The gauntlet was thrown, I was challenged, I pick it up. I intend during the next

hour, or if you stay with us and are one of the stations in the United States that carry both hours, two hours, to give you an in depth comprehensive analysis of the following, with even stronger charges. That there are numerous studies that show that low level radiation is killing Americans. That this information is not a secret except to the American public. That various agencies in the United States government have had this information and wilfully withheld this from our knowledge. That up to 50,000 Americans may have died due to Three Mile Island, as a result of low level fall out. We do a lot of investigative reporting, this is a special investigative report. The subject low level radiation, it's effect and impact on our health, both in short and long term. We have contacted in the past three weeks, with more than 150 calls, virtually every governmental agency, and department that handles information or research on the subject of low level radiation, or that was involved in the research, follow up, and dissemination of information on Three Mile Island. Later on in the program I'll give you a name, the names of individuals that participated with us in sharing information, not one of those agencies or individuals agreed to participate in our program. We then went to various members of the university community who have research background in epidemiology, and

physics, nuclear physics, only one agreed to participate in our forum to take issue with the basic assertion. That person hopefully will be on later on in our program. Most claim and I'll be mentioning their affiliations and positions, that they simply didn't want to appear on a program that was dealing with this issue, or with these guests. My statement was that you have an opportunity to come on and unlike other shows that deal with controversial issues, this show respects the individual to have a difference of opinion, and not attack the individual. I simply don't allow that on my program. This is not a slash and trash program. Where two individuals or five individuals or whatever can share differences of opinion, and still show respect for one another in other areas. Still, they refused to come on. So we have done everything possible to balance out the statements of our guest, but no one we could find would come on to take up the issue that these statements that you are about to hear are incorrect. Only that we shouldn't give them air time. And I said, then you come on and explain why. Well, the statements were that they don't have the academic qualifications, that there's no published proof, that there's no shred of evidence, I said fine, then if you say there's not a shred of evidence, then needless to say I will make it my job before I allow them on

the air, to see that they have evidence. Doesn't matter, that there is no scientific background. What if I produce it? Doesn't matter. They have no academic standing. What if they produce their academic credentials. Doesn't matter. Well, then it seems that everything you were saying that would keep you from coming on air, and that we have responded to, it's going on a different level, there's something else you're not telling me. I could not get to the bottom of that. So, they've had their chance, if they choose on a later date to come on, I will still offer them that opportunity. I want to waste no more time, we will get to people who agreed to come on our program. We have nine. Let's start with the gentleman who originated some of the more provocative statements, there are actually two, Doctor Sternglass, professor emeritus of radiological physics, University of Pittsburgh School of Medicine, also Dr. Jay Gould. Dr. Gould is an expert in data processing, PhD from Columbia Unversity, and was on the EPA science advisory board in the Carter Administration. Gentlemen, welcome to our program. I'd like to begin please with you Dr. Gould and ask our other (Inaudible) on the line to stay with us, we'll be with them each in time. Dr. Gould first to the following issue, do you have evidence that any individuals

died as a direct or indirect result of the Three Mile Island accident.

: I believe so. If you examine the mortality statistics, the age adjusted mortality rates in the United States over a long period you will see from 1979 to 1982, there was a jump in that mortality rate that suggests as many as 50,000 or more Americans died, whose deaths had been accelerated by some factor. The only factor that I've been able to ascertain could account for this, is the low level radiation from the Three Mile Island accident, which affected in particular a three state area consisting of upper New York State, Pennsylvania and Maryland, but there were counties within a 500 mile radius of Harrisburg that were also affected.

: One of the individuals that I spoke with said he knew of your data and said that it was weak. Substantiate your data to this audience.

: Well, statisticians use the concept of a significant excess of deaths. And the significance is based on a purely scientific analysis of a probablility that the excess could be due to chance, and the probability in this case that the excess could be due to chance is of such a low order that it has to be ruled out. We get p values as low as 1 in a million, or even less,

which means that if low level radiation is not responsible for the excess than it's up to the scientific community to come up with an alternative hypothesis.

: Have you shared this information with governmental agencies, or any of the groups involved with Three Mile Island.

: Yes, I was asked for example to appear before Senator Kennedy's public health committee by litigants in Three Mile Island. Let me just say parenthetically, that there are now 2500 law suits, plaintiffs who are suing the local utility for damage sustained by the radiation. This is a fact that I haven't been able to find mention of in any of the media outside of Harrisburg itself. But in their behalf I presented my data, before Senator Kennedy's staff twice in 1987, and they've had ample opportunity to investigate themselves, the only thing I can suggest that did happen is that at the end of the year, Senator Kennedy wrote a letter to the National Institute of Health asking for a study of mortality near nuclear reactors.

: and what happened from that study?

: The study was passed on to the National Cancer Institute, and they have announced

plans to complete a study sometime in 1990, but their study is restricted only to cancer, and to counties very close to nuclear reactors, which I think does violence to what we have found in the Case of Three Mile Island, which is that the damage extends to areas that are hundreds of miles away too, because the low level radiation is dispersed by inland waterways, and affects people who could be quite remotely situated from the point source of the radiation.

: Thank you Doctor Gould. Doctor Sternglass, is a professor emeritus of radiological physics at the University of Pittsburgh School of Medicine, author of numerous scientific papers, and a member of the academic elite when it comes to understanding the affects of radiation. Dr. Sternglass, do you have any knowledge that the United States government or any agencies or individuals of the United States government are aware of what Dr. Gould is saying, and have kept it from the American public.

: Yes, because when we examined the vital statistics, of the states involved, and the U.S. monthly vital statistics, we discovered that after both Three Mile Island and after Chernobyl, the original infant mortality data were altered in subsequent years in such a way as to minimize or essentially erase the peaks of mortality that occured. That means that individuals who are

doing this must believe that something serious occured, or else there would be no incentive to commit what is essentially a criminal act, namely to falsify government data in the interest of national security, which is not very different from what happened in the Iran Contra case, except that we are now dealing with millions of lives of Americans, that had been endangered deliberately in order to protect essentially what government believes is the necessary deterrent to prevent anyone from thinking that we would not be willing to use nuclear weapons even though this material would blow back on us, affect our children, and our older people who have lost their immune resistance, or who have never yet developed it, and cause enormous damage to the health and future of our society.

: Some of that is assumption, some of it is fact, let's try to stick with fact. Fact, you're stating that you have proof that they altered at the federal level the statistics, that's a criminal offense, tampering with federal documents, have you sought to have an investigation by the Attorney General's office?

: We have hoped that this would be undertaken by Senator Kennedy's staff.

: We have attornies, we have district attornies and we have all forms of people in the legal community who listen to this program, or who have access to the material of this program. We will make a transcript of this program and tapes available for any attornies or public interest research groups and citizens groups to bring the legal action to any agency that has what you state and what you can prove has committed this illegal act by covering up the deaths of 50,000 Americans, if indeed you can prove that, you will have a lot of people in this audience, who will certainly support that action. If you can prove it, that still remains to be seen. Let's go to the next issue. At the time of Three Mile Island, that's a private utility, private utilities, especially nuclear facilities frequently have close connections with governmental agencies, especially nuclear regulatory agencies, can you tell us anything about workings between a private utility and the governmental agencies, and how the government would have known to have covered this up, since it obviously at the time didn't know of all these deaths, it would have taken some time for it even to have known of these deaths.

: The government has known for many decades that much larger numbers of leukemia and

cancer cases occured around the bomb tests sites in Nevada at levels of radioactivity in the milk and diet that were comparable to what happened at Three Mile Island. And in fact, an investigative report by Bill Curry, in the Washington Post published in April 1979, just a few weeks after Three Mile Island began to release it's deadly radioactivity, found under Freedom of Information that the government deliberately at the top order from the White House and the Pentagon decided that findings by Dr. Edward Weiss, that leukemia had risen much beyond what anyone had expected in Utah and the near by area around Nevada, and that thyroid disease in Utah had increased much beyond anything that anyone had anticipated, that these reports were prevented from being published, and did not appear in the scientific literature until many years later, so that the government knew as early as the late 1950's and early 60's that very low levels of radiation were much more deadly than anyone had admitted.

: Explain the difference to our audience between high level radiation and low level radiation, how they each kill, and why we should be concerned about low level radiation.

: The tragedy has been that we were really misled by the lack of serious very serious

side effects from ordinary chest X-rays, medical X-rays, in nearly three quarters of a century in the use of X-rays. It turns out that fallout from a nuclear bomb test gets into the diet, exerts its influence over a period of many weeks and months, and turns out to produce entirely different kind of effects in the sense that the totally different biological mechanism involved, than at high doses. At high doses it's like bullet like action that damages the DNA, which is the center of the cell containing the genetic information to make a cell work, and you have to really hit it in order to destroy these molecules. It turns out that nature has provided for very efficient repair processes, that repair these genes because our future generations health depends on the genes, and apparently nature has found a way to do that. On the other hand, the low level radiation produces an indirect effect which only was really fully understood in 1972 by Doctor Abram Petkow at the Canadian Atomic Energy laboratory, in Pennawah Manitoba, who published an article in Health, Physics in March of 72, that showed that gentle radiation, milligram for milligram is a thousand times or more deadly in its damage to cell membranes than for instance a short X-ray, or a pulse from the flash of a nuclear bomb. And that information has been essentially suppressed in this country. The important part

about it is that it explains why a very small dose that you can hardly detect with a Geiger counter, but given inside the thyroid of a tiny fetus, damages the function, in a slight way, causes a baby to be born underweight, and prematurely, leading to all types of problems like the difficulty in breathing right after birth, or damage to the immune system, so it dies of infectious diarrhea, and all these things are occuring at levels that were hundreds to thousands of times greater than had been expected because of the enormously greater efficiency of this indirect biological mechanism that involved the production of free radicals, like OT Minus, which is like ozone, a very toxic form of oxygen that all of us have in our blood. So this information was not fully understood until after 1972, thirty years after we discovered fission and had our first reactors in operation. But the government had statistical data and epidemiological data such as that of Dr. Edward Weiss, long ago, but they feared that public disclosure of that information would prevent the continuation of nuclear bomb tests in Nevada, and would possibly prevent the operation of gigantic nuclear reactors which were already under construction.

: Let's summarize for a moment, you're telling us then that the effects of low level

radiation are up to a thousand times more serious to the genetic code within our body, and could be affecting genetic birth defects, ...

: No, no, not quite. Let me say the following. Fortunately the genes are more resistant, and the greatest effect is on the funtion of various hormone producing glands, like the thyroid, or the bone marrow, which is extremely sensitive to radiation. The genes which carry the information for future generations, appear to be much more resistant to radiation, than say the developing fetus, which is particularly sensitive because of cells multiplying so fast.

: Thank you, when we come back, we're going to be speaking to Dr. John Goffman, professor emeritus of medical physics, University of California, MB PhD on the effects of low level radiation, he's one of the world's greatest authorities on the effects of low level radiation, and then we'll be talking with Dr. Ellis Stewart, Dr. Carl Morgan, Dr. Erwin Brawls, Dr. Thomas Mancuso, Dr. Micho ~~Cochrane,~~ Kaku and Dr. Neil Ward. In this special two hour in depth investigative report on the effects of low level radiation and your health. What the government did and did not tell you. Our conference phone. Dr. John Goffman, professor emeritus, University of

California, medical physics, welcome to our progra;m Dr. Goffman.

: Thank you.

: Dr. Goffman, first I would like your opinions on the effect of low level radiation, what we know, and can prove, and what we can speculate, might be the effects.

: My work is largely focused on the occurence of leukemia and cancer, and efforts to understand the effects on the genetic heritage. But largely on leukemia and cancer. And from my work on cancer, and I want to make it very clear that I'm restricting my statements to cancer, I can't speak to the issues of immune system disorders, ear infections, or any of these things that would add up to the deaths that Dr. Sternglass and Gould have talked about. I have not investigated that, I could come back to that in a moment. But on cancer, I have found this by careful study of some 20 different investigators work around the world on medical exposures to radiation with subsequent follow up, and extensive studies that I have done now for over 15 or 20 years on the results of the Hiroshima and Nagasaki bombings. And from the most up to the minute data, and from all the past data from Hiroshima and Nagasaki, it's very clear to me that we find

cancer being produced in excess, down at very low levels of radiation, in the Hiroshima and Nagasaki experience, that goes down to 10 rads, a rad is a unit of dose, or 10 ~~rams~~ rems, as people are used to talking about it. Now the claims have been made by governmental scientists and others, that no effects have been observed below 50 or 100 rads, that simply is untrue, it's untrue from my investigations, and it's untrue from the government's own representative scientists within the Radiation Effects Research Foundation, at Hiroshima, Nagasaki, if you look at their recent reports from the RERF, you'll find that they too agree that cancer has been demonstrated to be a significant effect at 10 rads. But what is much more important than that, is what we call the shape of the dose response curve. If you were to plot how many cancers are occuring at various doses, the shape of that curve is exactly the opposite of what governmental scientists, and quasi-governmental scientists, a number of international and national bodies supported by governments have said. The shape shows that the most likely fit to the data would say that at low levels the increase in cancer rate per unit dose, per rad, is the steepest in the low level region, and then gets less steep as you go to higher doses. The government scientists and the quasi-government scientists have said that it is the least steep in the low

levels. Now, if you look at the radiation effects research foundation's reports, some that I could number for you such as 9-87, 12-87, 5-88, you find that they concede over and over in those reports that the shape is as I'm describing it, namely more steep in the lower region than in the higher region, which says that the hopes on the part of the promoters of nuclear energy, the U.S. government, and other governments being prime promoters, the hopes that you might have a safe amount of radiation down at low levels, simply is at variance with the evidence. That's a fact. It's not speculation, that's not my opinion, that's a fact.

: Dr. Goffman, how do people get exposed, and how many people are exposed to the amounts that you're referring to?

: 10 rads is not a common exposure. That's a lot. But the point I'm making is that the dose at 10 rads is showing you the shape of a curve, and the shape of the curve says that at one rad, or a half a rad, you'll be getting a worse effect than you would get for one rad or a half a rad added on to 10 or 50.

: How do we get a half a rad, where do we get it from?

: A half a rad we can get from a variety of medical procedures, we can get that from occupational exposure.

: Give us some examples.

: If you have say a flouroscopic procedure in association with a medical problem, you get more than a half a rad, you can get five or ten rads, to a limited region of the body. Now, I'd like to clarify that when you expose only a limited region of the body, the risk of cancer is reduced, not exactly in proportion but nearly in proportion to the fraction of the torso that you expose, arms and legs are not very seriously affected by cancer, but the torso, if the flouroscopy is over say only a fifth of the abdomen or a tenth of the abdomen, the risk is a lot less than if you were to expose the whole abdomen, but you can get doses of 5, 10, 15 rads, as a matter of fact, there was a very famous study by Ian MacKenzie in Nova Scotia, in the 60's, of women who had been in a tuberculosis sanitorium, and his studies resulted in showing these women had a great excess of breast cancer if they recovered from their TB. And this was because they had had radiation exposure, in the course of the treatment of their tuberculosis, and they had things like seven and a

half rads per sitting in the chest region, so they had quite a dose to the breast.

: What would be some of the other forms of radiation exposure.

: Well, there's natural radiation. We're exposed to about a tenth of a rad, whole body radiation, aside from what we get additionally from radon gas, which is regarded as the equivalent in cancer producing by some people of the order of maybe two tenths of a rad of other exposure. So medical exposure is a very large one. People who work in nuclear power plants, get excess exposure. The nuclear industry doesn't do a bad job by the way on the exposure to its workers, because they do try to control it very carefully, and the evidence indicates that they're doing a pretty good job with respect to keeping the dose down in their workers, but they have workers getting a rad per year, and some getting more than that per year. There are some objects that are getting to be less and less frequent that are possible sources of exposure, such as luminous dial wrist watches, or luminous faces of other instruments, there used to be an aircraft instrument where you could get a fair dose of radiation by wearing these instruments or being near them, but they're pretty much being phased out.

: How about dental X-rays?

: Dental X-rays I'd classify just the same as medical X-rays, dental X-rays and medical X-rays are not serious sources of radiation, and the point about both dental and medical X-rays, and this again is not my speculation, it's fact based upon governmental surveys, is that there are facilities in this country, both dentist offices, radiology offices, hospitals, there are facilities that for a given procedures, whether it be a dental procedure or a chest film, or an abdomen film, for a given procedure some places give two, five, ten, 20, even 50 times the exposure necessary to get a good picture. And unfortunately the average person going into any one of those places, doesn't know if that place is one that gives an overdose or doesn't. That's a tragedy because we're giving an awful lot of unnecessary radiation to people, that's unnecessary. I don't have an objection to having necessary medical X-rays, I think a person would have to be crazy to object totally to medical X-rays, or dental X-rays, there are places where I'm sure that the risk to a person is less by having the radiation and founding out a proper diagnosis than the risk of not having the radiation, but when you give a person five times the amount of radiation necessary to get that information, that's tragic.

: It sure is. I just want to mention to our stations around the United States, that this hour and the next hour we'll be skipping our national network break at 42 minutes after the hour, because of the amount of information we have to dispense on our program. Dr. Goffman, how many deaths from cancer would you estimate based on your research or the research that you've read of others are occuring each year that haven't acknowledged or been aware of from low level radiation.

: Well, I think my estimate would be in the ball park of at least 15% of cancer deaths in the country each year are due to radiation, a combination of sources of which natural radiation, and medical radiation, are definitely part. Now, as far as government sources, and by the way I would say in connection with what I said about medical and dental radiation, I think if you were to cut the medical and dental exposures down to the necessary dose to get a good picture, and cut out these overdoses, it would easy, by based on careful studies by scientists in Wisconsin, and Toronto Canada, it would be easy to cut the dose on the average to one third what it is now, I think about 50,000 cancers would be prevented each year in the United States from that measure alone, which in one generation of thirty years would be about a million and

a half cancers prevented. That's the preventable part from all sources of radiation, I would say it's about 15 or 16 percent of our cancer problem.

: And you're talking about 75,000 Americans dying each year due to this form of cancer induced ...

: that's a pretty good ballpark ...

: Why is it that you're telling us this and the National Cancer and the American Cancer Society have not told us this?

: Are you sure they don't tell us that? I've read some things in the Cancer Society literature, they have a lot of radiologists that support the Cancer Society, I think sometimes they aren't the best witnesses on this subject, but I've read some of the things in the Cancer Society literature where they definitely tell you you ought to be concerned about any unnecessary X-rays from medical sources ... I think they're recognizing it, and the government's recognizing, my argument about the government is this, their scientists are I think, approximately from my data, my analysis of the data versus theirs, they are estimating the cancer risk of radiation in general at approximately one twentieth of what I estimate

it. The United Nations estimate made in 1977, is approximately one thirty-seventh of what I estimated, so we're far apart. But the government people now are about one twentieth of what I say is correct, and the interesting thing is that now the Japanese Radiation effects research foundation has come out with two papers in the last two years, and they're now saying that the government estimates that have been proposed, and the United Nations estimates are between 10 and 16 times too low, so the real difference is now no longer between me saying that the United Nations estimate is 37 times too low and the government's estimate, such as their Academy of Sciences committee is approximately 20 times too low, the real difference is that on one side the radiation affects research foundation scientists and myself we're about a factor of three apart. I say it's three times worse than they do. The two of us are far far away from the governments.

: there's another issue here, Dr. Goffman, and it's not just to play with statistics. I really don't care if the government says that they're 20 or 30 times worse than you are, if they're not looking at the same data, or coming up with the same conclusions ...

: We're looking at the same data, but it's how you manipulate the data.

: The American public's lives could be hanging in the balance by this form of manipulation.

: It could be, and that's why I've written a book in 1981, and I tried to show exactly how I handled the data, and exactly how I arrived at the results, in fact I'm writing an updated book now, on the newer data, and I propose in answer to your question, I proposed to show every step in my procedure. Now when somebody gives you a black box report where they don't show you what they did, how they got the data, and you're supposed to believe what their answer is, I think that's worthless. The report should show you exactly what they did step by step in getting from raw data to final answers.

: Okay, but Dr. Goffman, the people listening right now have this concern. Many of these people for their entire lives, have undergone procedures, some of them as kids when they acne, they had their thyroid irradiated, many of them have had other forms of dental X-rays, when the dentist on routine examinations, would say, every six months, well let's just take an X-ray to make sure, and just to check it out. Some of these

people have no knowledge whatsoever of what it means to receive low level versus high level radiation, are not aware of the dangers, and if they saw in the headlines of the new York Times and the local newspapers, that 75,000 Americans were dying a year from low level exposure, from natural and medical usage, I can promise you that there would be a radical adjustment in how many X-rays are used each year.

: I wish that were true. When I wrote the book, Radiation and Human Health, 1981, I was on the Donahue show, and spoke about the results for an hour, got a lot of press attention, but not really very much happens from it. You get one hour attention from the public, what it does take is it takes a constant reinforcement, constant provision of evidence, constant careful analysis, but you need to remember Gary, one thing you're not taking into account, the vested interest in having people think the hazard of radiation is low. The vested interest is enormous, it involves medical, dental, industrial, nuclear activities, amounting to billions of dollars, and they put on a very very good counter campaign, in fact they now have mounted a campaign to tell you that taking some extra radiation is good for you, and they've given it a scientific name, it's called hormesis. Everybody needs a little jolt of radiation to get their immune system

working, they tell you, and they're sponsoring this. If you look at recent reports, from the Department of Energy and some of its scientists, they tell you that the net effect out of Chernobyl might be close to zero extra cancers. My estimate for Chernobyl world wide is a million extra cancers. So don't under estimate the counter-campaign, you can put out some truths, you can try to get people from both sides to come forward, and say where they're coming at this from and what their findings are, and you can finally get a lot of things out, but remember there will be a counter campaign that would make your head swim. Remember, 90-95% of the funding of all medical research comes from the government of the United States, one way or another, and the government of the United States is the chief sponsor of activities that irradiate people, and you're not going to find many scientists who are going to get what I will call in quotation marks, the wrong answer about radiation, you don't survive long with your funds if you don't get the right answer. So when somebody tells you and I tell the public all the time, well, the consensus of scientists is that there's no problem here, that Gary Null has some far out people, there's just no problem here, a little bit of radiation is good for you, or it doesn't hurt you, you bet

they'll get a consensus, they can get scientists that will tell you that the sun revolves around the earth.

: Hold your thoughts. We'll come back and continue our discussion on the effects of low level radiation, you say a million cancers from Chernobyl? I want to say what Dr. Sternglass will say about how many he thinks have died because of Chernobyl. Welcome back, I'm Gary Null, Dr. John Goffman on our phone, Dr. Goffman has just suggested that upwards of a million people have cancer due to Chernobyl, that the effects of low level radiation are not being countered in part because of the vested interest in the billions of dollars a year, that if you were to watch Dr. Goffman on a program or hear him here, if you were the average person, you could go to your dentist tomorrow and say, I heard Dr. Goffman on the Gary Null show, and he said this was dangerous, all these X-rays, are they really needed, and the likelihood would be, that you would have someone say, is he a dentist, what does he know, he's just writing, he's probably angry at something and getting his frustration out with some statements that are untrue, all the literature that we have shows that they're absolutely safe, and may actually benefit you, and we couldn't tell if you have tooth decay if we didn't take the X-rays, the person then feels the sense of confidence that

this Dr. in hand knows better than the one that's he's not seeing, what the motives of that doctor might be, whether it's an unwillingness to bend and look at new information, or whether its a stridency that they are against any change, or doing something wrong, maybe it's very profitable, a lot of podiatrists for years were responsible for taking $1.75 X-ray and charging $75 for it, so everyone who walked in had their feet X-rayed, a lot of chiropracters were doing the same thing, we don't always know the motives, but we do know that it's big business. One statistic that I did see recently showed that one half of all X-rays were unnecessary, and we have hundreds of millions of X-rays, billions of X-rays taken in a year. Dr. STernglass from your research, how many people have actually died, Americans died, from Chernobyl.

: Well, the statistics show that somewhere in the neighborhood of 30-40,000 died of various causes beyond normal expectation across the United States in direct relation to the measured amount of radioactivity in the milk which came down from Chernobyl. And that will eventually lead to many millions who will die all over the world over the next generation, and that of course, is what Dr. Goffman was referring to.

: Dr. Jay Goldman, a closing comment before the end of this hour. Did you communicate any of this with people at the national level.

: Well, when the results of Chernobyl were first announced, Dr. Harry Rosenberg of the National Center for Health Statistics, conceded that the figures should be examined carefully and with the hope that we can throw new light on the impact of low level radioactivity on immune systems.

: That doesn't answer my question, he could say that about anything. Are you saying that he found there was a peak, or not a peak?

: What he was saying in effect was that he could not find anything wrong with our analysis.

: So that doesn't how anything. Not finding anything wrong, doesn't tell us anything, in any case, this is the end of this particular hour, I want to thank you gentlement for having shared your insights, and for the audience, to at least have a different perspective on the effects of low level radiation. Not harmful, we've been assured that it isn't. We've been told by different agencies not to worry, but we have to worry, because many of those agencies have simply lied to us. Why

they've liked I don't know, the fact that they have, we can document. We will document the fact that we have been given a complete scenario written as if we didn't count, as if our lives didn't count, we have invited people from both sides of the issue on our program. You will hear from people who will give you statistics and background on why we are dying of low level radiation, these people have impeccable credentials, professors emeritus at different universities, former heads of major institutions, including the Oak Ridge National Laboratory, and the former head of health, there, on the other side, we have invited Dr. George Dicotia, the Department of Health at Harrisburg, Pa, to come on and he declined. We invited Dr. Dade Muller, Harvard School of Public Health, declined, Dr. Jacob Fabriconti, University of Berkeley's donor laboratory, declined, National Cancer Institute, National Regulatory Commission, Columbia University Department of Epidemiology, the Atlanta Center for Disease Control, Dr. Falk, said, quote evidence not clearly credible, unquote. Would these people come onto the program? None. Plus, at least 14 others who were in major institutional positions, all declined to come on to tell us why low level radiation was not a hazard, or why the guests you are about to hear are not giving us the facts or the truth. Well, these individuals are here, they have put

their reputations on the line, this is an important public medium, what you say can be held against you, if what you say is found to be untrue or irresponsible. We feel you should know how dangerous the story is. Stay with us, we're going to explore it after these messages. (END OF SIDE A OF TAPE) Individuals willing to share their side, and ironically, these individuals one and all are all members of the traditional conservative scientific and medical community. And they have found in their own research or clinical practice, that there was information that was not being presented to the American public that would make a difference in their health. Low level radiation is something that all of us, at one time or more than one time are exposed to. It can lead to a lot of adverse affects. Why aren't we being told the facts? Professor Micho Kaku, is the first panelist to give us his views. He's professor of nuclear physics at the City University of New York, an author on the subject, and welcome to our program, Professor Kaku.

: Glad to be on.

: First off, I would like to have you address three issues, the first. Are you familiar with the work of Dr. Ernest Sternglass, and Dr. Jay Gould on their findings that upwards of 50,000 Americans

died due to immune related disfunctions following the accident at Three Mile Island, that this information was with held from the American public, but was known by statisticians who illegally according to them, changed statistics so it would not show that the accidents actually occured, or that the deaths occured. Are you familiar with any of that information?

: Yes, I am, I'm familiar with their studies.

: All right, if you are, do you also have information that would show that the United States government or any of its agencies involved in the nuclear area, has deceived with held or in any way caused the American public to be exposed to radiation that would hurt them.

: Yes, I can address that.

: Then give us your documentation.

: First of all, with regards to the study by Professor Sternglass, and Gould, their study says that these people were already in a weakened state, but we're talking about essentially kicking grandma over the stairs, that is people who are already in a weakened state, were pushed over by the impact of radiation.

Now, let me explain. The establishment says that very little radiation came out of Three Mile Island, in fact, so little that it is virtually a medical impossibility that anyone could have died as a consequence of that accident. However, if you read their figures very carefully it turns out that the accident took place on Wednesday, but it wasn't till Saturday that the thermo luminescent decimeters were put in place. In other words, that's like trying to corral the horses after the horses have already left the corral. In other words, most of the radiation left that damaged reactor on Wednesday and Thursday, and then the NRC was able to get most of the radiation counters in place after the radiation had already escaped. Therefore, when the government said that approximately 13 million curies of xenon gas, and roughly 10 curies of radioactive iodine escaped from the reactor, that is only a best estimate, nobody knows for sure precisely how much radiation got out, simply because the radiation detectors for most of the important fission product was not in place during the course of the accident. Second of all, the government statistics do not tell you the truth because radiation is now known to be perhaps 5 times more dangerous than previously expected. In other words the Hiroshima data is the largest epidemiological source of information by which we calibrate

radiation. But it's been known for 40 years that the Hisoshima data shows that the radiation is not actually dangerous compared to other studies done for example to British subjects exposed to radiation for their spinal column, and we now know the reason the Livermore National Laboratory has exposed the fact that the Hiroshima data was miscalibrated, in other words for the past 40 years, we've been using radiation figures that were miscalibrated, and we think that next year the international standard setting bodies, the ICRP and the NCRP will officially acknowledge that they goofed, that for the past 40 years they've been using Hiroshima as a yard stick and we now know that radiation is perhaps 5 times more dangerous than previously expected. Now the international bodies are very conservative, and we expect them sometimes next year to say radiation is perhaps twice as dangerous as previously expected, however, if you read the figures very carefully, coming out of Livermore National Laboratory, a case can be made that radiation is perhaps five times more dangerous than previously expected, which would then put the Hiroshima data in agreement with all the other epidemiological data. So for those two reasons, I think we have to say that the figures of Sternglass and Gould can not be dismissed out of hand, in other words, the fact that we're talking about

people who the immune system was already weakened, we're talking about the fact that radiation, most of it escaped during the first hours of the accident, no one knows how much iodine came out of the reactor, and third of all the fact that the Hiroshima data, the bedrock upon which all radiation studies have been based, is now known to be miscalibrated, the T65 data upon which the Hiroshima data was calibrated, is now known to be absolutely incorrect.

: All right, give us other examples, then, specific examples, of dangers that have occured at nuclear power plants as just one case where this information has been with held or denied later on, to be confirmed.

: Let's take a look at the whole nuclear (Inaudible) cycle. Starting at the very beginning because it goes back many years, it turns out that in the 1950's, President Eisenhower issued a top secret memorandum, quote keep them confused unquote, about the dangers of radiation. In other words a proclamation at the highest levels of government, because of the arms race, stated that the radiation level should be deliberately fabricated during the 1950's. We now know for example that the doctor who registered the amount of radiation that GI's got during that horrible testing in the 1950's in Nevada, we

now know that the doctors kept double books, one book as to how much the soldiers actually got from the bomb, and another set of figures as to what they were told. We know this because one of the doctors died just a few years ago, and before he died, he had a guilty conscience, and he went to the New York Times and other media, and simply said, I lied, I carried out the edict of President Eisenhower, to quote keep them confused unquote, and he kept double books, and it bothered him for many decades, and before he died, he wanted to set the record straight about how many people, the real impact of radiation in Nevada. Then we have the commercialization of nuclear power in the late 60's and early 70's. We have the fact that many of the utilities were saying that if radiation were declared to be very dangerous, nuclear power plants could not be operated at all. Workers could not be set in, because as far as workers would only be sent in for a few seconds, it would be very expensive, you would have to recycle workers at a tremendous rate, each worker getting only a few seconds to a few minutes worth of radiation. As a consequence pressure was placed on the standard setting bodies to relax the radiation setting standards for radiation workers, as it is radiation workers can get ten times what the general public is allowed to get. Now this to me is criminal. A radiation worker is

not ten times healthier than the average person, and yet radiation workers are allowed to get ten times what the general public gets, because if they didn't bend the rules, then commercial nuclear energy would be virtually impossible, so we have from the very beginning, a history of obstruction of justice, and the obstruction of truth, going all the way back to the fifties, and the sixties, and now we are essentially inheriting this legacy of playing with the truth.

: Someone could say all right, that's histrionics, that doesn't happen today, if there are problems to the community, if there are threats, of any form of low level radiation from any of the nuclear power plants, any of the nuclear weapons arsenals, surely we would know about it, and you can not condemn the people currently for the mistakes made by Eisenhower or other people at that time. Do you have documentation, if you do substantiate it and story to back it up, as to what may be happening today.

: If you're talking about today, you're talking about the deliberate obstruction of science, and truth taking place for example at the 17 nuclear weapons sites. Where we now in Fernald, Ohio, almost a half million pounds of uranium dioxide was

deliberately released over the people's communities, we know that because we have now the documents themselves, showing that the government was fully aware of the dangers of the release of uranium dioxide in Fernald, Ohio, the release of tritium gas in Savannah, in Aiken South Carolina, where the SAvannah complex is located, and the deliberate release of radioactive products including plutonium at the Rocky Flats installation. Now these of course are weapons facilities so the government essentially used the blanket of national security, but we know that the documents up to last year, showed clearly that the government has been knowingly releasing plutonium, tritium, and radioactive by products like uranium dioxide in Fernald, Ohio, and it was only because crusading journalists were able to get most of these documents into the public, that we now know that the Department of Energy knowingly released these into the general atmosphere. Second of all, with regards to commercial nuclear power plants. Many of them of course run fairly normally and release only trace amounts of radiation into the environment, however, these radiation releases if you really look between the lines, many times they exceed the NRC regulation for what is allowed to be released into the area. Now we know that many times, reporting does not occur to the NRC, in other words we're talking about

reportable occurences that are not being reported to the NRC, where reactors are releasing much larger amounts of radiation than previously expected.

: Who would that hurt though. How much is being released around the United States that the American public is not being made aware of, and how many people would that impact on.

: You ask a very important question, because it turns out that the government even though it knowingly released tritium at Savannah, plutonium at Rocky Flats, and uranium dioxide in Ohio, deliberately prevented any kind of scientific epidemiological follow up study of the rate of increase in cancers. Only now the National Institutes of Health and the federal government is thinking about funding massive health studies to follow up exactly what happened to these workers and these people at Savannah, Fernald, the other 17 nuclear sites. it's only been within the last four months, that the government has finally acknowledged the fact that there has been deliberate release of radiation into these areas, and now belatedly, the National Institute of Health and other government organizations are setting up medical teams to investigate precisely how much got out and how many workers were exposed to this radiation. However once again, it is the goat

guarding the cabbage patch. That is, the same institution, the federal government that sited national security as the reason for lying about these numbers, is now being asked to find out how many workers and how many children have come down with cancer over the last several decades. I personally think we ought to set up an independent body, a body set up by perhaps the AMA, the American Physical Society, other reputable professional organizations, which are not tied to the government, have them investigate exactly what was the rate of cancers, what was the rate of health problems in these areas, around commercial nuclear power plants, and around weapons plants, and until that takes place, I really don't think that the American people are going to believe the same institution which released this massive quantity of radiation into the environment to begin with.

: How bad are the leaks at these plants that are causing low level radiation over a long period of time to be affecting people.

: If you take a look for example at the Hanford site, we're talking about a half a million gallons of liquified toxic waste that had leached into the soil. A half a million gallons, that's an incredible quantity of high level waste. It reputedly has

actually too low!

reached the water table, and perhaps has contaminated the Columbia River. The aquifers underneath Idaho Falls, the Snake River aquifers are now known to be polluted, and once aquifers are polluted, they remain polluted for several hundred years, because water does not move very quickly in these underground reservoirs. And around Delglalla aquifer, in Pantext, Texas, in Amarillo Texas, that's also known to be contaminated, and remember in the Bible it says that ye shall not contaminate the wells of your enemies, however, now we're in the strange situation where our own government has been contaminating the wells not of the enemy but of it's own citizens, for an extended period of time.

: Professor Kaku isn't it correct that city water municipalities generally do not test for nuclear low level isotopes in their water?

: That's correct. Even around New York City there was a little flash in the news about a year and a half ago about plutonium showing up in New York City's water supply, but again, the quote authorities, unquote, were investigating it, and it simply died. And I think it's one of the tragedies that the Departments of Health of most municipalities do not have the scientific equipment like a full scan analyzers or whatever,

that can calculate exactly what is the alpha, beta, gamma emission that occurs in drinking water or whatever.

: Okay, we have in the studio professor Ernst Sternglass, Professor Sternglass is professor emeritus in radiological physics, University of Pittsburgh School of Medicine, welcome to the program Dr. STernglass.

: Yes, thank you. One of the things that we need to be mainly concerned about is milk, because the milk is brought from the place where it is produced in a matter of hours, or less than a day, into our cities, and even very tiny amounts of radioactivity, like strontium 90 and iodine 131 are now known to be 100 to 1000 times more toxic because of the low level chronic irradiation they produce compared to the flash of a bomb. Therefore, not only do we need to be concerned about our drinking water, but we must ...

: Might it not also be possible that if we were being exposed through our milk to low level radiation, that all those children who have immaturely developed immune systems, could be developing immune related diseases later on in life, because of starting off with low level exposures of radiation.

: As a matter of fact, Dr. Gould has done some research that shows that in the mid-50's, there was a complete change, after strontium 90 got into the diet.

: Yes, as a matter of fact, if you look at the mortality rates in the 50's, you find that they flatten out for a period of nearly a decade, after four decades of coming down systematically. There has never been any explanation other than, this representing the immune damage that was done by atmospheric bomb testing.

: The atmospheric bomb testing dropping those low level radiation particles onto the soil which was eaten by the cows, their milk drunk by kids developing immune ... we'll be right back. We're going to be speaking with Dr. Alice Stewart. Dr. Stewart formerly of Oxford University has completed from 1953 to the present monitoring of childhood deaths in Great Britain. 23,000 cases studied by 1979 alone. Welcome to our program Dr. Stewart. Dr. Stewart would you please give us your evaluation of the effects of pregnancy on X-rays, and the effects of fetal exposure to background radiation, including childhood cancer.

: This study that we started way back in the 1950's almost accidentally tumbled

across the fact that to give a single X-ray to a child before birth, was sufficient to increase the risk of an early cancer death. And what we've done is we've gone to the mothers of children who recently died from leukemia, and asked them to complete a questionnaire, and we also went to a similar group of children who died from (Inaudible) diseases, and for each of the dead children, we also interviewed the mother of a live child, who was of the same age and sex, and came from the same region. And we were just looking at that time for any sort of collective memory of the mothers of the dead children, which could throw some light on why their young children were experiencing a rather unusual increase in leukemia mortality, at the same time there was also a general increase. And we didn't expect, because this increase had affected children between two and four more than younger children, I did have an idea that it might have something to do with pre-natal events. We just routinely asked all the questions you would ask in this situation, including of course whether the mother had been ill, and whether she had been X-rayed, and whether it had been a chest X-ray, or if it had been an X-ray to see the position and shape of the baby. And it was when we examined these records that we found that both groups of dead children, both the children who had died of leukemia, and

the children who had died of solid tumors, had been X-rayed in vitro twice as often as the live children. That was the beginning. Of course it was very difficult for people to believe that the apparently safe X-ray was having this effect, so the scientific world had some difficulty in believing that we hadn't made a mistake. And, we decided that the best way of settling this point was to continue. We had in fact succeeded in tracing 82% of all the children who died in Britain under the age of 10 years in three years, the three years were 1953, 54, and 55. And in each of those years, there were only 300 children who died of leukemia, and about 300 who developed solid tumors. So we had about 1800 of these children. Now, for various reasons we thought this was enough to prove our case, but as we met with our opposition, the real opposition coming from the fact that the follow up of A-bomb survivors, had not produced anything similar effect, on the survivors who had been exposed in (Inaudible), we decided the best way of establishing our case for yes or for no, was to continue and to take the deaths from, to go on forwards, to go 1956, 57, 58, our plan of course was to take in all the children who were already born, who had not yet reached the age of 10 years, who wouldn't do so until the year 1965, and then at least we would be able to have a sample, a large sample of

children, to see whether the test, and test them in various ways to see if our finding was correct. And then as time went on, we had increasing difficulty in convincing people, although we went on monitoring year in and year out, and we found exactly the same effect all the time. Then, of course, the effect began to decrease a bit, because the X-rays were safer, but the long and the short of the matter was that doctors did go on X-raying the mothers, in spite of the finding, so we eventually found ourselves in the early 70's, and we gave a risk estimate. I heard somebody earlier in the program give you a risk estimate for 10 rads as being a not safe dose of radiation. Well, what we found we summed up in a paper and said, giving a child one rad of ionizing radiation shortly before birth was sufficient to double the normal risk of getting cancer. This was challenged very fiercely, so by this time we were steadily grinding, so we decided to go on monitoring, and fortunately the English national health service helped us to do this, and we were able with a very small research center to keep tabs all over Britain. We in fact enlarged the survey so we followed up all children under the age of 16. And come the 1984, steadily going on and finding out other things about how cancers related to the X-rays, we finally came to the moment when we could test whether or not background radiation was

having a similar effect to the X-rays. I should perhaps explain that background radiation or natural radiation is coming to us, from cosmic radiation, and from the type of soil that we're standing on, rocks, and of course in Britain all the cosmic radiation is exactly the same (Inaudible). So you can't measure any effect. But the background radiation coming from the ground, there it is, the West Coast of England has higher doses than the east, and there are other differences, and the point about it being 1984, was that our national radiation protection board was doing a survey, measuring this terrestrial gamma radiation component of background radiation, and producing a dose estimate for every 10 km square of Britain. Now, we couldn't divide the country up into 10 km squares, from the point of view of who'd been born in those squares, and who had died from cancer in those squares, but what we could do, is divide the country into approximately 1000 subdivisions.

: What was your conclusion Dr. Stewart?

: And we could therefore fit the national radiation protection board, those estimates to our children, and test whether there was any effect from two types of fetal exposure, background radiation and the pre-natal X-rays. We had arrived at the point where we said

that if we were correct about the pre-natal X-ray, then there must be an effect from background radiation, let's see if we can measure it.

: What were your results?

: Well, we found (Inaudible) types of X-rays, and we were able to measure the contribution made by the two types of X-rays. And because only one of ten children were ever X-rayed before birth, the contribution from the pre-natal X-rays turned out to be only 8%. Calculating that of these 22,000 childhood cancer deaths, about 8% had been caused by pre-natal X-rays.

: That's still a high amount, you're still talking about a substantial number of children having cancer, and deaths due to those cancers that were unnecessary, I'm going to have to put you on hold because we have many other people, I want to tell our network sponsors, I'm sorry, and our stations around the country, we're not taking this break, because we have so many guests still to get to. Please hold on, Dr. Stewart, I want to speak now with Dr. Carl Morgan, Dr. Morgan is the former head of the Oak Ridge National Laboratory, the health division there, and the founder and first president of health civics society, and he is the first president of the

international commission on radiation protection, welcome to our program Dr. Morgan.

: Thank you.

: Dr. Morgan would you first tell us what your feeling is on the argument that low level radiation is non-harmful and really shouldn't be of concern to people.

: First of all, I'd like to make a correction, I was not the president of international commission of radiological protection, but a member, of that commission and a chairman of the internal toast committee. Now, my view of the effects of low level radiation is that all radiation is harmful there is no safe level of radiation exposure. No safe level, any more than there is a safe time to go without your seat belt. So, I think one should avoid all exposure to (Inaudible) radiation. I've been working with ionizing radiation, that is X-rays and gamma rays and so on for 58 years, and during this time, I've seen quite a change in our attitude toward the effects of this low exposure. During the other period of my experience, we accepted what we called the thresh hold hypothesis, mainly that you had it made, there was no risk whatever so long as you did not exceed a certain limiting dose, a dose of a few rads per week at that time. But then in the early 60's,

animal data and scattered human data began to indicate to us, that that was a rather reckless assumption, and we adopted what we call the linear hypothesis, namely that all exposure to this radiation is potentially harmful, that there is no safe level, and that the risk of cancer increases with the increases dose. You double the dose, you double the risk. And now during the past ten years in particular, 10-15 years, we've been examining more carefully the effects of quite low exposure, (Inaudible) studies such as done by Mancuso, Stewart and Kneale Kenniel of the Hanford workers, and they found there, that you had an increase of statistical significance in the cancer incidence at very low doses, Dr. Modern in Israel, studied the children that had been X-rayed because of ringworm, and other studies, indicated to us also I should mention Dr. Alice Stewart's (Inaudible) exposures, all of these studies of low doses indicated a higher cancer risk than one could estimate on the linear hypothesis, so now it's quite evident that we must go to another stage, and we call this the supra linear hypothesis. That is, as Dr. John Goffman indicated, the scope of the curve is greater at low doses than at high doses, you get more cancers per unit dose, more cancers per gram at low dose than you do at high dose. And so this is a matter of great concern to all of us. Now, we have to add

other studies, a very careful study by Goffman, and Dr. Nussbaum that is in publication I understand, have looked at the Hiroshima Nagasaki data, and those studies there, they've carried out, are indicating the same relation, that is that low doses you get more cancers per rad than you do at high doses. And this is just the opposite from what was thought a couple of years ago.

: That's excellent information, please hold your thoughts Dr. Morgan. I'd like to bring in Dr. Thomas Mancuso. The doctor is with the University of Pittsburgh in pathology, he has done a great deal of work on the effects of low level radiation. Welcome to our program.

: Thank you, I'm a research professor, and professor emeritus here, my field has been in environmental cancer not pathology.

: Would you please tell us from your background what you see as being some of the larger issues, especially when it comes to the government telling us we do not have anything to fear, the nuclear power industry telling us we have nothing to fear from low level radiation.

: The basic problem I see is the credibility. The fact that you can't believe the

government representatives anymore, because of the misleading information that has gone over for several decades, and the with holding of vital information for several decades, and the suppression of data, particularly if it's positive findings, findings that are contrary to what they'd like to see.

: Are you familiar with specific instances where any information that would be counter to their opinion or belief were with held from publication or information from the public.

: I can give you my own experience. ~~I was~~ The director of the AEC a number of years ago in 1964, approached me to conduct, determine and evaluate whether I could design the systems to evaluate the health effects of the atomic workers of the United States in all the facilities in all the divisions that were involved in the Manhattan project, and I undertook those series of studies and worked on that for 14 years, and basically in 1974, Dr. Sam Miller had made an observation that cancer was higher among the Hanford workers and we were in the midst of our study, and efforts were made to get me to agree to a press release that would say in effect that the findings that Dr. Miller had were not so because we were conducting a study, and I didn't go along with it, and I wouldn't agree

with it, and the time that we had our positive findings, I want to say at this point, that this was made possible through the superb excellent work of Dr. Stewart and Dr. Knedle, that when we had our positive findings, I remember going over to the AEC and Dr. Stewart and I, and we were providing them with the information, and the plan, and they were suggesting in effect to me, in a very quiet but quite clear way, well, maybe more research is necessary and perhaps you don't need to publish it at this time. They said, of course you can publish it, but it came quite across to me what they meant, and the irony of this was during the time when we were doing our research work, and progress reports showed negative findings because in the latent period, the cancers had not materialized as yet, they were encouraging me to publish negative findings, and I refused. And then when we had the positive findings by this, various forms of suppression as I call it, they took the project away from me, and they gave it to another organization, that happened to be the associated universities in Tennessee who did not have any expertise at all in this field, and did not have any staff for this survey purpose, and there was no protocol there was no director at the time, another form of suppression was when they wouldn't allow me to have access to my other data, which I developed, data at Oak Ridge, and

I was the director of all the projects for all the AEC facilities throughout the country, and they would not let me who designed and organized, put together, with tremendous effort, tremendous thought, they wouldn't let me have a copy of my own data at Oak Ridge. I think this is scientifically outrageous, and basically the problem as I saw it was that the government was afraid of the truth, and then they gave the research project to some people who did not have our experience, did not know the data, and so this was a way in my opinion of delaying the facts and the truth of the matter. But there are a whole series of ways in which the suppression occurred, but these are the particular ones that I was concerned about, that I actually experienced.

Hold on, we have to take our last break, and we'll be right back. Dr. Erwin Ross is a gentleman who has a lot of experience in the analysis of figures, since he has had background as a medical biostatistician at Roswell Park Memorial Hospital, and also has studied the effects of cancer producing agents in our environment. Welcome to our program, Dr. Bross. In your experience do you feel people are being given the facts about those elements in our environment that do cause cancer including low level radiation. We don't seem to have the proper connection with Dr. Bross, so we'll put him on hold,

in case we can get him back. We're coming back to the studio now, and our last guest, just for a brief few statements, because he's already been sharing information on our previous program, is Dr. Jay Gould, Dr. Gould, let's summarize the facts, closing out our special on radiation. What is the government not telling the American public?

: The government is not telling us about the impact of ingested fission products on the immune system. This is a big secret that has never been discussed, although it was known as far back as 1943, if you read Richard Rhodes, the making of the atom bomb, you find on page 155, the interesting discussion between Firmey, Oppenheimer and Teller on the following subject. If they could not produce the fission bomb in time, would it not be possible to kill as many Germans as would be necessary by simply spreading strontium 90 over the whole land mass, and they decided that that would be a very efficient way of killing as many people as would be necessary. So that as far back as 1943, it was known that strontium 90 would go to the bone marrow and do it's damage to the immune system, so this debate is now in it's 50th year.

: I think after all these years, and knowing how many people today have cancer, knowing that we have 500,000 Americans dying of cancer, we

have an estimated 7 million people with cancer, with all these other forms of immune related diseases, and knowing how toxic our environment is, I think it's time we stopped the politics and got people in these agencies to be open and honest, irrespective of the type of influence that the nuclear industry has had in keeping the facts from us. I want to thank Dr. Ernest Sternglass, Dr. Jay Gould, Dr. Karl Morgan, Dr. Alice Stewart, Dr. Thomas Mancuso, Micho Kaku, and Dr. Goffman, for sharing information with us. I hope this has given us an insight into the fact that we can no longer just arbitrarily trust government decisions, I'd like to thank Sharon, our producer, for having made about 300 calls to put this program together, and John Needer and others. Thank you very much.

	Source	Speaker	Summary Description
16.	Tr., Vol. I at 175-176	EID Attorney: Nelson	The EID written statement was developed for the Hazardous Waste Bureau for the permit hearing held on July 18, 1989. The written statement has been reviewed by the directors office and approved by the director as a statement of EID. The EID statement is the truest, clearest, fullest statement coming out of the Hazardous Waste Bureau concerning the issuance of the permit.
17.	Tr., Vol. I at 179	EID Attorney: Nelson	This permit does not deal with radioactive incineration in any way.
18.	Tr., Vol. I at 206	EID Attorney: Nelson	EID's written statement is the best statement of EID's understanding of the lawful operation and restrictions on EID as of July 18, 1989.
19.	Tr., Vol. I at 212	Hearing Officer: Youngblood	Questions concerning background radiation are not part of the public hearing held on July 18, 1989.

New Mexico Health and Environment Department

GARREY CARRUTHERS
Governor

DENNIS BOYD
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

November 16, 1989

Dear Concerned Citizen:

The Environmental Improvement Division (EID) issued the hazardous waste operating permit to Los Alamos National Laboratory on November 8, 1989. EID's responses to comments are enclosed. The changes made in the draft permit due to public comments are covered in the following responses: 10, metal emissions; 11, incinerator ash; 14 & 27, monitoring of radioactivity in the waste feed and exhaust gas and total hydrocarbons in the exhaust gas; 25, reverification of the destruction and removal efficiency. Changes made in response to comments by EID, Environmental Protection Agency and Los Alamos National Laboratory are in responses 51-56, 58-59, 61, 63-64. A copy of the permit is in the Espanola public library.

You have the right to appeal this decision to the Environmental Improvement Board (EIB) in accordance with the New Mexico Hazardous Waste Management Regulations (HWMR-5), as amended 1989, section 902.G. A copy of this section of HWMR-5 is enclosed. Petitions for review should be sent to the EIB at the address on this letter.

Sincerely,

Richard Mitzelfelt
Director

RM:AEG:vga

Encls.

EXHIBIT C

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

Response to Comments on the Draft Hazardous Waste Permit for Los Alamos National Laboratory.

The Environmental Improvement Division (EID) of the Health and Environment Department proposed to issue a permit to the Los Alamos National Laboratory (LANL) for the following management practices for hazardous waste: treatment and storage in tanks, storage in containers and treatment by incineration, and submitted a proposed draft permit for public comment on May 10, 1989. A formal public hearing was held during July 18-20, 1989 and the public comment period ended August 24, 1989. This letter is a summary of the comments received during the public comment period and the formal public hearing and EID's responses to these comments.

Additionally, the letter contains responses to comments received from LANL, the U.S. Environmental Protection Agency (EPA), Region VI and changes initiated by EID. The references to pages are to the pages in the transcript of the public hearing where the comment is recorded. The complete file of the written comments is available in the files of the Hazardous Waste Bureau in Santa Fe; a copy of the transcript of the hearing record is in the Santa Fe office and the Espanola Public Library. The references to Permit Modules are identical in the draft and final permits. The Public comments have been broken up into several general categories and they are hazardous waste, incineration, radioactive wastes, permitting process, oversight and miscellaneous.

Comments from the Public

Hazardous Waste

1. **Comment:** Inquiry (pp. 57, 60, 90, 91, 237; one letter) was made as to which chemicals and the quantities that would be incinerated. **Response:** The chemicals and quantities are designated in Permit Attachment G and the codes used in that attachment are defined in Permit Attachment K. The bulk of the chemicals to be incinerated are ignitable solvents, but many other chemicals in small quantities could be burned. The incinerator can handle approximately 100 pounds of waste per hour and the permit specifies a limit expressed in terms of the heat content of the waste. Permit Module V.B.2.b. **Permit modification:** None.

2. **Comment:** Several people (pp. 92, 189, 210) expressed concern that LANL would be accepting hazardous wastes from other Department of Energy (DOE) facilities for incineration. **Response:** The permit specifically prohibits accepting wastes from any facility not a part of LANL proper (Permit Module II.B.2.). **Permit modification:** None required.

3. **Comment:** There were several questions (p. 50 and throughout the record) as to why EID was addressing only chemical wastes with this permit and not radioactive and mixed wastes also. **Response:** The EID chose to address those aspects of the LANL application for which clear authority exists. Please see the enclosed statement "EID July 18, 1989 Statement Responding to Particular Concerns Expressed by Members of the Public Regarding the LANL Mixed Waste Incinerator" which details EID's authority on this issue. As is indicated in that Statement, radioactive wastes are not defined as hazardous waste; hazardous wastes are chemical in nature and mixed wastes are commingled radioactive and hazardous waste. In regards to mixed wastes, the state expects to receive authorization for mixed waste this year and will address the incineration of mixed wastes at LANL after that. **Permit modification:** None.

4. **Comment:** There were several inquiries (pp. 215, 312, 366; one letter)as to whether or not the permit postulated a "worst case" scenario for disaster training. **Response:** The permit requires a level of staffing and training for emergency response which could be capable of addressing most anticipated spills (Permit Attachment D: Contingency Plan). Additionally, in regards to the incinerator, there are several operating conditions under which the incinerator automatically shuts down (Permit Module V.F.10.). However, the EID did not postulate any specific release which must be addressed. Statewide emergency response is under the Department of Public Safety (DPS) which coordinates and directs actions under the state Emergency Response Act. One exercise has been conducted jointly with LANL by DPS. **Permit modification:** None.

5. **Comment:** Several people (pp. 54-56, 60, 61, 171, 282) questioned the handling of wastes and wanted to know how the chemical hazardous wastes would be separated from the mixed wastes. **Response:** The hazardous chemical wastes are separated from mixed wastes at the source and kept separate. There will be no attempt to break a mixed waste down into its hazardous waste component and its radioactive component. **Permit modification:** None.

6. **Comment:** Concern (p. 150) was expressed over the lack of specific regulations for mixed wastes. The EPA does not intend, at this time, to promulgate separate regulations for mixed wastes. The chemical component of mixed wastes will be subject to the same regulations as presently exist for strictly hazardous waste. Also see the EID July 18, 1989 Statement, p.4. **Permit modification:** None.

Incineration

7. **Comment:** Information (pp. 54, 76, 235, 348) was sought regarding the operating history of the LANL incinerator.

Response: LANL has incinerated waste and non-waste materials for various reasons for nearly thirty years. Materials are incinerated to recover plutonium, provide consolidation of high-volume wastes and to demonstrate the combustibility of various materials. The regulations (HWMR-5, Part V, 40 CFR section 264.74(b) and the permit (Permit Module I.G.) require LANL to keep operating records until closure is complete and they must be available for review at each inspection or as necessary to monitor compliance. **Permit modification:** None.

8. **Comment:** Several people (pp.83, 140) asked how many incinerators exist at LANL. **Response:** There are three existing incinerators and three proposed. The existing ones are the TA-50 CAI (controlled air incinerator), the TA-16 industrial waste incinerator (These are the two in the permit.), and the TA-55 incinerator which recovers plutonium from rags. The TA-50 CAI, for a second time, and the TA-55 incinerator, for the first time, will be subject to permitting when the state addresses the mixed waste activities at LANL. The three proposed incinerators are: the municipal waste incinerator, which is still awaiting funding, the second one at TA-50 which will be for hazardous waste, mixed waste and low level radioactive wastes and another one near TA-16 for paper and wood wastes contaminated with high explosives. New incinerators are required to obtain the appropriate permits prior to construction and operation. **Permit modification:** None.

9. **Comment:** There was a question (p.74) on the efficiency of the incinerator. **Response:** The incinerator is required to destroy or remove 99.9999% of the dioxin-type wastes and 99.99% of the other chemical wastes (HWMR-5, Pt. V, 40 CFR sections 264.343(a)(1) and (2). The efficiencies were demonstrated in a trial burn conducted in 1986. **Permit modification:** None.

10. **Comment:** One letter was received stating that incineration does not destroy wastes. **Response:** The EID interprets this to mean that elemental metal wastes are not destroyed and this is correct. The EID has recognized this concern and has added the requirement that hazardous wastes containing metals not have waste feed rates exceeding those dictated by the emissions screening limits designated in the EPA "Guidance on Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators, Vol. IV, March, 1989. **Permit modification:** Added this requirement at Permit Module V.C.4.

11. **Comment:** There were many questions (pp.55,75,284,300-304, 347) on the disposal of the ash from the incinerator. **Response:** Most of the waste incinerated at LANL is liquid waste and little ash is generated. The permit requires that any ash be contained and disposed of at a regulated disposal facility (Permit Module V.G.). **Permit modification:** The permit was modified to require that the ash resulting from the incineration of a listed waste be

cemented prior to disposal. In regards to the ash resulting from the burning of a characteristic waste, if analysis of the ash indicates that it is a characteristic waste, it must be cemented prior to disposal (Permit Module V.G.1.).

12. **Comment:** Many people (pp. 75,130,234; eight letters) questioned the safety of the environmental standards for the release of hazardous materials. **Response:** The performance standards developed by EPA for the incineration of hazardous wastes were based on research on incineration air emissions and health and environmental risk studies.(Hazardous Waste Incineration: Question and Answers, EPA 530-SW-88-018). States, in developing their own programs and in qualifying for authorization from EPA, must adopt regulations at least as stringent as EPA's and may adopt more stringent regulations. However, the New Mexico Legislature has required that none of the state's hazardous waste regulations can be more stringent than the federal regulations (Section 74-4-4 NMSA 1978). See response 34 under the permitting process below for the process for promulgating regulations in New Mexico. **Permit modification:** None.

13. **Comment:** Several people (pp.58,85,181; four letters) inquired as to how the moratorium on incineration enacted in House Bill 59 effected these two incinerators. **Response:** House Bill 59 was passed by the 1989 legislature and signed into law by the Governor. The moratorium enacted by this Bill addresses all new incinerators and exempts medical waste incinerators and the TA-50 CAI and the TA-16 industrial waste incinerator. Please see comment 8. (see attached Bill). **Permit modification:** None.

14. **Comment:** Numerous people (pp. 94-96, 143, 286, 290, 329, 356-357, 405, 511; three letters) questioned that monitoring of only a few parameters would be sufficient to ensure that no noxious emissions occurred. **Response:** The permit requires continuous monitoring of carbon monoxide in the exhaust gas, temperatures and oxygen levels in the combustion chambers and pressure drops and flow rates in the exhaust scrubber system. (Permit Module I.E.1-8.). These parameters were monitored and demonstrated in the trial burn as those ensuring the required destruction and removal efficiency (DRE). **Permit modification:** The EID has added a requirement for monitoring of total hydrocarbons and radioactivity in the exhaust (Permit Module V.E.9. and 10.) and radioactivity in the waste feed (Permit Module V.C.3.) to address the public concerns over these parameters. The present information available through EPA indicates that, at levels of 100 parts per million or less of carbon monoxide, there is negligible formation of noxious products of incomplete combustion. The addition of a hydrocarbon monitor will confirm this information. All these parameters will be continuously recorded on charts and these charts will be retained by LANL for inspection by the EID and EPA.

15. **Comment:** There were several inquiries (pp. 92-94, 289, 321, 359-361; one letter) as to how the incinerator operating parameters were determined. **Response:** All incinerators emit gases through a stack as the final step in the combustion process. Some of these emissions are pollutants and it is the quantity of these pollutants that determines the risk associated with incineration. To keep this risk at a minimum, performance standards for the quantity of designated organic compounds, hydrogen chloride and particulate matter that an incinerator can emit have been established by EPA. To qualify for a permit, an incinerator must be able to burn wastes and cleanse combustion pollutants so that the quantity of pollutants in its emissions does not exceed the performance standards. The destruction and removal efficiency (DRE) is EPA's main measure of an incinerator's performance. Destruction refers to the combustion of the waste and removal to the cleansing of the pollutants from the combustion gases before they are released from the stack. Because it is impossible to monitor the DREs of every organic compound in the waste stream, principal organic hazardous constituents (POHCs) are selected to be burned in order to determine an incinerator's DRE. These are usually organic compounds which comprise a large concentration in the waste stream and which are difficult to burn. If the incinerator meets the required DRE for POHCs, it should be able to meet or surpass the DRE required for organic compounds easier to burn. The performance standards are: a DRE of 99.99% for the POHCs designated in the permit; a DRE of 99.9999% for dioxins and dibenzofurans; removal of 99% of the hydrogen chloride gas from the emissions, unless the quantity of hydrogen chloride is less than four pounds per hour; a limit of 180 milligrams of particulates per dry standard cubic meter of gas emited through the stack (Hazardous Waste Incineration: Questions and Answers, EPA 530-SW-88-018). For the trial burn in 1986, the POHCs were carbon tetrachloride and trichloroethylene which are among the most difficult organic compounds to burn. This trial burn was witnessed by EID and EPA and separate contractors were used for the sampling and for the analyses. **Permit modification:** None.

16. **Comments:** Concern (p. 533) was expressed that the filters on the incinerator do not stop all particles and gases. **Response:** This is partially correct in that gases pass through filters, but particles are retained. The LANL incinerator has nuclear-grade HEPA filters to remove fine particulates and radionuclides and a venturi scrubber to remove the larger particulates; the absorber columns remove the acidic gases. Additionally, the LANL incinerator exceeds the EPA standards for emissions of particle removal (Final Report, Lab. Job No. LJ 10309/KA-035, Controlled Air Incinerator Upgrade, TA-50 Kaiser Engineers, Inc., August 16, 1989). **Permit modification:** None.

17. **Comment:** Two letters were received expressing concern that

the communities downwind from LANL would receive the emissions from the incinerator. **Response:** The air emission patterns for the proposed municipal incinerator indicated that the downwind effects would not exceed the published standards. The incinerator in the permit is much smaller than the proposed municipal incinerator and the effect should also be less. Please see comment 8. **Permit modification:** None.

18. **Comment:** Several individuals (three letters) mentioned the formation of acid rain and other environmental effects from burning. **Response:** Acid rain is believed to be primarily the result of combustion of coal and other fuels which contain sulfur. Such fuels lead to sulfur oxides which are precursors to sulfuric acid. The wastes to be incinerated at LANL do not contain sulfur in most cases. The wastes do contain chlorides in most cases and the acid gases formed by the combustion are removed at 99% efficiency or better by the exhaust scrubbers. **Permit modification:** None.

19. **Comment:** Six letters were received expressing concern over the possible formation of noxious substances due to incomplete combustion. **Response:** The permit (Permit Module V.F.7.b. and c.) specifies that an excess of oxygen be present and that only limited formation of carbon monoxide can occur. These parameters have been shown by EPA to indicate that the combustion process has proceeded essentially to completion. **Permit modification:** None.

20. **Comment:** There were inquiries (p.110; one letter) regarding the existence of an Environmental Impact Statement (EIS) for the incinerator and the request that the permit not be issued until after review of the EIS. **Response:** An EIS is required by the National Environmental Policy Act (NEPA) whenever activities by a federal facility may adversely impact on the environment. However, EPA determined in 1979 that a facility preparing a Resource Conservation and Recovery Act (RCRA) permit application addresses all the health and environmental issues required in an EIS. Consequently, an EIS is not required when issuing a RCRA permit (Hazardous Waste Incineration: Questions and Answers, EPA 530-SW-88-018). An EIS was prepared in 1972 for the incinerator. EID has inquired as to whether or not an EIS or environmental assessment, a scaled-down EIS, has been prepared since 1980, but has not yet received a reply (Letter of September 28, 1989 to Mr. Troy E. Wade, Acting Assistant Secretary for Defense Programs). A copy of the 1972 EIS was received November 3, 1989. This document was replaced by the "Environmental Statement Transuranium Solid Waste Development Facility, Los Alamos Scientific Laboratory, New Mexico, April, 1973 and a copy of that document was also received on November 3, 1989. Both were sent by Constance L. Soden, Chief, Environmental Programs Branch, DOE Albuquerque Operations Office. **Permit modification:** None.

21. **Comment:** Several individuals (pp. 110, 143,145; one letter) thought the state's standards were too lax and the more stringent ones of other countries or states should be followed. **Response:** See the response to Comment 12 regarding the statutory requirement that the state's regulations be no more stringent than those of EPA. **Permit modification:** None.

22. **Comment:** 274 petitioners asked the EID to issue an emergency order to prohibit the operation of the incinerator. **Response:** The EID may issue emergency orders under Section 74-2-10 of the Air Quality Control Act or Section 74-4-13 of the Hazardous Waste Act. Section 74-2-10 of the Air Quality Act reads "create an emergency which requires immediate action to protect human health and safety." and Section 74-4-13 of the Hazardous Waste Act reads "may present an imminent and substantial danger to health or the environment." The EID does not think that these bases will exist once this incinerator begins operating and will not issue orders under these sections. The performance standards are those required to ensure that the incinerator is properly operating. **Permit modification:** None.

23. **Comment:** Several people (p.224, 527; seven letters) commented on alternative technologies to replace incineration. **Response:** It is up to the applicant to determine which technology will be employed at her/his facility and then to detail how she/he plans to manage that technology so that human health and the environment are protected. It is EID's responsibility to determine if the management practices and the physical plant detailed in the permit application meet the technical standards required. The most frequent suggestion was to require supercompaction in place of incineration. Supercompaction is not applicable to liquid wastes which comprises a good portion of LANL's waste stream. Some of the advantages of incineration are: incineration results in the destruction of organic hazardous waste, supercompaction does not; volume reduction by incineration is 100 to 1 whereas that of supercompaction is 7 to 1 (Hazardous Waste Incineration: Questions and Answers, EPA 530-SW-88-018). **Permit modification:** None.

24. **Comment:** Inquiries (pp. 308, 418) were made about the modifications made to the incinerator after the trial burn. **Response:** The combustion chambers were unmodified. The exhaust system was rebuilt of more durable materials and expanded in size to provide more removal efficiency. The filter housings were redesigned to allow easier replacement of filters and alternate filters so that expended filters could be switched out of the process.(Final Report, Lab, Job No. LJ 10309-50/KA-035, Controlled Air Incinerator Upgrade, TA-50. Kaiser Engineers, Inc., August 16, 1989). **Permit modification:** None.

25. **Comment:** One individual (p. 526) requested that trial burns

be required at appropriate intervals, such as six months. Response: The permit (Permit Module V.I.3.b.) already requires reverification of the DRE whenever modifications to the incinerator affect the DRE, after 8000 hours of hazardous waste incineration time or five years after the effective date of this permit, whichever comes first. (Permit Module V.I.5.b.). Permit modification: The additional requirement that the DRE be verified if EID determines that new information requires further testing was added to Permit Module V.I.5.b.

26. Comment: There was an inquiry (p.78) as to the availability of epidemiological studies regarding the health effects due to emissions of toxic materials and/or radionuclides by LANL on the communities contained in the LANL region. Response: Dr. Sewell, Chief of the Epidemiology Bureau of EID was asked to provide a listing of any known studies applicable to the above concerns and, if possible, a source for each (Letter of September 14, 1989). In a letter dated September 22, 1989, but not received in the Hazardous Waste Program until November 3, 1989, Dr. Sewell indicated that Drs. Galke and Voelz in the Epidemiology Group at LANL have conducted some studies. Permit modification: None.

Radioactive Wastes

27. Comment: The separation of radioactivity issues from the permit was questioned by the majority of those at the hearing (p. 50 and throughout the hearing record; two letters, 248 people wrote or signed a petition). Response: Radioactive wastes are not subject to the regulations (HWMR-5, Pt.II, 40 CFR section 261.4(a)(4). EID's situation regarding mixed wastes is outlined in the EID July 18, 1989 Statement. The EID does recognize public concern over the potential release of radioactive materials and has added additional monitoring to the Permit. Permit modification: Monitoring for radioactivity was added to the operating requirements for the incinerator (Permit Module V.F.9.).

28. Comment: Several people (pp.76, 79,81) inquired as to who was monitoring the Los Alamos area for emissions of radionuclides. Response: LANL conducts continuous monitoring of radionuclide emissions and reports the results annually in a public document. Radioactive emissions standards are contained in the regulations published under the federal Clean Air Act and enforced by EPA. All sources of emission are reviewed for their contribution to the total which is subject to the standards. EID receives the LANL environmental reports which may be reviewed in the Santa Fe office. The EID Air Quality Bureau also monitors some of the ambient air parameters in the LANL area and prepares an annual report which is available from the Santa Fe office. Permit modification: None.

29. Comment: Several commentors (pp. 532,563; four letters)

urged the government and industry to stop producing radioactive materials and wastes. Response: It is not the role of the EID to prohibit business, but to enforce practices to provide for the protection of the environment and people by such businesses. Permit modifications: None.

30. Comment: Forty writers expressed concern that there are no state regulations governing radioactive emissions from federal facilities. Response: All state regulations evolve from state law and must conform to the dictates of the law. The state Air Quality Control Act at Section 74-2-5.B.(1) requires that the Environmental Improvement Board (EIB) adopt regulations that "shall be no more stringent than, but at least as stringent as required by federal standards of performance." The federal Clear Air Act presently has regulations governing radioactive emissions from federal facilities. Therefore, there presently are regulations governing LANL emissions at the federal level. The Air Quality Bureau is currently working on regulations for municipal incinerators and expects to do those for radioactive emissions in approximately two years. Permit modification: None.

Permitting Process

31. Comment: There were six inquiries (pp. 58,61, 137, 154, 223, 340) as to the reasons EID did not prepare one permit which combined all the requirements of all environmental regulations. Response: It is administratively difficult to combine all the requirements of several programs into one permit. The particular constraints due to different priorities within the various programs make such a combination impractical. Permit modification: None.

32. Comment: Several people (p. 147) questioned why the EID Director was not present to answer questions and one letter asking about the Director's role in the process was received. Response: The Director is required to make a decision based on the total record and does not participate in the day-to-day activities. The staff prepares a decision paper outlining the alternatives and summarizing the support for each. To facilitate reaching an unbiased decision, it is appropriate to separate the Director from the influence of any one group. Permit modification: None.

33. Comment: A few people inquired as to the decision-making process under the regulations (pp. 61, 65, 68, 325). Response: The New Mexico Hazardous Waste Act, Section 74-4-4.2 and the HWMR-5, Pt. IX, sections 902.F. and G. require that the Director of the EID make the decision on any hazardous waste permit. Any person adversely affected by the Director's decision may appeal that decision to the Environmental Improvement Board (EIB), the group appointed by the Governor to promulgate the regulations

which the EID enforces. Attached is a copy of the portion of the regulations regarding the appeal process and all requests for a review should be addressed to the EIB at the address on this letter. Permit modification: None.

34. Comment: Several commentors (pp. 180, 219-220, five letters) expressed confusion over the existence of more than one set of regulations. Response: There are numerous laws and regulations promulgated to implement these laws. Each set of regulations is independent of the others and is applied separately. The issuance of a permit under one law does not affect the issuance of a permit under another law, because each is independently enforced and applied. Please see the EID July 18, 1989 Statement. Permit modification: None.

35. Comment: Numerous individuals (pp. 65, 67, 68, 72, 124, 132, 198-199) indicated that they wanted the laws and regulations changed to include radioactivity standards . Response: The EID can only enforce the laws and regulations; it cannot write laws or promulgate regulations. To change the laws the public must contact the appropriate public officials. In New Mexico, it is generally the EIB which promulgates regulations. The process requires that the EIB advertise the subject and availability of the proposed regulations for public comment. The EIB meetings are open to the public. For more information, write the EIB Secretary at the address on this letter. Permit modification: None.

36. Comment: Several people (pp. 54, 133, 220, 233) expressed confusion over the term "interim status". The Resource Conservation and Recovery Act (RCRA) established the hazardous waste program in 1976 and EPA promulgated the first set of regulations on November 19, 1980. Under RCRA (HWMR-5 Pt. IX, 40 CFR section 270.1), any facility storing, treating or disposing of hazardous waste must have a permit to do so. Any facility which was managing hazardous waste on the above date or had begun construction before or on that date was considered an existing facility. An existing facility which had notified as handling hazardous waste and submitted the Part A of a permit application qualified for interim status. An owner and operator with interim status are treated as having been issued a permit and are required to follow the interim status regulations in HWMR-5, Pt. VI. Interim status is terminated when a final decision is made on a facility's permit application. If a permit is issued, the facility can continue to operate the units covered by the permit, according to the requirements outlined in the permit. If a permit is denied, in whole or in part, interim status is terminated and the facility must stop using the units not issued a permit. Denying a permit does not mean that the facility must stop generating hazardous waste, rather it means that the facility cannot store, treat or dispose of any hazardous waste on site and it must be removed from the facility within 90 days.

Thirteen individuals wrote in to express concern that LANL had been granted a research permit for the existing incinerator. A research permit is a specific permit to demonstrate new technology and must be issued under the same procedures as an operating permit. No such permit has been issued. Permit modification: None.

37. Comment: Several comments (pp. 158, 175, and four letters) were received that the permitting process was a sham and that the decision was predetermined to approve the application. Response: The permitting process has two decision points. The first occurs when the application is submitted and a completeness determination is made. An incomplete application is rejected; a complete application is accepted. This occurred in January 1987. Once an application is administratively complete, it is reviewed for technical adequacy and a tentative decision is made to prepare a permit or recommend denial. The appropriate documents for either of these decisions are prepared, the public notified and invited to comment on the proposed decision. A hearing such as the one on July 18-20, 1989 may be held to receive public comment. At the end of the public comment period, the record is closed, the comments evaluated and responded to, the record sent to the Director, and the final decision to issue or deny an operating permit made. All individuals submitting oral or written comments are informed of the decision (HWMR-5, as amended 1989, Part IX, section 902.A.). Permit modification: None.

38. Comment: Several people (pp. 88, 149, 257, 340) asked who had reviewed the permit application. Response: The principle reviewer was Mr. C. Kelley Crossman for the EID. He had a BS degree in chemistry and MS degree in education. He has been with the EID for 6 1/2 years and he has since left for a new position. The review was continued by Dr. A. Elizabeth Gordon who has a MS and PhD in Entomology. She has had course work in pollution ecology, population ecology and extensive field work. The materials were made availabe to the Air Quality Bureau and the Surface Water Bureau for thier review in areas of their concern, but no formal review and response were required. The materials were also at EPA Region VI where the incinerator materials were reviewed by their staff. Permit modification: None.

39. Comment: EID was asked (pp. 193; one letter) as to how it planned to address the mixed waste issue. Response: When the EID is prepared to address the mixed waste permitting requirements for LANL, a decision will be made whether to write a separate permit or to modify the present permit to include mixed wastes. Under either method, the public will be invited to comment on the application and the proposed decision concerning the mixed waste, just as is occurring under this permitting process. This is not expected to occur until 1991. Also, see #3 above. Permit modification: None.

40. **Comment:** There were a couple of inquiries (pp. 202, 318) as to how the operating permit and the cleanup of past activities were related. In the Hazardous and Solid Waste Amendments of 1984 (HSWA), Congress required all facilities to clean up any past solid waste management units. The state is not yet authorized for that part of the HSWA program, so EPA is presently implementing it. The cleanup process EPA is requiring of LANL is covered in Permit Module VIII. **Permit modification:** None.

Oversight

41. **Comment:** Numerous people (pp. 52, 166, 190) inquired as to who oversees LANL and DOE. **Response:** LANL is subject to oversight by the EID, EPA and DOE inspectors. The EPA and EID inspections are known to LANL only a few days in advance; in some cases with no advance notice. **Permit modification:** None required.

42. **Comment:** Many people (pp. 66, 162, 183, 5 letters) indicated distrust DOE. **Response:** All materials submitted by LANL are required to be certified as accurate and correct (HWMR-5, Part IX, 40 CFR section 270.11(d). If at any time, the EID receives information that such certification is false, the permit may be modified, terminated or rescinded (HWMR-5, Part IX, 40 CFR section 270.41, 270.42 and 270.43(a)(2). The EID is aware of the DOE record at other facilities and carefully evaluates all DOE inputs. **Permit modification:** None .

43. **Comment:** Several inquiries (pp. 140, 166, 290, 336, 4 letters) were made regarding EID's inspection frequency and practice for LANL. **Response:** The EID has historically visited each major facility, such as LANL, annually. LANL has also been inspected on an unannounced followup basis. Normally, LANL has been notified a few days in advance so that appropriate arrangements for access to secure areas may be made to minimize delay during the inspection. Both EPA and EID have inspectors with DOE security clearances to facilitate access. **Permit modification:** None.

Miscellaneous

44. **Comment:** Twelve commentors urged to EID to deny the permit, without providing any reason for such a suggestion. **Response:** Regulatory agencies do not have the authority to deny permits for non-technical reasons. (Hazardous Waste Incinerators: Questions and Answers, EPA 530-SW-88-018, p.22). **Permit modification:** None.

45. **Comment:** Several people (pp. 13, 74, 88-178) objected to the hearing procedure which did not require LANL to defend its application. **Response:** According to the New Mexico Hazardous

Waste Act, Section 74-4-4.2.E. NMSA 1978 and the New Mexico Hazardous Waste Management Regulations (HWMR-5), as amended 1989, Part IX, section 902.A.5., "No ruling shall be made on permit issuance... without an opportunity for a public hearing at which all interested persons shall be given a reasonable chance to submit data, views, or arguments orally or in writing and to examine witness testifying at the hearing..." The purpose of the hearing was to subject EID's proposed decision to public scrutiny and comment. There are no legal grounds for compelling any person/facility to testify and, consequently, be subject to cross examination. Permit modification: None.

46. Comment: A comment (p. 218) was made on the availability of the permit materials. Response: The volume of materials included in the permitting file exceeded the EID budget for production and distribution. The most pertinent documents were placed in the Los Alamos public library for one year and then moved to the Espanola library for the last two years. The complete EID file is in the Santa Fe office and is available for public review. Permit modification: None.

47. Comment: Several people (p. 9) asked that the hearing record be kept open to allow rebuttal to the comments to be submitted by LANL at the hearing. Response: The hearing officer kept the record open for five weeks after the close of the hearing. One person commented on LANL's submission. Permit modification: None.

48. Comment: There were inquiries (pp. 196, 317) as to the qualifications of the EIB. Response: The EIB is appointed by the Governor to promulgate regulations and such other tasks as are assigned by law. (Environmental Improvement Act, Section 74-1-8., NMSA 1978). According to the Environmental Improvement Act, the EIB members are appointed by the Governor, by and with the consent of the Senate and no more than three members shall be members of the same political party (Environmental Improvement Act, Section 74-1-4. NMSA 1978). Permit modification: None.

49. Comment: A few comments (p. 299) were received on the adequacy of the tanks described in the permit. Response: There are two sets of tanks described in the permit. One is a sealed reaction tank (Permit Module IV) and the other is a group of four open tanks used to evaporate, hydrolyze and mix wastes (Permit Modules IV and VI). Both are placed on a base designated to contain their contents if a leak occurs. The sealed reaction tank is in a building with controlled access and the four open tanks (Permit Modules IV and VI) are within a fenced area with controlled access. Permit modification: None.

50. Comments: Several people (pp. 305, 4 letters) inquired about recycling requirements and waste minimization. Response: The permit does not require recycling or waste minimization,

except to require a report on what was accomplished in these areas. The federal Resource Conservation and Recovery Act, Section 3005(h) specifies that it is the responsibility and the duty of the facility to implement these programs. Permit modification: None.

Comments from EID

51. Comment: The draft permit paragraphs I.A.(in part), II.A.3. and II.A.4. were conditions regarding the generation of waste. Response: After reviewing HWMR-5, Part IX, 40 CFR section 270.4.(a), it was concluded that conditions regarding generation are not subject to a permit, but to the requirements in HWMR-5, Part III generator standards. Permit modification: Permit paragraph I.A. was modified to reflect this and paragraphs III.A.3. and III.A.4. were deleted.

52. Comment: Review of draft permit paragraph II.E.2. raised questions that the sampling in the Mortendad Canyon for possible contamination needed to be increased for number of sites, that metals should be added to the data base and that the frequency of sampling should be increased. Response and Permit modification: Permit paragraph II.E.2.a. was rewritten to require reporting of all results, not just detected constituents and Tables II-2 and II-3 were modified. Additionally, Figure 9 was added to assist in identifying monitoring locations.

53. Comment: Review of Permit Modules III and IV revealed that the land ban requirements regarding storage in containers and tanks had not been included. Response and Permit modification: The land ban requirements for container storage were added as permit paragraph III.B.3. and for storage in tanks as permit paragraph IV.B.5.

Comments from EPA, Region VI

54. Comment: The secondary containment surrounding the existing tanks should be described in the permit. Response and Permit modification: This was done by additions to permit paragraphs IV.C.1. and 2. and by the addition of Figure 7 to the permit.

55. Comment: Clarification of the methods of determining the chlorine and heat content for wastes to be incinerated is required. Response and Permit modification: Permit paragraphs V.C.1. and V.F.1. were revised.

56. Comment: Add tolerances for measured parameters to reflect actual instrument accuracy. Response and Permit modification: Permit paragraphs V.F.6.b. and V.F.7.c. were revised to indicate a tolerance limit of plus or minus 3%.

57. Comment: The incinerator operating parameters should be

recorded and continuously monitored. **Response:** This requirement is specified in permit paragraph V.E. and the records are retained pursuant to paragraph V.I. **Permit modification:** None.

Comments from Los Alamos National Laboratory

58. **Comment:** The monitoring requirements of paragraph II.E.2.a. are redundant with Module VIII. **Response:** The specific sites to be monitored are not redundant, both are necessary. **Permit modification:** Permit paragraph II.E.2.f. was added to address the dry well situation so that all attempts to obtain water samples that are not successful are documented.

59. **Comment:** Requested that permit paragraph IV.D.1.c. be modified to address some discharges to the industrial wastewater system. **Response and Permit modification:** Permit paragraph IV.D.1.c. was redesignated IV.D.1.d. and rewritten to specifically authorize some discharges to the industrial wastewater system, i.e. for treatment residues that qualify for exclusion in accordance with Permit Attachment A.

60. **Comment:** LANL objected to permit paragraph VII.A.2. as constituting double jeopardy under the law. **Response:** This paragraph makes it explicit that all applicable state standards shall apply to this incinerator. The EID has the authority to enforce, but does not know at this time if it would enforce violations under this permit or any air permit or both. **Permit modification:** None.

61. **Comment:** LANL objected to the verification provisions of Permit Attachment A, paragraph A.5. **Response:** This paragraph was made more explicit to apply to instances where generators state knowledge of process as the analysis method. **Permit modification:** The requirement was increased to 1% verification analyses by chemical means.

62. **Comment:** LANL proposed that only hazardous waste handlers receive training on the requirements of RCRA. **Response:** The EID believes that every employee and regularly assigned contractor employee should receive basic training to recognize sufficiently what materials are subject to the permit and to be aware of the need to notify the proper specialists to handle the wastes. **Permit modification:** None.

63. **Comment:** LANL proposed numerous corrections to the figures in the permit to reflect the current locations and units subject to the permit. **Response and Permit modification:** The EID concurred that the most current figures should be used and replaced the outdated figures.

64. **Comment:** In reviewing the record of the permit hearing, LANL discovered, after the close of the public comment period,

that Exhibit No. 3 (Contingency Plan) in DOE's comments submitted to the EID during the hearing contained a copying error (double-sided document copied as a single-sided document) and requested that the minor changes to the Contingency Plan considered. Response: The changes were found to be clerical nature. Permit modification: The updated document was incorporated as the contingency plan.

65. Additionally, DOE provided, by letter dated August 24, 1989 a summary of the jurisdictions concerning radioactive materials at LANL. This summary, entitled "Answers to Questions Regarding the Department of Energy's Regulation of Radioactive Wastes," is enclosed for your information. EID has not investigated the answers as stated and does not vouch for their accuracy.

This concludes the responses to comments required by HWMR-5, Part IX, section 902.A.

Attachments

1. EID July 18, 1989 Statement Responding to Particular Concerns Expressed by Members of the Public Regarding the LANL Mixed Waste Incinerator.

2. Letter of September 14, 1989 to Dr. Mack C. Sewell, Chief, Epidemiology Branch, HED from Dr. Kirkland E. Jones, Deputy Director, EID.

3. Letter of September 22, 1989 to Dr. Kirkland E. Jones, Deputy Director, EID from Dr. Mack C. Sewell, Chief, Epidemiology Branch, HED.

4. Letter of September 28, 1989 to Mr. Troy E. Wade II, Acting Assistant Secretary for Defense Programs from Dr. Kirkland E. Jones, Deputy Director, EID.

5. HWMR-5, as amended 1989, Part IX, sections 902.F (Director's Decision) and 902.G. (Review and Hearing Before Board).

6. DOE's "Answer to Questions Regarding the Department of Energy's Regulation of Radioactive Wastes."

7. House Bill 59, as amended. 39th Legislature, first session 1989.

COMMENTS OF THE DEPARTMENT OF ENERGY AND THE REGENTS OF THE UNIVERSITY OF CALIFORNIA ON DRAFT PERMIT NUMBER 0890010515-1 TO OPERATE HAZARDOUS WASTE FACILITIES, BEFORE THE NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION-JULY 18, 1989.

The Department of Energy and the Regents of the University of California respectfully request the Environmental Improvement Division's (EID) consideration of the following comments regarding draft permit number 0890010515 relating to the operation of hazardous waste facilities at Los Alamos National Laboratory (LANL):

FACT SHEET

Although the Fact Sheet is not technically part of the permit, it contains a sentence which may cause some confusion and warrants clarification. The sentence is found in the paragraph titled "Description of the permit" and reads, "The controlled air incinerator may burn any waste capable of destruction by burning, except for a few prohibited wastes, including chlorinated phenols." Because of the structure of the sentence, it may appear that the burning of chlorinated phenols is prohibited. In fact, LANL's application has always included F027 and F028 waste types that will be incinerated and these are included in the draft permit.

MODULE II

<u>Section II.C.3. (p.17).</u>

The reference listed in this section is out of print and no longer available. LANL has obtained a copy of the American Society for Testing and Materials' version of this document and requests that the reference be changed to reflect this. The ASTM is substantially the same as the EPA document. The new reference is D-34 P 168, "Proposed Guide for Estimating the Incompatibility of Selected Hazardous Wastes Based on Binary Chemical Reactions."

<u>Section II E.2.a. (p.18)</u>

This section refers to surface water samples taken at locations in Table II-1 (p.52). Several of these locations are inappropriate for sampling for the following reasons:

a.) There is no perennial water at Canada del Buey or Water Canyon at Beta. Annual water samples may be impossible to obtain.

b.) Acid Weir, Pueblo 2, and Pueblo 3 are all in the same canyon. None of these stations would detect the results of any current activities (post 1980) from Laboratory operations. They would possibly detect activities by the town/county of Los Alamos, as well as past (pre-1980) Laboratory activities. Sampling and analysis at these stations is already addresssed in EPA's HSWA permit (Module VIII) on page 7 under the section entitled "Monitoring of Surface and Ground Water" and it is therefore unnecessary and duplicative to require additional sampling in this section of the permit.

Section II.E.2.c.

Analysis of variance to compare data from up-gradient and down-gradient stations is inappropriate and doesn't make sense under these circumstances. None of the station pairs reflect any current laboratory activity and thus such analysis is inappropriately included in the operating permit. Up-gradient and down-gradient stations exist at the two Frijoles Canyon Stations but are not impacted by run-off from Laboratory operations. A like situation exists, as explained above, for the Acid Weir/Pueblo Canyon complex.

Section II.K.1.g. (p.21)

The requirement that the Permittee must maintain "sufficient" records and documentation to demonstrate compliance is vague and creates substantial uncertainty as to what records are required to meet this "sufficiency"_standard. The draft permit contains many detailed and specific requirements with regard to recordkeeping and documentation. If these records are kept correctly and accurately, LANL assumes that they will meet the requirement of sufficient documentation. If documentation in addition to that already set forth in the draft permit will be required to meet the sufficiency standard LANL requests that the permit include a specific description of the nature of such documentation so that it can be on notice as to the requirements. If, on the other hand, the recordkeeping requirements already in the permit are considered sufficient to document compliance, LANL requests that the first sentence of paragraph g. be deleted. In the alternative, LANL requests that the following additional sentence be added after the first sentence in the existing paragraph g.:

"For purposes of this paragraph, records and documents which are required to be maintained by this permit shall constitute sufficient documentation to demonstrate compliance."

Section II.K.1.h. (p. 21)

The requirement in this paragraph that automatically extends the retention period for "all records required by this permit" during the course of an unresolved enforcement action appears to be unnecessarily overbroad. For example, an enforcement action involving monitoring records at a particular unit should not require the retention of inspection records at another, unrelated unit. LANL requests that this paragraph be amended to limit the automatic extension of the period to all records which are relevant to the enforcement action. This will avoid unnecessary and burdensome retention of irrelevant records.

MODULE III

Section III. A.1.c. and e. (p.24)

"Figure III-1" in each of these paragraphs should be "Figure 6".

Section III A.2.b.c. and d. (p. 24 and 25)

"Figure III-2" in each of these paragraphs should be "Figure-4". Also, the nomenclature of the units doesn't match that on Figure 4.

Section III H.3. (p. 28)

The inspections referred to in this section are performed weekly. Therefore "quarterly" should be changed to "weekly".

MODULE IV

Section IV.D.1.c. (p.30)

LANL requests that this section explicitly clarify that effluents from this unit may qualify for the exclusions set forth in HWMR-5 261.3(a)(2)(iii) and (iv.) and therefore that some residues from the unit will not be defined as hazardous wastes.

Section IV.E.3. (p.31)

The inspections referred to in this section are performed weekly. Therefore "quarterly" should be changed to "weekly".

MODULE VII

Section VII A. 2. (p.43)

LANL is subject to and must comply with state and federal air standards and regulations under the Federal Clean Air Act and the New Mexico Air Quality Control Act. There is no authority, however, for EID to include compliance with such requirements as part of this hazardous waste permit. This provision could unfairly subject LANL to double penalties under both the air Acts and the hazardous waste regulations.

MODULE VIII

Section A.4. (p.1)

This section requires notice within 24 hours of any release from a solid waste management unit. Release is broadly defined and by its terms includes any quantity, even de minimus amounts with no potential for any significant impact on the environment or human health. An inordinate amount of time and effort may be required to report even trivial amounts. LANL requests that this definition be further refined to include some criteria for types and quantities of releases which must be reported.

Section B.4. (p.2)

This section appears to be mooted by the addition of the new sections F. and G. which also deal with notification requirements for discovery of, and releases from, newly-identified solid waste management units. Section B.4 contains provisions which directly conflict with Sections F. and G. and LANL requests that it be deleted.

Section B. Perched Zone Monitoring (p.5)

This section requires the installation of the monitoring wells to be completed within 90 days of the effective date of the permit. LANL is informed that the permit will likely be issued in November. Although LANL will begin installation of the wells this fall, during the winter months, the canyons where the wells will be installed are largely inaccessible due to snowfall and winter conditions. Winter conditions are followed by spring runoff, and if there is significant snowfall, the canyons may not be accessible until May. The 90-day completion date is therefore unrealistic and LANL requests that it be changed to 270 days from the effective date of the permit.

The last paragraph, second sentence should read, "238 Pu, and 239Pu, 240 Pu" rather than "238, 240 Pu."

Section B. Monitoring of Surface and Groundwater (p.7)

LANL requests that the time period for submitting the summary describing the ongoing monitoring program, including sampling points, media, and constituents analyzed for be changed from 90 to 120 days from the effective date of the permit. The LANL Environmental Surveillance Program is extensive and complex and a thorough summary will take some time to compile.

Section B. Vertical Extent of Saturation (p.7A)

The last two sentences of this paragraph seem to require that all core material shall be analyzed for all constituents. LANL requests that this section be revised to allow for the exercise of professional judgement in determining the number of samples and subsequent constituent analysis during the investigation.

Section B. Identification and Summary of Previous Studies (p.7A)

LANL requests that the time period for submitting the reference list be changed from 120 to 180 days in order to insure adequate time to compile a thorough and accurate list. Additionally, LANL suggests that the intent of the section would be clearer if it was revised as follows:

> " Within 180 days of the effective date of this permit, the permittee shall develop and submit to the Administrative Authority, a reference listing of all known geologic, hydrogeologic, and all environmental studies previously performed at and/or by the facility relevant to potential contamination or migration of contamination from SWMUs, with a summary of the scope of the study and significant findings thereof."

Section D. Corrective Action for Continuing Releases (p.9)

The second paragraph on this page discusses the consequences of failure to comply with plans and schedules and references 40 CFR 270.41 for guidance on modifications. It is not clear how the permit modification process will apply to LANL's annual update of the Installation RI/FS Work Plan which must be approved by the Administrative Authority.

In the fourth paragraph on page 9, LANL requests that the following sentence be inserted after the sentence "The ER Program strategy for dealing with the large number of tasks is to prepare a single installation-wide work plan and task-specific RI/FS documents for each task":

"Depending on site-specific findings during the Corrective Action Plan process, a site within a task may be removed by a

determination that no further action is necessary. A site may also be assigned, to a different task, for example, by implementing interim corrective measures. Either of these actions may be taken by the permittee with the approval of the Administrative Authority."

Section H. (3) (p.14)

In the first paragraph, after the sentence "The scope of the RFI...from solid waste managment units," LANL requests that the following be inserted:

"As appropriate and with the approval of the Administrative Authority, the RFI Work Plan will be developed and implemented using the phased approach as described in EPA Corrective Action Plan guidance documents. Information obtained during the preceding phase will be incorporated in the modified RFI Work Plan for the subsequent phase. The draft RFI Report shall be prepared when all phases of the RFI have been completed to the satisfaction of the Administrative Authority."

More than one phase will be required in most cases at LANL during the RCRA Facility Investigation to provide sufficient information for the Corrective Measures Study.

Section H. (3) (p.14-19)

Some of the SWMUs identified in this section already have closure plans submitted to the State of New Mexico or characterization information has been requested by the State of New Mexico. Based on the characterization results, a determination will be made by LANL and the state with regard to appropriate further action. A list of these SWMUs is provided below. LANL requests that these SWMUs be deleted from the permit in order to avoid unnecessary and costly duplication of effort.

0-001	18-003
0-012	21-003
3-001(a-c)	21-011
3-001(m)	22-005
3-001(p)	22-006
3-001(r)	22-010
3-013	33-002
3-014	33-004
3-020	33-012(a)
3-028	33-013
3-033	35-004(e)
3-037	35-009(f-h)
3-039	35-010
6-001	36-002

6-006	36-003
9-004	36-005
9-005	39-002(a)
9-007	39-004(c,d)
9-009	39-006(b)
11-002	40-001(b,c)
11-004	40-005
11-005	41-002
11-009	46-002
14-004(b)	46-003(g)
14-005	48-002
14-007	48-003(a,b)
15-003	50-001
15-006	50-002
15-009	52-002
16-003(a-v)	53-001(a)
16-003(a-f)	53-001(b)
16-006	53-002
16-010(a-g)	53-006(b-e)
16-12	53-007(a,b)
	54-001(a)
	54-001(c)
	54-003
	54-005
	54-007(a-c)
	39-006(b)

Section I.1. (p.21)

This section is incomplete and appears to be superceded by later sections L., M., N., O., P., and Q of the permit. LANL requests that it be dropped.

Sections J. and K. (p.22-23)

It appears that Sections J. and K. might be most logically placed after Section G., Notification Requirements for Newly Discovered Releases at SWMUs. Approval of the annually updated Installation RI/FS Work Plan by the Administrative Authority as required by Section H might also serve as a mechanism for the Administrative Authority to reach a determination of no further action for specific sites.

Section L (p.23-24)

Task/site-specific bench-scale and pilot-scale studies are included in Section N, Corrective Measures Study Final Report, but not as a requirement for the corrective action measures study plan. The permit should clarify review, concurrence and reporting requirements for bench and pilot studies.

Section P.2. (p.27) and Task II (p.30)

Both of these provisions contain requirements for financial assurance. Current RCRA regulations at Section 264.140(c) state that the States and the Federal government are exempt from the financial requirements. For similar policy reasons, LANL presumes that when the proposed Subpart S regulations are issued, they will contain a similar exemption. LANL therefore requests that these provisions be deleted from the draft permit.

Section O., Summary, (p.29-30)

Several changes are needed to make the facility submission summary schedule consistent with the text and LANL's requested changes.

1. Under notification of newly-identified SWMUs and newly-discovered releases the word "written" should be added.

2. Task I deliverables are due 180 days after issuance rather than 90 days.

3.The SWMU Assessment for newly-identified sites is due 90 days after receipt of a request is consistent with Section F.3, p.10, however it is inconsistent with Section B.4.(b) which contains a requirement of 45 days. LANL requests that Section B.4.(b) be changed to 90 days.

4. The SWMU Assessment Report is due 60 days after completion of the SWMU Assessment Plan, however, Section F.5. indicates that it is due in 25 days. The 60 day period is preferable.

5. The requirement that the Revised RFI Work Plan be submitted within 30 days of receipt of the NOD applies to the Installation Work Plan and the Task/Site Work Plans.

6. The RFI Report and Summary Report are due 60 calendar days after completion of the RFI. This requirement is not specified in the text.

7. The Interim Measures Plan is required 30 days after notification. There is no plan requirement specified in the text.

8. The requirement to provide a CMS Plan 90 days from notification to perform CMS is consistent with page 23, Section L., Corrective Action Measures Study Plan, but not with page 21, Section 1., Correction Measures Study, that the draft report be submitted within 90 days. The 90-day requirement for the plan is more reasonable than the 90-day requirement for the report.

Section R. Task I.A.1.c. (p.33)

The request that a the report include a "Topography (with contour interval of five (5) or ten (10) feet and a scale of 1 inch-100 feet), waterways, all wetlands, floodplains, water features, drainage patterns"; is a significant task in terms of time and expense for a facility the size of LANL. LANL covers 43 square miles and is located on the Pajarito Plateau. The plateau consists of a series of finger-like mesas separated by deep eastwest oriented canyons cut by intermittent streams. The mesa tops range in elevation from approximately 7800 feet on the flank of the Jemez Mountains to about 6200 feet at their eastern termination above the Rio Grande Valley. It is unreasonable and impracticable to require this information to be submitted within 180 days from the issuance of a permit. LANL believes that one year from the effective date is a more realistic timeframe to compile this information and requests that the due date be changed to allow one year for preparation of the maps.

LANL also requests that the features required to be included in the topography be more clearly defined, including a definition of the geographic area that needs to be mapped and definitions of floodplains and wetlands. Wherever the term wetlands appears in MODULE VIII it should be further refined to mean "natural wetlands." Additionally, the requirement that the maps be to a scale of 1 inch-100ft. will result in preparing a large number of maps (approximately 400 standard-sized sheets to cover the entire facility), which currently do not exist. Some of the features requested exist on maps of different scales (e.g., 1 inch-500 feet), therefore, some flexibility should be allowed relative to map scale at the facility level. Detailed site-specific maps will be provided on a task-by-task basis displaying these features as appropriate during the RFI/CMS process.

Section R. Task I.A.1.h. (p.33)

The requirement that the Preliminary Report include "A detailed geologic map overlain on contour map (contour interval at least 10 feet) with a scale of 1 inch = 400 feet depicting all units of the Tshirege member of the Bandelier Tuff be prepared" and that, "Maps must depict all springs, faults, gravel deposits, alluvium, and pumice deposits." is not reasonable. Depicting all units of the Tshirege member in Bandelier Tuff as requested will in many cases result in useless maps given the LANL topography. Additionally, it is not clear how development of such a costly map will benefit evaluation of the SWMUs. To the extent that this information is needed on a site-specific basis, it will be provided in the appropriate site-specific documents during the

RFI/CMS process. However, if the Administrative Authority believes that the LANL-wide map is absolutely necessary, a due date of 180 days from the effective date of the permit is not reasonable. A due date of 360 days from issuance of the permit is more realistic. The features requested (e.g. springs and alluvium) should also be defined in the permit, including minimum size of those features which require mapping.

Section R. Task VI.C.

Previously, in Section N., mention is made of pilot studies, however, this Section R. omits them. Additionally, the term "laboratory studies" is not defined.

Overall, MODULE VIII requires LANL to submit a great many documents to EPA for concurrence within short time frames. LANL requests that EPA make available sufficient staff to review and approve these documents in a timely manner.

FIGURES

A current version of Figure 4, regarding locations of units at TA-50 is included in the draft permit after the Modules. However, outdated versions of Figure 4 are included in several places in Attachment E and need to be replaced with the updated Figure 4. The following pages reflected the outdated version of the figure and need to be replaced with the current figure 4:

E. 3.1
E. 4.1
E. 5.1
E. 6.1
E. 7.1

Additionally, there appears to be an unnecessary and duplicative copy of Figure 4 after Figure 6 following the Modules. Attached (as Exhibit 1) to these comments is an updated version of Figure 6 relating to the location of waste management units at TA-54 Area L. The new Figure 6 should replace the outdated one found after the Modules and also the outdated ones found at:

E.3.2
E 7.2
E.8.1
E.9.1

ATTACHMENT A

Section A.5

In general, all of section A.5. is highly redundant with the requirements already set forth in A.4. Section A.4 already describes the verification analysis that will be performed in each category and subcategory of chemicals. This obviates the need for Section A.5.2. with regard to verification of routine wastes.

The discussion of discharges to the Industrial Wastewater System found at A.5.3. should replace the discussion of the same item found at Section A.4. relating to waste residues.

Section A.5.1.

The requirement that one in each two hundred knowledge-of-process determinations be verified by quantitative chemical analysis does not make sense in the context of LANL's waste operations and is not necessary to protect public or employee health and safety or the environment. For the reasons set forth below, LANL requests that Section A.5.1 be deleted from the permit.

At the present time, knowledge of process determinations can be divided into two categories at the Laboratory. The wastes are either routine wastes or labpack wastes. Labpack waste is defined as waste in original chemical containers of less than five-gallon size. Routine wastes are already subject to the annual verification program. Additionally, every new batch or container of routine waste must be reanalyzed for key parameters before treatment. Labpack waste by definition contains information on its original label and has additional information available on the material safety data sheets. If for some reason, this information is not available, the container is handled as an unknown.

As the attached letters (Exhibits 2 and 2A) from two reputable hazardous waste handlers demonstrate, it is generally accepted in the field that labels on containers and/or Materials Safety Data Sheets (MSDS) data is sufficient information for treating and disposing of labpack wastes. Disposal companies have indicated to LANL that they are unaware of any other jurisdiction in the country which has required the analyses contained in Section A.5.1., nor do these companies' own permits for treatment and disposal require these analyses to be performed. If such analyses are not required for incineration and other treatments, it makes little sense to require it for simply storing wastes.

Verification of labpack wastes also presents another problem in that there is no standardized protocol for proving that no contaminants are present when it is not known what chemicals one is looking for. Chemists can perform tests to determine that a specific compound is not present. But without analyzing for the entire universe of chemicals, a chemist cannot determine that a compound is free of contamination. Another problem encountered is that there are different grades of chemical purity. For example, nitric acid is available in purites ranging from technical grade to chromatography grade. This raises the need to make a determination on the issue of how pure is pure.

In summary, performing verification analysis on labpack waste serves little purpose, is costly and time consuming, and does not provide significant additional protection to public health or the environment. In fact, the requirement increases risk to Lab employees by increasing chemical exposure potential while obtaining little new information.

ATTACHMENT B

Section B.1.3. (p. B-3)

In line 5, in order to be consistent with other sections, insert "Figures B-1 and B-2" after "inspection log sheet."

Section B.2.3. (p.B-4)

Beginning on line 2, "Figures B-7 through B-9" should be "Figures B-5 and B-6."

Section B.3.4. (p.B-6)

On line 2, "Figures B-3 through B-6 and B-12 through B-18 should be "Figures B-7 and B-8."

ATTACHMENT C

Introductory paragraph (p.C-1)

At line 8 after "at the facility." insert "and handle hazardous wastes." Not all LANL or contractor employees handle hazardous waste and, as such, are not required to undergo training. A similar change should be made at line 9 after "all personnel" insert "handling hazardous waste."

Section C.2.1 (p. C-2)

At line 4 after "All employees" insert "involved with hazardous waste handling," for the reason set out above.

RCRA Job Description Table

Please delete the name of A. Torres, Chemical Waste Coordinator for WX-3, from the table.

Figure C-1, Section II.C.

First Aid training and recertification is given in accordance with Red Cross policy, which requires recertification every three years. Please change this section to read "First Aid (IC) introductory, triennial recertification."

ATTACHMENT D

Section D.1.2 (p.D-1)

On the first line of the second paragraph, "Table D-2 should be "Table D-1."

Section D.2.

In order to accurately reflect the current organizational structure and title changes, LANL requests that the following new paragraph be inserted:

D.2.1.11 Operational Management Group I (Emergency Management)

This group provides a 24-hour duty officer, called the Laboratory Emergency Duty Officer (LEDO), to respond to all credible emergencies, including hazardous materials releases. The LEDO is the On-Scene Commander (OSC) for all emergencies, including releases of hazardous materials when an On-Scene Control Group (OSCG) is formed. Emergency Management maintains the Emergency Operations Center (EOC) in operational ready status should the center be required.

Additionally, throughout Attachment D wherever the term "EPODO" appears, it should be replaced with the term "LEDO." Attached (as Exhibit 3) to these comments is a marked-up copy of the draft Attachment D which shows where these changes need to be made.

ATTACHMENT E

Throughout this attachment, as listed below, reference is made to sending wastes, residues, filters, mops, rags, etc., off-site for disposal. LANL would like the option of treating or providing further treatment of such items on-site. LANL suggests that the term "treatment and/or disposal at a permitted facility" be substituted for the term "off-site disposal" in the following sections:

a) Page E.2-2, Paragraph 1, last sentence.
b) Page E.2-2, Paragraph 2, last sentence.
c) Page E.2-2, Paragraph 3, next to last sentence.
d) Page E.2-2, Paragraph 2, last sentence.
e) Page E.3-2, First sentence
f) Page E.2-3
g) Page E.3-2. Paragraph 2, third and forth sentences
h) Page E.3-2, Paragraph 5 eighth and ninth sentences.
i) Page E.4-2, Paragraph 4, forth and fifth sentences
j) Page E.5-2, Paragraph 1, second sentence.
k) Page E.5-2, Paragraph 2, forth and fifth sentences.
l) Page E.6-2, Paragraph 1, line 5.
m) Page E.6-2, Paragraph 2, Last sentences.
n) Page E.7-2, Paragraph 2, Third sentence.
o) Page E.8-2, Paragraph 2, Third sentence.
p) Page E.8-2, Paragraph 3, second and seventh sentences
q) Page E.8-3, Paragraph 2, Second sentence.
r) Page E.9-1, Paragraph 6, First sentence.
s) Page E.9-2, Paragraph 1, First sentence.
t) Page E.9-2, Paragraph 4, Last sentence.

Section E.1.6. (p.E.1.6)

To be consistent with Section E.1.7. this section should be amended to require that field blank samples be taken as well.

Section E.2.3.2. (p.E.2-2 and 2-3)

Reference is made throughout this section to the disposal of decontamination solutions containing hazardous constituents. LANL requests that this section be clarified to indicate that if the hazardous constituents meet the exclusions found in HWMR-5, Sections 261.3(a)(2)(iii) and 261.3(a)(2)(iv), the liquid may be disposed of as a non-hazardous waste.

Table E.2.3. (p.E.2-12)

The text explaining closure activities requires sampling of washwater prior to decontamination activities, but such a requirement is not listed in this table. Additionally, the text of the permit requires protective clothing washwater be analyzed for hazardous constituents but this requirement is also not

included in the summary table. Most decontamination activities will require washing protective clothing and analyzing the liquid prior to disposal, however, some of the "Sampling Summary" sections have not included this. All closure plans should be consistent.

Section E.3.3.2. (p.3-2)

LANL believes that the first sentence of paragraph 4 should be clarified to state that it is the "surface" rather than the "units" which must be sampled differently depending upon whether the surface is pervious or impervious.

Table E.4.1. (p.4-9)

LANL notes there are inconsistencies and omissions between this table and the actual activities required on p.E.4-2, paragraph 2.

Section E.8.5.3 (p.E.8-2)

The third paragraph of this section requires that for demonstration of final decontamination, soil samples will be analyzed for the parameters in Table E.8.2. This is inconsistent with Table E.8.3 on page E.8-12 which requires that final decontamination samples be analyzed for Appendix IX constituents. LANL requests clarification on which parameters apply.

Section E.4.1. (p.E.4.1)

The maximum inventory of three cubic meters (800 gallons) stored or treated at any one time in the TA-50 incinerator was calculated based on the volume contained in containers and feed tanks. If it is necessary to also include the wastes contained in piping and scrubwater tanks, the figure should be changed to eight cubic meters (2200) gallons).

Section E.9.4. (p.E.9-2)

LANL requests that this paragraph be clarified to indicate when sampling is required both within and outside the containment area.

ATTACHMENT G

LANL requests that the following changes be made to this attachment in order to make it consistent with the changes requested to the Part A application. These changes are requested because after reevaluating the wastes, LANL determined that the

following wastes may be incinerated within the conditions of the permit:

P043	Add T03
P092	Add T03
U005	Add T03
U006	Add T03
U092	Add T03
U123	Add T03
U136	Add T03
U234	Add T03

Additionally, LANL requests that the following waste code amounts and handling codes be added to attachment G:

U248	1000	S01, T03
U249	1000	S01
U326	1000	S01, T03
U353	1000	S01, T03
U359	1000	S01, T03

Based on additional analysis of generation data, LANL also requests the following changes to the amounts of material under the "D" designation:

D003	Change amount to 20,000.
D010	Change amount to 7,500.

ATTACHMENT I

Attachment I is a solid waste stream characterization. EID has no authority to require this characterization nor to impose a schedule for doing so. The HWMR regulations at 262.11 require generators to determine if their wastes are hazardous. There is no requirement for an over-all solid waste stream characterization. As presently drafted, the additional data submittal would require a tremendous amount of time and personnel to verify such waste streams as cafeteria trash and office waste. Such requirements are totally outside the purview of this permit.

Furthermore, the determination of whether wastes are hazardous is a generator requirement, enforcible under Part 262 and is improperly included in the permit. Permits ought to deal exclusively with the operational requirements for treatment, storage, and disposal facilities. Additionally, it is highly impractical to include the plan in the permit because changes to the plan or additional characterization may require permit modification. Waste stream analysis is an ongoing responsibility and must adapt to the changing circumstances at LANL.

Nevertheless, LANL believes that it would be useful to better define waste streams in a more comprehensive manner. LANL therefore proposes to be bound by a solid waste stream characterization plan, seperate and apart from the permit. A necessary component of this plan would be to require generators to characterize, via a waste profile sheet, all wastes that could potentially contain a hazardous waste or constituent. This would eliminate the need for annual verification as required in Section II.C.4. because verification would be obtained continually. The proposed plan will be submitted under separate cover.

ATTACHMENT J

Attachment J, in its present form, covers matters which are outside the jurisdiction of EID and should be deleted from the permit. Section 74-4-3H NMSA 1978 states that source, special nuclear or by-product material as defined in the Atomic Energy Act are not solid wastes and therefore cannot be hazardous wastes. Such materials may not be regulated by EID under the Hazardous Waste Act. Throughout Attachment J there are references to procedures, equipment, and personnel which are specifically and solely related to the proper control and management of radioactive materials. Clearly, these matters are improperly included in the hazardous waste permit and should be deleted. In lieu of the present Attachment J, the Laboratory has prepared a substitute Attachment (Exhibit 4) which addresses incinerator operational safety with regard to hazardous wastes. LANL requests that this document be substituted for Attachment J in the draft permit.

ATTACHMENT J TO
DRAFT PERMIT

INCINERATOR OPERATIONAL SAFETY

PERMIT ATTACHMENT J

NM0890010515-1

ATTACHMENT J

INCINERATOR OPERATIONAL SAFETY

J.1 LIMITING CONDITIONS FOR PROCESS OPERATION

J.1.1 Objective

To ensure safety and protection of the environment, the CAI process operations will be conducted within the limits listed herein and the following equipment, as appropriate to the activities, must be operating or available before process operations can be conducted.

J.1.2 Process Feed Preparation

J.1.2.1 Plant Utilities

Electrical service (normal and auxiliary generator in 10-second standby mode); compressed air (designated and standby compressors); and building fire protection systems (the main water supply is integral to the supply for the wet- and dry-pipe fire sprinkler systems) must be available. Prior to operations in the liquid feed preparation area, the special HALON® fire protection system must be available. Process area HEPA filtered ventilation system must be operating.

J.1.2.2 Radiation protection and plant instrumentation

The alpha continuous air monitor (CAM) must be operating and portable monitors (alpha and beta/gamma) on hand during the MEGAS and X-ray examination of radioactive waste feed packages. The glovebox mounted alpha hand monitors must be operating and portable monitors (alpha and beta/gamma) on hand or available in the office of the HPT during glovebox operations. Prior to liquid waste operations, a survey of the ambient air in the Liquid Feed Preparation Room must be made, and instruments for measuring combustibles and oxygen concentrations at hand during preparation of volatile liquids.

J.1.2.3 Personnel

At least two persons must be present during any feed preparation operations. A Health Physicist (HP) or HPT must also be available on-site during preparations for radioactive feed and incinerator operations and present during any operations involving Zone 1 containment penetration. The HP or HPT may be on call during operations involving non-radioactive waste.

J.1.3 Low-Temperature Check-Out Operations for the CAI

At low temperatures (below 500^{0}F) the following are required:

J.1.3.1 Equipment

In addition to the minimum equipment requirements listed in J.1.2 above, low temperature operations for instrumentation and equipment checkout and calibration require the following.

J.1.3.2 Utilities

Liquid (diesel oil) and/or fuel gas (natural gas) supply systems; auxiliary cooling water system uninterruptable power supply (UPS); and instrument and control air supply (designated and standby compressors).

J.1.3.3 Equipment in the CAI

Quench column pumps and sprays; incinerator-induced draft (ID blower or automatic crossover to the HEPA filter plenum in building exhaust); process offgas HEPA filter banks.

J.1.3.4 Instrumentation

All instrument and control panels must be on and operating. Prior approval of the Section Leader for Technical Support must be obtained to disable any safety interlock. If any interlocks are disabled, the front of the instrument chassis must be tagged and the interlock identified. An appropriate entry must be made in the Operations Log Book when any interlock is disabled or restored to operational condition.

J.1.3.5 Personnel

At least two persons must be present during operation of the incinerator. These are a shift supervisor and an additional process engineer. An HP or HPT must be available on call.

J.1.4 High-Temperature Operations for the CAI

During incinerator startup for operation at temperatures above 500^{0}F, and in addition to the items listed in J.1.3, the following must be fully functional.

J.1.4.1 Utilities

Auxiliary generator and automatic switchgear (running and ready); primary, secondary, and cooling tower loops and pumps; cooling tower blower(s), depending on the outside and process scrub system temperatures; and the process steam generator with the pre-start interlock satisfied.

J.1.4.2 Equipment in the CAI

Venturi scrubber system; packed-column scrubber system; process liquid filter and recirculation system; off-gas superheater; and induced draft blower.

J.1.4.3 Instrumentation

All of the process controls and interlocks listed in the Second Edition of the Final Safety Analysis Report must be operable. No interlocks shall be disabled.

J.1.4.4 Personnel

Personnel requirements are the same as for low temperature operation as in 1, above.

J.1.5 Waste Feed Operations

In addition to the above, the following are required for waste feed operations:

J.1.5.1 Utilities

Waste feeding will be terminated when the primary electrical supply system is lost. The loss of the primary water supply system initiates a controlled shutdown of the incinerator.

J.1.5.2 Radiation protection and plant instrumentation

The alpha continuous air monitor (CAM) must be operating and portable monitors (alpha, beta/gamma, and neutron) on hand or available in the office of the HPT. The neutron area monitors at the lower chamber ash removal quench/absorber columns area and at the process/building sump tanks liquid filter glovebox area must be operating.

J.1.5.3 Equipment

During incinerator waste feed operations, all equipment specified in the previous sections must be fully operational. Waste feed operations shall cease until discrepancies are corrected.

Incinerator in radioactive waste operations - The temperature in the lower incinerator chamber may not be less than 1000°F nor greater than 2500°F; the temperature in the upper incinerator chamber may not be less than 1500°F nor greater than 2500°F.

Incinerator in chemical operations for mixed waste and hazardous/toxic waste - The EPA permit for incineration of polychlorinated byphenyls and the NMEID permit for incineration of RCRA-listed and characteristic wastes specify minimum operating temperatures higher than the above listed minimum temperatures but less than the maximum listed temperatures. Also specified in the permits are minimum oxygen percentage in the incinerator exhaust gas, maximum carbon monoxide/carbon dioxide ratios, and maximum waste feed rates. These parameters are specified in Permit Module V for RCRA waste.

J.1.6 Process Off-gas Treatment

The following are required for process off-gas treatment.

J.1.6.1 Equipment

Gas stream exit temperature from the quench column not greater than 250°F; gas stream exit temperature from the packed column scrubber not greater than 180°F; gas stream inlet temperature to the process HEPA filters not greater than 250°F; scrubber solution temperature not greater than 180°F.

J.1.6.2 Personnel

In addition to the shift supervisor and process engineer, operations personnel shall be assigned to each shift as required to meet programmatic goals of the incinerator run plan. An HP or HPT shall be present during radioactive waste feed operations. An HP or HPT, as specified in agreement with HSE-1, shall be on site or on call during non-radioactive waste incineration operations.

J.1.7 Basis

Basis for the limiting conditions for process operations is the 1979 AL/OSD Facility and Process Operational Safety Review and subsequent approval of the Operational Safety Requirements, the TDF Quality Assurance Manual which includes requirements for reviews by the TDF experiment safety

committee and design committee, and AR 1-8, Working Alone, in the Health and Safety Manual, Chapter 1 of the Laboratory Manual.

J.2 DESIGN FEATURES

J.2.1 Construction

Except for the Office Addition, the TDF is constructed, of precast, prestressed, pretensioned concrete double "Tee" sections. The exterior walls are load bearing and are interior insulated. All sections contain weldments to provide connection of the reinenforcing steel between adjacent panels, floors and roof decks. The interior load bearing walls are of filled concrete block construction. Non-load bearing walls are of metal stud and gypsumboard construction. The building shell is designed to remain as a confinement structure in all but a beyond design basis accident (BDBA).

Building design loads used were in accordance with ANSI Standard A58.1; 1972, and the Uniform Building Code for Earthquake Zone 2, 100 mph wind with a 100 year mean recurrence interval, Exposure B, and roof loads determined for 30 psf snow in addition to the ANSI Standard dead loads.

J.2.2 Fire Protection

The facility is designed for one hour Fire Code resistance with wet pipe sprinklers in all heated areas except the chemical storage area and the liquid feed preparation area. Antifreeze and dry pipe systems are installed in unheated areas to meet or exceed DOEM 0552 minimum requirements for "Improved Risk" level of protection.

The CAI process area exhaust duct to the facility main HEPA filter plenum contains a dry pipe water spray cooldown system upstream of the plenum. The plenum contains a mist eliminator/fire screen upstream of the filter banks. The main HEPA filter plenum has a dry pipe sprinkler system and the Bay 2 exhaust HEPA filter plenum contains an antifreeze sprinkler system. The chemical storage area contains a deluge fire sprinkler system and the liquid feed preparation area contains a HALON® 1301 fire protection system.

J.2.3 Ventilation System

Three levels of containment with appropriate ventilation are provided. The four resulting zones are separated from each other by physical barriers and/or pressure gradients. All air exhausted from the process areas of the facility and the radioactive and chemical storage/staging bay is not less than double HEPA filtered before release from the facility stack. The stack is continuously sampled for radioactivity. The ventilation supply and exhaust blowers are interlocked with the fire alarm system. A fire alarm initiates shutdown of these blowers to reduce oxygen available to a fire. Likewise, the liquid feed preparation area inlet air supply louvers and the ventilation exhaust blowers are interlocked with the fire alarm and the HALON® system to isolate the room before the extinguishing medium is discharged.

J.2.4 Liquid Effluents

Except for the sanitary sewer system, all liquid effluents from the facility and the process are collected in sumps and transferred through the double contained and monitored radioactive waste line to the Industrial Waste Treatment Facility.

J.2.5 Utilities

The TCF has a diesel powered auxiliary generator and automatic switchgear that, when on standby mode, will supply electrical power to critical equipment and communications and lighting to critical areas within 10 seconds of a power failure. In the running and ready mode used during all incinerator operations, the transfer time is less than 1 second. A battery powered UPS system provides power to the instrumentation and controls if the auxiliary generator and standard power are lost.

Designated and backup air compressors, powered from both the line and auxiliary sources provide power to the pneumatic process devices. These compressors are backed up by compressed gas (nitrogen) bottles.

J.2.6 Process

The CAI Process has a number of engineered safeguards.

J.2.6.1 Fire Protection Systems

In addition to the facility wet pipe, antifreeze filled, deluge, and dry pipe sprinkler systems, the process has several engineered fire protection systems.

The liquid feed preparation room has a HALON® 1301 system fire protection system also initiated by UV detectors, temperature sensors, or manual pull station. The air supply louvers and exhaust blowers are interlocked with to isolate the room prior to the HALON release.

The chemical storage area deluge sprinkler system is provided with a Fire Department connection for the addition of foam fire suppressant from a tanker truck.

The blowers supplying and exhausting air from the CAI process area and the waste storage/staging area are shut down upon the initiation of a fire alarm to limit the oxygen available to a fire.

The floor drains in the CAI process and support areas and the sump in the radioactive waste storage area are connected to the facility sump tank in the pit in Room 112. This tank discharges to the double contained and instrumented industrial waste water pipe line to the treatment plant at TA-50, Building 1. Fire water from the CAI process and support area sprinkler systems is collected by the floor drains. The radioactive waste storage area fire water is collected in a floor sump and is pumped to the facility sump tank. This sump is provided with an overflow drain to one of the chemical storage area sumps in the event sprinkler flow in this room exceeds the pump capacity. Fire sprinkler water in Bay 2 and the main HEPA filter plenum system flows through floor drains and directly into the industrial waste line to the treatment plant.

There are no floor drains in the bermed liquid feed preparation area. The chemical storage area is provided with sumps with sufficient volume to contain the entire contents of the storage containers and not less than thirty minutes of the deluge sprinkler system flow.

J.2.6.2 Liquid Blend/Feed System

Except for transferring liquids from the shipping containers to the waste feed tanks, which require hands on operations, the liquid blend/feed station operations are performed from the control panel outside the liquid feed enclosure. Selected controls and instrument readouts are also located at the incinerator main control panel and the liquid burner station on the incinerator.

J.2.3.3 Incinerator Controls and Interlocks

Incinerator startup and operation are automatically controlled and the systems are interlocked to prevent unsafe operation. Three shutdown modes (controlled, fast, and scram) with automatic and/or manual initiation are provided to assure safe shutdown of the process. Both visible and audible alarms are provided.

J.2.6.3.1 Pre-Ignition Interlocks

Incinerator startup is prevented if faults are detected in the incinerator negative pressure, burner fuel supplies, and origin cleaning and cooling systems.

J.2.6.3.2 Startup Controls

A sequential timer controls air purge, pilot ignition, burner ignition, and flame failure shutdown.

J.2.6.3.3 Temperature Controllers

After startup, the incinerator is brought to temperature manually or automatically with a programmable set point generator. In the run mode, incinerator temperatures are maintained at set levels by temperature controllers.

J.2.6.3.4 Waste Feed Interruption and Cut-off Interlocks

During operation, certain fault conditions require that liquid and solid waste feed be interrupted. In the case of solid waste feed, the loading cycle timer is disabled and the ram feeder is placed into stand-by mode. An interruption of liquid waste feed involves an instantaneous feed cut-off by closing a solenoid shutoff valve on the liquid waste feed line.

J.2.3.3.5 Shutdown Controls

The detection of certain faults in the process equipment controls and interlocks will initiate one of three logic sequences (controlled, fast, and scram) provided to shut down the process in a safe and orderly manner as dictated by the nature and potential consequences of the fault.

J.3 ADMINISTRATIVE CONTROLS

J.3.1 Responsibilities

Ultimate safety of the TDF operations lies with the HSE Division Leader, who appoints personnel to be responsible for the daily operation of the facility. These responsibilities include overseeing all engineering functions associated with maintenance and modifications of the building and operating, maintaining, and modifying the CAI Process.

J.3.2 Training

Training requirements for personnel assigned to the incinerator operations are delineated in Permit Attachment C.

J.3.3 Other Controls

The TDF process areas have stations available at the exits and hallway for personnel to monitor themselves. Employees are responsible for monitoring their hands and feet before leaving the process areas. The Technical Support Section maintains an emergency plan that is reviewed annually and updated as changes occur. Each employee assigned to the TDF has a copy of the emergency plan.

J.3.4 Internal Safety Review Systems

HSE-7 maintains a safety committee and appoints a safety officer to oversee safety functions of the group. The safety committee performs routine safety inspections in all HSE-7 facilities. A representative of HSE-3, Safety, is an ad hoc member.

The Technical Support Section maintains a quality assurance (QA) program and a QA manual for the CAI Process. Process modifications are evaluated for QA requirements, which are implemented as required on both section-fabricated and purchased equipment. The section also employs engineering peer review through the Design Review Committee and the Safety Review Committee.

J.3.5 Documentation of Operating Procedures

J.3.5.1 Operating manual

An Operating Manual for the CAI Process is maintained at the TDF. This Manual is reviewed and updated as required. Each person assigned to TDF operations receives a copy of the manual. Manual contents are as follows:

1. Technical Support Section Organization
2. Operational Safety Requirements (OSRs)
3. Standard Operating Procedures (SOPs)
4. The TDF Emergency Plan
5. Facility Description
6. Facility Operating Instructions (OIs)
7. Process Description
8. Process Operating Instructions (OIs)
9. Utilities Operating Instructions (OIs)

J.3.5.2 Standard Operating Procedures

Standard operating procedures (SOPs) are in effect for operations in the TDF are specified in AR 1-3 in the Health and Safety Manual. These documents are submitted for review and approval by the HSE Division SOP Committee. The Technical Support Section reviews them at least annually and submits updates and changes to the SOP Committee for review and approval.

J.3.5.3 Special Work Permits

A special work permit (SWP) must be obtained prior to conducting potentially hazardous activities not covered by an SOP. The building manager reviews and approves SWPs. The appropriate disciplines in Facility Engineering (ENG-5), Radiation Safety (HSE-1), Industrial Safety (HSE-3), and Industrial Hygiene (HSE-5) also review the SWPs.

J.3.5.4 Operating Instructions

J.3.5.4 Operating Instructions

Operating Instructions (OIs) are the detailed process equipment operating procedures and check lists required to safely start, operate, and shutdown the mechanical equipment, CAI process equipment, and utilities. Members of the section's engineering staff write the OIs. They are submitted for peer review in the section. The OIs are revised as operational requirements change.

ATTACHMENT J TO
FINAL PERMIT AS ISSUED

ATTACHMENT J

INCINERATOR OPERATIONAL SAFETY

J.1 LIMITING CONDITIONS FOR PROCESS OPERATION

J.1.1 Objective

To ensure safety and protection of the environment, the CAI process operations will be conducted within the limits herein, and the following equipment, as appropriate to the activities, must be operating or available before process operations can be conducted.

J.1.2 Process Feed Operation

J.1.2.1 Plant Utilities

Electrical service (normal and auxiliary generator in 10-second standby mode); compressed air (designated and standby compressors); and building fire protection systems (the main water supply is integral to the supply for the wet- and dry-pipe fire sprinkler systems) must be available. Prior to operations in the liquid feed preparation area, the special HALON[R] fire protection system must be available. The process area HEPA filtered ventilation system must be operating.

J.1.2.2 Plant Instrumentation

Prior to liquid waste operations, a survey of the ambient air in the Liquid Feed Preparation Room must be made, and instruments for measuring combustibles and oxygen concentrations must be at hand during preparation of volatile liquids.

J.1.2.3 Personnel

At least two persons must be on hand during any feed preparation operations.

J.1.3 Low-Temperature Check-Out Operations for the CAI

At low temperatures (below 500°F) the following are required:

J.1.3.1 Equipment

In addition to the minimum equipment requirements listed in J.1.2 above, low temperature operations for instrumentation and equipment checkout and calibration require the following:

J.1.3.2 Utilities

Liquid (diesel oil) and/or fuel gas (natural gas) supply systems; auxiliary cooling water system; uninterruptable power supply (UPS); and instrument air supply (designated and standby compressors).

J.1.3.3 Equipment in the CAI

Quench column pumps and sprays; incinerator induced draft (ID blower or automatic crossover to the HEPA filter plenum in building exhaust); process off-gas HEPA filter banks.

J.1.3.4 Instrumentation

All instrument and control panels must be on and operating. Prior approval of the Section Leader for Technical Support must be obtained to disable any safety interlock. If any interlocks are disabled, the front of the instrument chassis must be tagged and the interlock identified. An appropriate entry must be made in the Operations Log Book when any interlock is disabled or restored to operational condition.

J.1.3.5 Personnel

At least two persons must be present during operation of the incinerator. These are a shift supervisor and an additional process engineer.

J.1.4 High-Temperature Operations for the CAI

During incinerator startup for operation at temperatures above 500°F, and in addition to the items listed in J.1.3, the following must be fully functional:

J.1.4.1 Utilities

Auxiliary generator and automatic switchgear (running and ready); primary, secondary, and cooling tower loops and pumps; cooling tower blower(s) (depending on the outside and process scrub system temperatures); and the process steam generator with the pre-ignition interlock satisfied.

J.1.4.2 Equipment in the CAI

Venturi scrubber system; packed-column scrubber system; process liquid filter and recirculation system; off-gas superheater; and induced draft (ID) blower.

J.1.4.3 Instrumentation

All of the process controls and interlocks listed in the Second Edition of the Final Safety Analysis Report must be operable. No interlocks shall be disabled.

J.1.4.4 Personnel

Personnel requirements are the same as for low temperature operations.

J.1.5 Waste Feed Operations

In addition to the above, the following are required for waste feed operations:

J.1.5.1 Utilities

Waste feed will be terminated if the primary electrical supply system is lost. The loss of the primary water supply system initiates a controlled shutdown of the incinerator.

J.1.5.2 Equipment

During incinerator waste feed operations, all equipment specified in the previous sections must be fully operational. Waste feed operations shall cease until any discrepancies are corrected.

The NMEID permit for incineration of RCRA-listed and characteristic wastes specifies minimum operating temperatures, minimum percent oxygen in the secondary chamber, maximum carbon monoxide levels in the off-gas, maximum feed rates, and other parameters for hazardous waste feed operations. These parameters are detailed in Permit Module V for RCRA waste.

J.1.6 Process Off-gas Treatment

The following are required for off-gas treatment:

J.1.6.1 Equipment

Gas stream exit temperature from the quench column not greater than 350°F; gas stream exit temperature from the packed-column scrubber not greater than 180°F; gas stream inlet temperature to the process HEPA filters not greater than 250°F; scrubber solution temperature not greater than 180°F.

J.1.6.2 Personnel

In addition to the shift supervisor and process engineer, operations personnel shall be assigned to each shift as required to meet programmatic goals of the incinerator run plan.

J.1.7 Basis

Basis for limiting conditions for process operations is the 1979 AL/OSD Facility and Process Operational Safety Review and subsequent approval of the Operational Safety Requirements, the Technical Development Facility (TDF) Quality Assurance Manual (which includes requirements for reviews by the TDF experiment safety committee and design committee), and Administrative Requirement 1-8 of the Los Alamos Health and Safety Manual, Chapter 1.

J.2 DESIGN FEATURES

J.2.1 Construction

Except for the office addition, the TDF is constructed of precast, prestressed, pretensioned concrete double-"Tee" sections. The exterior walls are load bearing and are

interior insulated. All sections contain weldments to provide connection of the reinforcing steel between adjacent panels, floors, and roof decks. The interior load bearing walls are of filled concrete block construction. Non-load bearing walls are of metal stud and gypsumboard construction. The building shell is designed to remain as a confinement structure in all but a beyond design basis accident (BDBA).

Building design loads used were in accordance with ANSI Standard A58.1; 1972, and the Uniform Building Code for Earthquake Zone 2, 100 mph wind with a 100 year mean recurrance interval, Exposure B, and roof loads determined for 30 psf snow in addition to the ANSI Standard dead loads.

J.2.2 Fire Protection

The facility is designed for one hour Fire Code resistance with wet pipe sprinklers in all heated areas, except for the chemical storage area and the liquid feed preparation area. Antifreeze and dry pipe systems are installed in unheated areas to meet or exceed DOEM 0552 minimum requirements for "Improved Risk" level of protection.

The CAI process area exhaust duct to the facility main HEPA filter plenum contains a dry pipe water spray cooldown system upstream of the plenum. The plenum contains a mist eliminator/fire screen upstream of the filter banks. The main HEPA filter plenum has a dry pipe sprinkler system and the Bay 2 exhaust HEPA filter plenum contains an antifreeze sprinkler system. The chemical storage area contains a deluge fire sprinkler system and the liquid feed preparation area contains a HALON^{R} 1301 fire protection system.

J.2.3 Ventilation System

Three levels of containment with appropriate ventilation are provided. The four resulting zones are separated from each other by physical barriers and/or pressure gradients. All air exhausted from the process areas of the facility and the waste storage/staging bay is not less than double HEPA filtered before release from the facility stack. The ventilation supply and exhaust blowers are interlocked with the fire alarm system. A fire alarm initiates shutdown of these blowers to reduce the amount of oxygen available to a fire. Likewise, the liquid feed preparation area inlet air supply louvers and the ventilation exhaust blowers are interlocked with the fire alarm and the HALON^{R} system to isolate the room before the fire extinguishing medium is discharged.

J.2.4 Liquid Effluents

Except for the sanitary sewer system, all liquid effluents from the facility and the process are collected in sumps and are transferred through the double-contained and monitored radioactive waste line to the Industrial Waste Treatment Facility.

J.2.5 Utilities

The TDF has a diesel powered auxiliary generator and automatic switchgear which, when on standby mode, will supply electrical power to critical equipment, as well as communications and lighting to critical areas, within 10 seconds of a power failure. In

the running and ready mode used during all incinerator operations, the transfer time is less than one second. A battery powered Uninterruptable Power Supply (UPS) system provides power to the instrumentation and controls if the auxiliary generator and line power are both lost.

Designated and backup air compressors, powered from both the line and auxiliary sources, provide instrument air to the pneumatic process devices. These compressors are backed up by compressed gas (nitrogen) bottles.

J.2.6 Process

The CAI has a number of engineered safeguards:

J.2.6.1 Fire Protection Systems

In addition to the facility wet pipe, antifreeze filled, deluge, and dry pipe sprinkler systems, the process has several engineered fire protection systems:

The liquid feed preparation room has a HALON^R 1301 fire protection system, also initiated by UV detectors, temperature sensors, or manual pull station. The air supply louvers and exhaust blowers are interlocked with the alarm system to isolate the room prior to the HALON^R release.

The chemical storage area deluge sprinkler system is provided with a Fire Department connection for the addition of foam fire suppressant from a tanker truck.

The blowers supplying and exhausting air from the CAI process area and the waste storage/staging area are shut down upon the initiation of a fire alarm, to limit the oxygen available to a fire.

The floor drains in the CAI process and support areas and the sump in the radioactive waste storage area are connected to the facility sump tank in pit in Room 112. This tank discharges to the double contained and instrumented industrial waste water pipe line to the treatment plant at TA-50, Building 1. Fire water from the CAI process and support area sprinkler systems is collected by the floor drains. The radioactive waste storage area fire water is collected in a floor sump and is pumped to the facility sump tank. This floor sump is provided with an overflow drain to one of the chemical storage area sumps in the event that sprinkler flow in this room exceeds the pump capacity. Fire sprinkler water in Bay 2 and the main HEPA filter plenum system flows through floor drains and directly into the industrial waste line to the treatment plant.

There are no floor drains in the bermed liquid feed preparation area. The chemical storage area is provided with sumps of sufficient volume to contain the entire contents of the storage area containers and not less than thirty minutes of the deluge sprinkler system flow.

J.2.6.2 Liquid Blend/Feed System

Except for the transferring of liquids from the shipping containers to the waste feed tanks (which requires hands-on operations), liquid blend/feed station operations are performed from the control panel outside the liquid feed enclosure. Selected controls and

instrument readouts are also located at the incinerator main control panel and the liquid burner station at the incinerator.

J.2.6.3 Incinerator Controls and Interlocks

Incinerator startup and operation are automatically controlled and the systems are interlocked to prevent unsafe operation. Three shutdown modes (controlled, fast, and scram), with automatic and/or manual initiation, are provided to ensure safe shutdown of the process. Both visible and audible alarms are provided for fault indication.

J.2.6.3.1 Pre-Ignition Interlocks

Incinerator startup is prevented if faults are detected in the incinerator negative pressure, burner fuel supplies, and off-gas cleaning and cooling systems.

J.2.6.3.2 Startup Controls

A sequential timer controls air purge, pilot ignition, burner ignition, and flame failure shutdown.

J.2.6.3.3 Temperature Controllers

After startup, the incinerator is brought to temperature manually or automatically by a single station microprocessor-based controller. In the run mode, incinerator temperatures are maintained at set levels by temperature controllers.

J.2.6.3.4 Waste Feed Interruption and Cut-Off Interlocks

During operation, certain fault conditions require that liquid and solid waste feed be interrupted. In the case of solid waste feed, the loading cycle timer is disabled and the ram feeder is placed into standby mode. Liquid waste feed is instantaneously interrupted by closing of a solenoid shutoff valve on the liquid waste feed line.

J.2.6.3.5 Shutdown Controls

The detection of certain faults in the process equipment controls and interlocks will initiate one of three logic sequences (controlled, fast, or scram) provided to shut down the process in a safe and orderly manner, as dictated by the nature and potential consequences of the fault.

J.3 ADMINISTRATIVE CONTROLS

J.3.1 Responsibilities

Ultimate safety of the TDF operations lies with the HSE Division Leader, who appoints personnel to be responsible for the daily operation of the facility. These responsibilities include oversight of all engineering functions associated with maintenance and modifications of the building and with operating, maintaining, and modifying the CA process.

J.3.2 Training

Training requirements for personnel assigned to the incinerator operations are delineated in Permit Attachment C.

J.3.3 Other Controls

The Technical Support Section maintains an emergency plan that is reviewed annually and updated as changes occur. Each employee assigned to the TDF has a copy of the emergency plan.

J.3.4 Internal Safety Review System

HSE-7 maintains a safety committee and appoints a safety officer to oversee safety functions of the group. The safety committee performs routine safety inspections of all HSE-7 facilities. A representative of HSE-3, Industrial Safety, is an ad hoc member.

J.3.5 Documentation of Operating Procedures

J.3.5.1 Operating Manual

An Operating Manual for the CAI process is maintained at the TDF. This manual is reviewed and updated as required. Each person assigned to TDF operations receives a copy of the manual. Manual contents are as follows:

1. Technical Support Section Organization
2. Operational Safety Requirements (OSRs)
3. Standard Operating Procedures (SOPs)
4. The TDF Emergency Plan
5. Facility Description
6. Facility Operating Instructions (OIs)
7. Process Description
8. Process Operating Instructions (OIs)
9. Utility Operating Instructions (OIs)

J.3.5.2 Standard Operating Procedures

Standard Operating Procedures (SOPs) are in effect for operations in the TDF, as specified in Administrative Requirement 1-3 of the Los Alamos Health and Safety Manual. The Technical Support Section reviews all SOPs at least annually and submits updates and revisions to the HSE Division SOP Committee for review and approval.

J.3.5.3 Special Work Permits

A Special Work Permit (SWP) must be obtained prior to conducting potentially hazardous activities not covered by an SOP. The building manager reviews and approves SWPs. The appropriate disciplines in Facility Engineering (ENG-5), Radiation Safety (HSE-1), Industrial Safety (HSE-3), and Industrial Hygiene (HSE-5) also review the SWPs.

J.3.5.4 Operating Instructions

Operating Instructions (OIs) are the detailed process equipment operating procedures and check lists required to safely start, operate, and shut down the CAI process, utilities, and other mechanical equipment. Members of the section's engineering staff write the OIs, which are then submitted for peer review within the section. The OIs are revised as operational requirements dictate.

From :

Dec. 20. 1989 11:05 AM P01

DOE F 1325.7
(8-80)

Exception to SF 14, Approved by NARS, June 1978

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FTS 855-4504

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FTS 843-5288

FAX 827-2836

Date: 12/20/89

To: Dr. Kirk Jones
Mr. Jack Ellvinger
Dr. Elizabeth Gordon, NMEID

Phone #: 827-2934

From: Dr. Paul Schumann, DOE/LAAO

Phone #: ~~667-5288~~

Number of Pages to Follow: 1

Attached for your information is a copy of our press release regarding the permit appeal. We received authorization to proceed from our AL office late Monday, and are filing the formal petition for a limited review of the record to the EIB sometime this afternoon. I will forward a courtesy copy as soon as I can; note that only the issues we discussed last Wednesday are being raised. We are not requesting a hearing nor introducing new evidence.

Please be aware that DOE and LANL staffs are visiting the Congressional staffs and media offices today to provide copies of this information; therefore it is possible you may receive independent inquiries from the press or others.

I wish to continue our discussions regarding monitoring alternatives soon after the holidays, if possible.

DOE NEWS

FOR IMMEDIATE RELEASE
December 20, 1989

DOE REQUESTS LIMITED REVIEW OF LANL WASTE MANAGEMENT PERMIT

- The U. S. Department of Energy and the University of California, which operates the Los Alamos National Laboratory, have filed an administrative appeal with the New Mexico Environmental Improvement Board requesting review of a limited section of the Hazardous Waste Facility Permit issued by the State Environmental Improvement Division to the Laboratory on November 20.

- The hazardous Waste Facility Permit is about 400 pages long and governs all aspects of hazardous waste storage and treatment at the Lab. The portion requested to be reviewed involves three provisions concerning radioactive waste. The EIB is not being asked to review any other portions of the document which have been accepted by the DOE and University of California.

- At issue is the New Mexico Environmental Improvement Division's authority to regulate radioactive waste and set certain standards for categorizing such waste and monitoring radioactive emissions from the controlled air incinerator at Los Alamos National Laboratory.

- The Atomic Energy Act mandates that the DOE regulate specified radioactive materials and wastes generated by federal defense facilities.

FOR MORE INFORMATION REGARDING THE APPEAL TO THE STATE ENVIRONMENTAL IMPROVEMENT BOARD, CONTACT DOE COUNSEL JOYCE LARSER, 505/667-4667.

- The DOE and University of California share the concern of the public and the Environmental Improvement Division concerning the safe operation of the controlled incinerator. Los Alamos scientists are currently developing an alternative system to the one proposed by the EID for monitoring radioactive emissions from the controlled air incinerator.

- The EID system involves monitoring emissions in the exhaust stack. The Lab's proposed system would measure radioactivity in the exhaust gas before it reaches the stack. If measurements revealed elevated levels of radioactivity, the incinerator would be temporarily shut down and the radioactive particulates would be contained in the filter system instead of being release into the environment.

FOR MORE INFORMATION ABOUT THE LAB'S PROPOSED MONITORING SYSTEM, CONTACT LANL PUBLIC AFFAIRS, 505/667-7000 OR DOE PUBLIC AFFAIRS, 505/845-6938.

AL 89-0023 - DOE -

December 12, 1989 Jack Boyd

Environmental Improvement Division
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, N.M. 87503

RECEIVED
DEC 15 1989
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

To Members of the Environmental Board,

As a citizen of Santa Fe County, I would appeal your decision to grant a hazardous waste incineration permit to Los Alamos National Labs under HWMR-5- Sect. 902 G.

I have not only read the Los Alamos comments and the EID's responses but have also attended both the EID and EPA hearings in Santa Fe.

You obviously have little regard for Mr. Richardson's amendment for a moratorium on burning. Otherwise, why not wait until new guidelines and standards are in place and met before issuing a permit?

I was also very sorry to see in the 16 page response to comments that there were virtually NO Permit Modifications made due to any of the comments by the public.

Also under Comments from LANL (#60), it would seem that here LANL is objecting to meeting <u>any</u> State standards with their incinerators. It states that the EID has the authority to enforce violations but does not know if it <u>would</u> under this permit. Perhaps both the EID and LANL would side step the issue of whether there ARE any violations of State standards. If there are any violations, it seems clear that neither the EID or LANL wants any responsibility for them. Isn't it the job of the EID to insure safety and environmental standards to the public?

I also find objectionable is the recent nomination of Vernon Kerr to the EIB. As we all know, Mr. Kerr was not only an employee of LANL but has come out publicly against anti-Wipp activists calling them "nuclear weenies". Could he really be counted on to make a fair decision concerning LANL or Wipp? More than likely there is a serious conflict of interest here.

The new policy of the EID to not allow access to records by the media is intolerable. Do you have something to hide? Clearly the recent articles in the Santa Fe Reporter on Lee Acres, etc. were very alarming but if the EID (or LANL) wants to work with the public in solving their many problems; they will need to be open and honest.

I sincerely hope the Board will go slowly as Mr. Richardson has proposed and take the time for careful consideration and review; ultimately leading to a reversal of the decision to grant this permit. It is something that will effect us all for a long time. In this case, it is <u>just</u> what we can't see that will hurt us.

Thank you,

Barbara Jaramillo
5 Pinon Lane
Pojoaque, NM 87540

Please see that a response is provided. ← Kirk J. — RM R

Dec. 1, 1989

Richard Mitzelfelt, Director, N.M. E.I.D.,

As a citizen of New Mexico,concerned with the E.I.D.'s issuing of a hazardous waste permit to Los Alamos National Laboratory on Nov. 8,1989, I would like to thank you for sending me your package of information . I appreciate this gesture and found it informative. However, I would like to appeal the decision to issue the above permit to L.A.N.L. (in accordance with HWMR-5).

This is a petition for review-after reviewing the information sent from the E.I.D., I feel several issues have not been sufficiently addressed with regard to public health and saftey as well as regulations of the chemical waste burning.

My specific concerns remain- mainly the fact that the E.P.A. cannot regulate mixed wastes or radioactive wastes. I realize the mixed waste issue is forthcoming, however, I feelthat the standards for the chemical waste incineration are not strict enough, and I'm not convinced there won't be mixed wastes being burned - in fact, you admit to such burning at L.A.N.L. for the past 9 years.

Also, the fact that the D.O.E. has the authority to regulate it's radioactive wastes is very unsettling. Since you have an Independent Defense Nuclear Facilities Safety Board , I do not see the necessity of the D.O.E. regulating itself. I find that appalling, and frightening. The D.O.E. has been found negligent in many cases where public health and safety are concerned in defense facilities across the U.S. If the E.I.D. is entrusted with concerns for the health of the public and the environment(they are interconnected), they would move to abolish the D.O.E. self-regulation of radioactive wastes, and set up an independent safety and regulating board. Until the E.I.D. takes a more aggressive approach in protecting the health and environment of New Mexico citizens, they are failing in their role.

In your Response to comments on the Draft Hazardous Waste Permit for L.A.N.L., you mentioned in #35- "the E.I.D. can only enforce the laws and the public must contact the appropriate public officials, since it cannot write laws or promulgate regulations. " In New Mexico, it is generally the E.I.B. which promulgates regulations. Therefore, I am requesting

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that the E.I.B. consider this matter.

I also express concern that a recent E.I.S. has not been done. You state in # 20 of the response comments that the most recent E.I.S. is dated 1973. I realize that an E.I.S. is not required when issuing a RCRA permit(EPA 530-SW-88-018). However, using such a dated E.I.S. by the D.O.E. raises great concern. After sixteen years, surely a much more current E.I.S. is called for.

Thank You for your time,

Sincerely,

Joan Berde
Box 15, Llano,N.M.
87543

xc: Gov. Gary Carruthers,
Santa Fe, N.M.
Sen. Bill Richardson, Washington, D.C.
Kirkland Jones, Dep. Director, E.I.D.
Dept. of Energy- Los Alamos Area Office
Boyd Hamilton, Program Mgr., Hazardous Waste Program
Jack Ellvinger, Chief, Hazardous Waste Bureau
Dr. Mack Sewell, Chief Epidemiology, Health and Environment Dept.

Kirk Jack

Box 29
Ojo Sarco NM 87520
December 9, 1989

EID
Harold Runnels Building
1190 Saint Francis Drive
Santa Fe, N.M. 87503

RECEIVED
DEC 12 1989
EID DIRECTOR'S OFFICE

Good day Richard Mitzelfelt,

I wish to appeal the decision of the hazardous waste operating permit at LANL enacted on November 8th, 1989. I received a copy postmarked Nov. 17th dated November 16th. I do wish for a hearing.

Three issues I see are:

① The figures at sampling stations are inaccurate. The correct place for monitoring would be at the the top of the incinerator.

② Volumes is reduce 100:1 you say. Matter can be neither created nor destroyed. Everything that goes out (in ash or up the the stack or in the slurry) equals that which is burned.

③ The filters are only pieces of paper. Rocky Flats had six in a row. (HNL) has only 3.

Please respond soon. Thank you. Emma Kegiren (Emmy Kegiren)

Box 29
Ojo Sarco, New Mexico 87
December 28, 1987

Environmental Improvement Board
Health and Environment Dept.
1190 Saint Francis Drive
Santa Fe, N.M. 87503

RECEIVED
JAN 2 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

Good day Ms. La Cuesta,

I wish to withdraw my request for an appeal hearing.
Thank you.

Sincerely,
Emmy Koponen
(Emmy Koponen)

MAILGRAM SERVICE CENTER
MIDDLETOWN, VA. 22645
21AM

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4-018411S355002 12/21/89 ICS IPMRNCZ CSP AQBA
1 5058276082 MGM TDRN SANTA FE NM 12-21 0153P EST

HEALTH & ENVIRONMENT DEPT ENVIRONMENTAL
IMPROVEMENT DIV
1190 ST FRANCIS DR RM SOUTH 4100
SANTA FE NM 87503

THIS IS A CONFIRMATION COPY OF THE FOLLOWING MESSAGE:

5058276082 MGMB TDRN SANTA FE NM 74 12-21 0153P EST
ZIP
MISS EMMY KOPORER
BOX 29
OJO SARCO NM 87550
MISS KOPORER:

REGARDING YOUR REQUEST OF THE ENVIRONMENTAL IMPROVEMENT BOARD FOR AN APPEAL HEARING CONCERNING LANL'S INCINERATION PERMIT. WE ARE UNABLE TO PROCEED ON YOUR REQUEST WITHOUT FURTHER INFORMATION.

PLEASE CONTACT THE BOARD'S ATTORNEY, RANDY VAN VLECK AT 827-6070 OR THE BOARD SECRETARY, SWANI LA CUESTA AT 827-2842 NO LATER THAN 500PM TUESDAY, DECEMBER 26, 1989. YOUR PROMPT ATTENTION IS REQUIRED.
TRAVIS DOLLAR
CHAIRMAN
TV:SL

13:52 EST

MGMCOMP

RECEIVED
DEC 1989
EID DIRECTOR'S OFFICE

RECEIVED
DEC 1989
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

TO REPLY BY MAILGRAM MESSAGE, SEE REVERSE SIDE FOR WESTERN UNION'S TOLL - FREE PHONE NUMBERS

New Mexico Health and Environment Department

GARREY CARRUTHERS
Governor

DENNIS BOYD
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

M E M O R A N D U M

To: Swani LaCuesta, EIB

From: Jack Ellvinger, Chief, HWB

Date: December 20, 1989

Re: Transmittal of a Request for the Board's to hold a hearing for the appeal of the Los Alamos Hazardous Waste Permit.

I've attached a letter that was directed to the Division by mistake. It is a request for the Board to hold an appeal hearing on the permit issued by the Division to the Los Alamos National Laboratory. Please provide it to the Board for their consideration.

Thank You.

cc: Gini Nelson, OGC
Elizabeth Gordon, HWB Permits

RECEIVED
DEC 20 1989
OFFICE OF ENVIRONMENTAL
IMPROVEMENT BOARD

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

New Mexico Health and Environment Department

GARREY CARRUTHERS
Governor

DENNIS BOYD
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

December 20, 1989

Ms. Emmy Koporer
Box 29
Ojo Sarco, New Mexico

Dear Ms. Koporer:

The Environmental Improvement Division is in receipt of your request for the Environmental Improvement Board's review of the Director's decision regarding the Los Alamos National Laboratory's Hazardous Waste Permit. The appropriate party this request should have been addressed to is the Environmental Improvement Board, This letter is to inform you that your request is being sent to the Environmental Improvement Board as of this date for their consideration.

If you should have further questions concerning this matter please address them to Ms. Swani LaCuesta at (505) 827-2850. Ms. Lacuesta is the secretary for the Environmental Improvement Board and will be able to inform you of the status of your request.

Sincerely,

Jack Ellvinger
Chief, Hazardous Waste Bureau

cc: Swani LaCuesta, EIB
Gini Nelson, OGC
Elizabeth Gordon, HWB Permits

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.

Kirk Jack

Box 29
C/o Jemez NM 87550
December 9, 1989

EID
Harold Runnels Building
1190 Saint Francis Drive
Santa Fe, N.M. 87503

RECEIVED
DEC 12 1989
EID DIRECTOR'S OFFICE

Good day Richard Mitzelfelt,

I wish to appeal the decision of the hazardous waste operating permit at LANL enacted on November 8th, 1989. I received a copy postmarked Nov. 17th dated November 16th. I do wish for a hearing.

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② Volumes is reduce 100:1 you say. Matter can be neither created nor destroyed. Everything that goes out (in ash or up the the stack or in the slurry) equals that which is burned.

③ The filters are only pieces of paper. Rocky Flats had six in a row. (LANL) has only 3.

Please reconsider. Thank you

Simon Koerner (Jemez...)

State of New Mexico
Environmental Improvement Board
Harold Runnels Building, Room S-4100-1190 St. Francis Drive
Santa Fe, New Mexico 87503
(505) 827-2842

RECEIVED
JAN 08 1990
EID DIRECTOR'S OFFICE

GARREY CARRUTHERS
GOVERNOR

January 8, 1990

Richard Mizelfelt, Director
Environmental Improvement Division
1190 St. Francis Drive, Rm S-4100
Santa Fe, New Mexico 87503

RE: Request for Filing of Record Proper
Los Alamos National Laboratory
Hazardous Waste Facility Permit No. 0890010515-1

Dear Mr. Mitzelfelt:

This will confirm the request made by the Environmental Improvement Board's Administrative Secretary's, Swani LaCuesta, on January 2, 1990. On that date, Ms. LaCuesta requested that you submit copies of the record proper record regarding Los Alamos National Laboratory Hazardous Waste Facility Permit No. 0890010515-1.

The Environmental Improvement Board has received three requests for review of the Environmental Improvement Division Director's decision from the Los Alamos National Laboratory, Joan Berde, and Barbara Jaramillo.

Section 902.G.2 of the Hazardous Waste Management Regulations requires the Board to consider evidence admitted in the record formed at the hearing before the Director or the evidence available to the Director at the time of his tentative decision. The Board will render a decision denying, modifying or sustaining the Directors decision, along with findings and reasons, within sixty days of the appellants requests, and only on those issues raised in the requests for review.

Please respond to this request on or before January 10, 1990 and title it"

"EID's Submission in Respect to
EIB Review of Director's Decision
Los Alamos National Laboratory
Hazardous Waste Facility Permit No. 0890010515-1"

If you have any questions please call the Board Secretary at (505) 827-2842.

Sincerely,

Swani M. LaCuesta

Travis Dollar
Chairman

/sl

RECEIVED
JAN 10 1990
OFFICE OF ENVIRONMENTAL
IMPROVEMENT BOARD

January 10, 1990

EID'S SUBMISSION IN RESPECT TO
EIB REVIEW OF DIRECTOR'S DECISION
LOS ALAMOS NATIONAL LABORATORY
HAZARDOUS WASTE FACILITY PERMIT NO. 0890010515-1

The administration record contains only materials used by the Director in coming to a tentative decision on the controlled air incinerator. The three major divisions within the record are: Pre-hearing, through May 9, 1989; Hearing, May 10, 1989 through 5 p.m., August 24, 1989; Post-hearing periods, after 5 p.m. August 24, 1989 to November 8, 1989, pre-decision period; November 8, 1989, date of Director's tentative decision; November 8, 1989 through November 20, 1989, post-decision period (added for clarification only).

I. Pre-hearing Materials:

A. LANL notes and misc. file (binder 1)

B. Permitting files: 1985 to May 9, 1989 (binder 1)

C. RCRA Part B Applications:

1. Initial, May 1985;
2. Rev. 2, January 1986;
3. Rev. 3, January 1986, as revised November 1986;
4. Rev. 4, November 1987. (all in binder 2)

D. RCRA Trial Burn documents:

1. Response to EPA/NMEID comments of September 13, 1985 on the Los Alamos National Laboratory TA-50 incinerator Trial Burn Plan, Submitted May 1985 (binder 3);

2. Los Alamos Controlled Air Incinerator RCRA Trial Burn Raw Data, December, 1986 (binder 3);

3. RCRA Trial Burn Final Report for the Los Alamos Controlled Air Incinerator, volumes I and II, March 1987 (binders 4 & 5);

4. Review of the RCRA Trial Burn Final Report for the Los Alamos Controlled Air Incinerator, June 1987 (binder 6).

II. Hearing Materials:

A. Permitting files: May 10, 1989 through 5 p.m., August 24, 1989 (includes written comments received on draft permit) (2 volumes, binders 7 & 8);

B. Exhibits from public hearing including the draft permit as EID exhibit no. 3. (two volumes, binders 9 & 10);

C. Enforcement and Inspection Files: Memorandum to file on August 7-11, 1989 inspection (binder 11).

D. Los Alamos National Laboratory Biennial Reports (binder 11).

III. Post-hearing Materials:

A. Permitting files:

1. Pre-decision, from 5 p.m. August 24, 1989 through November 8, 1989;

2. Date of Director's decision, November 8, 1989;

3. Post-decision, November 8, 1989 to November 20, 1989 (binder 12).

B. Materials used in preparing Response to Comments letter and Operating Permit:

1. Notes from transcript and written comments;

2. Notes and checklist used in preparing Operating Permit.

3. Notes and drafts used in preparing Response to Comments (all in binder 13);

C. Operating Permit (binder 14).

Materials not filed at this time, but previously provided to the Environmental Improvement Board, are the volumes of the transcript of the public hearing held July 18-20, 1989. The original volumes of the transcript were given to the Administrative Secretary of the Environmental Improvement Board on December 21, 1989 and they were returned on January 2, 1990.

Gini Nelson
Attorney for EID

January 29, 1990

RECEIVED
JAN 30 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

New Mexico Health and Environment Dept.
Environmental Improvement Board

Re: "EIB Review of Directors Decision LANL Hazardous Waste Facility
Permit # 09900105 15-1

Proposed findings and reasons on issues raised in requests for review.

The main issue in the LANL request for review is the Director's inclusion for the monitoring of radioactivity at the incinerator in three specific cases:

1. Module U, Sect. E (10)
2. Module U, Sect. D (9)
3. Module U, Sect. C (3)

After being granted the permit, LANL states in their petition for review that the Director's decision was arbitrary, capricious and an abuse of discretion but it clearly states in the Hazardous Waste Act (74-4-10.1) that if the facility or site present a substantial hazard to human health or the environment, the Director may require the owner to conduct such monitoring and testing the Director deems reasonable. It also states in Sect 74-4-4.2c in the Hazardous Waste Act that "the Director may issue a permit subject to ANY conditions to protect the human health and environment."

It is the specific duty and responsibility of the Environmental Improvement Division, Board and Director to act in the best interest of the people of New Mexico and to protect their health and environment.

The real problem here is that we can't or won't call a horse a horse. We all know that in fact radioactive materials were burned in Los Alamos but we can't call them hazardous. According to Webster, hazardous means dangerous or risky. Radioactivity is both.

So if in fact the State of New Mexico has no jurisdiction or authority (except in the transportation of) nuclear waste under the Atomic Energy Act of 1954, then perhaps it is time for a new look at that Act and/or a State referendum on nuclear matters in order to allow for a truly democratic decision by the people of New Mexico.

This state does not belong to DOE, LANL or any other entity but the people themselves and it is the purpose of the EIB and its Director to protect them, however necessary.

Barbara Jaramillo Bischoff
5 Piñon Lane, Lamy, NM
87540

FRANCES TYSON
RT 1 BOX
LAS VEGAS, NM 87701

RECEIVED
JAN 24 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

"EIB Review of Director's Decision Los Alamos Laboratory Hazardous Waste Facility Permit No. 0890010515-1"

Attention: Swani LaCuesta, EIB Administrator
Harold Runnels Building, Room S-410
1900 St. Francis Drive, Santa Fe, N.M. 87503

Dear Sirs,

Shut down Los Alamos and fire all those atomic scientists. If scientists are unable to handle nuclear processes and spill radiation all over the place - with clean-up costs estimated at $2 billion, ALL NUCLEAR FACILITIES SHOULD BE SHUT DOWN.

I understand that DoE has managed to radiate American soil equivalent to Rhode Island and Delaware combined. Why go on making nuclear wastes for weapons that cannot be used and the most expensive way to boil water?

One starts to wonder if the NRC, DoE, DoD, Congress and the White House are in the hands of the Mafia for there is no sense in going on producing nuclear anything. In England nuclear facilities have been shut down by The City (London's Wall Street) "The madcap (nuclear) scheme has been stopped in its tracts. Tory friends will not buy nuclear power at any price." (WORLD Watch Magazine, Jan/Feb '90 page 10.)

John Jeavons of Ecology Action of Willits CA was in Mexico where he said, "Recently a group of Soviet scientists analyzed the planet's environmental data. They concluded that unless dramatic c hanges are made, the earth will be uninhabitable in 16 years. This information was taken to scientists in the U.S. They looked at the data and essentially concurred. However, they said that if certain things happened, we would have a little longer - 18 years. This data was then taken to United Nations Environmental Program Officers. They felt the projections were way too pessimistic. They said we have 50 years. All these periods of time are very short." And be it 16 or 50 years, life will become progressively more horrible for everyone. I do not know on what forms of pollution those Russian, US, and UN figures are based, but considering the amount of radiation constantly spilled world over, assuredly this will bring death to our planet. See enclosed article on Dr Alice STewart and "mike notes"

Also attached are copies of 2 Letters to N.Y. TIMES Jan. 9, 1990.

Do NOT put plutonium in the hands of those incompetent men at Los Alamos, and do not tr to move any nuclear wastes around the country. From top to bottom, Americans are inept, drug ridden, and uneducated. Responsibility and kindness are 2 words rather lost from our vocabulary since the advent of TV which promotes sex, violence, greed, trivia, sentimentality and Hollywood garbage.

I urge the EID to promote Amory Lovins' "LEAST COST ENERGY SOLVING THE CO2 problem," - to crash program solar energy - where the jobs are - particularly passive solar energy, and, if you can find any responsible scientists, to develop Hydrogen as a clean fuel of the future. See enclosure from the N.Y. TIMES. Start now promoting the new energy- money-saving light bulbs and super windows. Our foreign competition is turning to energy efficiency and if we stick with the miserable nukes, we will be even further behind in competition. To support the nuclear drain, we have to borrow $150 billion annually so that government checks won't bounce.

The NRC has gone off its rocker when it suggests putting low-level radiation wastes into our general garbage. I urge you to do everything that you can to stop them.

As for the wastes at Los Alamos, would it be possible to line one of those canyons and bulldoze the Los Alamos Labs into it? Then cover it with water-impermiable clay soil and rubberized cloth? I don't know if this could be made safe for 500,000 years - but AT LEAST STOP MAKING NUCLEAR WASTES NOW.

Sincerely Frances Tyson, Vassar '34 Economics major. January 20 - 1990

Frances Tyson (Mrs. C. Wesley Tyson)

"A nuclear submarine? A fancier heliocopter? Americans can't even make a plunger to unplug a toilet bowl pipe." Mother Nature has no use for fools.

We're broke. How can we manage a $500 billion Chernobyl type accident here?

also in NY Times 1-9-90 is an article on the "Sad Legacy of Uranium Miners" Front

 Jan. 9 - 1990

Opposition to Nuclear Power Grows Stronger

To the Editor:

Nuclear power may not be inherently unworkable, but it is being rejected worldwide for precisely those reasons you mention in "Revive the Atom" (editorial, Dec. 8): bad economics, poorer safety and a lack of trust by the public.

You imply that the antinuclear movement is a United States phenomenon, but nuclear power has never faced such determined opposition around the world.

In Western Europe, France remains the only country with an active nuclear construction program, but France plans to order only one new plant in the next four years. The country has also seen an upswing in demonstrations — from across the political spectrum — against nuclear plants and waste dumps.

Britain's hopes for a new line of plants, based on the Sizewell-B P.W.R. reactor, have collapsed. This followed government attempts to get a resistant financial community to swallow the uneconomic nuclear stations. Elsewhere in Europe, the talk is of wastes and decommissioning, not construction of new plants.

Glasnost in the Soviet Union has been harsh on nuclear power advocates, with at least 10 plants closed or canceled in the last two years. This month, Hungary canceled plans to build four Soviet-style nuclear plants.

Faced with the largest popular movement since World War II, Japanese industry and government are scaling back ambitious nuclear expansion plans. Taiwan saw its third attempt to construct more plants stopped by domestic opposition this year. South Korea saw its first anti nuclear demonstration a year ago; now the government faces a coalition that has succeeded in halting planned expansion and is calling for shutdowns.

The notion that there are new environmentally benign and safe designs of nuclear plants that will alter public opposition is misconceived and not even shared by some in the industry. A study by the British Atomic Energy Authority found that the new designs may be just as vulnerable to structural failures as the old. Even the industry's trade journal, Nucleonics Week, states that "experts are flatly unconvinced that safety has been achieved — or even substantially advanced — by the new designs."

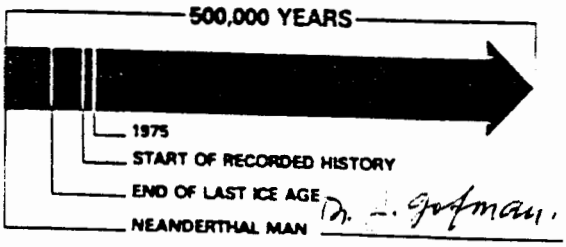
If companies say the newly designed nuclear power plants will be cheaper to build than coal-fired power plants, I say let them pay for them on their own. We've already poured a trillion dollars into nuclear power since World War II.

I'd rather spend the money on cleaning up nuclear wastes and decommissioning the numerous civilian nuclear plants that are being closed, including Rancho Seco in California and Fort St. Vrain in Colorado, an "advanced" high-temperature, gas-cooled reactor that didn't work.

You call for environmentalists to help create conditions for public acceptance of nuclear power. I remain doubtful that safe and cheap nuclear power, free of waste and proliferation problems, exists. The last 40 years haven't taught me otherwise. Until the manufacturers put their money where their mouth is, all I'll see is one more handout for another white elephant.

NICHOLAS LENSSEN
Takoma Park, Md., Dec. 21, 1989

PLUTONIUM LIFE SPAN



D. L. Goffman.

N. Y. Times 1-9-90

No Disposal Solution

To the Editor:

Several years ago, I was appointed by the governor of Washington to the state Nuclear Waste Advisory Committee, based on my professional work in technology assessment and involvement with citizens' organizations. In 1987, I organized a symposium on public policy and nuclear waste management for the American Association for the Advancement of Science. From this work, I know that there is no reliable solution to the problem of disposing of nuclear waste. Unless there has been some startling technological development in the last three years, it would be foolhardy to create even more waste.

Environmental Protection Agency guidelines require that nuclear waste be isolated from the ambient environment for 100,000 years (although the half-life of plutonium is 250,000). We do not have sufficent information about the geology and hydrology of any site under consideration in the United States to indicate that such a standard can be met; indeed, the once heralded salt deposits in New Mexico have recently been shown to be unstable for isolating nuclear wastes after only a decade of use!

You appear to ignore the substantial hazards of transporting thousands of shipments of nuclear waste across the country by rail and highway, through crowded urban areas and rural terrain.

For many reasons — conservation of resources, cost advantages, environmental considerations — energy conservation is preferable to new nuclear generation, especially if the calculations take into account the tilted playing field created by subsidies for nuclear power (such as the Price-Anderson Act, which limits the industry's liability in case of accidents, thus enabling it to get insurance). Let me note that in 1976 the Seattle municipal utility found conservation to be seven times more cost-effective than nuclear energy and adopted policies to promote increased efficiencies. (The assessment was only done under threat of a citizen lawsuit.)

The Reagan Administration undid the progress made under President Carter to stimulate conservation and more environmentally benign energy sources. A rational approach to our energy future does not involve spending great sums on a dangerous option when safer alternatives exist. We must end our habitual, naïve belief that technology will solve all problems.

PHILIP L. BEREANO
Paris, Dec. 23, 1989

The writer is a professor of engineering and public policy at the University of Washington.

ECC BULLETIN

Are you using the new energy-money-saving light bulbs - and the superwindows and superinsulants made by recycled paper, plastic, fiberglass, etc?

From the Director:

The $65 Billion Solution!

by Nicholas A. Fedoruk

This Spring and Summer the Energy Conservation Coalition (ECC) staff, the American Council for an Energy Efficient Economy (ACEEE), and the Alliance to Save Energy (ASE) got together to devise a joint energy efficiency platform. The result of our efforts is a $65 billion per year solution! That is not cost, that's annual savings to the consumer! (The cost of making the savings has already been subtracted.) In addition this little package provides energy savings of 15 quadrillion btu's (quads) and 337 million tons of carbon reduction every year. To give you a sense of the significance of these savings, we currently consume about 80 quads of energy and emit 1,503 million tons of carbon per year. As a measure of progress in slowing global warming, these programs represent 141 million tons of carbon reduction per year compared to 1988 or an absolute reduction of nine per cent. ACEEE calculated these savings against the Energy Information Administration's base case.

The next three issues of the *ECC Bulletin* will discuss the nine programs that account for these total savings. This article describes the subset of policies for improving the efficiency of the utility sector and thereby saving $23 billion, 6.6 quads and 162 million tons of carbon every year. The three major policy recommendations are:

1. Adopt acid rain legislation that encourages energy efficiency as a means for lowering emissions and reducing the costs of emissions control;

2. Reform federal utility regulation to foster investment in end-use energy efficiency and cogeneration systems;

3. Increase the efficiency of electricity supply through development, demonstration and promotion of advanced generating technologies.

Acid Rain Legislation: The energy efficiency platform recognizes that the current debates over acid rain have tended to shortchange energy efficiency as a means for reducing the emissions that create acid rain; the ultimate decisions will have an enormous effect on the future of the electric utility industry and its energy efficiency. This platform recommends several measures to reduce the cost of acid rain control and at the same time reduce the energy demand and CO_2 emissions of the utility sector. The proposed measures would save 1.9 quads (176 billion kwh), $9 billion (including $2 billion in reduced cost of acid rain controls), and 48 million tons of carbon emissions per year.

Acid rain legislation should set emission ceilings for precipitators of acid rain rather than emission rates. Emission ceilings permit utilities to get full acid rain control credit for the results of their investment in energy efficiency programs and they provide a firmer restraint to acid rain. To the degree that utilities pursue increased energy efficiency these ceilings would not restrict economic growth, because electric services could grow even while absolute electricity generation was decreased.

If acid rain legislation includes subsidies for other acid rain control measures, these subsidies should be extended to defray the costs of end-use energy efficiency investments with demonstrated performance. States such as Maine have developed methods for measuring the performance of energy efficiency investments.

The legislation should require that to the degree that any acid rain control measures decrease the efficiency of electric generation, the resulting increase of CO_2 emissions should be offset. Measures to reduce the danger of acid rain should not increase the dangers of global warming.

Finally, federal legislation should encourage states to develop least-cost utility planning and reform utility ratemaking so as to remove disincentives to utility investment in energy efficiency. Because of the tremendous variety in utility regulation at the state level, this legislation should not specify particular approaches to planning or ratemaking. But, it could tie these planning and incentive recommendations to the receipt of subsidies or other federal acid rain control benefits to assure broad implementation.

Federal Utility Regulation: Several alterations to current PURPA legislation would increase the role of utilities in encouraging end-use efficiency and cogeneration. Taken together these measures would save 3.8 quads (347 billion kwh), $14 billion and 94 million tons of carbon emissions per year.

The Role of Solar in the National Energy Strategy

by Scott Sklar

In June 1989, the leaders of this nation's private sector renewable energy companies gathered in Washington, D.C. to advise the Environmental Protection Agency on the potential "real world" contributions these industries could make in a business-as-usual scenario or an enhanced scenario. The Solar Energy Industries Association (SEIA) presentation showed that under enhanced conditions, active solar water heating, photovoltaics, and solar thermal utility-scale plants could meet 6.75 quads by the year 2000. But, in the business-as-usual scenario, these industries will barely supply 2.1 quads in that same time-frame.

The United States policy regarding solar and renewable energy over the last decade can be best characterized as "benign neglect." And, since this country has left a void in developing the solar industry, our international competitors have aggressively stepped in to such an extent that the United States may import all of its solar energy technologies by the year 2000 and lose its world markets as well.

Why did the United States, after inventing and holding the technological lead in all the solar technologies, allow its competitors to commercialize our inventions and reap the hundreds of millions of dollars in profits and thousands of jobs in solar energy? Why did the Reagan Administration discount the value of the contribution from solar energy even though the aggregate sales for solar approach $1 billion per year? And, despite its fine rhetoric about solar energy, will the Bush Administration support its rhetoric with actions? If not, the United States will continue to lose its domestic and world market share of the solar industry.

The U.S. energy policy is still fixated on conventional energy and not on the technologies that could maintain U.S. energy security and leadership in the twenty-first century. The Administration's recommendation of a 30% cut in photovoltaics and a 20% cut in solar buildings and solar thermal R&D for FY '90 must be changed. The House Ways and Means Committee's action not to extend the expiring commercial solar credits must be turned around this year.

To increase its world market share, the U.S. solar energy industry must increase its domestic market. Low-cost incentives promoting residential and commercial use of solar energy, federal procurement, and utility-scale generation are necessary. New incentives would not cost more than $100 million per year and many would save consumers and the federal government millions within a decade.

Aggressive use of solar applications to offset pollution is essential. Incentives which lower the risk and increase practical applications make the most sense. While the United States has one million solar water heaters, the City of Tokyo alone has an equal number. Japan and Germany have surpassed the United States in federal research and development spending for photovoltaics. Japan, Germany and others are using concessionary financing and tied aid to promote their exports of solar energy equipment in the Third World. If the United States is not vigilant, not only will our petroleum imports surpass 50 percent in the 1990's but our solar imports may surpass 50 percent by the year 2000. Solar imports from the very countries from which we import cars and VCR's!

With increased oil imports, increased environmental degradation, and increased usurpation of the solar industry in international markets, it's time for the Department of Energy to reassert itself in energy policy and take some proactive steps to build a viable and growing U.S. solar energy industry.

Scott Sklar is the Executive Director of the Solar Energy Industries Association (SEIA). He testified on the role of solar energy at the Department of Energy hearing on the National Energy Strategy in Washington D.C., August 1, 1989.

Florida Solar Use Adds Up to Mini-utility

By using solar energy technologies, Floridians annually save about half the energy of a typical coal-fired utility plant. Dr. David Block, director of the Florida Solar Energy Center, estimates that the dollar savings from those solar applications adds up to between $200 and $400 million.

In Florida, 250,000 solar water heaters save approximately 500 million kilowatt hours of electricity annually. "That's enough electricity to power 42,000 homes each year," said Dr. Block. Solar swimming pool heaters, which currently number 100,000, save 52,000 cubic feet of natural gas annually. And the use of solar cells (photovoltaics) to produce electricity in the state saves another 400,000 kilowatt hours a year. Block noted that passive cooling strategies in Florida also provide energy savings of 145 million kilowatt hours per year.

"We could view solar system owners as a mini-utility," said Dr. Block. "What's even better," he added, "is that no carbon dioxide or other emissions are generated along with that power. Florida's 'solar utility' won't result in global warming or acid rain."

at work in the Fields of the Bomb by Robert del Tredici p. 151 + 152. Harper New York

"'The black lines in this starlike formation have been made by bursts of alpha radiation from a microscopic particle of plutonium-239 embedded in the lung tissue of an ape. These alpha particles are a form of high-energy radiation but they are relatively heavy (7,330 times that of an electron or a beta particle) and can be stopped by a single sheet of paper, while a beta particle with an energy of 2 MeV can penetrate a centimeter of soft tissue.

"'Once inside the human body these alpha particles from the microscopic particle of Pu-239 penetrate over 10,000 body cells within their range of about 0.0044 cm. They kill most of these cells but occasionally one of these cells will survive and reproduce itself in its damaged form. After about 35 doubling times (1 to 30 years, depending on the type of cell), the clone of abortive or malignant cells is about 1 cc in volume and large enough to be detected and diagnosed as a tumor (cancer).

"'The amount of radiation shown here was released over a 48-hour period. Pu-239 has a half-life of 24,400 years and once deposited in bone its elimination is extremely slow, requiring 200 years to remove half of it, or only 24% is removed in 80 years from the human body.

"'A curie of Pu-239 corresponds to 16.3 grams (0.0359 lbs). After 100,000 years a curie of Pu-239 released into the environment has decayed radioactively so that only 0.0584 curies, or about 1 gram, remains. However, this 1 gram of Pu-239 is not an insignificant amount. For example, if it could be split into 3.5 billion equal parts and one part could be fixed in the body of each of 3.5 billion people, each person would get a bone dose of 25 millirems per year all the rest of his life. The 25 millirems per year is the maximum dose rate that the Environmental Protection Agency permits to members of the public from the operation of a nuclear power plant. The 3.5 billion people is about four-fifths of the present world population. The magnitude of this problem can be appreciated if we realize that thousands of persons are working with kilogram amounts of Pu-239 and about 5,000,000 grams have been released into the environment during nuclear weapons tests.'

"Sincerely, Karl Morgan

"P.S. Are you concerned about other elements similar to plutonium such as uranium and americium and curium that are becoming commonplace in our environment?"

40. Dr. Alice Stewart—Birmingham, England, September 2, 1981

My only claim to fame is that I stumbled across the low-level radiation cancer risk in the following way: I was aware that there was something very peculiar happening to children after the war, with a worldwide increase in leukemia mortality. The peculiarity was that children between two and three were being much more affected than either younger or older children. I thought up the bright idea that the children's cancers might be due to prenatal influences.

Dr. Alice Stewart

What made you suspect that? Why couldn't it have been something that began after they were born?

It could have been, but prenatal life is very different from postnatal life. Therefore if you were looking for some kind of unique event, it's more likely it had something to do with that prenatal stage than with life after birth.

Some kind of event which would have gone unrecognized?

Exactly. And the thing that had gone unrecognized was, in fact, the prenatal X ray. But the effect of a prenatal X ray is so small it has never produced even a dent on vital statistics. You see, only ten percent of children are X-rayed to begin with, and half of these children who are X-rayed get cancer as a result.

So that's five percent . . .

Yes, a five-percent effect is not going to be noticed. Five percent spread over vital statistics taken in sections of five years is not perceptible.

Even by a statistician?

Well, he has to be looking for it very, very carefully. And even then you never could have found it on the basis of vital statistics alone because the group at risk from these X rays were children up to the age of four, and then you might have spotted it because individual deaths are recorded for that age, but after that they lump deaths together into five-year age groups. And the peak incidence of cancers from this occurs between the ages of five and six. So the deaths would have been merged with the next four years, in which case there is no chance the effect could be seen. So this effect we found at first chiefly by my reasoning.

How did you know to include X rays as a factor in gathering the data?

I wanted to include everything. But also this was the mid-fifties—a time when people were very aware of the Hiroshima A-bomb findings which were just coming out. Hiroshima is built into my heart right there. You see, we started this survey in 1955, and the Atomic Bomb Casualty Commission began its project in 1950. Well, all sorts of rumors had been circulating and everybody knew that radiation was dangerous in the leukemia sense of the word. And it so happens that half of all childhood cancers are leukemias. So it was natural for anybody who was in the know to include a question on X rays in any survey they put out. The unique thing I did was to frame the question in such a way that the mother was allowed to describe what had happened to her from the moment her child was conceived. Basically you could say my study recognized that life began at conception and not at birth. But the idea of childhood cancers that were initiated before birth was totally novel. The idea that you could go to the age of ten in perfect health, while really you've been suffering from a disease since before you were born, was inconceivable to any doctor. We've since been able to show that these children, apparently in normal health, were not in normal health at all.

They've got a fatal disease.

Well, they've got a fatal disease, we all know that now, but the telling point is that when they meet with something like a bad infection on the way—they will die, and you and I won't. Now what will that do to the cancer statistics? It suppresses them, doesn't it? The children do not live long enough to realize that they are pre-cancer. So the whole story of cancer, in my mind, is the failure to realize that cancers are having an effect long before they are recognized, and the effect they're having causes these people to die easily from many natural causes. You know, once you're a year away from having leukemia, you're over 300 times more likely to die of pneumonia because your immune system is down.

Once I spotted the X-ray effect, I knew that we'd gotten onto something that was absolutely unique, because this was a cause of cancer that you could date, and it was so small that it was effectively quantified for

Dr Alice Stewart — cont.

you. And it was causing every sort of cancer known in that age range. Now there was no other cause of cancer that ran right across the board like that.

Except the X ray.

The one we'd found. Even in adults, it doesn't do this. Nobody could see my vision at the time, which was that I'd found the fixed North Star of childhood cancers, and once you've got one star in the firmament, you can fix in all the rest. But you must have time. You must be allowed to go on collecting data and collecting data and collecting data. . . .

When people speak of radiation damage, they also talk of the body repairing that damage. Can you describe how this works?

Foreign organisms in the body, if they are not recognized, will multiply. This is our friend the infection, right? But there is another form of foreign protein, and that is your own cells which have become mutant. Now they may do this accidentally, but they are much more likely to do it under the influence of radiation and other carcinogens.

Now there are lots of defenses against this. You couldn't live unless you were heavily protected, and you will understand our main defense if you understand the double helix. The helix formation of everything allows that the genes that are controlling each movement of each cell—and lots of them are silent, you're only playing the piano on certain parts of the keyboard in order to produce this and that reaction—these controlling genes are paired, and if you destroy one of them, template activities in the other will recreate it. So you've got to destroy not only one on one side and one on the other, but you've got to destroy the pair before you're in any trouble. Now every time a cell divides, the double helix stretches out. It's got to arrange for exactly equal controlling factors to the next cell, and though there's no final proof of this, there's a probability that during the full stretching-out process, if you get radiation, that's when the radiation's going to be best able to nick it.

As human beings, we are actually rather strongly defended against radiation, and I'll give you one simple reason: we've got a skin. This is the "thickness of a piece of paper" that you hear so much about, which they say can stop alpha radiation. It does in fact protect us against about fifty percent of the radioactivity around us, but we're still vulnerable to gamma radiation, neutrons, and X rays.

But if we didn't have a skin we'd be vulnerable to all kinds of other things too.

But can't you see that a unicellular organism is more vulnerable than we are? The logical argument is that single-celled organisms could not exist until background radiation fell to present levels millennia ago. And it requires just as delicate an environment for us to survive. Yet today, in the arrogance of humankind, we are raising the levels of background radiation and setting back the evolutionary clock.

Has bomb testing raised the levels?

Well, the bomb tests have had a measurable effect because you can measure it in your own bones. And if we allow every nation in this world to become dependent on nuclear energy for its electricity on the assumption that it is no longer safe to go down a coal mine, and you'd better not burn the woods—you're literally going to set the clock back. It could come to a point where biosphere development, which has taken millennia to produce human beings, will be put slowly into reverse, and humans won't be the first to go.

What will be?

Amoebae.

And then?

Then the things that feed on amoebae, and the things that feed on them, then the next, and the next, and the next . . . and then us.

Sounds like a chain reaction . . .

Well, of course it is, but it's not going to happen overnight. It's something that today is not yet numerically important—but it has no future. Nobody's ever set this clock back before. There's never been any means of doing it. If anything, the world's getting a little bit more tolerant of all living organisms. If only we'd been intelligent enough to get our energy by discovering the molecular processes that plants use, instead of splitting atoms! If we'd have put as much thought and energy into penetrating the molecular mechanism of photosynthesis as we did into cracking the secrets of fission I reckon we'd have some kind of man-made photosynthesis by now. My motto is: if plants can do it, so can we. But we'd need some Manhattan Project–sized funding to really get it going. Instead, we've pushed ahead on one side of science at the expense of the other, and we've ended up in an unbalanced situation where it looks as though we can only get our energy from the fission mechanism. And what are we doing with it? Actually turning the Earth back. The effects are still rather puny, but imagine going on with this and extending it. Radioactive waste is bound to increase not only the population load of cancers, but much more important, the population load of congenital defects, defects of future generations of the human race. What do we think we're doing with this Earth? There are now several studies on low-dose effects, all of which are pointed in the same direction. The most important of them is a study of nuclear workers in America which is now on a sufficiently large basis to be able to show the effects of age on the risk, the effects of latency on the risk, and above all, the effects of dose level on the risk. The key finding here is that the lower the dose, which in practice means the slower the delivery of radiation to the public, the more cancer risk there is per unit dose. In other words, it does not make it safer to deliver the radiation slowly; it in fact makes it more dangerous.

By relying on the technology of fission we're going against the very processes that made life possible. Isn't it time we took the money and the pressure off this playing with matches and really pumped some funding into biological research?

41. The Parents of Sadako

Mr. Shigeo Sasaki, Mrs. Fujiko Sasaki, and Masahiro Sasaki—
Kasuga City, Fukuoka Prefecture, Japan, October 13, 1984

On August 6, 1945, the day the atomic bomb exploded over Hiroshima, Mrs. Sasaki and her two children, Sadako (age two) and Masahiro (age four), were in Hiroshima. Mr. Sasaki was out of the city on military duty at the time.

Mrs. Sasaki, can you tell me what happened on the morning the atomic bomb fell?

Mrs. Sasaki: We were living on Kusunogi Street, a little more than one kilometer from the hypocenter. The all-clear siren had just sounded. I was getting breakfast for my children when my neighbor called out to me, "Look, up in the sky!" I stepped outside and saw something that looked like a big silvery balloon coming down.

Was the thing you saw floating?

Mrs. Sasaki: No, it was an object—it was round, a circle—and it was falling.

What did you think it was?

Mrs. Sasaki: I just thought, "Oh, it's

see also Adm. Rickover - p. 165 + | and from Citizens Health Dept Overcoming the Birth of the Earth

FLYER #3 December 28, 1989 Rte 1 Box 373, Las Vegas, New Mexico, 87701

Plus ça change, plus c'est la même chose. In 423 BC, Aristophanes wrote THE CLOUDS wherin a young man learns at The Thinkery how toevade his numerous creditors through shrewd arguments. This pleased his dishonest father until the young man turns his new talent against him, at which the old man regrets turning away from old virtues and ends up setting the school on fire.

This pattern has been repeated again and again over the centuries notably in the USA since W W II when the TV was invented and our AIR SCHOOL was taken over by a rotten power structure. It was used to befuddle the average citizen, to elect nincompoops to high office, and to turn a couple of generations of kids into dumb, drugged, pregnant egotists.

Environ mentalists struggle to stop the worstecological damage, but who is ready to get rid of our Thinkery and the P.R. slickers who flim-flam our nation?

In 1980, the USA was a lender nation. After 8 yeaars of the Archfool Reagan, the USA is the biggest debtor nation. Japan tells us to start educating our children and start making products that work. Mrs Thatcher grasps the advantage of safe, cheap energy and decides to take England off the outrageously expensive nuclear power. Our leaders pay no attention to Amory Lovins' LEAST COST ENERGY, SOLVING THE CO2 PROBLEM, EFFICIENT USE OF ENERGY AND SOLAR POWER.

Instead, DoE, which has wrecked American acerage with nuclear waste and spills the size of Rhode Island and Delaware combined, and admits that it will take $ 2 billion to clean up the spills at Los Alamos, makes no effort to fire any of those clumsy, inept scientists but rather offers them plutonium to play around with making nuclear triggers for warheads none of which can be used.

One of these days Japan is going to get fed up with US incompetence amd simply take over. Meantime, the silly Mr. Bush goeson a hunting trip while killing off some American soldiers and shooting up poor people in Grenada - excuse me, in Panama or wherever. He clings to the most expensive way to boil water (nuclear power) ; avoids cutting weapons with Mr Gorbachev; postpones any environmental conference for nearly a whole year. Congress is a bunch of gutless babblers.

So, do we want tobecome a Territory of Japan? If we don't, citizens must bestir themselves. Our Corporate structure must change its thinking. The slick, smart-alec PR boys must be thrown out, and the Media opened up to teaching "old fashioned virtues".

Jim Hightower might lead a Grassroots revolt. The TV has been in a wit over European revolt in East Germany and elsewhere, vs dictatorship. When will it have the sense to cheer on an American revolt vs our rotten Oligarchy. Under Japanese control they'd be cleaned up.

And if our Oligarchy doesn't relish the thought of an American uprising, boycotts (there are now 120 national boycotts in force as well as 3.5 million citizens boycotting G.E. until they shut down their nuclear department), electioneering, etc. - or look forward to saying, "Yes, Sir." to Japanese bosses, I suggest that they'd better start changing their ways, start thinking democratically and help to oust the Pols and the war mongers for whose huge profits we are throwing away our birthrights.

A NEW YEAR'S RESOLUTION FOR 1990. Try to save life on earth.

1- Crash program solar energy and use energy efficiently.
2- Stop making nuclear wastes before spilled radiation renders earth unfir for life.
3- Boycott products of polluters.
4= Recycle and use recycled products.
5- Cur population with the French pill, sterilization and abortions.
6- Clean-up the TV. Let it educate how-to regain old fashioned virtues.
7-Clean-out our lousy power structure. (I'm looking forward to reading a a new book, "Case for Hanging Errant Public Officials." by J Farrell.

NB

Frances Tyson - Vassar '34

his writing turns out Right wing

Hydrogen: Is It the Clean Fuel of the Future?

By MATTHEW L. WALD

When all the coal, natural gas and oil have been burned, or the world does not dare burn any more because of global warming, what will be used for fuel, especially for cars, trucks and buses?

The answer, many experts say, is hydrogen, because when it burns — in vehicles, industrial boilers or home furnaces — it produces almost nothing but a gentle puff of steam. It can be made using electricity from solar cells through a process simple enough that it is performed daily in high school chemistry labs. And it can be stored for future use.

"Hydrogen is almost an environmentalist's dream come true," wrote Robert H. Williams and Joan M. Ogden, researchers at Princeton University, in a recent study on making hydrogen from solar power.

Hydrogen is far from perfect; when burned it produces only about half the energy required to create it. And between creation and combustion, it is difficult to handle.

But the concept has attracted increasing interest. In addition to the Princeton researchers' study, which was sponsored by the World Resources Institute, a nonprofit group based in Washington, a newsletter on hydrogen is now published in Washington to track global developments.

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Most of the research is in other countries. The Soviets have built hydrogen-powered airplanes. The provincial government of Quebec and the European Community are in the middle of a two-year joint study on using surplus hydroelectric power from Quebec to make hydrogen that would fuel bus fleets. Two dozen institutions and private companies are helping to finance the $3.3 million study.

Almost nothing is left but a gentle puff of steam.

West German researchers are building a pilot plant in eastern Bavaria. Bayernwerk A. G., a large German utility based in Munich, is building the project with BMW, the auto company, Siemens A. G., the electric equipment manufacturer, and two other companies. They are also studying ways to increase the efficiency of hydrogen production from water.

Mercedes-Benz is also active in hydrogen research, and has converted cars to run on hydrogen.

Hydrogen is not so much a fuel as a form of storage, holding energy generated by electricity and then releasing it without producing carbon dioxide, the gas thought to be responsible for half of global warming.

To make the hydrogen, electric current, which can be generated by photovoltaic cells that tap the sun's energy, is run through water that has a chemical catalyst, in a device called an electrolyzer. The water molecules are divided into hydrogen and oxygen gases. The hydrogen can then be shipped by pipeline for use in many of the same ways as natural gas. For use as a transportation fuel it must be compressed into a liquid or combined with other chemicals, to decrease the size of the fuel tank necessary to hold it. Burning the hydrogen — or recombining it with oxygen in a reaction that gives off heat — produces nothing but H_2O and small amounts of nitrous oxide, from nitrogen picked up from the air. These can be easily controlled.

Hydrogen is clean enough, in fact, to burn indoors, without a chimney.

Burning the hydrogen gives back only half the energy that went into making it, but if the solar power is cheap enough, or the premium on reducing greenhouse gases is strong enough, the low efficiency is acceptable.

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But hydrogen is difficult to handle. While it is not toxic, as gasoline is, it will burn or explode over a wide range of concentrations, and under some circumstances it can make metal brittle. In addition, a far larger volume of hydrogen than of natural gas or oil is needed to accomplish the same work.

Also, substantial energy is required to compress it to a liquid for storage, and the liquid tends to boil away.

But hydrogen is easier to store than electricity itself, barring major breakthroughs in chemical batteries or superconducting materials that could be used as batteries.

The ability to store electric energy is important because if the world goes on a low-combustion diet, forgoing fossil fuels, experts point out, the major sources of energy will probably be dammed water, nuclear fission and sunlight.

All three are used to make electricity that is well suited to providing heat, light and mechanical power, but the storage problem makes it hard to use in transportation. Batteries are the weak link in experimental electric cars, and even nonportable storage systems like pumped-storage hydroelectric projects and subterranean vaults pumped with compressed air have found only limited success.

The rapidly falling cost of photovoltaic cells makes hydrogen more attractive, engineers say. In fact, according to the Princeton researchers, hydrogen and solar photovoltaic panels overcome each other's weaknesses.

Hydrogen's weakness is that while it burns cleanly, it makes little sense to use unless it is produced cleanly. The cheapest source of energy to make hydrogen would probably be coal, but that fuel is a greenhouse culprit. Nuclear reactors are another source, but they can run at night or in cloudy locations, so it makes more sense to use their energy directly, not store it at a substantial cost.

But electricity made by solar cells is in the wrong form for most uses, and requires "conditioning." Without conditioning, a homeowner with a big electric bill could cover the roof with solar cells and get plenty of energy but have no way to use it, because the product is low-voltage, direct-current power, while refrigerators, air-conditioners and lights run on high-voltage alternating current.

The conditioning equipment is expensive, especially for small installations. Engineers predict that for efficiency entire neighborhoods will have roofs covered with photovoltaic shingles and will be wired together to a central conversion station. But a more efficient method would be to find a use for the low-voltage power without having to convert it.

Meanwhile, makers of photovoltaic cells, facing the difficulty of energy storage for use in cloudy periods or at night, are looking to hydrogen to solve that problem. "The marriage is a good one," said Dr. David Carlson, vice president and general manager of Solarex, a Rockville, Md., subsidiary of the Amoco Corporation that is the largest American-owned photovoltaic company. "It gives you a total system solution," said Dr. Carlson, a pioneer in cell development.

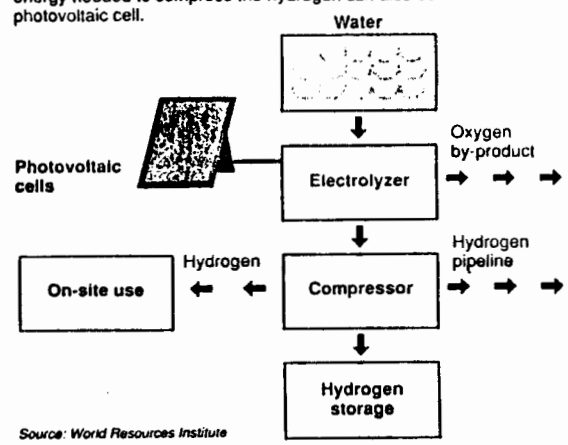
It also allows the use of solar power in locations remote from the sun. The Princeton researchers suggest making the hydrogen in the deserts of the Southwest and sending it through pipelines originally built for natural gas, after supplies of that gas are depleted. Although rainfall is scarce in the desert, the water required is only a small fraction of desert rainfall, they said.

Assuming cells that are 15 percent efficient and electrolyzers that are 84 percent efficient (both slight improvements over standard equipment now in use), replacing all oil in use would require an area of 24,000 square miles, which is five-tenths of 1 percent of the country, or 7 percent of its desert area.

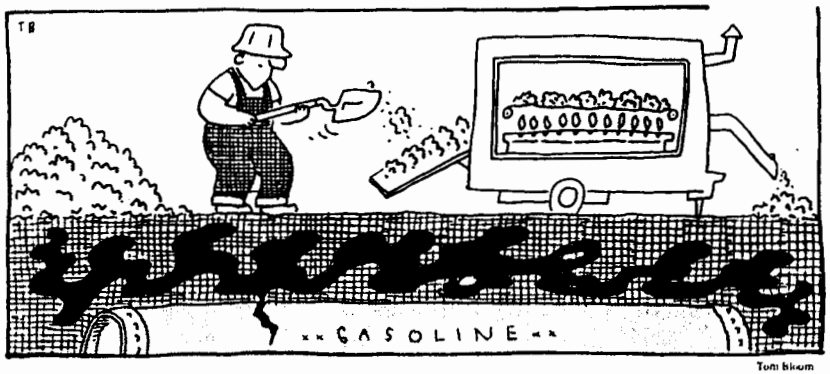
The Princeton study said the United States has about two acres of cropland per person, but the land required for photovoltaic hydrogen would be only about 0.13 acre per person.

Putting Sunlight Into a Pipeline

Energy from the sun can be stored in the form of hydrogen that can be burned without pollution in vehicles, industrial boilers and even home furnaces. Photovoltaic cells absorb sunlight and produce electricity, which is used in a device called an electrolyzer to break up molecules of water into hydrogen and oxygen. The oxygen can be used in a variety of industrial processes; the hydrogen can be compressed into a liquid and sent by pipeline for use in places that do not have enough sunlight or space to make hydrogen locally. The energy needed to compress the hydrogen can also come from the photovoltaic cell.



Source: World Resources Institute



Tom Bloom

Cleaning the Soil After a Gasoline Leak

There are an estimated two million underground gasoline tanks in this country, at service stations and industrial plants, and at least a quarter of them are thought to be leaking. Owners of these sites are obliged to clean up contaminated soil to prevent gasoline from fouling supplies of drinking water.

Thermo Process Systems Inc., a subsidiary of the Thermo Electron Corporation of Waltham, Mass., has developed a portable two-step process to remove gasoline from soil and then burn it with a minimum of air pollution.

All the equipment is mounted on a trailer that can be driven to a leaky-tank location. This avoids the problems associated with moving potentially hazardous waste to a remote location for treatment.

The soil is fed into a rotary kiln that raises the soil's temperature to 600 to 700 degrees Fahrenheit. At this temperature the liquid petrochemicals become gaseous and are driven out of the dirt, which is then fit to be put back into the ground. The concentration of gasoline in the soil is kept low enough to avoid the danger of explosion. With heavily contaminated soils, production rates are slowed or clear dirt added to stay below the explosion limit.

After the gasoline vapors are passed through a filter that screens out solids, the fumes are exposed to a flame at 1,400 degrees in an oxygen-rich atmosphere. This breaks down the complex hydrocarbons, and what emerges are the simplest combinations, carbon dioxide and water.

Jeffrey L. Powell, a vice president of Thermo Process Systems, said the unit can process 25 tons of soil an hour.

NUKES NOTE

How high is "low level"?

The Mid-Hudson Valley is only one day downwind from the proposed site of one of the largest nuclear waste dumps in the world. A balloon which was released from the proposed low level radioactive waste (LLRW) dump site in Taylor, N.Y. was found the very next day in Hudson.

According to Ted Taylor, an eminent nuclear physicist who helped design the atomic bomb, New York State's proposed LLRW dump will receive waste amounting to 100 billion lethal doses of waste. If the past record of the waste producers is any indication, it will receive it, but it will not contain it. State Department of Environmental Conservation officials acknowledge that the dump will leak.

"Low level radioactive waste" is one of the most misleading terms ever created. It includes the control rods from the core of the nuclear power plant and the irradiated primary system components, hardware and pipes that are in continual contact with highly radioactive water for the 20 to 30 years the reactor operates. The metal becomes "activated," or radioactive, itself from bombardment by neutrons that are released when energy is produced. The waste also includes the poison resins which absorb neutrons from the water in the reactor core and the irradiated fuel (high level waste) pool, the resins, sludges, filters and evaporator bottoms that are left over after this water is cleansed.

These highly radioactive and long-lived reactor wastes are included in the "low level" waste category with the much less concentrated and generally much shorter-lived wastes from medical treatment and diagnosis that are commonly identified as low-level. Medical wastes account for less than one half of 1% of low-level waste. The medical waste from diagnosis and treatment shipped in one year from most states usually gives off a fraction of one curie of radiation. In contrast, each nuclear reactor generates hundreds of thousands of curies in "low level waste" every year.

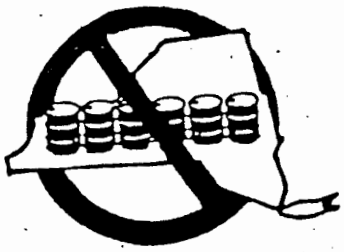
Because the nuclear weapons plants will have to be cleaned up, and all the nuclear power plants in the country will be decommissioned by the year 2000 and the waste that comes out of them will be one hundred times what came out of them during the whole time they were still operating, the federal Nuclear Regulatory Commission is under a great deal of pressure to find a cheap way to dump nuclear wastes.

The NRC's answer to the problem is the "Below Regulatory Concern" policy. Forty percent of these low-level wastes are scheduled to be declared exempt from any regulatory control whatsoever early in 1990, and some of it will definitely end up unannounced and unmarked in our local landfills, incinerators, recycling centers or sewage treatment plants by this spring.

According to the Nuclear Information and Resource Service, "Once the BRC program takes effect, localities will not legally be able to stop any of the deregulated nuclear wastes from coming into their areas." As incredible as it may seem, local municipalities will be required to bear the brunt of responsibility for the radiation levels in their dumps and will be accountable and liable for any problems, even though there will be no notification of when, where or how the wastes will arrive. When one dump has reached its "limit," which is something that we have to take their word for, they will be looking for others. Radioactive metal and plastic will find their way into our raw materials and will be distributed to our homes in consumer products. BRC will permanently raise the background radiation of the entire planet.

In 1986, a hypothetical computer model based on thirty-year-old data from the atomic bomb survivors in Hiroshima and Nagasaki was used to arrive at a figure of 100 millirems as the proposed "collective dose limit." What the NRC calls the collective dose limit is really a secret plan to instill the illusion of technical and legal credibility in nonsensical terminology which will mean anything they want it to mean while they give us whatever exposure they find opportunities for unlimited exposure to the various waste streams which would be deregulated. For example, two or three waste producers could use the same town dump and do not need to notify *anybody*, including each other. Recently, according to my copy of an October 13, 1989 memo from the Nuclear Regulatory Commission to its staff, the NRC has raised the proposed collective dose limit to 1000 millirems. This is a ten-fold increase in the proposed allowable exposure in just three years. The agency maintains that the "limit" might possibly go up to 100,000. (For more information call The Nuclear Information and Resource Service, 202-328-0002, or write them at Suite 601, 1424 16th Street NW, Washington, D.C. 20036. Ask for their BRC packet, which includes sample local ordinances.)

The city of Cortland, N.Y., has passed an ordinance opposing radioactive waste that supposedly falls "below regulatory concern." The ordinance will have no legal strength against the



Nuclear Regulatory Commission, but such ordinances may have a valuable effect as protests if enough of them are made. Our environmental-fad-of-the-week politicians and the local anti-nuclear movement are all fast asleep. The consensus at the day-long, statewide November meeting of Don't Waste New York was that in the area we live in, the anti-nuclear dumping movement is presently defunct. If you learned anything from the fight over the megadump you'll realize that this makes our dumps prime candidates for radioactive waste. One of the problems we deal with in our workshops is that we tell people what is happening and they simply don't believe us.

Soon it will cost no more to dispose of nuclear waste than you pay to get rid of your garbage. The NRC has openly declared that risking the health of the public is preferable to risking the economic viability of the waste generators. Their estimation of the risk involved in the BRC policy and in the LLRW dumps is not based on the actual studies of exposed populations which exist in growing numbers, but on 30 year old computer estimates of probable risks to the average person which ignore the fact that the unborn, infants and children are up to 40 times more sensitive to radiation than adults because of their rapidly dividing cells and immature immune systems. These computer estimates also do not account for the fact that the elderly will be at a greater risk, or that women are twice as susceptible to some cancers. The NRC does not consider the inevitable, non-fatal health effects as relevant to their studies; they do not include any health effects, fatal or non-fatal, which occur to people past the second generation.

Most experts agree that any radiation exposure at all increases the risk of adverse health effects, not all of which are fatal or limited to the first two generations. Small doses over long periods of time have been linked to increased cancers, blood disorders, impaired immunity and high incidences of miscarriages and birth defects. As far back as 1945, Hermann Muller received a Nobel Prize for his work on the genetic effects of radiation. He showed through his work with Drosophilia (a fruit fly) that ionizing radiation affects not only the biological organism which is exposed but also the seed within the body from which the future generations are formed.

The Don't Waste New York coalition against the five sites proposed for the LLRW dump in Allegheny and Cortland counties, the eight nuclear power plants throughout the state and the BRC policies suggest that the cost of disposing of radioactive waste should be an internalized part of the cost of doing business with radioactive materials. If a business can't pay the costs of keeping its pollution from the environment, then the obvious and only sane solution is to cut off production at the source by shutting it down and then isolating and monitoring the already existing waste in a retrievable form.

The creation and deregulation of massive amounts of radioactive wastes is an atrocity unequaled in the history of the world. There is no way to safely contain it for the duration of its hazardous life. The fact that most of it has been contained temporarily does not make the inevitable future destruction of the life-supporting environment of the planet less likely than if it had been delivered in missles during World War III. We can only delay the inevitable, and this will require that we see to it that our government and our industries create as little and contain as much as is humanly possible.

DWNY deserves your support and participation. It has been instrumental in convincing Mario Cuomo and the state to sue the federal government in order to get the law which forces every state government to arrange for the storage of the radioactive waste produced within its borders declared unconstitutional.

This is only one step. We also need much more grassroots education, organization and people power. When you go through parts of Cincinatus, N.Y., which is near the proposed LLRW dump site in Taylor, you will see that every single house, store and telephone pole has a bright orange posted sign against radioactive dumping. It is quite an amazing sight. When you get to the outskirts of town the farms have barns with signs like "Who will drink our radioactive milk?" painted on them. By the time you get to the next town, which is only five miles downwind, there are no more of the bright orange rectangles to be seen.

There is some kind of a mental block that follows the artificial boundaries between these towns all the way from Taylor to Hudson and beyond, and, like the Berlin Wall and the Iron Curtain, it is rooted deep in the propaganda and history of World War II and desperately needs to come down. We couldn't have less of a chance to choose than if we lived in East Berlin; and look what happened there. The nuclear power industry lies about its victims by the millions, and is a heavily subsidized economic failure forced on uneducated or unrepresented populations.

For more information, call Jean Fazzino of Ulster-Orange DWNY and the organizer for The Radioactive Waste Campaign, at 651-7917. Ask her about *Living without Landfills*, which is the textbook for DWNY. You *can* get involved and you *can* make a difference. I will offer rides to all of the monthly meetings and the additional educational workshops, starting with the Taylor meeting on December 16th. Who will help co-ordinate them by offering their local phone number for public access? Find out more or leave your phone number for me at the Taylor number of DWNY: 1-607-863-4295. ++

Robin Red

January 24, 1990
Box 341 El Prado, N.Mex
Legions of Living Light

RECEIVED
JAN 29 1990
OFFICE OF ENVIRONMENT
IMPROVEMENT BOARD

RE: EIB Review of Directors Decision
Los Alamos National Lab
Hazardous Waste Facility Permit No. 0890010515-1

Dear EIB Members,

Please read and accept into your record the enclosed "LANL Surveillance book review". It details deceptions in the Lab's environmental surveillance practices tantamount to fraud. Since there are EPA standards for some radioactive elements and EID is assigned to enforce them, it would subvert the agency's mission to accept the LANL argument that there should be no state jurisdiction. This is especially important since DoE exceeds some EPA standards despite serious statistical manipulation. (see "Book Review")

Airborne and other contaminated emissions from LANL will effect the state's environment for a long time, up to 250,000 years, surely you should fight for jurisdiction over our vital resources. Do you think you are there to oversee the poisoning of our air, earth and water? It is time to put a halt to these practices. It would be folly to trust LANL to moniter the stack emissions. They demonstrate a clever ability to misrepresent environmental surveillance statistics in their annual report and will surely continue this practice with stack moniters. It is essential that people who are technically competent be assigned to oversee these operations.

New Mexico Air Quality Control Regulation 201 includes the "applicable standard" for airborne beryllium. How many other elements are subject to state regulation? It is EID's duty to enforce these standards, but is ~~quantifiable if~~ beryllium ~~is~~ monitered in Los Alamos where at least two sources emit it regularly? This situation must be corrected. Obviously the existence of such regulations imply

a legal basis for state jurisdiction. Possible stack emissions from incinerators will only add to existing contamination. Those too must be subject to New Mexico Air Quality Control Regulation. Since all that goes up, must come down, related EPA and state standards for soil and water should be enforced. Fines and penalties are essential for effective enforcement.

And talk about this whole process being a sham, i cite the January 5 letter from Swani LaCuesta ending "If you have any questions please call me..." So i called to ask about the issues raised in the requests for review from Joan Berde and Barbara Jaramillo. Since the issues were enumerated in the director's decission, this seemed like a reasonable request. Instead your administrative secretary was totally hostile and lied, insulted me and other anonymus concerned citizens and finally hanged up right in the middle her raving. There was a time when government employees were called "civil servants", but i must say this person was neither. I had tried to get answers to this question through sympathetic sources, but finally resorted to calling your office after all other possibilities were exhausted. (Had previously wasted both time and money trying to contact Kelly Crossman on this issue earlier this year.)

Ms. LaCuesta said i should have to travel to Santa Fe and read the requests because i might interpret them differently from her. Yet obviously the interpretation of your office on these issues is the only acceptable one and if my comments should differ from them they will be disgarded as irrelevant. Just like so many of our public comments in the hearing process were misinterpreted or disgarded.

Do hope that this will be acceptable. Peace,

Bonnie (Yvonne) Bonneau

bonnie bonneau

(one enclosure- four page book review)

LANL Surveillance

a book review
by bonnie bonneau

Environmental Surveillance at Los Alamos During 1987 is a government document designed to prop up the illusion of LANL's environmental sensitivity. Though it is presented to the US Environmental Protection Agency (USEPA) and a list of other officials and agencies it's hard to believe that any read or analyze the content, since there are serious questions about it's validity. Research indicates, both the scientific process and statistical methods employ deceit.

This document cleverly ignores any possibility of off-site contamination. It pretends that Espanola and Pojoaque can provide valid "background" samples, as though they have received no contamination in the past 45 years. Background ~~stats~~ statistics are supposed to represent an area untainted by the activities in question. However, in this survey high off-site counts do not serve to indicate trouble but rather make better comparisons with LANL samples, and prove, "that environmental effects from Laboratory operations are insignificant and do not pose a threat to the public..." (p. 1).

Background statistics are manipulated so many tables show contamination counts with minus signs in front of the number. This suggests negative quantities of radiochemicals, which is impossible. All samples are taken to LANL for analysis. If the contamination counts of the sample are lower than those at the testing facility, a negative quantity is assigned. This is described as the difference between the analytical background of the Lab test room and the

environmental background from which the sample was taken.

Such mathmatical chicanery makes analysis difficult, since it is impossible to tell the amount subtracted from each sample, but it would change as levels at the Lab shift with time. Also one would asume that USEPA standards are based on an absolute zero rather than manipulated backgrounds. Still, following is a simplified composit baised on five of the book's data tables. Notice that EPA standards are exceeded in four of five elements. (^3H stands for tritium.)

Surface and Ground Water Radiochemical Maximum Contamination Summary

Page	Site	^3H	^{137}Cs	Total U	^{238}Pu	$^{239,240}Pu$	Gr.Gamma
239	USEPA	20	200	1800	15	15	--
174	Lab Perimeter	0.4	98	12.5	0.036	0.037	160
176	Wht Rck Can	13	149	22	0.027	0.009	220
191	Mortandad	12,000	213	5.7	30	90	11,000
172	Background from	0.2 All 4	1200 Otowi	3.0 Bernalillo	0.011 Chamita	0.025 Bernalillo	460 Embudo

(Units of measure for above elements are 10^{-6} microcuries per mililiter of tritium, 10^{-9} microcuries per mililiter of cesium and plutonium, micrograms per liter of uranium and counts per minute for gross gamma.)

Mortandad Canyon begins on LANL and runs onto San Ildefonso Pueblo. It receives effluent from the Lab's sewage treatment facility. As the chart shows, Mortandad has high levels of water contamination in all but one element. Yet soil and sediment samples from Mortandad are not tested for tritium or gross gamma, and no airborne studies are done there. Water samples are concentrated in the bottom of the canyon without assessing the penetration into canyon walls.

Wind studies show a lot of wind from the southwest, and areas to the northeast of LANL show some high readings. Both Espanola and Pojoaque have more airborne uranium than anyplace they sampled at LANL. Noone asks what happened to the 22 pounds of uranium presumed aerosolized when 220 ~~lbs~~ pounds. of the substance was detonated in "dynamic experiments" during 1987.

Beryllium is also aerosolized in these "dynamic experiments" but it's airborne quantities are not analyzed. Of course, no air, soil or water samples are taken from Technical Area 14 where these "dynamic experiments" are detonated. Dispersion of such elements is regarded to be good when winds move them off the hill, but there is no attempt to follow the wind courses.

Though more than 60 atomic elements are mentioned in this text, only six are broken down for much surveillance. There is no recognition of cumulative effects from all sources multiplied by the number of years of exposure. DOE (Department of Energy) exposure limits apply only to routine Lab operations excluding all other sources of radiation even from accidental or unplanned releases at the Lab. As long as operational discharges meet the antiquated standards, everything seems alright, according to LANL.

"Radioactive airborne emissions are discharged at the Laboratory from 87 stacks." p. 29. None of these emissions were effected by either moritorium on incineration. Some exhausts are not filtered. Incinerator exhausts would add pollutants to these quantities. Sampling statistics are often followed by large numbers in parenthesis, described as "counting uncertainties" indicating wide margins for error. Though this report considers radioactive emissions only, a large portion of the book is devoted to toxic chemical releases.

Research into that area will probably uncover more questions about the document's integrity and validity. Health and disease statistics for the Lab or Los Alamos area are not surveyed.

Certain items are so bizarre they could pass for science fiction. Such as, entries in a bibliography which include, "Dwarf Mistletoe Control with Ethrel, Seismic Trench, Lethality Test System, Plutonium Gas Gun Facility..." (p. 235)

Another story could be set at Technical Area 49. "From 1959 to 1961, hydronuclear experiments were conducted in underground shafts at the Lab's TA-49...(Over 500 pounds of various radioactive elements were detonated.) Plutonium had apparently been dispersed through fractures in the tuff by the detonation of an experiment in an adjacent shaft. All surface soil contamination ascertainably by standard procedures and instruments of the time was cleaned up and placed back in the shaft from which it originated." (p. 97) There is no data from sediment stations downstream from TA-49 which are now covered by a reservoir.

These documents are prepared annually by LANL's Environmental Surveillance Group and are available free by calling (505) 667-2256 or writing Lars Soholt, Environmental Surveillance Group, HSE8-88-246, Mail Stop K490, LANL, Los Alamos, N.M. 87545. The 1988 book should be available soon, but at last inquiry, had not been released by the DoE.

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BEFORE THE ENVIRONMENTAL IMPROVEMENT BOARD

RECEIVED
JAN 29 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

IN THE MATTER OF APPEALS OF HAZARDOUS WASTE FACILITY PERMIT NO. 0890010515-1 ISSUED TO LOS ALAMOS NATIONAL LABORATORY

RESPONSE OF THE ENVIRONMENTAL IMPROVEMENT DIVISION TO THE APPEALS OF THE LANL HAZARDOUS WASTE PERMIT

The United States Department of Energy ("DOE") and the Regents of the University of California ("the University") on December 20, 1989 filed a Petition For Limited Review with the Environmental Improvement Board ("EIB"). Ms. Barbara Jaramillo on December 12, 1989, and Ms. Joan Berde on December 8, 1989 also filed appeals. The EIB directed all parties who participated in the hearing below to file their responses to the appeals by January 29, 1990. The Environmental Improvement Division ("EID") has filed a Motion to Dismiss Appeals For Lack of Jurisdiction ("Motion to Dismiss") and supporting Memorandum.

I. THE EIB MUST DISMISS THESE APPEALS FOR LACK OF JURISDICTION

The EIB does not have jurisdiction to hear these appeals, and must dismiss the appeals. See EID's Motion to Dismiss Appeals For Lack of Jurisdiction and supporting Memorandum filed this same date.

II. ALTERNATIVELY, IF THE EIB HAS JURISDICTION, A PUBLIC HEARING IS MANDATED ON THESE APPEALS

1. DOE and the University Have Presented New Evidence.

Alternatively, assuming the EIB has jurisdiction, HWMR-5 §902 mandates a public hearing to consider the new evidence presented in DOE's and the University's Petition For Limited Review. The EIB should stay its review of the appeals and remand to the EID for the public hearing on the fact questions raised in the appeals.

DOE and the University have presented new evidence in their Petition without complying with the requirements that new evidence was unavailable at the time of the proceedings below, and that the new evidence be submitted, examined and considered <u>only</u> pursuant to public hearing. HWMR-5, §902.G.2 in relevant part states:

> Any new evidence becoming available after the tentative decision by, or the hearing before the Director, may be presented at a hearing before the Board if such hearing is requested along with the request for review of the Director's decision. Otherwise, the Board shall consider only the evidence admitted in the record formed at the hearing before the Director or the evidence available to the Director at the time of his or her tentative decision.

The Petition submits several pages of alleged facts in the form of unsworn statements by the attorneys in support of DOE's and the University's allegations that the administrative record does not support the authority and feasibility of the conditions established in the permit. In summary, DOE and the University make the following factual allegations <u>in their Petition</u>:

a) That the radioactive emissions that may be released during the incineration of hazardous waste are "source, special nuclear, or byproduct material"

as defined by the Atomic Energy Act of 1954;

b) That monitoring for radioactive emissions during incineration of hazardous waste is the same as a substantive condition on the treatment of radioactive waste -- consideration of this issue requires facts which are not in the administrative record;

c) That the definition of "background" cannot be constant, and it does not indicate any particular type of radiation (alpha, beta or gamma) or any particular radioisotope;

d) That, in monitoring, it is difficult to determine: 1) if an increase in activity is due to instrument noise from the monitoring device or from an actual increase in radioactivity in the exhaust gas, and 2) at low levels of alpha radiation, interference from naturally occuring radon and thoron make it impossible to determine the actual amount of alpha radiation present due to incineration by the laboratory, particularly by continuous monitoring.

DOE and/or the University <u>in the administrative record</u> below (in summary) state the following concerning radioactivity in support of their permit application (<u>see</u> Exhibit A attached hereto for all of DOE's and the University's statements in the administrative record): All references to radioactivity are to the

burning of purely radioactive wastes or mixed wastes. Nowhere do DOE and the University discuss monitoring requirements for radioactivity at the stack or the difficulties regarding radon and thoron. There is one definition of background and that is in Appendix M to the RCRA Trial Burn Final Report for the Los Alamos Controlled Air Incinerator. Appendix M is the Quality Control Program/Quality Assurance Plan of Controls for Environmental Pollution, Inc., the lab doing the sampling and analyses for the trial burn. In the glossary, p. B-1, there is a definition of background very similar to that used by EID in the operating permit, Module V.F.9c. Because this is a document submitted by another laboratory, it is not possible to determine to what degree DOE and the University subscribed to that definition. Also, when radon and thoron are discussed in "A Review of the Report: High Efficiency Particulate Arrestors (HEPA Filter) in the Nuclear Industry," author, Joseph Goldfield, it is not in the context of monitoring difficulties. Except for these areas, none of the technical issues under appeal have ever been discussed by DOE and the University in the administrative record.

Thus, none of the alleged "facts" offered in the Petition were submitted to the administrative record. DOE and the University make no demonstration that the information stated in the Petition was unavailable at the time of the proceedings below, although they have the burden of doing so.

Upon information and belief, the information was available, DOE and the University failed to provide it, and they are

consequently estopped from submitting the information. Without such a demonstration the evidence cannot be considered by the EIB. DOE and the University have waived their right to submit the new evidence.

2. DOE and the University Have Waived Their Right to Present New Evidence.

DOE and the University waived their right to present the evidence they offer now in their Petition because they failed to offer it below. The administrative record clearly shows that there was extensive concern expressed about radioactive emissions from the incinerator during the incineration of hazardous waste <u>because</u> the incinerator is also intended for the incineration of radioactive waste. DOE and the University were put on notice of the concern and had the opportunity to present their own evidence. They chose not to offer any evidence, and were silent; in fact, they refused to testify concerning <u>any</u> issue at the public hearing. They risked nonsubmittal, and they lost. Therefore, they waived their right to present new evidence, and do not get a second chance to make their case.

HWMR-5, §902 prohibits the EIB from considering evidence outside of the administrative record, unless there is a public hearing on that evidence. Absent a hearing, the EIB must limit its review to the evidence in the administrative record, and may not consider in any way the unsworn assertions made by counsel for DOE and the University in their Petition. The factual assertions

constitute new evidence; the evidence could and should have been raised at the hearing below or following the hearing; DOE's and the University's failures to raise the evidence constitute waiver of the evidence. Given DOE's and the University's waiver of the evidence they seek to submit now, and the existence in the administrative record of evidence supporting the EID Director's conditions, see Exhibit 2 attached hereto for the information that was before the EID Director at the time of his decision, the EIB must affirm the EID Director's permit decision.

3. If the EIB Chooses to Consider the New Evidence, a Public Hearing Is Mandated, and Is Best Held Before EID.

Alternatively, without waiving its position that the existing record supports the authority for and appropriateness and feasibility of the permit conditions, EID asserts that a public hearing is mandated by HWMR-5, §902.G.2. If the EIB chooses to consider DOE's and the University's new evidence, there must be a public hearing allowing all parties a reasonable opportunity to submit written and oral evidence and arguments, to introduce exhibits, and to cross-examine persons who testify.

Such a public hearing would best be held in front of EID instead of in front of the EIB, and in that event EID requests the EIB to remand the appeals to EID for further proceedings. EIB review under HWMR-5, §902 is primarily designed to be an appellate review, as manifested by the standards for review. It is more appropriate for EID to hold an evidentiary hearing. The EIB lacks

the technical expertise to evaluate evidence presented at such a hearing.

Appellants will not be harmed by a remand to EID for a public hearing. Due to the Congressional moratorium passed on or about August 1, 1989, DOE and the University are prohibited from burning any radioactive waste in the incinerator for which the hazardous waste permit applies. The moratorium extends for one year, or until EID's Air Quality Bureau's regulations on incineration of radioactive wastes are promulgated, whichever comes first. Further, upon information and belief, DOE and the University are also not burning any hazardous waste in the incinerator at this time. Thus, DOE, the University, Ms. Jaramillo and Ms. Berde will not be harmed by any delay from holding a public hearing on DOE's and the University's new evidence.

III. IF THE EIB PURSUES THE APPEALS, EID REQUESTS TEN ADDITIONAL DAYS IN WHICH TO FILE

Should the EIB pursue consideration of these appeals, EID hereby moves the EIB to permit EID a ten (10) day extension in which to file its substantive responses to the merits of the appeals.

IV. EIB EXTENSION OF TIME IN WHICH TO RULE ON THE APPEALS

Counsel for the EIB has requested from the parties and EID an extension in which to rule on the appeals. EID does not object to such an extension.

V. CONCLUSION

For the reasons stated above, the EIB should dismiss these appeals for lack of jurisdiction; alternatively, the EIB should without public hearing affirm the EID Director's permit on the basis of the administrative record, without consideration of DOE's and the University's new evidence; alternatively, the EIB should remand the appeals to EID for a public hearing to better develop the record for review. Additionally, if the EIB goes forward with these appeals, EID requests an extension of ten days in which to file its substantive responses to the merits of the appeals; and EID does not object to the EIB's extension of time in which to rule on the appeals.

Respectfully submitted,

GINI NELSON
Special Assistant Attorney General
Assistant General Counsel
Office of General Counsel
Health and Environment Department
1190 St. Francis Drive
Santa Fe, New Mexico 87503
(505) 827-2990

Attorney for Environmental
Improvement Division

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Response of the Environmental Improvement Division to the Appeals of the LANL Hazardous Waste Permit was mailed on this 29th day of January, 1990, to the following:

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Llano, New Mexico 87543

GINI NELSON

[permitmm.gn2]

Documents in the Administrative Record submitted by Los Alamos National Laboratory (LANL) that address the Issues under appeal.

Listed below are all the references referring to radioactivity in administrative record documents submitted by LANL. All citations are as outlined in "EID's submission in respect to EIB review of the Director's decision Los Alamos National Laboratory Hazardous Waste Facility Permit No. 0890010515-1 of January 10, 1990." None of the references to radioactivity cites any information regarding background levels or monitoring of radioactivity at the stack.

I.B. Permitting files: 1985 to May 9, 1989 (binder 1)

I.B.1. CAI Run Plan for Run 21 RCRA Final Burn received September 4, 1986, p. 7, section 5.2:

HSE-1 health physics personnel will monitor all samples (as possible) for presence of radioactive contamination prior to release.

I.B.2. DOE letter dated November 25, 1987, p. 4, paragraph 2:

<u>The system upgrade of the TA-50 Controlled Air Incinerator</u>. The incinerator, in addition to disposing of hazardous wastes, has burned transuranic (TRU) waste as a research and development operation. In converting to a production mode for TRU disposal it was decidded the facility needed to be modified to accommodate an increased radioactivity. Because this impacts hazardous waste operations, the permit application is modified to reflect these changes.

I.C. RCRA Part B Applications

I.C.1.a. Initial, May 1985, Volume I, p. 2-5:

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms.

I.C.1.b. Initial, May 1985, Volume I, p. 4-5, section 4.2:

It is currently permitted to burn radioactive and PCB-contaminated materials... The incinerator and fuel gas treatment systems are capable of safely combusting a variety of hazardous wastes including low-level radioactive wastes and transuranic

Blumberg No. 5119
EXHIBIT
1

contaminated wastes. Since the incinerator is designed to combust materials contaminated with radioactivity, the incinerator is fitted with glove boxes that permit operation and maintenance of components that have the potential of becoming radioactively contaminated.

I.C.1.c. **Initial, May 1985, Volume I, p. 4-8:**

Since the incinerator is used for volume reduction of transuranic and low-level radioactive wastes, the ash, scrub solution and scrub filter cartridges are handled as suspect radioactive wastes. Thus, the ash is solidified by mixing with cement and the scrub solution is transferred to the TA-50 industrial (radioactive) waste treatment system for treatment. Since the incinerator is used for volume reduction of radioactive waste as described above, the ash is considered a hazardous waste (40 CFR section 261.3[c][2])(NMHWMR 201.A.2.c[2]) and is checked for radioactive contamination and handled appropriately.

I.C.1.d. **Initial, May 1985, Volume I, p. 9-11:**

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms.

I.C.1.e. **Initial, May 1985, Volume I, p. 9-12. section 9.3.2.2.:**

All radioactive components will be decontaminated and disposed of according to appropriate regulations... A detailed description of decontamination produces upon closure is not possible at this time since the equipment may be contaminated with transuranic (TRU) and low-level radioactive wastes. Decommissioning will follow Laboratory guidelines and procedures for handling radio active contaminated equipment. Exact procedures are a function of the degree of contamination at the time of closure... Upon the decision to close the facility, the equipment and building will be surveyed to determine the nature and levels of both radioactive and hazardous chemical contamination... All materials generated from decontamination and demolition will be treated as radioactive wastes and disposed of in

accordance with DOE radioactive waste management guidelines.

I.C.1.f. **Initial, May 1985, Volume II, P. J-6:**

Production-scale CAI system at Los Alamos was originally designed for the demonstration of volume reduction of combustible solid radioactive wastes... Research studies which have been completed in the CAI unit have included the incineration of various radioactively contaminated solid wastes, liquid PCBs, and pentachlorophenol contaminated wood.

I.C.2.a. **Revision 2.0, January 1986, Volume I, p. 6, section 1.2.4:**

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms. The liquid waste blowdown goes to the radioactive waste treatment facility. Samples will be collected as specified in the Incinerator Trial Burn Plan.

I.C.2.b. **Revision 2.0, January 1986, Volume I p. 2-4, section 2.1.2.2:**

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms.

I.C.2.c. **Revision 2.0, January 1986, Volume I, p. 4-6, section 4.2:**

It si currently permitted to burn radioactive and PCB-contaminated materials... The incinerator and flue gas treatment systems are capable of safely combusting a variety of hazardous wastes including low-level radioactive wastes and transuranic contaminated wastes. Since the incinerator is designed to combust materials contaminated with radioactivity, the incinerator is fitted with glove boxes that permit operation and maintenance of components that have the potential of becoming radioactively contaminated.

I.C.2.d. **Revision 2, January 1986, Volume I, p. 4-9, section 4.2.2:**

Since the incinerator is used for volume reduction of transuranic and low-level radioactive wastes; the ash, scrub solution and scrub filter cardridges are handled as suspect readioactive wastes. Ash is first checked to determine its radionuclide content. Ash that is classified as transuranic waste is solidified by mixing with cement and stored for proper disposal. Has that is classified as low-level radioactive waste is analyzed according to the procedures in section 3.0 to determine whether or not a hazardous waste, component is present. If the waste is also found to be a hazardous waste, it is handled as a mixed waste. Ash that is not found to be radioactive is analyzed according to the plan presented in Section 3.0. If the ash is hazardous waste, it is handled and disposed in accordance with the waste procedures presented in this document. The incinerator scrub solution is transferred to the TA-50 industrial (radioactive) waste treatment system via a closed piping system for treatment (a non-RCRA regulated activity). Thus, the incinerator is used for volume reduction of radioactive and hazardous waste as described above, and the ash is considered potentially to be hazardous waste (40 CFR 261.3,[c][2]) (NMHWMR 201.A.2.c.[2]) and is checked for radioactive and hazardous waste contamination and handled appropriately.

I.C.3.a. **Revision 3.0, January 1986 (revised November 1986), Volume I, page entitled, Lower-Burner-Combustion Air/Flowmeter Upgrade:**

A part of upgrade efforts in anticipation of production-level incineration of TRU and chemical wastes, we are removing the lower burner from the CAI and will be firing the lower chamber with the liquid injection burner, using natural gas or fuel oil during heatup or when incinerating solids.

I.C.3.b. **Revisions 3.0, January 1986 (revised November 1986), Volume I, page entitled, Vacuum Ash Removal System/Ash Removal Upgrade:**

However, this system was never intended for production-level incineration and presents a particular concern, both operationally and with regard to maintenance when, high volumes of TRU waste are being incinerated. "Clinkers" formed during incineration and noncombustibles (e.g.

nails) inadvertently fed to the system were often too heavy to be conveyed overhead and would require dismantling of the alpha-contaminated pipeline for their removal.

I.C.3.c. **Revision 3.0, January 1986 (revised November 1986), page entitled, Quench Column, Absorber and Piping Upgrade:**

However, for the anticipated production-level incineration of TRU and chemical wastes, these components present a substantial operational and safely concern... We feel that more reliable materials of construction are necessary in a system which will be operated for longer and more frequent intervals, and which will be highly contaminated with ^{239}Pu.

I.C.3.d. **Revision 3.0, January 1986 (revised November 1986), page entitled, Dual, Liquid Filter/Hydrocyclone and Blowdown Filter Upgrade:**

These filter element housings were located in a glovebox enclosure to reduce any radiological hazard (alpha activity resulting from incineration of TRU combustibles, i.e. ^{239}Pu)... In addition, the large volume of TRU-contaminated filter tubes generated by this system (and which required subsequent incineration) presented an undesirable waste handling and storage problem.

I.C.3.e. **Revision 3.0, January 1986 (revised November 1986), page entitled, HEPA Filter Plenum Upgrade:**

Although the offgas treatment system effectively removes particulate from the offgas streams radiological concerns arising from TRU incineration dectate the need for HEPA filtration... This system presented several problems from an operational and safety standpoint: 1) the lack of a backup HEPA filter plenum necessitated placing the CAI in an idle mode during filter changeout, 2) filter changeout was difficult to accomplish while maintaining an alpha seal on the plenum, because of the physical location of the plenum in the process (floor level), and 3) removal of the interior filter was difficult thereby presenting a radiological hazard. Relocation and use of individual filter enclosures will make filter changeout safer, less tedious, and will minimize the possibility of alpha release.

I.C.3.f. Revision 3.0, January 1986 (revised November 1986) p. 4-6, section 4.2:

It is currently permitted to burn radioactive and PCB-contaminated materials... Since the incinerator is designed to combust materials contaminated with radioactivity, the incinerator is fitted with glove boxes that permit operation and maintenance of components that have the potential of becoming radioactively contaminated.

I.C.3.g. Revision 3.0, January 1986 (revised November 1986) p. 4-9 section 4.2.2:

Since the incinerator is used for volume reduction of transuranic and low-level radioactive wastes, the ash, scrub solution and scrub filter cartridges are handled as suspect radioactive wastes. Ash is first checked to determine its radionuclide content. Ash that is classified as transuranic waste is solidified by mixing with cement and stored for proper disposal. Ash that is classified as low-level radioactive waste is analyzed according to the procedures in Section 3.0 to determine whether or not a hazardous waste component is present. If the waste is also found to be hazardous waste, it is handled as a mixed waste. Ash that is not found to be radioactive is analyzed according to the plan presented in Section 3.0. If the ash is hazardous waste, it is handled and disposed in accordance with the waste procedures presented in this document. Thus, the incinerator is used for volume reduction of radioactive and hazardous waste (40 CFR 261.3[c][2]) (NMHWMR 201.A.2.c.[2]) and is checked for radioactive and hazardous waste contamination and handled appropriately.

I.C.3.h. Revision 3.0, January 1986 (revised November 1986), p. 6-15, section 6.5.2:

Hazardous liquids are then pumped to the Laboratory's industrial (radioactive) waste treatment plant.

I.C.3.i. Revision 3.0, January 1986 (revised November 1986), p. 9-26, section 9.3.2:

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the

incineration of hazardous chemicals and certain radioactive waste forms.

I.C.3.j. Revision 3.0, January 1986 (revised November 1986), p. 9-27, section 9.3.2.2:

The manner of disposal will depend on any residual radionuclide contamination as well as any residual hazardous waste contamination. All radioactive components will be decontaminated to the extent practicable and disposed of according to appropriate regulations... A detailed description of decontamination procedures upon closure is not possible at this time because the equipment may be contaminated with transuranic (TRU) and low-level radioactive wastes. Decommissioning will follow Laboratory guidelines and procedure for handling radioactive contaminated equipment. Exact procedures are a function of the degree of contamination at the time of closure... Upon the decision to close the facility, the equipment and building will be surveyed to determine the nature and levels of both radioactive and hazardous chemical contamination... All materials generated from decontamination and demolition will be treated as radioactive or mixed waste and disposed of in accordance with appropriate regulations.

I.C.3.k. Revision 3.0, January 1986 (revised November 1986), Volume II, Appendix J. p. 2, section 2:

The small production-scale CAI system at Los Alamos was originally designed for the demonstration of volume reduction of combustible solid radioactive wastes... Research studies which have been completed in the CAI unit have included the incineration of various radioactively contaminated solid wastes, liquids PCBs, and pentachlorophenol contaminated wood.

I.C.4.a. Revision 4.0, November 1987, Volume I, p. 2-5, section 2.1.3.2:

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms.

I.C.4.b. Revision 4.0, November 1987, Volume I, p. 4-7, section 4.2:

The incinerator is currently permitted to burn radioactive and PCB-contaminated materials... The incinerator and flue gas treatment system are capable of safely combusting a variety of hazardous including low-level radioactive wastes and transuranic contaminated wastes. Since the incinerator is designed to combust materials contaminated with radioactivity, the incinerator is fitted with glove boxes that permit operation and maintenance of components that have the potential of becoming radioactively contaminated.

I.C.4.c. **Revision 4.0, November 1987, Volume I, p. 4-11, section 4.2.2:**

Since the incinerator is used for volume reduction of transuranic and low-level radioactive wastes, the ash, scrub solution and scrub filter bags are handled as suspect radioactive waste. Ash is first checked to determine its radionuclide content. Ash that is classified as transuranic waste is solidified by mixing with cement, calcium sulfate, or other DOE-approved immobilizing media, and stored for proper disposal. Ash that is classified as low-level radioactive waste is analyzed according to the procedures in Section 3.0 to determine whether or not a hazardous waste, component is present. If the waste is also found to be a hazardous waste, it is handled as a mixed waste. Ash that is not found to be radioactive is analyzed according to the plan presented in Section 3.0. If the ash is hazardous waste, it is handled and disposed in accordance with the waste procedures presented in this document. Thus, the incinerator is used for volume reduction of radioactive and hazardous waste as described above, and the ash is considered potentially to be hazardous waste [40 CFR 261.3(c)(2)] (NMHWRM 201.A.2.c.(2) and is checked for radioactive and hazardous waste contamination and handled appropriately.

I.C.4.d. **Revision 4.0, November 1987, Volume I, p. 9-29, section 9.3.2.1:**

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain readioactive waste forms.

I.C.4.e. **Revision 4.0, November 1987, Volume 1, p. 9-29, section 9.3.2.3.:**

The incinerator and the flue gas treatment systems are capable of safely combusting a variety of hazardous wastes including low-level radioactive wastes and transuranic wastes.

I.C.4.f. **Revision 4.0, November 1987, Volume I, p. 9-30, section 9.3.2.4:**

The manner of disposal will depend on any residual radionuclide contamination as well as any residual hazardous waste contamination. All radioactive components will be decontaminated to the extent practibable and disposed of according to appropriate regulations... A detailed description of decontamination procedures for the incinerator upon clousre is not possible a this time because the equipment may be contaminated with transuranic (TRU) and low-level radioactive wastes. Decommissioning will follow Laboratory guidelines and procedures for handling radioactive contaminated equipment... Upon the decision to close the facility, the equipment and building will be surveyed to determine the nature and levels of both radioactive and hazardous chemical contamination.

I.D. RCRA Trial Burn Documents

I.D.1. **Response to EPA/NMEID comments of September 13, 1985 on the Los Alamos National Laboratory TA-50 Incinerator Trial Burn Plan, submitted May 1985 (binder 3).**

I.D.1.a. Comment 26 and Response.

Comment 26:

Los Alamos need a full schedule for the final closure (procedures and the schedule).

Response:

Since the incinerator will be contaminated by radionuclides, clousre procedures will have to be developed that take the radiation hazard into account. Thus, these procedures will be developed after the radiation hazard has been determined.

I.D.1.b. **Comment 41 and Response.**

Comment 41:

Page 4-8, LANL need to provide information on the "(radioactive) waste treatment system" located at buildign TA-50.

Response:

Section 4.2.2 has been revised to clarify the role of the radioactive waste treatment system as it relates to the incinerator operations.

I.D.1.c. **Comment 42 and Response.**

Comment 42:

Page 4-8. LANL need to note that the ash will also need to be analyzed and treated if necessary, as a hazardous waste.

Response:

The incinerator will be analyzed for both radioactive and hazardous constituents. The final disposition of the ash will depend on the result of the analyses as discussed in Section 4.2.2.

I.D.3. **RCRA Trial Burn Final Report for the Los Alamos Controlled Air Incinerator, Volumes I and II, March 1987 (binder 4 and 5):**

I.D.3.a **Volume I, Appendix G. HEPA Filter Specifications, High Efficiency Particulate Air Filters. (paragraphs numbered consecutively throughout the article)**

I.D.3.a.1. **Page 1, paragraph 1:**

High efficiency particulate air (HEPA) filters, once known as absolute filters, were originally developed as the particulate attenuation state of a chemical, biological, radiological (CBR) filtration adsorber unit for use by the U.S. Armed Services. In the late 1940's the U.S. Atomic Energy Commission (AEC) adopted tehm for use for the containment of airborne radioactive particulates in

the exhaust ventilation system of experimental reactors, nuclear laboratories, and nuclear processing plants.

I.D.3.a.2. **Page 1, paragraph 2:**

On adoption of absolute filters by the ACE, Oak Ridge National Laboratory was assigned the study and developement program to optimize HEPA filtration design for nuclear service. The results of this on-going program have been published in "Design, Construction, and Testing of High-Efficiency Air Filtration Systems for Nuclear Application", USAEC Report ORNL/NSIC-65, and later under the Energy Research and Development Administration (ERDA) as the "Nuclear Air Cleaning Handbook", ERDA-76-21. The Second Edition of ERDA-76-21 (excerpt attached) was the nuclear industry standard at the time of design and construction of the Los Alamos Treatment Development Facility (TDF).

I.D.3.a.3. **Page 1, paragraph 3:**

The purpsoe of a nuclear air cleaning system is to provide protection of the public, plant operating pesonnel, and the environment from airborne radioactive particles and gases which are, or could be, generated or released from operations conducted in a nuclear reactor, fuel fabrication or processing plant, radiochemical operaion, laboratory, or other nuclear operation.

I.D.3.a.4. **Page 1, paragraph 4:**

In nuclear process off-gas cleaning applications, the HEPA filters are generally proceded in the process line by scrubbers, cyclones, and/or common air filters, which extend the operating life of the HEPA filters, but the HEPA filters are used as the final barrier between a process or contained space in which radioactive particles could be generated and the point of release to the atmosphere (the facility stack).

I.D.3.a.5. **Pages 1-2, paragraph 5:**

Not all of these applciations require the performance and construction of filters used in nuclear service.

I.D.3.a.6. **Pages 2, paragraph 6:**

In the 1960's, the American Association for Contamination Control convened a committee to write specification standards for HEPA filters, (IES CS-IT) which resulted in these grades of HEPA filters, i.e., Industrial, Nuclear, and Laminar Flow. The Nuclear Grade specification has been futher refined into a Military Specification, Mil-F-51068D, Filter, Particulate, High Efficiency, Fire Resistant.

I.D.3.a.7. **Page 2, paragraph 7:**

High efficiency filtration theory and the significance of particle size is subject to considerable misunderstanding both within and without the nuclear industry.

I.D.3.a.8. **Pages 2-3, paragraph 8:**

At operating conditions recommended for nuclear grade HEPA filters, calculations indicated a particle diameter of from 0.09 to 1.0 microns as the most difficult to filter... Nuclear grade HEPA filters must demonstrate a removal efficiency of not less than 99.97% of 0.3 micron particles.

I.D.3.a.9. **page 3, paragraph 9:**

The HEPA filters received at Los alamos are routinely purchased by the Laboratory's Materials Management and Transportation (MAT) Division according to current Department of Energy (DOE) and Nuclear Regulatory Commission (NRC) Nuclear Grade specifications... Facilities and processes involving plutonium or other transuranic isotopes have a minimum of double HEPA

filtrations; that is, two filter banks in series, each in-situ tested to meet the 99.97% minimum removal efficiency requirement.

I.D.3.a.10. **Page 3, paragraph 10:**

Additional environmental protection from volatile radioisotopes, such as radioiodine, and organic vapors is provided by the activated carbon adsorption bed. A final HEPA filter is the downstream bed screen.

I.D.3.a.11. **Page 3, paragraph 11:**

Chapter 4.3.3, Radioactive Plant Emissions Under Normal Operations, of the Final Safety Analysis Report (FSAR) for the Transuranic Contaminated Solid Waste Treatment Development Facility (LA-7971-MS, July 1979) (copy attached) contains an evaluation of the particle removal efficiencies by the variable throat venturi scrubber.

I.D.3.b. **Volume I, Appendix G, HEPA Filter Specifications, Nuclear air Cleaning Handbook, Design, Construction, and Testing of High-efficiency Air Cleaning Systems for Nuclear Application. (paragraphs numbered anew on each page):**

I.D.3.b.1. **Page 1, paragraph 1:**

A nuclear air cleaning system is provided to protect the public and plan operating personnel from airborne radioactive particles and gases which are, or could be, generated or released from operations conducted in a nuclear reactor, fuel fabrication or processing plan, radiochemical operation, laboratory, or other nuclear operation... The component almost univerally included in such systems is the hich-efficiency particulate air (HEPA) filter. This type of filter may be supplemented by common air filters, bag filters, cyclones, scrubbers, or other devices used in more conventional

applications but is nearly always employed by the nuclear air or gas cleaning system as the final barrier between a contained space (in which radioactive particultates could be generated) and the point of release to the atmosphere (i.e., the stack) or to an environmentally controlled space of the facility.

I.D.3.b.2. **Page 1, paragraph 2:**

The prevention of even extremely low concentrations of airborne contamination is fundamental to the safe opeation of a nuclear facility... Although protection of the health and safety of the public and of plant personnel is the primary consideration, the high costs of decontamination and the possiblility of shutdown of the facility in the event of an accidental airborne release of radioactive material are also important considerations.

I.d.3.b.3 **Page 1, paragraph 3:**

Radioactive substances tend to deposit or "plate out" on ducts, components, and other exposed surfaces and, in time, become sources of persistent ionizing radiation... These problems are of particular concern in power reactors and fuel reprocessing facilities because of their petential for releasing large amounts of radioactive material in the event of a system malfunction or upset.

I.D.3.b.4. **Page 1, paragraph 4:**

Much of the information pertinent to the design, construction, and testing of very-high-efficiency air and gas cleaning systems for nuclear applications is contained in limited-distribution topical reports, technical papers, and job specifications that are often not readily available to designers... The handbook summarizes findings from the literature and air cleaning practices at labortories, production facilities, power and

research reactors, and radiochemical and fuel reprocessing facilities. The judgments and recommendations presented reflect the experience of users and conditions that exist in operating systems where airborne radioactive materialis being successfully controlled on a day-to-day basis, oftern in situations where personnel have had to live with, or adapt to, serious deficencies in design or construction.

I.D.3.b.5. **Page 2, paragraph 5:**

... The functional design of nuclear air cleaning systems is covered in Safety Monograph No. 17 of the International Atomic Energy Agency (IAEA),[2] in various Regulatory Guides of the Nuclear Regulatory Commission (NRC),[3-5] and in the ERDA Manuar.[6]... Gas adsorption theory of interst to the nuclear industry is covered best in the proceedings of the biennial AEC (now ERDA) Air Cleaning Conferences.

I.D.3.b.6. **Page 2, paragraph 6:**

The design of nuclear air cleaning systems is complicated by the extremely high collection efficiencies required to meet the maximum permissible concentration (MPC) calues that have been established for radioactive substances in air.[1]... The situation is quite different in nuclear systems because of the complete insensitivity of man to the presence of radioactivity, even at levels that represent an immediate danger to life, and because of possible long-term effects of exposures even at low levels. The lowest threshold limit values (TLV)[12] specified for most chemical contaminants in air are at least two orders of magnitude higher than the MPC of any radioactive material.

I.D.3.b.7. **Page 2, paragraph 7:**

Similarly, the iodine adsorption units used in nuclear air and gas cleaning

service must also exhibit collection (i.e., decontamination) efficiencies substantially greater than adsorption units used in fume and oder control and most toxic or noxious gas control applications.

I.D.3.b.8. **Pages 2-3, paragraph 8:**

If airborne radioactive material is released from the system, there is the possiblity of seriously contaminating occupied spaces of the plant, as occured in the St. Laurent fuel meltdown incident in France, or of contaminating the surrounding countryside, as occurred in the Windscale reactor incident in England several years ago... In addition, the deposition and "plate out" of radioactive particulate matter and gases in and on ductwork, housings (i.e., equipment casings), filters, and other air cleaning system components limits access, obstructs maintenance, and increases the cost of operation. The designer must appreciate these substantial differences between nuclear and conventional air cleaning systems. Concentration of radiotoxic materials in the air cannot be maintained below statutory limits[1] if the design or layout of the system, or selection or installation of components is deficient. Some operations in the past have relied to some extent on dilution of airborne radioactive wastes with large volumes of air, followed by dispersal in the atmosphere. This practive is no longer acceptable in view of recent "as low as reasonably achievable" (ALARA) regulations, and heavy emphasis must be placed on positive removal of radioactive particlates, fumes, and gases by means of well-designed and-maintained filtration and adsorption systems.

I.D.3.b.9. **Page 3, paragraph 9:**

Also, since filters are collectors of radioactive (or potentially radioactive (or potentially radioactive) dust, they

can contain substantially greater concerntrations of radioactive material than the air of the contained space served by the system.

I.D.3.b.10. **Page 3, paragraph 10:**

Although lack of ventilation system flexiblity may create no problems in nuclear reactors and other facilities that have a fixed function, in radiochemical operations and particularly in laboratories and experimental facilities wehre changes is almost standared procedrue, provision for future system modification at the time of original system design can pay for itself many times over. The rebuilding of radioacvtively contaminated ducts and air cleaning systems is costly and hazardous, at best, and can be even more costly and hazardous when some provision for flexibility has not been left in the original design. because of the radioacticity problem, the costs of modifying or rebuilding a nuclear plant exhaust or air cleanup system may run five to ten times the cost of similar worked carried out in a nonradioactive system.

I.d.3.b.11. **Page 3, paragraph 12:**

He cannot be expected to build a system having the special features and requirements of a nuclear air cleaning system unless the design details and specifications clearly define them.

I.D.3.b.12. **Page 4, paragraph 14:**

A survey by the Harvard Air Cleaning Laboratory showed that operation and maintenance accounted for more than 85% of the total cost of owning a nuclear air cleaning system, based on 20-year amortization.[18]

I.D.3.b.13. **Pages 5-6, paragraph 16:**

The previous issue of the handbook[20] has

provided background information for a growing family of national standards covering air and gas cleaning systems for nuclear applications; the new issue will hopefully assist designers and engineers in using and interpreting those standards. It is also hoped that the volume will provide a rationale for the engineer, the manager, and the designer to justify the more costly, but necessary, features that a nuclear air cleaning system demands.

I.D.3.b.14 **Pages 7-11, Terms and Phrases (20 total):**

activation analysis. A method for identifying and quantitatively measuring chemical elements in a sample. Atoms in the sample are first made radioactive by bombardment with neutrons, charged particles, or other nuclear radiation; they then give off characteristic nuclear radiation by which they can be identified and their relative abundance can be determined.

adsorber. A device for removing gases or vapors from air by means of preferential physical condensation and retention of molecules on a solid surface. Adsorbers used in nuclear applications are often impregnated with chemicals to increase their activity for organic radioactive iodine compounds.

containment (containment vessel or building). A gastight enclosure around a nuclear reactor or other nuclear facility designed to prevent fission products from escaping to the atmosphere.

contamination. Any unwanted material in the air, in process fluids, or on surfaces. For the purposes of this handbook, contamination is usually assumed to be radioactive.

criticality. The state of sustaining a chain reaction, as in a nuclear reactor. When fissionable materials are handled

or processed, they must be kept in a subcritical geometry, configuration, or mass to avoid accidental criticality.

dose. The amount of ionizing radiation energy absorbed per unit mass of irradiated material at a specific location. In the human body it is measured in rems; in inanimate bodies it is measured in rads.

hot. Highly radioactive.

ionizing radiation. Any radiation (alpha, beta, or gamma) that directly or indirectly displaces electrons from the outer domains of atoms.

isotope. One of several forms of nuclides of the same chemical element that have the same number of protons in the nucleus and therefore have the same chemical properties, but have differing numbers of neutrons and differing nuclear properties.

maximum permissible dose. The dose of ionizing radiation which competent authorities have established as the maximum that can be absorbed without risk to human health.

nuclear reactor. An apparatus in which a chain reaction of fissionable material is initiated and controlled.

particle, particulate. A minute piece of solid matter having measurable dimensions. Also a radioactive particle (alpha, beta) which can liberate ionizing radiation or (neutron) which can initiate a nuclear transformation.

rad. Radiation absorbed dose, the basic unit of ionizing radiation. One rad is equal to the absorption of 100 ergs of radiation energy per gram of matter.

radiation. The propagation of energy through matter or space in the form of electromagnetic waves or fast-moving particles (alpha and beta particles,

neutrons, etc). Gamma rays are electromagnetic radiation in which the energy is propagated in "packets" called photons.

radioactivity. The spontaneious decay or disintegration of an unstable atomic nucleus accompanied by the emission of radiation.

rem. reontgen equivalent man. The unit of absorbed radiation dose in rads multiplied by the relative biological effectiveness of radiation.

shielding. A mass of absorbing material placed around a radioactive source to reduce ionizing radiation to levels not hazardous to personnel.

specific radioactivity. radioactivity per unit weight of a material.

spill. Accidential release of radioactive or other contaminating materials.

treatment. The process of removing all or a part of one or more chemical components, particulate components, or radionuclides from an off-gas stream.

I.D.3.c. **Volume I, Appendix G. HEPA Filter Specifications, Flanders: Air Filtration Products. (paragraph numbered anew on each page)**

I.D.3.c.1. **Page 1.15, paragraph 2:**

Before this time the uses for the absolute filters were largely for radioactive containment... It was no accident that HEPA filters used to "contain" radioactivity were selected as the best and simplest means of controlling harmful airborne contaminants.

I.D.3.c.2. **Page 8, paragraph 4:**

This, in trun, led to a re-evaluation of the filter test procedures for filters

used for radioactive containment. Prior to the advent of commercial nuclear power stations, most of these filters were used either by the U.S. weapons program or in the field of nuclear research. The U.S. Department of Energy (formerly, The Atomic Energy Commission) operates, through perime contractors, several filter test facilities equipped with Q 107 Penetrometers. Hepa filters purchased for weapons and nuclear research facilities are retested en route to these plants.

I.d.3.c.3. **Page 10, paragraph 1:**

The most stringent factory tests for hepa filters have resulted from the requirments of both the nuclear industry and the operators of laminar flow clean rooms... Consequently, it is not surprising that the nuclear industry and those industries requireing liminar flow clean rooms also require verification of inservice performance of both Nuclear Grade and Laminar Flow Grade Hepa Filters and their supporting frameworks.

I.D.3.c.4. **Page 10, paragraph 6:**

Hepa filters installed in nuclear air cleaning systems are required to be tested in-service following each filter change and in certain cases, periodically during the life of the filters... The in-place test is frequently called an efficiency test, but the standard, Testing of Nuclear Air Cleaning Systems, ANSI/ASME N510-1980, states;

I.D.3.c.5. **Page 14, paragraph 3:**

As in the testing of nuclear systems in-place, a uniform challenge is required.

I.D.3.c.6. **Page 15, paragraph 6:**

The breakthrough on VLSI^{tm} filtration is certain to have far-reaching effects in both the nuclear and clean room

industries in years to come.

I.D.3.d. **Volume I, Appendix G: HEPA Filter Specifications, Excerpt:FSAP for the Treatment Development Facility, LA-7971-MS, July 1979, (paragraphs numbered anew on each page)**

I.D.3.d.1. **Page 4-26, paragraph 2:**

Radioactive emissions from the Zones 2 and 3 filter systems will be small fraction of that from the incineration offgas cleanup train filters (Zone 1).

I.D.3.d.2. **Page 4-26, paragraph 3:**

The incineration of 100 lbs of design matrix wastes per hour at a level of 100 nCi/g will contain 4540 Ci of transuranics... At the design offgas rate of 30900 ft^3/h, some 200 g of ash containg 20 Ci of transuranics would be carried over into the offgas treatment train.

I.D.3.d.3. **Page 4-28, paragraph 2:**

Using the middle value of 96.13% particulate removal efficiency for the venturi scrubber (normal operating pressure drop is 50"), and assuming no allowance for partuclate removal in the quench chamber, liquid-gas separator, packed column scrubber, demister or ash or roughing filters, 7.74 g of ash containing 0.77 Ci of transurarics is expected to impinge on the HEPA filters... The stack flow rate is 746,950 SCFH or $2.12 \times 10^4 m^3/hr$ yielding a plutonium concentration in the effluent of 3.14×10^{-18} Ci/m , well below the DOEM 0524 limit of 6×10^{-14} Ci/m for soluble plutonium. Additionally, plutonium incinerated at 2300 F is most probably in the oxide form and insoluble except in acid digestion. Therefore, the DOEM chapter 0524 limit of 10^{-12} Ci/m is considered to be the applicable standard.

I.D.3.e. **Volume II, Appendix I, Trial Burn Plan,**

Section D: Process Information, p. 2., paragraph 1:

Research studies which have been completed in the CAI unit have included the incineration of various radioactively contaminated solid wastes, liquid PCBs, and pentachlorophenol contaminated wood.

I.D.3.f. **Volume II, Appendix M, Analytical Laboratory QA/QC Plan, Controls for Environmetnal Pollution, Inc. Quality Control Program/Quality Assurance Plan.**

I.D.3.f.1. **Page 3, section 2.2.(g):**

(g) standardizing all radioactive quality control solutions; and

I.D.3.f.2. **Pages 3-4, section 4.1 Radiochemistry:**

4.1. Radiochemistry

(e) Radioactive quality control solutions will be calibrated as requried.

I.D.3.f.3. **Page 5, section 4.5 Nuclear Measurements Instrumetnation:**

4.5 Nuclear Measurements Instrumentation

(a) All nuclear measurements instrumentation and equipment shall be on a maintenance program, as appropriate for the nature and frequency of usage.

(b) Backgrounds on proportional counters and alpha spectrometers will be conducted with every twenty-five samples. Backgrounds for gamma spectrometry are determined automatically for all samples analyzed (computerized program).

(c) Insturmentation calibrations of proportional counters, gamma spectrometers and liquid scintillation systems shall be counducted on a weekly basis. Alpha spectometers shall be calibrated on a quarterly basis. Less frequently used instruments will be calibrated prior to use. Standards used are to be traceable to National Bureau

of Standards, when available.

(d) Self-absorption curves will be conducted on a quarterly basis.

I.D.3.f.4. **Page 8, section 5.2.1. Radiochemistry:**

5.2.1. Radiochemistry

(a) All Radiochemistry personnel shall follow approved methods by the Environmental Protection Agency, Environmental Measurements Laboratory or other methods approved by management to meet client specifications or regulatory requirements.

I.D.3.f.5. **Page 10, section 5.2.5. Nuclear Measurements:**

5.2.5. Nuclear Measurements

(a) All Nuclear Measurement personnel shall follow the Standard Operating Procedure Manual for each instrument.

(c) Backgrounds on proportional counters and alpha spectrometers will be conducted with every twenty-ive samples. Backgrounds for gamma spectrometry are determined automatically for all samples analyzed (computerized program). Standard traceable to National Bureau of Standards, when available, will be run on a weekly basis, or as appropriate for the instruement.

I.D.3.f.6 **Page 10, section 5.4. Quality Assurance Audits:**

CEP-QA-85 Quality Assurance Audit, Nuclear Measurements.

I.D.3.f.7. **Page 11, section 6.1. Radiochemistry:**

(a) All analytical records and quarterly reports shall be retained as permanent record in accordance with CEP administrative requirements.

(b) Records and reports shall be formated as directed by CEP clients.

I.D.3.f.8. **Pages 11-12, section 6.5. Nuclear Measurements:**

(a) Quality Assurance records shall consist of all logs, reports, results, difeciency reports and the like which are generated in the course of carrying out requirements of all Quality Assurance Plan.

(b) All such records shall be retained as permanent record in accordance with CEP's administrative requirements.

I.D.3.f.9. **Page 12, section 8.1. Quality Assurance Plan and Standard Operating Procedures:**

The draft of the completed Qualtiy Assurance Plan and Standard Operating Procedure for Radiochemistry, Inorganic Chemistry, Organic Chemistry, Microbiology and Nuclear Measurements shall be distributed for review comment and approval as follows:

President	1 Copy	(For review and comment)
All Labortory Managerial Positions	1 Copy	(For review and comment)
Director of Quality Control	1 Copy	(For approval)

I.D.3.f.10. **Page B-1, Glossary:**

Background- Radiation present when there is no source under the detector usually expressed as counts per minute.

I.D.3.f.11. **QA Manual Checklist:**

CEP-QA-A	Radiation Control Manual for LAboratory Personnel
CEP-QA-6	Standard Operating Procedure Inventory of Radioactive Material
CEP-QA-9	Radionuclide Issuance Procedure

CEP-QA-14	Nuclear Measurements Instrument Loading and Unloading Procedure
CEP-QA-45	Quality Assurance Standard Operating Procedure for the Calibration of Wide Beta Systems
CEP-QA-46	Quality Assurance Standard Operating Procedure for Determining Efficiencies of Detectors for Wide Beta II and Low Beta II Systems
CEP-QA-47	Quality Assurance Standard Operating Procedure for Calibration of Low Beta II Systems.
CEP-QA-56	Procedures for Analytical Performance of Radioanalytical Lab
CEP-QA-58	Importance of Quality Control in Radioanalytical Laboratory
CEP-QA-81	Quality Assurance Audit, Radiochemistry
CEP-QA-85	Quality Assuracne Audit, Nuclear Measurements
CEP-QA-89	Standard Operating Procedure Review of Radiochemical Data

II.A. **Permitting files: May 10, 1989 through 5 p.m., August 24, 1989 (includes written comments received on draft permit) (2 volumes, binders 7&8)**

II.A.1. **Response to Mr. Michael Horan's 5/31 letter to NMEID Re: Los Alamos Controlled Air Radioactive Waste Incinerator RCRA Operating Permit #NM0890010505-1**

II.A.1.a. **Item #1 - HEPA Filters, paragraph 1-2,5.**

The Carbon Bed Adsorber was originally installed in the CAI offgas treatment line as part of a research project to study the fate of various fission activation products during incineration.

Its primary purpose at that time was for capture of Iodine 131 that might pass through the upstream offgas treatment components. It is not now, nor has it ever been, intended to serve as a filter or control device for PU-238, PU-239, PU-240, or any other particulates in the offgas stream. The sole reason this component has been retained in the present incinerator design configuration is that due to offgas duct piping constraints between the primary HEPA filter banks and the Carbon Bed, EPA Method 5 isokinetic sampling associated with the RCRA Trial Burn could only be made in the ductwork downstream of the Carbon Bed.

The primary filtration device for removal of radioactive particulates in the offgas stream is the High Efficiency Particulate Air (HEPA) filters, located upstream of the Carbon Bed. These are nuclear grade filters which are factory tested and certified to have a minimum particle capture efficiency of not less that 99.97 percent of 0.3 micron particles. All HEPA filters are further tested by DPE prior to installation at the site to certify 99.97% capture efficiency. Following installation, leak testing is performed across the filter bank to ensure adequate installation and filter performance. Three HEPA filter banks are located in series in the process, for tripley staged filtration of the offgas.

HEPA filters in current usage at the CAI are the industry standard, non-regenerable type. Regenerable HEPA filters are available, but as yet are not approved for nuclear service. HEPAs removed from service are assayed to determine whether they contain transuranic (TRU) or low level radioactive contamination. Low level contaminated filters are placed into contained storage pending disposal at a mixed waste disposal site. TRU contaminated filters are placed into contained storage pending certification and disposal at WIPP.

II.A.2. COMMENTS OF THE DEPARTMENT OF ENERGY AND THE REGENTS OF THE UNIVERSITY OF CALIFORNIA ON DRAFT PERMIT NUMBER 0890010515-1 TO OPERATE HAZARDOUS WASTE FACILITIES, BEFORE THE NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION-JULY 18, 1989.

II.A.2.a ATTACHMENT J.

Attachment J, in its present form, covers matters

which are outside the jurisdiction of EID and should be deleted from the permit. Section 74-4-3H NMSA 1978 states that source, special nuclear or by-product material as defined in the Atomic Energy Act are not solid wastes and therefore cannot be hazardous wastes. Such materials may not be regulated by EID under the Hazardous Waste Act. Throughout Attachment J there are references to procedures, equipment, and personnel which are specifically and solely related to the proper control and management of radioactive materials. Clearly, these matters are improperly included in the hazardous waste permit and should be deleted. In lieu of the hazardous waste permit and should be deleted. In lieu of the present Attachment J, the Laboratory has prepared a substitute Attachment (Exhibit 4) which addresses incinerator operational safety with regard to hazardous wastes. LANL requests that this document be substituted for Attachment J in the draft permit.

II.A.3. Supplementary Comments of the Department of Energy and the University of California on Draft Permit #NM0890010515-1

II.A.3.a. Introduction p.1, paragraph 2.

Concerns dealing with the treatment of radioactive or mixed waste are not relevant to this proceeding and may not be considered by EID unless they directly relate to the storage or treatment of chemical wastes.

II.A.3.b. P.2, Section 3, Paragraphs 1-2.

Exceptions are the TRU contaminated PCBs and other TRU waste, the scintillation vial (pseudocumene or 1,2,4-trimethylbenzene) waste, and some materials contaminated with methanol (upon which the interim status request was based).

Ashes qualifying as TRU waste were sent to TA-55, where they were solidified along with evaporator bottoms from TA-55 processing operations. These materials are currently sorted with other TUR wastes at TA-54, pending ultimate disposal (at WIPP or a similar facility). Non-TRU ashes, whether resulting from radioactive or non-radioactive real or simulated waste incineration, have been handled as low level or potential mixed waste. Consequently, these ashes have been sent to the mixed waste landfill at Area G. No ash has

been disposed of at that site since the last operation of the CAI for scintillation vial destruction in the Spring of 1987.

II.A.3.c. **P.6, Section 6, Paragraphs 1-2.**

The radioactive constituents in mixed wastes have no known or demonstrable effect on efficiency of chemical destruction.

Damage of impairment of the incinerator due to exposure to radioactivity is not a valid concern. Although conditions of high neutron flux or gamma energy (such as in a reactor environment) can cause materials damage (such as embrittlement of metals), the CAI will not see appreciable levels of this type of radioactivity. The plutonium contaminating the radioactive and mixed waste emits primarily alpha activity, which is not a materials concern.

II.A.3.d. **P.7, Section 12, Paragraph 2.**

At no time did LANL decide, nor was it necessary, to suspend chemical operations due to some other alleged system damage, not was the decision to return to burning primarily TRU waste in the CAI a result of such corrosion damage.

II.A.4. **A Review of the Report: High Efficiency Particulate Arrestors (HEPA Filters) in the Nuclear Industry. Author: Joseph Goldfield, Consulting Engineering; Reviewer: Ronald C. Scripsick, Industrial Hygiene Group, HSE-5, Health, Safety, and Environment Division, LANL; Review Date: August 17, 1989 (submitted with Supplemental Comments)**

II.A.4.a. **"Radon and Thoron Daughters," p.**

Because plutonium activity levels were so low on the second and third stage samples, radon and thoron activity was allowed to decay away before making the plutonium activity measurements. The radon and thoron activity is associated with a naturally occurring gas and is not associated with plutonium processing.

II.A.5. **Operational Evaluation of the High Flow Alternative Filter Test System, R.C. Scripsick, R.L. Smitherman, and S.A. McNabb, 19th DOE/NRC Nuclear Air Cleaning Conference (submitted with**

Supplementary Comments

II.A.5.a. **IV. Summary, last page**

The HFATS provides the capability of measuring worst case filter penetration and readily determining penetration in terms of physical factors of concern (i.e. mass, radioactivity, etc.).

Listed below are the comments regarding radioactivity and the Los Alamos National Laboratory which were before the Director when he made the decision to issue the operating permit.

III.A.2. **Post-hearing Materials; Permitting-files: Date of Director's Decision, November 8, 1989.**

III.A.2.a. **Memorandum: Summary of issues regarding the operating permit for hazardous waste units at Los Alamos National Laboratory, November 8, 1989.**

IIIA.2.a.1. **Hazardous waste units and wastes handled at LANL, paragraph 3, p.2.**

Additionally the incinerator is burning mixed wastes under interim status and it permitted to burn strictly radioactive wastes and PCBs.

III.A.2.a.2. **Changes to the draft permit, paragraph 5, p.3.**

A majority of people were concerned that the number of parameters being monitored were too low and that radioactivity was not being monitored. The monitoring requirements have been increased so that the waste feed must be monitored for radioactivity (permit paragraph V.C.3) and the exhaust at the stack must be monitored for radioactivity and total hydrocarbons (permit paragraphs V.E.9. and 10.).

III.A.2.a.3. **Concerns regarding incineration, paragraph 3, p.4.**

A major concern is that the very small particulates will entrain metals (and radionuclides) and carry then for considerable distances.

III.A.2.a.4. **Concerns regarding incineration, paragraph 11, p.5.**

The last major concern is incinerator failure or malfunction. The incinerator is monitored for the following operating parameters: pressure drop across the venturi scrubber; pressure drop across the HEPA filter banks; operating temperatures; flow rate and pH of the effluent control system solution; the flow rate and carbon monoxide and oxygen concentrations in the combustion air; total hydrocarbons in exhaust gas; radioactivity of the exhaust gas. If the incinerator cannot maintain any one of these parameters at the required level, the incinerator automatically shuts down.

III.A.2.b. **Responses to comments on the Draft Hazardous Waste**

EXHIBIT
2

Permit for Los Alamos National Laboratory.

II.A.2.b.1. **Comment 14, p. 4.**

Comment: Numerous people (pp.94-96, 143, 286, 290, 329, 356-357, 405, 511; three letters) questioned that monitoring of only a few parameters would be sufficient to ensure that no noxious emissions occurred. **Repsonse:** The permit requires continuous monitoring of carbon monoxide in the exhaust gas, temperatures and oxygen levels in the combustion chambers and pressure drops and flow rates in the exhaust scrubber system. (Permit Module I.E.1-8.). These parameters were monitored and demonstrated in the trial burn as those ensuring the required destruction and removal efficiency (DRE). **Permit modification:** The EID has added a requirement for monitoring of total hydrocarbons and radioactivity in the exhaust (Permit Module V.E.9. and 10) and radioactivity in the waste feed (Permit Module V.C.3.) to address the public concerns over these parameters.

III.A.2.b.2. **Comment 16, p.5.**

Comments: concern (p. 533) was expressed that the filters on the incinerator do not stop all particles and gases. **Response:** This is partially correct in that gases pass through filters, but particles are retained. The LANL incinerator has nuclear-grade HEPA filters to remove fine particulates and radionuclides and a venturi scrubber to remove the larger particulates; the absorber columns remove the acidic gases. Additionally, the LANL incinerator exceeds the EPA standards for emissions of particle removal (Final Report, Lab, Job No. LJ 10309/KA-035, Controlled Air Incinerator Upgrade, TA-50 Kaiser engineers, Inc., August 16, 1989). **Permit modification:** None.

III.A.2.b.3. **Comment 27, p.8.**

Comment: The separation of radioactivity issues from the permit was questioned by the majority of those at the hearing (p. 50 and throughout the hearing record; two letters, 248 people wrote or signed a petition). **Response:** Radioactive wastes are not subject to the regulations (HWMR-5, Pt. II, 40 CFR section 261.4(a)(4). EID's situation regarding mixed wastes is outlined in the EID July 18, 1989 Statement. The EID does recognize public concern over the potential release of radioactive

materials and has added additional monitoring to the Permit. **Permit modification:** Monitoring for radioactivity was added to the operating requirements for the incinerator (Permit Module V.F.9.).

PART IX - THE HAZARDOUS WASTE PERMIT PROGRAM

901. Adoption of 40 CFR PART 270. The regulations of the United States Environmental Protection Agency set forth 40 CFR Part 270, through July 1, 1987, are hereby incorporated in Part IX of the New Mexico Hazardous Waste Management Regulations.

902. Permitting Procedures.

A. Permit Issuance.

1. Once an application is complete, the Director shall tentatively decide whether to prepare a draft permit or to deny the application.

2. If the Director decides to prepare a draft permit, he shall prepare a draft permit that contains all conditions, compliance schedules, monitoring requirements and technical standards for treatment, storage, and/or disposal provided for in Part 270 of these regulations.

3. All draft permits for facilities or activities prepared by the Division under 902.A.2. shall be accompanied by a fact sheet and shall be based on the administrative file. Copies of the fact sheet shall be sent to the applicant, any state or federal agency as applicable and, on request, to any other person.

4. The Director shall give public notice that a draft permit has been prepared or that a permit application has been tentatively denied and shall allow at least forty-five (45) days for public comment and review. During this comment period, whenever a written notice of opposition to a draft permit and a request for a hearing is received from an affected individual, a public hearing may be held. The Division, acting in conjunction with the applicant, will respond to these requests in an attempt to resolve those issues giving rise to such opposition. If such issues can be resolved to the satisfaction of the opponent, the affected individual may waive his request for a public hearing. In such case the public hearing need not be held. The Director may also hold a public hearing at his discretion.

5. No ruling shall be made on permit issuance without an opportunity for all interested persons to be given a reasonable chance to submit significant data, views or arguments orally or in writing and to examine witnesses testifying at any public hearing. The comment period specified in 902.A.4. shall automatically be extended to the close of any public hearing.

6. The Director shall give due consideration and the weight he deems appropriate to all comments received during a public comment period and to all relevant facts and circumstances presented at any public hearing.

7. When ruling on permit issuance, the Division may disapprove in whole or in part, or make reasonable conditions to any permit, if it appears that the proposed action will not meet the requirements of these regulations.

8. At the time that any final permit decision is issued, the Director shall issue a response to comments. This response shall:

   a. Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and

   b. Briefly describe and respond to all significant comments on the draft permit or the permit application raised during the public comment period, or during any hearing.

9. The response to comments shall be available to the public.

10. The approval of a permit does not relieve any person from the responsibility of complying with applicable state or federal laws and regulations.

11. The Director shall notify the permittee by certified mail of any impending permit action and of any scheduled public hearing date.

B. Permit Modification, Suspension and Revocation.

1. The Director may modify, suspend, or revoke a permit issued pursuant to 902.B. for cause set forth in Part 270 of these regulations.

2. The Director may modify, suspend, revoke or terminate a permit upon his initiative, or if, after the Division's investigation of the facts and circumstances, pursuant to the request of any interested person, such permit action is deemed warranted.

3. All requests for permit modification, suspension, revocation or termination shall be in writing and shall contain facts or reasons supporting the request.

4. In a permit modification under this section, only those conditions to be modified shall be considered when a new draft permit is prepared. All other aspects of the existing permit shall remain in effect for the duration of the unmodified permit.

5. Minor modifications as outlined in Part 270 of these regulations are not subject to the requirements in 902.B. for permit modifications.

6. The Director shall notify the permittee by certified mail of any impending permit action and of any scheduled public hearing date and issue public notice of impending permit action.

7. No ruling shall be made on permit modification, suspension or revocation without an opportunity for a public hearing at which all interested persons shall be given a reasonable chance to submit significant data, views or argument orally or in writing and to examine witnesses testifying at the hearing.

8. The Director shall give due consideration and the weight he deems appropriate to all comments received during a public comment period and to all relevant facts and circumstances presented at any public hearing.

C. Public Notices.

1. Public notice of permit actions (preparation of a draft permit, tentative denial of a permit application, scheduling of a public hearing) shall be given by publication of a notice in a newspaper of general circulation in the area affected, broadcasts over local radio stations and by mailing a copy of the notice to the permit applicant, those individuals on the Hazardous Waste Unit's mailing list, and to any units of local, state and federal government as may be applicable.

2. All public notices issued shall contain the following minimum information:

   a. The subject, the time and place of any scheduled hearing and the manner in which interested persons may present their views;

   b. A brief description of the procedures by which requests for hearings may be made, unless already scheduled;

   c. Name and address of the office processing the permit action for which notice is being given;

   d. Name and address of the permittee or permit applicant, and, if different, of the facility or activity regulated by the permit;

   e. A brief description of the business conducted at the facility or activity described in the permit application or the draft permit; and

f. Name, address and telephone number of a person from whom interested persons may obtain further information;

g. In addition, public notice of a scheduled public hearing shall also contain references to the date of previous public notices relating to the permit.

D. Fact Sheet.

1. A fact sheet shall be prepared for every draft permit for a Hazardous Waste Management facility or activity. The fact sheet shall briefly set forth the principal facts and the significant factual legal, methodological and policy questions considered in preparing the draft permit.

2. The fact sheet shall include, when applicable:

a. A brief description of the type of facility or activity which is the subject of the draft permit;

b. The type and quantity of wastes which are proposed to be or are being treated, stored, disposed of, injected, emitted, or discharged.

c. A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions.

d. Reasons why any requested variance or alternative to require standards do or do not appear justified.

e. A description of the procedures for reaching a final decision on the draft permit including:

(1) The beginning and ending dates of the comment period and the address where comments will be received;

(2) Procedures for requesting a hearing and the nature of that hearing; and

(3) Any other procedures by which the public may participate in the final decision.

f. Name and telephone number of a person to contact for additional information.

3. The fact sheet shall be available at the time the public notice is published.

E. Hearings.

1. Public notice of any public hearing shall be given at least thirty (30) days prior to the scheduled date of the hearing.

2. Hearings shall be held in Santa Fe or within any area of the state substantially affected by the proceedings as specified by the Director.

3. The Director may designate a hearing officer to take evidence at the hearing.

4. All hearings shall be recorded by a certified court reporter. A transcript will be furnished to all persons for review at the Division's main office. Costs of a copy of a transcript will be borne by those requesting such copies.

5. In hearings, the rules of civil procedures and the technical rules of evidence shall not apply, but the hearings shall be conducted so that all relevant views, arguments, and testimony are amply and fairly received without undue repetition.

6. Any person heard or represented at the hearing shall be given written notice of the action of the Director.

7. The Director shall notify the applicant or permittee of his decision and the reasons, therefore, by certified mail.

F. Director's Decision.

For purposes of these regulations, the Director's decision is not made until it becomes final under Section 902.G. or until the Board renders its decision under 902.F. either sustaining or reversing the Director. Immediately upon receiving the Board's decision the Director shall enter the Director's decision in accord with the Board's decision, which shall be considered the Director's decision for purposes of appeal to the Court of Appeals.

G. Review and Hearings Before Board.

1. Any person adversely affected by the decision of the Director concerning the issuance, suspension, modification or revocation of a permit may submit a petition for review of the Director's decision by the Environmental Improvement Board. For purposes of this regulation, an applicant for permit, permittee or an alleged violator of a permit or regulation shall be the "appellant". A petition for review must be made in writing to the Board within thirty (30) days after notice of the Director's action or decision has been received by the appellant and must include a statement of issues and supporting

arguments. Unless a timely request for review and hearing is made, the decision of the Director shall be final.

2. Any new evidence becoming available after the tentative decision by, or the hearing before the Director, may be presented at a hearing before the Board if such hearing is requested along with the request for review of the Director's decision. Otherwise, the Board shall consider only the evidence admitted in the record formed at the hearing befc e the Director or the evidence available to the Director at the time of his or her tentative decision. All parties who participated in the hearing before the Director may submit to the Board, within thirty days of the appellant's request for review, proposed findings and reasons based upon the hearing record.

   In reviewing the Director's decision, the Board may modify or reverse the Director's decision if the decision is forund to be:

   (a) arbitrary, capricious or an abuse of discretion;

   (b) not supported by substantial evidence; or,

   (c) otherwise not in accordance with law.

   If the appellant requests only that the Board review the Director's decision without requesting a hearing to consider new evidence, the Board shall render a decision denying, modifying or sustaining the Director's decision, along with findings and reasons, within sixty (60) days of the appellant's request, and by certified mail shall notify the appellant and shall make a reasonable effort to notify all participants in the hearing before the Director of its decision, findings and reasons. If a hearing to consider new evidence is held, the Board's decision on the Director's decision shall be defered until the hearing is held in accordance with the sub-sections 3 through 6.

3. If a timely request for hearing is made, the Board shall hold a hearing within sixty (60) days after receipt of the request, and at least twenty (20) days prior to the hearing date shall notify the appellant by certified mail and shall make a reasonable effort to notify all who submitted comments on the permit, or who participated in the hearing before the Director of the date, time and place of the hearing. The Board shall also publish notice of the date, time and place of hearing at least twenty (20) days prior to the hearing date in a newspaper of general circulation in the county in which the facility is proposed to be located or is located and a newspaper of general circulation in the state.

4. The Division will arrange for transcript of the hearing by a certified reporter. Copies of the transcript shall be paid for by those requesting them.

5. Hearings shall be before the Board or a hearing officer appointed by the Board. If a hearing officer is designated by the Board he or she shall conduct the hearing and rule on the evidence presented. In hearings, the technical rules of evidence and the rules of civil procedure shall not apply, but the hearings shall be conducted so that all relevant views are amply and fairly presented without undue repetition. The Board may require reasonable substantiation of statements or records tendered and may require any view to be stated in writing when the circumstances justify.

6. The Board shall allow all parties a reasonable opportunity at a hearing to submit written and oral evidence and arguments, to introduce exhibits, and to cross-examine persons who testify. At any hearing accompanying the review of the Director's decision, in which only new evidence becoming available following the hearing before the Director is allowed, all exhibits, evidence and cross-examination shall be restricted to such new evidence.

7. All parties participating in the hearing may submit proposed findings and reasons to the Board within thirty (30) days following the Board's receipt of the transcript.

8. The Board may adopt findings submitted or may make separate findings, but the Board shall:

   (a) consider and weigh all of the evidence presented in making or adopting any and all of its findings and reasons;

   (b) adopt or make only findings and reasons that are supported by substantial evidence as presented; and,

   (c) not adopt or make any findings and reasons which are arbitrary or capricious, or otherwise not in accordance with the law.

9. Within sixty (60) days following the Board's receipt of the transcript, the Board shall render a decision on the basis of the hearing record sustaining, modifying or reversing the Director, along with findings, and shall notify the appellant and all participants in the hearing of its decision and findings.

December 12, 1989

Environmental Improvement Division
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, N.M. 87503

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DEC 15 1989
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

To Members of the Environmental Board,

As a citizen of Santa Fe County, I would appeal your decision to grant a hazardous waste incineration permit to Los Alamos National Labs under HWR-5- Sect. 902 G.

I have not only read the Los Alamos comments and the EID's responses but have also attended both the EID and EPA hearings in Santa Fe.

You obviously have little regard for Mr. Richardson's amendment for a moratorium on burning. Otherwise, why not wait until new guidelines and standards are in place and met before issuing a permit?

I was also very sorry to see in the 16 page response to comments that there were virtually NO Permit Modifications made due to any of the comments by the public.

Also under Comments from LANL (#60), it would seem that here LANL is objecting to meeting <u>any</u> State standards with their incinerators. It states that the EID has the authority to enforce violations but does not know if it <u>would</u> under this permit. Perhaps both the EID and LANL would side step the issue of whether there ARE any violations of State standards. If there are any violations, it seems clear that neither the EID or LANL wants any responsibility for them. Isn't it the job of the EID to insure safety and environmental standards to the public?

I also find objectionable is the recent nomination of Vernon Kerr to the EIB. As we all know, Mr. Kerr was not only an employee of LANL but has come out publicly against anti-Wipp activists calling them "nuclear weenies". Could he really be counted on to make a fair decision concerning LANL or Wipp? More than likely there is a serious conflict of interest here.

The new policy of the EID to not allow access to records by the media is intolerable. Do you have something to hide? Clearly the recent articles in the Santa Fe Reporter on Lee Acres, etc. were very alarming but if the EID (or LANL) wants to work with the public in solving their many problems; they will need to be open and honest.

I sincerely hope the Board will go slowly as Mr. Richardson has proposed and take the time for careful consideration and review; ultimately leading to a reversal of the decision to grant this permit. It is something that will effect us all for a long time. In this case, it is <u>just</u> what we can't see that will hurt us.

Thank you,

Barbara Jaramillo
5 Pinon Lane
Pojoaque, NM 87540

New Mexico Health and Environment Department

GARREY CARRUTHERS
Governor

DENNIS BOYD
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

M E M O R A N D U M

To: Swani La Questa, EIB

From: Jack Ellvinger, Chief, HWB

Date: December 20, 1989

RE: Transmittal of a Request for the Board's Review of Hazardous Waste Permit.

I've attached a letter that was directed to the Division by mistake. It is a request for the Board to review the Director's decision regarding the issuance of the hazardous waste permit for the Los Alamos National Laboratory. Please provide it to the Board for their consideration.

Thank you.

cc: Tracy Hughes, OGC
Elizabeth Gordon, HWB Permits

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OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

New Mexico Health and Environment Department

GARREY CARRUTHER
Governor

DENNIS BOYC
Secretary

MICHAEL J. BURKHAR
Deputy Secretary

RICHARD MITZELFEL
Director

December 20, 1989

Joan Berde
Box 15
Llano, New Mexico
87543

Dear Ms. Joan Berde:

The Environmental Improvement Division is in receipt of your request for the Environmental Improvement Board's review of the Director's decision regarding the Los Alamos National Laboratory's Hazardous Waste Permit. The appropriate party this request should have been sent to is the Environmental Improvement Board. This letter is to inform you that your request is being sent to the Environmental Improvement Board as of this date for their consideration.

If you should have further questions concerning this matter please address them to Ms. Swani La Questa at (505) 827-2850. Ms. La Questa is the secretary for the Environmental Improvement Board and will be able to inform you of the status of your request.

Sincerely,

Jack Ellvinger
Chief, Hazardous Waste Bureau

cc: Swani La Questa, EIB
Tracy Hughes, OGC
Elizabeth Gordon, HWB Permits

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OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.

B4

Dec. 1, 1989

Richard Mitzelfelt, Director, N.M. E.I.D.,

As a citizen of New Mexico,concerned with the E.I.D.'s issuing of a hazardous waste permit to Los Alamos National Laboratory on Nov. 8,1989, I would like to thank you for sending me your package of information . I appreciate this gesture and found it informative. However, I would like to appeal the decision to issue the above permit to L.A.N.L. (in accordance with HWMR-5).

This is a petition for review-after reviewing the information sent from the E.I.D., I feel several issues have not been sufficiently addressed with regard to public health and saftey as well as regulations of the chemical waste burning.

My specific concerns remain- mainly the fact that the E.P.A. cannot regulate mixed wastes or radioactive wastes. I realize the mixed waste issue is forthcoming, however, I feelthat the standards for the chemical waste incineration are not strict enough, and I'm not convinced there won't be mixed wastes being burned - in fact, you admit to such burning at L.A.N.L. for the past 9 years.

Also, the fact that the D.O.E. has the authority to regulate it's radioiactive wastes is very unsettling. Since you have an Independent Defense Nuclear Facilities Safety Board , I do not see the necessity of the D.O.E. regulating itself. I find that appalling, and frightening. The D.O.E. has been found negligent in many cases where public health and safety are concerned in defense facilities across the U.S. If the E.I.D. is entrusted with concerns for the health of the public and the environment(they are interconnected), they would move to abolish the D.O.E. self-regulation of radioactive wastes, and set up an independent safety and regulating board. Until the E.I.D. takes a more aggressive approach in protecting the health and environment of New Mexico citizens, they are failing in their role.

In your Response to comments on the Draft Hazardous Waste Permit for L.A.N.L., you mentioned in #35- "the E.I.D. can only enforce the laws and the public must contact the appropriate public officials, since it cannot write laws or promulgate regulations. " In New Mexico, it is generally the E.I.B. which promulgates regulations. Therefore, I am requesting

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that the E.I.B. consider this matter.

I also express concern that a recent E.I.S. has not been done. You state in # 20 of the response comments that the most recent E.I.S. is dated 1973. I realize that an E.I.S. is not required when issuing a RCRA permit(EPA 530-SW-88-018). However, using such a dated E.I.S. by the D.O.E. raises great concern. After sixteen years, surely a much more current E.I.S. is called for.

Thank You for your time,

Sincerely,

Joan Berde
Box 15, Llano,N.M.
87543

xc: Gov. Gary Carruthers,
Santa Fe, N.M.
Sen. Bill Richardson, Washington, D.C.
Kirkland Jones, Dep. Director, E.I.D.
Dept. of Energy- Los Alamos Area Office
Boyd Hamilton, Program Mgr., Hazardous Waste Program
Jack Ellvinger, Chief, Hazardous Waste Bureau
Dr. Mack Sewell, Chief Epidemiology, Health and Environment Dept.

BEFORE THE
ENVIRONMENTAL IMPROVEMENT BOARD

IN RE: HAZARDOUS WASTE FACILITY PERMIT NO. NM 0890010515-1 ISSUED BY ENVIRONMENTAL IMPROVEMENT DIVISION, NEW MEXICO HEALTH AND ENVIRONMENT DEPARTMENT.	)

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OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

PETITION FOR LIMITED REVIEW

The United States Department of Energy ("DOE") and the Regents of the University of California, as owner and operator respectively of the Los Alamos National Laboratory, (hereafter called the "Permittee") petition the Environmental Improvement Board (the "Board") in accordance with Section 902(G)(1) of the New Mexico Hazardous Waste Management Regulations ("HWMR-5" or "the Regulations"), as amended, for limited review of a decision of the Director of the Environmental Improvement Division ("EID"), New Mexico Health and Environment Department, which placed certain conditions upon the Hazardous Waste Facility Permit ("Permit") granted to the Permittee. The Permit allows the Permittee to operate various storage and treatment units including a controlled

air incinerator ("incinerator") for hazardous waste. EID is authorized to regulate hazardous waste only. In this case, the Permit issued by EID improperly includes conditions which attempt to regulate radioactive waste.

In accordance with Section 902(G)(2) of the Regulations, the Permittee requests that the Board's review be based on the record formed at the permit hearing before the Director and the evidence available to the Director at the time of his decision. The Permittee is not petitioning the Board for an evidentiary hearing because at this time, the Permittee has no new evidence to present and an evidentiary hearing will merely duplicate the existing record.

The Permit contains approximately 400 pages of conditions and operating procedures. The Permittee is requesting review of only three of these conditions. The Permittee already conducts an extensive monitoring program for radioactivity. The Permittee has indicated to EID its willingness to voluntarily undertake additional, specific, reasonable and scientifically legitimate monitoring procedures related to the incinerator, but these monitoring activities are not properly part of a hazardous waste permit.

BACKGROUND

On November 20, 1989[1] the Director of EID issued a hazardous waste facility permit to the Permittee pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), as amended, 42 U.S.C. 6901, et seq., and the New Mexico Hazardous Waste Act (the "Hazardous Waste Act"), Section 74-4-1 et seq. NMSA 1978 (1989 Comp.). The Permit allows the Permittee to operate various storage and treatment units including a hazardous waste incinerator. The Permit contains numerous terms and conditions with which the Permittee must comply. Failure to comply with any of these terms and conditions may subject the Permittee to enforcement action and substantial fines and penalties.

This petition seeks limited review of only three conditions placed in the Permit relating to the operations of the controlled air incinerator: (1) Module V, Section E (10) of the Permit requires continuous

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[1]The Permit was originally issued on November 8, 1989. On November 20, 1989, EID issued a corrected copy of the Permit. In the cover letter accompanying the corrected copy, EID stated that the 30-day time period for petitioning the Board would end on December 20, 1989 at 5 p.m.

monitoring of radioactivity from the exhaust stack of the incinerator; (2) Module V, Section F (9) establishes permissible emission limits for radioactivity contained in the exhaust gas; and (3) Module V, Section C (3) requires the survey of each batch of waste to be incinerated to determine its radionuclide content. This petition does not seek review of any other portion of the Permit.

STANDARD OF REVIEW

The law in New Mexico is clear that an agency decision may be set aside if it is found to be arbitrary, capricious, not supported by substantial evidence in the record or otherwise not in accordance with law. See, Duke City Lumber Co. v. N.M. Environmental Improvement Board, 101 N.M. 291, 681 P.2d 717 (1984). This standard is reiterated in the Board's own regulations. Section 903(G)(2) of the Hazardous Waste Management Regulations (HWMR-5, as amended 1989) provides that in reviewing the Director's decision, the Board may modify or reverse the Director's decision if the decision is found to be:

(a) arbitrary, capricious or an abuse of discretion;

(b) not supported by substantial evidence; or,

(c) otherwise not in accordance with law.

Thus, the regulations promulgated by the Board concerning review of the decision of the Director contain the same standard of review adopted by the New Mexico courts.

In reviewing the evidence relied on by the Director in making his decision, the Board is required to determine if that decision is supported by substantial evidence. Llano, Inc. v. Southern Union Gas Co., 75 N.M. 7, 399 P.2d 646 (1964). Substantial evidence means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion. Viking Petroleum, Inc. v. Oil Conservation Commission, 100 N.M. 451, 672 P.2d 280 (1983). Substantial evidence requires that the reviewing body review the whole record to determine whether there is substantial evidence to support the decision made by the Director. Duke City Lumber Co. v. N.M. Environmental Improvement Board, 101 N.M. 291, 681 P.2d 717 (1984).

STATEMENT OF ISSUES

I. EID has no authority or jurisdiction under RCRA or the Hazardous Waste Act to regulate radioactive

waste through permit conditions which impose monitoring requirements on radioactivity and establish standards for exhaust gas radioactivity.

II. Even if the Director of EID has the authority to place conditions on the Permit concerning radioactive waste, the monitoring requirements selected by the Director are scientifically meaningless and produce statistically insignificant data. Furthermore, the definition of background level radiation is unclear, unworkable and has no recognized scientific basis.

SUPPORTING ARGUMENTS

I.

THE EID HAS NO JURISDICTION OVER RADIOACTIVE WASTE AND THE DIRECTOR'S DECISION TO IMPOSE CONDITIONS ON RADIOACTIVE WASTES IS NOT IN ACCORDANCE WITH LAW, IS ARBITRARY AND CAPRICIOUS AND AN ABUSE OF DISCRETION, AND IS NOT SUPPORTED BY SUBSTANTIAL EVIDENCE IN THE RECORD

a. The EID is Authorized to Issue Hazardous Waste Facility Permits Concerning "Hazardous Waste" Only as That Term is Defined in the Hazardous Waste Act and RCRA.

Pursuant to RCRA, 42 U.S.C. 6926, the State of New Mexico is authorized by the Environmental Protection Agency ("EPA") to issue and enforce hazardous waste facility permits. Under New Mexico law, the state

regulations governing the issuance of these permits can be no more stringent than federal regulations under RCRA. Section 74-4-4(A) NMSA 1978 (1989 Comp.).

"Hazardous waste" is a defined term limited to types of "solid waste" that have certain attributes. Section 74-4-3(I) NMSA 1978 (1989 Comp.); RCRA, 42 U.S.C. 6903(5); 40 CFR 261(C) and (D). The definition of "solid waste" includes numerous categories of waste, but expressly excludes,

> ... source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923) [42 U.S.C.A. 2011 et seq.].

Section 74-4-3(M) NMSA 1978 (1989 Rplmt.); 42 U.S.C. 6903 (27); See also HWMR-5, as amended 1989, Part II; 40 CFR 261.4(a)(4). By definition, substances which are not solid waste cannot be hazardous waste and are not subject to RCRA or the Hazardous Waste Act.

The Director of EID is authorized to issue hazardous waste facility permits in accordance with Section 74-4-4.2 (C) NMSA 1978 of the Hazardous Waste Act:

> ... [U]pon a determination by the director that the applicant has met the requirements adopted pursuant to Section 74-4-4 NMSA 1978, the director may issue a permit or a permit subject to any conditions necessary to protect human health and the environment for the facility.

The discretion given to the Director by Section 74-4-4.2 to impose permit conditions is not without limit. The Director has authority to issue permits only concerning "hazardous waste" as that term is defined by the Hazardous Waste Act.

The law in New Mexico is clear that an agency or agency Director may not expand a statutory scope of authority. As New Mexico courts have stated:

> Administrative bodies are creatures of statute and can act only on those matters which are within the scope of authority delegated to them.

Matter of Proposed Revocation of Food and Drink, Etc., 102 N.M. 63, 691 P.2d 64, (Ct. App. 1984); Public Service Company of New Mexico v. New Mexico Environmental Improvement Board, 89 N.M. 223, 549 P.2d 638 (Ct. App. 1976). Action taken by a governmental agency must conform to some statutory standard. Rivas v. Board of Cosmetologists, 101 N.M. 592, 686 P.2d 934 (1984); State ex rel. Lee v. Hartman, 69 N.M. 419, 367 P.2d 918 (1961).

The Hazardous Waste Act, by its express language, limits the Director's authority to the regulation of hazardous waste and expressly excludes source, special nuclear and byproduct material covered by the Atomic Energy Act. He cannot, by the permit process, regulate activities beyond those statutorily authorized.

b. The Permit Conditions Imposed by the Director of EID and at Issue in This Review Govern "Radioactive Waste" and Not "Hazardous Waste".

The EID Director imposed the following conditions upon the Permittee:

> V.E. MONITORING
>
> For each hazardous waste burn, the continuous monitoring and/or recording devices below shall be observed hourly by an operator during waste feed operation and the observation recorded in the operating record.....
>
> ....
>
> 10. Radioactivity from the exhaust stack. (Emphasis added)
>
> ....
>
> V.F. OPERATION
>
> During hazardous waste feed operations the following operational limits shall be observed:
>
> ...
>
> 9. Radioactivity.
>
> a. The exhaust gas radioactivity measured during operation under this permit shall not exceed the background by ten percent (10%) for more than one minute. (Emphasis added.)
>
> b. The exhaust gas radioactivity measured during operation under this permit shall not exceed the background by fifty percent (50%). (Emphasis added.)

c. Background is defined as that level of radiation read when the incinerator is operating at the parameters required for hazardous waste treatment but no waste feed occurring measured prior to hazardous waste treatment. (Emphasis added.)

These conditions, by their express language, apply to the treatment of radioactive waste. Radioactive waste regulated by the Atomic Energy Act is not a solid waste and therefore cannot be a "hazardous waste" under the Hazardous Waste Act or RCRA. As discussed earlier, the term "solid waste" specifically excludes source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, 42 U.S.C. 2011 et seq.[2]

Under the regulatory scheme established by statute and implemented by regulation, the EPA and EID regulate "hazardous waste" pursuant to the Hazardous Waste Act and RCRA. The Nuclear Regulatory Commission ("NRC") and DOE regulate "radioactive waste" under the Atomic Energy Act. The regulating agencies have, through various Federal Register notices, clarified their respective

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[2]The Atomic Energy Act defines source material at 42 U.S.C. 2014(z), special nuclear material at 42 U.S.C. 2014(z)(aa), and byproduct material at 42 U.S.C. 2014(e) (Supp.1989).

jurisdictions in the context of so-called "mixed waste." See 51 Fed. Reg. 24504 (July 3, 1986) and 52 Fed. Reg. 159371 (May 1, 1987). "Mixed waste," which contains both "hazardous" and "radioactive" waste is regulated under a dual regulatory scheme which in the case of a defense facility, involves either EPA or the state (if it has an EPA approved program) and DOE.[3] EPA has addressed this issue and has stated that the hazardous component of mixed waste is regulated by RCRA and conversely, the radioactive component of mixed waste is regulated by either the NRC or DOE. 51 Fed. Reg. 24504 (July 3, 1986).

Notwithstanding the regulatory agencies' recognition of their jurisdictional limits, the Director imposed monitoring and emission conditions on radioactive waste as part of the hazardous waste permit. This decision ignored the law and disregarded the agency's stated position with respect to the limits of its regulatory authority over radioactive waste.

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[3]EID does not currently have an EPA approved program to regulate even the hazardous waste component of "mixed waste." When and if it does, any "mixed waste" burned in the Permittee's incinerators will be subject to dual regulation and enforcement by both EID (under RCRA and the Hazardous Waste Act) and DOE (under the Atomic Energy Act).

c. EID Has Repeatedly Admitted That It Has No Authority to Regulate or Impose Conditions on the Treatment of Radioactive Waste.

EID prepared a written statement that was presented at the public hearings held on July 18 and 19, 1989, concerning the issuance of the Permit. This statement was approved by the Director as a statement of EID's position and was considered the "truest, clearest, [and] fullest statement ..." concerning EID's authority to issue the Permit. See Exhibit B; Tr. at 176.

The EID statement and comments made at the hearing, See Exhibit B, make clear that the Permit issued to the Permittee cannot regulate radioactive waste. In particular, EID stated that:

> The State Hazardous Waste Act does not regulate radioactive waste in any way. (Emphasis in original)

See EID Statement attached as Exhibit A at 1; Exhibit B; Tr. at 37.

> ... [N]o RCRA hazardous waste permit can regulate radioactive waste.

See Exhibit A at 3; Exhibit B; Tr. at 43.

> ... [N]o RCRA permit could regulate the radioactive part of mixed waste.

See Exhibit A at 6; Exhibit B; Tr. at 47.

These statements were made by EID in recognition of the fact that the Hazardous Waste Act applies only to waste

that meets the legal definition of "hazardous waste" and cannot be applied to "radioactive waste" for reasons previously discussed. See Exhibit A at 1; Tr. at 37-38.

EID re-emphasized its lack of authority to regulate radioactive waste in the EID response to public comments issued concurrently with the Permit:

> COMMENT: The separation of radioactivity issues from the permit was questioned by the majority of those at the hearing ....
>
> RESPONSE: Radioactive wastes are not subject to the regulations ... (HWMR-5, Part II, 40 CFR Section 261.4(a)(4). (Emphasis added.)

See Exhibit C at 8. EID also addressed public concern over the fact that state regulations do not presently govern radioactive emissions from federal facilities.

> RESPONSE: ... The federal Clean Air Act presently has regulations governing radioactive emissions from federal facilities. Therefore, there presently are regulations governing LANL emissions at the federal level ....

See Exhibit C at 9.

Furthermore, as part of its comments on the draft Permit, the Permittee advised EID that certain references to radioactive waste in Attachment J to the draft Permit were improper since EID had no jurisdiction over

radioactive waste. The Permittee submitted with its comments a revised Attachment J with all references to radioactive waste deleted. The EID accepted the Permittee's revised Attachment J and used it in the final Permit. Copies of the Permittee's comments, draft Attachment J and the final Attachment J are attached for reference as Exhibit D. EID's use of this revised Attachment J is further evidence of EID's understanding that it has no jurisdiction over radioactive waste.

At the hearing EID described the Permit to be issued as a RCRA permit, prepared by EID's Hazardous Waste Program staff to address only those specific parts of RCRA that EPA has authorized New Mexico to enforce. See Exhibit A at 2; Tr. at 40. EID stated that the permit would regulate the incineration of hazardous waste only. The EID statement and comments to the public clearly establish that EID understands that the permit cannot impose conditions on radioactive wastes. See Exhibit A at 2, 5-6; Tr. at 40, 47-49. In spite of this recognition and EID's awareness of DOE's own requirements controlling radioactive waste, the Director issued a permit imposing conditions on radioactive waste.

d. The EID Director Does Not Have the Authority to Broaden His Regulatory Jurisdiction Beyond That Conferred Under the Hazardous Waste Act.

Both RCRA and the Hazardous Waste Act contain provisions for the protection of human health and the environment:

> ... [E]ach permit issued under this section shall contain such terms and conditions as the Administrator (or the State) determines necessary to protect human health and the environment.

RCRA 42 U.S.C. 6925(c)(3).

> ... the [EID] director may issue a permit or a permit subject to any conditions necessary to protect human health and the environment for the facility.

Section 74-4-4.2 (C) NMSA 1978. These provisions grant broad authority to the Director to regulate "hazardous waste" where there has been a showing that a substance or an activity may endanger human health or the environment. But the exercise of this authority is limited by the scope of the Director's jurisdiction. The Director cannot broaden his regulatory authority through the permit process beyond the jurisdiction of the Hazardous Waste Act. Such action would be contrary to New Mexico law. Administrative bodies are creatures of statute and can act only on those matters which are within the scope of

authority delegated to them. See, Matter of Proposed Revocation of Food and Drink, Etc., and Public Service Co. of N.M., supra. As discussed earlier, the Hazardous Waste Act applies to "hazardous waste" only and not to radioactive waste.

Radioactive waste is not unregulated. Airborne radiation and radioactive materials discharged from DOE facilities are subject to EPA regulation and must comply with the requirements of the Clean Air Act and the regulations found at 40 CFR Part 61, Subpart H. This Subpart sets national emission standards for radionuclide emissions from DOE facilities and requires environmental surveillance for radioactivity and monitoring of emissions. Further, for those radioactive materials not regulated under the Clean Air Act, DOE has established standards to meet its responsibilities under the Atomic Energy Act. DOE Order 5400.1 (November 9, 1988).

CONCLUSION

Notwithstanding the numerous references in the record acknowledging EID's lack of jurisdiction over radioactive wastes, the Director imposed monitoring and regulatory conditions on radioactivity in the issuance of the Permit. The Director's decision was arbitrary and

capricious, an abuse of discretion, not supported by substantial evidence in the record and not in accordance with law.

The record in this matter is voluminous. Testimony and comments were solicited and received from the public and participants at the public hearing on many different aspects of the Permit's coverage. Although public concern was expressed about the issue of radioactive waste, virtually no technical evidence or testimony was sought or received on that issue because EID acknowledged throughout the proceedings that it had no jurisdiction over radioactive waste. See Exhibit A, which is a statement issued by EID to the public and all participants at the beginning of the hearings on this Permit; Exhibit B, which lists all references in the transcript concerning this issue; and Exhibit C, which contains EID's responses to public comment issued at the same time the Permit was issued. Throughout these statements and testimony, EID acknowledged that its jurisdiction in issuing this Permit was limited to hazardous waste and expressly noted that its jurisdiction did <u>not</u> extend to the regulation of radioactive waste. The Director's decision was not in accordance with law.

In reviewing the evidence relied on by the Director in making his decision, the Board is required to determine if that decision is supported by substantial evidence, Llano, Inc. v. Southern Union Gas Co., 75 N.M. 7, 399 P.2d 646 (1964). A review of the evidence in the record as a whole supports the conclusion that EID knew and acknowledged that the Director did not have either the jurisdiction or the authority to regulate radioactive wastes. Jurisdiction over radioactive waste from DOE facilities is vested in DOE by the Atomic Energy Act. Substantial evidence in the record demonstrates EID's full understanding and acknowledgement of this fact. Those conditions in the Permit which attempt to regulate radioactive waste are not in accordance with law and are not supported by substantial evidence in the record. The Director's decision to include them was arbitrary, capricious and an abuse of discretion.

In accordance with its own regulations, the Board should reverse the Director's decision to regulate radioactive waste and order the Director to modify the Permit by removing these conditions from it.

II.

EVEN IF THE EID DIRECTOR HAS THE AUTHORITY TO IMPOSE PERMIT CONDITIONS CONCERNING RADIOACTIVE WASTE, THE CONDITIONS IMPOSED ARE ARBITRARY, CAPRICIOUS, AN ABUSE OF DISCRETION AND NOT SUPPORTED BY SUBSTANTIAL EVIDENCE IN THE RECORD

As discussed above, Module V of the Permit imposes conditions concerning radioactive waste: Section E (9) requires monitoring of "radioactivity" from the exhaust gas of the air incinerator; and, Section F (9) establishes emission limits for exhaust gas radioactivity. The permit conditions state that the exhaust gas radioactivity is not to exceed 10 percent of background radiation for more than one minute or be 50 percent over the background radiation at any time.

a. The Definition of "Background" Contained in the Permit is Unclear, Unworkable and Has No Recognized Scientific Basis.

Module V Section F (9)(c) of the Permit defines background as follows:

> Background is defined as that level of radiation read when the incinerator is operating at the parameters required for hazardous waste treatment but no waste feed occurring measured prior to hazardous waste treatment.

This means that "background" is the level of radiation in the exhaust gas when the incinerator is at operating conditions, but wastes are not being burned. This definition does not take into account the fact that "background" radiation is not constant.

Radioactivity occurs naturally in the atmosphere in the form of radon gas and thoron decay products. These naturally occurring radioisotopes rarely remain constant over even the shortest measuring period. Natural radon levels often fluctuate more than 50 percent within one hour and 500 percent within 24 hours. The factors which influence the radon levels include temperature, barometric pressure, moisture, snow cover and wind speed, all of which are particularly dramatic in a northern New Mexico location. Without some recognition or adjustment for these naturally occurring variations in background radiation, the definition of background is unrealistic and inadequate.

b. The Monitoring Requirements Contained in the Permit Produce Scientifically Meaningless and Statistically Insignificant Data.

The term "radioactivity" is not defined by the Permit. It is unclear whether EID intends to regulate alpha, beta, or gamma radiation or a particular radioisotope or class of radioisotopes. The Permittee

must assume the term, as it is used in the Permit, includes all three types of radiation. Current continuous monitoring technology cannot accurately provide the data required by the permit conditions for the three radiation types.

Different types of monitors are used for each of the different types of radiation. The most sensitive continuous monitors are available for alpha radiation. A continuous air monitor for measuring alpha radiation pulls an air sample across a filter paper and detects the radiation accumulation on the paper as counts per minute ("cpm"). The monitor must convert the radiation to an electrical signal that is displayed as a cpm reading. The sensitivity of the monitor is ultimately limited by electric noise inherent in the instrument, noise that would show up as counts at the lower range of the instrument and give spurious readings.

Alpha monitors operating in the clean area around the incinerator, and indicative of the air that will enter the incinerator during operation, would show a naturally occurring background of 5 to 15 cpm. Assuming an average of 10 cpm of radiation in the air entering the incinerator and assuming that this 10 cpm level is equivalent to the level found as background in the exhaust gas, an upward

variation of more than 1 cpm would immediately exceed the 10 percent limit imposed by the emission standard in the Permit. For example, assuming a 10 cpm background radiation level, a 1 cpm increase would raise the background radiation to 11 cpm. This 1 cpm increase would constitute a 10 percent increase in the established background level. Any further increase would violate the stated conditions in the Permit. Because of the inherent limitation of current monitoring instruments, it would be impossible to determine whether the 1 cpm increase is due to instrument noise or an increase in radioactive exhaust emissions.

Furthermore, the detection of low concentrations of alpha radioactivity is limited by interference from the presence of naturally occurring radon and thoron decay products in the air. Continuous air monitors can use spectral analysis to determine different sources of alpha radiation. However, some of the background alpha emitters may have energies nearly identical to alphas emitted from radioactive waste isotopes and cannot be separated. The naturally occurring emitters are short-lived and are normally determined by removing the filter from the continuous air monitor and measuring the filter's activity after the naturally occurring radiation has had an

opportunity to decay. This approach does not meet the definition of continuous monitoring. Consequently, there is no way to determine if a 10 percent change in alpha concentration in the exhaust gas is indicative of radioactive waste isotopes or a change in naturally occurring background.

In addition, the best available monitors for beta and gamma are less sensitive than alpha monitors. Thus, for beta and gamma radiation it is even more difficult to determine whether a 10 percent change in the levels constitutes noise, a change in natural background, or a statistically significant change in emissions.

For these reasons, the continuous monitoring requirements as currently written produce inaccurate and meaningless data because the data produced will not necessarily indicate the amount of radioactivity linked to incineration of hazardous waste but may simply reflect naturally occurring radioactivity or equipment noise.

CONCLUSION

As discussed earlier in this Petition, the Director of EID has no authority to impose any conditions on the treatment of radioactive waste. Even if he had such authority, the monitoring and emission requirements

contained in the Permit are arbitrary, capricious, an abuse of discretion and is not supported by substantial evidence in the record.

Because EID acknowledged throughout the proceedings that it had no jurisdiction over radioactive waste, EID did not request technical evidence or information concerning conditions to be placed on the treatment of radioactive waste. Consequently, neither the Permittee nor the public had an opportunity to present the technical and scientific data necessary to establish meaningful monitoring standards and conditions.

Since little technical evidence was presented during the permit hearing process, the record lacks substantial evidence upon which the Director could reasonably or rationally base the conditions imposed in the Permit. The imposition of these conditions without substantial evidence in the record on which they could be based is arbitrary, capricious and an abuse of discretion.

Arbitrary and capricious action by an administrative agency consists of a ruling or conduct which, when viewed in light of the whole record, is unreasonable or does not have a rational basis.

Perkins v. Dept. of Human Services, 106 N.M. 651, 748 P.2d 24 (Ct. App. 1987); Garcia v. New Mexico Human Services Dept., 94 N.M. 178, 608 P.2d 154 (Ct. App. 1979), rev'd on other grounds, 94 N.M. 175, 608 P.2d 151 (1980). There is virtually no evidence in the record to support the Director's decision with respect to the monitoring requirements and emission standards he imposed on the treatment of radioactive waste. His decision is unreasonable and without a rational basis. To impose conditions that are unworkable and that lead to absurd results is arbitrary and capricious action.

An abuse of discretion is established if the agency has not proceeded in the manner required by law or the decision is not supported by the evidence. Perkins, supra, at 655. The lack of information in the record concerning monitoring and emission controls of radioactive waste makes the Director's decision to impose permit conditions completely unsupported by substantial evidence in the record. This action constitutes an abuse of discretion.

Because the monitoring and emission control requirements related to radioactive requirements are arbitrary, capricious and an abuse of discretion, they should be removed from the Permit. The Board has the authority to reverse the Director's decision under 902(F)

of the Regulations and should order the Director to modify the Permit by deleting these conditions.

SUMMARY

EID has authority to impose conditions concerning "hazardous waste" upon the Permit issued to the Permittee. The Director of EID exercised this authority by imposing approximately 400 pages of conditions and procedures on the operations of the Permittee. However, the Director also imposed conditions upon "radioactive waste" despite numerous statements to the public that EID had no authority to do so. This decision to impose conditions on radioactive waste was not in accordance with law. The decision by the Director was arbitrary and capricious, is not supported by substantial evidence in the record and is an abuse of his discretion.

Even if the Director had the authority to place conditions on radioactive waste, the monitoring requirements imposed on the Permit are scientifically meaningless and statistically insignificant. In addition, the definition of background level contained in the Permit is unclear, unworkable and has no recognized scientific basis. The imposition of these conditions without adequate information in the record constitutes an arbitrary and capricious decision and an abuse of the discretion of the Director.

The Director's decision to regulate radioactive waste should be reversed and all conditions imposed on radioactive wastes, including the conditions contained in Module V, Section E (10), Module V, Section F (9) and Module V, Section C (3) of the Permit should be deleted. The Board should order the Director to modify the Permit reflecting these changes.

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We hereby certify that we have delivered a copy of the foregoing pleading to counsel for the Environmental Improvement Division on this 20th day of December, 1989.

SUTTIN, THAYER & BROWNE
A Professional Corporation

By _____

EID JULY 18, 1989 STATEMENT RESPONDING TO PARTICULAR CONCERNS EXPRESSED BY MEMBERS OF THE PUBLIC REGARDING THE LANL MIXED WASTE INCINERATOR

EID has received many comments from the public concerning this draft permit. Regrettably, the laws and regulations that govern a facility as large as LANL are very complex. Several of the comments received by EID reflect that complexity. As important, the comments reflect concerns some members of the public have regarding operation of the mixed waste incinerator. In order to better inform the public of the applicable laws and regulations and to better address the public's concerns, EID has developed a statement to explain what this draft permit can and cannot do regarding the mixed waste incinerator.

THIS DRAFT PERMIT CAN ONLY REGULATE CHEMICAL WASTE IT CANNOT REGULATE RADIOACTIVE WASTE

The federal Atomic Energy Act of 1954 (AEA), authorized the United States Department of Energy ("DOE") to develop and effectuate its own regulations controlling DOE's management of its own radioactive wastes. Other statutes may impose additional requirements on radioactive material handling. This permit action is under the State Hazardous Waste Act. The State Hazardous Waste Act does not regulate radioactive waste in any way. The Hazardous Waste Act only applies to wastes that meet the legal definition of "hazardous waste," and these are basically chemical wastes. The Hazardous Waste Act cannot be applied to source, special nuclear or byproduct radioactive wastes. Thus, EID does not have the authority through its Hazardous Waste Program, and through this or any other hazardous waste management permit, to regulate radioactive waste. This draft permit is a permit that only regulates chemical hazardous waste. It does not and can not regulate radioactive waste.

"MIXED WASTE" REGULATION

When a waste has both chemical and radioactive components, it is called a "mixed waste." Because of the chemical component of mixed waste, the Hazardous Waste Act does apply to mixed wasta. It only applies to the chemical part of mixed waste, however. The Hazardous Waste Act does not apply to the radioactive part. DOE regulates the radioactive part, pursuant to the Atomic Energy Act.

EXHIBIT A

STATE AUTHORITY TO ENFORCE THE FEDERAL STATUTE, RCRA

This draft permit is a hazardous waste management permit administered by EID's Hazardous Waste Bureau. EID's legal authority to issue this permit under State law is the Hazardous Waste Act. Ultimately, however, EID's legal authority to issue this permit comes from the federal hazardous waste management statute, named the Resource Conservation and Recovery Act ("RCRA"). Under RCRA, the federal government, through the United States Environmental Protection Agency ("EPA"), gives specific authorizations to a state to enforce certain parts of RCRA. The state then enforces those parts of RCRA in the state instead of EPA.

New Mexico is an "authorized state," that is, New Mexico is authorized by EPA to enforce certain parts of RCRA in New Mexico instead of EPA. This draft permit is a RCRA permit, prepared by EID's Hazardous Waste Program staff to address only those specific parts of RCRA that EPA has authorized New Mexico to enforce. Because Congress has added requirements to RCRA in stages through amendments, EPA is requiring states to submit their requests for authorization in stages. Thus, New Mexico is authorized by EPA to enforce some RCRA provisions, but not other RCRA provisions.

NEW MEXICO DOES NOT HAVE RCRA AUTHORIZATION TO REGULATE THE CHEMICAL PART OF MIXED WASTE

New Mexico is not yet authorized by EPA to regulated the chemical part of mixed waste through its RCRA hazardous waste management program. New Mexico is in the process of applying to EPA for authorization, however.

THIS DRAFT PERMIT IS A RCRA PERMIT

Because New Mexico is not authorized by EPA to regulated the chemical part of mixed waste through its RCRA program, this draft RCRA permit does not authorize LANL to incinerate the chemical part of mixed waste. This draft permit only authorizes the incineration of purely chemical waste in the incinerator.

In order to get a RCRA permit to incinerate mixed waste, LANL will need to develop a mixed waste permit application, and submit it to EID. EID expects LANL to submit this application in the late fall of 1989. The EID Hazardous Waste Program staff will review the

application. After EID has been authorized by EPA to regulate the chemical part of mixed waste under the RCRA hazardous waste program, EID will draft a proposed RCRA permit based on the LANL application, and submit it to the public for public comment, just as this draft permit has been submitted to the public for public comment.

RCRA "INTERIM STATUS"

"Interim status" gives temporary authorization to certain facilities to continue their hazardous waste management activities until their applications for final permits can be acted on. RCRA gave this interim status to facilities that were in existence on a certain date and which complied with certain notification requirements. Operations under interim status are regulated by regulations designed for this interim status.

THE LANL INCINERATOR HAS RCRA "INTERIM STATUS"

The LANL incinerator has RCRA "interim status" and is thus authorized to burn chemical waste without a final hazardous waste RCRA permit. This is true for both purely chemical waste and for mixed waste. The temporary permission to burn purely chemical waste will end when EID takes final action on this draft RCRA permit. Then, burning of purely chemical waste will be allowed only pursuant to the permit. The temporary permission to burn the chemical part of mixed waste will end when EID takes final action on a RCRA permit addressing that waste, which EID will not do until after EPA authorizes EID to do so. Then, burning of the chemical part of mixed waste will be allowed only pursuant to that permit.

SUMMARY

Thus, this draft permit does not authorize LANL to incinerate mixed waste, that is, chemically hazardous waste that is mixed with radioactive waste. The draft permit only proposes to authorize the incineration of strictly chemical hazardous waste, and then only under the permit's specified conditions. EID will at a later date propose a draft hazardous waste permit to regulate the incineration of the chemical part of mixed waste. No RCRA hazardous waste permit can regulate radioactive waste.

INDEPENDENT STATE HAZARDOUS WASTE ACT AUTHORITY TO REGULATE RCRA

INTERIM STATUS FACILITIES

EID has two sources of authority under the Hazardous Waste Act. First, EID is authorized to enforce whatever portions of RCRA that EPA has expressly authorized the State to enforce. Second, EID is authorized to enforce all provisions of the Hazardous Waste Act, even if some particular provision has not yet been approved by EPA as part of RCRA authorization. In this second case, EID is acting on solely state authority; it is not acting pursuant to its federal RCRA authority. EID has used this state authority in the past, to deny LANL's request to begin construction of a new mixed waste incinerator until after review and approval of the construction phase.

Interim Status Regulations

Under the Hazardous Waste Act, the incinerator, in so far as it burns mixed waste, has "interim status." It has interim status under both the State's federal RCRA program, and the independent state authority. That means that it has a temporary permit to operate until a final permit, such as this one presently under consideration for purely chemical waste, is considered. In the interim, it is regulated under the regulations designed for the interim period, and not under the regulations designed for final permits.

There are no specific regulations applicable to interim status under either state or federal law addressing the chemical part of mixed waste. EPA intends at this time to regulate all chemical wastes under the same set of regulations.

EID's Hazardous Waste Bureau did not develop any interim regulations independent of those required for the federal RCRA program. EID did not develop interim regulations specifically governing the chemical part of mixed waste under its state authority for several reasons. First, the Hazardous Waste Act prohibits the State from regulating hazardous waste more strictly than RCRA does. EID could not develop regulations covering the chemical part of mixed waste until RCRA covered the chemical part of mixed waste. EPA did not clearly add the chemical part of mixed waste to its RCRA program until July 3, 1986. EID could not have begun the process of promulgating such regulations until after that date.

Second, the process of promulgating regulations is very resource intensive, and EID's Hazardous Waste Program has extremely limited resources. EPA funds 75% of the program and requires that those

monies go only into RCRA-related activities. The remaining 25% is paid out of state monies that are the State's required "match" for getting the EPA grant monies. Thus, the Hazardous Waste Program's budget is restricted to federally-authorized RCRA activities. The program has developed other, extensive regulatory, and statutory, changes in the interim in order to maintain current, and seek new, RCRA authorization. In addition to regulation development, the program must meet inspection, enforcement, and permit commitments to EPA for purposes of maintaining RCRA authorization. There simply have not been enough resources to do everything that EID would like to do, and it chose not to develop interim regulations applying to the chemical part of mixed waste. An important goal of RCRA and the Hazardous Waste Act is to get facilities operating pursuant to permits instead of under interim status. Therefore, developing regulations governing interim status facilities uses the Hazardous Waste Bureau's limited resources less well than developing regulations applying to final permits.

Final Permit Regulations

EPA has indicated that it does not intend to promulgate any final permit regulations specific to the chemical part of mixed waste. EPA has apparently determined that the present regulations governing permits are sufficient to protect the public health and the environment from the chemical part of mixed waste. The State has adopted these regulations.

Thus, EPA will not require EID to develop any additional regulations governing permits specific to the chemical part of mixed waste in order for EID to get and maintain RCRA authorization for the chemical part of mixed waste.

EID is authorized by the Hazardous Waste Act to develop additional regulations applicable to permits dealing with the chemical part of mixed waste. However, under the Hazardous Waste Act prohibition, such regulations could not be stricter than whatever RCRA requires through permits dealing with the chemical part of mixed waste. EID is not presently considering developing any such regulations, but welcomes the public's input on whether EID should.

AIR QUALITY REGULATIONS

Some members of the public have expressed their concern that State or federal air quality requirements may not adequately regulate the incineration of the radioactive part of mixed waste. As previously stated, this draft RCRA permit does not cover any mixed waste

incineration; it is limited to purely chemical waste incineration. Further, no RCRA permit could regulate the radioactive part of mixed waste. The incinerator has interim status that allows it to operate without a final RCRA permit. Operation of the incinerator must also comply with any other applicable laws and regulations, however. Thus, the incinerator will not be allowed to operate if it has failed to satisfy the legal requirements of other relevant state and/or federal programs.

Regarding Air Quality Regulation

EID's Air Quality Bureau reviewed the operation of this incinerator in 1988 and determined that a state air quality permit is not required, because the predicted emissions were below thresholds that require a permit. Under new State toxic air pollutant requirements, effective December, 31, 1988, this incinerator is an "existing source" and therefore is not subject to the new air regulations. Data concerning the incinerator are being collected, however.

EID has the authority under the State Air Quality Control Act to regulate the radioactive emissions from this incinerator, but does not have any implementing regulations to do so at this time. EPA enforces other air quality programs in the State. The radionuclide emissions from this incinerator have been reviewed by EPA Region VI for compliance with the regulations that govern (40 CFR Part 61, Subpart H) radionuclide emissions from DOE facilities, under the federal Clean Air Act. EPA reviewed the emissions from the existing incinerator in November 1988, as part of reviewing LANL's application for a new proposed mixed waste incinerator.

EID expects to develop new air quality regulations for incineration, that will include radionuclide emission limits at the stack as opposed to the fence line. Under EID's current schedule for the development of such regulations, a public hearing on the proposed regulations is expected next spring. In the interim, the Air Quality Bureau will be developing and taking to hearing regulations governing municipal and medical waste incineration.

REFERENCES IN TRANSCRIPT
CONCERNING STATEMENTS THAT EID LACKED
JURISDICTION OVER THE TREATMENT OF RADIOACTIVE WASTE

	Source	Speaker	Summary Description
1.	Tr., Vol.I at 37-38	EID: Crossman	The draft permit can only regulate chemical waste. The permit cannot regulate radioactive waste. The state Hazardous Waste Act does not regulate radioactive waste in any way. The Hazardous Waste Act only applies to wastes that meet the legal definition of hazardous waste.
2.	Tr., Vol.I at 38	EID: Crossman	The New Mexico Hazardous Waste Act cannot be applied to radioactive wastes and the EID has no authority through the permit procedure to regulate radioactive waste.
3.	Tr., Vol. I at 42	EID: Crossman	The permit will only authorize the incineration of strictly chemical hazardous waste.
4.	Tr., Vol. I at 43	EID: Crossman	No RCRA hazardous waste permit can regulate radioactive waste.
5.	Tr., Vol. I at 47	EID: Crossman	No RCRA permit could evaluate the radioactive part of mixed waste.
6.	Tr., Vol. I at 51	EID: Crossman	Only wastes that are strictly chemical, without contamination by radionuclides, are addressed by the permit.
7.	Tr., Vol. I at 60	EID: Crossman	Source, special nuclear and byproduct materials are specifically excluded and are outside the purview of the permit. The law which authorizes EID activities does not address radioactivity.

	Source	Speaker	Summary Description
8.	Tr., Vol. I at 62	EID: Crossman	Mixed waste is subject to AEA, and regulations under the AEA, RCRA, and regulations under RCRA, and the State Hazardous Waste Act and the regulations under the State Hazardous Waste Act.
9.	Tr., Vol. I at 68	EID: Crossman	Radioactivity is outside of my [EID] authorization.
10.	Tr., Vol. I at 70	EID: Crossman	DOE is authorized to develop regulations concerning the management of radioactive waste. DOE has developed regulations that cover radioactive waste.
11.	Tr., Vol. I at 119	EID: Crossman	Regulations concerning radiation are beyond my (EID) scope of authority.
12.	Tr., Vol. I at 122	EID: Crossman	The subject of monitoring for radioactivity is outside the purview of the permit, therefore, it is not in the permit.
13.	Tr., Vol. I at 124-125	EID Attorney: Nelson	Crossman is qualified to speak concerning the permit and for the Hazardous Waste Bureau.
14.	Tr., Vol. I at 130	EID: Crossman	Radionuclide emission standards are unregulated under Hazardous Waste Laws, but are regulated under the Clean Air Act.
15.	Tr., Vol. I at 171	EID: Crossman	The effect of nuclear waste on various chemical waste and mixed waste is outside the scope of this permit.

BEFORE THE ENVIRONMENTAL IMPROVEMENT BOARD

RECEIVED
JAN 30 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

IN THE MATTER OF APPEALS OF
HAZARDOUS WASTE FACILITY PERMIT
NO. 0890010515-1 ISSUED TO
LOS ALAMOS NATIONAL LABORATORY

MOTION TO DISMISS APPEALS FOR LACK OF JURISDICTION

The United States Department of Energy ("DOE") and the Regents of the University of California ("the University") on December 20, 1989 filed a Petition For Limited Review with the Environmental Improvement Board ("EIB"). Ms. Barbara Jaramillo on December 12, 1989, and Ms. Joan Berde on December 8, 1989 also filed appeals. The EIB directed all parties who participated in the hearing below to file their responses to the appeals by January 29, 1990. The Environmental Improvement Division ("EID") hereby file a Motion to Dismiss Appeals For Lack of Jurisdiction ("Motion to Dismiss"), with accompanying Memorandum in support of the Motion. EID this same date has filed a separate response to the DOE's, the University's, Ms. Barbara Jaramillo's and Ms. Joan Berde's appeals.

As basis for the Motion, EID states:

1. Jurisdictional issues can be raised at any time and must be decided before issues on the merits.

2. EID moves the EIB to dismiss these appeals for lack of jurisdiction because those portions of HWMR-5 §902 that purport to give the EIB the power to review the EID Director's permit decisions and substitute the EIB's legal and factual conclusions for the EID Director's are <u>ultra vires</u> and therefore void. The reasons for this are set forth fully in Part IV of this Memorandum,

but summarized here:

a. The legislature knowingly created EID and the EIB with specific powers and duties delegated between them. These delegated authorities cannot be exceeded.

b. Under the Hazardous Waste Act, the Legislature delegated:

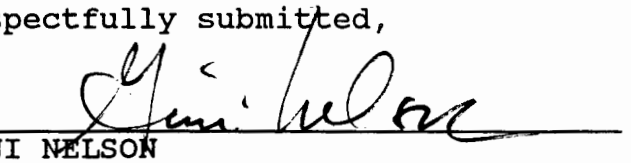
(1) to the EIB, authority to promulgate regulations of general, state-wide applicability; and

(2) to EID, the authority to manage and enforce those regulations, and make binding determination directly affecting the legal rights of individuals, e.g., permit decisions.

c. The legislature did not create a substantive right to appeal the EID Director's permit decisions to the EIB. The EIB's attempt to give itself that power exceeds its statutory grant, and seeks to displace the authority the Legislature granted to EID to make final permit decisions.

WHEREFORE, EID moves the EIB to dismiss the appeals for lack of jurisdiction.

Respectfully submitted,



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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Motion To Dismiss Appeals For Lack of Jurisdiction was mailed on this 29th day of January, 1990, to the following:

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GINI NELSON

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BEFORE THE ENVIRONMENTAL IMPROVEMENT BOARD

RECEIVED
JAN 30 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

IN THE MATTER OF APPEALS OF
HAZARDOUS WASTE FACILITY PERMIT
NO. 0890010515-1 ISSUED TO
LOS ALAMOS NATIONAL LABORATORY

MEMORANDUM IN SUPPORT OF EID'S
MOTION TO DISMISS APPEALS FOR LACK OF JURISDICTION

I. INTRODUCTION

The United States Department of Energy ("DOE") and the Regents of the University of California ("the University") on December 20, 1989 filed a Petition For Limited Review with the Environmental Improvement Board ("EIB"). Ms. Barbara Jaramillo on December 12, 1989, and Ms. Joan Berde on December 8, 1989 also filed appeals. The EIB directed all parties who participated in the hearing below to file their responses to the appeals by January 29, 1990. The Environmental Improvement Division ("EID") has filed a Motion to Dismiss Appeals For Lack of Jurisdiction ("Motion to Dismiss"). This Memorandum supports EID's Motion to Dismiss. EID this same date has filed a separate response to the DOE's, the University's, Ms. Barbara Jaramillo's and Ms. Joan Berde's appeals.

II. THE EIB DOES NOT HAVE JURISDICTION TO HEAR HAZARDOUS WASTE PERMIT APPEALS

1. Powers and Duties of Administrative Agencies.

Administrative agencies have only those powers that the legislature gives them, and can act only on matters within the scope of the authority delegated to them. Public Serv. Co. of N.M. v. New Mexico Envir. Imp. Bd., 89 N.M. 223, 549 P.2d 638 (Ct.App.

1976). An administrative agency has both the powers expressly delegated to it, and all powers that may be fairly implied from the statutory grant of power. Wimberly v. N.M. State Police Bd., 83 N.M. 737, 497 P.2d 968 (1972). An agency may not, however, enlarge its authority through rules and regulations, nor, through regulations, modify the statutory provisions. Matter of Prop. Revoc. of Food & Drink, Etc., 102 N.M. 63, 691 P.2d 64 (Ct. App. 1984). An agency has no power to create a rule or regulation that is not in harmony with its statutory authority. Rivas v. Board of Cosmetologists, 101 N.M. 592, 686 P.2d 934 (1984).

The right of appeal is a matter of substantive law and outside of rule-making power. In the judicial setting, a court is powerless to create a substantive right of appeal by adopting a rule providing a procedure for appeals. Hillhaven Corp. v. State of New Mexico, Human Services Dept., No. 11,102 (Ct.App. filed April 6, 1989)(Vol. 28, No. 19, May 11, 1989 Bulletin), citing State v. Arnold, 51 N.M. 311, 183 P.2d 845 (1947), Eastern Indem. Co. v. Heller, 102 N.M. 144, 692 P.2d 530 (Ct.App. 1984).

Administrative bodies cannot delegate power, authority and functions which under the law may be exercised only by them, and which are quasi-judicial in character or which require the exercise of judgment. Kerr-McGee Nuclear Corp. v. New Mexico Envtl. Imp. Bd., 97 N.M. 88, 637 P.2d 38 (Ct. App. 1981).

2. Legislative Delegation of Powers and Duties In the Hazardous Waste Act.

The Hazardous Waste Act, §§74-4-1 et seq. ("HWA"), §74-4-

4.A.(6) authorizes the EIB to promulgate regulations requiring hazardous waste management permits:

> The board shall adopt regulations ... requiring each person owning and operating an existing facility ... to have a permit issued pursuant to requirements established by the board ...

HWA, §74-4-4.A(7) authorizes the EIB to promulgate regulations establishing the procedure for issuance, suspension and revocation of such permits:

> ... establishing <u>procedures</u> for the <u>issuance, suspension and revocation of permits</u> issued under Paragraph (6) of this subsection, which regulations shall provide for prior notice and an opportunity for a hearing prior to the <u>issuance, suspension or revocation of the permit</u> unless otherwise provided in the Hazardous Waste Act;

HWA, §74-4-2.C. authorizes EID to review permit application and issue such permits:

> ... Upon a determination <u>by the director</u> that the applicant has met the requirements adopted pursuant to Section 74-4-4 NMSA 1978, <u>the director</u> may issue a permit or a permit subject to any conditions necessary to protect human health and the environment ... . (emphasis added)

Finally, HWA, §74-4-2.G. and H. provide that appeals from permit decisions are from decisions by the EID Director and not from the EIB:

> G. Any person adversely affected by a <u>decision of the director</u> concerning the issuance ... of a permit may appeal the decision by filing a notice of appeal with the court of appeals within thirty days after the date the decision is made ... . (emphasis added)
>
> H. Upon appeal, the court of appeals shall set aside <u>the decision of the director</u> ... . (emphasis added)

Contrast the structure the legislature established in the HWA with the structure it established in the Air Quality Control Act, §§ 74-2-1 <u>et seq</u>. ("AQCA"). AQCA, §74-2-7.A. authorized the EIB to promulgate regulations requiring air permits:

> By regulation the board may require persons ... to obtain a permit ... .

AQCA, §74-2-7.C. authorizes the EIB to promulgate regulations establishing the procedure for processing applications of such permits:

> The board shall adopt—such regulations as are necessary to implement this section, including regulation governing the deadlines for processing permit applications and the public notice, comment period and public hearing, if any, required prior to the issuance of a permit. ...

AQCA, §74-2-7.E.-G. authorizes EID to review permit applications and issue such permits. AQCA, §74-2-7.K authorizes permit applicants to request a hearing before the EIB if applicants are dissatisfied with the EID Director's permit decision:

> If the applicant is dissatisfied with the action taken by [EID], he may request a hearing <u>before the board</u>. ... (emphasis added).

AQCA, §74-2-7.M provides that appeals to the Court of Appeals are appeals from decisions by the EIB and not from the EID Director:

> An applicant may appeal <u>the decision of the board</u> by filing with the court of appeals ... . Upon appeal, the court of appeals shall set aside <u>the decision of the board</u> ... (emphasis added).

Contrast, too, the structure the legislature established in the Occupational Health and Safety Act, §§50-9-1 to 50-9-25 NMSA 1978 ("OHSA"). OHSA, §50-9-7 authorizes the EIB to promulgate regulations. OHSA, §50-9-9 establishes the Occupational Health and Safety Review Commission ("OHSRC"). OHSA, §50-9-17.E authorizes employers to request a hearing before the OHSRC for review of certain EID actions:

> ... If the matter is not successfully resolved at the informal administrative review, the petition may request a hearing

> before the occupational health and safety review commission after the administrative review. ...

OHSA, §50-9-17.G. provides that appeals to the district court are from orders of the OHSRC and not from decisions of the EID Director:

> Any person adversely affected by an order of the commission ... may, after exhausting his administrative remedies, obtain a review thereof in the district court ... . Upon appeal, the court may set aside the action of the commission ... .

3. Statutory Construction.

The standard for statutory construction as recently stated by the Court of Appeals is:

> In construing the meaning of a particular statute, a reviewing court's central concern is to determine and give effect to the intention of the legislature. State ex rel. Klineline v. Blackhurst, 106 N.M. 732, 749 P.2d 1111 (1988). In determining this intent, we look primarily to the language of the act and the meaning of the words, and when they are free from ambiguity, we will not resort to any other means of interpretation. See State v. Pitts, 103 N.M. 778, 714 P.2d 582 (1986); New Mexico Beverage co. v. Blything, 102 N.M. 533, 697 P.2d 952 (1985).

Montez v. J & B Radiator, Inc. and Mountain States Mutual Casualty Co., No. 10,744 (Ct. App. filed 7/20/89)(Vol. 28, No. 38, 9.21.89) quoting Security Escrow Corp. v. State Taxation & Revenue Department, 197 N.M. 540, 543, 760 P.2d 1306, 1309 (Ct.App. 1988).

Where words used in a statute are free from ambiguity and doubt, and express plainly, clearly, and distinctly the intent of the legislature, there is no need to construe the statute. Absent clear intent to the contrary, statutory words are given their ordinary and usual meaning; words and phrases ordinarily are construed according to context and approved usage of the language. Matter of Prop. Revoc. of Food & Drink, Etc., 102 N.M. 63, 691 P.2d

64 (Ct. App. 1984).

Courts assume "that the Legislature is well-informed as to existing statutory ... law ... and that it does not intend to enact useless statutes ... ." (citation omitted) State ex rel. Bird v. Apodaca, 91 N.M. 279, 284, 573 P.2d 213, 218 (1977). And, "[a]ll statutes are presumed to be enacted by the legislature with full knowledge of all other statutes ... ." New Mexico Municipal League, Inc., 88 N.M. 201, 206, 539 P.2d 221, 226 (Ct. App. 1975).

4. Argument.

The EIB's regulation purporting to authorize the EIB to, upon appeal, review the EID Director's permit decisions and substitute the EIB's legal and factual conclusions for the EID Director's in a permit action is ultra vires. Like in the judicial setting, an administrative body is powerless to create a right of appeal where that purported right exceeds the grant of authority from the legislature, and purports to take that right away from the agency that the legislature delegated the decision authority to.

The legislature in enacting the Hazardous Waste Act expressly required the following: (1) that the EID Director make permit decisions; (2) that the EIB establish regulations about the procedure by which the EID Director makes the permit decisions; and (3) that appeals of the EID Director's permit decisions be taken to the court of appeals.

The EIB has the authority to promulgate the procedure by which the EID Director makes the permit decision, such as by a public hearing, with a hearing officer, and on a transcribed record; the

EIB does not have the authority, however, to give itself the power to substitute its legal and factual conclusions for EID's, i.e., the power to change the EID Director's permit decision. That is an abrogation of EID's authority and responsibility under the Hazardous Waste Act.

It is contrary to what the legislature unambiguously required in the statute. If the legislature had wanted to give affected parties the substantive right to appeal the EID Director's permit decisions to the EIB, and if it wanted the court of appeals to review the EIB's legal and factual conclusions instead of the EID Director's conclusions, it could easily have so specified. Since it did not, the statute can only be construed to conclude that the EIB is not authorized to review the EID Director's permit decisions, and substitute its legal and factual conclusions for the EID Director's. The legislature intended only that the EIB establish regulations of general applicability pertaining to permit applications, and that the EID Director evaluate and make the final decisions on particular applications.

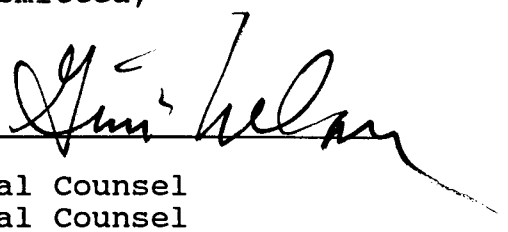
Looking at other statutes, it is even clearer that the legislature did not intend for the EIB to review the EID Director's permit decisions. The Air Quality Control Act and the Occupational Health and Safety Act set up very different regulatory schemes, demonstrating that the legislature knows how to do so.

III. CONCLUSION

For the reasons set forth above, EID respectfully requests that the EIB enter an order dismissing DOE's, the University's, Ms.

Jaramillo's and Ms. Berde's appeals for lack of jurisdiction.

Respectfully submitted,



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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing MEMORANDUM IN SUPPORT OF EID'S MOTION TO DISMISS APPEALS FOR LACK OF JURISDICTION was mailed on this 29TH day of January, 1990, to the following:

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RECEIVED
JAN 29 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

BEFORE THE
ENVIRONMENTAL IMPROVEMENT BOARD

NO. 098890890

In Re: HAZARDOUS WASTE FACILITY)
PERMIT NO: N.M. 0890010515-1)
ISSUED BY THE ENVIRONMENTAL)
IMPROVEMENT DIVISION, New Mexico)
Health and Environment)
Department.)
)

SUMMARY OF PROPOSED FINDINGS
SUBMITTED TO THE ENVIRONMENTAL IMPROVEMENT BOARD

The United States Department of Energy ("DOE") and The Regents of the University of California ("University"), have submitted Proposed Findings of Fact and Conclusions of Law ("Findings") to the Environmental Improvement Board ("the Board") in accordance with Section 902.G(1) of the Hazardous Waste Management Regulations Number 5 ("the Regulations" or "HWMR-5"). As part of the Findings, DOE and the University (hereinafter "Permittees") submit this Summary to the Board.

A. The Board Has Jurisdiction To Consider The Petition For Limited Review Submitted By DOE and The University.

Counsel for DOE has been informed by EID counsel that the Director of the Environmental Improvement

Division ("EID") challenges the Board's jurisdiction to consider the Petition for Limited Review filed with the Board by the Permittees on December 20, 1989. We understand that the Director is taking the position that an appeal of the Director's decision to impose certain conditions upon the hazardous waste facility permit issued to the Permittees must be made to the New Mexico Court of Appeals.

The Regulations specifically direct the Permittees to submit a petition for review of the Director's decision to the Board.[1] The Permittees complied with the Regulations and submitted their petition within the prescribed 30-day deadline. The Board has 60 days, or no later than February 19, 1990, in which to review the petition submitted, and to come to a decision regarding the Director's imposition of certain conditions upon the permit issued to the Permittees.[2] Once the Board reaches a decision, it is the Board's decision and its immediate adoption by the Director, which constitutes the "final" decision from which the Permittees may appeal to the New Mexico Court of Appeals.[3]

The Director's present position on the Board's jurisdiction is contrary to the Regulations,[4] the express language contained in the permit issued to the Permittees,[5] correspondence to the Permittees,[6] and EID's statements to the public.[7] The Permittees relied upon the express language of the permit, the Regulations and EID's statements in submitting their Petition for Limited Review to the Board. The Director's new position is wholly inconsistent with his prior position and is an attempt to circumvent the Regulations promulgated by the Board.

B. Procedural History.

The Director of EID issued a Hazardous Waste Facility Permit ("Permit") to the Permittees on November 20, 1989 pursuant to the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act ("Hazardous Waste Act"). The Permit allows the Permittees to operate various storage and treatment units including a hazardous waste incinerator.

The Director imposed numerous conditions upon the Permit, only three of which are the subject of the Petition for Limited Review. These three conditions impose monitoring and other requirements upon the treatment of "radioactive waste."[8]

C. EID's Authority.

The regulation of "radioactivity" or "radioactive waste" is not within the authority of EID, EID's Director or the Board.[9] Jurisdiction over radioactive waste from DOE facilities is vested in DOE by the Atomic Energy Act of 1954.[10] EID is authorized to regulate only "hazardous waste" as defined by the Hazardous Waste Act and RCRA. Both the Hazardous Waste Act and RCRA specifically exclude source, special nuclear, and byproduct material defined and regulated under the Atomic Energy Act of 1954 and limit the Director's authority to the regulation of "hazardous waste" only.[11]

D. The Director's Decision to Impose Conditions on the Treatment of Radioactive Waste was Arbitrary, Capricious, an Abuse of His Discretion, not Supported by Substantial Evidence and not in Accordance With Law.

The Director's decision to impose Permit conditions on the treatment of radioactive waste is an attempt to broaden EID's regulatory jurisdiction into areas specifically excluded by RCRA and the Hazardous Waste Act and preempted by the Atomic Energy Act of 1954. The Director's attempt to broaden EID's regulatory jurisdiction is not in accordance with law.[12]

EID admits that it does not have the authority through RCRA or the Hazardous Waste Act to regulate "radioactive waste."[13] EID further admits that any condition relating to radioactivity is outside the scope of the Permit issued to the Permittees.[14] Despite EID's consistent recognition that regulations placed upon "radioactive waste" are not within EID's jurisdiction, the Director of EID made an arbitrary and capricious decision to imposed Permit conditions on "radioactive waste."[15]

The decision to impose the three conditions upon radioactive waste was an arbitrary and capricious decision made by the Director solely on the basis of public pressure and was an abuse of his discretion. Furthermore, the imposition of conditions on radioactive waste upon the Permit issued to the Permittees is not supported by substantial evidence in the record.[16]

E. The Board's Review.

Neither the Permittees nor the other petitioners have new evidence to present to the Board. Because no new evidence exists, there were no requests for a hearing before the Board.[17] Consequently, the Board's review of the Director's decision is limited to the evidence admitted in the record and the evidence available to the

Director at the time of the Director's tentative decision.[18] Thus, in accordance with the Regulations, the Board has until February 19, 1990 to make its findings and state its reasons concerning the Director's decision to place conditions regarding radioactive waste on the Permit.

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UNITED STATES DEPARTMENT OF ENERGY

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We hereby certify that we have delivered a copy of the foregoing pleading to counsel for the Environmental Improvement Division on this 29th day of January, 1990.

SUTIN, THAYER & BROWNE
A Professional Corporation

By _____

FOOTNOTES TO SUMMARY OF PROPOSED FINDINGS

1. HWMR-5, Section 902.G(2); Findings No.s 2.0 and 2.1.
2. HWMR-5, Section 902.G(2); Findings No.s 1.12.
3. HWMR-5, Section 902.F; Findings No. 1.13.
4. HWMR-5, Section 902.F, 902.G(2).
5. Findings No. 2.3, See The Hazardous Waste Facility Permit No. 0890010515-1.
6. Findings No.s 2.0, 2.1 and 2.2.
7. Findings No. 2.4.
8. Findings No. 1.4.
9. Findings No.s 4.0-4.15.
10. Findings No.s 4.8 and 4.9.
11. Findings No.s 4.0-4.15.
12. Findings, Conclusion No.s 18-23.
13. Findings No.s 3.0-3.4.18.
14. Findings No. 3.4.8.
15. Findings No.s 4.0-4.15.
16. Findings No.s 1.5; and 1.5.1-1.5.4.
17. HWMR-5, Section 902.G(2); Findings 1.5-1.5.4.

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BEFORE THE
ENVIRONMENTAL IMPROVEMENT BOARD

NO. 098890890

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Department.)
)

AMENDED CERTIFICATE OF SERVICE

We hereby certify that on January 30, 1990 we served by hand delivery on Gini Nelson, Esq., counsel for the Environmental Improvement Division, true copies of: 1) Permittees' Proposed Findings of Fact and Conclusions of Law, and 2) Summary of Proposed Findings Submitted to Environmental Improvement Board.

SUTIN, THAYER & BROWNE
A Professional Corporation

By _____
A. Michael Chapman
Attorneys for the Regents of
the University of California
300 First Interstate Plaza
P. O. Box 2187
Santa Fe, New Mexico 87504
(505) 988-5521

We hereby certify that we hand delivered the foregoing to Gini Nelson, Esq., counsel for the Environmental Improvement Division on this 30th day of January, 1990.

SUTIN, THAYER & BROWNE
A Professional Corporation

By _____

Jan. 28, 1989

RECEIVED
JAN 31 1990
OFFICE OF ENVIRONMENTAL
IMPROVEMENT BOARD

Ms. Suani La Cuesta
c/o EIB Adm. Secretary
Runnels Building
Rooms 1100 - 1190
St. Francis Drive
Santa Fe, N.M. 87503

Dear Ms. La Cuesta -

I write to inform you that I support the letter sent to you by Ms. Berde. I am one of many frustrated citizens who feel very threatened by the current state of affairs at ~~the~~ Los Alamos National Labs and are definitely opposed to the issuance of a hazardous waste permit without first considering all the objections raised in Ms. Berde's letter!

Thank you!

Ann Hendrie

Hendrie
Box. 44
Ojo Sarco
NM 87550

Tanya Leherissey
Box 9
Llano, N.M. 87543
January 28, 1990

RECEIVED
JAN 31 1990
OFFICE OF ENVIRONMENTAL
IMPROVEMENT BOARD

Ms. Swani LaCuesta
EIB Adm. Sec.
Harold Runnels Bldg.
Room 1100 - 1190
St. Francis Dr.
Santa Fe, N.M. 87503

I fully support Bonnie Berdes' request for added review of the LANL incinerator.

Public Health and Safety is paramount.

Thank you,
Tanya Leherissey

La Comunidad
Box 237
Penasco, NM 87543
1/25/90

Ms. Suani La Cuesta
c/o EIB Adm. Secretary
Runnels Bldg
Rooms 1100 - 1190
St Francis Drive
Santa Fe, NM 87503

RECEIVED
JAN 31 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

Dear Ms. La Cuesta

La Comunidad is an environmenal organization of about 100 members in the Penasco Valley. We are opposed to issuing any hazardous waste permit to Los Alamos National Labs. We support the letter sent to you by Ms. Berde. It is very dangerous to the public to dispose of hazardous wastes by burning. The cleaness of the operation is only as good as the people running the program and actually doing the work. It is a bad idea from the start and with poor administration and poor execution and possible negligance it can be disasterous to the health of the people in surrounding areas. We know the EID is understaffed and undefunded but the hazardous waste issue is very important. Please do not make a rash decision here. We want an uptodate EIS and we think an independent regulation process must be instituted before this waste can be effectively and safely managed.

Thank you very much,

La Comunidad

Tanya Lehrissey
Amy Bymer
Paula Stator
Amy Hendrie
Violette Pocock
Jean Nichols
Scott Zeheering
Felimon Sanchez

Scott Leherissey
Box 9
Llano, NM 87543
Jan. 26, 1990

Susan La Cuesta
c/o EIB Adm. Secr.
Harold Runnels Bldg.
Rooms 1100-1190
St. Francis Drive
Santa Fe, NM 87503

RECEIVED
JAN 31 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

Dear Susan,

I totally support the letter addressed to the EID Director by Joan Berde. I am very concerned about the public health and safety regarding the issuance of a hazardous waste permit. There has been a history of negligence regarding the handling and disposal of hazardous waste. Please do not rubber stamp this permit. We want an up to date EIS. Also the DOE should not be allowed to regulate their own messes.

Please let's look at this one very closely. Why do we have to sacrifice our health and safety for the sake of the military/industrial complex?

Thank You!

Scott Leherissey

Scott Leherissey

Swani La Cuesta
Administration Secretary
Harold Runnels Bldg.
St. Francis Drive
Santa Fe, NM 87503

RECEIVED
JAN 31 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

Jan. 26, 1990

Dear Swani,

I would like to write in support of Joan Berde's letter concerning the LANL hazardous waste permit. Considering the track record of the D.O.E and LANL, (consider the existing toxic dump sites) we feel that every precaution MUST be taken.

I feel that until all past toxic dump sites have been cleaned up, no new permits for waste disposal should be issued.

Please review this issue and let the public know about future hearings.

Sincerely,

Jean C. Nichols

JEAN NICHOLS
BOX 30
LLANO, NM 87543

RECEIVED
JAN 31 1990
OFFICE OF ENVIRONMENTAL
IMPROVEMENT BOARD

Paula Seaton
P.O. Box 93
Embudo, NM 87531
Jan. 29, 1990

Swani M. La Cuesta
EIB Administrative Secretary
Harold Runnels Building, Rm S-4100
1190 St. Francis Drive
Santa Fe, NM 87503

I am writing in regard to the LANL Hazardous Waste Facility Permit No. 0890010515-1.
I have not been able to review the requests for review but I feel it would be hazardous for our health to incinerate hazardous waste, mixed waste and radioactive waste.
The standards are not strict enough by Environmental Improvement ~~Division~~ Board. Please do not allow more lenient measures to be taken by DOE.
I strongly oppose any incineration of these materials. Thank you.

Sincerely,

Paula Seaton
Paula Seaton

Box 29
C/o Sarco, N.M. 87550
January 28, 1990

EIB
Swania M. La Questa
c/o EIB Administration Secretary
Harold Runnels Building
room 1100-1190
Saint Francis Drive
Santa Fe, N.M. 87503

RECEIVED
JAN 31 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

Good day Swani,

I am responding to your letter dated Jan. 5, 1990. I have read Joan Berdie's request for review. I fully support her rational asking for review. In lieu of the public safety, I have heard of many failings of the HEPA filters, and the danger and threat that shown effects surrounding Rocky Flats, we do not want here. A full EIS, updated, is required.

Thank you,

Emmy Koponen
(Emmy Koponen)

GROVE T. BURNETT
ATTORNEY AT LAW
GLORIETA BALDY - LA CUEVA ROAD
ROUTE 1, BOX 9-A
GLORIETA, NEW MEXICO 87535
(505) 757-8408

January 29, 1990

RECEIVED
JAN 31 1990
OFFICE OF ENVIRONMENTAL IMPROVEMENT BOARD

Ms. Swani LaCuesta
Environmental Improvement Board
Harold Runnels Building
Room S-4100
1190 St. Francis Drive
Santa Fe, NM 87503

Re: Los Alamos National Laboratory
Hazardous Waste Facility Permit No.
0890010515-1

Dear Ms. LaCuesta:

- [ ] For your information
- [ ] Per your request

We enclose the following:

- [ ] Complaint & Summons
- [ ] Entry of Appearance
- [ ] Answer
- [ ] Certificate of Service
- [ ] Jury Demand
- [ ] Motion
- [ ] Notice of Hearing
- [ ] Notice to Take Deposition
- [ ] Request for Setting/Hearing
- [ ] Check in the amount of $
- [ ] Self-addressed, stamped envelope
- [x] Other: Proposed Findings and Reasons of Concerned Citizens for Nuclear Safety

Please:

- [x] File/Record
- [ ] Serve
- [ ] Other:
- [ ] Approve/Sign and Return
- [ ] Return endorsed/recorded copy

Sincerely,

Grove T. Burnett
Attorney at Law

cc:

Enclosure(s)

BEFORE THE
ENVIRONMENTAL IMPROVEMENT BOARD

IN RE: HAZARDOUS WASTE FACILITY	)
PERMIT NO. NM 0890010515-1	)
ISSUED BY ENVIRONMENTAL IMPROVEMENT	)
DIVISION, NEW MEXICO HEALTH AND	)
ENVIRONMENT DEPARTMENT.	)
	)

PROPOSED FINDINGS AND REASONS

On November 20, 1989, the Director of the New Mexico Environmental Improvement Division ("EID") issued Hazardous Waste Facility Permit No. 0890010515-1 to Los Alamos National Laboratory ("LANL"). The permit pertains to LANL's treatment and disposal of "hazardous waste," as that term is defined in the New Mexico Hazardous Waste Act, N.M.Stat.Ann. 74-4-1 et seq. The permit in no way purports to regulate LANL's treatment, storage, and/or disposal of radioactive waste, most of which is excepted from coverage under the New Mexico Hazardous Waste Act.

On December 20, 1989, LANL filed a Petition for Limited Review before the Environmental Improvement Board ("Board"). In its petition LANL argues that EID does not have the authority to regulate radioactive waste and that the conditions which EID has placed upon the incineration of hazardous waste are arbitrary, capricious, an abuse of discretion, and not supported by substantial evidence. LANL's petition concludes that the "Director's decision to regulate radioactive waste should be

reversed and all conditions imposed on radioactive waste . . . should be deleted."

Concerned Citizens for Nuclear Safety ("CCNS"), an interested party herein, will show below that LANL's petition for review of the Director's decision must be denied. First, CCNS will demonstrate that LANL misconstrues the Director's permit when it argues that the permit conditions are ultra vires. CCNS submits that the Director has broad discretion to impose conditions upon the disposal and treatment of hazardous waste, and that he has exercised that discretion reasonably in this case. Second, CCNS will show that LANL's petition for limited review raises new evidentiary issues which may not be considered by the Board without running afoul of the Board's regulations.

1. LANL Misconstrues the Permit When It Argues that the Permit Regulates the Incineration of Radioactive Waste.

LANL's primary argument in its Petition for Limited Review is that the Director of EID does not have jurisdiction to regulate the incineration of radioactive waste. While CCNS disputes this position, the Board should note that the authority of the Director to regulate the disposal and treatment of radioactive materials is not at issue in this case. LANL utterly fails to understand the nature of the permit and the permit conditions. The permit in dispute governs only the disposal and treatment of hazardous waste. It is undisputed that the Director of EID has authority to impose conditions on the incineration of hazardous waste.

Were it not for the fact that LANL plans to burn radioactive waste in the same incinerator in which it plans to burn hazardous waste, the Director's conditions regarding radioactive emissions monitoring would probably not have been imposed. Obviously, if LANL planned to burn only hazardous waste in its controlled air incinerator, conditions pertaining to radioactive stack emissions would have been unnecessary. Unfortunately, LANL's decision to burn both radioactive and hazardous waste in its controlled air incinerator has complicated this matter. Since LANL has decided to use the controlled air incinerator to burn both radioactive and hazardous waste in one incinerator, the Director finds it necessary to ensure that radioactive emissions will not leave the incinerator stack while hazardous waste is under treatment in the incinerator.

The Board should note, however, that there is a significant difference between monitoring radioactive emissions which leave the incinerator stack during the course of treatment and disposal of hazardous waste, and the regulation of radioactive waste itself. In the former case, which <u>is</u> at issue here, the Director merely exercises his authority under the Hazardous Waste Management Act to regulate the treatment of hazardous waste, and that authority certainly extends so far as to impose monitoring requirements. In the latter case, which <u>is</u> <u>not</u> at issue here, the Director would impose direct restrictions upon the incineration of radioactive waste. To date, the Director has imposed no such conditions.

The New Mexico Hazardous Waste Act provides, in pertinent part, that the Director "may issue a permit subject to any conditions necessary to protect human health and the environment for the facility." N.M.Stat.Ann. 74-4-4.2(C). This provision of the state act is identical to a provision in RCRA. See 42 U.S.C. 6925(c)(3). The United States Senate Report which accompanied the provision in the federal act explains the provission as follows:

> This provision also gives the . . . State . . . the authority to add permit terms and conditions beyond those mandated in regulations, if, in the judgment of the . . . State . . ., such terms and conditions are necessary to protect human health and the environment. This amendment gives the Agency the authority to address special cases and unique circumstances. The provision is designed to deal with factors or situations different from those addressed in the regulations.

S. Rep. No. 284, 98th Cong., 1st Sess. 31 (1983) (emphasis added).

Obviously, this is an appropriate case for the imposition of permit conditions under the omnibus authority of N.M.Stat.Ann. 74-4-4.2(C) and 42 U.S.C. 6925(c)(3), and the Director's conditions must be confirmed. The fact that LANL has applied for a permit providing for the incineration of hazardous waste in an incinerator which will also be used for the incineration of radioactive waste presents a special case and unique circumstances. There is likelihood that radioactive residue from the incineration of radioactive waste will be emitted from the

incinerator stack when hazardous waste is incinerated. The permit conditions which are under challenge herein merely direct LANL to assure that the incineration of hazardous waste does not unwittingly become a vector for the emission of radioactive isotopes. The permit conditions in no way fetter LANL's discretion as to how to dispose and/or treat its radioactive waste. Rather, the conditions attempt to ensure that hazardous waste incineration will result only in hazardous waste-related emissions, and not radioactive waste-related emissions.

The conditions under challenge are not contrary to law. The conditions are clearly within the omnibus authority provided in the state and federal acts. CCNS submits that, contrary to LANL's position, it would be contrary to law for the Director to refuse to place monitoring conditions on the incineration of hazardous waste, particularly where there is a likelihood that the incineration could become an unwitting vector for the dispersal of radioactive emissions.

2. <u>The Director's Conditions are Reasonable.</u>

Not only does the Director have the authority to impose the subject conditions upon the incineration of hazardous waste in the controlled air incinerator, the conditions imposed by the Director are reasonable. LANL bears the burden of proving through references to the administrative record that the Directors' conditions are unreasonable. Significantly, LANL's petition for review does not make a single cite to the administrative record. Rather, LANL adduces new evidentiary

materials, which this Board may not consider in ruling on LANL's petition.

The Board's regulations provide that any new evidence which a petitioner seeks to have the Board consider in its resolution of a petition for review may only be adduced at a hearing. See New Mexico Hazardous Waste Management Regulations 902.G.2. "Otherwise, the Board shall consider only the evidence admitted in the record formed at the hearing before the Director . . . ." Id. LANL has not requested a hearing in this matter. Rather, LANL requests that this Board make a determination of the Director's conditions on the basis of unsworn and untested assertions. Certainly, this violates CCNS's procedural due process rights to participate in the development of the administrative record, and to cross-examine LANL's witnesses.

Since LANL has not shown, on the basis of the administrative record properly before the Board, that the Director's conditions are unreasonable, the conditions must be affirmed. If LANL desires to have this Board entertain further evidence in this matter, the proper forum for the introduction of new evidence is at a formal public hearing, and not in a Petition for Limited Review. Having failed to provide its evidence to the Director in the compilation of the administrative record, LANL may not present its evidence for the first time to this Board.

3. Conclusion.

As demonstrated above, the conditions imposed by the Director upon LANL's permit are within the scope of the

Director's authority. The Director has broad authority to impose such conditions upon the treatment and disposal of hazardous waste as are necessary to protect human health and the environment. In this case, the conditions regarding monitoring for unintentional releases of radioactive emissions during hazardous waste burns are certainly within the authority granted by the New Mexico Hazardous Waste Act. Since the Director has the authority to impose such conditions, and since LANL has failed to prove on the basis of the administrative record that such conditions are unreasonable, the Director's conditions must be affirmed in all respects.

Wherefore, Concerned Citizens for Nuclear Safety hereby proposes that the Board confirm Hazardous Waste Facility Permit No. NM 0890010515-1 in its entirety.

Respectfully submitted,

Steven Sugarman
Grove T. Burnett
Attorneys for Concerned Citizens
for Nuclear Safety
Glorieta Baldy-La Cueva Road
Route 1, Box 9-A
Glorieta, New Mexico 87535
(505) 757-8408

I hereby certify that a copy of this pleading was mailed to counsel for Petitioner this 29 day of January, 1990.

Steven Sugarman

LANL motion to strike
2/7/90

RECEIVED
FEB 7 1990
OFFICE OF ENVIRONMENTAL
IMPROVEMENT BOARD

BEFORE THE ENVIRONMENTAL IMPROVEMENT BOARD

NO. 098890890

In Re: HAZARDOUS WASTE)
FACILITY PERMIT NO:)
N.M. 08900105515-1 ISSUED BY)
THE ENVIRONMENTAL IMPROVEMENT)
DIVISION, New Mexico Health)
and Environment Department.)
)

PETITION TO STRIKE FROM ADMINISTRATIVE
RECORD DOCUMENTS SUBMITTED TO THE
BOARD BY EID ON JANUARY 29, 1990
AND TO DENY REQUESTS FOR EXTENSIONS OF TIME

The United States Department of Energy and The Regents of the University of California, hereinafter collectively referred to as "Permittees," hereby submit this motion to strike from the administrative record the Environmental Improvement Division's ("EID") Response to Appeals of the LANL Hazardous Waste Permit, Motion to Dismiss, and Memorandum in Support of EID's Motion to Dismiss submitted to the Environmental Improvement Board (the "Board") on January 29, 1990. In support of the Permittees' position the Permittees state:

1) The Board has no jurisdiction or authority to review or consider the various documents filed with the Board by EID on January 29, 1990.

The Environmental Improvement Act, NMSA 1978 Section 74-1-1 et seq., (1989 Rplmt.), empowers and requires the Board to promulgate regulations and standards concerning hazardous waste. Section 74-1-8 NMSA 1978 (1989 Rplmt.). In particular, the New Mexico Hazardous Waste Act ("Hazardous Waste Act") requires the Board to establish procedures for the issuance of hazardous waste facility permits. Section 74-4-4 (7) NMSA 1978 (1989 Rplmt.). In accordance with its statutory authority, the Board promulgated the Hazardous Waste Management Regulations No. 5 (hereafter "HWMR-5" or "the Regulations"). EID is required to enforce the Regulations as promulgated by the Board. Section 74-1-7A (13) NMSA 1978 (1989 Rplmt.).

The Regulations enable the Board to review: 1) a timely petition for review ("Petition") of the Director's decisions concerning issuance, suspension, modification or revocation of a hazardous waste permit from a person adversely affected by the Director's decision, (Section 902.G(1) HWMR-5) and; 2) a timely proposed findings and reasons ("Proposed Findings") based on the hearing record from any party participating in the hearing before the

Director (Section 902.G(2) HWMR-5). Although it is within the Board's statutory authority and power to promulgate regulations that would allow the Board to review more than these two documents involving the review of the Director's decision concerning the issuance of a permit, the Board has chosen to not exercise its power to do so. Consequently, the Board may not exceed its Regulations by reviewing improper documents and EID is required to enforce the Regulations as promulgated.

On January 29, 1990, EID submitted the following documents to the Board for review and consideration:

1) a Response to the Appeals of the LANL Hazardous Waste Permit (the "Response");

2) a Motion to Dismiss for Lack of Jurisdiction ("Motion to Dismiss"), and;

3) a Memorandum in Support of EID's Motion to Dismiss for Lack of Jurisdiction ("Memorandum").

EID's Response was filed on the deadline date for filing Proposed Findings to the Board. The fact that it was filed on the established deadline does not transform the Response into Proposed Findings. Even with a liberal construction of Section 902.G(2) of the Regulations, EID's Response cannot be characterized as Proposed Findings. EID's Response is appropriately titled as a response because it is argument and does not set forth any proposed findings.

The Response contains reference to EID's Motion to Dismiss; arguments and comments that a new hearing is required, ignoring the fact that no hearing has been requested in <u>any</u> petition for review as required by Section 902.G(2) HWMR-5; a request for a ten-day extension; and a statement that it does not oppose a time extension for the Board to rule on the appeals. Because EID's Response is not Proposed Findings, the Board must comply with its Regulations and disregard the inappropriately submitted Response.

The Board has no authority to review or consider a Motion to Dismiss for Lack of Jurisdiction. The Board has promulgated no regulations which provide for adjudicatory motions or which enable the Board to entertain motions that are adjudicatory in nature. Although the Board has the statutory authority to promulgate regulations that would enable the Board to review adjudicatory motions in the context of procedures for the issuance of a hazardous waste facility permits, the Board has not chosen to exercise its power in this manner. Consequently, the Motion to Dismiss and supporting Memorandum submitted by EID may not be considered by the Board. In addition, EID's Motion to Dismiss and supporting Memorandum cannot be characterized as either a Petition or Proposed Findings

because a review of the EID Director's decision is not requested and no findings or reasons are presented.

For these reasons the Board should strike EID's documents submitted to the Board on January 29, 1990 from the administrative record.

2) EID lacks standing to submit its Response to the Board.

Section 902.G(1) of the Regulations state:

> 1. Any person adversely affected by the decision of the director concerning the issuance ... of a permit may submit a petition for review of the Director's decision by the Environmental Improvement Board ... (emphasis added)

The Regulations clearly state that only persons adversely affected by the Director's decision may submit a Petition for review to the Board. Even if EID's Response could be characterized as a Petition, which the Permittees contest, EID is not and cannot be adversely affected by its own decision. Thus, EID lacks standing to submit a Petition to the Board and the Response should be stricken from the administrative record.

3) The Board should deny EID's request for an evidentiary hearing.

Section 902.G(2) of the Regulations state:

> Any new evidence becoming available after the tentative decision by, or the hearing before the Director, may be presented at a hearing before the Board if such hearing is requested along with the request for review of the Director's decision. Otherwise, the Board shall consider only the evidence admitted in the record formed at the hearing before the Director or the evidence available to the Director at the time of his or her tentative decision. (emphasis added)

The Regulations clearly state that a hearing before the Board concerning "new" evidence will only be conducted if a hearing is requested in a Petition submitted to the Board. EID's Response misconstrues the clear meaning of Section 902.G(2) by stating that a public hearing is mandated to consider "new" evidence presented in Permittees' Petition for Limited Review.

a) No Petition submitted to the Board requested a hearing.

December 20, 1989 was the deadline established by the Regulations and by official correspondence from EID to submit Petitions to the Board. Three documents were submitted to the Board within the deadline period: Permittees' Petition for Limited Review and letters from

Ms. Joan Berde and Ms. Barbara Jaramillo. Only the Permittees sought review of the Director's decision in their Petition. Ms. Berde and Ms. Jaramillo submitted letters to the Board, but did not seek the Board's review of the Director's decision, present new evidence or request a hearing before the Board. See Permittees' Proposed Findings Nos. 5.0-5.5.

The Permittees' Petition for Limited Review does not request a hearing before the Board. In fact, the Permittees state their reliance on Section 902.G(2) of the Regulations and ask the Board to review the Director's decision based on the record formed at the permit hearing before the Director and the evidence available to the Director at the time of his decision. Further, the Permittees specifically state that "The Permittee is not petitioning the Board for an evidentiary hearing..." See page 2 of the Permittees' Petition for Limited Review.

Because the Regulations require that a hearing be requested along with the Petition and because the Permittees specifically stated that a hearing was <u>not</u> requested in their Petition for Limited Review, the Board may not grant EID's request for a hearing without violating its Regulations.

b) No new evidence was presented in Permittees' Petition.

EID argues in its Response that the Permittees have presented "new" evidence in Permittees' Petition for Limited Review and that the Permittees have waived their right to present new evidence. EID makes these "new" evidence arguments and ignores the fact the Permittees stated that "the Permittee has no new evidence to present and an evidentiary hearing will merely duplicate the existing record." See page 2 of the Permittees' Petition for Limited Review.

The information EID argues constitutes new evidence is contained in Section II of the Petition for Limited Review and was included to refute the conditions placed on the Permittees' hazardous waste facility permit. No new evidence was presented and no hearing was requested.

c) If a hearing is to be held, the hearing is only proper before the Board, not EID.

EID states that if a hearing is to be held on "new" evidence, a public hearing is mandated and requests that the hearing be held before EID. Permittees assert they presented no new evidence to the Board. Even if the Board were to determine there is new evidence, however,

then EID's request is contrary to the express terms of the Regulations. Section 902.G of the Regulations makes numerous references to the fact that if a hearing is held, such a hearing must be held before the Board:

> 3. If a timely request for hearing is made, the Board shall hold a hearing...and ... shall notify the appellant by certified mail and shall make a reasonable effort to notify all who submitted comments on the permit....The Board shall also publish notice of the date, time and place of hearing...
>
> 5. Hearings shall be before the Board or a hearing officer appointed by the Board.
>
> 6. The Board shall allow all parties a reasonable opportunity...
>
> 7. All parties participating in the hearing may submit proposed findings and reasons to the Board ...
>
> 8. The Board may adopt findings submitted ... but the Board shall:
>
> 9. Within sixty (60) days following the Board's receipt of the transcript, the Board shall render a decision ...
>
> (emphasis added)

In light of the clear meaning of Section 902.(G), the Board must deny EID's request that a hearing on new evidence, if any, be held before EID.

4) The Board may not grant itself an extension of time in which to rule on the appeals submitted to the Board.

The Permittees submitted their Petition for Limited Review to the Board in accordance with Section 902.G of the Regulations. Section 902.G in relevant part states:

> G. Review and Hearings Before Board.
>
> 1. ... For purposes of this regulation, an applicant for permit, [or] permittee ... shall be the "appellant". . .
>
> 2. ... If the appellant requests only that the Board review the Director's decision without requesting a hearing to consider new evidence, the Board shall render a decision denying, modifying or sustaining the Director's decision along with findings and reasons, within sixty (60) days of the appellant's request, . . . (emphasis added)

The Regulations do not allow the Board to extend the sixty-day time period for review of the EID Director's decision to impose certain conditions on the Hazardous Waste Facility Permit (the "Permit") issued to the Permittees. The Board has the power to provide for such an extension in its regulations under Sections 74-1-8 and 74-4-4 (7) NMSA 1978 (1989 Rplmt.), however has not done so. Without a regulation allowing the Board to extend its time for review, the Board may not grant itself an extension on an ad hoc basis. Granting itself an extension

thereby circumventing the Regulations would be a violation of the authority granted the Board and contrary to Sections 74-1-9 and 74-4-4 of the Hazardous Waste Act.

To disregard the Regulation's express sixty-day time period in which to render a decision and to grant itself an extension would be an arbitrary and capricious decision on the part of the Board. Further, such a decision by the Board would not be in accordance with the law and would constitute an abuse of the Board's discretion.

The fact that EID does not object to an extension is irrelevant, but is somewhat enlightening. EID is required by law to enforce regulations and standards promulgated by the Board. Section 74-1-7A (13) NMSA 1978 (1989 Rplmt.). In spite of its duty, EID takes the position that it does not object to the Board granting itself an extension, thereby "bending" the rules. EID is empowered and required to enforce the Regulations- not agree to ignore them.

5) <u>The Board may not grant EID's request for an additional 10 days to file a substantive response</u>.

EID has moved the Board to permit EID a ten-day extension in which to file its "substantive" responses to the merits of the appeals. Apparently, the requested extension is to be calculated from February 9, 1990, the

date of the Board's meeting at which jurisdiction to consider appeals in accordance with Section 902.G and F of the Regulations will be addressed. If granted, the extension would effectively grant EID a twenty-two day extension beyond the January 29 deadline provided for in the Regulations, Section 902.G(2), and the Board's official notice of deadline for proposed findings and reasons transmitted by letter dated January 5, 1990.

As noted above, neither the Regulations nor the Hazardous Waste Act enable the Board to grant any extensions of time. The Board has the statutory authority to provide for time extensions in its regulations, however has not done so. Consequently, the Board has no authority to grant an extension to EID.

In addition, EID asked for the extension to file "substantive responses to the merits of the appeals." EID's Response Part III, page 7. The Board has no authority to review such responses, nor does EID have standing to submit such a response. Only parties <u>adversely affected</u> by the Director's decision may submit a Petition for review to the Board. (See Part (2) above.) No provision in the Regulations allows EID to further document the Director's decision by submitting responses to a properly filed Petition.

By requesting the Board to grant an extension of time, EID is improperly asking the Board to "bend" its Regulation. EID is empowered and required to enforce the Regulations- not attempt to circumvent them.

REQUESTED RELIEF

The Permittees request the Board to strike the documents filed by EID on January 29, 1990 from the administrative record and to disregard the documents in their entirety. In the alternative, the Permittees request that the Board refuse to grant EID any extension of time in which to file a "substantive" document and to render a decision concerning the Permittees Petition for Limited Review, supported by findings and reasons, no later than February 19, 1990.

Without prejudice or waiver of the positions taken by Permittees in this Petition to Strike from the Administrative Record, the Permittees intend to file a Petition in response to EID's Motion to Dismiss no later than February 8, 1990.

SUTIN, THAYER & BROWNE
A Professional Corporation

By _____
John A. Bannerman
A. Michael Chapman
Attorneys for University
600 First Plaza
P. O. Box 1945
Albuquerque, New Mexico 87103
(505) 842-8200
5946t

UNITED STATES DEPARTMENT OF ENERGY

_____
Joyce H. Laeser
Counsel for DOE
Los Alamos Area Office
Los Alamos, New Mexico 87544
(505) 667-4667

We hereby certify that we have hand delivered a copy of the foregoing pleading to counsel for the Environmental Improvement Division this 7th day of February, 1990.

SUTIN, THAYER & BROWNE
A Professional Corporation

By _____

RECEIVED
JUL 26 1989
EID DIRECTOR'S OFFICE

MR. Richard MITZELFELD —

Please add my name to the list of people opposed to the Los Alamos Incinerator.

Our environmental poisoning will not just go away unless the E.I.D take positive action against all forms of environmental contamination.

Sincerely —

Jonathan Sobol

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

July 26, 1989

Congressman Bill Richardson
332 Cannon House Office Building
Washington, D.C. 20515

Dear Congressman Richardson:

This letter concerns your proposed amendment to the Department of Defense Authorization Bill regarding a moratorium on the incineration of radioactive waste at Los Alamos National Laboratory. My comments below are in response to questions raised by the memorandum I sent to your office yesterday, July 25, 1989, regarding the proposed amendment.

The Environmental Improvement Division's priorities in developing new regulations for incineration have been set primarily by citizens and our state legislature reacting to new or proposed facilities in the state. In the spring of 1988, public concern was focused on a proposed municipal waste incinerator at Los Alamos. This concern resulted in our state moratorium bill on incineration. Although this bill covers other classes of incineration besides municipal waste, its primary focus was on municipal waste and we have put our efforts into this area first. We have also begun to address the incineration of medical waste at this time primarily because of a large uncontrolled facility in the southern part of the state. We do not have the staff to concurrently address radioactive waste along with these other categories. We would consider the assistance of a third party in developing such regulations if funding were available.

There are a number of reasons why our interest in incineration of radioactive waste was not expressed as strongly in the past as it is today. The Los Alamos incinerator is to our knowledge the only unit in the state conducting this activity. In the past, this facility was represented as a research unit. Today, it will be used on a larger scale as an integral part of the Laboratory's waste management effort. Potential impacts to human health are therefore much greater. In addition, most of our citizens only became aware of this facility recently and public concern has been very high.

We are confident the state has adequate statutory authority to address the incineration of radioactive waste. Under the New Mexico Air Quality Control Act, "radioactive material" is listed as a substance for which the New Mexico Environmental Board clearly has the right to control through the adoption of regulations. In addition, the state legislature has further directed the EID

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

to develop new regulations with stringent emission limitations for all classes of incineration. This language is within the recently enacted H.B. 59 which is a state bill addressing incineration. Although EPA has not yet delegated authority for mixed waste under the Resource Conservation and Recovery Act to the state, we do not believe this in any way precludes the development of new air quality regulations for this type of waste.

I hope this answers your recent questions. Please contact me again if additional concerns arise.

Sincerely,

Richard Mitzelfelt

Richard Mitzelfelt
Director

RM:BB:cg

cc: Max Best, Governor's Office
Michael J. Burkhart, Deputy Secretary, HED
Boyd Hamilton, Hazardous Waste Bureau

7-25-89

MODIFICATION TO THE AMENDMENT
OFFERED BY MR. RICHARDSON OF NEW MEXICO

The amendment as modified is as follows:

Page 350, after line 3, add the following new section:

July 26, Congressional Record

SEC. 3137. MORATORIUM ON INCINERATION OF RADIOACTIVE WASTE AT LOS ALAMOS NATIONAL LABORATORY.

The Los Alamos National Laboratory is prohibited from incinerating radioactive waste, until ~~including any waste containing radioactive constituents, until the earlier of the following occurs:~~

~~(1) A period of one year elapses after the date of the enactment of this Act.~~

~~(2)~~ The State of New Mexico adopts regulations on ~~emissions resulting from~~ the incineration of radioactive waste.

RECEIVED
AUG 16 1989

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

MEMORANDUM

TO: CONGRESSMAN BILL RICHARDSON

ATTENTION: STEVE CROUT

FROM: RM RICHARD MITZELFELT, DIRECTOR
NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION
505/827-2850 (FAX # 505/827-2836)

RE: INCINERATOR AMENDMENT - NMEID COMMENTS

DATE: JULY 25, 1989

The Division supports this amendment for the following reasons:

1. The amendment would prevent the burning of mixed waste and radioactive waste without a RCRA component at the only facility in the state exempt from state moratorium, H.B. 59.

2. This amendment would enable the Division to move from a position of uncertainty regarding public health impacts to one of protection. The health impacts of this activity would then be discussed in a public hearing through the adoption of new air regulations before the activity could resume.

3. The Air Quality Bureau which develops regulations would be given more time to address this type of incineration along with municipal and medical waste incineration. This would also alleviate the potential to act too hurriedly.

Although we support this moratorium, one question needs to be researched. Does this moratorium as currently proposed create a conflict by preventing activities currently authorized by the Resource Conservation and Recovery Act? The incineration of mixed waste being one such activity.

lr

cc: Max Best, Governor's Office
Michael Burkhart, Deputy Secretary, HED
Cecilia Williams, Air Quality Bureau
~~Boyd Hamilton~~, Hazardous Waste Bureau

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

July 25, 1989

Mr. Richard Mitzelfelt
1190 St. Francis Drive
Santa Fe, New Mexico 87503

RECEIVED
JUL 26 1989
EID DIRECTOR'S OFFICE

Dear Mr. Mitzelfelt:

As a recently arrived citizen of Santa Fe (transplanted from Los Angeles to escape the smog and poor air quality there which was affecting my three year old's health) I was appalled to see that there is a possibility that we will be forced to breathe radioactive waste here!!

I demand that the EID issue an emergency order, by authority of the New Mexico Air Quality Control Act section 74-2-10, to prevent the burning of radioactive waste until the State of New Mexico can at least adopt standards in a public forum to regulate it. Any hearing relating to the incineration of waste must include both hazardous waste and radioactive permits!!

Please, we are talking about the lives and health of our families and children. "Mistakes" have been made in Washington state, Rocky Flats, South Carolina, etc. please lets learn from them and NOT duplicate them here in the beautiful state of New Mexico.

Thank you for your time and consideration.

Sincerely,

K.E. Buckley

K.E. Buckley
336 Delgado Street
Santa Fe, New Mexico 87501

What about supercompaction? It's cheaper + much safer for the citizens!

a

Kellog

July 25, 1989

RECEIVED
JUL 27 1989
EID DIRECTOR'S OFFICE

EID
1190 St. Francis Dr.
Santa Fe, NM 87503
Att: Richard Mitzelfelt

Subject: Los Alamos incineration of hazardous & rad- wastes.

Dear Mr. Mitzelfelt,

I have just learned through information received from the NM Conservation Voters Alliance that Los Alamos is incinerating hazardous & radioactive wastes without any state oversight. I presume they are doing so under DOE authority?! Given the infamous DOE record on such matters, & given what we now know of the dangers of toxic incineration, how can the state sit blind to it?

It would be a good move (& as a citizen I demand it) to:

1. (EID) issue an emergency order to prevent the incineration of rad wastes until the state can adopt standards in a public forum to regulate them,

2. hold hearings on this issue that include both hazardous waste & radioactive permits.

Please [illegible]e a response on this.

Best Wishes,

Ross

Ross Lockridge
PO Box 22
Cerrillos, NM 87010

cc. CVA, CCNS, SWRIC, Bill Richardson

7/24/89

RECEIVED
JUL 26 1989
EID DIRECTOR'S OFFICE

Dear Mr. Mitzefelt,

I am a voting member of Santa Fe and wanted you to support regulation of both hazardous and radioactive waste. This is an important issue for me and my family. Please make sure the Los Alamos lab obtains the permit to operate their incinerator. Thank you!

Sincerely,

Jason Adams
530 E. Garcia
#11
Santa Fe, N.M.
87504

rec'd

New Mexico Health and Environment Department

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

P-965 484 533

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

July 25, 1989

Mr. Harold Valencia
DOE Area Manager
U.S. Department of Energy
Los Alamos, NM 87544

RE: NM 0890010515

Dear Mr. Valencia:

In the course of the public hearing on the draft RCRA permit for LANL it was apparent that confusion still exists over which incinerators exist at LANL, what they incinerate and which have environmental reports under the National Environmental Policy Act or other applicable statues. Please respond for the record by August 14, 1989, with answers to the following questions so that this confusion may be eliminated.

1. What incinerators exist at LANL?

   Please identify fully by Technical Area, building, LANL name used to identify each and, if possible, manufacturer and model number.

2. What materials or wastes are incinerated at each?

   Please indicate physical state (gaseous, liquid or solid) and general classification of material (classified materials, explosives, chemical waste under RCRA, mixed waste under RCRA, radioactive materials under the AEA of 1954, etc.).

3. What environmental documents exist for each?

   Please indicate general category (RCRA, NEPA, CAA etc.), common English identification (application, environmental assessment etc.), whether "in preparation", "draft prepared" or "final report" and availability to the public (yes or no). Any document in final form should be clearly identified by title, reference number and publication date.

5. Any other information you believe would assist the EID in evaluating the applicability of state laws and regulations to each incinerator.

6. Has DOE withheld any information pursuant to the questions above under laws pertaining to national security? If so,

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

please clearly and specifically identify what has been withheld.

The information above is requested pursuant to Section 74-4-4.3 NMSA 1978 and should be certified in accordance with HWMR-5 as amended July 1989, Part IX, 40 CFR section 270.11(d).

If you have any questions please call Mr. C. Kelley Crossman at 827-2923.

Sincerely,

Boyd Hamilton

Boyd Hamilton
Program Manager
Hazardous Waste Program

BH:CKC:vga

Ms. Lynn Prince, USEPA Region VI (6H-HS)
Ms. Gini Nelson, HED Office of General Counsel

P 965 484 533

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to MR HENRY VALENCIA
DOE AREA MANAGER
Street and No. U.S. DEPT. OF ENERGY
P.O., State and ZIP Code LOS ALAMOS NM 87544

Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date 7/25/89	

PS Form 3800, June 1985

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Laboratory Counsel/General Law

DATE: July 24, 1989
IN REPLY REFER TO: LC/GL:89-624
MAIL STOP: A187
TELEPHONE: 505-667-3766

Mr. C. Kelley Crossman
Hazardous Waste Bureau
Environmental Improvement Division
1190 St. Francis Drive
Harold Runnels Building
Santa Fe, NM 87503

SUBJECT: WITNESS AND MAILING LISTS FROM THE PERMIT HEARING JULY 18, 19 AND 20, 1989.

Dear Kelley,

In order to respond fully to all the questions asked by the public at the subject hearing, we would appreciate receiving a copy of the witness and mailing lists.

As you probably recall, some of the people who gave testimony did not give their addresses during the beginning of the hearing. We want to make sure our records are as complete as possible.

Thank you for your help.

Sincerely,

Marja H. Shaner

Marja H. Shaner
Legal Assistant

MHS:rvj

Cy: CRM-4 (2), MS A150
File (3)

JUL 27 1989

Referred to Howard Henry to see they were added to the hearing record. She will call Mr. H. Kelley 7/31/89

Linda Epton Wenrick
1700 Paseo de Peralta No. 5
Santa Fe, New Mexico 87501

RECEIVED
JUL 26 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt
Director of the E.I.D.
1190 St. Francis Dr.
Santa Fe, New Mex. 87503

Dear Richard Mitzelfelt,

This is only to affirm personally what is already spelled out in this flyer. I've lived in Santa Fe for 16 years and am aware of Los Alamos enjoying a privileged political position, which the Lab has abused in many instances. We certainly do not need more radioactive toxins in the environment, and as the major producer of these, some limits and controls need to be established and reinforced.

Sincerely,

Linda Epton Wenrick

cc
July 24, 1989

(505) 982-0629

We cannot afford to risk permanent harm to our citizens and our land in the name of national security. -Senator John Glenn

RADIOACTIVE AIR?

Los Alamos Radioactive Waste Incinerators Threaten Air Quality

Los Alamos National Laboratories (LANL) is applying for a final permit to burn radioactive and hazardous chemical waste. The purpose of incineration is to reduce the volume of radioactive hazardous waste that needs to be stored or disposed of. The emissions from the proposed incineration are sure to include toxic dioxins and radionuclides; therefore they must be regulated and closely monitored.

The State of New Mexico has no regulations for radioactive emissions!

Radioactive materials are not changed by fire and are most volatile when released into the atmosphere. One-millionth of a gram of plutonium in your lungs results in a 50/50 chance of developing cancer. Dioxins are almost as toxic as plutonium; the standard for these emissions are 30 trillionths of a gram per cubic meter of air. This is another extremely hazardous carcinogen with zero as the only safe dose.

In New Mexico, there is a moratorium on incinerator operations until regulations are established. However, the Los Alamos incinerator was exempted. This incinerator has operated under a "research permit." Before regulations are written, LANL is seeking to obtain a full production permit.

Hearings for this incinerator are scheduled for July 18 at 9:00 am in the Runnels Building Auditorium, 1190 St. Francis Drive.

Despite this hearing, under the current regulations, LANL is able to operate this incinerator today without this permit.

These hearings will only address the hazardous waste portion of the permit since New Mexico has no regulations to cover the radioactive emissions. These hearings are misleading and premature since there are no regulations to address the radioactive portions of the waste.

WHAT TO DO

- **It is important to write,** at the very least call the Dir. of the Environmental Improvement Division (EID):
  Richard Mitzelfelt
  1190 St. Francis Drive
  Santa Fe, New Mexico 87503 (505) 827-2850

- Demand that the EID issues an emergency order (by authority of the New Mexico Air Quality Control Act, section 74-2-10) to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Demand that any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

- **Plan to attend these crucial hearings.** Fact sheets will soon be available from CCNS.

You can't hide from air!
Don't let our air quality be compromised!

Concerned Citizens for Nuclear Safety • 712 Calle Grillo • Santa Fe • New Mexico • USA • (505) 986-1973

RECEIVED
JUL 26 1989
EID DIRECTOR'S OFFICE

July 24, 1989

Dear Mr. Mitzelfelt:

I write this letter as a concerned resident, parent and businessman. As a screen writer/director, I have had 2 films produced in the last year and am currently developing a project with Moctesuma Esparza (Milagro Beanfield War, Ballad of Gregorio Cortez, Agueda Martinez). In the delicate process of choosing a location for a film, which can bring millions of dollars to a state, the incineration of dangerous waste from LANL represents a severe deterent to the state of New Mexico. If our economy loses even 1 film per year, at 2 million dollars to our economy per film, for the next 50 years, then we lose 100 million dollars toward our future.

My education in Department of Energy (D.O.E.) sanctioned projects and how Americans fare in the aftermath began while I was writing a docu-drama called "Desert Fire". This script dealt with another D.O.E. santioned project, the atomic testing program at Yucca Flat, where during the 1950's about a quarter of a million men and women where exposed to "safe" levels of radiation. As I interviewed members of the program and did research through the National Center for Disease Control, I learned that since the program ended nearly 40 percent of these participants have developed cancer, leukemia, sterility, birth defects and a host of other radiation related illnesses. The D.O.E. had santioned the project, scientists and medical experts of the day had sanctioned the project, and today a group of Americans the size of the city of Santa Fe are dead, dying or ill. One accident, one mistake, one oversight could fill our future with disaster.

Today, the D.O.E. and the scientists of the day tell us that incineration of this waste is safe. When it comes to the lives of my family, my friends and employees, I am not willing to gamble that they will be wrong again.

Please issue an emergency order to prevent the burning of radioactive waste until the state of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to incineration <u>must</u> include <u>both</u> hazardous waste and radioactive permits. Thank you.

Sincerely,

Roger Holzberg

Roger Holzberg
Santa Fe, New Mexico 87501

P.S. Supercompaction is a viable alternative to incineration, is less costly and most importantly does not result in any airborne releases of hazardous or radioactive materials.

rcd

New Mexico Health and Environment Department

MARALYN BUCKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

July 24, 1989

Mr. Bill Gallagher
Section Chief
U.S. EPA Region VI (6H-PS)
1445 Ross Avenue
Dallas, TX 75202

RE: LANL Permit
NM 0890010515-1

Dear Mr. Gallagher:

Enclosed for your information are copies of six letters from the public which convey the essence of all the comments received to date. If you have any questions call me at (505) 827-2923.

Sincerely,

C Kelley Crossman

C. Kelley Crossman
Supervisor
Hazardous Waste Program

CKC:vga

Enclosure

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

JUL 11 1989
EID DIRECTOR'S OFFICE

HUGH K. JENNINGS
329 Sanchez St.
Santa Fe, NM 87501
10 July 1989

Mr. Richard Mitzelfelt
Director, Environmental Improvement Division

Dear Sir:

I am a retired nuclear engineer from Los Alamos, having been a staff member there for twenty five years. I write to urge you to deny to LANL the permit to incinerate hazardous waste at their site. A new era of concern for public health and safety has arrived, and is long overdue. For many years this concern had low priority in DOE, as they admit, as compared to "national security".

In recent years the incineration of radioactive, hazardous, and municipal waste has gained popularity, with disastrous results. Some results of the industrial incineration of hazardous waste are summarized by the Citizens Clearing House for Hazardous Waste, Inc., PO Box 926, Arlington, VA 22216. They list 32 industrial sites as examples of the failures of this technology. This list includes accounts of violations of regulations, fires, explosions, spills, threats to public health and general mismanagement. Their findings are summarized in a guidebook: Hazardous Waste Incineration, The Burning Issue.

Recently Livermore National Laboratory proposed a huge incinerator of toxic and radioactive waste, which would generate two million pounds of radioactive ash each year. Fortunately the residents of the area persuaded enough public officials, including California congressmen, to deny the laboratory's proposal.

Los Alamos National Laboratory has a very checkered past in the management of waste disposal. I refer you to an investigative report in the Albuquerque Journal, starting 7 Oct 1979, a series of eight articles. These detail a history of confused regulations, spills, and

leaks of radioactive materials, both planned and unplanned. They document contamination into the Rio Grande, the soil, and the air of these materials. This account gives me great doubt about LANL's abilities and philosophies about waste management.

I would appreciate your including these comments in the proceedings of the hearing on the incineration permit, scheduled for 18 July 1989.

Sincerely yours,

Hugh K. Jennings

Hugh K. Jennings

July 7, 1989

RECEIVED
JUL 11 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt, Director EID
1190 St. Francis Dr.
Santa Fe, N.M. 87503

Dear Sir:

I understand that you have the authority, under the New Mexico Air Quality Act, to prevent the burning of radioactive waste until regulation standards can be adopted.

It is imperative for the health and safety of all New Mexicans -- and our environment--that you include not only hazardous waste, but radioactive waste as well in your hearings since they are both very dangerous to plants, animals and humans; certainly, radioactive waste has even far greater ramifications, since it can remain in the environment for centuries!

It is my understanding that it takes only one millionth of a gram of plutonium in my lungs to give me a 50/50 chance of getting cancer and with a history of cancer in my family, my chances could even be higher--a chance I do not wish to take.

Please issue an emergency order (under section 74-2-10 of the Air Quality Act) to prevent all burning of radioactive waste, until standards can be adopted to regulated such burning. This certainly sounds like the sane, responsible thing to do, wouldn't you agree? We are playing with very dangerous toys, Mr. Mitzelfelt and we must make sure we do not further endanger our environment--we have enough toxins and pollutants to deal with already!

Finally, why is the Los Alamos incinerator exempted from any future regulations--it sounds like a copout to me. Since they will be burning toxins and radioactive wastes, surely regulations are needed!

Sincerely,

Rosemary Lowe

Rosemary Lowe, M.A.
[illegible] La Placita Circle
Santa Fe, N.M. 87501

July 13, 1989

RECEIVED
JUL 17 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt
Director, NMEID
1190 St. Francis Drive
Santa Fe, NM 87503

Dear Mr. Mitzelfelt:

As an ardent supporter of your Agency's mission, I request that you consider the prudence of tabling the LANL Radiological and Hazardous Waste Incinerator application citing the emergency provision of Section 74-2-10. There is activity at the DOE Headquarters level to invigorate the continuing work involving on-site processes of a non-burning nature. It would be of great assistence to this newly recognized development, if you enacted the emergency provision. Also, the interest of integrated regulation of radiological and hazardous wastes would be served by such an action.

I also petition you to consider the research exemption which LANL Incinerator as an unfortunate condition, and not the desired one. I urge you to consult with Colorado and Ohio to compare experiences in dealing with federal facilities and laboratories so you can obtain a clear direction on access and control as related to your Agency's responsibility for public health.

Sincerely yours,

Thomas L. Andrews

Thomas L. Andrews
814 Fayette Street
Santa Fe, NM 87501

Kelley

Robert Walsh
Rt 3 Box 196B
Espanola, NM 87532

Called 7/18 -
Protest LANL Permit because
DOE has not shown good faith on
audence at Rocky Flats.

etc, etc,

RECEIVED
JUL 18 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt Director
ENVIRONMENTAL "IMPROVEMENT" DIVISION
1190 St. Francis Drive
Santa Fe, NM 87503

Sir:

How ironic that you {supervise / allow} such planetary destruction under the name of "improvement".

If you are truly interested in protecting the environment, then show it:

- Prevent burning of radioactive waste at least until the state adopts regulations according to public input
- Hold adequate hearings on both hazardous and radioactive permits.
- Contain the greedy, selfish interests of the U of C junta — LANL MUST be regulated.

Preserve the earth. You have no right to destroy it.

Connie Janssens

CONNIE JANSSENS • DRAFTING • GRAPHIC DESIGN • ILLUSTRATION
P.O. BOX 16191 • SANTA FE, NM • 87506 • 505 986 0376

SHUBE'S
MANUFACTURING, INC.

RECEIVED
JUL 18 1989
EID DIRECTOR'S OFFICE

Mr. Richard Mitzelfelt
Director, Environmental Improvement Division
1190 St. Francis Drive
Santa Fe, New Mexico 87503

17 July, 1989

Dear Mr. Mitzelfelt,

As a citizen with two small children, I wanted to enter my opinion on the burning (at Los Alamos National Laboratories) of Radioactive and Hazardous Chemical Waste.

Currently this is permitted under a "Temporary Permit", and the Lab is trying to obtain a "Final Permit" BEFORE State regulations on incinerators go into effect.

As even a small amount of radioactive material released into the air can cause cancer, I do NOT want radioactive waste incinerated in New Mexico. Living or working in Santa Fe, as you do, with your proximity to the lab, I would think you probably understand this concern.

I request an Emergency Order (by authority of the New Mexico Air Quality Control Act) to prevent the burning of radioactive waste until the State sets standards on this. I also request that any hearings on the incinerator at Los Alamos National Labs take into account both chemical waste and radioactive waste, so that we are not "hit" down the road with large numbers of sick and deformed children, high incidences of cancer, etcetera.

I am looking forward to hearing back from you on this.

Sincerely,

Howard Shube
Shube's Manufacturing, Inc.

P.O. Box 25631 • Albuquerque, New Mexico 87125 • *Showroom:* 2010 Ridgecrest Dr. SE
Phone: (505) 266-5951 **Nationwide Toll Free: 1-800-545-5082**

RECEIVED
JUL 25 1989
EID DIRECTOR'S OFFICE

12:40 p.m

TO:Richard Mitzelfelt
FR:Steve Crout
Congressman Bill Richardson
(202) 225-6190
July 24, 1989

FAX # 202/225-1950

RE: INCINERATOR

O The attached amendment is to be offered to the Department of Defense Authorization bill. It is currently scheduled for action on the House floor today after 4 PM. I would appreciate your reaction. The attached amendment would have the following affect:

The amendment calls for a one-year moratorium on incineration of radioactive waste at LANL unless the state adopts regulations on radioactive emissions at an earlier date.

The amendment only deals with emissions which are dealt with under the Clean Air Act. Under this act states have the authority to develop and enforce emissions regulations that are at least as stringent as federal emissions regulations established by the EPA. LANL currently complies with federal EPA emissions regulations, but the state has none (EID currently plans to develop such regulations). This amendment would allow the state time to develop radioactive emissions regulations. However, if the state fails to develop such regulations within a year, LANL could begin burning. The intent is to give the state a chance to act without holding up the incinerator for an unreasonable amount of time.

This amendment does not deal with RCRA regulations. However, on Thursday the 27th Congressman Luken plans to mark up H.R. 2078, a bill to clarify that mixed waste (including radioactive waste) is to be included under RCRA. This would give states the authority to enforce RCRA regulations with respect to mixed waste. States currently do not have this authority.

7-25-89

MODIFICATION TO THE AMENDMENT
OFFERED BY MR. RICHARDSON OF NEW MEXICO

The amendment as modified is as follows:

Page 350, after line 3, add the following new section:

1 **SEC. 3137. MORATORIUM ON INCINERATION OF RADIOACTIVE WASTE AT**
2 **LOS ALAMOS NATIONAL LABORATORY.**
3 The Los Alamos National Laboratory is prohibited from
4 incinerating radioactive waste, including any waste
5 containing radioactive constituents, until the earlier of the
6 following occurs:
7 (1) A period of one year elapses after the date of
8 the enactment of this Act.
9 (2) The State of New Mexico adopts regulations on
10 emissions resulting from the incineration of radioactive
11 waste.

Department of Energy
Albuquerque Operations
Los Alamos Area Office
Los Alamos, New Mexico 87544

RECEIVED
JUL 25 1989
EID DIRECTOR'S OFFICE

JUL 24 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Richard Mitzelfelt
Director
Environmental Improvement Division
1190 St. Francis Drive
Harold Runnels Building
Santa Fe, New Mexico 87503

Dear Mr. Mitzelfelt:

This letter hereby transmits replacement pages for the Los Alamos National Laboratory's (the Laboratory's) Resource Conservation and Recovery Act, Part B application. These pages update the most recent modifications to the Laboratory's waste management practices and supersede all previous revisions. The changes occur at the following Part B application sections:

Part A, Appropriate Pages
Part A, Figure 3
Part B, Figure 2-5
Part B, Figure 9-10
Appendix R, Figure 8

Please call Mr. James Phoenix of my staff (667-5288) if you have any further questions.

Sincerely,

Harold E. Valencia
Area Manager

Enclosures

cc w/enclosures:
A. Davis, EPA, Region VI, Dallas, TX

LTP:JAP:0066

US. DOE

Department of Energy
Albuquerque Operations
Los Alamos Area Office
Los Alamos, New Mexico 87544

APR 29 1988

RECEIVED
MAY 0 4 1988
EID DIRECTOR'S OFFICE

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Michael Burkhart, Director
N. M. Environmental Improvement Division
P. O. Box 968
Santa Fe, NM 87504

Dear Mr. Burkhart:

The Department of Energy is submitting the enclosed 1987 Biennial Report for Los Alamos National Laboratory in accordance with New Mexico Hazardous Waste Management Regulations. This report covers the Laboratory's generation, storage, and treatment of hazardous waste during the period of 1 January through 31 December 1988. Because mixed wastes are not presently being regulated under RCRA, these wastes are not included, as RCRA wastes, in this report. However, in some cases, e.g. the Technical Area 50 Incinerator, these wastes are reported in the "Total" category as non-RCRA wastes.

If you have any questions regarding this report contact Donna Lacombe at 667-5288.

Sincerely,

Harold E. Valencia
Area Manager

8598A

Enclosure

EXPLANATION OF PROCESS CODE LISTINGS AND/OR DESIGN CAPACITY

Line 1	S01	TA-54, Area L TA-50, Container Storage Units
Line 2	S02	TA-54, Area L Waste Oil Storage Tanks
Line 3	S04	TA-54, Area L Surface Impoundments B and D TA-35, TSL-85 and TSL-125 Surface Impoundments
Line 4	T01	TA-54, Area L TA-50, Batch Waste Treatment Unit
Line 5	T02	TA-16, Surface Impoundment
Line 6	T03	TA-16, Incinerator TA-50, Incinerator
Line 7	T04	The following open burning units are located at TA-16:

- Two burn pads (388, 399) for burning HE-contaminated solids. Each unit has a capacity of 1,000 pounds of solids per burn.
- Two pressure vessels (401, 406) for burning HE-contaminated sludges. Each unit has a capacity of 750 pounds of sludge per burn.
- One burn pad for HE-contaminated oil/solvent mixtures. This unit has a capacity of 100 gallons per burn.
- One flash pad for HE-contaminated equipment. This unit does not have a design capacity.
- One burn cage for HE-contaminated paper. This unit has a capacity of 3.0 cubic feet per burn.

The following waste detonation units are designed to open detonate explosives:

Unit	Design Capacity (pounds of HE per detonation)
TA-14-35	10
TA-15, Phermex	100
TA-36, Kappa 8	200

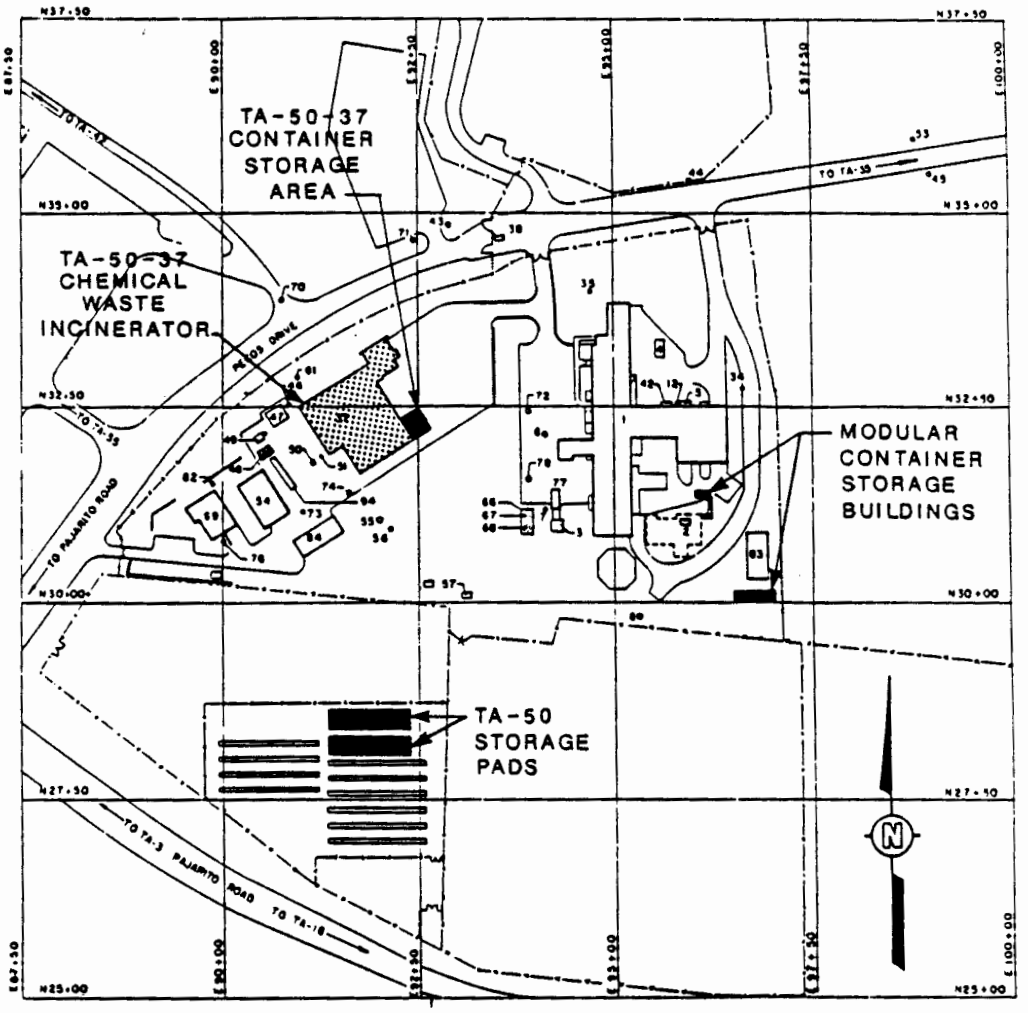

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FIGURE 9

LOCATIONS OF TA-50
CHEMICAL WASTE INCINERATOR
AND CONTAINER STORAGE
UNITS

PREPARED FOR

LOS ALAMOS
NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO

INTERNATIONAL TECHNOLOGY CORPORATION

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LIST OF PHOTOGRAPHS

TA-14-23 and 35 - Building with firing point 35.

TA-15, Phermex - Firing point.

TA-16-387 - Burn Pad for Flashing Equipment.

TA-16-406 - Pressure Vessel for dried HE Sludge and Associated Storage Area.

TA-16-394 - Burn Pans for HE Contaminated Oil.

TA-16-401 - Pressure Vessel for Dried HE Sludge and Associated Storage Area.

TA-16-399 - Burn Pad.

TA-16-388 - Burn Pad.

TA-36- 8 - Kappa 8 - Firing Point.

TA-39-57 - Firing Point.

TA-39-6 - Firing Point.

TA-50-1 - Building Housing the Batch Waste Treatment Unit.

TA-50-1 - Batch Waste Treatment.

TA-50-1 - Batch Waste Treatment.

TA-50-114 - Hazardous Waste Storage Module.

TA-50-37 - Chemical Waste Incinerator Facility (east side).

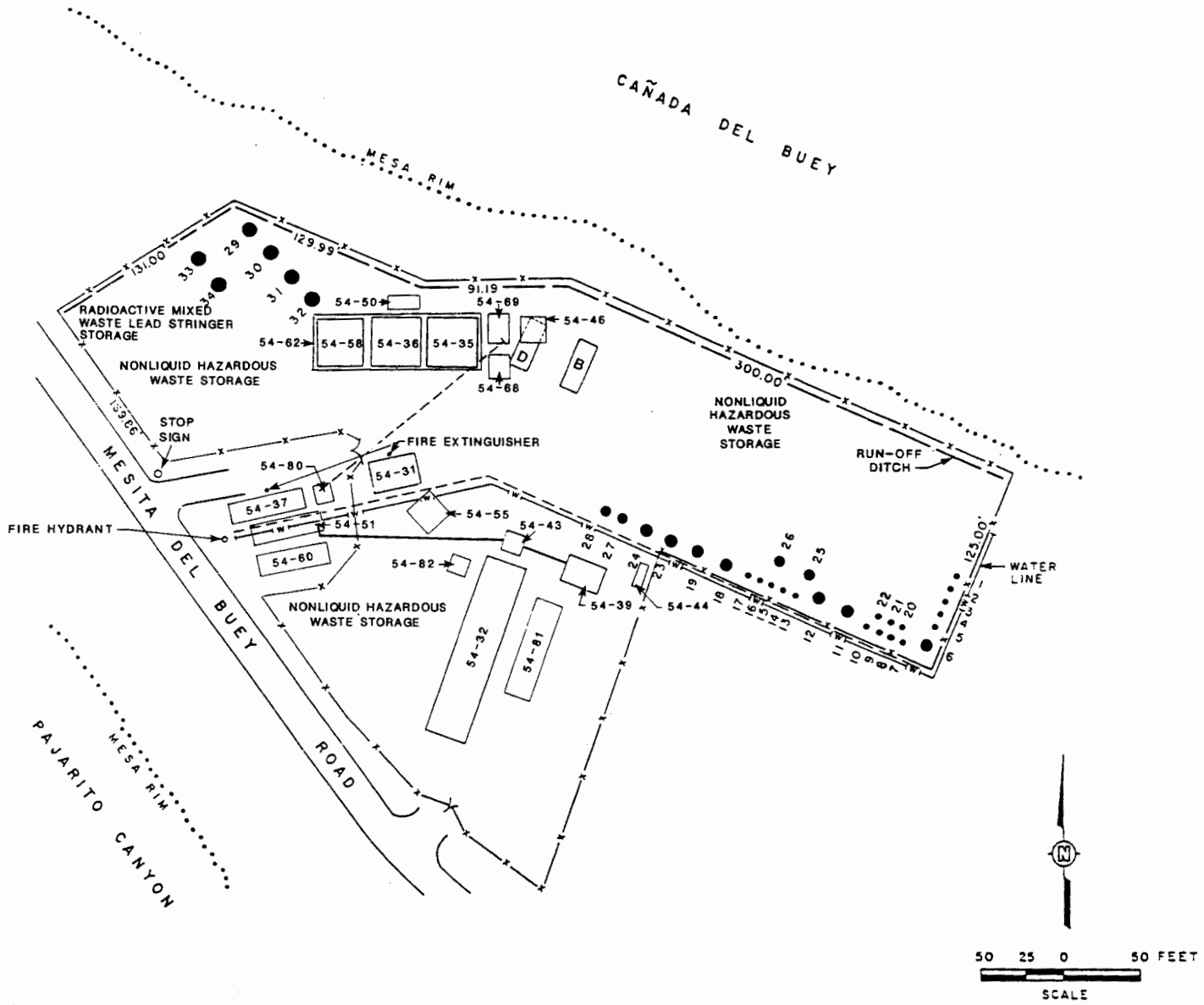
TA-54, Area L - Front Gate.

TA-54, Area L - Gas Cylinder Storage.

TA-54, Area L - Treatment Tanks.

TA-54, Area L - Nonliquid Hazardous Waste Storage Area.

TA-54, Area L - Hazardous Waste Storage Unit.



LEGEND

MATERIAL DISPOSAL UNITS

54-31 PACKAGING BUILDING
54-32 ROOFED WASTE STORAGE PAD
54-35 TREATMENT PAD
54-36 SAMPLING PAD
54-37 OFFICE TRAILER
54-39 PCB BUILDING
54-43 SEPTIC HOLDING TANK
54-44 PROPANE TANK
54-46 EQUIPMENT STORAGE BUILDING
54-50 EQUIPMENT STORAGE BUILDING
54-51 OFFICE TRAILER
54-55 SAMPLE PREP LAB BUILDING
54-58 TRANSPORT PAD
54-60 OFFICE TRAILER
54-62 CANOPY OVER MD-35,MD-36,MD-58
54-68 MODULAR STORAGE BUILDING
54-69 MODULAR STORAGE BUILDING
54-80 SEPTIC HOLDING TANK
54-81 PCB OIL TANK STORAGE
54-82 DRUM CRUSHER
B SURFACE IMPOUNDMENT
D SURFACE IMPOUNDMENT

● LOCATION OF AREA L INACTIVE SHAFTS

FIGURE 3

TA-54 AREA L
WASTE MANAGEMENT UNITS

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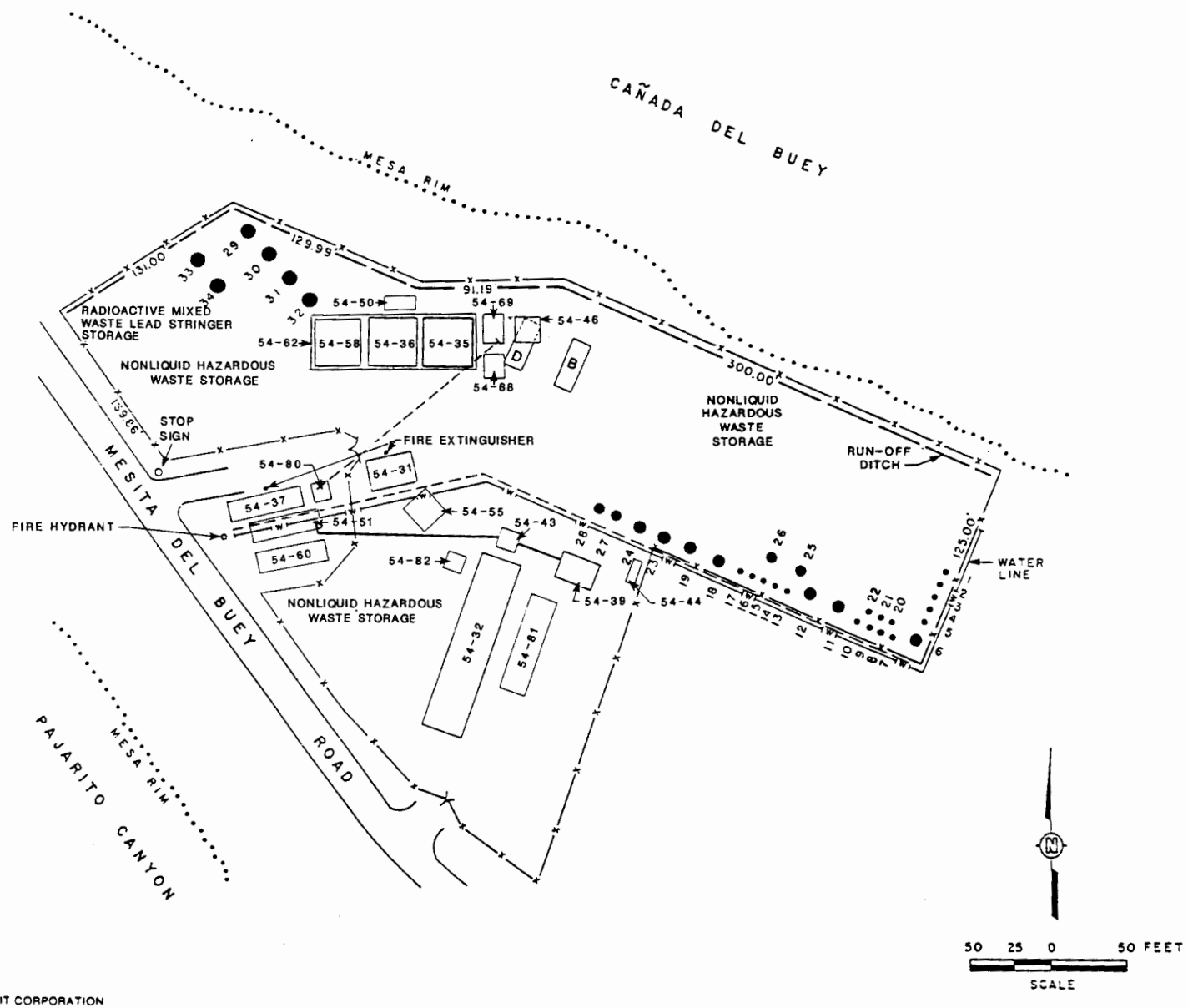

LEGEND

MATERIAL DISPOSAL UNITS

54-31	PACKAGING BUILDING
54-32	ROOFED WASTE STORAGE PAD
54-35	TREATMENT PAD
54-36	SAMPLING PAD
54-37	OFFICE TRAILER
54-39	PCB BUILDING
54-43	SEPTIC HOLDING TANK
54-44	PROPANE TANK
54-46	EQUIPMENT STORAGE BUILDING
54-50	EQUIPMENT STORAGE BUILDING
54-51	OFFICE TRAILER
54-55	SAMPLE PREP LAB BUILDING
54-58	TRANSPORT PAD
54-60	OFFICE TRAILER
54-62	CANOPY OVER MD-35, MD-36, MD-58
54-68	MODULAR STORAGE BUILDING
54-69	MODULAR STORAGE BUILDING
54-80	SEPTIC HOLDING TANK
54-81	PCB OIL TANK STORAGE
54-82	DRUM CRUSHER
B	SURFACE IMPOUNDMENT
D	SURFACE IMPOUNDMENT
●	LOCATION OF AREA L INACTIVE SHAFTS

FIGURE 2-5

TA-54 AREA L
WASTE MANAGEMENT UNITS

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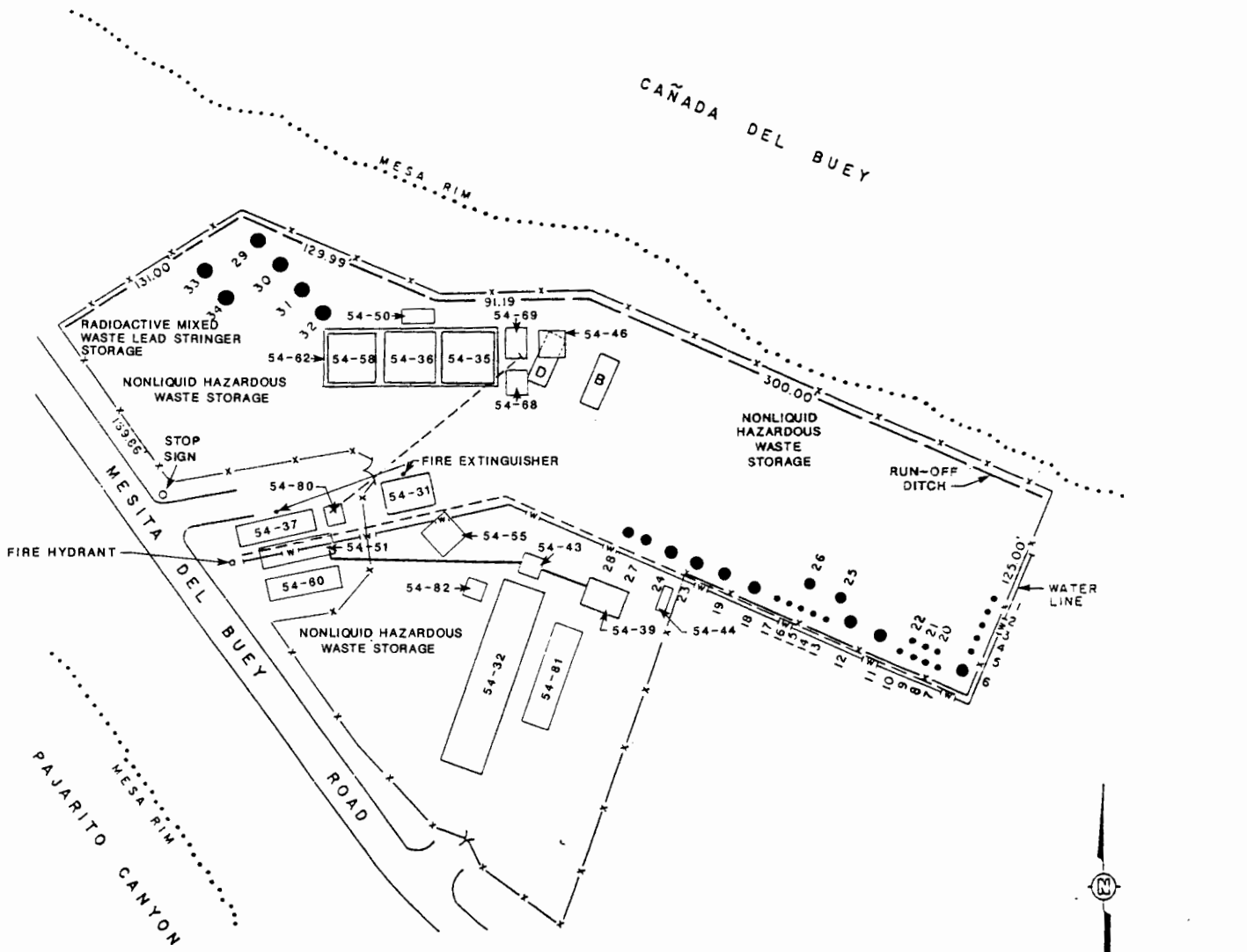

LEGEND

MATERIAL DISPOSAL UNITS

54-31 PACKAGING BUILDING
54-32 ROOFED WASTE STORAGE PAD
54-35 TREATMENT PAD
54-36 SAMPLING PAD
54-37 OFFICE TRAILER
54-39 PCB BUILDING
54-43 SEPTIC HOLDING TANK
54-44 PROPANE TANK
54-46 EQUIPMENT STORAGE BUILDING
54-50 EQUIPMENT STORAGE BUILDING
54-51 OFFICE TRAILER
54-55 SAMPLE PREP LAB BUILDING
54-58 TRANSPORT PAD
54-60 OFFICE TRAILER
54-62 CANOPY OVER MD-35,MD-36,MD-58
54-68 MODULAR STORAGE BUILDING
54-69 MODULAR STORAGE BUILDING
54-80 SEPTIC HOLDING TANK
54-81 PCB OIL TANK STORAGE
54-82 DRUM CRUSHER
B SURFACE IMPOUNDMENT
D SURFACE IMPOUNDMENT

● LOCATION OF AREA L INACTIVE SHAFTS

50 25 0 50 FEET
SCALE

FIGURE 9-10

TA-54 AREA L

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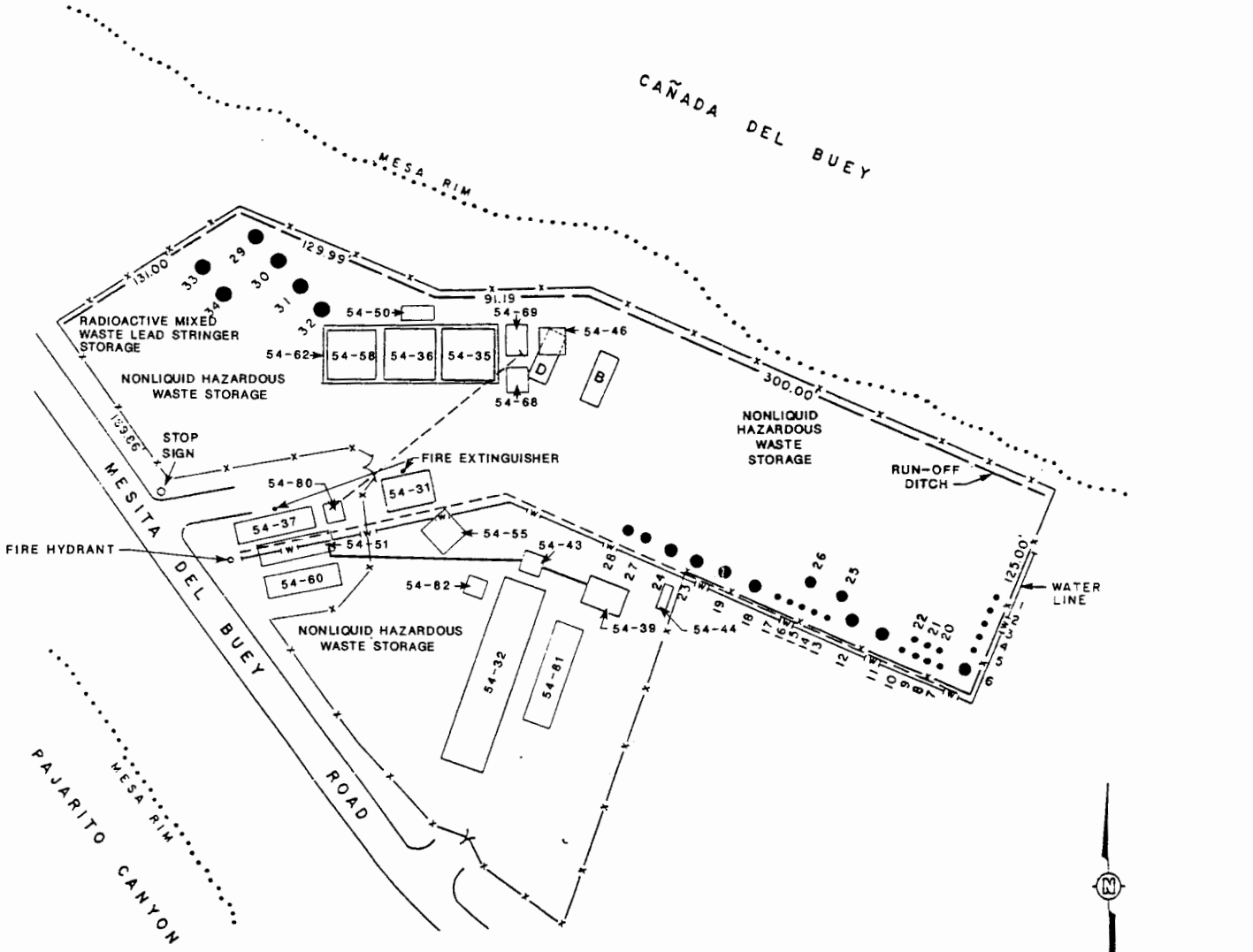

LEGEND

MATERIAL DISPOSAL UNITS

54-31	PACKAGING BUILDING
54-32	ROOFED WASTE STORAGE PAD
54-35	TREATMENT PAD
54-36	SAMPLING PAD
54-37	OFFICE TRAILER
54-39	PCB BUILDING
54-43	SEPTIC HOLDING TANK
54-44	PROPANE TANK
54-46	EQUIPMENT STORAGE BUILDING
54-50	EQUIPMENT STORAGE BUILDING
54-51	OFFICE TRAILER
54-55	SAMPLE PREP LAB BUILDING
54-58	TRANSPORT PAD
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54-62	CANOPY OVER MD-35,MD-36,MD-58
54-68	MODULAR STORAGE BUILDING
54-69	MODULAR STORAGE BUILDING
54-80	SEPTIC HOLDING TANK
54-81	PCB OIL TANK STORAGE
54-82	DRUM CRUSHER
B	SURFACE IMPOUNDMENT
D	SURFACE IMPOUNDMENT
●	LOCATION OF AREA L INACTIVE SHAFTS

FIGURE 8

TA-54 AREA L
WASTE MANAGEMENT UNITS

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RECEIVED
JUL 25 1989
EID DIRECTOR'S OFFICE

July 24th, 1989

Dear Sir,

I attended that public hearing on EID's draft permit "LANL" operating permit NM 0890010515 1 on July 18, 1989 in Santa Fe. Mr. Mutzelfelt, your presence at the hearing would have been more valuable, perhaps your answers to our questions would have been more sincere. I was not satisfied with the hearing proceedings and results, I demand that the EID issue an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. I also demand that any hearing relating to the incinerator should include both hazardous waste and radioactive permits.

Your attention in this deep problem will be greatly appreciated

Sincerely
Diego S. Bernal
Taos Pueblo, New Mex.

Diego S. Bernal
P.O. Box 175
El Prado, N.M 87529

EID JULY 18, 1989 STATEMENT RESPONDING TO PARTICULAR CONCERNS EXPRESSED BY MEMBERS OF THE PUBLIC REGARDING THE LANL MIXED WASTE INCINERATOR

EID has received many comments from the public concerning this draft permit. Regrettably, the laws and regulations that govern a facility as large as LANL are very complex. Several of the comments received by EID reflect that complexity. As important, the comments reflect concerns some members of the public have regarding operation of the mixed waste incinerator. In order to better inform the public of the applicable laws and regulations and to better address the public's concerns, EID has developed a statement to explain what this draft permit can and cannot do regarding the mixed waste incinerator.

THIS DRAFT PERMIT CAN ONLY REGULATE CHEMICAL WASTE IT CANNOT REGULATE RADIOACTIVE WASTE

The federal Atomic Energy Act of 1954 (AEA), authorized the United States Department of Energy ("DOE") to develop and effectuate its own regulations controlling DOE's management of its own radioactive wastes. Other statutes may impose additional requirements on radioactive material handling. This permit action is under the State Hazardous Waste Act. The State Hazardous Waste Act does not regulate radioactive waste in any way. The Hazardous Waste Act only applies to wastes that meet the legal definition of "hazardous waste," and these are basically chemical wastes. The Hazardous Waste Act cannot be applied to source, special nuclear or byproduct radioactive wastes. Thus, EID does not have the authority through its Hazardous Waste Program, and through this or any other hazardous waste management permit, to regulate radioactive waste. This draft permit is a permit that only regulates chemical hazardous waste. It does not and can not regulate radioactive waste.

"MIXED WASTE" REGULATION

When a waste has both chemical and radioactive components, it is called a "mixed waste." Because of the chemical component of mixed waste, the Hazardous Waste Act does apply to mixed waste. It only applies to the chemical part of mixed waste, however. The Hazardous Waste Act does not apply to the radioactive part. DOE regulates the radioactive part, pursuant to the Atomic Energy Act.

STATE AUTHORITY TO ENFORCE THE FEDERAL STATUTE, RCRA

This draft permit is a hazardous waste management permit administered by EID's Hazardous Waste Bureau. EID's legal authority to issue this permit under State law is the Hazardous Waste Act. Ultimately, however, EID's legal authority to issue this permit comes from the federal hazardous waste management statute, named the Resource Conservation and Recovery Act ("RCRA"). Under RCRA, the federal government, through the United States Environmental Protection Agency ("EPA"), gives specific authorizations to a state to enforce certain parts of RCRA. The state then enforces those parts of RCRA in the state instead of EPA.

New Mexico is an "authorized state," that is, New Mexico is authorized by EPA to enforce certain parts of RCRA in New Mexico instead of EPA. This draft permit is a RCRA permit, prepared by EID's Hazardous Waste Program staff to address only those specific parts of RCRA that EPA has authorized New Mexico to enforce. Because Congress has added requirements to RCRA in stages through amendments, EPA is requiring states to submit their requests for authorization in stages. Thus, New Mexico is authorized by EPA to enforce some RCRA provisions, but not other RCRA provisions.

NEW MEXICO DOES NOT HAVE RCRA AUTHORIZATION TO REGULATE THE CHEMICAL PART OF MIXED WASTE

New Mexico is not yet authorized by EPA to regulated the chemical part of mixed waste through its RCRA hazardous waste management program. New Mexico is in the process of applying to EPA for authorization, however.

THIS DRAFT PERMIT IS A RCRA PERMIT

Because New Mexico is not authorized by EPA to regulated the chemical part of mixed waste through its RCRA program, this draft RCRA permit does not authorize LANL to incinerate the chemical part of mixed waste. This draft permit only authorizes the incineration of purely chemical waste in the incinerator.

In order to get a RCRA permit to incinerate mixed waste, LANL will need to develop a mixed waste permit application, and submit it to EID. EID expects LANL to submit this application in the late fall of 1989. The EID Hazardous Waste Program staff will review the

application. After EID has been authorized by EPA to regulate the chemical part of mixed waste under the RCRA hazardous waste program, EID will draft a proposed RCRA permit based on the LANL application, and submit it to the public for public comment, just as this draft permit has been submitted to the public for public comment.

RCRA "INTERIM STATUS"

"Interim status" gives temporary authorization to certain facilities to continue their hazardous waste management activities until their applications for final permits can be acted on. RCRA gave this interim status to facilities that were in existence on a certain date and which complied with certain notification requirements. Operations under interim status are regulated by regulations designed for this interim status.

THE LANL INCINERATOR HAS RCRA "INTERIM STATUS"

The LANL incinerator has RCRA "interim status" and is thus authorized to burn chemical waste without a final hazardous waste RCRA permit. This is true for both purely chemical waste and for mixed waste. The temporary permission to burn purely chemical waste will end when EID takes final action on this draft RCRA permit. Then, burning of purely chemical waste will be allowed only pursuant to the permit. The temporary permission to burn the chemical part of mixed waste will end when EID takes final action on a RCRA permit addressing that waste, which EID will not do until after EPA authorizes EID to do so. Then, burning of the chemical part of mixed waste will be allowed only pursuant to that permit.

SUMMARY

Thus, this draft permit does not authorize LANL to incinerate mixed waste, that is, chemically hazardous waste that is mixed with radioactive waste. The draft permit only proposes to authorize the incineration of strictly chemical hazardous waste, and then only under the permit's specified conditions. EID will at a later date propose a draft hazardous waste permit to regulate the incineration of the chemical part of mixed waste. No RCRA hazardous waste permit can regulate radioactive waste.

INDEPENDENT STATE HAZARDOUS WASTE ACT AUTHORITY TO REGULATE RCRA

INTERIM STATUS FACILITIES

EID has two sources of authority under the Hazardous Waste Act. First, EID is authorized to enforce whatever portions of RCRA that EPA has expressly authorized the State to enforce. Second, EID is authorized to enforce all provisions of the Hazardous Waste Act, even if some particular provision has not yet been approved by EPA as part of RCRA authorization. In this second case, EID is acting on solely state authority; it is not acting pursuant to its federal RCRA authority. EID has used this state authority in the past, to deny LANL's request to begin construction of a new mixed waste incinerator until after review and approval of the construction phase.

Interim Status Regulations

Under the Hazardous Waste Act, the incinerator, in so far as it burns mixed waste, has "interim status." It has interim status under both the State's federal RCRA program, and the independent state authority. That means that it has a temporary permit to operate until a final permit, such as this one presently under consideration for purely chemical waste, is considered. In the interim, it is regulated under the regulations designed for the interim period, and not under the regulations designed for final permits.

There are no specific regulations applicable to interim status under either state or federal law addressing the chemical part of mixed waste. EPA intends at this time to regulate all chemical wastes under the same set of regulations.

EID's Hazardous Waste Bureau did not develop any interim regulations independent of those required for the federal RCRA program. EID did not develop interim regulations specifically governing the chemical part of mixed waste under its state authority for several reasons. First, the Hazardous Waste Act prohibits the State from regulating hazardous waste more strictly than RCRA does. EID could not develop regulations covering the chemical part of mixed waste until RCRA covered the chemical part of mixed waste. EPA did not clearly add the chemical part of mixed waste to its RCRA program until July 3, 1986. EID could not have begun the process of promulgating such regulations until after that date.

Second, the process of promulgating regulations is very resource intensive, and EID's Hazardous Waste Program has extremely limited resources. EPA funds 75% of the program and requires that those

monies go only into RCRA-related activities. The remaining 25% is paid out of state monies that are the State's required "match" for getting the EPA grant monies. Thus, the Hazardous Waste Program's budget is restricted to federally-authorized RCRA activities. The program has developed other, extensive regulatory, and statutory, changes in the interim in order to maintain current, and seek new, RCRA authorization. In addition to regulation development, the program must meet inspection, enforcement, and permit commitments to EPA for purposes of maintaining RCRA authorization. There simply have not been enough resources to do everything that EID would like to do, and it chose not to develop interim regulations applying to the chemical part of mixed waste. An important goal of RCRA and the Hazardous Waste Act is to get facilities operating pursuant to permits instead of under interim status. Therefore, developing regulations governing interim status facilities uses the Hazardous Waste Bureau's limited resources less well than developing regulations applying to final permits.

Final Permit Regulations

EPA has indicated that it does not intend to promulgate any final permit regulations specific to the chemical part of mixed waste. EPA has apparently determined that the present regulations governing permits are sufficient to protect the public health and the environment from the chemical part of mixed waste. The State has adopted these regulations.

Thus, EPA will not require EID to develop any additional regulations governing permits specific to the chemical part of mixed waste in order for EID to get and maintain RCRA authorization for the chemical part of mixed waste.

EID is authorized by the Hazardous Waste Act to develop additional regulations applicable to permits dealing with the chemical part of mixed waste. However, under the Hazardous Waste Act prohibition, such regulations could not be stricter than whatever RCRA requires through permits dealing with the chemical part of mixed waste. EID is not presently considering developing any such regulations, but welcomes the public's input on whether EID should.

AIR QUALITY REGULATIONS

Some members of the public have expressed their concern that State or federal air quality requirements may not adequately regulate the incineration of the radioactive part of mixed waste. As previously stated, this draft RCRA permit does not cover any mixed waste

incineration; it is limited to purely chemical waste incineration. Further, no RCRA permit could regulate the radioactive part of mixed waste. The incinerator has interim status that allows it to operate without a final RCRA permit. Operation of the incinerator must also comply with any other applicable laws and regulations, however. Thus, the incinerator will not be allowed to operate if it has failed to satisfy the legal requirements of other relevant state and/or federal programs.

Regarding Air Quality Regulation

EID's Air Quality Bureau reviewed the operation of this incinerator in 1988 and determined that a state air quality permit is not required, because the predicted emissions were below thresholds that require a permit. Under new State toxic air pollutant requirements, effective December, 31, 1988, this incinerator is an "existing source" and therefore is not subject to the new air regulations. Data concerning the incinerator are being collected, however.

EID has the authority under the State Air Quality Control Act to regulate the radioactive emissions from this incinerator, but does not have any implementing regulations to do so at this time. EPA enforces other air quality programs in the State. The radionuclide emissions from this incinerator have been reviewed by EPA Region VI for compliance with the regulations that govern (40 CFR Part 61, Subpart H) radionuclide emissions from DOE facilities, under the federal Clean Air Act. EPA reviewed the emissions from the existing incinerator in November 1988, as part of reviewing LANL's application for a new proposed mixed waste incinerator.

EID expects to develop new air quality regulations for incineration, that will include radionuclide emission limits at the stack as opposed to the fence line. Under EID's current schedule for the development of such regulations, a public hearing on the proposed regulations is expected next spring. In the interim, the Air Quality Bureau will be developing and taking to hearing regulations governing municipal and medical waste incineration.

COMMENTS OF THE DEPARTMENT OF ENERGY AND THE REGENTS OF THE UNIVERSITY OF CALIFORNIA ON DRAFT PERMIT NUMBER 0890010515-1 TO OPERATE HAZARDOUS WASTE FACILITIES, BEFORE THE NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION-JULY 18, 1989.

The Department of Energy and the Regents of the University of California respectfully request the Environmental Improvement Division's (EID) consideration of the following comments regarding draft permit number 0890010515 relating to the operation of hazardous waste facilities at Los Alamos National Laboratory (LANL):

FACT SHEET

Although the Fact Sheet is not technically part of the permit, it contains a sentence which may cause some confusion and warrants clarification. The sentence is found in the paragraph titled "Description of the permit" and reads, "The controlled air incinerator may burn any waste capable of destruction by burning, except for a few prohibited wastes, including chlorinated phenols." Because of the structure of the sentence, it may appear that the burning of chlorinated phenols is prohibited. In fact, LANL's application has always included F027 and F028 waste types that will be incinerated and these are included in the draft permit.

MODULE II

<u>Section II.C.3. (p.17).</u>

The reference listed in this section is out of print and no longer available. LANL has obtained a copy of the American Society for Testing and Materials' version of this document and requests that the reference be changed to reflect this. The ASTM is substantially the same as the EPA document. The new reference is D-34 P 168, "Proposed Guide for Estimating the Incompatibility of Selected Hazardous Wastes Based on Binary Chemical Reactions."

<u>Section II E.2.a. (p.18)</u>

This section refers to surface water samples taken at locations in Table II-1 (p.52). Several of these locations are inappropriate for sampling for the following reasons:

a.) There is no perennial water at Canada del Buey or Water Canyon at Beta. Annual water samples may be impossible to obtain.

LANL F

b.) Acid Weir, Pueblo 2, and Pueblo 3 are all in the same canyon. None of these stations would detect the results of any current activities (post 1980) from Laboratory operations. They would possibly detect activities by the town/county of Los Alamos, as well as past (pre-1980) Laboratory activities. Sampling and analysis at these stations is already addresssed in EPA's HSWA permit (Module VIII) on page 7 under the section entitled "Monitoring of Surface and Ground Water" and it is therefore unnecessary and duplicative to require additional sampling in this section of the permit.

Section II.E.2.c.

Analysis of variance to compare data from up-gradient and down-gradient stations is inappropriate and doesn't make sense under these circumstances. None of the station pairs reflect any current laboratory activity and thus such analysis is inappropriately included in the operating permit. Up-gradient and down-gradient stations exist at the two Frijoles Canyon Stations but are not impacted by run-off from Laboratory operations. A like situation exists, as explained above, for the Acid Weir/Pueblo Canyon complex.

Section II.K.1.g. (p.21)

The requirement that the Permittee must maintain "sufficient" records and documentation to demonstrate compliance is vague and creates substantial uncertainty as to what records are required to meet this "sufficiency"_standard. The draft permit contains many detailed and specific requirements with regard to recordkeeping and documentation. If these records are kept correctly and accurately, LANL assumes that they will meet the requirement of sufficient documentation. If documentation in addition to that already set forth in the draft permit will be required to meet the sufficiency standard LANL requests that the permit include a specific description of the nature of such documentation so that it can be on notice as to the requirements. If, on the other hand, the recordkeeping requirements already in the permit are considered sufficient to document compliance, LANL requests that the first sentence of paragraph g. be deleted. In the alternative, LANL requests that the following additional sentence be added after the first sentence in the existing paragraph g.:

"For purposes of this paragraph, records and documents which are required to be maintained by this permit shall constitute sufficient documentation to demonstrate compliance."

Section II.K.1.h. (p. 21)

The requirement in this paragraph that automatically extends the retention period for "all records required by this permit" during the course of an unresolved enforcement action appears to be unnecessarily overbroad. For example, an enforcement action involving monitoring records at a particular unit should not require the retention of inspection records at another, unrelated unit. LANL requests that this paragraph be amended to limit the automatic extension of the period to all records which are relevant to the enforcement action. This will avoid unnecessary and burdensome retention of irrelevant records.

MODULE III

Section III. A.1.c. and e. (p.24)

"Figure III-1" in each of these paragraphs should be "Figure 6".

Section III A.2.b.c. and d. (p. 24 and 25)

"Figure III-2" in each of these paragraphs should be "Figure-4". Also, the nomenclature of the units doesn't match that on Figure 4.

Section III H.3. (p. 28)

The inspections referred to in this section are performed weekly. Therefore "quarterly" should be changed to "weekly".

MODULE IV

Section IV.D.1.c. (p.30)

LANL requests that this section explicitly clarify that effluents from this unit may qualify for the exclusions set forth in HWMR-5 261.3(a)(2)(iii) and (iv.) and therefore that some residues from the unit will not be defined as hazardous wastes.

Section IV.E.3. (p.31)

The inspections referred to in this section are performed weekly. Therefore "quarterly" should be changed to "weekly".

MODULE VII

Section VII A. 2. (p.43)

LANL is subject to and must comply with state and federal air standards and regulations under the Federal Clean Air Act and the New Mexico Air Quality Control Act. There is no authority, however, for EID to include compliance with such requirements as part of this hazardous waste permit. This provision could unfairly subject LANL to double penalties under both the air Acts and the hazardous waste regulations.

MODULE VIII

Section A.4. (p.1)

This section requires notice within 24 hours of any release from a solid waste management unit. Release is broadly defined and by its terms includes any quantity, even de minimus amounts with no potential for any significant impact on the environment or human health. An inordinate amount of time and effort may be required to report even trivial amounts. LANL requests that this definition be further refined to include some criteria for types and quantities of releases which must be reported.

Section B.4. (p.2)

This section appears to be mooted by the addition of the new sections F. and G. which also deal with notification requirements for discovery of, and releases from, newly-identified solid waste management units. Section B.4 contains provisions which directly conflict with Sections F. and G. and LANL requests that it be deleted.

Section B. Perched Zone Monitoring (p.5)

This section requires the installation of the monitoring wells to be completed within 90 days of the effective date of the permit. LANL is informed that the permit will likely be issued in November. Although LANL will begin installation of the wells this fall, during the winter months, the canyons where the wells will be installed are largely inaccessible due to snowfall and winter conditions. Winter conditions are followed by spring runoff, and if there is significant snowfall, the canyons may not be accessible until May. The 90-day completion date is therefore unrealistic and LANL requests that it be changed to 270 days from the effective date of the permit.

The last paragraph, second sentence should read, "238 Pu, and 239Pu, 240 Pu" rather than "238, 240 Pu."

Section B. Monitoring of Surface and Groundwater (p.7)

LANL requests that the time period for submitting the summary describing the ongoing monitoring program, including sampling points, media, and constituents analyzed for be changed from 90 to 120 days from the effective date of the permit. The LANL Environmental Surveillance Program is extensive and complex and a thorough summary will take some time to compile.

Section B. Vertical Extent of Saturation (p.7A)

The last two sentences of this paragraph seem to require that all core material shall be analyzed for all constituents. LANL requests that this section be revised to allow for the exercise of professional judgement in determining the number of samples and subsequent constituent analysis during the investigation.

Section B. Identification and Summary of Previous Studies (p.7A)

LANL requests that the time period for submitting the reference list be changed from 120 to 180 days in order to insu adequate time to compile a thorough and accurate list. Additionally, LANL suggests that the intent of the section woul be clearer if it was revised as follows:

> " Within 180 days of the effective date of this permit, the permittee shall develop and submit to the Administrative Authority, a reference listing of all known geologic, hydrogeologic, and all environmental studies previously performed at and/or by the facility relevant to potential contamination or migration of contamination from SWMUs, with a summary of the scope of the study and significant findings thereof."

Section D. Corrective Action for Continuing Releases (p.9)

The second paragraph on this page discusses the consequences of failure to comply with plans and schedules and references 40 CFR 270.41 for guidance on modifications. It is not clear how the permit modification process will apply to LANL's annual update of the Installation RI/FS Work Plan which must be approved by the Administrative Authority.

In the fourth paragraph on page 9, LANL requests that the following sentence be inserted after the sentence "The ER Program strategy for dealing with the large number of tasks is to prepare a single installation-wide work plan and task-specific RI/FS documents for each task":

"Depending on site-specific findings during the Corrective Action Plan process, a site within a task may be removed by a

determination that no further action is necessary. A site may also be assigned, to a different task, for example, by implementing interim corrective measures. Either of these actions may be taken by the permittee with the approval of the Administrative Authority."

Section H. (3) (p.14)

In the first paragraph, after the sentence "The scope of the RFI...from solid waste managment units," LANL requests that the following be inserted:

"As appropriate and with the approval of the Administrative Authority, the RFI Work Plan will be developed and implemented using the phased approach as described in EPA Corrective Action Plan guidance documents. Information obtained during the preceding phase will be incorporated in the modified RFI Work Plan for the subsequent phase. The draft RFI Report shall be prepared when all phases of the RFI have been completed to the satisfaction of the Administrative Authority."

More than one phase will be required in most cases at LANL during the RCRA Facility Investigation to provide sufficient information for the Corrective Measures Study.

Section H. (3) (p.14-19)

Some of the SWMUs identified in this section already have closure plans submitted to the State of New Mexico or characterization information has been requested by the State of New Mexico. Based on the characterization results, a determination will be made by LANL and the state with regard to appropriate further action. A list of these SWMUs is provided below. LANL requests that these SWMUs be deleted from the permit in order to avoid unnecessary and costly duplication of effort.

0-001	18-003
0-012	21-003
3-001(a-c)	21-011
3-001(m)	22-005
3-001(p)	22-006
3-001(r)	22-010
3-013	33-002
3-014	33-004
3-020	33-012(a)
3-028	33-013
3-033	35-004(e)
3-037	35-009(f-h)
3-039	35-010
6-001	36-002

6-006	36-003
9-004	36-005
9-005	39-002(a)
9-007	39-004(c,d)
9-009	39-006(b)
11-002	40-001(b,c)
11-004	40-005
11-005	41-002
11-009	46-002
14-004(b)	46-003(g)
14-005	48-002
14-007	48-003(a,b)
15-003	50-001
15-006	50-002
15-009	52-002
16-003(a-v)	53-001(a)
16-003(a-f)	53-001(b)
16-006	53-002
16-010(a-g)	53-006(b-e)
16-12	53-007(a,b)
	54-001(a)
	54-001(c)
	54-003
	54-005
	54-007(a-c)
	39-006(b)

Section I.1. (p.21)

This section is incomplete and appears to be superceded by later sections L., M., N., O., P., and Q of the permit. LANL requests that it be dropped.

Sections J. and K. (p.22-23)

It appears that Sections J. and K. might be most logically placed after Section G., Notification Requirements for Newly Discovered Releases at SWMUs. Approval of the annually updated Installation RI/FS Work Plan by the Administrative Authority as required by Section H might also serve as a mechanism for the Administrative Authority to reach a determination of no further action for specific sites.

Section L (p.23-24)

Task/site-specific bench-scale and pilot-scale studies are included in Section N, Corrective Measures Study Final Report, but not as a requirement for the corrective action measures study plan. The permit should clarify review, concurrence and reporting requirements for bench and pilot studies.

Section P.2. (p.27) and Task II (p.30)

Both of these provisions contain requirements for financial assurance. Current RCRA regulations at Section 264.140(c) state that the States and the Federal government are exempt from the financial requirements. For similar policy reasons, LANL presumes that when the proposed Subpart S regulations are issued, they will contain a similar exemption. LANL therefore requests that these provisions be deleted from the draft permit.

Section Q., Summary, (p.29-30)

Several changes are needed to make the facility submission summary schedule consistent with the text and LANL's requested changes.

1. Under notification of newly-identified SWMUs and newly-discovered releases the word "written" should be added.

2. Task I deliverables are due 180 days after issuance rather than 90 days.

3.The SWMU Assessment for newly-identified sites is due 90 days after receipt of a request is consistent with Section F.3, p.10, however it is inconsistent with Section B.4.(b) which contains a requirement of 45 days. LANL requests that Section B.4.(b) be changed to 90 days.

4. The SWMU Assessment Report is due 60 days after completion of the SWMU Assessment Plan, however, Section F.5. indicates that it is due in 25 days. The 60 day period is preferable.

5. The requirement that the Revised RFI Work Plan be submitted within 30 days of receipt of the NOD applies to the Installation Work Plan and the Task/Site Work Plans.

6. The RFI Report and Summary Report are due 60 calendar days after completion of the RFI. This requirement is not specified in the text.

7. The Interim Measures Plan is required 30 days after notification. There is no plan requirement specified in the text.

8. The requirement to provide a CMS Plan 90 days from notification to perform CMS is consistent with page 23, Section L., Corrective Action Measures Study Plan, but not with page 21, Section 1., Correction Measures Study, that the draft report be submitted within 90 days. The 90-day requirement for the plan is more reasonable than the 90-day requirement for the report.

Section R. Task I.A.1.c. (p.33)

The request that a the report include a "Topography (with contour interval of five (5) or ten (10) feet and a scale of 1 inch-100 feet), waterways, all wetlands, floodplains, water features, drainage patterns"; is a significant task in terms of time and expense for a facility the size of LANL. LANL covers 43 square miles and is located on the Pajarito Plateau. The plateau consists of a series of finger-like mesas separated by deep eastwest oriented canyons cut by intermittent streams. The mesa tops range in elevation from approximately 7800 feet on the flank of the Jemez Mountains to about 6200 feet at their eastern termination above the Rio Grande Valley. It is unreasonable and impracticable to require this information to be submitted within 180 days from the issuance of a permit. LANL believes that one year from the effective date is a more realistic timeframe to compile this information and requests that the due date be changed to allow one year for preparation of the maps.

LANL also requests that the features required to be included in the topography be more clearly defined, including a definition of the geographic area that needs to be mapped and definitions of floodplains and wetlands. Wherever the term wetlands appears in MODULE VIII it should be further refined to mean "natural wetlands." Additionally, the requirement that the maps be to a scale of 1 inch-100ft. will result in preparing a large number of maps (approximately 400 standard-sized sheets to cover the entire facility), which currently do not exist. Some of the features requested exist on maps of different scales (e.g., 1 inch-500 feet), therefore, some flexibility should be allowed relative to map scale at the facility level. Detailed site-specific maps will be provided on a task-by-task basis displaying these features as appropriate during the RFI/CMS process.

Section R. Task I.A.1.h. (p.33)

The requirement that the Preliminary Report include "A detailed geologic map overlain on contour map (contour interval at least 10 feet) with a scale of 1 inch = 400 feet depicting all units of the Tshirege member of the Bandelier Tuff be prepared" and that, "Maps must depict all springs, faults, gravel deposits, alluvium, and pumice deposits." is not reasonable. Depicting all units of the Tshirege member in Bandelier Tuff as requested will in many cases result in useless maps given the LANL topography. Additionally, it is not clear how development of such a costly map will benefit evaluation of the SWMUs. To the extent that this information is needed on a site-specific basis, it will be provided in the appropriate site-specific documents during the

RFI/CMS process. However, if the Administrative Authority believes that the LANL-wide map is absolutely necessary, a due date of 180 days from the effective date of the permit is not reasonable. A due date of 360 days from issuance of the permit is more realistic. The features requested (e.g. springs and alluvium) should also be defined in the permit, including minimum size of those features which require mapping.

Section R. Task VI.C.

Previously, in Section N., mention is made of pilot studies, however, this Section R. omits them. Additionally, the term "laboratory studies" is not defined.

Overall, MODULE VIII requires LANL to submit a great many documents to EPA for concurrence within short time frames. LANL requests that EPA make available sufficient staff to review and approve these documents in a timely manner.

FIGURES

A current version of Figure 4, regarding locations of units at TA-50 is included in the draft permit after the Modules. However, outdated versions of Figure 4 are included in several places in Attachment E and need to be replaced with the updated Figure 4. The following pages reflected the outdated version of the figure and need to be replaced with the current figure 4:

E. 3.1
E. 4.1
E. 5.1
E. 6.1
E. 7.1

Additionally, there appears to be an unnecessary and duplicative copy of Figure 4 after Figure 6 following the Modules. Attached (as Exhibit 1) to these comments is an updated version of Figure 6 relating to the location of waste management units at TA-54 Area L. The new Figure 6 should replace the outdated one found after the Modules and also the outdated ones found at:

E.3.2
E 7.2
E.8.1
E.9.1

ATTACHMENT A

Section A.5

In general, all of section A.5. is highly redundant with the requirements already set forth in A.4. Section A.4 already describes the verification analysis that will be performed in each category and subcategory of chemicals. This obviates the need for Section A.5.2. with regard to verification of routine wastes.

The discussion of discharges to the Industrial Wastewater System found at A.5.3. should replace the discussion of the same item found at Section A.4. relating to waste residues.

Section A.5.1.

The requirement that one in each two hundred knowledge-of-process determinations be verified by quantitative chemical analysis does not make sense in the context of LANL's waste operations and is not necessary to protect public or employee health and safety or the environment. For the reasons set forth below, LANL requests that Section A.5.1 be deleted from the permit.

At the present time, knowledge of process determinations can be divided into two categories at the Laboratory. The wastes are either routine wastes or labpack wastes. Labpack waste is defined as waste in original chemical containers of less than five-gallon size. Routine wastes are already subject to the annual verification program. Additionally, every new batch or container of routine waste must be reanalyzed for key parameters before treatment. Labpack waste by definition contains information on its original label and has additional information available on the material safety data sheets. If for some reason, this information is not available, the container is handled as an unknown.

As the attached letters (Exhibits 2 and 2A) from two reputable hazardous waste handlers demonstrate, it is generally accepted in the field that labels on containers and/or Materials Safety Data Sheets (MSDS) data is sufficient information for treating and disposing of labpack wastes. Disposal companies have indicated to LANL that they are unaware of any other jurisdiction in the country which has required the analyses contained in Section A.5.1., nor do these companies' own permits for treatment and disposal require these analyses to be performed. If such analyses are not required for incineration and other treatments, it makes little sense to require it for simply storing wastes.

Verification of labpack wastes also presents another problem in that there is no standardized protocol for proving that no contaminants are present when it is not known what chemicals one is looking for. Chemists can perform tests to determine that a specific compound is not present. But without analyzing for the entire universe of chemicals, a chemist cannot determine that a compound is free of contamination. Another problem encountered is that there are different grades of chemical purity. For example, nitric acid is available in purites ranging from technical grade to chromatography grade. This raises the need to make a determination on the issue of how pure is pure.

In summary, performing verification analysis on labpack waste serves little purpose, is costly and time consuming, and does not provide significant additional protection to public health or the environment. In fact, the requirement increases risk to Lab employees by increasing chemical exposure potential while obtaining little new information.

ATTACHMENT B

Section B.1.3. (p. B-3)

In line 5, in order to be consistent with other sections, insert "Figures B-1 and B-2" after "inspection log sheet."

Section B.2.3. (p.B-4)

Beginning on line 2, "Figures B-7 through B-9" should be "Figures B-5 and B-6."

Section B.3.4. (p.B-6)

On line 2, "Figures B-3 through B-6 and B-12 through B-18 should be "Figures B-7 and B-8."

ATTACHMENT C

Introductory paragraph (p.C-1)

At line 8 after "at the facility." insert "and handle hazardous wastes." Not all LANL or contractor employees handle hazardous waste and, as such, are not required to undergo training. A similar change should be made at line 9 after "all personnel" insert "handling hazardous waste."

Section C.2.1 (p. C-2)

At line 4 after "All employees" insert "involved with hazardous waste handling," for the reason set out above.

RCRA Job Description Table

Please delete the name of A. Torres, Chemical Waste Coordinator for WX-3, from the table.

Figure C-1, Section II.C.

First Aid training and recertification is given in accordance with Red Cross policy, which requires recertification every three years. Please change this section to read "First Aid (IC) introductory, triennial recertification."

ATTACHMENT D

Section D.1.2 (p.D-1)

On the first line of the second paragraph, "Table D-2 should be "Table D-1."

Section D.2.

In order to accurately reflect the current organizational structure and title changes, LANL requests that the following new paragraph be inserted:

D.2.1.11 Operational Management Group I (Emergency Management)

This group provides a 24-hour duty officer, called the Laboratory Emergency Duty Officer (LEDO), to respond to all credible emergencies, including hazardous materials releases. The LEDO is the On-Scene Commander (OSC) for all emergencies, including releases of hazardous materials when an On-Scene Control Group (OSCG) is formed. Emergency Management maintains the Emergency Operations Center (EOC) in operational ready status should the center be required.

Additionally, throughout Attachment D wherever the term "EPODO" appears, it should be replaced with the term "LEDO." Attached (as Exhibit 3) to these comments is a marked-up copy of the draft Attachment D which shows where these changes need to be made.

ATTACHMENT E

Throughout this attachment, as listed below, reference is made to sending wastes, residues, filters, mops, rags, etc., off-site for disposal. LANL would like the option of treating or providing further treatment of such items on-site. LANL suggests that the term "treatment and/or disposal at a permitted facility" be substituted for the term "off-site disposal" in the following sections:

a) Page E.2-2, Paragraph 1, last sentence.
b) Page E.2-2, Paragraph 2, last sentence.
c) Page E.2-2, Paragraph 3, next to last sentence.
d) Page E.2-2, Paragraph 2, last sentence.
e) Page E.3-2, First sentence
f) Page E.2-3
g) Page E.3-2. Paragraph 2, third and forth sentences
h) Page E.3-2, Paragraph 5 eighth and ninth sentences.
i) Page E.4-2, Paragraph 4, forth and fifth sentences
j) Page E.5-2, Paragraph 1, second sentence.
k) Page E.5-2, Paragraph 2, forth and fifth sentences.
l) Page E.6-2, Paragraph 1, line 5.
m) Page E.6-2, Paragraph 2, Last sentences.
n) Page E.7-2, Paragraph 2, Third sentence.
o) Page E.8-2, Paragraph 2, Third sentence.
p) Page E.8-2, Paragraph 3, second and seventh sentences
q) Page E.8-3, Paragraph 2, Second sentence.
r) Page E.9-1, Paragraph 6, First sentence.
s) Page E.9-2, Paragraph 1, First sentence.
t) Page E.9-2, Paragraph 4, Last sentence.

Section E.1.6. (p.E.1.6)

To be consistent with Section E.1.7. this section should be amended to require that field blank samples be taken as well.

Section E.2.3.2. (p.E.2-2 and 2-3)

Reference is made throughout this section to the disposal of decontamination solutions containing hazardous constituents. LANL requests that this section be clarified to indicate that if the hazardous constituents meet the exclusions found in HWMR-5, Sections 261.3(a)(2)(iii) and 261.3(a)(2)(iv), the liquid may be disposed of as a non-hazardous waste.

Table E.2.3. (p.E.2-12)

The text explaining closure activities requires sampling of washwater prior to decontamination activities, but such a requirement is not listed in this table. Additionally, the text of the permit requires protective clothing washwater be analyzed for hazardous constituents but this requirement is also not

included in the summary table. Most decontamination activities will require washing protective clothing and analyzing the liquid prior to disposal, however, some of the "Sampling Summary" sections have not included this. All closure plans should be consistent.

Section E.3.3.2. (p.3-2)

LANL believes that the first sentence of paragraph 4 should be clarified to state that it is the "surface" rather than the "units" which must be sampled differently depending upon whether the surface is pervious or impervious.

Table E.4.1. (p.4-9)

LANL notes there are inconsistencies and omissions between this table and the actual activities required on p.E.4-2, paragraph 2.

Section E.8.5.3 (p.E.8-2)

The third paragraph of this section requires that for demonstration of final decontamination, soil samples will be analyzed for the parameters in Table E.8.2. This is inconsistent with Table E.8.3 on page E.8-12 which requires that final decontamination samples be analyzed for Appendix IX constituents. LANL requests clarification on which parameters apply.

Section E.4.1. (p.E.4.1)

The maximum inventory of three cubic meters (800 gallons) stored or treated at any one time in the TA-50 incinerator was calculated based on the volume contained in containers and feed tanks. If it is necessary to also include the wastes contained in piping and scrubwater tanks, the figure should be changed to eight cubic meters (2200) gallons).

Section E.9.4. (p.E.9-2)

LANL requests that this paragraph be clarified to indicate when sampling is required both within and outside the containment area.

ATTACHMENT G

LANL requests that the following changes be made to this attachment in order to make it consistent with the changes requested to the Part A application. These changes are requested because after reevaluating the wastes, LANL determined that the

following wastes may be incinerated within the conditions of the permit:

P043	Add T03
P092	Add T03
U005	Add T03
U006	Add T03
U092	Add T03
U123	Add T03
U136	Add T03
U234	Add T03

Additionally, LANL requests that the following waste code amounts and handling codes be added to attachment G:

U248	1000	S01, T03
U249	1000	S01
U326	1000	S01, T03
U353	1000	S01, T03
U359	1000	S01, T03

Based on additional analysis of generation data, LANL also requests the following changes to the amounts of material under the "D" designation:

D003	Change amount to 20,000.
D010	Change amount to 7,500.

ATTACHMENT I

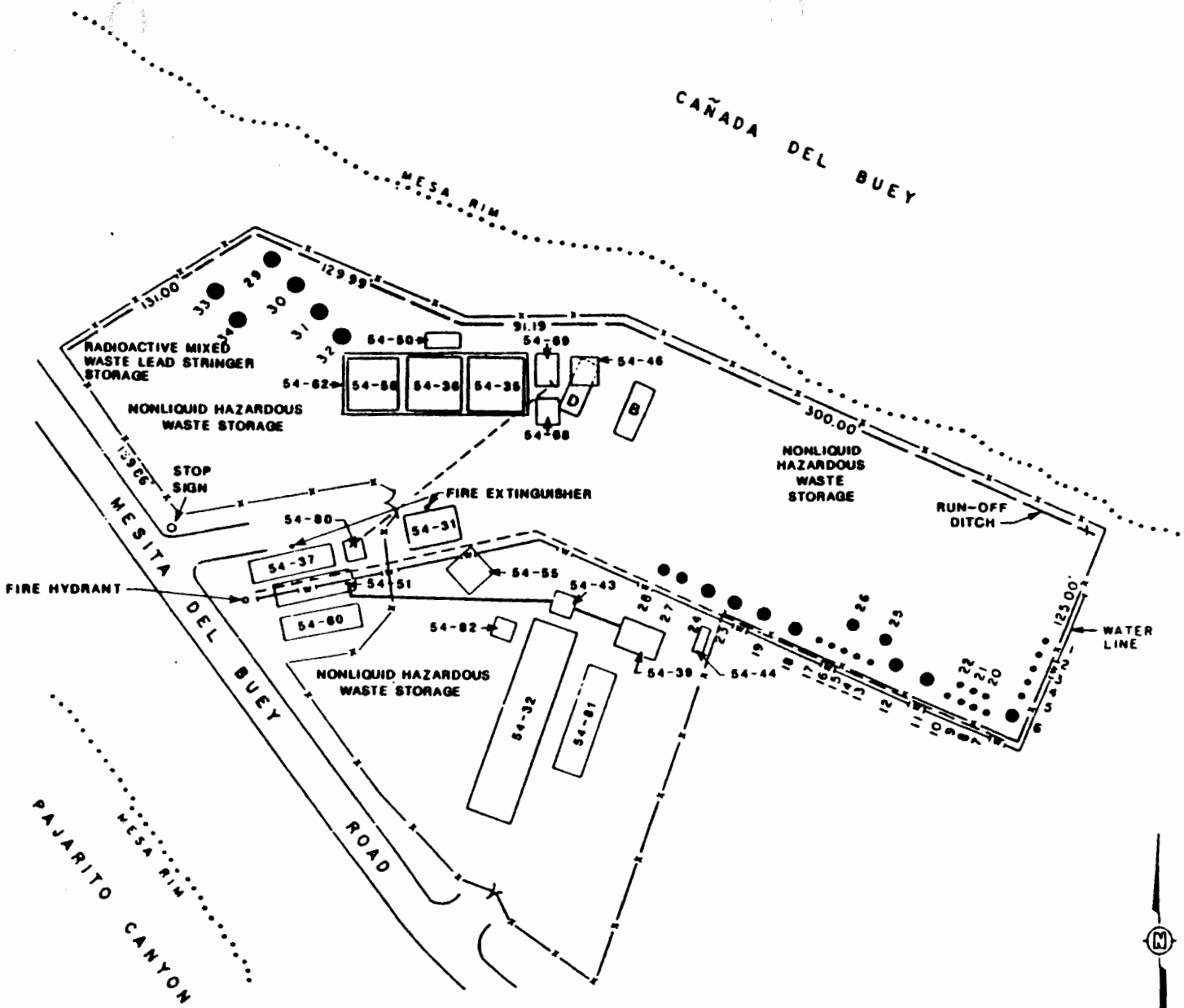
Attachment I is a solid waste stream characterization. EID has no authority to require this characterization nor to impose a schedule for doing so. The HWMR regulations at 262.11 require generators to determine if their wastes are hazardous. There is no requirement for an over-all solid waste stream characterization. As presently drafted, the additional data submittal would require a tremendous amount of time and personnel to verify such waste streams as cafeteria trash and office waste. Such requirements are totally outside the purview of this permit.

Furthermore, the determination of whether wastes are hazardous is a generator requirement, enforcible under Part 262 and is improperly included in the permit. Permits ought to deal exclusively with the operational requirements for treatment, storage, and disposal facilities. Additionally, it is highly impractical to include the plan in the permit because changes to the plan or additional characterization may require permit modification. Waste stream analysis is an ongoing responsibility and must adapt to the changing circumstances at LANL.

Nevertheless, LANL believes that it would be useful to better define waste streams in a more comprehensive manner. LANL therefore proposes to be bound by a solid waste stream characterization plan, seperate and apart from the permit. A necessary component of this plan would be to require generators to characterize, via a waste profile sheet, all wastes that could potentially contain a hazardous waste or constituent. This would eliminate the need for annual verification as required in Section II.C.4. because verification would be obtained continually. The proposed plan will be submitted under separate cover.

ATTACHMENT J

Attachment J, in its present form, covers matters which are outside the jurisdiction of EID and should be deleted from the permit. Section 74-4-3H NMSA 1978 states that source, special nuclear or by-product material as defined in the Atomic Energy Act are not solid wastes and therefore cannot be hazardous wastes. Such materials may not be regulated by EID under the Hazardous Waste Act. Throughout Attachment J there are references to procedures, equipment, and personnel which are specifically and solely related to the proper control and management of radioactive materials. Clearly, these matters are improperly included in the hazardous waste permit and should be deleted. In lieu of the present Attachment J, the Laboratory has prepared a substitute Attachment (Exhibit 4) which addresses incinerator operational safety with regard to hazardous wastes. LANL requests that this document be substituted for Attachment J in the draft permit.



LEGEND

MATERIAL DISPOSAL UNITS

54-31 PACKAGING BUILDING
54-32 ROOFED WASTE STORAGE PAD
54-35 TREATMENT PAD
54-36 SAMPLING PAD
54-37 OFFICE TRAILER
54-39 PCB BUILDING
54-43 SEPTIC HOLDING TANK
54-44 PROPANE TANK
54-46 EQUIPMENT STORAGE BUILDING
54-50 EQUIPMENT STORAGE BUILDING
54-51 OFFICE TRAILER
54-55 SAMPLE PREP LAB BUILDING
54-58 TRANSPORT PAD
54-60 OFFICE TRAILER
54-62 CANOPY OVER MD-35,MD-36,MD-58
54-68 MODULAR STORAGE BUILDING
54-69 MODULAR STORAGE BUILDING
54-80 SEPTIC HOLDING TANK
54-81 PCB OIL TANK STORAGE
54-82 DRUM CRUSHER
B SURFACE IMPOUNDMENT
D SURFACE IMPOUNDMENT

● LOCATION OF AREA L INACTIVE SHAFTS

50 25 0 50 FEET
SCALE

FIGURE 6

TA-54 AREA L
WASTE MANAGEMENT UN

PREPARED FOR

LOS ALAMOS
NATIONAL LABORATORY
LOS ALAMOS, NEW MEXI

IT Creating a Safer To

© IT CORPORATION
COPYRIGHTS RESERVED
Not Scale This Drawing

Exhibit 1

CHEMPAK

June 19, 1989

Mr. Patrick Josey
Los Alamos National Laboratories
P. O. Box 1663 - Mail Stop E-517
Los Alamos, NM 87545

Subject: Sampling/Analysis of CHEMPAK Prepared Lab Packs

Dear Patrick,

When lab packs are prepared by our personnel under the provisions of 49 CFR 173.12, no sampling or analysis is required for acceptance by any Rollins Environmental Services facility. The nature of lab packs is such that the wastes are not homogeneous and are present in small quantities. Since a detailed drum inventory sheet is prepared for each drum, which fully identified each inner container, any sampling or analysis serves little purpose.

Should you have any further questions on this or any subject, I can be contacted at 302-479-3446.

Sincerely,

Rean T. Swanson
National Quality Control Manager

RTS/ch/078

cc: Allison Sommer

ROLLINS CHEMPAK INC.

Exhibit 2

Chemical Waste Management, Inc.
Technical Services Division
3766 Yale Way
Fremont, California 94538
415 770-0575

June 13, 1989

Anthony F. Drypolcher
Los Alamos National Laboratories
P.O. Box 1663 Mail Stop E-518
Los Alamos, New Mexico 87545
(Fax 505-665-3750)

RE: Sampling and Analysis of Labeled Lab Pack Material at CWMI Facilities

Dear Tony,

CWMI has a number of permitted facilities and handles labpack type waste from a wide range of research, development and manufacturing industries. There is no case in which a Waste Analysis Plan (WAP) at a CWMI owned, Part B permitted facility requires sampling of labeled lab pack containers prior to acceptance, treatment and/or disposal.

Permitting agencies have agreed that sampling and analysis would yield no better information than that furnished by the label. In addition, sampling involves additional personnel and environmental exposure risks as well as additional cost. Agencies have not sought to impose the risks and cost of additional sampling where there is not a clear added information benefit.

For more detailed discussion of this issue, CWMI would be pleased to make available the expertise of Jack Kolopanis or Marty Cahill who have worked with a variety of agencies in developing CWMI's WAP's. Jack works out of CWMI's Oak Brook, Illinois office and can be reached at (312) 218-1715. Marty works out of CWMI's Technical Center in Riverdale, Illinois. She can be reached at (312) 841-8360.

Sincerely,
Chemical Waste Management, Inc.

Bill Van Dyke
Technical Services Division

cc: Jack Kolopanis
Marty Cahill

Exhibit 2A

The Fire Department personnel make regular tours of the Laboratory facilities to detect and discuss hazards associated with individual facilities and are instructed in hazardous material handling and emergency procedures. They are aware of the hazardous waste practices at the Laboratory, and are well equipped to handle any credible emergency situation.

D.2.1.7 Mason & Hanger Protective Force (Pro-Force)
The Pro-Force consists of more than 300 personnel who are responsible for Laboratory security. The security force is provided by Mason & Hanger, Silas Mason, under contract to the Laboratory.

During an emergency, the Pro-Force activities include maintenance of security, direction of traffic within the Laboratory, and control of access to the emergency site. The Pro-Force maintains the necessary equipment to perform these functions such as crowd control equipment, patrol cars, etc.

D.2.1.8 PAWS
PAWS provides a maintenance support force on contract to the Laboratory. This support force is under the Laboratory's direction in an emergency. PAWS conducts inspections of Laboratory equipment, maintains equipment, and participates in emergency cleanup.

D.2.1.9 Los Alamos County Police
In keeping with the principle of handling emergencies internally, the Los Alamos County Police have only a minimal interaction with the Laboratory in an emergency. That interaction is limited to traffic control on DOE roads with public access. The limits of interaction are included in a signed agreement, a copy of which is included as an attachment to this document. There are no agreements with other agencies.

D.2.1.10 WX and M Division Personnel
Personnel in WX and M Divisions are trained to safely handle and dispose of highly reactive materials (High Explosives). Any spill or uncontrolled release of material at the burning grounds (TA-14 and -16) or the detonation pads (TAs 14, 15, 36, and 39) will be cleaned up by personnel from these divisions. The Fire Department may be called to respond if a burn or detonation results in an uncontrolled fire.

New Paragraph D.2.1.11

D.2.2 Emergency Equipment
A list of emergency equipment for use at the Laboratory and the location of this equipment can be found in Table D-3. The equipment immediately available for use is located at TA-54, Area L, the TA-50 batch treatment system and modular container storage buildings, the TA-50 waste incinerator and Room 117 storage, the TA-16 incinerator, and the TA-60 storage pads.

In addition, PAWS, the Fire Department, and HSE-2 maintain emergency equipment. Major emergency facilities are shown in Figure D-4.

D.2.3 Communications
Effective emergency response at Los Alamos National Laboratory requires an efficient communication system which will integrate all personnel into the emergency response procedure.

There are two central alarm systems (CAS) at the Laboratory; an emergency CAS and a mechanical CAS. The emergency CAS is activated by:

Telephone communication (9-911)

Automatic fire alarms

Manual pull alarms

D.3 NONSUDDEN RELEASES

Nonsudden releases include those incidences which, if uncontrolled, impact the environment over a long period of time. Such incidences include minor leaks of containers, loss of integrity of secondary containment, incomplete treatment, and leachate migration from disposal areas.

D.3.1 Responsibility

Correction of nonsudden release shall be the responsibility of the operating group and can be handled with normal maintenance and management procedures. Correction methods for nonsudden releases that have resulted in environmental contamination shall be coordinated with the New Mexico Environmental Improvement Division (NMEID).

D.3.2 Credible Nonsudden Releases

Not all failures can be predicted. In general, the response to nonsudden release will (1) contain the release, (2) correct the cause of the release, and (3) clean up any release to a level that protects health and the environment.

D.3.3 Nonsudden Release Surveillance

In addition to routine inspection and site-specific sampling and testing, the Laboratory maintains an area-wide environmental monitoring network maintained by HSE-8. Routine monitoring for radiation, radioactive materials, and chemical substances on the Laboratory site helps to fulfill the Laboratory's policy to protect the general public, employees, and the environment.

Monitoring and sampling locations for various types of measurements are organized into three main groups. Regional monitoring stations are located within the five counties surrounding Los Alamos County. They are placed up to 80 kilometers (50 miles) from the Laboratory, and serve to determine background conditions. Perimeter stations are located within approximately four kilometers (2.5 miles) of the Laboratory boundary, and document conditions in residential areas surrounding the Laboratory. On-site stations are within the Laboratory boundary, and most are accessible only to employees during work hours.

The types of routine surveillance conducted at these stations includes radiation measurements and collection of air particulates, waters, soils, sediments, and foodstuffs for subsequent analysis.

Additional samples are collected to gain information about particular events such as major runoff events and nonroutine releases. Data are used for comparison with standards, background radiation levels, and dose calculations.

D.4 SUDDEN RELEASES

This section deals with incidents involving sudden release such as spills, fires, or explosions which pose a significant threat to human health or the environment and includes the release of hazardous materials and hazardous wastes. Hazardous materials are chemical substances that become a regulated waste as the result of the incident and can include hazardous raw materials that are spilled, products of combustion, and products of uncontrolled reactions.

D.4.1 Hazardous Waste Emergency Coordination

~ E00 The [redacted] is responsible for coordinating all emergency response measures involving sudden releases of hazardous wastes with the exception of the open burning and open detonation units at TA-14, 15, 16, 36, and 39. HE waste handling is the responsibility of M and WX divisions, who have developed Standard Operating Procedures (SOPs) based on safe handling practices designed to eliminate the risk of fire and explosions. Unplanned detonation or combustion of HE renders the HE waste nontoxic. In some cases, residuals contain barium. Cleanup of barium contaminated areas due to unplanned detonations shall be coordinated with the ~~[redacted]~~

L E0.0

D.4.2.2 Emergency Notification

Immediately upon discovery of an imminent or actual incident involving hazardous wastes or hazardous materials, the EPOOO will be notified first. In the case of fire involving hazardous wastes or hazardous materials, this is superseded by the Laboratory fire alarm system. A fire is reported by dialing 9-911, activation of automatic alarms, or activation of a fire pull box. All fire alarms simultaneously alert the CAS Dispatcher, the Fire Department, and the Mason and Hanger Pro-Force. For fire involving hazardous wastes, hazardous materials, or hazardous waste units, the CAS Dispatcher shall contact the EPOOO (Figure D-5). Orange signs on buildings which contain HE are a warning to fire fighters not to approach or enter the building without obtaining information from WX or M Division personnel about the nature and location of HE materials in the building.

During off hours, all incidents involving hazardous wastes or hazardous materials shall be reported to the CAS Dispatcher, who will contact the on-call EPOOO.

The EPOOO shall proceed to the incident and assess the nature of the problem. On an as-needed basis, the EPOOO shall contact response groups directly or instruct the CAS Dispatcher to contact them or contact the HSE-Duty Officer (HSE-DO) who will notify the appropriate HSE groups. Table D-2 shows the assistance available from each emergency response group. The EPOOO will use this list as criteria to determine which groups to contact in an emergency.

Each response group maintains an on-call person and/or a call-down procedure to answer emergencies.

Because the initial observer may not be able to recognize the involvement of hazardous materials, the EPOOO shall be notified of any incident as described in Section D.4.1. The EPOOO shall use whatever means available including the assistance of other response groups, computer data searches, and sampling to determine if a hazardous waste is generated. HSE-5 and HSE-8 have the expertise to determine the nature and extent of contamination, the chemicals involved in the incident, and the characteristics of the hazardous waste.

D.4.2.3 EPOOO Actions

Upon notification of an incident, the EPOOO shall:

1. Proceed directly to the site;

2. Assess the nature of the incident, and quantities and types of hazardous wastes or hazardous materials involved; and

3. Based on the guidelines in Section D.4.2.1 of the Contingency Plan, determine if implementation of the HWF Emergency Contingency Plan is warranted.

Upon the decision to implement the HWF Emergency Contingency Plan, the EPOOO shall perform, in this order, the following actions:

1. Assess the hazards to human health and the environment including both direct and indirect effects such as generation of toxic, irritating, or asphyxiating gases, hazards of runoff of fire water or treatment chemicals. The EPOOO will use the guidelines in Section D.4.2.1 to assess the hazards to human health and the environment. If any of the criteria under Section D.4.2.1 are met, evacuation of the immediate area will be initiated.

6. Within 15 days of the incident, submit to the Regional Administrator and Environmental Improvement Division the report described in Section D.10.

D.5 SPECIFIC EMERGENCY RESPONSE PROCEDURES FOR HAZARDOUS WASTE UNITS

The following section summarizes the guidelines for handling emergencies.

D.5.1 Chemical Spills

Hazardous wastes are handled and stored in small containers, lab packs, 55-gal. drums, and dumpster tanks. The individual volumes handled are small. Handling of hazardous materials may involve truckload quantities of material such as solvents, fuels, acids, and bases.

The general steps in handling hazardous wastes are:

Containment including spreading of absorbents or forming of temporary dikes,

Waste pickup and packaging in sound containers, and

Decontamination followed by testing to assure adequate clean-up.

The emergency preparedness procedures related to flammable organic solvent spills call for stabilization of the spilled material with the organic solvent spill kit. Other chemical spills are to be stabilized using the acid and caustic spill kits or by the addition of absorbents such as vermiculite. Personnel protective equipment will be worn during spill control and cleanup. The stabilized material will be treated as hazardous waste. Runoff which might occur from spills outside containment areas during precipitation must be contained and handled as a hazardous waste unless analyzed and found to be nonhazardous. Temporary dikes can be constructed to contain runoff.

D.5.1.1 Spill Control Procedures

Vermiculite or Pell-O-Cell will be used to control all chemical spills except hydrofluoric acid spills. Vermiculite and Pell-O-Cell are compatible with all chemicals except fluorine and hydrofluoric acid. Hydrofluoric acid is generally only handled in very small volumes, in small containers, so that a spill would be limited to a very small volume (less than 1 gallon). A hydrofluoric acid spill will be neutralized by carefully adding calcium hydroxide or other caustic to the spill. After an excess of caustic has been added and the reaction has ceased, the resulting solution will be cleaned up using vermiculite. Vermiculite and caustic are stored at all the TSD units at the Laboratory.

DOT approved drums will be used to collect all spilled material and contaminated absorbent. There are many drums of this type, located at all treatment and storage facilities at the laboratory. For corrosives, the drums will be lined with polyethylene drum liners. The list of emergency equipment (Table D-3) shows the equipment available at each area to be used to control a spill. The ultimate disposition of any contaminated absorbent or waste material will be decided by HSE-7 according to permit conditions and RCRA standards. The material will be temporarily stored at TA-64, Area L.

Decontamination will be accomplished at the spill site. After the spilled material has been absorbed by vermiculite or Pell-O-Cell, the material will be drummed. If the spill occurs on a cemented area, water or an appropriate solvent will be used to clean the area and this liquid will be absorbed onto vermiculite or Pell-O-Cell and drummed.

Other potential chemical exposures will necessitate evacuation if anyone notices any of the following conditions:

- Irritation of the eyes, breathing passages or skin,
- Difficulty in breathing, or
- Nausea, light-headedness, vertigo, or blurred vision.

The affected person will be transferred to the Medical Department and the HSE-5 Group representative will attempt to ascertain what, if any, chemical exposure occurred and what corrective measure is appropriate.

D.5.5 Flood

The U.S. Army Corps of Engineers has documented that Los Alamos National Laboratory's waste management facilities are not located within the 100-year floodplain. This documentation has been included as an attachment to this document.

D.6 EVACUATION

A facility will be evacuated upon the voice command of "evacuate the area," or upon the sounding of the evacuation alarm, or upon the fire alarm.

D.6.1 Evacuation Plan

Emergency situations may warrant the shutdown and evacuation of an area(s) or building(s) in order to protect personnel and property, to anticipate the emergency condition, or to enhance the appropriate response. Table D-8 shows the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions.

To initiate building evacuation, the evacuation alarm is sounded and/or the public address system is used. The evacuation alarm, which is more suitable for evacuation of the whole facility, is a steady, continuous, audible signal. This alarm cannot be silenced and reset by site personnel. The Fire Alarm Maintenance Section at 667-4027 and the Fire Department Platoon Chief at 667-7026 can silence and reset the alarm.

To evacuate a portion of the building, the public address system is more appropriate. The PA system will notify the occupants of the area to be evacuated, and additionally, will advise personnel in the rest of the facility of the existence of a problem in that specific area.

Upon initiation of an evacuation, either via the PA or evacuation alarm, all personnel are to leave the specified area and go to the muster area, turning off all equipment that could contribute to the hazard if left unattended.

In the event of an evacuation of only a portion of the building, one of the out buildings, or outlying work areas, the Group Leader will designate a control point at the closest and/or the most convenient location. This area will be outside the affected area and will serve as a muster point and provide control of the affected area to prevent further spread of the hazard.

Sweep Team personnel will remain in the area for a visual inspection of all the affected work areas, laboratories, and offices. At least two persons will do the sweep to insure that if an injured person is found or if a single person is fighting a small fire, turning off equipment or activating fire suppression systems, one sweep team member can give assistance while the other reports to the muster area or control point to obtain additional aid.

Allow the reactor mixer to operate unless its operation poses a unique hazard (operation helps remove heat and prevents stratification).

D.6.2.2 TA-50 Waste Incinerator

If a fire or evacuation alarm sounds during the operation of the controlled air incineration process, the operating crew will initiate a process shutdown in accordance with the current operating instructions. Three logic sequences are provided to shut down the process in a safe and orderly manner.

Controlled Shutdown - Initiated when there is potential for significant damage to minor process components. This is also the normal shutdown mode at the completion of a run. When controlled shutdown is initiated, feeding of waste to the incinerator is stopped and a programmable set-point generator is activated that directs remote set-point inputs to the temperature controllers, causing a gradual decrease in chamber temperatures. Switches internal to the set-point generator cause an orderly-timed shutdown of process components.

Fast Shutdown - Initiated for conditions that could likely result in loss of containment or damage to major process components. Waste feeding is stopped. Following a two-minute timed interval following the last feeding of solid waste (immediate, if feeding liquid waste), the upper and lower chamber burners are shut down and the system valves and dampers are positioned so as to maintain a negative pressure in the system while minimizing flow through the system. Snuffing steam is introduced into the lower chamber. The two-minute delay when feeding solid waste allows for the ignition of pyrolitic gases formed immediately after feeding.

Scram Shutdown - Initiated at the discretion of an operator. The chain of events are identical to the fast shutdown except that the sequence is not delayed when feeding solid waste. Scram buttons are located at the incinerator and in the control room.

The last two shutdown modes are potentially destructive to the incinerator refractory and are initiated only when the consequences of not shutting down are greater than the consequences to the incinerator during a scram or fast shutdown. It is the responsibility of the operating personnel and the process lead engineer to assess any situation and initiate the proper process shutdown sequence.

D.6.2.3 TA-16 Industrial Incinerator

If a fire or evacuation alarm sounds during the operation of the TA-16 Industrial Incinerator, the operating crew will initiate a process shutdown. The TA-16 Incinerator is equipped with automatic and manual controls for shutdown of burners.. Burners may be shut down manually by tripping a single switch. Automatic shutdown of the burners will occur on occurrence of a power failure, limit failure, or flame failure.

D.7 SALVAGE AND CLEANUP

The affected area will be surveyed by appropriate representatives from HSE Groups before salvage, cleanup and return to normal operations. Visual inspections of the affected area will be supplemented by sampling to determine whether cleanup is complete. After determination of any existing hazards from toxic or hazardous gases or fumes, electrical hazards, or other unsafe conditions, personnel or selected teams, equipped with proper breathing apparatus and protective clothing, will reenter the area to perform designated tasks to effect decontamination, repairs, and salvage to allow the return to normal operations. After an emergency, the [redacted] will:

- LEDO

Provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion. Contaminated material will be treated as a hazardous waste and temporarily stored at one of the permitted hazardous waste storage areas at the laboratory. HSE-7 will be responsible for determining the final disposition of the waste. This determination will be made in compliance with the permit and RCRA standards.

Remain at the site to ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed.

Ensure that emergency equipment is cleaned and fit for its intended use before operations are resumed. Equipment will be visually inspected and sampled to determine the type and degree of contamination and appropriate cleanup measures will be used.

Prior to resuming operations, appropriate local authorities will be notified that cleanup procedures are completed and emergency equipment is cleaned and fit for its intended use.

Damage assessment and recovery (LEDO) shall be performed within the reporting and investigative requirements of DOE Order 5484.1. The [redacted] has general responsibility for coordinating post-emergency actions, particularly during the time period immediately after the emergency. Such actions include cleanup operations, repair of vital equipment, or interim hazard-removing operations (such as demolition of unstable walls). The services of the affected operational organizations, HSE Division, the PAWS, and other on-site talent will also be utilized to estimate cleanup costs and operational impact. The [redacted]O declares the end of the emergency; an Incident Report is filled out, and the Group Leader and his staff review emergency actions.

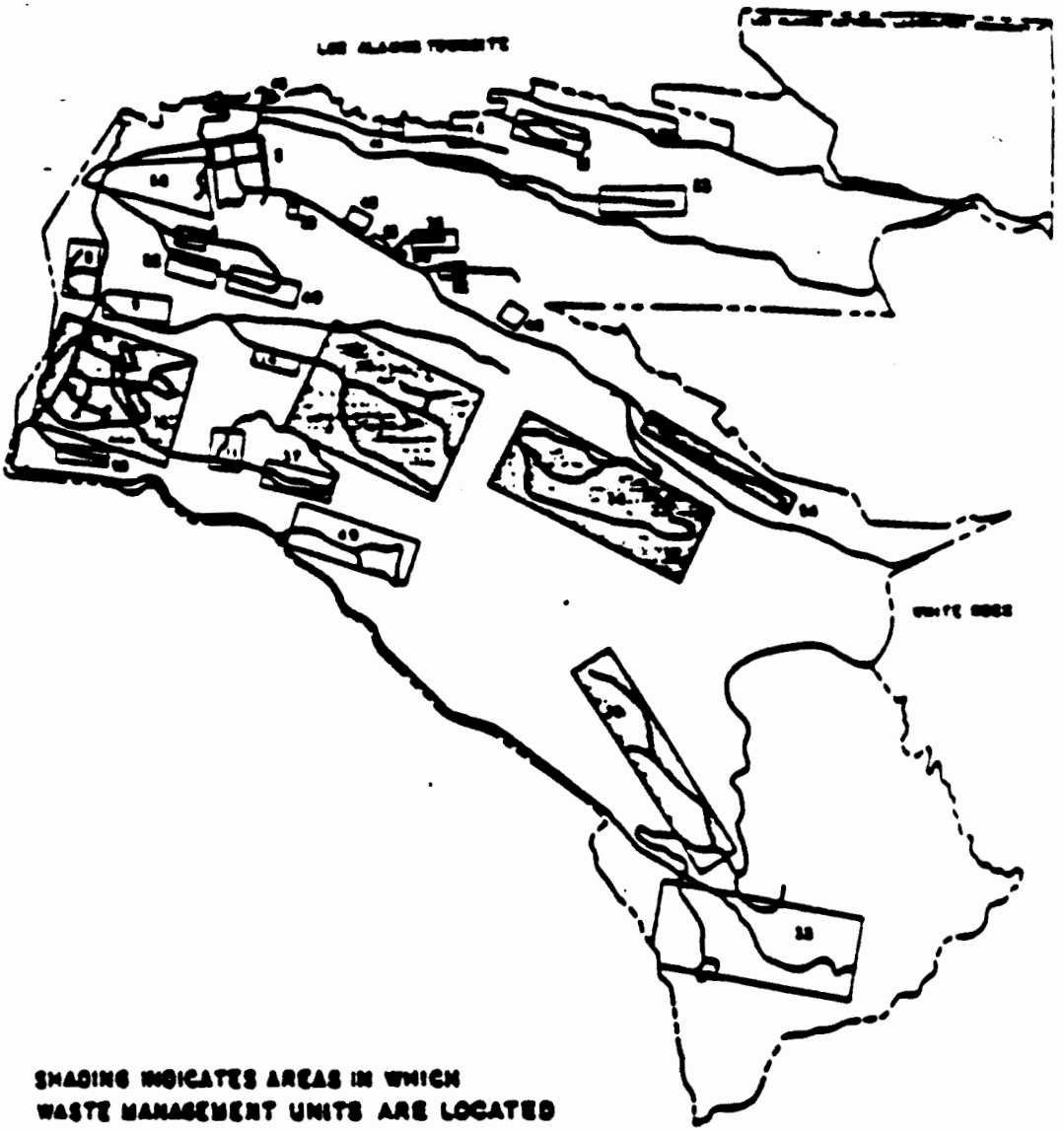
D.8 POST-EMERGENCY ASSESSMENT

When the emergency is over, the causes of the emergency and the effectiveness of the response are investigated, in order that future emergencies may either be prevented, or that the response to them may be more effective. Following each event requiring the implementation of the HWF Contingency Plan, the [redacted]O shall meet with representatives of all response functions to determine the adequacy of the response. LEDO

D.9 EMERGENCY RECORDS

The details of any incident that requires implementation of the HWF Emergency Contingency Plan must be noted in that unit's log book. This record must include the time, date, and full description of the incident.

See page 147



SHADING INDICATES AREAS IN WHICH WASTE MANAGEMENT UNITS ARE LOCATED

4000 0 4000

SCALE

Figure D-1

LOS ALAMOS TECHNICAL AREAS

PREPARED FOR

LOS ALAMOS NATIONAL LABORATORY LOS ALAMOS, NEW MEXICO

INTERNATIONAL TECHNOLOGY CORPORATION

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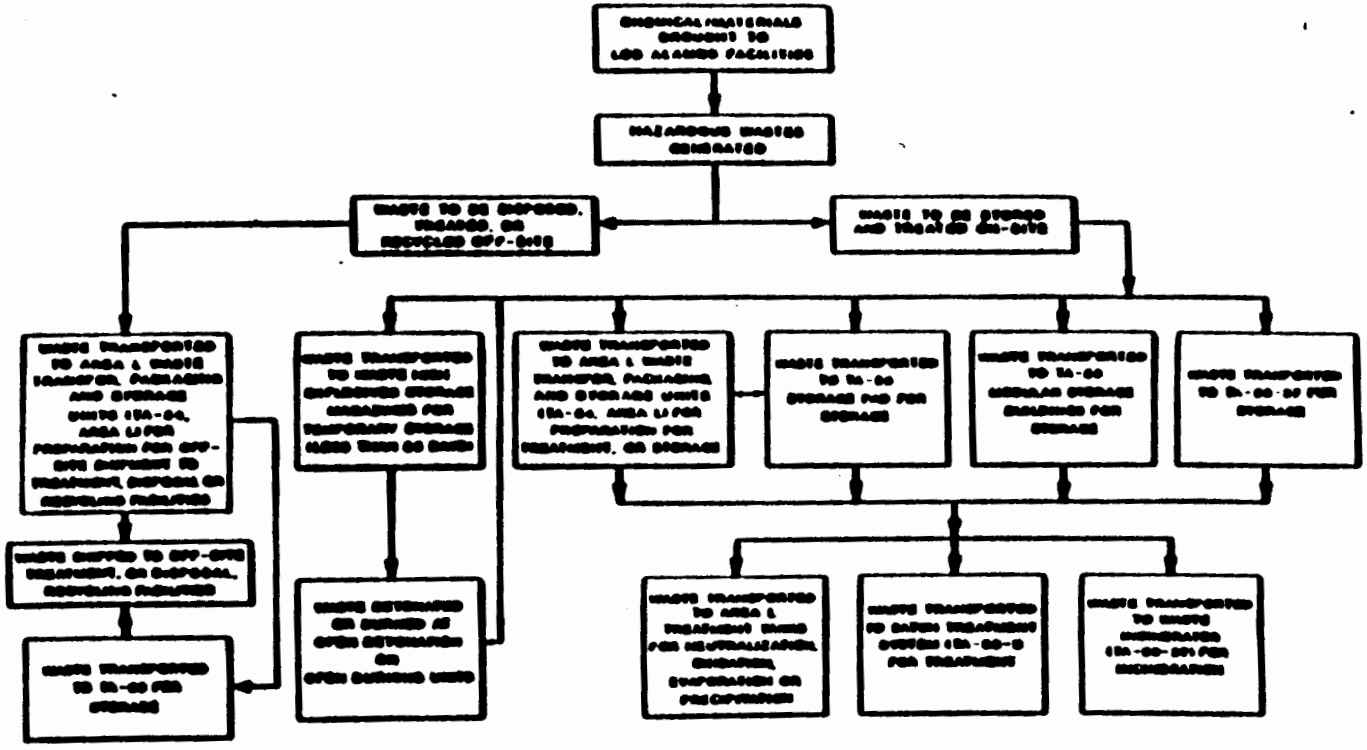

Figure D-3

SCHEMATIC DIAGRAM OF LOS ALAMOS HAZARDOUS WASTE MANAGEMENT ACTIVITIES

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LOS ALAMOS, NEW MEXICO

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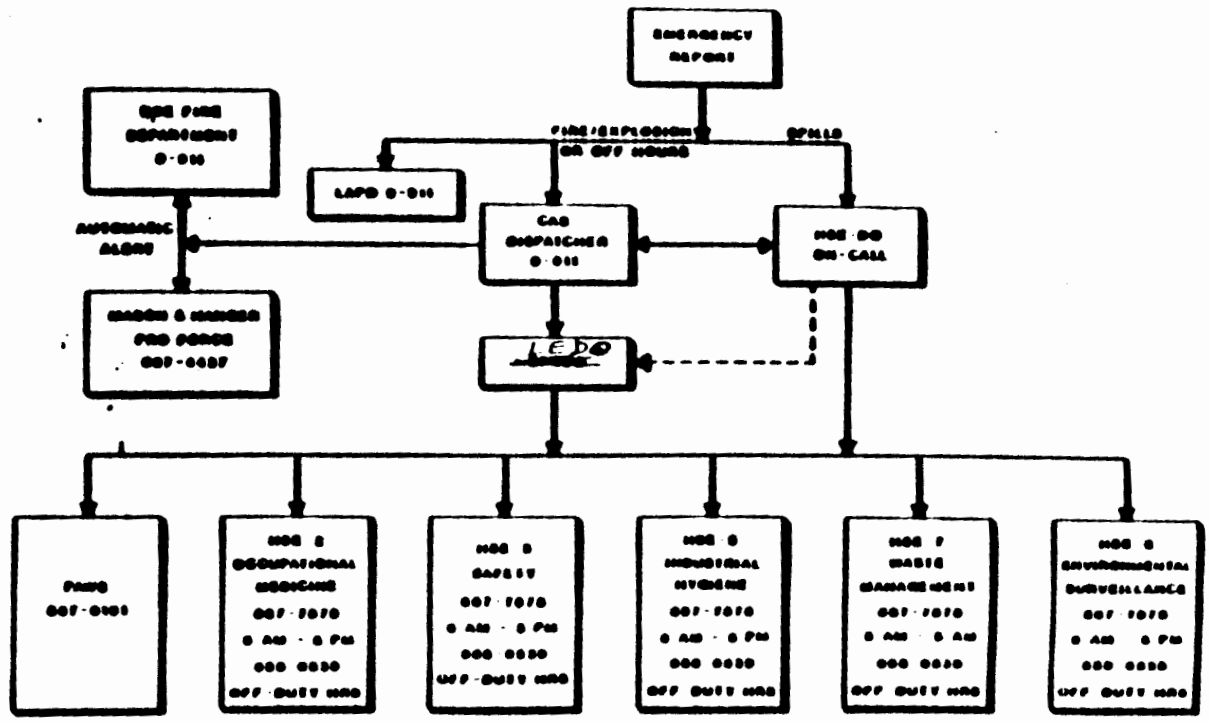

Figure D-5
HAZARDOUS WASTE
EMERGENCY
NOTIFICATION STRUCTURE
PREPARED FOR
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1-5101051 3-1

TABLE D-2
HAZARDOUS WASTE EMERGENCY RESPONSE GROUPS

Laboratory Controlled Response Group	Emergency Telephone	Assistance Available
HSE-2 Occupational Medicine	667-7878 (8 am - 5 pm) 988-0539 off-duty hours	Emergency medical treatment
HSE-3 Safety		Reviews and approves fire protection procedures. May assist in process shutdown and evacuation
HSE-5 Industrial Hygiene		Site evaluation - field testing to determine the nature and extent of contamination (nonradiological)
		Specify protective clothing and equipment
		Information services regarding hazards of wastes and treatment for exposur
HSE-7 Waste Management		Hazardous waste cleanup, handling, treatment, and disposal
HSE-8 Environmental Surveillance		Field surveys to determin spread of contamination and adequacy of clean up
		Meterological information
		Geohydrologic support
HSE-9 Health and Environmental Chemistry		Chemical analytical services
Fire Department	9-911	Firefighting personnel ar equipment
		Ambulance and paramedic service
Mason & Hanger Protective Force (Pro Force)	667-4437	Traffic Control
		Security
Emergency Management Group	667-6211 (8am-5pm) 667-7080 (Off-Duty Hours)	24-hour Duty Officer (EE On-Scene Command & Control, Resource Reporting procedures and Operations Criterion

TABLE D-8

EVACUATION DETERMINATION AND REENTRY

Reason for Evacuation	Determination Made By	Reentry Conditions
Fire	Fire or Evacuation Alarm; Group Leader; Alternate; Lead Engineer, Senior Staff Member present, or HWEC	Following survey by the Chief Fire Officer, HSE-1 and/or HSE-5, and R&D Supervision Approval by [illegible]
Explosion	Same as above	Same as above plus HSE-3 and survey by [illegible]
Loss of Ventilation	Group Leader, Alternate, Senior Staff Member, Lead Engineer, or Senior Technician	Following survey by HSE-1 and/or HSE-5, and R&D Supervision
Loss of Electric Power	Same as above	Same as above
Extensive Contamination	Same as above or HSE-1 Representative	Same as above
Airborne Contamination	Same as above or Rad Monitor	Same as above
Escape or Release of Toxic or Hazardous Gas or Fumes	Group Leader, Alternate, Senior Staff Member, Lead Engineer, Senior Technician, or HWEC	Same as above plus HSE-5
Bomb Threat	HSE-3 or Protective Force Representative, R&D Section Leader, Alternative, Senior Staff Member or Lead Engineer, LEDC	~~Following determination by HSE or Protective Force Representative and R&D Supervision~~ Following determination of the Hazardous Devices Team, and LEDC, [illegible]

ATTACHMENT J

INCINERATOR OPERATIONAL SAFETY

J.1 LIMITING CONDITIONS FOR PROCESS OPERATION

J.1.1 Objective

To ensure safety and protection of the environment, the CAI process operations will be conducted within the limits herein, and the following equipment, as appropriate to the activities, must be operating or available before process operations can be conducted.

J.1.2 Process Feed Operation

J.1.2.1 Plant Utilities

Electrical service (normal and auxiliary generator in 10-second standby mode); compressed air (designated and standby compressors); and building fire protection systems (the main water supply is integral to the supply for the wet- and dry-pipe fire sprinkler systems) must be available. Prior to operations in the liquid feed preparation area, the special HALON[R] fire protection system must be available. The process area HEPA filtered ventilation system must be operating.

J.1.2.2 Plant Instrumentation

Prior to liquid waste operations, a survey of the ambient air in the Liquid Feed Preparation Room must be made, and instruments for measuring combustible and oxygen concentrations must be at hand during preparation of volatile liquids.

J.1.2.3 Personnel

At least two persons must be on hand during any feed preparation operations.

J.1.3 Low-Temperature Check-Out Operations for the CAI

At low temperatures (below 500°F) the following are required:

J.1.3.1 Equipment

In addition to the minimum equipment requirements listed in J.1.2 above, low temperature operations for instrumentation and equipment checkout and calibration require the following:

J.1.3.2 Utilities

Liquid (diesel oil) and/or fuel gas (natural gas) supply systems; auxiliary cooling water system; uninterruptable power supply (UPS); and instrument air supply (designated and standby compressors).

J.1.3.3 Equipment in the CAI

Quench column pumps and sprays; incinerator induced draft (ID blower or automatic crossover to the HEPA filter plenum in building exhaust); process off-gas HEPA filter banks.

J.1.3.4 Instrumentation

All instrument and control panels must be on and operating. Prior approval of the Section Leader for Technical Support must be obtained to disable any safety interlock. If any interlocks are disabled, the front of the instrument chassis must be tagged and the interlock identified. An appropriate entry must be made in the Operations Log Book when any interlock is disabled or restored to operational condition.

J.1.3.5 Personnel

At least two persons must be present during operation of the incinerator. These are a shift supervisor and an additional process engineer.

J.1.4 High-Temperature Operations for the CAI

During incinerator startup for operation at temperatures above 500°F, and in addition to the items listed in J.1.3, the following must be fully functional:

J.1.4.1 Utilities

Auxiliary generator and automatic switchgear (running and ready); primary, secondary, and cooling tower loops and pumps; cooling tower blower(s) (depending on the outside and process scrub system temperatures); and the process steam generator with the pre-ignition interlock satisfied.

J.1.4.2 Equipment in the CAI

Venturi scrubber system; packed-column scrubber system; process liquid filter and recirculation system; off-gas superheater; and induced draft (ID) blower.

J.1.4.3 Instrumentation

All of the process controls and interlocks listed in the Second Edition of the Final Safety Analysis Report must be operable. No interlocks shall be disabled.

J.1.4.4 Personnel

Personnel requirements are the same as for low temperature operations.

J.1.5 Waste Feed Operations

In addition to the above, the following are required for waste feed operations:

1 4 6 4 0 0 2

J.1.5.1 Utilities

Waste feed will be terminated if the primary electrical supply system is lost. The loss of the primary water supply system initiates a controlled shutdown of the incinerator.

J.1.5.2 Equipment

During incinerator waste feed operations, all equipment specified in the previous sections must be fully operational. Waste feed operations shall cease until any discrepancies are corrected.

The NMEID permit for incineration of RCRA-listed and characteristic wastes specifies minimum operating temperatures, minimum percent oxygen in the secondary chamber, maximum carbon monoxide levels in the off-gas, maximum feed rates, and other parameters for hazardous waste feed operations. These parameters are detailed in Permit Module V for RCRA waste.

J.1.6 Process Off-gas Treatment

The following are required for off-gas treatment:

J.1.6.1 Equipment

Gas stream exit temperature from the quench column not greater than 350°F; gas stream exit temperature from the packed-column scrubber not greater than 180°F; gas stream inlet temperature to the process HEPA filters not greater than 250°F; scrubber solution temperature not greater than 180°F.

J.1.6.2 Personnel

In addition to the shift supervisor and process engineer, operations personnel shall be assigned to each shift as required to meet programmatic goals of the incinerator run plan.

J.1.7 Basis

Basis for limiting conditions for process operations is the 1979 AL/OSD Facility and Process Operational Safety Review and subsequent approval of the Operational Safety Requirements, the Technical Development Facility (TDF) Quality Assurance Manual (which includes requirements for reviews by the TDF experiment safety committee and design committee), and Administrative Requirement 1-8 of the Los Alamos Health and Safety Manual, Chapter 1.

J.2 DESIGN FEATURES

J.2.1 Construction

Except for the office addition, the TDF is constructed of precast, prestressed, pretensioned concrete double-"Tee" sections. The exterior walls are load bearing and are

interior insulated. All sections contain weldments to provide connection of the reinforcing steel between adjacent panels, floors, and roof decks. The interior load bearing walls are of filled concrete block construction. Non-load bearing walls are of metal stud and gypsumboard construction. The building shell is designed to remain as a confinement structure in all but a beyond design basis accident (BDBA).

Building design loads used were in accordance with ANSI Standard A58.1; 1972, and the Uniform Building Code for Earthquake Zone 2, 100 mph wind with a 100 year mean recurrance interval, Exposure B, and roof loads determined for 30 psf snow in addition to the ANSI Standard dead loads.

J.2.2 Fire Protection

The facility is designed for one hour Fire Code resistance with wet pipe sprinklers in all heated areas, except for the chemical storage area and the liquid feed preparation area. Antifreeze and dry pipe systems are installed in unheated areas to meet or exceed DOEM 0552 minimum requirements for "Improved Risk" level of protection.

The CAI process area exhaust duct to the facility main HEPA filter plenum contains a dry pipe water spray cooldown system upstream of the plenum. The plenum contains a mist eliminator/fire screen upstream of the filter banks. The main HEPA filter plenum has a dry pipe sprinkler system and the Bay 2 exhaust HEPA filter plenum contains an antifreeze sprinkler system. The chemical storage area contains a deluge fire sprinkler system and the liquid feed preparation area contains a HALON® 1301 fire protection system.

J.2.3 Ventilation System

Three levels of containment with appropriate ventilation are provided. The four resulting zones are separated from each other by physical barriers and/or pressure gradients. All air exhausted from the process areas of the facility and the waste storage/staging bay is not less than double HEPA filtered before release from the facility stack. The ventilation supply and exhaust blowers are interlocked with the fire alarm system. A fire alarm initiates shutdown of these blowers to reduce the amount of oxygen available to a fire. Likewise, the liquid feed preparation area inlet air supply louvers and the ventilation exhaust blowers are interlocked with the fire alarm and the HALON® system to isolate the room before the fire extinguishing medium is discharged.

J.2.4 Liquid Effluents

Except for the sanitary sewer system, all liquid effluents from the facility and the process are collected in sumps and are transferred through the double-contained and monitored radioactive waste line to the Industrial Waste Treatment Facility.

J.2.5 Utilities

The TDF has a diesel powered auxiliary generator and automatic switchgear which, when on standby mode, will supply electrical power to critical equipment, as well as communications and lighting to critical areas, within 10 seconds of a power failure. In

the running and ready mode used during all incinerator operations, the transfer time is less than one second. A battery powered Uninterruptable Power Supply (UPS) system provides power to the instrumentation and controls if the auxiliary generator and line power are both lost.

Designated and backup air compressors, powered from both the line and auxiliary sources, provide instrument air to the pneumatic process devices. These compressors are backed up by compressed gas (nitrogen) bottles.

J.2.6 Process

The CAI has a number of engineered safeguards:

J.2.6.1 Fire Protection Systems

In addition to the facility wet pipe, antifreeze filled, deluge, and dry pipe sprinkler systems, the process has several engineered fire protection systems:

The liquid feed preparation room has a HALON^R 1301 fire protection system, also initiated by UV detectors, temperature sensors, or manual pull station. The air supply louvers and exhaust blowers are interlocked with the alarm system to isolate the room prior to the HALON^R release.

The chemical storage area deluge sprinkler system is provided with a Fire Department connection for the addition of foam fire suppressant from a tanker truck.

The blowers supplying and exhausting air from the CAI process area and the waste storage/staging area are shut down upon the initiation of a fire alarm, to limit the oxygen available to a fire.

The floor drains in the CAI process and support areas and the sump in the radioactive waste storage area are connected to the facility sump tank in pit in Room 112. This tank discharges to the double contained and instrumented industrial waste water pipe line to the treatment plant at TA-50, Building 1. Fire water from the CAI process and support area sprinkler systems is collected by the floor drains. The radioactive waste storage area fire water is collected in a floor sump and is pumped to the facility sump tank. This floor sump is provided with an overflow drain to one of the chemical storage area sumps in the event that sprinkler flow in this room exceeds the pump capacity. Fire sprinkler water in Bay 2 and the main HEPA filter plenum system flows through floor drains and directly into the industrial waste line to the treatment plant.

There are no floor drains in the bermed liquid feed preparation area. The chemical storage area is provided with sumps of sufficient volume to contain the entire contents of the storage area containers and not less than thirty minutes of the deluge sprinkler system flow.

J.2.6.2 Liquid Blend/Feed System

Except for the transferring of liquids from the shipping containers to the waste feed tanks (which requires hands-on operations), liquid blend/feed station operations are performed from the control panel outside the liquid feed enclosure. Selected controls and

instrument readouts are also located at the incinerator main control panel and the liquid burner station at the incinerator.

J.2.6.3 Incinerator Controls and Interlocks

Incinerator startup and operation are automatically controlled and the systems are interlocked to prevent unsafe operation. Three shutdown modes (controlled, fast, and scram), with automatic and/or manual initiation, are provided to ensure safe shutdown of the process. Both visible and audible alarms are provided for fault indication.

J.2.6.3.1 Pre-Ignition Interlocks

Incinerator startup is prevented if faults are detected in the incinerator negative pressure, burner fuel supplies, and off-gas cleaning and cooling systems.

J.2.6.3.2 Startup Controls

A sequential timer controls air purge, pilot ignition, burner ignition, and flame failure shutdown.

J.2.6.3.3 Temperature Controllers

After startup, the incinerator is brought to temperature manually or automatically by a single station microprocessor-based controller. In the run mode, incinerator temperatures are maintained at set levels by temperature controllers.

J.2.6.3.4 Waste Feed Interruption and Cut-Off Interlocks

During operation, certain fault conditions require that liquid and solid waste feed be interrupted. In the case of solid waste feed, the loading cycle timer is disabled and the ram feeder is placed into standby mode. Liquid waste feed is instantaneously interrupted by closing of a solenoid shutoff valve on the liquid waste feed line.

J.2.6.3.5 Shutdown Controls

The detection of certain faults in the process equipment controls and interlocks will initiate one of three logic sequences (controlled, fast, or scram) provided to shut down the process in a safe and orderly manner, as dictated by the nature and potential consequences of the fault.

J.3 ADMINISTRATIVE CONTROLS

J.3.1 Responsibilities

Ultimate safety of the TDF operations lies with the HSE Division Leader, who appoints personnel to be responsible for the daily operation of the facility. These responsibilities include oversight of all engineering functions associated with maintenance and modifications of the building and with operating, maintaining, and modifying the CAI process.

J.3.2 Training

Training requirements for personnel assigned to the incinerator operations are delineated in Permit Attachment C.

J.3.3 Other Controls

The Technical Support Section maintains an emergency plan that is reviewed annually and updated as changes occur. Each employee assigned to the TDF has a copy of the emergency plan.

J.3.4 Internal Safety Review System

HSE-7 maintains a safety committee and appoints a safety officer to oversee safety functions of the group. The safety committee performs routine safety inspections of all HSE-7 facilities. A representative of HSE-3, Industrial Safety, is an ad hoc member.

J.3.5 Documentation of Operating Procedures

J.3.5.1 Operating Manual

An Operating Manual for the CAI process is maintained at the TDF. This manual is reviewed and updated as required. Each person assigned to TDF operations receives a copy of the manual. Manual contents are as follows:

1. Technical Support Section Organization
2. Operational Safety Requirements (OSRs)
3. Standard Operating Procedures (SOPs)
4. The TDF Emergency Plan
5. Facility Description
6. Facility Operating Instructions (OIs)
7. Process Description
8. Process Operating Instructions (OIs)
9. Utility Operating Instructions (OIs)

J.3.5.2 Standard Operating Procedures

Standard Operating Procedures (SOPs) are in effect for operations in the TDF, as specified in Administrative Requirement 1-3 of the Los Alamos Health and Safety Manual. The Technical Support Section reviews all SOPs at least annually and submits updates and revisions to the HSE Division SOP Committee for review and approval.

J.3.5.3 Special Work Permits

A Special Work Permit (SWP) must be obtained prior to conducting potentially hazardous activities not covered by an SOP. The building manager reviews and approves SWPs. The appropriate disciplines in Facility Engineering (ENG-5), Radiation Safety (HSE-1), Industrial Safety (HSE-3), and Industrial Hygiene (HSE-5) also review the SWPs.

J.3.5.4 Operating Instructions

Operating Instructions (OIs) are the detailed process equipment operating procedures and check lists required to safely start, operate, and shut down the CAI process, utilities, and other mechanical equipment. Members of the section's engineering staff write the OIs, which are then submitted for peer review within the section. The OIs are revised as operational requirements dictate.

7/17/89

RECEIVED
JUL 25 1989
EID DIRECTOR'S OFFICE

Director
Richard Mitzelfelt

Sir:

I am writing for myself and for those who are not in the knowing to what is going on in the way our environment.

I demand that the EID will issue an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. The hearing relating to the incinerator should include both the hazardous waste and radioactive ~~waste~~ permits.

Sincerely -
Ronda Sabatti
825 Calle Mejia #231
Santa Fe, NM
87501

a

Charles Crooks Jr.
143 Mutt Nelson Rd
Santa Fe, NM 87505
July 13, 1989

RECEIVED
JUL 26 1989
EID DIRECTOR'S OFFICE

Mr. Richard Mitzelfelt
Director, EID
1190 St. Francis Dr.
Santa Fe, NM 87503

Dear Mr. Mitzelfelt:

We are writing to you to protest the application, by the Los Alamos National Laboratories, for a permanent permit to burn radioactive and hazardous chemical waste.

We are aware that dioxins and radioactive particles are being emitted, and will continue to be emitted, by this operation. We are also aware that the incinerator in question is operating only because it was exempted from the current statewide moratorium on incinerator operations. This exemption came about because the incinerator was granted a "research permit". Currently, New Mexico has no standards to regulate incinerator operations!

We are aware that even minute amounts of certain chemicals or radioactive elements which are most certainly being produced even as these very words are being written significantly impact the health of individuals in the locality. For example, only one millionth of a gram of plutonium in a person's lung will result in an approximately 50% chance that individual will contract lung cancer. We are also unaware that any of us have given anyone permission to experiment upon us, as the research status of the Los Alamos incinerator implies.

We request that the State of New Mexico issue an emergency order, as permitted by the New Mexico Air Quality Control Act, section 74-2-10, to prevent the further burning of radioactive waste until the State has adopted standards in the field. We request that any hearings related to this subject include both hazardous waste and radioactivity permits.

Thank you for taking the time from your undoubtedly busy schedule to thoroughly investigate this matter.

Sincerely,

C. Crooks
P. Armstrong
Laurie Bless
John Marlott
Merida Fortner
R. Stringer
Albert Rothenson

THIS FILEFOLDER IS FULL

SEE THE SUBSEQUENT FILEFOLDER

FILE NAME LANL

YEAR 1989

FILE NUMBER Red - 2

Annotations

Q means questions recorded for response

ML or ✓ means name placed on mail list

MICHAEL HORAN

P.O. Box 2262
Taos, New Mexico 87571-2262
24 July, 1989

Dr. Jim Kane
University of California Berkeley
Laboratory Affairs
731 University Hall
2199 Addison St.
Berkeley, CA. 94720

Dear Sir:

FOIA FREEDOM OF INFORMATION ACT REQUEST
ENVIRONMENTAL ASSESSMENT EA
LANL TA-50 AREA
CONTROLLED AIR TRU WASTES INCINERATOR

Pursuant to FOIA, this is to request a copy of the following document:

The current Environment Assessment EA Draft specific to the U.C./DOE Los Alamos National Scientific Laboratory TA-50 Area Controlled Air Transuranic Wastes Incinerator. Operator: Regents of the University of California

---

I note that a full EIS (DOE/EIS-0133-D) has been made available to the public for the U.C. operated Lawrence Livermore Lab Tru Wastes Incinerator.

I am especially interested to see how the EA addresses waste minimization strategies and recycling of some of these wastes.

Sincerely,

Michael Horan
Bicycle Mechanic
Taos, NM
tel: (505) 758-3522

cc: C. Kelley Crossman, NM EID Haz. Wastes Bureau
Richard Mayer, U.S. EPA, Region 6, Dallas
Hon. Pete Domenici, U.S. Senate
Hon. Jeff Bingaman, U.S. Senate

MICHAEL HORAN

RECEIVED
JUL 25 1989

P.O. Box 2262
Taos, NM 87571-2262
24 July, 1989

C. Kelley Crossman
Supervisor
Hazardous Waste Bureau (EID)
1190 St. Francis Drive
Santa Fe, NM 87503

LANL TA-50 AREA
CONTROLLED AIR TRU WASTES
INCINERATOR

(1) When will you receive authority to regulate mixed wastes?

(2) When authority is granted, what guidance sources from U.S. EPA will you be following in redrafting a permit to address mixed wastes?

(3) Is there now or will there be an EPA comment period preparatory to tightening the RCRA particulates PM limit from 0.08 gr./dscf down to 0.01 gr./dscf.?
As the LANL Tru wastes incinerator exceeds even the 0.01 proposed rule, will LANL be granted the customary rollbacks, waivers and exemptions as a DOE facility?

Sincerely,

Michael Horan

Michael Horan
tel: (505) 758-3522
Taos, NM

cc: Richard Mayer, U.S. EPA, RCRA Permits Branch, Dallas

6

G. T' :ODORE DAVIS, M.D.
Encino Crescent Building
1010 Las Lomas, N.E., Suite 1
Albuquerque, New Mexico 87102
Office (505) 242-8502
Home (505) 268-7822

Kelly

July 22, 1989

RECEIVED
AUG 07 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt, Director
Environmental Improvement Division
1190 St. Francis Dr.
Santa Fe, NM 87503

Dear Mr. Mitzelfelt,

I am concerned about the public health implications of Los Alamos incinerating hazardous and radioactive waste materials. Currently the State has no regulations or standards for radioactive and hazardous emissions that may occur from these activities.

I am very concerned about the public health implications of this activity. I have been trained at the Oak Ridge National Laboratories DOE facility in management of radiation accidents. It is certain that some public health risk is exposed by the operation of this facility, especially under the circumstances of some sort of accident that would release toxic materials and/or radioactive materials into the environment.

I believe that the EID should issue an emergency order to prevent the incineration of these wastes until the State can adopt appropriate standards to regulate this activity. Additional public hearings concerning these matters should be held, and the content of these meetings should include discussion of and development of permits to regulate hazardous and radioactive emissions.

Please put me on the mailing list concerning any additional information concerning this incinerator. I also would be interested if you have any specific comments concerning the points that I have raised in this letter.

Thank you very much for your consideration.

Sincerely,

G. Theodore Davis, M.D.

GTD:mh

cc: Hon Bingaman
Hon Domenici
Hon Richardson
Hon Carruthers

LANL rcd

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

July 20, 1989

Mr. Richard Mayer
USEPA Region VI (6H-PS)
1445 Ross Avenue
Dallas, TX 75202

RE: Public Input, LANL
NM 0890010515

Dear Mr. Mayer:

The enclosed question from Mr. Michael Horan was received during our permitting hearing, with the request that it be forwarded to EPA Region staff.

Sincerely,

C. Kelley Crossman

C. Kelley Crossman
Supervisor
Hazardous Waste Program

CKC:vga

Enclosure

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

7/20/89
CKC

Michael HORAN's Question

Q: Under RCRA is the current federal particulates limit of 0.08 grains per dry standard cubic foot being tightened to a limit of 0.01 in a new draft promulgation as the particulate emissions from the LANL DRE TESTS exceed this new limit.

SOURCE: Air Resources Board in Calif. on July 19, 1989.

RECEIVED
JUL 20 1989

IT is the ARB's understanding that the new limit will be imposed in the near future.

Bottom Line: The LANL incinerator would exceed this limit as communicated by Mr. Grossman to Mr. Horan as results of the DRE tests.

RECEIVED

JUL 13 1989

HAZARDOUS WASTE SECTION

P.O. Box 2262
Taos, NM 87571-2262
13 July, 1989

C. Kelley Crossman
Supervisor
Hazardous Waste Bureau (EID)
1190 St. Francis Dr.
Santa Fe, NM 87503

PUBLIC COMMENT
LANL TA-50 AREA
CAI, CONTROLLED AIR RADIOACTIVE WASTES INCINERATOR
EPA/EID #NM0890010515

(1) It is my understanding from Richard Mayer of EPA, Dallas on 7/13/89 that EPA inspectors never actually inspected the CAI when it was operating, only observed it from the outside when it was not operating; hence, they never observed and witnessed pressure drop across the carbon bed filter to determine if it was working correctly to specification.

(2) Did EPA inspectors witness sampling protocols during the DRE test burns? Or do they simply take DOE's word for it?

(3) I understand from Greenpeace that both Senators Pete Wilson and Alan Cranston are opposed to a similar CAI radioactive wastes incinerator at U.C./DOE Lawrence Livermore Laboratory in CA. Why are they opposed to it and if they don't incinerate the wastes, what will they do with them, immobilize them by clay and synthetic barrier surroundment on site?

(4) The LANL CAI does not meet the CA. Air Resource Board PM_2 particulates limit although it is operated by the Regents of the University of Calif. This is important due to radioactive elements adsorption onto sub-micron particulates. The LANL unit fails the test.
Does the Lawrence Livermore Lab CAI meet the CA. PM_2 particulate stack gas emissions limit?

(5) The most current EA, specific to the TA-50 CAI, is not available from DOE.

Sincerely,

Michael Horan
tel: (505) 758-3522
Taos, NM

100% Recycled Paper

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

RECEIVED
JUL 19 1989
EID DIRECTOR'S OFFICE

7/89

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

✓ Sonya Roberts Box 176 TAOS NM 758-7489
✓ Jerry Buchanan Box 5745 TAOS N.M. 8-2158
ML ✓ MICHAEL McRA. P.O. BOX 2262 TAOS
✓ Ann Kilborn P.O. Box [illegible] TAOS 87557
ML Nancy Ti[illegible] Rt 1 Box 88 Ta[illegible]
✓ Rainbow Seaver PO Box 1498 Taos NM 87571
✓ Whitney Nieman P.O. Box [illegible] 87571
✓ Pink Santa PO. Box 13, Embudo, NM [illegible]
✓ Cathes Hicks P.O. Box 3004 Taos, N.M. 87571
✓ Miranda Hicks PO BOX 3004 TAOS, N.M. 87571
ML Ryan Ross PO Box 3128 Taos NM 87571
ML C. Jameson Wells Box 43 Arroyo Taos NM 87571
✓ Jerry Crowley PO Box 209, Taos, N.M. 87571

7/89

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

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Lisa Gordon
✓ LISA GORDON POB 3135 TAOS N

✓ Emma Gurney P.O.B. 262 Arroyo Seco 87514

✓ Ellen R. Kanchi P.O. Box 550 Ranchos 87557

✓ Richard B. Hughes Box 2341 TAOS 87571

✓ Yvonne Barrister Box 351 El Prado NM 87529

✓ Ivory Crozier P.O. Box 209, Taos, N.M. 87571

✓ [illegible] P.O.B. 1254 Ranchos de Taos, N.M. 8755[illegible]

✓ Elliot Haas P.O Box 3200 Taos N.M. 8757[illegible]

✓ Michael Allen PO Box 41 Embudo NM 87531

✓ [illegible] Ireland PO Box # 9808 Ranchos de Taos 87557

✗ William R. Coon general principles

✓ Lynda Dimitriadis 672 N. State Rte. Questa NM 87556

✓ [illegible] Sanderson PO Box 746 El Prado, NM [illegible]

7/89

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

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R.J. MacLeod Box 7 Pueblo Alegre Wall TAOS 87571

Tina Hahn P.O. Box 437 Ranchos de Taos, N.M. 87557

Robert L Hawley II POBOX3232 TAOS NM 87571

Linda Stenseth Box 87 Arroyo Seco NM 87514

Julie Brindure #955 Ranchos de Taos 87557

BEAU HOWARD Box 1081 Ranchos 87557

ROBERT ANAYA BOX 219 EL PRADO NM

Heather Anderson Box 6694 TAOS, NM 87571

P.O. BOX 2558 TAOS, N.M. 87571

JEAN-PIERRE DHONDT BOX 2847 TAOS N.M.

P.O. BOX 804 TAOS N.M.

Michael J. Goerg
Box 724 El Prado, NM 87529

Mike Flaherty
Box 4418 TAOS N.M. 875

7/89

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

	Print Name	Address
✓	Kelly Previti	O/C ocelvies 103 E. PLAZA. TAOS, NM 8757
✓	OV. Lucero	Box 6502 TAOS
✓	MARTIN LULEK	Box 6502 TAOS
✓	Charles Farden	Charles Farden Box 62 Penasco
✓	Eve Rebas	Eve R1643 P.O Box 37 Ojo Sarco 87550
✓	Marylin Abair	MARYLIN ABAIR PO Box 178 TAOS NM 875
✓	Jack Lage	Jack Lage Gen Del Llano [illegible]
✓	Miguel Cordova	Miguel Cordova [illegible]
✓	Brandy Corry	Brandy Corry PO Box 364/Arroyo Hondo NM
✓	Charlotte Torres	Charlotte Torres PO Box 1435 Taos N
✓	Ricky Musgrove	Ricky Musgrove PO Box 5182 Taos N
✓	Jackie L Musgrove	Jackie L Musgrove PO Box 518
✓	Sasha Miller	Sasha Miller Box 154 Taos radioactive 875

7/89

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

✓ [signature] MARGARET TAOS N.M. Box 2110

[signature] Thompson

✓ [signature] PETER SHARFIN SAN CRISTOBAL P.O. BOX 87569

✓ [signature] Ed Sasek POB 229 Taos

✓ [signature] Rob Burney POB 2819 TAOS

✓ [signature] VIRGINIA QUINN POB 1834 Taos

✓ [signature] Sheila Miller Box 154 Penasco

✓ [signature] SARA RANSOM PO Box 2353, Taos NM 87571

Kornelia Hoer

✓ [signature] P.O. Box 2841, Taos NM 87571

✓ John Daly, P.O. Box 915, Taos, N.M. 87571

✓ [signature] Cathy M Vigil Box 5604 Taos NM 87571

✓ [signature] PO Box 446 - TAOS N.M. 87571

BRUCE HOLTHOUSE Box 19 ARROYO SECO, N.M. 87514

Kelly,

Mike Horan from Tass called with some references for mixed waste incinerators. I can explain these notes

— Brian

6/30/89 ?

Michael Horan, Tass 758-3522
DOE EIS @ Lawrence Livermore.

SEE Lawrence Livermore Rad Lab Incinerator
1st Mixed Waste Incinerator Permit in CA
DOE / EIS - 0133 - D

and also update
available from:
State of California
Dept. of Health Services
Walter Kahm
(415) 540 - 3277

has LLNL done risk assessment on the incinerator? has question not been asked.

Roland Wong Air Resources Board
Sacramento
(916) 322 - 8273
has recent BACT data on file for firms in CA. that needed data for permit decisions.

2

Add to LANL mail list

Ms Rebecca McLeod, President
Dolphinswim
986 Acequia Madre
Santa Fe, NM 87501

Mr Eric Swanson
P.O. Box 5898
Santa Fe, NM 87502

Ms Shereen Noon
P.O. Box 5850
Santa Fe, NM 87502

Add to LANL mail list

Dr. Alice E Meader
P.O. Box 1359
Taos, NM 87571

MORANDUM OF MEETING OR CONV ATION

☑ Telephone ☐ Personal	Time	Date

Originating Party	Other Parties
Priscilla Logan	AG Gordon
471-3635	

Subject LANL incinerator

Discussion Gave her address for submitting comments. She wants to know how public meetings will be held. Called Gini who said a sign up sheet will be ~~at~~ available at back.

She thinks expert witnesses from out of ~~state~~ state should be given preference.

Conclusions or Agreements

Distribution CKC

Signed AGG

✓ Telephone ☐ Personal | Time 11: | Date 7/9/89

Originating Party	Other Parties
Elizabeth ~~Sillup~~ Billup 986-1973	A G Gordon

Subject
LANL incinerator

Discussion
Want to know if the radioactive component will be addressed at the public hearing. She has talked with Lyon previously and needs some companion board e.g. someone is saying they have a "permit" to burn radioactive wastes.

Conclusions or Agreements

Distribution
CKC

Signed A G Gordon

Q
ML

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

ML Judy Cruz El Valle Box 23, Chamisal, NM 689-22

ML Glenda Sandoval Box 103 Penasco New Mexico

ML Mary M Mascarenas Box 11 Llano, N.M. 87543 587-27

ML Theresa Velarde Box 17 Llano, NM 87543 587-21

ML Alice M. Gonzales Route Box 3 Vadito, New Mexico 87579 587-2398

ML Irene D Lopez PO Box 13 Chamisal NMex 87521 587-23

ML Debbie Wade P.O. Box 21 Vadito, N.M 87579

ML Laurence E Gottschalk P.O. Box 23 Llano NM 87543 587-2185

ML Rose Congdon Gen. Del. Llano, NM 87543 587-2925

ML Theresa M. Kellywood P.O. Box 387 Penasco, NM 87553

ML Diana Nichols P.O. Box 30 Llano, N.M. 87543

Philip K Bras P.O Box 30 Llano N.M 87543

Pat Lalid P.O Box 67 Penasco NM 87553 587-2211

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

ML Florence J. Velarde Gen. Del. Penasco, N.Mex 587-2388

ML Oralia Martinez Box 18 Llano, N.Mex 587-2864

ML Cecilia M. Surati Penasco, NM 87553

ML Andrea Lopez Chamisal, NM 87521

ML [illegible]

ML [illegible]

ML Betsy Martinez Penasco N Mex 87553

ML Olivia Domingues Box 374 Penasco, NM 87553

Dolores A. Trujillo Box 363 Penasco, N.M 87553

ML Lupita Archuleta Gen. Del Penasco, NM 87553

ML Karen Caraco Box 187 Penasco, NM 87553 587-2001

ML Yolanda Esquibel Gen. Del Llano, N.M. 87543

ML Eliza Romero El Valle Rt. Box 16, Chamisal, NM 87...

a

L. NL Mailing Requests

1. Ms. Michael Coupard 982-2182

mL 2. Mr. Michael Horan
P.O. Box 2262
Taos, NM 87571-2262

mL 3. Ms Flo Walker
P.O. Box 2407
Taos, NM 87571

4. Ms Bonnie Bonneau
Box 351
El Prado, NM 87529

mL 5. Mr Gary A. Beimer
Code Enforcement Division
P.O. Drawer M
Taos, NM 87571

mL 6. Mr Ryan Ross
P.O. Box 3128
Taos, NM 87571

mL 7. Ms Susan M'Cartay
P.O. Box 1591
Taos, NM 87571

mL 8. Ms Nancy Tibbetts
Rt 1 Box 88
Taos, NM 87571

9. Ms Pat Sommer (Permit only)
Chemical Waste Management, Inc
107 South Motor
Azusa, California 91702

mL

ML 10. Ms Tom Barnes, Editor
Rio Grande Sun
P.O. Box 790
Espanola, NM 87532

ML 11. Ms Evelyn Vigil, Editor
Los Alamos Monitor
P.O. Box 1268
Los Alamos, NM 87544

ML 12. Mis Janie O'Rourke
League of Women Voters
3 La Rosa Ct
WhiteRock, NM 87544

ML 13. Ms Martha Aguilar
Realty Officer
Pueblo de San Ildefonso
Route 5 Box 315-A
Santa Fe, NM 87501

ML 14. Ms Jane Wells
US DOI / BIA
P.O. Box 26567
Albuquerque, NM 87125-6567

ML 15. C.C.N.S.
Attention Elizabeth Billups
712 Calle Grillo
Santa Fe, NM 87501

ML 16. Ms Kathy Velleca
~~229 Hyde Park Estates~~ P.O.B. 8147
Santa Fe, NM 87504

ML 17. Ms Mary G.P. Hall
329 Sanchez Street
Santa Fe, NM 87501

ML 18. Ms Barbara Cleaver
Rt 4 Box 36 A
Santa Fe, NM 87501

ML 19 Ms Joni Arenda
712 Calle Grillo
Santa Fe, NM 87501

ML 20. Mr Jose A. Cisneros
Superintendant
Bandelier National Monument
Los Alamos, NM 87544

ML 21. Ms Silvi Solomon
1107 B Pen Road
Santa Fe, NM 87501

ML 22. Ms Sondra Spies
547 Franklin Avenue
Santa Fe, NM 87501

ML 23 Mr Douglas Meiklejohn
NM Environmental Law Center
1709 Paseo de Peralta
Santa Fe, NM 87501

ML 24. Ms Emmy Koponen
Box 29
Ojo Sarco, NM 87550

ML 25 Ms Joyce Stark
P.O. Box 725
Ranchos de Taos, NM 87557

ML 26 Mr Ed Grant
Los Cordovas Rt, Box 180
Taos, NM 87571

27. Ms Martina Hollufer
P.O. Box 2755
Taos, NM 87571

ML 28. Mr Paul Robinson
Southwest Research + Information Center
P.O. Box 4524
Albuquerque, NM 87106

WHILE YOU WERE OUT

TO: Kirk

DATE 1

TIME 3:20 pm

M

OF Ramona Maes

PHONE AREA CODE [redacted]-9508 EXTENSION

Asked Lanz hearing be put off till 20th allow citizen to bring outside expert(s)?

Kirk

Telephone ~~comp~~ in lieu of letter

Carolyn Kef Keskulla

~~SF~~ Rt 3 Box 106F

Santa Fe

87505

EID ~~shall~~ should issue Emergency Order – to prevent under authority of Section 210 - Air Quality incineration of Radioactive waste

Q

6-19

Richard

Amy Bice from Tesuque called to oppose EID's approval on a permit for burning radioactive materials at LANL. She is opposed to this permit being issued to them.

She wd. like to urge you issue an emergency order to prevent the issuance of a permit until a public hearing is scheduled.

Her address is P.O. Box 208 - Tesugue 87574

Q

STATE OF NEW MEXICO HEALTH & ENVIRONMENT

Date 7/18

To Kelly

Building/Room Whitney NIEMAN P.O. Box 357 El Prado 87529

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number _____ Time Called 8:45AM

MESSAGE

STOP BURNING

Would like Hearings to include Radioactive ISSUES also.

From Jana

Building/Room

ADM 030 Issued 5/78

Q

Public Fighting Back Over Waste Incinerator

CONTINUED FROM PAGE 1

the state authority to consider another class of debris called "mixed waste." which is combined chemical and radioactive waste, Crossman said. However, the EPA will consider the strictly radioactive portion of the incinerator plan on its own.

Officials from the EPA office in Dallas will present their plan for huge cleanup of contamin ted waste sites at the lab.

Steve Slaten, an EPA official at Tuesday's hearing, said Los Alamos National Laboratory is one of the Department of Energy's top 10 worst waste sites in the country. He said over 600 individual dumps have been identfied so far and said the total cost for cleanup at Los Alamos could reach between $1.6 billion and $2 billion.

Slaten said it will take about eight years to investigate all the waste sites at Los Alamos and get federal approval to go ahead with cleanup work.

He said the sites involve radioactive waste, chemicals and other substances.

Much of the public comment Monday centered on whether the energy department is trying to pull a fast one by splitting responsibility for the incinerator project between state and federal watchdog agencies. Many in the crowd insisted in addressing the radiological portion of the incinerator plan — despite the fact the state doesn't have legal authority to consider it.

The audience's mood of distrust was heightened by the EID's meetig agenda, which showed that DOE officials did not intend to testify on their own application. The agenda called for DOE officials to cross-examine statements from audience members or by EID officials, but did not allow the public to cross-examine written statements the DOE proposed to submit to the hearing record.

Howard Shulman of Santa Fe, a member of the Concerned Citizens for Nuclear Safety group, questioned why the DOE was exempt from questioning.

Gini Nelson, a lawyer for the state Health and Environment Department who coached Crossman on many of his answers, responded the DOE has the same rights as a member of the public to choose not to testify. And unless the agency testified, she said, it wasn't subject to cross-examination.

Shulman responded, "They are a weapons research facility; they are not a part of the public."

Hearing officer Walt Youngblood, deputy director of the Public Health Division of state's Health and Environment Department, asked for a showing of how many people in the audience of perhaps 200 wanted an opportunity to cross-examine the lab. After most people in the room stood up, he estimated for the record that 90 percent of the audience wanted the lab to respond.

The DOE didn't submit its comments on Monday. The hearing is scheduled to reconvene at 8:30 a.m. today at the Harold Runnels Building auditorium in Santa Fe.

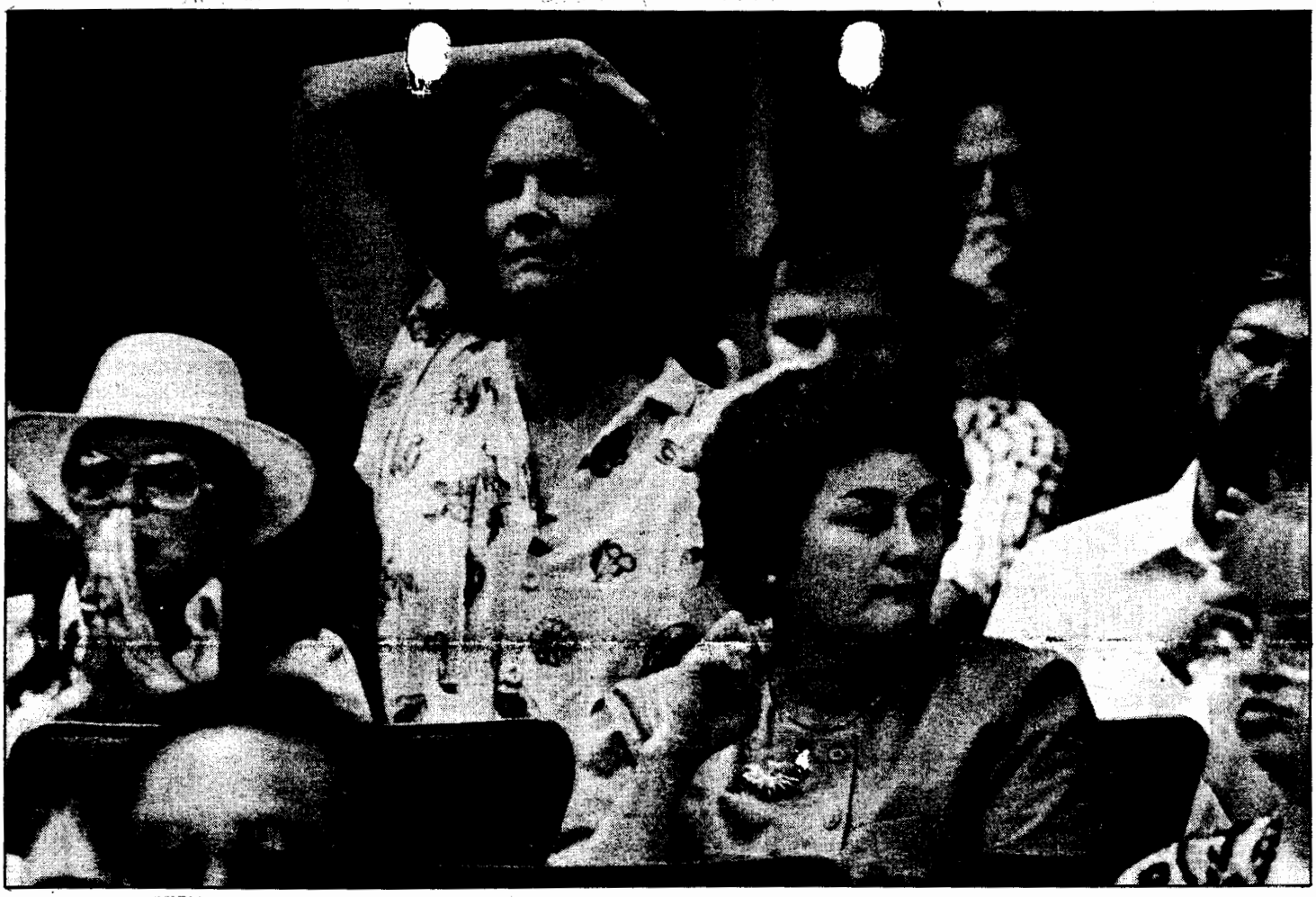
DOE lawyer Joyce Laeser said the agency decided not to testify because, "We've been working with the EID for a long time and we really have nothing to add." She also said the permit application is so broad that it would require the DOE to have dozens of experts on hand.

Youngblood said the purpose of Monday's hearing was to prepare a record of discussion so Richard Mitzelfelt, state EID director, can decide later whether to give final approval to the project.

Priscilla Logan, a Santa Fe teacher, responded, "One person? Not a board?" She asked whether the process was intended to be democratic or autocratic and said she wanted the hearing expanded to consider all aspects of the incinerator, "since we all have real questions, real doubt and mistrust of the DOE."

David Bates of Taos questioned how the state will verify information the DOE provides about the incinerator. Crossman replied that the state intends to inspect the incinerator once a year and has the option to do other verification sampling.

Tom Rutherford of Albuquerque, a Democratic state senator, mentioned recent federal investigations into energy department practices in Colorado and elsewhere. He told Crossman, "If for no other reason than that you don't have the budget to keep an eye on the DOE, given their past criminal acts, then that alone should be sufficient to deny this permit."



Elaine Giovando holds up her arm as she waits to ask a question at Monday's hearing. Joyce Laeser, lawyer for the U.S. Department of Energy, is in the foreground.

Public Fights Back Over Incinerator

Journal North 7/19/89

By Ben Neary

JOURNAL STAFF WRITER

A state hearing on a Los Alamos National Laboratory waste incinerator resumes today after a daylong hearing Tuesday on waste-handling at the lab left many in an audience of 200 frustrated and dissatisfied.

The U.S. Department of Energy is applying for state approval for all its hazardous-waste operations at the lab. However, the discussion Tuesday centered around the federal agency's plan to operate an incinerator at the lab to reduce the bulk of dangerous chemical and radioactive waste.

Many in the audience wanted to talk about radioactive waste. But C. Kelley Crossman, supervisor of the state's hazardous waste bureau, spent most of the day trying to explain in person — and through his lawyer — why the state isn't considering whether it's safe to burn radioactive material in the incinerator.

Crossman emphasized the state presently has legal authority from the federal government to consider only whether the incinerator meets federal standards for burning non-radioactive chemicals — or what regulations call simply hazardous waste.

The state lacks the legal authority to address whether the incinerator is safe to burn radioactive waste, he said.

After the state acts on the DOE's hazardous waste application, the U.S. Environmental Protection Agency intends to give

MORE: See PUBLIC on PAGE 3

NEIL JACOBS / JOURNAL

Priscilla Logan, a Santa Fe teacher, expresses her concerns with the U.S. Department of Energy's hazardous waste-management plan at a hearing Monday.

7/19/89

RECEIVED
JUL 21 1989
EID DIRECTOR'S OFFICE

EID
1190 St. Francis Dr.
Santa Fe, NM 87503

Dear Richard Mitzelfelt,

I just want you to know that I am against giving permission for any incineration of Radioactive & Hazardous wastes in Los Alamos & anywhere in our state, until we have federal and state regulations on radioactive emissions. I am also concerned about LANL's "temporary permit" for burning radioactive & hazardous waste without any environmental assessment on our environment. Have they really been using it for NINE YEARS? Please look into it. Thank you. Sherwin Moon

PO Box 5550
Santa Fe
NM 87502

Dear Sir,

I would strongly urge the EID issue an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits

Sincerely Yours,
Marjorie Schuckman

SWANSON

PHOTOGRAPHY

Jack p/s. Handle

18 July 89

RECEIVED
JUL 21 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt
Enviromental Improvement Division
1190 St. Francis Drive
Santa Fe, NM 87503

Mr. Mitzelfelt:

Due to my work schedule and to a slight amount of apathy, I was unable to attend todays meeting regarding radioactive and hazardous waste incineration at Los Alamos National Lab. The apathy resulted from the exclusion of nuclear waste from the agenda of this meeting. How can one be discussed with out the other? The real reason for this meeting and what is expected to be accomplished is beyond me. The potential for enviromental and health hazards from incineration are very great, too great a risk for the amount of waste this type of processing reduces. I urge you to recommend a total moratorium on any type of incineration in New Mexico. I do not feel that there has been enough research into incineration or its alternatives to warrant endorsement by your agency at this time. Recycling, reduction of waste at the source and in this case, super compaction are all alternatives that need to be thourghly studied before the land and people of New Mexico are subjected to the potential hazards of incineration.

I would also like to suggest a evening meeting for people who work but who would like to express their feelings on this subject for the record.

Thank you.

Eric

ERIC SWANSON • PO BOX 5898 • SANTA FE, NEW MEXICO 87502-5898 • 505 988-3031

JEAN JANU • Rt. 7 Box 124-JJ, La Barberia Rd. • Santa Fe, NM [illegible]05 • (505) 988-[illegible]

July [illegible], 1989

RECEIVED
JUL 20 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt
1190 St. Francis Drive
Santa Fe, NM 87573

Dear Mr. Mitzelfelt

I am writing to request that the [illegible] issue an emergency order to prevent the burning of radioactive and toxic waste until the state of New Mexico can adopt standards in a [illegible] forum to regulate it. I am [illegible] kind of incineration went on for years in [illegible] I have lived in Santa Fe for more than [illegible] I understand that we have released [illegible] hazardous carcinogens into the air we breathe in our ignorance. We have more information [illegible] let's not let our ignorance spoil our most important resource. Please act on our behalf.

Thank you.

Sincerely,

Jean Janu

RECEIVED
JUL 18 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt Director
ENVIRONMENTAL "IMPROVEMENT" DIVISION
1190 St. Francis Drive
Santa Fe, NM 87503

Sir:

How ironic that you {supervise / allow} such planetary destruction under the name of "improvement".

If you are truly interested in protecting the environment, then show it:

- Prevent burning of radioactive waste at least until the state adopts regulations according to public input
- Hold adequate hearings on both hazardous and radioactive permits.
- Contain the greedy, selfish interests of the U of C junta — LANL MUST be regulated.

Preserve the earth. You have no right to destroy it.

Connie Janssens

CONNIE JANSSENS • DRAFTING • GRAPHIC DESIGN • ILLUSTRATION
P.O. BOX 16191 • SANTA FE, NM • 87506 • 505 986 0376

Kelley

Robert Walsh
Rt 3 Box 196B
Espanola, NM 87532

Called 7/18 -
Protest LANL Permit because
DOE has not shown good faith a
audience at Rocky Flats.

etc, etc,

PUBLIC HEARING ON EID'S DRAFT PERMIT
LOS ALAMOS NATIONAL LABORATORY ("LANL")
RESOURCE CONSERVATION AND RECOVERY ACT ("RCRA")
OPERATING PERMIT NM 08900105151
July 18, 1989

ORDER OF PROCEEDING

EID PROCEEDING

1. Introductory statement by Hearing Officer.

2. Prepared Exhibits offered by EID attorney. (Additional exhibits may be offered by anyone during hearing.)

3. Testimony by EID.

   a. Cross-examination by LANL.
   b. Cross-examination by public.

4. Submittal of comments by LANL.

5. Testimony by public.

   a. Cross-examination by LANL.
   b. Cross-examination by public (other than member of the public testifying).
   c. Cross-examination by EID.

6. Rebuttal testimony by anyone (subject to cross-examination).

7. Conclusion of EID hearing by Hearing Officer.

[hrgofsta.lnl]

MEMORANDUM OF MEETING OR CONVERSATION

[X] Telephone [ ] Personal	Time 1:30	Date 7/18

Originating Party	Other Parties
Howard Shube 266 5951	Nick Van Kleeck EID

Subject

LANL Incinerator

Discussion

Mr. Shube (210 Ridgecrest SE, Albuquerque, NM 87108) called to comment on LANL permit. Said he'd submitted his comments in writing already.

He is opposed to incineration of radioactive or hazardous waste until full standards are established by the legislature. He is opposed to any "permanent permit" until standards are established.

Conclusions or Agreements

Distribution

Signed [illegible]

Ms. Kristin Thygeson
P. O. Box 243
Ward, Colorado 80481

July 17, 1989

Richard Mitzelfelt, Dir.
Environmental Improvement Division
1190 St. Francis Drive, Santa Fe, N.M. 87503

Dear Mr. Mitzelfelt:

I strenuously oppose Los Alamos National Laboratories being allowed to burn radioactive and hazardous waste, when New Mexico has no regulations for radioactive emissions. DOE and Los Alamos, moreover, should not be exempt from any regulations. EID should issue an emergency order under the New Mexico Air Quality Control Act Section 74-2-10 to prevent burning until radioactive waste disposal by burning or any other means is regulated.

It is important to note that HEPA filters do not prevent escape into the atmosphere of any material that in the course of burning is changed into a gas. The source for this is from Joseph Goldfield, Consulting Engineer of Denver who wrote "High Efficiency Particulate Arrestors (HEPA Filters) in a

the nuclear industry." Mr. Goldfield told me verbally by phone that any material in the form of a gas is NOT filtered by HEPA filters.

HEPA Filters are best by many premises as discussed by Mr. Goldfield in the above paper that make HEPA filters very unreliable, even for solids of .3 micron in size. Please see Mr. Brandenship for a copy of Mr. Goldfield's paper.

I urge you to stop the Los Alamos burn.

Sincerely yours,
Kristin Thyeson

RECEIVED
JUL 20 1989
EID DIRECTOR'S OFFICE

C Kelley Crossman
Environmental "Improvement" Division
North 2311 - 1190 St. Francis
Santa Fe, NM 87503

RECEIVED
JUL 17 1989
HAZARDOUS WASTE SECTION

Dear Mr. Crossman:

I protest strongly the way your division has arranged the hearing on the permit for Los Alamos labs to continue defiling our environment. It is one more attempt of a ~~non~~ non-democratic government to shut out public input.

I moved here to save my life, to find peace in nature. You and your kind are destroying us. For god's sake, stop raping the universe before it is too late.

Sincerely,

Connie Janssens

CONNIE JANSSENS • DRAFTING • GRAPHIC DESIGN • ILLUSTRATION
P.O. BOX 16191 • SANTA FE, NM • 87506 • 505 986 0376

Holocaust Project/1990

Exploring the significance of the Holocaust through art.

RECEIVED
JUL 19 1989
EID DIRECTOR'S OFFICE

July 17, 1989

Judy Chicago
Photography by
Donald Woodman

Post Office Box 8138
Santa Fe, New Mexico 87504

Board of Advisors

Dr. David Blumenfeld
Executive Director
New York Holocaust Memorial
Commission, New York

Michael Borwinick
Senior Vice-president
Knoedler Modarco
New York

Dr. Koppitya Feig
Professor
San Francisco State University

Dr. Samuel Goetz
Survivor of the Holocaust
Los Angeles

Elyse Grinstein
Architect
Los Angeles

Stanley Grinstein
Trustee
Los Angeles County Museum of Art

Dr. Vera Joha Steiner
Survivor of the Holocaust
and Psychiatrist Therapist
University of New Mexico
Santa Fe

Isaiah Kuperstein
Executive Committee Member
Association of Holocaust
Organizations
Washington, DC

Betty Levinson
Director
Learning Resource Centers, UCLA
Survivor Tape Archives

Dr. Gerold Margolis
Director
Simon Wiesenthal Center
Los Angeles

Dr. Michael Nutkiewicz
Director
Martyrs Memorial and Museum
of the Holocaust
Los Angeles

Dr. Joan Ringelheim
Director
Women and Holocaust Project
Institute for Research in History
New York

Mr. Richard Mitzelflt, Director of EID
1190 St. Francis Drive
Santa Fe, NM 87503

re: Los Alamos Radioactive Waste Incinerators

Dear Mr. Mitzelfelter:

Radioactive waste is a major problem and no solution is possible until the government and private industry STOPS producing this lethal waste.

Studies, which the government will not recognize, prove the disasterous effect low levels of radioactive waste has on the environment and living creatures - humans included. In light of the recent revelations about the misinfrmation produced by the DOE, and by burning the waste at LANL it will create a more concerntrated and more lethal form of hazardous and radioactive waste. We demand that the EID issue an emergency order (by authority of the New Mexico Air Quality Control Act section 74-2-10) to prevent the burning of radioactive and hazardous waste uutil the State can adopt standards in a public forum to regulate it.

Please act in the interest of the private citizens of this State whom you are suppose to protect.

Sincerely,

DONALD WOODMAN

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT

Date 7/17

To Kelley

Building/Room Roy Helton

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number 587-2734 Time Called 10:25 AM

MESSAGE LANL

PO Box 1

Los Alamos NM 87543

From

Building/Room

ADM 030 Issued 5/78

ALBUQUERQUE JOURNAL

BEN NEARY

JOURNAL NORTH
328 GALISTEO
SANTA FE, NEW MEXICO 87501

(505) 988-8881

FAX # 827-2836

Director of EID

MR. Richard Mitchell:

RECEIVED
JUL 17 1989
EID DIRECTOR'S OFFICE

PLEASE —

WE DEMAND THE E.I.P. ISSUE EMERGENCY MORATORIUM TO PREVENT BURNING of RADIOACTIVE WASTE UNTIL THE STATE OF NEW MEXICO CAN ADOPT STANDARDS AND RESTRICTIONS IN PUBLIC FORUM TO REGULATE IT.

ALSO TO PREVENT ALL TYPES of COMMERCIAL INCINERATION UNTIL REGULATIONS AND STANDARDS CAN BE ADOPTED IN PUBLIC FORUM TO PROTECT AIR QUALITY FOR ALL.

EL TRUS Community
J. Buchanan
Box 5745
TAOS, N.M. 87571

Rt. 7, Box 125 SC
Santa Fe, NM 87505
July 10, 1989

Dear Mr. Mitzelfelt:

We are shocked to learn that our state has no regulations governing radioactive emissions from incinerators at Los Alamos, and that the forthcoming hearings on the LANL incinerator will cover only hazardous, but not radioactive waste. It is inconceivable that our state will allow this to happen. We demand that the EID issue an emergancy order, under the NM Air Quality Control Act, Sec. 74-2-10 preventing the burning of radioactive waste until standards for this are adopted. We also want the projected 7/17 hearing to include the need for permits for radioactive waste.

Sanford & Laura Clarke

7/14/89

DEAR MR. MITZELFELDT:

WE URGE YOU NOT TO ACT ON THE LOS ALAMOS LAB'S REQUEST FOR APPROVAL OF ITS INCINERATOR TO BURN RADIOACTIVE AND HAZARDOUS WASTE UNTIL THE STATE ADOPTS REGULATIONS ON SUCH INCINERATION.

WHAT IS THE BIG HURRY? ISN'T IT THE FUNCTION OF EID TO PROTECT THE CITIZENRY OF NEW MEXICO FROM ENVIRONMENTAL DANGER? WHY THE RUSH TO EXEMPT THIS PARTICULAR PROJECT BEFORE WE KNOW IT IS SAFE?

SINCERELY, ROBERT + ROSE MARY STEARNS
1176 CERRO GORDO
SANTA FE NM 87501

July 17, 1989

RECEIVED
JUL 19 1989
EID DIRECTOR'S OFFICE

Dear Richard Mitzelfelt,

I am writing you in regards to to the incinerators being installed in Los Alamos.

Since we already know that any burning produces chemical by products that contribute to toxic rain, I'm amazed that incineration is allowed at all in this state. We are one of the few remaining areas that has semi-clean air.

The air is not only at stake since the chemical by products that fall in rain will destroy the water sheds in affected areas.

The air has been getting increasingly poor since we have not taken measures to maintain its purity. As a native Santa Fean I have watched the changes occurs.

I hope you take action to prevent any burning of any waste in this state whatsoever!

Sincerely

Mary Kathleen [illegible]

Hope A. Curtis
P.O. Box 4023
Santa Fe, New Mexico
~~87501~~ 87502

RECEIVED
JUL 18 1989
EID DIRECTOR'S OFFICE

July 16, 1989

Dear Mr. Mitzelfelt,

I am very concerned about LANL's application for a final permit to burn radioactive and hazardous chemical waste. Since the State of New Mexico has no regulations for radioactive emissions I feel very strongly that the EID should issue an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Also, any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

Thank you for your consideration.

Sincerely yours,

Hope A. Curtis

6/10/89

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT

Date

To Kelly

Building/Room

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number 662-4342 Time Called 10:55

MESSAGE Carmella Gutierrez
Radiost. in Los Alamos
explained the sequence
and timing.

From Carl

Building/Room

ADM 030 Issued 5/78

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT

Date

To

Building/Room

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number Time Called

MESSAGE

Hall

From

Building/Room

ADM 030 Issued 5/78

Dear Sir:

We demand CJD issues an emergency order to prevent the burning of radioactive waste until the state of N.M. can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

Thank you.

Claire Adelstein and Anne Cole

Incinerator Safe, Lab Says

Los Alamos Burner Designed For Radioactive Wastes

By Ben Neary

OF THE JOURNAL'S NORTHERN BUREAU

SANTA FE — Los Alamos National Laboratory officials are confident that a waste incinerator now under state review is safe, despite concerns of Northern New Mexico groups about the burning of radioactive materials.

"When it's operating, if you want a publicity shot, I'll stand up there on the stack and snort the discharge," said David Hutchins, project leader for chemical waste incineration. "I'm that convinced."

And John Vavruska, project leader for radioactive waste incineration, says, "I've got integrity; I live in Santa Fe and I've got a 2-year-old daughter. I wouldn't be working on it if I didn't think it was going to work."

The state's Environmental Improvement Division on July 18 will consider an application from the U.S. Department of Energy for final state approval of the incinerator at the laboratory.

The energy department plans to use the incinerator primarily to reduce its volume of radioactive waste, which the lab hopes to ship to the Waste Isolation Pilot Plant near Carlsbad.

However, the state hearing will only consider whether the plant meets federal standards for incinerating chemical, non-radioactive material. The federal government will consider standards for radioactive emissions.

C. Kelley Crossman, supervisor of the state's Hazardous Waste Bureau, said Friday it's not a foregone conclusion that the state will approve the permit. However, he said, "If I have any indication it was not going to meet the standards, it never would have got this far; I would have recommended permit denial."

Environmentalists intend to protest the incinerator at the hearing, which begins at 9 a.m. Tuesday in the auditorium of the Harold Runnels Building in Santa Fe.

Vavruska, lab project leader, said Los Alamos National Laboratory has generated 35 to 100 cubic meters a year of transuranic waste — items contaminated with highly radioactive material. The material currently is stored at the lab site.

Hutchins said most of the transuranic waste is easily burned items such as paper, rags and gloves. He said the incineration reduces the volume of such waste by about 100 times.

The DOE has similar low-level waste incinerators at Idaho Falls and near the Savannah River Plant in South Carolina. Hutchins and Vavruska said federal regulators are leaning increasingly toward incineration as a way to cut the volume of waste stockpiled around the country.

Vavruska said he's not aware of any plans to accept waste from any other parts of the country for burning in Los Alamos.

Tuesday's hearing isn't limited to the incinerator question. Hutchins said the state is considering whether to give final approval to the entire lab's provisional permission to handle non-radioactive hazardous waste in all its operations.

Dear Mr Mitchell,

I am extremely alarmed to [illegible] that LANL are going to be allowed to burn radioactive waste in their incinerator when New Mexico has no regulations for non-active emissions. Please speak to someone in order to prevent these burnings until NM can adopt standards in a public forum that can regulate these burnings. Such a forum should be for both hazardous & radioactive permits

MEMORANDUM OF MEETING OR CONVERSATION

Telephone ☐ Personal	Time 10:50	Date 7/14/89
Originating Party		Other Parties
Dr. Abardin		AE Gordon EID
9887369 home	after 2:30	

Subject

LANL Incinerator

Discussion

422 Medico Lane
Santa Fe 87501

deep concern about the burning of both radioactive and toxic wastes at LANL incinerator; believe that it should not be given further permit without considerable study of standards; any further hearings should be on overall status of incinerator

Conclusions or Agreements

Distribution

CKC

Signed AE Gordon

7-14-89
Fr.

Dear Mr Mitzfelt,

I am currently visiting this beautiful state of New Mexico. I find it devastating that there are no regulations for radioactive emissions.

We must think of our posterity & the future of our planet & environment. Our children & children deserve to live in a clean, healthy environment.

I demand that EID issue an emergency order (by authority of the New Mexico Air Control Act, section 74-2-10) to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. I demand that any hearing relating to the incinerator should include both the hazardous waste and radioactive permits. Please don't let our air quality be compromised. We can't hide from air.

RECEIVED
JUL 18 1989
EIB DIRECTOR'S OFFICE

Sincerely,
Mary Anna Kaur
Chelan

[illegible]

radioactive [illegible]

hearing [illegible]

radioactive [illegible]

[illegible]

EVELYN L. PETSHEK
1810 CALLE
DE SEBASTIAN C2
SANTA FE NM 87501

It is imperative that the [illegible] issue an emergency order [illegible] [illegible] [illegible] the burning of radioactive waste before standards to regulate such burning are adopted. Hearings should consider hazardous waste & radioactive [illegible]

Evelyn L. Petshek

2

[illegible] AUTHORITY OF THE N.M. AIR QUALITY CONTROL ACT, SECTION 74-2-10 TO ISSUE AN EMERGENCY ORDER PROHIBITING THE BURNING OF RADIOACTIVE WASTE UNTIL THE STATE OF N.M. CAN ADOPT STANDARDS AND PUBLIC FORUM TO REGULATE IT. ANY HEARING RELATING TO THE INCINERATOR MUST INCLUDE BOTH HAZARDOUS AND RADIOACTIVE HAZARDS!

Alex Stanley

ALEX C. STANLEY
2706 CALISTEO #A
SFE, N.M. 87505

2592 Calle Delfino
Santa Fe, NM 87505
July 13, 1989

Dear Mr. Mitze;felt:

I urge you to issue an emergency order to prevent the burning of radioactive waste, until our state can adopt a public forum to regulate it. It is very important that any hearing relating to the incinerator include BOTH hazardous and radioactive concerns, Thank you.

Sherry Sandlin

July 11, 1989

DEAR MR. MITZELFELT,

IT IS MY UNDERSTANDING THAT YOU HAVE THE LEGAL AUTHORITY TO STOP THE INCINERATION OF RADIOACTIVE WASTE AT LOS ALAMOS UNTIL THE STATE OF NEW MEXICO HAS STANDARDS IN PLACE TO REGULATE SUCH ACTIVITIES. PLEASE ACT ON THIS TODAY WE NEED PUBLIC HEARINGS PLEASE ADVISE ME OF WHEN THEY WILL BE.

THANK YOU,

MYLA RESON

P.O. BOX 803 SANTA FE, NM 87504

MRS. HOPE T. BROWN
529 CORTEZ ST.
SANTA FE, NM 87501

July 12, 1989

Dear Sir,

My husband, Leslie and I want to go on record to demand that the EID issue an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it.

We also demand as concerned citizens (and registered voters) that any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

Thank you.

Sincerely, Mrs. Hope T. Brown

Tel: 983-9314

Dear Richard Mitzelfelt,

Please, this letter is to demand that the EID issue an emergency order (by authority of the N.M. Air Quality Control Act section 74-2-10) to prevent the burning of radioactive waste until the state of New Mexico can adopt standards in a public forum to regulate it. I demand that any hearing relating to the incinerator should include both the hazardous & radioactive permits.

Thank you for your consideration.

Hilary Bennett

Frances Harron

WASTE ISOLATION PILOT PLANT

A Research and Development Facility of the U.S. Department of Energy

PUBLIC LAW 96-164

OVERVIEW

The Waste Isolation Pilot Plant (WIPP) is a research and development project of the Department of Energy (DOE) that is designed to demonstrate the safe disposal of transuranic radioactive waste. This unique project was authorized by the U.S. Congress in response to the national need for long-term, safe methods for disposing of radioactive by-products from our defense programs. Public Law 96-164 appropriated funds for WIPP activities and defined the mission of this important project.

The official title of Public Law 96-164 is "Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1980." At the time that it was enacted its principal purpose was to specify the dollar amounts authorized to fund defense nuclear activities such as those at Hanford, Washington and Oak Ridge, Tennessee. It also appropriated funds to support the WIPP Project activities for fiscal year 1980.

Congress included language in the act that described the role of the WIPP Project. This language established three significant aspects of the Project: (1) it defined the Project in such a fashion as to exclude the WIPP from Nuclear Regulatory Commission licensing, (2) it defined the Project's mission, and (3) it provided for consultation and cooperation between the DOE and the State of New Mexico.

OUR "DEFENSE" ROLE

The defense nuclear activities of the federal government have operated independent of civilian licensing authorities for more than 40 years. In fact, the defense activities existed well before the commercial nuclear power industry was established. To maintain this policy, Section 210 of the Act is entitled "Restriction on Licensing Requirement for Certain Defense Activities and Facilities." The Section reads:

> None of the funds authorized to be appropriated by this or any other Act may be used for any purpose related to licensing of any defense activity or facility of the Department of Energy by the Nuclear Regulatory Commission.

Subsequently, Paragraph (a) of Section 213 states, "Notwithstanding any other provision of law, the Waste Isolation Pilot Plant is authorized as a defense activity of the Department of Energy . . ." This language and the fact that the WIPP authorization was included in the act clearly denote Congress' intent that the WIPP Project was not subject to NRC licensing.

Input - Packer Strong

RECEIVED

JUL 13 1989

HAZARDOUS WASTE SECTION

WIPP MISSION

The mission of the Project also is described in Paragraph (a) of Section 213. WIPP would have ". . . the express purpose of providing a research and development facility to demonstrate the safe disposal of radioactive wastes resulting from the defense activities and programs of the United States . . ."

The Project has carried out this mission by designing and implementing a two-fold program. One major activity is the conduct of an integrated research program designed to study the characteristics of the host salt rock and how it could interact and safely contain the canisters of radioactive wastes. The other is a production-scale program to demonstrate, for a period of 5 years, that TRU wastes can be safely packaged, certified, load-managed, transported, processed and stored in a deep bedded salt formation. During this period, the TRU wastes will be stored in a manner that they can be retrieved and removed from WIPP. Following a satisfactory demonstration period, and a showing of compliance with all applicable regulations and DOE Orders, the facility could continue to operate as a disposal facility for defense TRU wastes.

CONSULTATION AND COOPERATION

The provision for consultation and cooperation between the DOE and the State of New Mexico is described in Paragraph (b) of Section 213. This section requires that the DOE and the State of New Mexico cooperate to resolve any concerns the state may have about public health and safety. Both parties are further required to execute a written agreement which specifies: procedures and time limits for the DOE to receive, resolve and act upon recommendations made by the State of New Mexico; and procedures for periodic review and modification of the agreement. The original agreement was signed in July 1981.

In 1979, New Mexico established the Environmental Evaluation Group (EEG). The EEG's purpose is to perform an independent, technical evaluation of the WIPP Project with respect to potential radiation exposure for people or environmental degradation in the Delaware Basin of southeast New Mexico.

Currently, the EEG has seven full-time personnel located in Carlsbad. Their work includes establishing an independent radiation baseline by analyzing air, water and other environmental samples. The EEG will provide an independent review with the intent of assuring the State of New Mexico that the WIPP Project will be managed in a safe and environmentally sound manner.

Would your Club or Organization like to hear a talk on this subject?
Contact our Speakers Bureau. (505) 885-8883

Additional information can be obtained by contacting:

U.S. Department of Energy
Office of Public Affairs
WIPP Project Office
P.O. Box 3090
Carlsbad, N.M. 88221
Telephone (505) 887-8117

Westinghouse Waste Isolation Division
Public Affairs
WIPP Project
P.O. Box 2078
Carlsbad, N.M. 88221
Telephone (505) 885-8883

Revised 3/7/89

Waste Isolation Pilot Plant (WIPP) - Supplement to the Environmental Impact Statement (SEIS) Santa Fe, June I5/I6

I could repeat many of the things which others at this hearing have expressed as seriuos concerns. As they are my concerns also. I will restate in my own words many of those same concerns later in my written testimony.

In this brief oral presentation I would like to bring out several points which may or may not have been brought out today in these hearings.

I. The DOE'S WIPP project under Public Law 96-I64 must be changed by congress so that it does not exclude the nuclear regulatory commission from involvment in WIPP'S licensing. WIPP needs outside agencies to oversee it. Therefore all of us who are concerned about WIPP'S safety must pressure our congressmen to change P.L. 96-I64 so that the NRC, EPA, EEG, BLM, RCRA, EID,NEPA and others are fully involved in protecting us.

2. We must go to the executive branch of our government to President George Bush, who appointed Admiral James D. Watkins as head of the DOE for his administration. James D. Watkins is a member of Bush'es cabinet. It is up to president Bush to mandate to Watkins that all nuclear material handled by DOE be handled safely and properly. Bush and Watkins inherited colossal mess, decade in the making. But now Bush, with the DOE directly under him, is responsible to see that proper, safe handling of all nuclear material and waste is forth coming and that no mistakes such as WIPP are made.

   We must all write to president Bush and tell him that we expect him to see that James D. Watkins and the DOE do their job responsibly. We must tell him also that more money needs to be allocated for DOE nuclear waste disposal and less money for military build up.

3. We must send our complaints to our congressmen so that they write, amend and pass appropriate legislation that will protect us.

4. The DOE has operated its nuclear weapons production factories and waste dumps under the veil of national security which is stated in Public Law 96-I64. The DOE must not continue to be exempt from EPA standards and NRC licensing.

National security should be the concern for the physical, mental, emotional and spititual health of not only the American people but all people of the world.

Sincerely

(Peder Strong)

727 Camino Santa Ana
Santa Fe, New Mexico 8750I

C.C.-President George Bush
-Admiral James D. Watkins, DOE
-Sierra Club and NRDC
-Congress
- Representative Bill Richardson, New Mexico
-Governor Roy Romer, Colorado
-Governor Cecil Andrus, Idaho
-EIG
-EPA
-Rex Tilousi, Havasupai Tribe of Arizona
-CCNS
-Governor Garry Carruthers, New Mexico

Kate!

RECEIVED
JUL 1 0 1989
EID DIRECTOR'S OFFICE

RECEIVED
JUL 1 4 1989
AIR QUALITY BUREAU

July 12, 1989

Dear Mr. Mitzelsels,

I hope this finds you well.

Incinerating nuclear wastes makes a critical situation all the more lethal, as radioactive waste doesn't destroy by burning, and the airborne plutonium is incomprehensibly carcinogenic.

Please acknowledge that section 14-2-10 of the Air Quality Act empowers you to issue a temporary order to prevent Los Alamos from burning radioactive wastes until the state adopts standards, and do so immediately.

Thank you.

With best wishes,
Kate Jewel

compositions for modern dance and ballet

lessons in piano, improvisation, composition

accompanying, chamber music

live piano music for weddings, parties, banquets, celebrations — improvisations, blues, classical, popular

. . . a special kind of music

Dr. Kate Jewel 1655½ Canyon Road Santa Fe, New Mexico 87501 505/984-0605

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT

Date 7/12 9:57 am

To Gini

Building/Room 758-2040

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number _____ Time Called _____

MESSAGE Rose
Jonas Rene, Esq.

From Taos P.O. Box 2344
Taos, NM 87571

RE: Tues Hearing
Incineration in Los Alamos

From INFO MAILING

Building/Room

ADM 030 Issued 5/78

DEAR SIR:

I DEMAND, RESPECTFULLY BUT URGENTLY, THAT THE EID ISSUE AN EMERGENCY ORDER (BY AUTHORITY OF THE NEW MEXICO AIR QUALITY CONTROL ACT, SECTION 74-2-10) TO PREVENT THE BURNING OF RADIOACTIVE WASTE UNTIL THE STATE OF NEW MEXICO CAN ADOPT STANDARDS IN A PUBLIC FORUM TO REGULATE IT.

SINCERELY,
Dale R Caldwell
1715B SIRI DHARMA
SANTA FE, NM 87501

Q

July 13, 1989

Richard Mitzelfelt
Director, NMEID
1190 St. Francis Drive
Santa Fe, NM 87503

Dear Mr. Mitzelfelt:

As an ardent supporter of your Agency's mission, I request that you consider the prudence of tabling the LANL Radiological and Hazardous Waste Incinerator application citing the emergency provision of Section 74-2-10. There is activity at the DOE Headquarters level to invigorate the continuing work involving on-site processes of a non-burning nature. It would be of great assistence to this newly recognized development, if you enacted the emergency provision. Also, the interest of integrated regulation of radiological and hazardous wastes would be served by such an action.

I also petition you to consider the research exemption which LANL Incinerator as an unfortunate condition, and not the desired one. I urge you to consult with Colorado and Ohio to compare experiences in dealing with federal facilities and laboratories so you can obtain a clear direction on access and control as related to your Agency's responsibility for public health.

Sincerely yours,

Thomas L. Andrews

Thomas L. Andrews
814 Fayette Street
Santa Fe, NM 87501

P.O. Box 2353
Taos, NM 87571
505/758-1967

EID DIRECTOR

July 13, 1989

Richard Mitzelfelt
1190 St. Francis Drive
Santa Fe, NM 87503

Dear Mr. Mitzelfelt:

Immediately, the EID should issue an emergency order to prevent the burning of radioactive waste. It is unthinkable that LANL should be exempted from a moratorium on incinerator operations until regulations are established.

Whether the issue is hazardous waste emissions or radioactive emissions, it is in the interests, indeed, the basic human rights, of the inhabitants of this state that LANL be stopped. In a case like this where the health of the citizens is truly at stake, there should be no "grandfathering". In other words, just because LANL applied for a permit before regulations have been established, that does not mean they should be exempt from compliance ever afterwards. THEY SHOULD NOT BE ALLOWED TO OPERATE UNTIL REGULATIONS ARE MADE.

Furthermore, the very concept of putting hazardous and radioactive wates into the atmosphere is a heinous crime. Radioactive materials are not changed by combustion and indeed are even more volatile when they are released into the atmosphere.

I am appalled at the shortsightedness of these so-called experts who seek a "band-aid" solution (burning hazardous and radioactive waste) as a solution to the volume of waste to be disposed of. Such an irresponsible "solution" will cause unspeakably greater problems--FOR ALL OF US--a few years later.

In the name of your own children and grandchildren, use your influence to stop LANL from this idiotic course. Shut the incinerators down.

Most sincerely,

Sara Ransom

Sara Ransom

Dear Mr. Mitzedfelt —

July 11 '89

Supposedly, we live in a Scientific Age — it is imperative that we protect human life and well being. This means that we should not allow burning of hazardous wastes until we know what we are doing! You and EID have an important Trust! We depend on you.

Sincerely, Betty J P Berchtold

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT

Date 7/14/89

To Kelley KERN

Building/Room 1's Mansi Kern

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number 882-4990 Time Called 4:45pm

MESSAGE Lanl Permit
[illegible] - [illegible]
Up[illegible] regulations
[illegible] 142
Taos [illegible]

From

Building/Room

ADM 030 Issued 5/78

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT

Date 6/16/89

To Kelley

Building/Room

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number 758-5437 Time Called 10:50

MESSAGE Ed Grant in Taos has question about LANL incinerator

6/16/ 1145AM -
Box Los Cordovas Rte
Box 180
Taos 85 87571

From CN

Building/Room

ADM 030 Issued 5/78

7-11-89

Dear Mr. Mitzelfelt,

I'm greatly distressed to read that radioactive waste may be burned at the LANL incinerator. I fear for the health of all the inhabitants of the Rio Grande Valley. It is impermissible that incineration should occur before the public has been given the chance to insure that standards for regulation are in place. Please enact an emergency order to halt the burning of radioactive waste and insist that all hearings about the matter include all waste materials.

Signed DANA E. HEES - Santa Fe resident

STEPHEN JOSEPH ROS
ATTORNEY AT LAW
P.O. Box 2112
Taos, NM 87571
(505) 758-1290

July 11, 1989

Mr. Kelly Crossman
Environmental Improvement Division
1190 St. Francis Drive
Santa Fe, NM 87503

RECEIVED
JUL 13 1989
HAZARDOUS WASTE SECTION

Dear Mr. Crossman:

My family and I live in Taos and are very much concerned about the proposed incinerator at Los Alamos National Laboratory (LANL). Since the wind frequently blows from that direction, we are directly in the path of any emissions from a LANL incinerator and thus would be directly affected by any toxic chemical or radioactive emissions. We are concerned not only for ourselves but also for our neighbors and all persons and creatures who live near or downwind from LANL. The health and safety of all of us would be seriously risked by an incinerator which emitted <u>any</u> radioactive or other toxic waste, whether that emission was part of regular operations or of some extraordinary event or accident. Extreme caution must be exercised in the face of the extreme dangers posed by this incinerator.

The operating permit should be denied for any and all operations at the LANL incinerator until: (a) emission standards and regulations for radioactive emissions are carefully developed by the state, with adequate opportunity for public input and hearing; (b) a <u>thorough</u> and objective environmental impact statement (EIS) is prepared and published by LANL and DOE and public hearings held on it; and (c) LANL and DOE have proved, if they can, that there is no risk to the health and safety of the citizens of northern New Mexico under either normal or any conceivable circumstances.

Until such time, an emergency or other temporary order should be issued by EID forbidding the use of the LANL incinerator.

It is extremely irresponsible to permit the LANL incinerator to operate at all until the above conditions are met.

Very truly yours,

Stephen Ros

STEPHEN J. ROSE

SJR/gg

Kelley call 7/12/89 4:30pm
Della Sue Martin
POB 5688
983-2832
SF 87502
RE: LANL INCINERATOR
7/13 returned call.

RECEIVED
JUL 1 1989
EID DIRECTOR'S OFFICE

7/1/89

Dear [illegible],

I demand that the EID issue an emergency order to prevent burning of radioactive waste in the state of New Mexico!

I demand that any hearing relating to the [illegible] should include both [illegible] gas waste and radioactive [illegible] to [illegible]

Thank you,

[illegible]

707 Camino del Monte [illegible] Santa Fe 87501

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

RECEIVED
JUL 1 1989
EID DIRECTOR'S OFFICE

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

DAVID GOTTSCHALK Box 23 Llano, N.M. 587-2185 D. Gottschalk
Diane L. Sahd Diane L. Sahd Box 67 Penasco N. Mex 587-2436
Melinda A Lopez P.O. Box 116 Chamisal NMex 87521 587-2441
Alberto Cantagua Box 13 Llano NM 87543 Cantagua 587-2067
D. Albert Valdez Box 13 Vadito N. Mex 87521 587-2541
Irene Romero Box 76 Chamisal N.M. 587-2837
Laurence J. Romero Box 164 Vadito N.M. 587-2501
Lydia Angelada P.O. Box 361 Penasco, N.M. 587-27[illegible]
Agnes Romero Box 164 Vadito NM 587-2501
Juan Mascarenas Box 164 Vadito N.M. 587-2068
Cipriano G Mascarenas Box 164 Vadito N M 587-2068
Benedicto Valdez - P.O. Box 113 Vadito New Mex 505-587-2548
" " " " " " " "
Cresita M Valdez

PO BOX 1924
LAS VEGAS, NM 87701
7-11-89

DEAR MR. MITZELFELT:

I AM WRITING IN REGARD TO THE BURNING OF RADIOACTIVE WASTE IN NEW MEXICO, AND TO FIRMLY REQUEST THAT YOU HAVE THE EID IMMEDIATELY ISSUE AN EMERGENCY ORDER TO PREVENT THIS BURNING. SPECIFICALLY IN LOS ALAMOS WHERE SUCH AN INCINERATOR OPERATES UNDER A SO-CALLED RESEARCH PERMIT.

YOU AND I BREATHE THE SAME AIR — AND SOME OF IT DRIFTS OVER FROM LOS ALAMOS. I DON'T WANT CANCER, AND I DON'T WANT MY CHILDREN TO DEVELOP IT, AND I'M SURE YOU DON'T WANT TO INHALE CARCINOGENS EITHER. THANK YOU.

YOURS RESPECTFULLY, Virginia Marquez

Dear Mr. Mitzelfelt: July 10, 1989

We find it TOTALLY UNACCEPTABLE that there is no emergency restraint on the LANL burning of radioactive wastes. As taxpayers and citizens, we insist that this burning cease until there are proper standards of control.

Dan Tyson
Hannah Tyson

RECEIVED
JUL 14 1989
EID DIRECTOR'S OFFICE

PO Box 15178
Santa Fe, NM 87506
July 11, 1989

RECEIVED
JUL 14 1989
AIR QUALITY BUREAU

Richard Mitzelfelt, Director
Environmental Improvement Division
1190 St. Francis Drive
Santa Fe, NM 87503

Dear Mr. Mitzelfelt:

It is my understanding that the Los Alamos National Laboratories is applying for a final permit to burn radioactive and hazardous chemical waste.

I would like to register my protest against the issuance of this permit until regulations are written controlling the emissions in question, and LANL can be shown to comply. Radioactive materials are not changed by fire, and are in fact most volatile when released into the atmosphere. One millionth of a gram of plutonium absorbed into the lungs creates a 50-50 chance of developing cancer. Dioxins, which will also be released by this plant are also extremely toxic - the standard for these emissions are 30 trillionths of a gram per cubic meter of air. I remember at the last hearing that was held for LANL's proposed municipal waste incinerator, there were not standards in place to govern the emission of dioxins, an omission I found incredible and atrocious.

The fact that LANL is currently operating its incinerator under a "research permit" is a gross violation of the public trust, if not the letter of the law. To issue a full production permit without any standards to regulate radioactive emissions is irresponsible, if not criminal, in my opinion, and will seriously erode any credibility to which your agency may now legitimately lay claim. How can an organization which is called the Environmental Improvement Division conscience the unregulated release of these toxic substances into the air we breathe. Is not it your responsibility to ensure that the public health and safety is being protected.

As a citizen of this beautiful enchanted and enchanting land, I must demand that EID do its job and issue an emergency order (by authority of the New Mexico Air Quality Control Act, section 74-2-10) to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. The public hearings you have scheduled for July 18 are premature until both hazardous and radioactive regulations can be considered to legally apply.

Sincerely,

Joe Landwehr

Joe Landwehr

STEPHEN JOSEPH ROS
ATTORNEY AT LAW
P.O. Box 2112
Taos, NM 87571
(505) 758-1290

RECEIVED
JUL 13 1989
EID DIRECTOR'S OFFICE
RECEIVED
JUL 14 1989
AIR QUALITY BUREAU

July 11, 1989

Mr. Richard Mitzelfelt, Director
Environmental Improvement Division
1190 St. Francis Drive
Santa Fe, NM 87503

Dear Mr. Mitzelfelt:

My family and I live in Taos and are very much concerned about the proposed incinerator at Los Alamos National Laboratory (LANL). Since the wind frequently blows from that direction, we are directly in the path of any emissions from a LANL incinerator and thus would be directly affected by any toxic chemical or radioactive emissions. We are concerned not only for ourselves but also for our neighbors and all persons and creatures who live near or downwind from LANL. The health and safety of all of us would be seriously risked by an incinerator which emitted <u>any</u> radioactive or other toxic waste, whether that emission was part of regular operations or of some extraordinary event or accident. Extreme caution must be exercised in the face of the extreme dangers posed by this incinerator.

The operating permit should be denied for any and all operations at the LANL incinerator until: (a) emission standards and regulations for radioactive emissions are carefully developed by the state, with adequate opportunity for public input and hearing; (b) a <u>thorough</u> and objective environmental impact statement (EIS) is prepared and published by LANL and DOE and public hearings held on it; and (c) LANL and DOE have proved, if they can, that there is no risk to the health and safety of the citizens of northern New Mexico under either normal or any conceivable circumstances.

Until such time, an emergency or other temporary order should be issued by EID forbidding the use of the LANL incinerator.

It is extremely irresponsible to permit the LANL incinerator to operate at all until the above conditions are met.

Very truly yours,

STEPHEN J. ROSE

SJR/gg

WINTERHAWK PRESS
615 CALLE GRILLO
POST OFFICE BOX 5314
SANTA FE, NEW MEXICO 87502
(505) 988 - 1950

RECEIVED
JUL 14 1989
AIR QUALITY BUREAU

July 11, 1989

RECEIVED
JUL 18 1989
EID DIRECTOR'S OFFICE

Mr. Richard Mitzelfelt, Director
New Mexico Environmental Improvement Div.
1190 St. Francis Drive
Santa Fe, NM 87503

Dear Mr. Mitzelfelt,

I am writing you regarding the upcoming hearing for the Los Alamos National Laboratories Waste Incinerator.

I am strongly opposed to the operation of this facility in any way, shape or form! I therefor request that you and your department issue an emergency order to prevent burning of radioactive wastes at this or any other facilityuntil the State can adopt concientious standards in a public forum. I further request that any hearings related to the incinerator should include both the hazardous waste and radioactive waste permits. If this facility is allowed to operate without these safeguards I will hold you personally responsible for the resulting pollution, illness, and death!

I hope that you will demonstrate the concientious responsibility placed in you by the public trust.Thank you for your consideration.

Sincerely,

Daniel Owsiany

Daniel Owsiany
cc: CCNS, Governor Garry Carruthers

As Dir. of the Environ. Improvement Div., I am sure you must be in favor of New Mexico's not being a place where radioactive wastes are burned. The air quality in New Mexico looks the best in the world, as a person who lives here I hope it continues to be the best.

Jul 10, 89

Bolling Lowrey
1019 San Lorenzo Dr.
Santa Fe

Dear Mr Mitzelfelt.

Regarding the hazardous waste problem at Los Alamos - Please issue an emergency order to prevent burning until standards can be met - both radioactive & hazardous waste permits -

Thank you
[illegible]

Department of Energy
Albuquerque Operations
Los Alamos Area Office
Los Alamos, New Mexico 87544

JUL 10 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. Kelley Crossman
Hazardous Waste Bureau
Environmental Improvement Division
1190 St. Francis Drive
Santa Fe, NM 87503

Dear Mr. Crossman:

Thank you for your letter of June 1, 1989, furnishing us a copy of the revised public notice concerning the draft RCRA operating permit for the Los Alamos National Laboratory and the public hearing on the permit scheduled for July 18, 1989.

We intend to answer all relevant comments posed at the hearing in writing as soon as possible following the close of the hearing. We also have a number of comments on the draft permit which will be submitted in writing for the record.

Sincerely,

Harold E. Valencia
Area Manager

cc:
John M. Puckett, HSE-DO, MS-K491
Sheila E. Brown, LC, MS-A187

RECEIVED
JUL 11 1989
HAZARDOUS WASTE SECTION

July 10 1989

Hazardous Waste Bureau
Santa fe. 87503

RECEIVED
JUL 1 1 1989
HAZARDOUS WASTE SECTION

Mr Crossman,

I am writing to state my opposition to the plan for Los Alamos National Laboratories to burn radioactive and hazardous chemical waste.

- It would be dangerous and hope this application from LANI will be stopped

JANE MINGENBACH
Jane Mingenbach
~~Box 49~~
~~Los, N.M~~
~~87571~~

MEMORANDUM OF MEETING OR CONVERSATION

✓ Telephone ☐ Personal	Time 3:26	Date 7/10/89
Originating Party		Other Parties
[redacted]		A E Gordon
~~968-8683~~		CK Grossman

Subject: LANL draft permit

Discussion: What is purpose of July 18 meeting?

Can citizens make comments? Sign-up sheet

Who is the hearing officer? Wayne Youngblood

Radiation Technical Council advising EIB
Has the council enacted any reg's for radioactive wastes? Told him you would call him back

Tried to explain mixed, NRC + fed fac; air quality presently working on standards, etc.

Conclusions or Agreements

Please call him back re. issuing a permit when air quality has no state standards at this time.

Distribution

Signed A E Gordon

209 Ojo de la Vaca
Sante Fe, NM 87505
July 10, 1989

RECEIVED
JUL 1 9 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt, Director
Environmental Improvement Division
1190 St. Francis Drive
Sante Fe, NM 87503

Dear Mr. Mitzelfelt:

I am writing to urge you to take a leadership stand to prevent the burning of radioactive waste.

On behalf of our health and safety I urge you to call for an emergency order under Sect 74.2.10 of NM Air Quality Control Act to halt all such burning.

Radioactive & hazardous permits should also be heard at public hearing relative to the incinerator.

Thank you for your leadership in this area of concern. This is a crucial

matter affect ig all of u who live in and love New Mexico + deserve happy, healthy lives.

Sincerely,

Susan Mikulka

RECEIVED
JUL 11 1989
EID DIRECTOR'S OFFICE

HUGH K. JENNINGS
[redacted]
[redacted] 87501

10 July 1989

Mr. Richard Mitzelfelt
Director, Environmental Improvement Division

Dear Sir:

I am a retired nuclear engineer from Los Alamos, having been a staff member there for twenty five years. I write to urge you to deny to LANL the permit to incinerate hazardous waste at their site. A new era of concern for public health and safety has arrived, and is long overdue. For many years this concern had low priority in DOE, as they admit, as compared to "national security".

In recent years the incineration of radioactive, hazardous, and municipal waste has gained popularity, with disastrous results. Some results of the industrial incineration of hazardous waste are summarized by the Citizens Clearing House for Hazardous Waste, Inc., PO Box 926, Arlington, VA 22216. They list 32 industrial sites as examples of the failures of this technology. This list includes accounts of violations of regulations, fires, explosions, spills, threats to public health and general mismanagement. Their findings are summarized in a guidebook: Hazardous Waste Incineration, The Burning Issue.

Recently Livermore National Laboratory proposed a huge incinerator of toxic and radioactive waste, which would generate two million pounds of radioactive ash each year. Fortunately the residents of the area persuaded enough public officials, including California congressmen, to deny the laboratory's proposal.

Los Alamos National Laboratory has a very checkered past in the management of waste disposal. I refer you to an investigative report in the Albuquerque Journal, starting 7 Oct 1979, a series of eight articles. These detail a history of confused regulations, spills, and

leaks of radioactive materials, both planned and unplanned. They document contamination into the Rio Grande, the soil, and the air of these materials. This account gives me great doubt about LANL's abilities and philosophies about waste management.

I would appreciate your including these comments in the proceedings of the hearing on the incineration permit, scheduled for 18 July 1989.

Sincerely yours,

[redacted]

Retta Richards
RR Rt 4 Box 1JC
Santa Fe, NM 87501

RECEIVED
JUL 10 1989
EID DIRECTOR'S OFFICE

Dear Mr. Mitzelfelt,

I hope you will act on behalf of the many citizens who are alarmed that the state has no regulation on radioactive emissions and that the state is allowing LANL to procede without <u>any</u> regulations, whatsoever.

This is especially alarming now that we are all seeing the naiwete + dangerous incaution that has surrounded the containment + storage of radioactive waste since it came into existence.

I wish you clear thinking and courage.

Please check the Air Quality Act Section 74-2-10 to clarify your action.

Rt 4 Box 15C Santa Fe, N.M. 87501

1/10/89

~~Please table the~~
~~gas control ordinance~~
Please do not allow the incinerator at Los Alamos until they have been proved safe

H Brown

Radioactive Questions

Mrs. Patricia Ranker

579-4606

Kelley Crossman

Concerned w/ LANL PERMIT - AS it related to Radioactive Incineration and who she can talk to about Source specific standards in-lieu of property boundaries

GROVE T. BURNETT
ATTORNEY AT LAW

(505) 757-8408

RT. 1, BOX 9-A
GLORIETA, NM 87535

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT

Date 7/18/89

To Kelley
Stephanie Shirl

Building/Room

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number _____ Time Called 8:15 Am

MESSAGE

OPPOSED TO [illegible] INCINERATOR STARTING BACK up again.

From

Building/Room

ADM 030 Issued 5/78

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT

Date 7/7

To Kelley

Building/Room

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number _____ Time Called _____

MESSAGE

PEDER STRONG
~~PA~~ (PA'DER)

Called to see how to make public comment on LA incinerator
988-2931

From

Building/Room

ADM 030 Issued 5/78

Dave

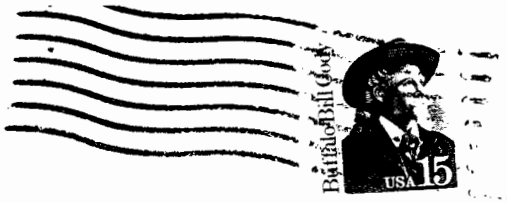
July 9, 1989

Dear Director of the Environmental Improvement Division (EID)

Please, do demand that EID issue an emergency order to prevent the burning of radioactive waste (by authority of the N. M. Air Quality Control Act, Section 74-2-16). I also request that any hearings relating to the incinerator should include the hazardous waste and radioactive permits. Sincerely,

6-9-89

Letter from Zuni Pueblo children to protest nuclear technology and its implications for the nation and the earth.



© 1989, Michel Monteaux

Dear Sir:

Please use everything in your power to implement an emergency order (Section 74-2-10 of the New Mexico Air Quality Control Act) to prevent the burning of hazardous waste in this state until regulatory standards can be developed publicly. Hearings should include both hazardous waste and radioactive permits.

Very truly yours,

Jo Randall

RECEIVED
JUL 1 0 1989
EID DIRECTOR'S OFFICE

Santa Fe Medical Associates
422 Medico Lane • Suite C • Santa Fe, New Mexico 87501 • (505) 988-5551

July 9, 1989

State of New Mexico
Environmental Improvement Division
Richard Mitzelfelt, Director
1190 St. Francis Drive
Santa Fe, NM 87503

RECEIVED
JUL 1 4 1989
AIR QUALITY BUREAU

Mr. Mitzelfelt:

The burning of both toxic and radioactive waste at the Los Alamos National Lab is a public health issue of great personal and professional concern to me.

As a citizen and a doctor, I implore you to issue an emergency order (by authority of the New Mexico Air Quality Act, section 74-2-10) to prevent the burning of radioactive waste until the State of New Mexico can adopt stringent standards in a public forum to regulate such burning.

Furthermore, I call on you to work to make any hearing on the incinerator at LANL relate to both the burning of hazardous waste *and* radioactive materials.

Sincerely,

Dr. Celeste Skardis

July 9, 1989

RECEIVED

JUL 11 1989

HAZARDOUS WASTE SECTION

Mr. Crossman,

I write in reference to proposed hazardous waste incinerator for Los Alamos Nat. Labs. The first best choice for such waste, in my view is to reduce production.
According to studies I have read, incineration is not a viable alternative because:
1) Incineration of various materials together creates new chemical combinations with dangerous properties
2) It spreads these materials over vast areas and they fall where they may fall - no doubt some upon my small farm, and upon the watershed from which my family will continue to require safe drinking water for years to come.
3) Of course the very toxic ash will present its own set of problems.

Ours is a finite and complicated world as I'm sure you're aware. Air borne emissions do not disappear on the wind. Radioactivity from the Chernobyl incident was detected in Santa Fe nine days afterwards. Sure, we can survive these onslaughts to the pure world God gave us, but for how long. The time has come to reduce emphasis on 'Standard of Living' and replace it with a better standard: 'Quality of Life.'

(over)

Roger N. Lerman
P. O. BOX 190
EL PRADO, N. MEX. 87529
(505) 758-0710

RECEIVED
JUL 1 1989
EID DIRECTOR'S OFFICE

July 9, 1989

Richard Mitzelfelt
Director, EID
1190 St. Francis Drive
Santa Fe, NM 87503

Dear Mr. Mitzelfelt:

I am registering my concern about the proposed burning of radioactive waste by Los Alamos Laboratory. I am requesting that EID issue an emergency order to prevent the proposed Los Alamos toxic waste incinerator, and that any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

I plan to attend the July 18th hearing at the Harold Runnels Building in Santa Fe.

Prayers for a cleaner environment,

Roger N. Lerman

July 9, 1989

RECEIVED
JUL 11 1989
EID DIRECTOR'S OFFICE

Mr. Richard Mitzenfelt,

I write in reference to the proposed hazardous waste incinerator for Los Alamos Nat. Labs. The first best choice for such waste in my view is to reduce production. As I see it, incineration is not a viable alternative because:

1) Incineration of various materials together creates new chemical combinations - w/ dangerous ~~and~~ in properties
2) Incineration spreads hazardous waste over vast areas - no doubt some will settle on my small farm and upon the watershed from which my family will continue to require safe drinking for years to come.
3) Of course the toxic ash will need to be disposed of.

→ Ours is a finite and intricately interconnected world as I am sure you are aware. Airborn emissions do not disappear on the wind. Sure we can survive these onslaughts to the pure world God gave us, but for how long? The time has come to reduce emphasis on 'Standard of Living' and replace it with a better standard 'Quality of Life'. What good are all the amenities of 20th Century life if the water we drink is carinogenic. I ask you sir, to take a stand on this issue that may be politically difficult. Please reject the LANL incineration permit. Please send me a note on your thoughts on this issue.

- Mark Schuetz

JUL 1989
EID DIRECTOR'S OFFICE

Santa Fe Medical Associates
422 Medico Lane • Suite C • Santa Fe, New Mexico 87501 • (505) 988-5551

July 9, 1989

State of New Mexico
Environmental Improvement Division
Richard Mitzelfelt, Director
1190 St. Francis Drive
Santa Fe, NM 87503

Mr. Mitzelfelt:

The burning of both toxic and radioactive waste at the Los Alamos National Lab is a public health issue of great personal and professional concern to me.

As a citizen and a doctor, I implore you to issue an emergency order (by authority of the New Mexico Air Quality Act, section 74-2-10) to prevent the burning of radioactive waste until the State of New Mexico can adopt stringent standards in a public forum to regulate such burning.

Furthermore, I call on you to work to make any hearing on the incinerator at LANL relate to both the burning of hazardous waste *and* radioactive materials.

Sincerely,

Dr. Jonas Skardis

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

July 8, 1989

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

Malcolm Martinez PO Box 1661 El Prado NM 87529
Manuel Trujillo PO Box 82 El Prado NM 87529
Catherine Mapes Box 18 Taos 87571
Christine Santistevan Box 954 Ranchos 87557
J. B. Ball P.O. Box 2863 Taos 87571
Ann Allen PO Box 669 Ranchos de Taos 87557
Mr & Mrs Ben Ortega Embudo NM
Eileen Lopez Ranchos NM 87557
Moses Muniz Box 6584 Las Cruces Rd Taos NM 87571
Lucille Graves Box 6524 Taos New Mexico 87571
Sharon Henry P.O. Box 2925 TAOS NM 87571
Kyle Henry P.O. Box 2925 TAOS, NM. 87571
[illegible] Sen'l delivery TAOS 87571
[illegible] [illegible] Taos 87571

July 8, 1989

RECEIVED
JUL 11 1989
EID DIRECTOR'S OFFICE

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

Katherine Pettus PO Box 2430 Taos NM 87571
Dana Weidlette Box 744 El Prado 87529
Lucille Quintana Box 6353 Taos 87571
Joel Kunitz P.O. Box 2641 Taos 87571
N. Lanoff P.O. Box 2641 Taos 87571
Johnny Spicer Gen Del. Taos
Judith Gatlin PO Box 557 El Prado
[illegible] P.O. Box 3271 Taos NM 87571
Susann McCarthy P.O. Box 1511 Taos NM [illegible]
Elizabeth A. Thomas PO Box 1434 Santa Fe, NM 87501
[illegible] Box 6[illegible] Taos N.M. 87571

[redacted]
July 8, 1989
[redacted]501

RECEIVED
JUL 11 1989
EID DIRECTOR'S OFFICE

RECEIVED
JUL 11 1989
EID DIRECTOR'S OFFICE

Mr. Richard Mitzelfelt, Director
Environmental Improvement Division
1190 St. Francis Drive
Santa Fe, N.M. 87503

Dear Mr. Mitzelfelt,

Learning of the public hearing on July 18, I feel impelled to write to tell you that the people I know in Santa Fe do not want to have any waste incinerated by the Los Alamos Lab.

We do not want the EID to issue any permit for incinerating any toxic waste into our air and water.

We are disturbed that Los Alamos has been exempt from State regulation in view of the abysmal record of the DOE and the NRC in protecting public health and safety.

We understand that Los Alamos Laboratory has already incinerated radioactive waste without informing the public,and we feel that any permit to incinerate is a foot in the door for the lab to ignore public health and safety.

We need much more public input into the regulatory process.
We appreciate your efforts in this matter. Please include this letter in the hearing record.

Sincerely,
Mary G.P. Hall
Mary G.P.Hall

July 8, 1989

RECEIVED
JUL 1 1 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt
Director, EID
1190 St. Francis Drive
Santa Fe, NM 87503

Dear Mr. Mitzelfelt:

I am registering my concern about the proposed burning of radioactive waste by Los Alamos Laboratory. I am requesting that EID issue an emergency order to prevent the proposed Los Alamos toxic waste incinerator, and that any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

I plan to attend the July 18th hearing at the Harold Runnels Building in Santa Fe.

PRAYERS FOR A CLEANER ENVIRONMENT,

Name: Roberta Lomnet
Address: Box 196
El Rito, N.M.
Phone: 758-0716

RECEIVED

JUL 13 1989

HAZARDOUS WASTE SECTION

JULY 8, 1989
P O BOX 1439
TAOS,
NEW MEXICO
87571

DEAR MR. CROSSMAN,

I AM HAPPY TO HAVE YOUR ADDRESS, WHICH I OBTAINED FROM THE LOCAL TAOS NEWSPAPER.

I WISH TO EXPRESS MY DISCOMFORT WITH THE USE OF A POLLUTING INCINERATOR IN LOS ALAMOS. THIS MAY NOT BE EVERYONES' DISCRIPTION, BUT IT IS MINE, AND ALTHO I WISH TO REMAIN OPEN — I THINK IT IS UNLIKELY THAT I COULD BE CONVINCED THAT THE LANL INCINERATOR COULD EVER BE A SAFE FORM OF DEALING WITH HAZARDOUS WASTE.

I AM AGAINST ITS USE AT ANY TIME; AND CERTAINLY FEEL THAT IT SHOULD NOT BE USED UNTILL, AT LEAST, THERE IS SOME HUMANE REGULATIONS ESTABLISHED TO CONTROL IT.

THANK YOU,
PETER WOOD

June 27 - July 8, 1989

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alomos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

EDWARD J. VISARRAGA P.O. Box 41 Peñasco, N.M. 87553 Edward J. Visarraga

Shirley Roybal P.O. Box 283 Penasco, N. Mex. 87553 Shirley Roybal

Cecilia Gonzales P.O. Box 307 Penasco, N.M. 87553 - Cecilia Gonzales

SUZANNE LOPEZ P.O Box 302 Penasco NM 87553

Kim Oraver 124 H. Paul St Taos, N.M. 87571 Kim Oraver

Elizabeth Romero Box 5701 El Prado NM 87514

(PAMELA PINO GUTIERREZ)
Pamela Gutierrez Box 6251 Taos NM 87571

Carolyn Daniel P.O. Box 2923 Taos, N.M. 87571

Jeffrey Gabert Box 150 Penasco NM 87553

Carolyn Clark Box 1 Llano NM 87543

June 27 - July 8 1989

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

1. Annabelle Fresquez - Chamisal NM, Annabelle Fresquez
2. Theresa Vigil - Penasco NM - Theresa Vigil
3. Ed Cart - Penasco, NM
4. Lillian R Lopez Rubert NM
5. Nemesio Duran Jaramillo
6. Sandra L. Gonzales P.O. Box 19 Llano, NM
7. John O Pinto P.O. Box - 845. Taos N.M.
8. Lou [illegible] P.O. 116 Taos
9. Rosanna Padilla P.O. Box 510 Taos, NM
10. Kathleen Prewitt. P.O. 845 Taos NM
11. Sabina Vigil P.O. 360 Penasco NM
12. Joanne Lopez P.O. Box 2822 Taos, NM 87571
13. [illegible] Box 852 El Prado NM

June 27 - July 8 1989

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

1. Caralinz Gray Wolf Llano Journado
2. Katherine Loge Gen. Del Llano NM 87543
3. Robert Harnesberger POB 691 Taos, NM 87571
4. Jim Stoner Ranchos de Taos, NM. 87557
5. Marie Bessette Rt. 2 Box 138 Taos, N.M 8757,
6. Phil Brither 29 Encantado Way, Santa Fe, NM 87507
7.
8.
9.
10
11.
12.
13.

July 8, 1989

RECEIVED
JUL 10 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt
Director, EID
1190 St. Francis Drive
Santa Fe, NM 87503

Dear Mr. Mitzelfelt:

I am registering my concern about the proposed burning of radioactive waste by Los Alamos Laboratory. I am requesting that EID issue an emergency order to prevent the proposed Los Alamos toxic waste incinerator, and that any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

I plan to attend the July 18th hearing at the Harold Runnels Building in Santa Fe.

PRAYERS FOR A CLEANER ENVIRONMENT,

Virginia Quinn

Virginia Quinn
P.O. Box 1834
Taos, NM 87571
(505) 758-3963

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

July 8, 1989

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

Mary C. Dill Box YYY TAOS NM 87571

Evelyn Shirk P.O. Box 919 El Prado NM 87529

[illegible] Mendez P.O. Box 2062 TAOS N.M. 87571

Marc Gray PO Box 705 TAOS N.M 87571

Catherine Kennedy PO Box 3013 Taos NM 87571

Edith C. Whitson P.O. Box 2831 Taos NM 87571

Ken Benoit PO Box 8740 Santa Fe NM 87504

Brian O'Donnell P.O. Box 1101 Ranchos de Taos, N.M. 87557

Christine Trout PO Box 1353 Ranchos de Taos 87557

Rose C. Pacheco Box 6558 TAOS NM 87571

Paul Trujillo Box 3236 Taos, N.M. 87571

Anna Trujillo " "

[illegible] Box 5807 Taos N.M. [illegible]

Michael Trujillo Box 1202 Ranchos de Taos

MEMORANDUM OF MEETING OR CONVERSATION

✓ Telephone ☐ Personal | Time 11:25 a.m. | Date 7/7/89

Originating Party	Other Parties
Mary Hall	AE Gordon
Hugh Jennings	

Subject
LANL incinerator

Discussion
main questions
1) who has jurisdiction over the hazardous waste? over radioactive
2) LANL – concern over their incineration of radioactive wastes.

~~Mary A.P. Hall~~
~~[illegible], NM~~ / SF NM ~~87507~~
983-8342

Hugh Jennings
same address

Conclusions or Agreements
Suggest they have handouts on who has jurisdiction over what

Distribution

Signed AEGordon

Pot Creek Box 6
Ranchos de Taos, NM 87557
July 7, 1989

RECEIVED
JUL 10 1989
EID DIRECTOR'S OFFICE

Dear Mr. Mitzelfelt;

We strongly oppose the permission given to Los Alamos Incinerator to operate before the State of NM has adopted any standards for regulation of radioactive emissions. We feel it is imperative that EID issue an emergency order to prevent the burning of radioactive waste until regulations have been adopted in a public forum. Furthermore, any hearing relating to the incinerator should include both the hazardous wastes and radioactive permits.

We do not want our air ruined by toxics and radionuclides. It is the only air we have.

Sincerely,
C Jameson Wells

July 7, 1989

RECEIVED
JUL 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt, Director EID
1190 St. Francis Dr.
Santa Fe, N.M. 87503

Dear Sir:

I understand that you have the authority, under the New Mexico Air Quality Act, to prevent the burning of radioactive waste until regulation standards can be adopted.

It is imperative for the health and safety of all New Mexicans -- and our environment--that you include not only hazardous waste, but radioactive waste as well in your hearings since they are both very dangerous to plants, animals and humans; certainly, radioactive waste has even far greater ramifications, since it can remain in the environment for centuries!

It is my understanding that it takes only one millionth of a gram of plutonium in my lungs to give me a 50/50 chance of getting cancer and with a history of cancer in my family, my chances could even be higher--a chance I do not wish to take.

Please issue an emergency order (under section 74-2-10 of the Air Quality Act) to prevent all burning of radioactive waste, until standards can be adopted to regulated such burning. This certainly sounds like the sane, responsible thing to do, wouldn't you agree? We are playing with very dangerous toys, Mr. Mitzelfelt and we must make sure we do not further endanger our environment--we have enough toxins and pollutants to deal with already!

Finally, why is the Los Alamos incinerator exempted from any future regulations--it sounds like a copout to me. Since they will be burning toxins and radioactive wastes, surely regulations are needed!

Sincerely,

Rosemary Lowe

Rosemary Lowe, M.A.
104 La Placita Circle
Santa Fe, N.M. 87501

STATE OF NEW MEXICO — HEALTH & ENVIRONMENT

Date 7-7-89

To Kelly

Building/Room

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number NO # Time Called 2:55

MESSAGE Nancy Gilbert Taos
on your mailing list -
is planning to come to 18th
rounding up several others from T.
Wanted to be sure hearing
still on.
I told her yes

From ~~NO #~~ Sylvia

Building/Room

ADM 030 Issued 5/78

STATE OF NEW MEXICO — HEALTH & ENVIRONMENT

Date 7-6-89

To Kelly

Building/Room

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
- ☐ Please See Me
- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number 988-5541 Time Called 2:30 pm

MESSAGE Keith Einthouse / Int Reg
wants to meet w/ you on
Mon, July 10th, 30 min.
interview, on mix waste
incin. FRIDL

From Veronica

Building/Room

ADM 030 Issued 5/78

July 10, 1989

Dear Mr. Mitzelfelt,

We urgently request that the EID issues an emergency order to prevent incineration of radioactive waste to close the present loop-hole in New Mexico Law. This order must prevent a most serious problem until the State can adopt standards in a public forum. Public hearings must include both radioactive and hazardous waste permits standards.

Yours truly

Eleanor Leighton

3024 Plaza Blanca, Santa Fe, NM 87505

MEMORANDUM OF MEETING OR CONVERSATION

Telephone ☐ Personal	Time 3:35	Date 7/6/89
Originating Party		Other Parties
Michael Freeman, [redacted], Box 364 988-4764		
[redacted]		

Subject
LANL incineration of radioactive

Discussion
emergency order should be issued prevent burning of radioactive waste until state can adopt standards

Why isn't the radioactive component being addressed at this time. He understands at this time that LANL plans to burn both

Would like these questions answered. He is sending a letter

Conclusions or Agreements

Distribution
CKC

Signed A.P. Gordon

RECEIVED
JUL 10 1989
EID DIRECTOR'S OFFICE

Priscilla Logan
Rt 2 Box 305-62
Santa Fe NM
87505

July 6, 1989

Dear Mr. Mitzelfelt,
The Los Alamos Incinerator needs to have total hazardous waste and radioactive waste regulations safety standards developed by the state NOT DOE. We the people do not trust DOE. We want to trust EID so please prevent any further burning of radioactive waste until New Mexico can adopt

MEMORANDUM OF MEETING OR CONVERSATION

✓ Telephone ☐ Personal	Time	Date 7/5/89
Originating Party		Other Parties
A L Gordon EID		Leona Luba 989-9060

Subject: LANL

returning her call of 7/3/89

Discussion: registered a comment re. hearing of July 18, 1989.

1) demand that Laing included hazardous + radioactive wastes / permits

2) emergency order from EID to prevent the burning of radioactive waste until the state adopts standards in a public forum.

Conclusions or Agreements

Will be sending a letter with above requests to Kelley

Distribution

CKC

Signed A L Gordon

MEMORANDUM OF MEETING OR CONVERSATION

Telephone ✓	☐ Personal	Time 4:40	Date 9/5/89
Originating Party		Other Parties	
Keith Easthouse		AEGordon	

Subject: LANL incinerator - radioactive incinerator

Discussion: Keith Easthouse
Santa Fe Reporter

188-5544

Told him to call back on the 10th and talk with you. They come out weekly July 12. night work

Told incinerator was also for haz. waste.

Conclusions or Agreements

Distribution: CKC

Signed: AEGordon

MEMORANDUM OF MEETING OR CONVERSATION

✓ Telephone ☐ Personal	Time 9:40 a.m.	Date 7/5/89
Originating Party		Other Parties
[redacted] 685-4419		AE Gordon
[redacted]		

Subject
LANL incinerator
regulation of radioactive waste

Discussion
terrible affected by Tejico; nature father doctor
1) Here they burned radioactive + hazardous waste? that is a shock to her
2) Who monitors the particles emitted by these incinerator.

→ Please call to answer this questions
She's at home in the afternoon

Conclusions or Agreements

Distribution
CKC

Signed AEGordon

MEMORANDUM OF MEETING OR CONVERSATION

✓ Telephone	☐ Personal	Time 3:46	Date 7/5/89
Originating Party		Other Parties	
Elizabeth Gillupse		AE Gordon	
986-1973		EID	

Subject: LANL Incinerator

Nov 19, 1980

Discussion: When was incinerator built & given IS-?
Don't know age of incinerator; have been told it has burned radioactive since mid-1970
Who warns of public if there is a release that endangers the general populace? sent her reg's re. release to off site for bxd permitted and interim status facilities
Sent her flyers on RCRA and haz waste incineration

712 Calle Grullo 87501

Conclusions or Agreements

Distribution: CKC

Signed: AEGordon

July 5, 1989

RECEIVED
JUL 07 1989
HAZARDOUS WASTE SECTION

C. Kelly Crossman
Hazardous Waste Section EID
1190 St. Francis Dr.
Santa Fe, NM 87503

Dear Ms. Crossman -

Regarding the LANL incinerator:

1. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.
2. EID should issue an emergency order preventing the burning of radioactive waste until the State adopts standards, in a public forum, to regulate it.

We need to have regulations for radioactive emissions, and we need everyone, including the LANL, to abide by them!

Sincerely,

Leona Luba
409 S. Guadalupe
Santa Fe

WAKING UP IN THE NUCLEAR AGE

Affiliated with Earth Island Institute
A Project of Fort Mason Foundation

RECEIVED
JUL 1 1989
EID DIRECTOR'S OFFICE

July 3, 1989

Dear Mr. Mitzelfelt,

I am concerned about the Los Alamos radioactive and hazardous waste incinerator for reasons of health and safety.

If the Environmental Improvement Division is interested in improvement, it will issue an emergency order by the authority of the New Mexico Air Quality Control Act, section 74-2-10, to prevent the burning of radioactive waste until the state can adopt standards in a public forum to regulate it.

Any hearings the EID holds should include both the hazardous and radioactive permits. It is a real show of lack of common sense not to.

Thank you for your attention.

Sincerely,

Chellis Glendinning

Chellis Glendinning, Ph.D.

Chellis Glendinning, Ph.D.
Box 381, Tesuque, New Mexico 87574 (505) 982-2053
Fort Mason Center, San Francisco, California 94123 (415) 441-5706

July 3, 1989

Mr. Kelley CROSSMAN
HAZARDOUS WASTE BUR/EID
1190 St. Francis Dr.
S.F, NM. 87503

RECEIVED
JUL 05 1989
HAZARDOUS WASTE SECTION

Dear Mr. Crossman:

Dr. Liz Gordon, an associate of Richard Mitzfelt, (phone # 827-2850) referred me to write you of my concerns that radioactive waste Not be allowed to burn in New Mexico's air. I requested Dr. Gordon issue an emergency order to prevent burning of radioactive, HAZARDOUS waste until the State of New Mexico can adopt standards in public forum. I believe the authority to issue the emergency order is from New Mexico air quality Sec. 74-2-10. I will plan on attending a July 18 hearing on this matter at 9:00AM Runnells auditorium at 1190 St. Francis Dr, S.F. N.M.

Thank you and I anticipate your cooperation.

Sincerely,

[redacted]

Q

Box 29
Ojo Sarca NM 87550
July 1st, 1989

Kelly Crossman, Supervisor
1190 St. Francis Drive
Santa Fe, N.M. 87503

Goodday,

Thank you for sending me the June 19th information incineration literature. Surely more information is available now.

Why just hazardous waste? What about the radioactive waste.

Incineration doesn't destroy the waste.

I would like a page(s) of the amended 1989 act allowing the ~~[illegible]~~ permit to issue.

Thank you.

Sincerely,
Emmy Koponen
(Emmy Koponen)

RECEIVED
JUL 05 1989
HAZARDOUS WASTE SECTION

Jul

Box 29
Cuba Sakco NM 87013
July 1st, 1989

Richard Mitzeltelt, Director
1190 St. Francis Drive
Santa Fe, N.M. 87503

RECEIVED
JUL 5 1989
EID DIRECTOR'S OFFICE

Good day,

I am concerned that the new hazardous waste incinerator at LANL is allowed to operate.

What is the 1989 Amendment of the NMHWA?

As Director of the EID I urge you to regulate and improve the hazardous waste problem, including radioactive waste.

thank you.

Sincerely,
Emmy Kagoyen
(~~[illegible]~~)

RECEIVED
JUL 5 - 1989
HAZARDOUS WASTE BUREAU

Q

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

July 1, 1989

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issue an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

[illegible] 6233 W. 60th AVE. ARVADA, CO.

Jonette Trujillo Box 451 Peñasco, NM 87553

[illegible] 2323 [illegible] Albuq. N. Mex 87106

F.M. Sanchez Picuris Pueblo N.M. 87553

Nancy J. Armijo Picuris Pueblo N.M. 87553

Francisco Martinez Box 383 Peñasco NM 87553

Cyral Abbott Box 4451 TAOS, NM 87571

Esteban Bellano Box 52 Embudo, NM 87531

Rudy Martinez Rt. 1 Box 203-A Spur 6 Española, N. Mex. 87532

Xavier Pubble 6041 Osuna NE ABQ NM

Kathy Riggs PO Box 76 Ojo Sarco NM 87550

Gloria Dos N SR 642 Questa NM 8755

[illegible] Box 1366 Taos N.M. 87571

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator July 1, 1989

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

Elsa Morales Smith Box 4391, Taos, NM
J. Winthrop Smith Box 4390, TAOS, NM
Brenda Mitchell Box 346, Valarde NM
Loretta B. Atencio P.O. Box 123 Dixon, NM 875.2
Benedetto Tacaf Box 992 Taos Pueblo
Pollen Shorty Box 892 El Prado N.M. 87529
Shell Smith BOX 892 El PRADO NM 87529
Michelle Sharp Box 1332 Taos, NM 87571
Carla Lujan PO BOX 8625 Santa Fe NM
Henrietta Gomez P.O. 202 El Prado N.M.
Kim Nailor Box 132 Vadito, NM 87579
Joann Dowd Ford Box 45 Ojo Sarco, N.M. 87550
GERALD NAILOR - Pueblo of Picuris
87553

MEMORANDUM OF MEETING OR CONVERSATION

✓ Telephone ☐ Personal	Time 12:02	Date 6/30/89 9/30/89
Originating Party		Other Parties
Mary Fadet Faact		
2940 ~~Calle~~ Calle Princesa Juana		
S.F. NM 87505		
473-2993		

Subject

Discussion

tax payer, mother concerned citizens asking for postponement of public meeting on July 18th. Quiet fed into environment problems and she is very concerned.

Conclusions or Agreements

Distribution

Signed

Dear Richard Mitzelfelt

I am upset and don't agree with the incineration of radioactive waste. I demand that this burning be prevented until the state has proper regulations of this burning & that the LANL be prohibited from burning until that time.

Thank you for listening and responding to my request.

Sincerely,

[redacted]

RECEIVED
JUN 30 1989
EID DIRECTOR'S OFFICE

[redacted]

PS. Please issue an emergency order to prevent the burning of radioactive waste until the state provides a standard.

2

James F. Bresson
Senior Health Physicist

DAMES & MOORE
6100 INDIAN SCHOOL RD., NE SUITE 225
ALBUQUERQUE, NM 87110
(505) 884-2611

A PROFESSIONAL LIMITED PARTNERSHIP

Lift Inc. of Albuquerque, which

from the SBA.

nated for the annual honors by the

'Waste days' underway

Matt Filer (left), a summer undergraduate student in Waste Management (HSE-7), and John Pieniazek and Dan Buchan, both from Rollins Chempack Inc., are preparing waste material for transportation to an incinerator in Baton Rouge, La. The packing is part of an HSE-7 program to ease the process for efficient and safe disposal of hazardous chemical waste. HSE sends trucks and crews to sites on a pre-arranged schedule for pick up of wastes. S-Site, TA-53 and TA-35 have already been serviced since the project began on April 17. The service begins July 10 at TA-3. On the schedule for late summer and fall are TAs 21, 48 and 43. "We aim to improve the efficiency of waste management practices," said Pat Josey, head of the program.

U.S. GOVE

The Newsbulletin is published Fridays by Los Alamos National Laboratory, an Affirmative Action/Equal Opportunity Employer. We're part of Public Affairs (CPA-1). Address mail to: Newsbulletin, MS F318, Los Alamos, N.M. 87545. Our phone number is (505) 667-6103. For drop-off items, come to TA-3, SM-43, Room A-361. (Administration Building, west wing).

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NEWSBULLETIN

Mail Stop F318
Los Alamos, N.M. 87545

MONTOYA, ELOY

PO BOX 424
SANTA FE, NM 87504

from the SBA.

nated for the annual honors by indi-

compete for the national award.

way

nd aduate student in and ohn Pieniazek and lins Chempack Inc., are or transportation to an La. The packing is part e the process for efficient ous chemical waste. HSE sends trucks and crews to sites on a pre-arranged schedule for pick up of wastes. S-Site, TA-53 and TA-35 have already been serviced since the project began on April 17. The service begins July 10 at TA-3. On the schedule for late summer and fall are TAs 21, 48 and 43. "We aim to improve the efficiency of waste management practices," said Pat Josey, head of the program.

MAT's Keller honored by Las Cumbres

Connie Keller from the Materials Management Division (MAT) Office, got a big thanks last month from a community group working with handicapped and disabled people.

Las Cumbres' Industrial Development Division feted her with a luncheon and a plaque May 9.

In MAT-DO, Keller is an administrative specialist and acts as a liaison with the local vendor agreement program, in which Las Cumbres participates.

At Las Cumbres, handicapped people are taught and trained to refill toner cartridges for laser jet printers and Canon table-top copiers. This work provides employment and training for members of Las Cumbres.

Industrial Development Director Ron Garcia thanked Keller for her long-term work on behalf of Las Cumbres at the Lab.

"Connie constantly keeps Las Cumbres in mind and has originated ideas too numerous to mention, which have generated a lot of work and training opportunities for the handicapped individuals we serve," he said.

U.S. GOVERNMENT PRINTING OFFICE: 1989 673-083-00029

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NEWSBULLETIN
Mail Stop F318
Los Alamos, N.M. 87545

BULK RATE
PERMIT NO. 107
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Los Alamos, N.M.

MONTOYA, ELOY

PO BOX 424
SANTA FE, NM 87504

6/29/89

Richard Mitzelfelt
1190 St. Francis Drive
Santa Fe, New Mexico 87503

RECEIVED
JUL 3 1989
EID DIRECTOR'S OFFICE

Dear Mr Mitzelfelt,

I am writing to strongly urge the EID to issue an emergency order to prevent the burning of radioactive waste at the Los Alamos Labs until such time as the State of New Mexico, through a public forum with the EID and all concerned citizens, can adopt standards regarding such a practice. You have the authority to do this through the New Mexico Air Quality Control Act, section 74-2-10.

I find it extremely alarming that your organization has sanctioned the burning of hazardous and radioactive wastes when the State has no regulations regarding this foolish and deadly practice.

It seems idiotic to me that there are separate hearings to address the hazardous and the radioactive portions of this waste. Does this mean that Los Alamos is going to separate the waste into separate hazardous chemical and separate radioactive chemical portions and burn each of them separately? You know as well as I, that this is impossible. It also seems moronic that the State of New Mexico does not consider radioactive materials to be "hazardous". What's going on at the EID?

It also seems ludicrous to me that Los Alamos has requested a blanket coverage for burning the hazardous portion and therefore will not have to tell you what hazardous chemicals are being burned. Is this true?

Until standards are written, there should **not** be a public hearing, so that both portions of the permit can be addressed together.

It seems to me that we are getting stupider every day. We are doing more and more to poison ourselves and our environment. So many people have moved to Santa Fe to live in a clean environment. And now, Los Alamos wants to add poisonous dioxins and radioactive toxins into everyones' air. We'd better wake up soon, before it's too late!

Sincerely,

Dr Robert March

not that they have not already done so!

[redacted]

MEMORANDUM OF MEETING OR CONVERSATION

✓ Telephone ☐ Personal	Time 11:12	Date 6/29/89
Originating Party		Other Parties
Francis Tyson 4256369	Rt 1 Box 373 ~~Los Vegas NM~~ 87701	A E Gordon EID

Subject: LANL incineration of nuclear waste

Discussion: postponed public hearing until free open and discussion of matter.

stupid

plutonium isot

feel strongly

don't allow them to do it.

Conclusions or Agreements

Distribution: CKC

Signed: A E Gordon

Jack
Pls. Handle

712 Calle Grillo
Santa Fe, NM 87501
June 28, 1989

RECEIVED
JUN 30 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt
Director, EID
1190 St. Francis Drive
Santa Fe, NM 87503

Re: Emergency Order to Prevent the Burning of Radioactive Waste

Dear Mr. Mitzelfelt:

I am writing to express my concerns about the incineration of radioactive and hazardous waste. I understand New Mexico does not have any regulations for radioactive emissions, and that dioxins can be emitted from the stacks at this time.

I insist that the Environment Improvement Division issue an emergency order (by authority of the New Mexico Air Quality Control Act - Section 74-2-10) to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate this burning. The EPA in Dallas should be included in this process.

The hearings scheduled on this matter for July 18 should include the incineration of both hazardous and radioactive materials permits.

Thank you for your attention to this crucial matter. You can't hide from air! We have a precious resource here in New Mexico - clean air and blue skies. Let's work together to keep the freshness here. Many thanks,

Joni Arends

[redacted]

~~242 Calle Grillo~~
Santa Fe, NM 87501
June 28, 1989

RECEIVED
JUN 30 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt
Director, EID
1190 St. Francis Drive
Santa Fe, NM 87503

Re: Emergency Order to Prevent the Burning of Radioactive Waste

Dear Mr. Mitzelfelt:

I am writing to express my concerns about the incineration of radioactive and hazardous waste. I understand New Mexico does not have any regulations for radioactive emissions, and that dioxins can be emitted from the stacks at this time.

I insist that the Environment Improvement Division issue an emergency order (by authority of the New Mexico Air Quality Control Act - Section 74-2-10) to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate this burning. The EPA in Dallas should be included in this process.

The hearings scheduled on this matter for July 18 should include the incineration of both hazardous and radioactive materials permits.

Thank you for your attention to this crucial matter. You can't hide from air! We have a precious resource here in New Mexico - clean air and blue skies. Let's work together to keep the freshness here. Many thanks,

MEMORANDUM OF MEETING OR CONVERSATION

[✓] Telephone [ ] Personal	Time 2:40	Date 6/28/89
Originating Party		Other Parties
Jeanette Fraser		A.L. Gordon

Subject

Discussion

Jeanette Fraser
711 Edith Street SE
Albuquerque NM
505-983-9896

request emergency order to prevent the burning of radioactive waste until State adopts standards in a public forum.

air quality 74-2-10

Conclusions or Agreements

Distribution

CKC

Signed A.L. Gordon

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT department

MEMORANDUM

DATE: 6/28/89

TO:

FROM:

SUBJECT: ~~Elizabeth Bessin~~
~~Box 385~~ ~~Jemez~~, NM
~~Jemez~~ ~~87594~~
988-1130

EID issue emergency order to stop the burying of radioactive waste until the State adopts standards. Public hearing on July 18, 1989 should address both radioactive wastes + hazardous wastes, and that the permit should address both types of wastes.

ADM 031 Issued 6/78

June 27, 1989

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

Renée Sakburge P.O. Box 3092 Taos N.M. 87571

Iris Kelly 1008 Richmond NE Alb. 87106

Wm Kelly 1008 Richmond NE ALB 87106

Carol L Cox POB 962 Ranchos de Taos N.M. 87557

Gary Quiowitz Carson N.M.

Katharine Upton Brown PO Box 3245 Taos NM 87571

Tomas B. Gravel Box 139 Los Cordovas Rt. Taos New Mexico 8755

EMORANDUM OF MEETING OR CON SATION

☑ Telephone ☐ Personal	Time 9:45	Date 6/27/89

Originating Party	Other Parties
JIM TIRJAN	A. ELIZABETH GORDON
505-989-9271	

Subject LANL permit

Discussion

emergency order to stop handle of radioactive waste + hazardous waste.

He will be sending a letter.

Conclusions or Agreements

Distribution

CKC

Signed A. Gordon

LANL
Red
ASQ

MORANDUM OF MEETING OR CONVE ATION

☑ Telephone ☐ Personal	Time 8:50	Date 6/27/89

Originating Party	Other Parties
Michael Horan	AE GORDON

Subject LANL

Discussion Field EA of 1983 will be sent to Jaos. Is sending a letter requesting that meeting be postponed until the recent in-house EA is available.

Conclusions or Agreements

Distribution
CKC
LANL file

Signed AE Gordon

Dear Mr Mitzelfeld 6/27/89

I am deeply alarmed at the exception granted to LANL to burn radioactive and hazardous chemical waste. I urgently request that EID issue emergency orders to prevent incineration until New Mexico can adopt standards which are publicly reviewed, and which include both hazardous and radioactive waste. Thank you

Ellen Fox

Q

July 8, 1989

Dear Mr. Mitzelfeld -

We are new residents of New Mexico - refugees from Los Angeles' congestion and pollution. We are surprised to find that New Mexico - home of the atomic bomb - has no regulations governing radioactive emissions. This must be remedied, and in the meantime the LANL incinerator must be forbidden to burn radioactive materials. We urge the EID to issue an emergency order now to this effect.

Lionel & Estella Soracco
643 Camino de la Luz
Santa Fe, NM,

Q

EMORANDUM OF MEETING OR CON SATION

☑ Telephone ☐ Personal	Time 3:05	Date 6/27/89

Originating Party	Other Parties
Ruth Stevens	AGGordon
989 - 8085	

Subject LANL proposed draft permit

Discussion Request that permit be denied
wants standards from state for toxic hazardous
+ radioactive wastes

Conclusions or Agreements

Distribution
CKC

Signed AGGordon

B Towle
3204 Siringo Road
Santa Fe, NM 87505

Richard Mitzelfelt
1190 St. Francis Drive
Santa Fe, NM 87503

6/27/89

TO: Jack E.

Please coord. a response with the appropriate staff. Be aware that I was not at the Santa Fe Alloys Hearing.

Dear Mr Mitzelfelt:

I had the opportu[illegible] your face with your [illegible] hearing June 17th a[illegible] in San Miguel County. I felt that you were sincerely attempting to resolve the problem for the citizens there. You were honest and forthright and had the courage to admit there was much unknown about the situation. Thanks.

Now we have the radioactive air problem at LANL. The hearings, as you know, are set for July 18th. Please issue an emergency order to prevent radioactive burning until our beautiful state has standards in a public forum to regulate it. The hearing should include both the hazardous waste & radioactive permits.

I hope your willingness to help the people of Rivera will extend to the

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal	Time 8:40	Date June 26, 1989

Originating Party	Other Parties
Michael Horan	Elizabeth Gordon EID
758-3522	

Subject
LANL incinerator

Discussion
Environmental Assessment done at LANL recently and is undergoing internal review. The EA is specific to this incinerator. Is it possible to have that sent up to the EID office.
Questions re. LANL draft permit:
1) Can permit be denied if LANL's efforts at waste minimization are inadequate.
2) Has LANL considered the on-site immobilization of mixed waste with clay and cement. Studies done re. WIPP have indicated that such on-site immobilization is adequate for 20-100 years.
3) DOE is to have similar incinerators at several of its facilities throughout the country. Has DOE considered the accumulative effect of burning radioactive wastes when all incinerators are up + going
Is LANL burning radioactive wastes during FS?
4) Can EID require maintenance of pollution control devices
Seem to be lacking in draft permit

Conclusions or Agreements

Distribution
CKC
LANL file

Signed AG Gordon

Dear Richard, 6/26/89

I've just returned from a vacation from back east. I enjoyed the trip, but I was anxious to return home to the Land of Enchantment.

Upon returning, I was appalled to learn that Los Alamos was burning radioactive waste.

I don't feel that burning radioactive waste should be allowed at least until it is closely monitored and regulated. Please act quickly to halt this practice until regulations are enacted.

Thank you for considering my opinion,

[redacted]

RECEIVED
JUN 30 1989
EID DIRECTOR'S OFFICE

PS. I also request that the EID issue an emergency order to prevent the burning of radioactive waste until the state provides a standards adopted in a public forum.

Q

6/20/89

Dear Richard Nitzelfelt

I am upset to learn that the LANL is/will be burning radioactive waste. I feel that your agency must regulate operations of this sort and should not allow this to occur until there are regulations.

Thank you for your consideration of my opinion

Sincerely

Herb McDonald
876 Tramway Ln Ct NE
ABQ, N.M 87122

June 26, 1989

RECEIVED
JUN 30 1989
EID DIRECTOR'S OFFICE

Dear Mr. Mitzelfelt,

I understand you are involved in the very impactful decision regarding the burning of radioactive waste at Los Alamos Labs. I am appalled to find out the labs have an exemption to allow them to burn in an unregulated manner. Please do what you can to halt this. I realize we must deal with the fact of life of nuclear fecal matter. Let's handle it with at least the same respect as natural human waste. I implore regulation of this process. I demand the EID issue an emergency restraining order to prevent burning prior to regulation.

Sincerely

David Denar

Maqom Miryam
Box 4053
Santa Fe, NM 87502
June 26,1989

RECEIVED
JUN 30 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt
Environmental Improvement Division
1190 St. Francis Drive
Santa Fe, nM 87503

Dear Mr. Mitzelfelt:

I write to you on my behalf and the behalf of several friends. We are quite alarmed by the news that Los Alamos National Laboratory is operating an incinerator for hazardous and radioactive wastes. That it is doing so currently, without a permit is secondary to the fact that releasing such wastes into the air is dangerous to life. I am sure that there is not yet available scientific evidence that such incineration processes are NOT hazardous to our health.

If I were a native I would be outraged, but since I am only a displaced person, resident of Santa Fe since 1972 all I can do is anguish that the place that I have chosen for home, as refuge from the madness of twentieth century America is now being invaded by these very same forces.

It seems to me that the LANL incinerator is as or more dangerous for the quality of life in Santa Fe and environs as the WIPP trucks passing through on St. Francis Drive.

I hope that you as Director are doing everything in your power to protect the quality of air in our "Land of Enchantment". What the producers of nuclear and hazardous wastes ought to do with their wastes is a pressing problem, and probably for LANL. But what good is nuclear energy going to do for life on the planet if many are dying of cancer?

I bless you with fortitude in dealing with this issue and pray that you keep the welfare of New Mexican residents in mind as you make decisions.

Sincerely,

Ketura

[redacted]

Rabbi Ketura Eshel
Maqom Miryam
Box 4053, Santa Fe, NM 87502
(505) 986-0471

RECEIVED
JUN 30 1989
EID DIRECTOR'S OFFICE

June 26,1989

Mr. Richard Mitzelfelt
Director, E.I.D.
1190 St. Francis Drive
Santa Fe, New Mexico

Dear Mr. Mitzelfelt:

I am writing to voice my concern about the Los Alamos incinerator which is seeking a full production permit to burn radioactive hazardous waste. I understand that it is currently working under a research permit.

I demand that this incinerator be shut down until standards can be written concerning the emissions of incredibly dangerous substances such as plutonium and dioxins. The people of New Mexico should be a party to these decisions.

I also demand that the hearings scheduled for this incinerator include both the hazardous waste and the radioactive permits. The quality of our air cannot be compromised!

Respectfully,

John Forsdale Diane Forsdale

John and Diane Forsdale

D I A N E F O R S D A L E
rt 9 box 90-20 santa fé new mexico 87505

Jack

RETURN:
~~JANA CURTIS~~
~~PO BOX 1411~~
~~SANTA FE, NM 87504~~

June 25, 1989

RECEIVED
JUN 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt, Director of E.I.D.
1190 St. Francis Dr.
Santa Fe, NM 87503

Dear Mr. Mitzelfelt:

I am writing to urge you to issue an emergency order to prevent the burning of radioactive wastes at Los Alamos. The St. of N.M. is in urgent need of adopting standards that the public agrees with in order to regulate such burning of radioactive wastes. You know, as well as I do, that a small, very small fraction of plutonium in the lungs has an excellent chance of causing lung cancer. If you don't care enough, that you would allow Los Alamos to poison the people of this land with one of the most deadly substances known to man, then God help you. I, as well as many of the people of this community deserve to live here without this insidious threat. God help you if you choose to participate in such a horror. Please take correct action. Thank you.

Sincerely, Jana Curtis

June 24, 1989

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

Nancy Tibbetts - Nancy Tibbetts - Rt. 1 Box 88 Taos, N.M. 87571

Sandra Hall PO Box 231 - Ranchos de Taos 87557

Donna Klisiunas PO Box 1883 TAOS 87571

Cayen P. Speed Box 616 NSR. Questa 87556

Patricia Shirley Box 844 Questa NM 87556

Alma O. Sajorja Box 583 Ranchos De Taos

W.A. RUTHERFORD BOX 522 EL PRADO NM.

J.A. Bishop 631 T1SR, Questa 875

Julia Vazquez P.O. Box 3142 TAOS. N.M. 87571

BASSARA P.O. BOX 57 SAN CRISTOBAL 87564

Rachelyn Martin Box 1070C Ranchos de Taos 87557

Judith Hovetter Judith Hovetter Box 695 El Prado NM 875

CASE COHEN BOX 203 DIXON NM 87527

June 24, 1989

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

Jeff Kiefer Box 393 TAOS, NM 87571

Mary Jo Carey Box 2981 TAOS, NM 87571

Marion Meek Box 4985 Taos, NM 87571

Burton P Jacobsen Box 5884 Taos NM 87571

Mary [illegible] P.O. 5884 TAOS N.M. 87571

[illegible] P.O. 3186 TAOS N.M 8757[illegible]

Joan M Villamar PO Box 2334 TAOS NM 87571

Nora Oest Box 112 Arroyo Seco NM 87514

Christina M. Trent PO Box 1353 Ranchos de Taos 8755[illegible]

Susan Hanger Box 285 Arroyo Hondo 87513

Joan Loveless Box 180 Arroyo Seco 87514

Kim A Gamez Box 2895 TAOS 87571

[illegible] Box 156 El Prado 87529

June 24, 1989

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

87557 - 1135

Catherine Kenneson PO Box 432 TAOS 87571.

Pobox 928 Ranchos 87557

Box 46 Cerro, NM. 87571

Box 2048 TAOS NM 8757

JANE M. MINGENBACH - Box 49 - TAOS - 875

Box 1820 TAOS 87571

PO Box 2885 TAOS, NM 87571

Box 2885 Taos, NM 87571

Box 9707 Ranchos de Taos 875

" Ranchos de Taos 875

776-8723 Box 11 Arroyo Seco N.M. 87514

Box 2860 TAOS NM 87571

June 24, 1989

Director of the EID
Richard Mitzelfelt
1190 St.Francis Drive
Santa Fe, NM 87503

Ref. to: Los Alamos Radioactive Waste Incinerator

We demand that the EID issues an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any hearing relating to the incinerator should include both the hazardous waste and radioactive permits.

Michael Rosberg P.O. Box 286 Arroyo Hondo, NM 87513
Kigh Carmona P.O. BOX 286 ARROYO HONDO NM 87513
Dawn Reel P.O. Box 6415 Taos N.M.
Brian Kaplin Fotota Rd. El Prado NM
Edwin Brown BOX 2012 TAOS, NM
Carol Lee Pelo Box 526 El Prado NM 87529
Kathleen Rumfelt P.O Box 514 El Prado NM 87529

RECEIVED
JUN 23 1989
EID DIRECTOR'S OFFICE

Dear Mr. Mitzelfelt,

I am writing to you to express my deep concern about the proposed Los Alamos hazardous waste incinerator

It is most important that the EID issue an emergency order to prevent the burning of radioactive wastes until the state of New Mexico can adopt standards in a public forum to regulate it.

Any hearing related to the incinerator should include both the hazardous waste and radioactive permits.

Thank you,

Susie Kornfield
Box 8307
Santa Fe, NM
87504

June 21, 1989

RECEIVED
JUN 23 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt, Dir. EID
1190 St. Francis Dr.
Santa Fe, NM 87503

Sir:

I am writing to express my deep concern about the proposed burning of radioactive hazardous waste by Los Alamos National Lab.

It is very important -- and I demand -- that the EID issue an order to prevent burning of radioactive waste until the State of New Mexico adopts standards in a public forum to regulate it.

It is very important -- and I demand -- that any hearing relating to the incinerator should include both the hazardous waste and radioactive waste permits.

Sincerely,

Carolyn Vantress

Carolyn Vantress
323 Calle Loma Norte
Santa Fe, NM 87501

James A. Dreisbach-Towle
3204 Siringo Road
Santa Fe, New Mexico 87505-5050

RECEIVED
JUN 1989
EID DIRECTOR'S OFFICE

June 24, 1989

Richard Mitzelfelt
1190 St. Francis Drive
Santa Fe, New Mexico

Dear Sir,

I along with a growing number of concerned citizens are outraged by the unregulated burning of radioactive material at Los Alamos National Laboratories. I demand that the EID issues an emergency order to prevent the burning of these waste until the State of New Mexico can adopt standards in a public forum to regulate it. I also demand as my right as a citizen, that the upcoming hearings on the incinerator concern both the hazardous waste and radioactive permits.

Sincerely,

James A. Dreisbach-Towle

James A. Dreisbach-Towle

Kirk
pls. handle

RECEIVED
JUN 30 1989
EID DIRECTOR'S OFFICE

Richard Mitzelfelt
1190 St. Francis Dr
Santa Fe, N. Mex.
87503

Gloria Coequyt
1145 Camino San Acacio
Santa Fe, N. Mex. 87501

Dear Mr. Mitzelfelt,

I am very concerned about the burning of hazardous and radio-active waste @ Los Alamos National Lab. I am writing to request 1) Los Alamos stop burning this waste without a permit and 2.) New Mexico research & develop regulations regarding burning of radio active materials.

Sincerely,

Gloria Coequyt

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT Department

MEMORANDUM

DATE: 6-20-89

TO: Kelley Crossman, HWB

FROM: Mike Saladen, SWQB MS

SUBJECT: LANL - Public Comments

The NPDES permit does not require radioactive monitoring. Radioactive elements are monitored by the NRC. You can not have 2 federal facilities (EPA/NRC) regulate the same parameters. LANL is required to analyze for heavy metals. I have enclo the effluent limits for the TA-50 outfall. Sorry it took this long to response. If you have any questio call me at 827-2798

ADM 031A Issued 6/78

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 051

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 051 - **radioactive waste treatment plant discharge.**

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Ammonia (as N)	N/A	N/A	Report mg/l	Report mg/l
Chemical Oxygen Demand	42.7(94)	70.9(156)	N/A	N/A
Total Suspended Solids	8.6(18.8)	29.5(62.6)	N/A	N/A
Total Cadmium	0.03(0.06)	0.14(0.30)	N/A	N/A
Total Chromium	0.09(0.19)	0.17(0.38)	N/A	N/A
Total Copper	0.28(0.63)	0.28(0.63)	N/A	N/A
Total Iron	0.45(1.0)	0.90(2.0)	N/A	N/A
Total Lead	0.03(0.06)	0.07(0.15)	N/A	N/A
Total Mercury	0.001(0.003)	0.04(0.09)	N/A	N/A
Total Zinc	0.28(0.62)	0.83(1.83)	N/A	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Continuous	Record
Ammonia (as N)	1/Month	Grab
Chemical Oxygen Demand	1/Week	Grab
Total Suspended Solids	1/Week	Grab
Total Cadmium	1/Week	Grab
Total Chromium	1/Week	Grab
Total Copper	1/Week	Grab
Total Iron	1/Week	Grab
Total Lead	1/Week	Grab
Total Mercury	1/Week	Grab
Total Zinc	1/Week	Grab

(*1) Report.

OUTFALL 051

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored continuous, record.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge from TA 50-1.

P.O. Box 2262
Taos, New Mexico 87571-2262
5/29/89

NMEID
Mr. C. Kelley Crossman
Supervisor
Hazardous Waste Bureau
1190 St. Francis Drive
Santa Fe, NM 87503

RECEIVED

MAY 3 1 1989

HAZARDOUS WASTE SECTION

Dear Mr. Crossman,

Operator: UNIVERISITY OF CALIFORNIA REGENTS
LANL TA-50 UNIT
CONTROLLED AIR RADIOACTIVE WASTES INCINERATOR
RCRA OPERATING PERMIT #NM0890010515-1
May 1989
Public Comment

The following comments are requested for response in writing from U.S. EPA/ NM EID and from LANL staff at the public hearing June 13, 1989 in Santa Fe.

Page numbers are referenced to the draft permit document:

(1)

page -35. HEPA Filters. It is my understanding that a carbon bed filter will remove radioactive elements, including Pu-238, Pu-239, Pu-240, tritium, etc. in the flue gas stream. What is the minimum gauge pressure drop across the carbon bed filter specified by the manufacturer. What is the frequency of verification of the pressure drop? Is it each shift?

When the carbon bed filter becomes plugged with radioactive pu or contaminated particulates how is the carbon bed filter regenerated? Is it purged with inert gas?

What is the specified frequency for carbon bed regeneration purging?

How frequently are the carbon bed absorber nozzles removed and inspected?

What is the disposal method for radioactive fly ash from the carbon bed filter purging?

(2) page A-9 Radioactive Scrubber Water

What happens to the radioactive scrubber water? It says the scrubber water "will always be within the discharge guidelines established under the NPDES permit for the Ta-50 radioactive treatment system thereby negating chemical analysis." Does this mean that LANL will obtain a RCRA "delisting" from U.S. EPA for the scrubber wastewater?

100% Recycled Paper

LANL TA-50 Unit Radioactive Wastes Incinerator
RCRA NM #08900010515-1 (cont.)

Is there in effect a memorandum of prior understanding, pre-dating the draft permit between LANL and U.S. EPA for a RCRA "delisting" for the scrubber radioactive wastewater?

What is the maintenance checklist for the scrubber each shift, monthly and annually?

(3) ref: Permit Attachment K, NM EIB-HWMR-5, #301
and 40 CFR, Ch. I, part 262.42 (7)

40 CFR Part 262 is incorporated as Part III of the NM Hazardous Waste Regulations. 40 CFR, part 262.42 ,(6,7)requires(6) "a description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated. (7) "a description of the changes in the volume and toxicity waste actually achieved during the year in comparison to previous years to the extent such information is available for years prior to 1984."

Is this waste reduction report to U.S. EPA available for public examination?

For example, what types of biodegradeable solvent replacements is LANL now using as replacements for chlorinated halogenated solvents and for chlorofluorocarbon solvents? What reduction in chlorinated solvents volume has been achieved by the use of biodegradeable solvent replacements?

What is the volume reduction achieved, for example, in heavy metals through use of ion exchange metal recovery systems?

What is the volume reduction in cyanide containing water by use of reverse osmosis systems?

I herein request to receive a copy of the waste reduction report to U.S. EPA required by 40 CFR, Ch. I, part 262.42 (6) & (7).

As LANL has recently refused to provide even one waste 55 gallon drum for use as staging containers for community recycling in Taos County and as Dr. Jim Kane at University of California, Berkeley, the U.C. liason between LANL and President Gardner's office, did not ever respond to the request for community recycling containers, what precisely is the U.C. and LANL response to 40 CFR, Ch. I, part 262.42 (6) and (7).? If LANL is unwilling to donate several waste drums to Taos County for community recycling, their response to 40 CFR, Ch. I part 262.42 shall indeed be interesting at the public hearing on June 13, 1989.

Sincerely,

Michael Horan tel: (505) 758-3522
Taos, NM

cc: Mr. Bill Honker, U.S. EPA
RCRA Permits Branch, Dallas

Kirk
pls. handle

Mr. Richard Mitzelfelt
1190 St. Francis Drive
Santa Fe, New Mexico 87503

June 19, 1989

RECEIVED
JUN 20 1989
EID DIRECTOR'S OFFICE

Dear Mr. Mitzelfelt,

I am deeply disturbed that the Los Alamos National Laboratories has been incinerating radioactive materials under a "research permit". I think it is seriously important that the Environmental Improvement Division issue an emergency order to prevent the burning of radioactive waste until the state of New Mexico can adapt standards in a public forum to regulate it.

Also, any hearing relating to the incinerator should include both the hazardous waste & radioactive permits.

Thank you for your consideration -

Sincerely,

Michele Beinder
Rt 9 Box 89E
Santa Fe New Mexico
87505

RECEIVED
JUN 19 1989
EID DIRECTOR'S OFFICE

Karen McIntosh
2 Monte Alto Way
Santa Fe, NM 87505

Dear Mr Mitzelfelt,

I am very concerned about the issue of Los Alamos National Laboratories incinerating hazardous waste.

I demand that the EID issue an emergency order to prevent the burning of radioactive waste until the State of New Mexico can adopt standards in a public forum to regulate it. Any future dealing must include BOTH the hazardous waste and radioactive permits.

Thank you for your kind attention.

Sincerely,

Karen S. McIntosh

6/16 1:30 or so

Paul called back & asked if he could borrow the draft for a few days or 1 at most and copy it at his office. I said he could borrow the library copy for an hour or so and copy locally but I could not authorize removal for a full day. Paul said I was deliberately excluding the Abq community. I said I had placed the materials in Espanola as the center of the area most likely affected plus an extra copy in Taos because of the interest. The extra copy would be transferred to Los Alamos library on/about June 27.

Los Alamos permit

Is circulating a petition to get a hearing in Taos

R/Kirk
P.S. Call Marlene Holloway
in ~~Los~~ Taos RCB 2755
Re: LANL incinerator
6/6/89 1145AM + NR 758-0521
6/6 1150
Request

Explained the process and which incinerator was involved.

[redacted]
[redacted]
982-7045
LANL permit
6/23/89
Pls. mail/phone

Gary Kristoff

6/4/89
4:45pm

Disagrees w Silvi Solomon article of 6/4/89

Supports rational permitting with controls.

LEGAL NOTICE

NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION
HAZARDOUS WASTE BUREAU
Santa Fe, New Mexico 87503

PUBLIC NOTICE NO. 29 June 11, 1989

NOTICE OF INTENT TO GRANT A PERMIT FOR THE OPERATION OF A HAZARDOUS WASTE TREATMENT AND STORAGE FACILITY
SECOND NOTICE

The State of New Mexico is authorized to operate a hazardous waste management program in lieu of the Federal program for those portions of the Resource Conservation and Recovery Act (RCRA) in effect prior to the enactment of the Hazardous and Solid Waste Amendments of 1984 (HSWA). The HSWA impose additional requirements on hazardous waste management facilities which will be administered and enforced by the U.S. Environmental Protection Agency until the State of New Mexico receives additional authorization for these requirements.

Under authority of RCRA, the Environmental Improvement Division (EID) of the New Mexico Health and Environment Department and the U.S. Environmental Protection Agency (EPA) Region VI, propose to issue a final permit to Los Alamos National Laboratory, Los Alamos, New Mexico 87545, for the storage, incineration, and chemical treatment of hazardous waste. The EID permit is to be issued under authority of the New Mexico Hazardous Waste Act (§ 74-4-1 *et. seq.*, NMSA 1978, as amended 1989) and the EPA permit under the authority of the Hazardous and Solid Waste Amendments of 1984. The facility has been assigned EPA identification number NM0890010515.

The proposed EID permit contains conditions for the nonradioactive hazardous waste storage in tanks and containers, chemical treatment to reduce the hazardous nature and incineration to destroy hazardous wastes. The EPA permit will address the investigation and, if necessary, the cleanup of past spills and disposal sites as well as other HSWA regulations. Radioactive mixed wastes subject to regulation under the Resource Conservation and Recovery Act will be addressed at a later date.

The draft proposed permits and the administrative records may be reviewed at either the E.I.D. Central Office library at the Harold Runnels Building, 1190 St. Francis Drive, Santa Fe, New Mexico; the Espanola public library, 314A Onate N.W., Espanola, New Mexico; or the EPA library, 1445 Ross Avenue, Dallas, Texas. To obtain a copy of the administrative record or any part thereof, at 35 cents per page, please contact Mr. Crossman at the address below, or call (505) 827-2923.

The addresses of the E.I.D. and EPA representatives for either reviewing or obtaining a copy of the administrative record or any part thereof, or for commenting or public participation, are:

Mr. C. Kelley Crossman
Supervisor
Hazardous Waste Bureau (EID)
1190 St. Francis Drive
Santa Fe, New Mexico 87503

Mr. Bill Honker, Chief,
RCRA Permits Branch
U.S. EPA Region VI
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Any person, including the applicant, who wishes to comment on the decision to issue a permit may do so by submitting comments, along with the commentor's name and address, to both addressees above. All written comments submitted on the decision to issue the permit must be received by the EID not later than July 18, 1989, to be considered in formulating a final decision.

A public hearing is scheduled for 9:00AM on July 18, 1989 in the auditorium of the Harold Runnels Building, 1190 St Francis Drive, Santa Fe, NM. These are a new date and location which supersede those given in EID legal notice 28 dated May 10, 1989. Any person, including the applicant, who wishes to present information for the record at the public hearing or to speak on the proposed action(s), may do so by submitting a written request to both addressees above. Any request to speak at the hearing shall state the nature of the issues proposed to be raised. All comments should include the requestor's name and address.

All written comments submitted on the proposed plan or permit will be considered in formulating a final decision. EID and/or EPA may modify the draft permit(s) based on the comments received. The EID will notify LANL, and each person who submitted a written comment during the public comment period, of the final decision or of any other public hearing which may be scheduled.

If, after consideration of all written comments, this proposed action becomes the final decision, the EID and the EPA will each issue the laboratory an operating permit. These permits will govern the handling and treatment of regulated hazardous wastes at the laboratory.

This notice satisfies the requirements of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6901, *et. seq.* and 40 CFR 124.10. The final permit, if issued by the EPA, will implement the requirements of the HSWA, amending the Federal Solid Waste Disposal Act, as amended. The State of New Mexico and the EPA have entered into a joint permitting agreement whereby RCRA permits may be issued in the State, in accordance with the Hazardous Waste Management Regulations of the State of New Mexico and the HSWA, until the State receives interim or final authorization under RCRA to administer the requirements of HSWA. In order for the applicant to have a fully effective RCRA permit, both the New Mexico EID and the EPA must issue a permit. EPA may participate in any public hearing if one is held.

June 8th

C. Kelly Crossman
Runnels Building
1190 St. Francis Drive
Santa Fe, 87503

Dear Mr. Crossman:

I am writing to express my concern that the scheduled hearings for July 18th to review the LANL draft peoposal for mixed hazardous waste incinerators will not result in a decision which will protect the environment and the people of this state. Because the hearings exclude radioactive materials from the discussion, I believe that the vital debate necessary to make a sound decision will be eliminated from the proceedings and the health of the people will suffer.

I have read your announced press release detailing the consideration of radioactive materials for another time. The next question is this: if not now, when and where? And why is the consideration of the mixed-waste incinerator being split into two parts? I suspect that the radioactive portion may be located in some other area of the country where local participants will be unable to attend. Please clarify this sneaking suspicion by informing me where and when the radioactive portion of the permit will be considered.

I believe it to be in the best interests of public health to NOT SPLIT THE HEARINGS INTO TWO PARTS, but to keep it together so that BOTH KINDS OF MATERIALS can be considered at the same hearings since THEY ARE BOTH MIXED TOGETHER IN THE WASTE STREAM.

It also seems obvious that if the two kinds of materials are split-up, the consideration of radioactive materials COMES FIRST, NOT AFTER HAZARDOUS WASTES since radioactive materials are the most long-lived and lethal part of the waste str stream coming out of the stacks.

I have just finished reading the Draft Proposal and I am perplaexed by your announced intention to grant this permit even BEFORE HEARINGS ARE HELD. What then are the purpose of public hearings? Such a statement on your part implies that the public is present merely to WITNESS what has already been decided.... Indeed, sir, this is an insult to the democratic process.

Since reading the Draft Proposal, several question came to my mind:

1) What per cent of the waste stream is only hazardous? What per cent is hazardous mixed with radioactive?

2) How many curies are estimated to be contained in the mixed-waste proposed for incineration?

3) How many pounds of plutonium are estimated to be in the mixed waste?

In conclusion, I call upon you to do right by the people you serve. POSTPONE HEARINGS until a full and impartial review can occur which includes ALL THE MATERIALS that might be burned in a mixed-waste incinerator at LANL.

RECEIVED
JUN 9 1989
HAZARDOUS WASTE SECTION

Sincerely,

Silvi Solomon

Silvi Solomon
1107 B Pen Road
Santa Fe, 87501

cc: Congressman Bill Richardson
Senator Jeff Bingman

Box 29
Ojo Sanco NM 87550
June 6, 1989

Runnels Building
1190 St. Francis Drive
Santa Fe, N.M. 87503

RECEIVED
JUN 15 1989
HAZARDOUS WASTE SECTION

Good day Mr. Crossman,

I am concerned about radioactivity. I live not far from Los Alamos and an experimental incinerator upsets me. The 1988 incinerator upsets me.

Please keep me informed. I would like to be part of the process.

I want you to abide by the Clean Air Act.

thank you.

Sincerely,
Emmy Koponen
(Emmy Koponen)

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

JUN. 2 1989

Dear Concerned Citizen:

Enclosed for your information is material on a hazardous waste facility in your area.

If you have any questions about this information feel free to call me at (505) 827-2923 or write to the address below.

Sincerely,

C Kelley Crossman

C. Kelley Crossman
Supervisor

CKC/aw

cc: Lynn Prince, U.S. EPA - Region VI

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

89-043

NEW MEXICO HEALTH AND ENVIRONMENT DEPARTMENT

HED NEWS

OFFICE OF PUBLIC INFORMATION
1190 St. Francis Drive
Santa Fe, New Mexico 87503
(505)827-2618

FOR IMMEDIATE RELEASE **CONTACT: C. Kelley Crossman**
JUNE 2, 1989 **827-2923**

SANTA FE, NM-- The Environmental Improvement Division of the New Mexico Health and Environment Department has rescheduled a public hearing on a draft hazardous waste permit for Los Alamos National Laboratory (LANL) for July 18, 1989. The public hearing had originally been set for June 13, 1989.

According to EID Director Richard Mitzelfelt, the decision to reschedule the hearing was prompted by requests from citizens wishing to take part in U.S. Department of Energy hearings on WIPP scheduled for the week of June 12, 1989.

"Although the WIPP hearings and the LANL hearing are unrelated, many citizens would attend both events if given the opportunity," said Mitzelfelt.

The July 18 public hearing on the draft permit will begin at 9:00 AM in the Harold Runnels Building Auditorium located in Santa Fe at 1190 St. Francis Drive.

The draft permit details the requirements for storage and treatment of hazardous wastes generated through LANL operations. The public may review the draft plan at the Harold Runnels Building library, 1190 St. Francis Drive in Santa Fe, or the Espanola Public Library, 314A Onate, NW. A third copy of the draft plan will be available in EID's Taos Field Office through most of June and will then be moved to the Los Alamos Public Library for July.

(more)

According to C. Kelley Crossman of EID's Hazardous Waste Bureau, LANL generates large quantities of waste solvents and chemicals which must be handled in accordance with strict guidelines. The draft permit specifies which chemicals may be stored while awaiting treatment, the treatment processes LANL may employ, and the conditions under which certain materials may be incinerated. Additionally, the permit will require LANL to investigate all past disposal sites and prepare clean-up plans where necessary.

Crossman said this permit does not authorize or address radioactive wastes contaminated with regulated chemicals, which are subject to a separate permit to be processed at a later date.

Questions and comments regarding the draft permit may be directed to the Hazardous Waste Bureau, 1190 St. Francis Drive, Santa Fe, NM 87503. Comments must be received by the close of the public hearing on July 18, 1989.

--30--

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

ENVIRONMENTAL IMPROVEMENT DIVISION
1190 St. Francis Drive
Harold Runnels Building
Santa Fe, New Mexico 87503
HAZARDOUS WASTE PROGRAM

(505) 827-2929

GARREY CARRUTHERS
Governor
MARALYN BUDKE
Acting Secretary
CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

June 1, 1989

Howard W. Henry Company
1300 Central Avenue SW
Albuquerque, NM 87102

RE: LANL Public Hearing
NM 0890010515

Dear Mr. Henry:

I wish to confirm my conversation with Pam of your staff today, cancelling our request for a recorder on June 13, 1989 and rescheduling for July 18-19, 1989. The location has changed from the PERA Building to the Harold Runnels Building in Santa Fe at 9AM.

Please annotate "580489" on your bill for services and send it to:
Ms. Anna Walker
Hazardous Waste Bureau (EID)
Santa Fe, NM 87503.

Thank you.

Sincerely,

C. Kelley Crossman
Supervisor

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

ENVIRONMENTAL IMPROVEMENT DIVISION
1190 St. Francis Drive
Santa Fe, New Mexico 87503

HAZARDOUS WASTE BUREAU
(505) 827-2929

GARREY CARRUTHERS
Governor
MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary
MICHAEL J. BURKHART
Deputy Secretary

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

June 1, 1989

Mr. Harold E. Valencia
Area Manager
DOE Area Office
Los Alamos, NM 87544

RE: NM 0890010515

Dear Mr. Valencia:

Enclosed for your information is a revised public notice concerning the draft RCRA operating permit and the public hearing. The public notice will be made on or about June 11, 1989. This notice changes the public hearing date and place to July 18, 1989 at the Harold Runnels Building in Santa Fe. It also extends the comment period to the close of the hearing.

LANL is invited to attend the hearing and may be asked to answer questions posed by the public at the hearing.

Sincerely,

C. Kelley Crossman

C. Kelley Crossman
Supervisor

cc: Richard Mayer, EPA (6H-CP) with enclosures
Lynn Prince, EPA (6H-HS)

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

ENVIRONMENTAL IMPROVEMENT DIVISION
1190 St. Francis Drive
Harold Runnels Building
Santa Fe, New Mexico 87503
HAZARDOUS WASTE PROGRAM

(505) 827-2929

GARREY CARRUTHERS
Governor
MARALYN BUDKE
Acting Secretary
CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

June 1, 1989

Legal Editor
Journal North
328 Galesteo
Santa Fe, NM 87501

Dear Sir:

Please publish by June 11, 1989 the enclosed legal notice. Please send an affidavit of publishing and any bill for services to:

Ms. Anna Walker
Hazardous Waste Management Program
1190 St. Francis Drive/Harold Runnels Bldg
Santa Fe, NM 87503

Thank you.

Sincerely,

C Kelley Crossman

C. Kelley Crossman
Supervisor

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

ENVIRONMENTAL IMPROVEMENT DIVISION
1190 St. Francis Drive
Harold Runnels Building
Santa Fe, New Mexico 87503
HAZARDOUS WASTE PROGRAM

(505) 827-2929

GARREY CARRUTHERS
Governor
MARALYN BUDKE
Acting Secretary
CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

June 1, 1989

Legal Editor
Los Alamos Monitor
256 DP Road
Los Alamos, NM 87544

Dear Sir:

Please publish by June 11, 1989 the enclosed legal notice. Please send an affidavit of publishing and any bill for services to:

Ms. Anna Walker
Hazardous Waste Management Program
1190 St. Francis Drive/Harold Runnels Bldg
Santa Fe, NM 87503

Thank you.

Sincerely,

C Kelley Crossman

C. Kelley Crossman
Supervisor

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

MEMORANDUM

TO: C. Kelly Crossman, Hazardous Waste Bureau

FROM: Mike Saladen, Surface Water Quality Bureau MS

DATE: June 1, 1989

RE: LANL Monitoring

I have reviewed the draft RCRA permit for LANL which is currently in the Public Comment period. Listed below are some comments addressing monitoring of the surface discharges:

1) LANL is required to take surface water samples and analyze for metals, volatile and both acid-and-base neutral semivolatile organic hazardous waste constituents on an annual basis. If the permittee samples a monitoring site more than once a year, all samples need to be included in the annual report. The permittee should include number of samples collected, average and maximum values, as well as standard deviations from the mean.

   Monitoring locations should include monitoring stations on Mortandad Canyon and a new station in Los Alamos Canyon, downstream for "Basalt Spring." These monitoring sites are on main watershed systems to the Rio Grande. The total impact on the environemnt must be evaluated from all watershed systems.

   Please add the total metals, including, copper, zinc and iron, to the annual monitoring list. These toxic parameters are listed in section 307(a) of the Clean Water Act and are not currently monitored under any permit. Also add total chlorine residual, a known toxic, with adverse effects on aquatic life at certain levels. Please add hardness testing to the annual monitoring list. Many of the parameters listed in the permit are hardness dependent, and the effects of these parameters can not be evaluated without this information. The regulatory agency must include the aforementioned parameters to help evaluate the impact to human health and the environment from the surface discharges at LANL.

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

2) Records of monitoring information should include:

   a. The date, exact place, and time of sampling or measurement;

   b. The individual(s) who performed the sampling or measurement;

   c. The date(s) analyses were performed;

   d. The individual(s) who performed the analyses;

   e. The analytical techniques or methods used; and,

   f. The results of all such analyses.

Records such as described above help the regulatory agency evaluate the validity of the data submitted by the permittee. It also helps verify if the permittee is using the correct EPA approved methods for sample anylses.

3) The permittee should allow authorized representatives, upon the presentation of credentials and other documents required by law, to:

   a. Enter upon the permittee's premises where as regulated facility or activity is located or conducted;

   b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

   c. Inspect at reasonable times any facility, equipment, procedures or operations regulated under the permit;

   d. Sample or monitor for the purpose of assuring permit compliance.

4) LANL currently has 105-109 permitted NPDES outfalls. Are all these outfalls included in the surface water monitoring? Should all NPDES outfalls be included?

5) Samples and measurements taken should be representative of the volume and nature of the monitored discharge. All samples should be taken at the monitoring points specified in the permit, and, unless otherwise specified, before the effluent joins or is diluted by any other wastestreams, body of water or substance.

Health and Environment Department
Environmental Improvement Division
Surface Water Quality Bureau
PO Box 968 - Harold Runnels Building
Santa Fe, NM 87504-0968
ATTENTION: JIM PIATT

Lab Number _____
Date Received _____
Date Reported _____

SLD User Code 59100

METAL ANALYSIS

			ug/l	Date Analyzed
X	Total Arsenic	(01002)	____	_____
X	Total Barium	(01007)	____	_____
X	Total Cadmium	(01027)	____	_____
X	Total Chromium	(01034)	____	_____
X	Total Lead	(01051)	____	_____
X	Total Mercury	(71900)	____	_____
X	Total Selenium	(01147)	____	_____
X	Total Silver	(01077)	____	_____
X	Total Copper	(01042)	____	_____
X	Total Iron	(01045)	____	_____
X	Total Manganese	(01055)	____	_____
X	Total Molybdenum	(01062)	____	_____
X	Total Nickel	(01067)	____	_____
X	Total Zinc	(01092)	____	_____

This form accompanies **ONE** sample marked as follows to indicate field treatment: **NF (no filtration) / A (5 ml HNO_3)**

PLEASE NOTE ANY DEVIATIONS FROM THE REQUESTED ANALYSES

712 Calle Grillo
Santa Fe, NM 87501
May 31, 1989

Mr. C. Kelley Crossman
NMEID
Hazardous Waste Management Section
1190 St. Francis Drive
Santa Fe, NM 87503

Re: Intent to Issue a Permit for the Operation of Hazardous Waste Units - Los Alamos National Lab

Dear Mr. Crossman:

Please be advised that I am very concerned about the issuance of a permit for the incinerator at Los Alamos Labs.

I feel that I am unprepared to comment at a public hearing set for June 13, 1989. With the upcoming hearings on the WIPP SEIS scheduled for June 15 and 16 in Santa Fe, and the hearings on the landfill bill (Senate Bill 2) in Santa Fe next week, my time and energy is focused on these two important issues. I formally request that the hearings on the incinerator be postponed until after June 15, 1989 to give citizens like myself time to properly prepare for such an important hearing on our air quality.

Thank you for your consideration and time.

Sincerely, Spencer Wayne Wlcof

RECEIVED
JUN 12 1989
HAZARDOUS WASTE SECTION

RECEIVED

JUN 6 1989

HAZARDOUS WASTE SECTION

712 Calle Grillo
Santa Fe, NM 87501
May 31, 1989

Mr. C. Kelley Crossman
NMEID
Hazardous Waste Management Section
1190 St. Francis Drive
Santa Fe, NM 87503

Re: Intent to Issue a Permit for the Operation of Hazardous Waste Units - Los Alamos National Lab

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I feel that I am unprepared to comment at a public hearing set for June 13, 1989. With the upcoming hearings on the WIPP SEIS scheduled for June 15 and 16 in Santa Fe, and the hearings on the landfill bill (Senate Bill 2) in Santa Fe next week, my time and energy is focused on these two important issues. I formally request that the hearings on the incinerator be postponed until after June 15, 1989 to give citizens like myself time to properly prepare for such an important hearing on our air quality.

Thank you for your consideration and time.

Sincerely,

Jeni Arends

resched pub notice + news release sent 6/6/89 SKC

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

MEMORANDUM

TO: Nancy Hunter, HED Office of the Secretary

THROUGH: Dan Balduini, Program Support Bureau

FROM: C. Kelley Crossman, Hazardous Waste Program CKC

SUBJECT: News Release

DATE: May 31, 1989

Please release to the media as soon as possible the attached news item. all media in the northern portion of the state should be included.

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

Richard Mitzelfelt, Director of the Environmental Improvement Division of the Health and Environment Department, announced the rescheduling of the hazardous waste draft permit hearing for Los Alamos National Laboratory from June 13, 1989, to July 18, 1989. The decision was prompted by public requests to reschedule due to the WIPP hearings scheduled for the same week in June. "The two hearings are unrelated. The hazardous waste permit will address only chemical wastes at this time and most of the interest so far has been directed toward radioactive waste" Mr. Mitzelfelt stated. "I know that many citizens are interested in LANL and would attend both hearings if given the opportunity." The permit is proposed under the State Hazardous Waste Management Regulations which implement the federal hazardous waste program.

The hearing will be held in Santa Fe at the auditorium of the Harold Runnels building, 1190 St. Francis Dr., beginning at 9:00am. This is a change from the June date which was scheduled for the PERA building. The draft permit is available in the Espanola public library and the EID library in the Harold Runnels building in Santa Fe. A third copy will be in the EID Taos Field office for most of June and will then be moved to the Los Alamos public library for July. Public comments on the draft permit will be accepted by EID through the close of the public hearing scheduled for July 18.

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

5/31/89
OK by Dkm if Gini Nelson concurs.

MEMORANDUM

TO: Richard Mitzelfelt, Director

THROUGH: Dr. Kirkland Jones, Deputy Director

FROM: C. Kelley Crossman, Hazardous Waste Program CKC

SUBJECT: Rescheduling LANL Permit Hearing

DATE: May 31, 1989

5/31/89
Okay
Nelson

I have considered the impact on the LANL permit schedule of rescheduling the permit hearing from June 13-14 to July 18-19, 1989. This was requested by several callers because I had inadvertently scheduled the same week as the WIPP hearings. While the permit and WIPP are separate issues and do not really conflict, the callers felt that we had not provided adequate time to prepare for both hearings. If a decision is made by June 2, 1989, the impact on the overall schedule will be minimal. Therefore I recommend that we reschedule in order to accomodate the public and the WIPP hearings.

cc: Jack Ellvinger
Boyd Hamilton

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

MORANDUM OF MEETING OR CON ATION

☑ Telephone ☐ Personal	Time 9:30	Date 5/30/89
Originating Party		Other Parties
Dr. Chellis Glendenning 982-2053		Dr. A. E. Gordon

Subject
public meeting on LANL draft permit

Discussion
Dr. Glendenning is registering a complaint that the meeting is being held for the public to prepare for meeting. It is also being held at the same time as the DOE meeting on [illegible] 15+16).

STATE OF NEW MEXICO ENVIRONMENT

Date 5/30/89

To Kelley

Building/Room Dr. Chellis Glendenning

☐ For Your Attention
☐ For Your Information
☐ Please Comment
☐ Please See Me
☐ Please Handle
☐ Approved
☐ For Your Recommendation
☐ For Your Approval
☐ Please Return
☐ Please File
☐ Please Mail
☐ As Requested

☐ Telephone Call: Number 982-2053 Time Called 9:30 AM

MESSAGE
LANL Permit

Tesuque

Ref call [illegible]
[illegible]

From [illegible]

Building/Room

Signed Dr. A. E. Gordon

ADM 030 Issued 5/78

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

M E M O R A N D U M

TO: Ms. Kathy Sisneros, Chief
Surface Water Bureau

FROM: C. Kelley Crossman CKC
Hazardous Waste Program

SUBJECT: LANL Monitoring

DATE: May 30, 1989

The enclosed pages from the draft RCRA permit for LANL address monitoring of the surface discharges. If your bureau wishes to comment on this, or any other portion, of the permit, please do so by July 7, 1989, so that I can include your comments in the final draft.

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

II.D. SECURITY

The Permittee shall comply with the security provisions of HWMR-5, Part V, Section 264.14.

II.E. INSPECTION REQUIREMENTS

1. Inspection Plan. The Permittee shall follow Permit Attachment B. and the inspection requirements in Modules III through VII. The Permittee shall remedy any deterioration or malfunction of equipment or structure discovered by an inspection as required by HWMR-5, Part V, Section 264.15(c). Inspection logsheets may be revised by the Permittee and submitted to the Director for inclusion in this permit by permit modification in accordance with HWMR-5, Part IX, Section 270.42.

2. Facility Release Inspection.

   a. The Permittee shall take surface water samples and analyze for metals, volatile and both acid-and-base neutral semivolatile organic hazardous waste constituents in accordance with Table II-2 annually at the sample locations in Table II-1.

   b. The sampling and analysis shall be done using EPA-approved procedures as published in the latest issue of SW-846.

   c. Analysis of Variance (ANOVA) statistical procedures as promulgated in 53 FR 39720 (October 11, 1988) shall be used to compare data between up-gradient and down-gradient stations

   d. Records of this inspection shall be kept in accordance with permit paragraph II.K.1.a. below.

   e. Reports of releases detected by this inspection shall be made in accordance with permit paragraph II.K.2.c. below.

II.F. PERSONNEL TRAINING

The Permittee shall conduct personnel training as required by HWMR-5, Part V, Section 264.16. This training program shall follow Permit Attachment C. Permit Attachment C. shall be updated by the Permittee whenever necessary so as to remain current and accurate. A dated copy of the revised training program will be submitted to the Director for the permit files and permit modification in accordance with HWMR-5, Part IX, Section 270.42 prior to its implementation.

II.G. REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

The Permittee shall comply with the requirements of HWMR-5, Part V, Section 264.17.

TABLE II-1

ENVIRONMENTAL MONITORING LOCATIONS

STATION	N-S Coordinate (LANL Grid)	E-W Coordinate (LANL Grid)
Los Alamos Reservoir	N105	W090
Frijoles	S280	E180
Canada del Buey	N010	E150
Water Canyon at Beta	S090	E090
Acid Weir	N125	E070
Pueblo - 2	N120	E155
Pueblo - 3	N085	E315
DPS - 1	N090	E160
SCS - 2	N060	E140
Pajarito Stream	S180	E410
Ancho Stream	S295	E340
Frijoles Stream	S365	E235
Pajarito Canyon (PCO-3)	S098	E293
LAO-4.5	N065	E270

TABLE II-2 SAMPLING PARAMETERS

TOTAL METALS

Arsenic
Barium
Cadmium
Chromium
Lead
Mercury
Selenium
Silver
Nickel
Berylium

ORGANICS

Halogenated volatile organics
Nonhalogenated volatile organics
Acid-extractable semivolatile organics
Base-neutral extractable semivolatile organics
Phenols

OTHER

Cyanide
pH

All methods are as published in US EPA SW-846, 3rd Edition or later.

If any metal's total concentration exceeds that metal's standard for Extraction Procedure Toxicity, a determination of the Extraction Procedure Toxicity concentration for that metal will be performed. Both data will be recorded and reported.

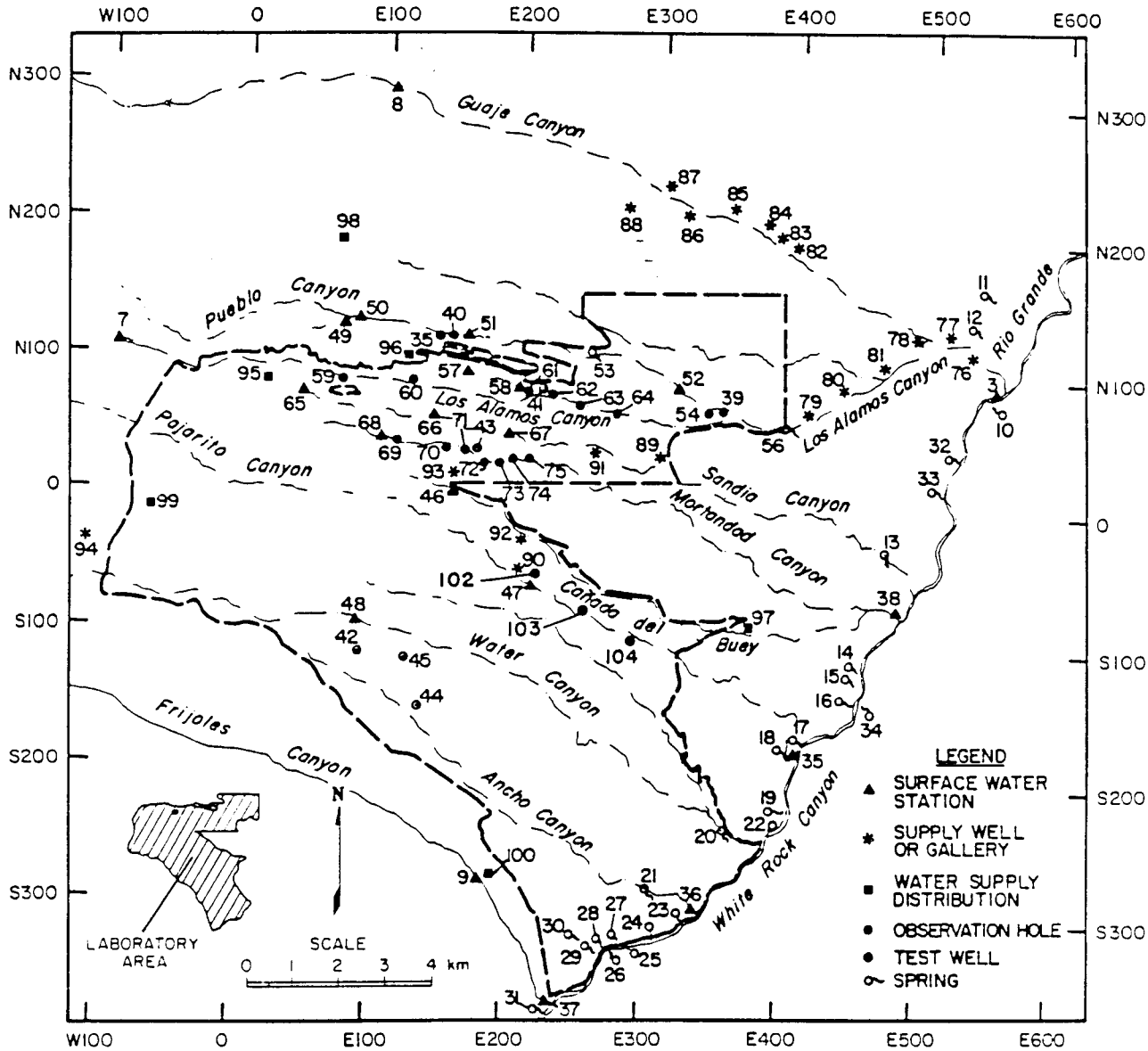

Fig. 15. Surface and ground water sampling locations on and near the Laboratory site.

(TA-57) is located within this drainage. The drainage area is small, about 1220 km^2 (471 mi^2). During water year 1986, discharge ranged from 0.34 m^3/sec (12 ft^3/sec) in February to 54 m^3/sec (1900 ft^3/sec) in July. The river is tributary to the Rio Grande downstream from Los Alamos.

Surface waters from the Rio Grande, Rio Chama, and Jemez River are used for irrigation of crops in the valleys both upstream and downstream from Los Alamos. Water from these rivers is part of recreational areas on state and federal lands.

a. Radiochemical Analyses. Surface water samples from regional stations were collected in February and September 1987. Cesium, plutonium, tritium, and total uranium activity levels in these waters were low (Tables 13 and G-15). Samples collected downgradient from the Laboratory showed no

Table G-14. Location of Surface and Ground Water Sampling Stations

Station	Latitude or N-S Coordinate	Longitude or E-W Coordinate	Map Designation[a]	Type[b]
Regional Surface Water				
Rio Chama at Chamita	30°05'	106°07'	---	SW
Rio Grande at Embudo	36°12'	105°58'	---	SW
Rio Grande at Otowi	35°52'	106°08'	---	SW
Rio Grande at Cochiti	35°37'	106°19'	---	SW
Rio Grande at Bernalillo	35°17'	106°36'	---	SW
Jemez River	35°40'	106°44'	---	SW
Perimeter Stations				
Los Alamos Reservoir	N105	W090	7	SW
Guaje Canyon	N300	E100	8	SW
Frijoles	S280	E180	9	SW
La Mesita Spring	N080	E550	10	GWD
Sacred Spring	N170	E540	11	GWD
Indian Spring	N140	E530	12	GWD
White Rock Canyon				
Group I				
Sandia Spring	S030	E470	13	SWR
Spring 3	S110	E450	14	SWR
Spring 3A	S120	E445	15	SWR
Spring 3AA	S140	E440	16	SWR
Spring 4	S170	E110	17	SWR
Spring 4A	S150	E395	18	SWR
Spring 5	S220	E390	19	SWR
Sprng 5A	S240	E360	20	SWR
Ancho Spring	S280	E305	21	SWR
Group II				
Spring 5A	S230	E390	22	SWR
Spring 6	S300	E330	23	SWR
Spring 6A	S310	E310	24	SWR
Spring 7	S330	E295	25	SWR
Spring 8	S335	E285	26	SWR
Spring 8A	S315	E280	27	SWR
Spring 9	S270	E270	28	SWR
Spring 9A	S325	E265	29	SWR
Doe Spring	S320	E250	30	SWR
Spring 10	S370	E230	31	SWR
Group III				
Spring 1	N040	E520	32	SWR
Spring 2	N015	E505	33	SWR

Table G-14 (cont)

Station	Latitude or N-S Coordinate	Longitude or E-W Coordinate	Map Designation[a]	Type[b]
White Rock Canyon				
Group IV				
Spring 3B	S150	E465	34	SWR
Streams				
Pajarito	S180	E410	35	SWR
Ancho	S295	E340	36	SWR
Frijoles	S365	E235	37	SWR
Sanitary Effluent				
Mortandad	S070	E480	38	SWR
Onsite Stations				
Test Well 1	N070	E345	39	GWD
Test Well 2	N120	E150	40	GWD
Test Well 3	N080	E215	41	GWD
Test Well DT-5A	S110	E090	42	GWD
Test Well 8	N035	E170	43	GWD
Test Well DT-9	S155	E140	44	GWD
Test Well DT-10	S120	E125	45	GWD
Canada del Buey	N010	E150	46	SW
Pajarito	S060	E215	47	SW
Water Canyon at Beta	S090	E090	48	SW
Pajarito Canyon (Onsite)				
PCO-1	S054	E212	102	GWS
PCO-2	S081	E255	103	GWS
PCO-3	S098	E293	104	GWS
Effluent Release Areas				
Acid-Pueblo Canyon				
Acid Weir	N125	E070	49	SW
Pueblo 1	N130	E080	50	SW
Pueblo 2	N120	E155	51	SW
Pueblo 3	N085	E315	52	SW
Hamilton Bend Springs	N110	E250	53	S
Test Well 1A	N070	E335	54	GWS
Test Well 2A	N120	E140	55	GWS
Basalt Spring	N065	E395	56	S

Table G-14 (cont)

Station	Latitude or N-S Coordinate	Longitude or E-W Coordinate	Map Designation[a]	Type[b]
DP-Los Alamos Canyon				
DPS-1	N090	E160	57	SW
DPS-4	N080	E200	58	SW
LAO-C	N085	E070	59	GWS
LAO-1	N080	E120	60	GWS
LAO-2	N080	E210	61	GWS
LAO-3	N080	E220	62	GWS
LAO-4	N070	E245	63	GWS
LAO-4.5	N065	E270	64	GWS
Sandia Canyon				
SCS-1	N080	E040	65	SW
SCS-2	N060	E140	66	SW
SCS-3	N050	E185	67	SW
Mortandad Canyon				
GS-1	N040	E100	68	SW
MCO-3	N040	E110	69	GWS
MCO-4	N035	E150	70	GWS
MCO-5	N030	E160	71	GWS
MCO-6	N030	E175	72	GWS
MCO-7	N025	E180	73	GWS
MCO-7.5	N030	E190	74	GWS
MCO-8				
Water Supply and Distribution				
Los Alamos Well Field				
Well LA-1B	N115	E530	76	GWD
Well LA-2	N125	E505	77	GWD
Well LA-3	N130	E490	78	GWD
Well LA-4	N070	E405	79	GWD
Well LA-5	N076	E435	80	GWD
Well LA-6	N105	E465	81	GWD
Guaje Well Field				
Well G-1	N190	E385	82	GWD
Well G-1A	N197	E380	83	GWD
Well G-2	N205	E365	84	GWD
Well G-3	N215	E350	85	GWD
Well G-4	N213	E315	86	GWD
Well G-5	N228	E295	87	GWD
Well G-6	N215	E270	88	GWD

Table G-14 (cont)

Station	Latitude or N-S Coordinate	Longitude or E-W Coordinate	Map Designation[a]	Type[b]
Pajarito Well Field				
Well PM-1	N030	E305	89	GWD
Well PM-2	S055	E202	90	GWD
Well PM-3	N040	E255	91	GWD
Well PM-4	S030	E205	92	GWD
Well PM-5	N015	E155	93	GWD
Water Canyon Gallery	S040	W125	94	GWD
Fire Station 1	N080	E015	95	D
Fire Station 2	N100	E120	96	D
Fire Station 3	S085	E375	97	D
Fire Station 4	N185	E070	98	D
Fire Station 5	S010	W065	99	D
Bandelier National Monument Headquarters	S270	E190	100	D
Fenton Hill (TA-57)	35°53'	106°40'	101	D

[a]Regional surface water sampling locations in Fig. 15; Perimeter, White Rock Canyon, On-site, and Effluent Release Area sampling locations in Fig. 16.
[b]SW = surface water, GWD = deep or main aquifer, GWS = shallow or alluvial aquifer, SWR = spring at White Rock Canyon, and D = water supply distribution system.

MEMORANDUM OF MEETING OR CONVERSATION

✓ Telephone ☐ Personal	Time 8:40 a.m.	Date 6 9/29/89
Originating Party	Other Parties	
A.G. Gordon - EID	Lars Soholt - LANL	

Subject: EA of incinerator

in-house

Discussion: The EA applies to the low level radioactive incinerator being proposed for LANL, not the incinerator being ~~proposed~~ permitted.

STATE OF NEW MEXICO ENVIRONMENT DEPARTMENT

Date 6/26/89

To Elizabeth

Building/Room Michael Hogan

☐ For Your Attention
☐ For Your Information
☐ Please Comment
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☐ For Your Recommendation
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☐ As Requested

☐ Telephone Call: Number 758-3522 Time Called 1:08 PM

MESSAGE

TA-15 [redacted]

From

Building/Room

ADM 030 Issued 5/78

Signed A.G. Gordon

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal	Time 10:55 a.m.	Date 6/28/89

Originating Party	Other Parties
Michael Horan	A.L. Gordon EID

Subject
Most recent environmental assessment of TA15 incinerator

Discussion ~~Met~~
Richard Mayer referred Michael to Lars Schatt (667-2256) about this EA. Lars Schatt told Michael Horan that a copy is not available. Michael re-iterated his opinion that the incinerator should not be permitted until EID has reviewed at EA

Conclusions or Agreements

Distribution
CKC

Signed A.L. Gordon

[redacted]
Taos, NM 87571-2262
28 June, 1989

C. Kelley Crossman
Supervisor
Hazardous Waste Bureau (EID)
1190 St. Francis Drive
Santa Fe, NM 87503

RECEIVED
JUN 30 1989
HAZARDOUS WASTE SECTION

PUBLIC COMMENT
LOS ALAMOS NATIONAL SCIENTIFIC LABORATORY/LANL
LANL TA-50 UNIT
CONTROLLED AIR RADIOACTIVE WASTES INCINERATOR
RCRA OPERATING PERMIT #NM 0890010515-1

My comment is that it is impossible for the public to correctly evaluate or make substantive comments on the draft permit as EID has not provided (nor do you or EPA have yourselves) the most recent Environmental Assessment (EA) specific to the CAI.

It is my understanding from James Phoenix at DOE Area Office, Los Alamos that the most recent DOE EA specific to the CAI is undergoing correction within DOE and has not been provided to either U.S. EPA or to NM EID.

I therefore reqeust that the July 18, 1989 public hearing be re-scheduled until such time as the most recent EA has been provided to EID, EPA and is available for public study.

Apart from the lack of the current EA, my concerns once again are:

(1) No maintenance requirements for the pollution controls in the Draft Operating Permit
(2) Are U.S. EPA inspection records of the carbon bed filtration available to the public?
(3) May U.S. EPA deny the permit (or NM EID) based on inadequacy of Waste Minimization efforts at DOE/LANL? (See 40 CFR, Part 262.42 (6,7)
(4) No perspective provided by DOE/EPA/NM EID on the total radioactive releases from all of these incinerators at the various labs (Lawrence Livermore, PANTEX, Rocky Flats, Savannah River, Ohio, etc.) Are the total releases equal to a large atmospheric test?
(5) What happens to the radioactive scrubber water and filter fly ash?

Yours sincerely,

[redacted]
tel: 505) 758-3522
Taos, NM

cc: Bill Honker, U.S. EPA, Dallas

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M. ORANDUM OF MEETING OR CONVE TION

☑ Telephone ☐ Personal	Time 8:50	Date 6/27/89

Originating Party	Other Parties
Michael Horan	AE GORDON

Subject LANL

Discussion Old EA of 1983 will be sent to Jass. Is sending a letter requesting that meeting be postponed until the recent in-house EA is available.

Conclusions or Agreements

Distribution
CKC
LANL file

Signed A.E. Gordon

M ORANDUM OF MEETING OR CONVER TION

☑ Telephone ☐ Personal	Time 8:40	Date June 26, 1989
Originating Party		Other Parties
Michael Horan		Elizabeth Gordon EID
758-3522		

Subject
LANL incinerator

Discussion
Environmental Assessment done at LANL recently and is undergoing internal review. The EA is specific to this incinerator. Is it possible to have that sent up to the ~~Zoo~~ EID office.
Questions re. LANL draft permit:

1) Can permit be denied if LANL's effort at waste minimization are inadequate.

2) Has LANL considered the on-site immobilization of mixed wastes with clay and cement. Studies done re. WIPP have indicated that such on-site immobilization is adequate for 20-100 years.

3) DOE is to have similar incinerators at several of its facilities throughout the country. Has DOE considered the accumulative effect of burning radioactive wastes when all incinerators are up + going

*Is LANL burning radioactive wastes during TS?

4) Can EID require maintenance of pollution control devices. Seem to be lacking in draft permit

Conclusions or Agreements

Distribution
CKC
LANL file

Signed AG Gordon

MEMORANDUM OF MEETING OR CONVERSATION

This may be a duplicate.

☑ Telephone ☐ Personal	Time 8:40	Date June 26, 1989

Originating Party	Other Parties
Michael Horan	Elizabeth Gordon EID
758-3522	

Subject: LANL incinerator

Discussion

Environmental Assessment done at LANL recently and is undergoing internal review. The EA is specific to this incinerator. Is it possible to have that sent up to the EID office.

Questions re. LANL draft permit:

1) Can permit be denied if LANL's effort at waste minimization are inadequate.

2) Has LANL considered the on-site immobilization of mixed waste w/ clay and cement. Studies done re. WIPP have indicated that such on-site immobilization is adequate for 20-100 years.

3) DOE is to have similar incinerators at several of its facilities throughout the country. Has DOE considered the accumulative effect of burning radioactive wastes when all incinerators are up + going. Is LANL burning radioactive wastes during TS?

4) Can EID require maintenance of pollution control devices. Seem to be lacking in draft permit.

Conclusions or Agreements

Distribution

CKC

LANL file

Signed A.G. Gordon

MEMORANDUM OF MEETING OR CONVERSATION

✓ Telephone ☐ Personal	Time	Date
Originating Party		Other Parties
David Hutchins		R.E. Gordon EIP
Waste Mgt. 667-7391		

Subject

LANL incinerator

Discussion

Response to comments from Michael Horrar Kelly

Has he received the information sent by Mr. Hutchins?

I called him back to let him know that the comments are in house.

Conclusions or Agreements

Distribution

CKC

Signed R.E. Gordon

MICHAEL HORAN

P.O. Box 2262
Taos, New Mexico 87571-2262
23 June, 1989

NM EID
C. Kelley Crossman
Supervisor
Hazardous Wastes Bureau
1190 St. Francis Drive
Santa Fe, NM 87503

RECEIVED
JUN 28 1989
HAZARDOUS WASTE SECTION

Dear Mr. Crossman,

LANL TA-50 Unit
CONTROLLED AIR RADIOACTIVE WASTES INCINERATOR
RCRA OPERATING PERMIT #NM0890010515-1
May 1989
Public Comment

Further to my comment letter dated 5/29/89, would your please incorporate the enclosed FOIA request to U.S. EPA as additional tehcnical comments for response by U.S. EPA and LANL at the July 18, 1989 public hearing in Santa Fe.

I will attend the July 18, 1989 hearing in Santa Fe.

CLEAN AIR - A NEW MEXICO HERITAGE. LET'S PRESERVE IT! *

*motto of NM EID Air Quality Bureau

Sincerely,
Respectfully,

Michael Horan
tel: 758-3522
Taos, NM

P.O. Box 2262
Taos, New Mexico 87571-2262
23/6/89

FOIA OFFICER
U.S. EPA
1445 Ross Ave.
Dallas, TX. 75202-2733

FOIA REQUEST
LOS ALAMOS NATIONAL SCIENTIFIC LABORATORY
LANL TA-50 UNIT
CONTROLLED AIR RADIOACTIVE WASTES INCINERATOR
RCRA OPERATING PERMIT #NM 0890010515-1

Persuant to FOIA and persuant to instructions of your Mr. Reeves of U.S. EPA Environmental Services Div. on 23 June, 1989 and preparatory to the public hearing of NM EID on July 18, 1989 on the above referenced draft permit, this is to request the U.S. EPA response to the following questions:

(1) On the LANL TA-50 unit CAI, what was the historical U.S. EPA frequency of inspection of the pressure drop across the carbon bed filter. Was the pressure drop logged and compared to the manufacturer's specified minimum pressure drop?
(2) When the pressure drop across the carbon bed filter was below manufacturer's minimum pressure drop specification, was the carbon bed filter purged with inert gas and was this purging filter regeneration ever witnessed by U.S. EPA and the pressure drop across the filter checked and logged after purging?
(3) What was the frequency of carbon bed filter purging according to U.S. EPA CAI log inspections?
(4) How frequently were the carbon bed filter nozzles removed and inspected in the presence of U.S. EPA inspectors?
(5) Has, or will U.S. DOE/LANL obtain a RCRA "delisting" for the carbon bed filter fly ash and for the radioactive scrubber water from the TA-50 CAI?
(6) Was the radioactive scrubber water ever tested by U.S. EPA?
(7) 40 CFR Part 262.42 (6,7) requires a "Waste Minimization" report by U.S. DOE/LANL to U.S. EPA. Is U.S. EPA allowed to determine the U.S. DOE/LANL "Waste Minimization" as inadequate? If reviewed and determined as inadequate, is U.S. EPA allowed to deny the permit to operate?

Sincerely,

Michael Horan
Bicycle Mechanic
Taos, NM
tel: (505) 758-3522

cc: Bill Honker, U.S. EPA, Dallas
C. Kelley Crossman, NM EID, Haz. Wastes Bureau, Santa Fe, NM

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STATE OF NEW MEXICO

Date June 23, 1989

To ~~Michael Horan~~ CKC

Building/Room

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☐ Telephone Call: Number _____ Time Called _____

MESSAGE Michael Horan

Michael Horan called to see if his written comments must be resubmitted because date of meeting had to be changed. Told him. What's to know if LANL's not filing reports re: waste minimization ~~etc~~ is a

From

Building/Room

ADM 030 Issued 5/78

Karen McIntosh
2 Monte Alto Way
Santa Fe, N.M. 87505

ALBUQUERQUE, N.M. 87103
PM
16 JUN
1989

SEFA
MUSCULAR DYSTROPHY
SUPPORT WORLD

Mr. Richard Mitzelfelt
1190 St. Francis Drive
Santa Fe, N.M. 87503

6/19

KELLY -

BUDD HEBERG OF DAMES & MOORE
WOULD LIKE TO SPEAK WITH YOU
RE LANL INCINERATOR. HE WILL
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MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

June 8, 1989

CERTIFIED MAIL NO. P 996 328 875
RETURN RECEIPT REQUESTED

See hearing record at page 58, line 3.

Mr. Harold Valencia
DOE - Albuquerque Operations
Los Alamos Area Office
Los Alamos, NM 87544

RE: Permit Application No. 772

Dear Mr. Valencia:

As you are undoubtedly aware, New Mexico House Bill 59 imposes a moratorium on the operation of incinerators in the state until the Environmental Improvement Board adopts regulations for these sources. Air Quality Control Regulation 702 requires the Division to review permit applications for conformance with all applicable regulations prior to issuing a permit.

Since the Legislature has imposed a moratorium on new incinerators until such regulations have been adopted by the Board, it is inappropriate for the Division to review the proposed incinerator until the regulations have been adopted. Consequently, we are unable to review your 5/1/89 application until such regulations have been adopted and are effective.

Your permit application will be kept on file and when the regulations are adopted, we will re-open the permit and proceed with the permit process at that time.

If you have any questions, feel free to call either myself, Cubia Clayton or Louis W. Rose.

Sincerely,

Bruce Nicholson

Bruce Nicholson, P.E.
Program Manager
Technical Analysis & Permits Section
Air Quality Bureau

RECEIVED
AUG 31 1989

BN/lb

Enclosure

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

LANL Rec'd 89

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

May 19, 1989

Howard W. Henry Co.
1300 Central Avenue S.W.
Albuquerque, NM 87102

RE: Public Hearing on LANL
NM 890010515

Dear Mr. Henry:

I wish to confirm with you the arrangements discussed with Pat on May 19, 1989 for a recorder for a public hearing. The hearing will begin at 9 a.m. on June 13 in the Apodaca auditorium of the P.E.R.A. building in Santa Fe. We anticipate the hearing will be continued into June 14 at the public's request. At this time we believe the hearing will not continue past 5 p.m. but your recorder should be prepared for the possibility of staying later.

The enclosed materials provide some background for your information. The billing code will be "580389:LANL Permit". Bills for your service and the transcript should be sent to:

Ms. Anna Walker
EID Hazardous Waste Program
1190 St. Francis Dr.
Santa Fe, NM 87503

If you have any questions please call Mr. C. Kelley Crossman on my staff at 827-2923.

Sincerely,

Boyd Hamilton

Boyd Hamilton
Program Manager
Hazardous Waste Program

BH/CKC/vga

Response to Mr. Michael Horan's 5/31 Letter to NMEID Re: Los Alamos Controlled Air Radioactive Waste Incinerator RCRA Operating Permit #NM0890010505-1

Item #1 - HEPA Filters:

The Carbon Bed Adsorber was originally installed in the CAI offgas treatment line as part of a research project to study the fate of various fission activation products during incineration. Its primary purpose at that time was for capture of Iodine 131 that might pass through the upstream offgas treatment components. It is not now, nor has it ever been, intended to serve as a filter or control device for PU-238, PU-239, PU-240, or any other particulates in the offgas stream. The sole reason this component has been retained in the present incinerator design configuration is that, due to offgas duct piping constraints between the primary HEPA filter banks and the Carbon Bed, EPA Method 5 isokinetic sampling associated with the RCRA Trial Burn could only be made in the ductwork downstream of the Carbon Bed.

The primary filtration device for removal of radioactive particulates in the offgas stream is the High Efficiency Particulate Air (HEPA) filters, located upstream of the Carbon Bed. These are nuclear grade filters which are factory tested and certified to have a minimum particle capture efficiency of not less than 99.97 percent of 0.3 micron particles. All HEPA filters are further tested by DOE prior to installation at the site to certify 99.97% capture efficiency. Following installation, leak testing is performed across the filter bank to ensure adequate installation and filter performance. Three HEPA filter banks are located in series in the process, for tripley staged filtration of the offgas.

The Venturi Scrubber acts as a pre-filtration device to remove gross particulate from the offgas stream prior to entering the HEPA filters, thus substantially extending HEPA filter service life. The Venturi Scrubber removes 95-99 weight percent of particulates contained in the offgas flow through entrainment in a finely atomized liquid flow injected upstream of the venturi throat.

The current minimum gauge pressure drop specified by the manufacturer for new HEPA filters is 0.1 inches of water column (W.C.). When the pressure drop across an individual filter reaches 5 inches W.C., the filter is changed out. Pressure drop across the incinerator offgas HEPA filter bank is continuously monitored and recorded electronically and is alarmed in the event of a low or excess pressure drop indication. In the event of a low HEPA pressure drop alarm,

waste feed is automatically interrupted. In the event of a high pressure drop alarm (an indication of loading of the filter with moisture or particulate) operations personnel reroute offgas flow to the parallel back-up HEPA filter bank. This allows changeout of exhausted filters without interruption of operations.

HEPA filters in current usage at the CAI are the industry standard, non-regenerable type. Regenerable HEPA filters are available, but as yet are not approved for nuclear service. HEPAs removed from service are assayed to determine whether they contain transuranic (TRU) or low level radioactive contamination. Low level contaminated filters are placed into contained storage pending disposal at a mixed waste disposal site. TRU contaminated filters are placed into contained storage pending certification and disposal at WIPP.

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT

Date 5/25/89

To CKelley Crossman

Building/Room

- ☐ For Your Attention
- ☐ For Your Information
- ☐ Please Comment
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- ☐ Please Handle
- ☐ Approved
- ☐ For Your Recommendation
- ☐ For Your Approval
- ☐ Please Return
- ☐ Please File
- ☐ Please Mail
- ☐ As Requested

☐ Telephone Call: Number _____ Time Called _____

MESSAGE

229 Hyde Park Est
Kathy Velleca Santa Fe 87501
983-3193; gave her date + time of meeting + location in Jeas of draft permit ~~beg~~ questions on meeting re LANL incinerator held earlier; believe she wants minutes from info meeting held earlier

From AGordon

Building/Room

ADM 030 Issued 5/78

STATE OF NEW MEXICO
HEALTH & ENVIRONMENT

Date

To Kurk

Building/Room

- ☐ For Your Attention
- ☐ For Your Information
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☐ Telephone Call: Number _____ Time Called 3:17

MESSAGE

Richard Cameron
988-2256
Objects to our hearings due to SEIS hearing

From

Building/Room

ADM 030 Issued 5/78

Jock

July 10, 1989

Dear Mr. Mitzelfelt,

As a former information officer of the U.S. Atomic Energy Commission in Washington, I am writing to urge the Environmental Improvement Division to issue an emergency order under the state Air Quality Control Act to prevent any burning of radioactive waste by Los Alamos National Laboratories until the state adopts standards to regulate this practice. Such a ban should apply also to other toxic wastes.

Sincerely,

Truman Temple

Truman Temple

RECEIVED
JUL 11 1989

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal	Time 10:10	Date 5/30/89

Originating Party	Other Parties
Wayne Wilcox 983 1111	A.E. Gordon EID

Subject LANL draft

Discussion

712 Calle Grillo
Santa Fe, NM 87501

Calling in support of public hearing on incinerator

Conclusions or Agreements

Distribution
CKC

Signed A.E. Gordon

RACHEL'S HAZARDOUS WASTE NEWS #131

Providing news and resources to the Movement for Environmental Justice -- May 30, 1989

FINE PARTICLES--PART 1
THE DANGERS OF INCINERATION

Incineration of anything, including garbage and hazardous chemical wastes, produces a kind of pollution that is uniquely dangerous to humans: fine particles.

In this series, we will first discuss the characteristics of fine particles, and later we will discuss health studies showing the consequences of breathing fine particles.

The process of incineration turns solids and liquids partly into gases and partly into tiny particles of soot or ash. As the gases rise in the smoke stack, they cool and some of the gas molecules come together to form additional fine particles. The resulting particles are exceedingly small when they are emitted into the environment. Scientists who study particles make a distinction between coarse (large) particles and fine (small) particles. Fine particles behave entirely differently from coarse particles and, as we will see, are much more dangerous to humans. Fine particles are also much more difficult and expensive to control. They are also invisible, so when they are not controlled, there is no way to know it except by monitoring with the proper instruments.

Coarse particles are those with a diameter larger than 2 micrometers (um); fine particles are those with a diameter less than 2 micrometers. A micrometer (um) is a millionth of a meter and a meter is about a yard. (An older term for micrometer is micron.)

Incinerators emit large numbers of particles, despite the best available control technology. Half of all the particles emitted will have a diameter less that 2 um, and the majority of these will have a diameter of 0.3 um.

It is difficult to imagine how small these particles are. To help understand what we're talking about, look at the dot over the letter i in this newsletter; that dot measures about 400 micrometers in diameter. You could fit 1590 coarse particles (with a diameter of 10 micrometers) on that dot. In the case of fine particles with a diameter of 2 um, you could fit 40,000 particles on the dot. When the particles have a diameter of 0.3 um, you can fit 1,777,780 (nearly 2 million) particles on the dot over the i.

Unfortunately, U.S. EPA [Environmental Protection Agency] regulations do not take into consideration the sizes of the particles emitted by an incinerator. For regulatory purposes, coarse particles are considered to be the same as fine particles, as if they were all equivalent. The regulations issued as part of the Resource Conservation and Recovery Act (RCRA) allow the emission of 180 milligrams (mg) of particles per dry standard cubic meter of stack gas. Measurements show that half these particles will have a diameter larger that 2.5 micrometers. The remaining 90 mg of particles, however, will have diameters ranging from 2.5 down to 0.1 micrometers. A majority will have a diameter of 0.3 micrometers. If we assume that 25% are 2 um, 25% are 1 um, 35% are 0.3 um and 15% are 0.1 um in diameter, we can develop a general picture of the typical fine particle emissions from an incinerator.

Each gram of fine particles emitted from an incinerator will consist of 311 trillion (3.1×10^{14}) individual particles. There are 28 grams in an ounce and 454 grams in a pound. A trillion (10^{12}) is a thousand billion (or a million million). Over a year's time, an incinerator meeting the federal standards will legally emit anywhere from 10 to 1000 <u>tons</u> of fine particles, depending on the size of the incinerator. One ton of fine particles will be made up of 280,000,000,000,000,000,000 (280 million trillion) individual particles.

Breaking things into fine particles has the effect of vastly increasing their surface area. A single particle weighing a gram (and having the same density as water) would have a surface area of about 5 square centimeters (the size of a small U.S. postage stamp). But when that same gram is broken into 311 trillion fine particles, its combined surface area grows to 8958 square meters (the area of two football fields).

This is important for several reasons: as

these fine particles move upward in the smoke stack, they are immersed in a bath of gaseous chemicals that are cooling and are "looking" for a place to turn from a gaseous to a solid state. Fine particles, with their large surface area, provide an inviting place, and so the surfaces of fine particles become covered with pollutants ("enriched" is the technical term for this) before they are released into the local air. In particular, fine particles become coated with toxic metals (lead, cadmium, arsenic, chromium, and zinc, and with sulfur and polycyclic aromatic hydrocarbons--or with whatever else is in the smoke stack at the time).

As the human body evolved throughout its long history, it adapted to the environment. One factor in the environment has always been dust, principally from dust storms. Dust from storms is all larger than 10 um in diameter and the human body evolved mechanisms for protection against such large particles. The hairs inside the nose, the mucous membranes lining the nose, throat and lungs, and even the shape of the throat, help to trap dust. As air is inhaled, the shape of the throat causes the air to swirl, so heavy dust particles are thrown outward by centrifugal force, where they strike the mucous-lined walls. As the tubes and passageways leading to the lungs twist and branch, they provide many opportunities for particles to collide with sticky walls and become trapped before they enter the lungs. Once trapped by mucous, coarse particles are coughed up and excreted.

Nature has gone to great lengths to protect the lungs because the deepest regions of the lung provide places (called alveolar sacs, or alveoli) where oxygen passes into the blood and carbon dioxide passes out of the blood. Thus, the deep regions of the lung provide direct access to the blood stream and, by this means, to every part of the body.

Unfortunately, humans now produce huge numbers of fine particles that elude the body's protective mechanisms entirely. Fine particles pass easily into the deepest regions of the lungs. There they remain indefinitely because no clearance mechanisms effectively remove them.

Once lodged in the deep regions of the lung, fine particles, with their enormous surface area enriched with toxics, provide a particularly efficient means for delivering metals and organic pollutants directly into the blood stream. Their large surface area provides effective contact with moist tissue and the opportunity for dissolving or for other chemical reactions, putting pollutants directly into the victim's blood. Once in the circulatory system, toxics are then distributed throughout the body.

[To be continued.]

The best books on fine particles are those of the National Research Council, National Academy of Sciences: Airborne Particles (Baltimore, MD: University Park Press, 1979) and Controlling Airborne Particles (Washington, DC: National Academy of Sciences, 1980); a short summary appears in Fine Particulate Pollution, a Report of the United Nations Economic Commission for Europe (London and NY: Pergamon Press, 1979). A good, though very technical, introduction is William Hinds, Aerosol Technology; Properties, Behavior and Measurement of Airborne Particles (NY: John Wiley and Sons, 1982).

Rachel's Hazardous Waste News is published weekly by Environmental Research Foundation, P.O. Box 3541, Princeton, NJ 08543. Editor: Peter Montague, Ph.D.; Associate Editor: Maria B. Pellerano; Assistant Editor: Annette Eubank; West Coast Editor: Tim Montague; subscriptions: Abigail Allen, Office Manager. Subscription rates: $25 per year for individuals and citizen groups, $50 for government agencies, $8 for students and seniors, $250 for businesses and professionals. In Canada, add $4.00; in Europe, add $11.00.

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P.O. Box 968
Santa Fe, NM 87503

Ralph
Per our telecon 6/6/89, please annotate info where you can and send back to me ASAP.
Thanks
Kelley
827 2923
only did #1
Per Kelley — Call me.
Action
Diane H.

NMEID
Mr. C. Kelley Crossman
Supervisor
Hazardous Waste Bureau
1190 St. Francis Drive
Santa Fe, NM 87503

Dear Mr. Crossman,

Operator
L.
CONTROLLED A
RCRA OPERATING PERMIT #NM0890010515-1
May 1989
Public Comment

The following comments are requested for response in writing from U.S. EPA/ NM EID and from LANL staff at the public hearing June 13, 1989 in Santa Fe.

Page numbers are referenced to the draft permit document:

(1)

page -35. HEPA Filters. It is my understanding that a carbon bed filter will remove radioactive elements, including Pu-238, Pu-239, Pu-240, tritium, etc. in the flue gas stream. What is the minimum gauge pressure drop across the carbon bed filter specified by the manufacturer. What is the frequency of verification of the pressure drop? Is it each shift?

When the carbon bed filter becomes plugged with radioactive pu or contaminated particulates how is the carbon bed filter regenerated? Is it purged with inert gas?

What is the specified frequency for carbon bed regeneration purging?

How frequently are the carbon bed absorber nozzles removed and inspected?

What is the disposal method for radioactive fly ash from the carbon bed filter purging?

(2) page A-9 Radioactive Scrubber Water

What happens to the radioactive scrubber water? It says the scrubber water "will always be within the discharge guidelines established under the NPDES permit for the Ta-50 radioactive treatment system thereby negating chemical analysis." Does this mean that LANL will obtain a RCRA "delisting" from U.S. EPA for the scrubber wastewater?

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LANL TA-50 Unit Radioactive Wastes Incinerator
RCRA NM #08900010515-1 (cont.)

Is there in effect a memorandum of prior understanding, pre-dating the draft permit between LANL and U.S. EPA for a RCRA "delisting" for the scrubber radioactive wastewater?

What is the maintenance checklist for the scrubber each shift, monthly and annually?

(3) ref: Permit Attachment K, NM EIB-HWMR-5, #301
and 40 CFR, Ch. I, part 262.42 (7)

40 CFR Part 262 is incorporated as Part III of the NM Hazardous Waste Regulations. 40 CFR, part 262.42 ,(6,7)requires(6) "a description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated. (7) "a description of the changes in the volume and toxicity waste actually achieved during the year in comparison to previous years to the extent such information is available for years prior to 1984."

Is this waste reduction report to U.S. EPA available for public examination?

For example, what types of biodegradeable solvent replacements is LANL now using as replacements for chlorinated halogenated solvents and for chlorofluorocarbon solvents? What reduction in chlorinated solvents volume has been achieved by the use of biodegradeable solvent replacements?

What is the volume reduction achieved, for example, in heavy metals through use of ion exchange metal recovery systems?

What is the volume reduction in cyanide containing water by use of reverse osmosis systems?

I herein request to receive a copy of the waste reduction report to U.S. EPA required by 40 CFR, Ch. I, part 262.42 (6) & (7).

As LANL has recently refused to provide even one waste 55 gallon drum for use as staging containers for community recycling in Taos County and as Dr. Jim Kane at University of California, Berkeley, the U.C. liason between LANL and President Gardner's office, did not ever respond to the request for community recycling containers, what precisely is the U.C. and LANL response to 40 CFR, Ch. I, part 262.42 (6) and (7).? If LANL is unwilling to donate several waste drums to Taos County for community recycling, their response to 40 CFR, Ch. I part 262.42 shall indeed be interesting at the public hearing on June 13, 1989.

Sincerely,

Michael Horan tel: (505) 758-3522
Taos, NM

cc: Mr. Bill Honker, U.S. EPA
RCRA Permits Branch, Dallas

P.O. Box 2262
Taos, New Mexico 87571-2262
5/29/89

NMEID
Mr. C. Kelley Crossman
Supervisor
Hazardous Waste Bureau
1190 St. Francis Drive
Santa Fe, NM 87503

RECEIVED
MAY 31 1989
HAZARDOUS WASTE SECTION

Dear Mr. Crossman,

Operator: UNIVERISITY OF CALIFORNIA REGENTS
LANL TA-50 UNIT
CONTROLLED AIR RADIOACTIVE WASTES INCINERATOR
RCRA OPERATING PERMIT #NM0890010515-1
May 1989
Public Comment

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RCRA NM #08900010515-1 (cont.)

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Sincerely,

Michael Horan tel: (505) 758-3522
Taos, NM

cc: Mr. Bill Honker, U.S. EPA
RCRA Permits Branch, Dallas

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

MAY 19 1989

Dear Concerned Citizen:

Enclosed for your information is material on a hazardous waste facility in your area.

If you have any questions about this information feel free to call me at (505) 827-2923 or write to the address below.

Sincerely,

C. Kelley Crossman

C. Kelley Crossman
Supervisor

CKC/vga

cc: Janie Hernandez, EPA, (6H-HS)

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

89-038

HED NEWS

NEW MEXICO HEALTH AND ENVIRONMENT DEPARTMENT

OFFICE OF PUBLIC INFORMATION
1190 St. Francis Drive
Santa Fe, New Mexico 87503
(505)827-2618

FOR IMMEDIATE RELEASE **CONTACT: C. Kelley Crossman**
MAY 19, 1989 **827-2923**

SANTA FE, NM-- The Environmental Improvement Division of the New Mexico Health and Environment Department is seeking public comment on a draft hazardous waste permit for Los Alamos National Laboratory (LANL).

The draft permit details the requirements for storage and treatment of hazardous wastes generated through LANL operations. The public may review the draft plan at the Harold Runnels Building library, 1190 St. Francis Drive in Santa Fe, or the Espanola Public Library, 314A Onate, NW.

According to C. Kelley Crossman of EID's Hazardous Waste Bureau, LANL generates large quantities of waste solvents and chemicals which must be handled in accordance with strict guidelines. The draft permit specifies which chemicals may be stored while awaiting treatment, the treatment processes LANL may employ, and the conditions under which certain materials may be incinerated. Additionally, the permit will require LANL to investigate all past disposal sites and prepare clean-up plans where necessary.

Crossman said this permit does not authorize or address radioactive wastes contaminated with regulated chemicals, which are subject to a separate permit to be processed at a later date.

The public is also invited to attend a public hearing on the draft permit scheduled for June 13, 1989. The hearing will begin at 9:00 AM in the P.E.R.A. Building's Apodaca Hall, located in Santa Fe at the intersection of Paseo de Peralta and Old Santa Fe Trail.

(more)

Questions and comments regarding the draft permit may be directed to the Hazardous Waste Bureau, 1190 St. Francis Drive, Santa Fe, NM 87503. Comments must be received by July 7, 1989.

--30--

Rec'd ~~LAL~~ LANL

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

MAY 19 1989

Dear Concerned Citizen:

Enclosed for your information is material on a hazardous waste facility in your area.

If you have any questions about this information feel free to call me at (505) 827-2923 or write to the address below.

Sincerely,

C. Kelley Crossman

C. Kelley Crossman
Supervisor

CKC/vga

cc: Janie Hernandez, EPA, (6H-HS)

P.S.
A copy of the draft permit is in the Taos EID office in the County Health Building until June 9th.

Letters with the footnote went to Taos addresses only. All others received plain letter. Mailing groups 2, 5 & 6 plus LANL special list etc

– ENVIRONMENTAL IMPROVEMENT DIVISION –
Harold Runnels Building
1190 St. Francis Dr
Santa Fe, New Mexico 87503

NEWS RELEASE

MAY 1 9 1989

The Environmental Improvement Division of the Health and Environment Department announced the availability of a draft hazardous waste permit for the Los Alamos National Laboratory and has invited the public to review and comment on the draft. The permit details the requirements for storage and treatment of hazardous wastes from the laboratory operation. Under the state and federal hazardous waste regulations LANL must apply for and receive a permit for storage and treatment of regulated wastes. This draft was prepared in response to these regulations and covers waste analysis, inspections, employee training, closure of each unit and treatment practices and safeguards. The draft permit may be reviewed at either the EID Santa Fe office at 1190 St. Francis Dr. or the Espanola Public Library at 314A Onate, NW.

LANL generates large quantites of waste solvents and chemicals which must be handled in accordance with strict guidelines. This draft permit specifies which chemicals may be stored while awaiting treatment, the treatment processes which LANL may conduct and the conditions under which certain chemicals may be incinerated. This permit does not authorize or address radioactive wastes contaminated with regulated chemicals. They will be subject to a permit to be processed later.

LANL first applied for a permit under the State Hazardous Waste Act in 1985. This draft is the result of numerous reviews and technical exchanges, carefully defining which activities will be allowed to continue. LANL decided to discontinue disposal of hazardous wastes on site and will close the landfills and lagoons which received hazardous wastes. The public

will be asked to comment on closure plans in the future as the EID processes them.

The permit will also require LANL to investigate all past disposal sites and to prepare cleanup plans where necessary. The State and EPA will oversee this activity and monitor cleanup of these old sites. This will be an on-going effort which is expected to take years to complete.

The EID will hold an public hearing on the draft permit in Santa Fe on June 13, 1989. The hearing will be to assess public concerns and to respond to questions. The hearing is scheduled to begin at 9:00 am in Apodaca Hall of the P.E.R.A. Building at Paseo de Peralta and Old Santa Fe Trail.

Questions and comments should be directed to the EID Hazardous Waste Section in Santa Fe. They can be reached at 827-2929 or 1190 St. Francis Drive, Santa Fe, NM 87503. Comments must be received by July 7, 1989 to be considered.

FACT SHEET

MAY 1 9 1989

Intent to Issue a Permit for the Operation
of Hazardous Waste Units
Under the
New Mexico Hazardous Waste Act

Activities: Hazardous waste storage in containers and tanks; treatment in tanks; incineration of hazardous wastes.

Facility Name: Los Alamos National Laboratory

EPA I.D. Number: NM 0890010515

Location : Los Alamos, N.M.

Landowner: United States Department of Energy

Facility Operator: University of California Regents

Interim status Activities: The laboratory conducts research in chemistry, physics and explosive technology. As a result of this activity a wide variety of chemical wastes are generated. These wastes are stored, treated and incinerated if applicable. Wastes not amenable to treatment on site are disposed of by shipment off site to a permitted facility.

Description of the permit: The permit describes the operation of each unit at the laboratory. Storage occurs in drums, large polyethylene transportable containers, and metal tanks. Any hazardous waste generated by the laboratory may be stored for an indefinite period of time. Treatment occurs in a controlled containment tank or large steel tanks. Treatment typically consists of neutralization of acids and corrosives, precipitation of metals and solidification of the sludges; and destruction of cyanide wastes. Incineration occurs in a controlled air incinerator and an industrial incinerator. The controlled air incinerator may burn any waste capable of destruction by burning, except for a few prohibited wastes, including chlorinated phenols. The industrial incinerator burns ignitable wastes contaminated with explosives. The permit includes a waste analysis plan, inspection plan, training plan, contingency plan, closure plans, operating procedures, an additional data submittal schedule and the regulations applicable for the permit period. If the permit is issued it will become the enforceable requirements under the state Hazardous Waste Act and the federal Resource Conservation and Recovery Act for conduct of hazardous waste management. The proposed permit is for a period of ten years as allowable by the regulations, with an automatic review required at five years.

Availability of the draft permit: A copy is available for public review at the New Mexico Environmental Improvement Division, Hazardous Waste Section, 1190 St. Francis Drive, Santa Fe, New Mexico and the Espanola public library, 314A Onate Street, NW, Espanola, New Mexico.

Comment Period: Any person, including the applicant, who wishes to comment on the tentative decision to issue the permit may do so by submitting written comments to the NMEID, Hazardous Waste Management Section, 1190 St. Francis Drive, Santa Fe, New Mexico 87503, ATTENTION: Mr. C. Kelley Crossman. Only comments received by July 7, 1989 will be considered.

Procedures for Requesting a Hearing: Any person, including the applicant, who wishes to request a public hearing concerning the proposed actions, may do so by submitting a written request to the address in the above section. Any request for a hearing shall be submitted in writing and shall state the nature of the issues proposed to be raised in the hearing. Each request must include the requestor's name and address. Only requests received by July 7, 1989 , will be considered.

Scheduled Hearing: The Director of the Environmental Improvement Division, under the authority of the Hazardous Waste Management Regulations, has scheduled a hearing for June 13, 1989 at the P.E.R.A. Building, Old Santa Fe Trail at Paseo de Peralta, Santa Fe, NM. The hearing will be held in Apodaca Hall on the first floor and will begin at 9 AM. The Director has reserved the right to cancel the hearing if public interest in this proposed action does not appear significant. Comments and hearing requests received by June 9, 1989 will be used to judge public interest in this matter. Requests for a public hearing received after June 9, 1989 and by July 7, 1989, will be used to form a decision on holding a hearing at a future date.

Final Decision: All comments submitted on this proposed action will be considered in formulating a final decision. Under the Hazardous Waste Management Regulations the Director may either approve the permit as written, modify the permit based on the comments received, or deny the permit, either in whole or in part. If the permit is issued, it will become the operating conditions for hazardous waste management at LANL. If the permit is denied in whole or in part, the units for which a permit is denied will lose interim status and will be required to close under the Hazardous Waste Management Regulations for interim status units. The NMEID will notify LANL, and each person who submitted a written comment during the public comment period, of the final decision, or of any public hearing which may be scheduled.

New Mexico Health and Environment Department

~~LAC~~ LANL 89 permit

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

May 18, 1989

Mr. Cubia Clayton, Chief
Air Quality Bureau
1190 St. Francis Dr.
Santa Fe, NM 87503

RE: NM0890010515
Los Alamos National Laboratory

Dear Mr. Clayton:

The Hazardous Waste Bureau has prepared a draft hazardous waste incinerator permit for LANL. Enclosed are the pertinent portions which may be of concern to your bureau. The entire document is available in the EID library and the Hazardous Waste Section.

Please provide any comments you may have by July 7, 1989, so that they may be incorporated in the final document as appropriate.

Sincerely,

Boyd Hamilton

Boyd Hamilton
Program Manager
Hazardous Waste Program

BH/CKC/vga

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

Agenc[illegible] to burn lab's nuclear waste

[illegible] DAVID ROYBAL
[illegible] New Mexican Staff

[illegible] low-level radioactive waste [illegible] at Los Alamos National [illegible] and [illegible] should be [illegible] instead, says the U.S. [illegible] of Energy.

The process [illegible] disposal [illegible] in coming months by [illegible] New Mexico Environmental [illegible] Division, which [illegible] separate applications [illegible] Energy Department [illegible]

[illegible]

[illegible] years ago and that all state requirements were met. But the incinerator has not been used in the past two years.

[illegible] is undergoing improvements [illegible] nothing to do with the [illegible]," LaCroix said.

Ken Hargis, group leader with the lab's environmental surveillance group, said the proposed new incinerator would pose no threat to health or safety.

"[illegible] designed with multiple [illegible] controls," Hargis said. [illegible] there would be "a lot of [illegible] of potential emissions" from the incinerator.

"[illegible] under all conditions, the incinerator would comply with [illegible] requirements," he said.

Hargis said only [illegible] would be burned at the [illegible] incinerator.

[illegible]

Santa Fe New Mexican 5/18/89

JOURNAL NORTH

Two SF Baseball Players Named to North Team — Page 5

SANTA FE / Wednesday, May 17, 1989

DOE Wants Nuke-Trash Incinerator at Lab

Proposed $3 Million Unit To Burn Only Low-Level Debris

By Ben Neary
JOURNAL STAFF WRITER

The U.S. Department of Energy this month applied for state permission to build an incinerator to burn 3.6 million pounds of low-level radioactive trash each year at Los Alamos National Laboratory.

The lab currently buries such trash and needs the incinerator to cut down on volume, lab environmental scientist Donna Lacombe said Tuesday. She said the agency will control the burning with special filters to keep emissions within standards.

Lacombe said the planned incinerator could be built within five years at a cost of about $3 million. She said it would only burn items from Los Alamos that have been exposed to radioactivity — not inherently radioactive substances.

The incinerator isn't intended to burn any of the same material that the DOE wants to store underground at the Waste Isolation Pilot Plant near Carlsbad, Lacombe said. She said the department plans to isolate more highly radioactive material for burial at WIPP.

The DOE still hasn't determined what to do with the ash, which remains radioactive, Lacombe said. She said the laboratory already has state permission to operate a small incinerator to burn radioactive waste but said it's been idle for two years.

The DOE got state permission last June to burn nearly 100 tons of nonradioactive garbage a day at an incinerator in Los Alamos County.

Robert Kirkpatrick, the state Environmental Improvement Division engineer handling DOE's application for the radioactive incinerator, predicted Tuesday the project will attract a lot of public attention. "You think that a garbage incinerator causes a lot of controversy, wait until the public hears about an incinerator that's buring radiological and hazardous material," he said.

Bill Blankenship, an environmental specialist at EID responsible for drafting the incinerator regulations required by the new law, agreed. He speculated the new application will be "one of the most controverisal items worked on here, and it should be.'

The DOE applied to the EID for permission to operate the new incinerator on May 3. However, EID workers said Tuesday they have done little work on the application.

The Legislature passed a law this spring prohibiting disposal of solid waste by incineration until state regulators draft and adopt stringent discharge emission limits.

Louis Rose, lawyer with the State Health and Environment Department which oversees the EID, said Tuesday the new state law perhaps would allow the EID to issue an incinerator permit. However, he said the law plainly prohibits actual operation of an incinerator until the state adopts the new standards.

Rose said the EID may be ready to propose draft regulations in the next few months and said the State Environmental Improvement Board

MORE: See N-TRASH on PAGE 3

N-Trash Incinerator Permit Sought

CONTINUED FROM PAGE 1

may act on them by the end of the year.

Kirkpatrick, the EID environmental engineer responsible for reviewing the incinerator application, said Tuesday he is inclined to wait until the state adopts its new regulations before reviewing the application.

The garbage incinerator that won state approval last year was intended to replace a 38-year-old steam generating plant which provides heat for lab buildings.

Although the DOE's application for the garbage incinerator last year was successful, it drew much public attention to the condition of state regulations. The new state law requiring stringent regulations is the result.

Rep. Max Coll, D-Santa Fe, sponsored the bill to require new regulations. "I wanted to see a good set of regulations in effect before we bought off on incinerators wholesale," he said Tuesday. "I hope that we put some really good regulations in place to protect the state."

The DOE's planned garbage incinerator apparently is on hold. Harold Valencia, area manager for the DOE in Albuquerque, said several construction companies submitted bids on the garbage incinerator project last month. He said all the companies wanted more than his office wanted to pay.

Valencia said many of the companies apparently jacked up their bids to cover the unknown cost of meeting the new state regulations when they go into effect. He said the DOE probably will postpone putting the garbage incinerator project out to bids again until the new state regulations come out.

Although Valencia declined to say how much the DOE wanted to spend on the garbage incinerator, other department officials last year said they expected getting the plant into operation would cost $7.6 million.

New Me[illegible]o Health and Environment[illegible]partment

MARALYN BUOKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

MEMORANDUM

TO: Gini Nelson, HED OGC

FROM: C. Kelley Crossman, Supervisor
Hazardous Waste Program

DATE: May 16, 1989

**SUBJECT: Los Alamos National Laboratory
Draft RCRA Permit**

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

M E M O R A N D U M

TO: Nancy Hunter, HED Office of the Secretary

FROM: C. Kelley Crossman, EID Hazardous Waste Program

DATE: May 16, 1989

SUBJECT: News Release, LANL

Please release the attached information to the media for immediate use. The public comment period on the Los Alamos National Laboratory draft permit for hazardous waste management has been formally opened by Legal Notice. This news release will increase the likelyhood of public participation in the permitting process.

cc: Richard Mitzelfelt, EID Director
Kirkland Jones, EID Deputy Director
Jack Ellvinger, EID Hazardous Waste Bureau
Michael Brown, EID District II
Dan Balduini, EID Public Relations

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

5/16/89

Mic

Can you get this to the Taos EID office for me, easily? I'd like to leave it there until June 9 at least. It is open to the public and can be loaned out for copying if your staff feels confident they can get it back. I expect the Taos folks to be the most interested - and vocal.

If this is a problem, call me.

Thanks

Kelly

NEWS RELEASE

The Environmental Improvement Division of the Health and Environment Department announced the availability of a draft hazardous waste permit for the Los Alamos National Laboratory and has invited the public to review and comment on the draft. The permit details the requirements for storage and treatment of hazardous wastes from the laboratory operation. Under the state and federal hazardous waste regulations LANL must apply for and receive a permit for storage and treatment of regulated wastes. This draft was prepared in response to these regulations and covers waste analysis, inspections, employee training, closure of each unit and treatment practices and safeguards. The draft permit may be reviewed at either the EID Santa Fe office at 1190 St. Francis Dr. or the Espanola Public Library at 314A Onate, NW.

LANL generates large quantites of waste solvents and chemicals which must be handled in accordance with strict guidelines. This draft permit specifies which chemicals may be stored while awaiting treatment, the treatment processes which LANL may conduct and the conditions under which certain chemicals may be incinerated. This permit does not authorize or address radioactive wastes contaminated with regulated chemicals. They will be subject to a permit to be processed later.

LANL first applied for a permit under the State Hazardous Waste Act in 1985. This draft is the result of numerous reviews and technical exchanges, carefully defining which activities will be allowed to continue. LANL decided to discontinue disposal of hazardous wastes on site and will close the landfills and lagoons which received hazardous wastes. The public

will be asked to comment on closure plans in the future as the EID processes them.

The permit will also require LANL to investigate all past disposal sites and to prepare cleanup plans where necessary. The State and EPA will oversee this activity and monitor cleanup of these old sites. This will be an on-going effort which is expected to take years to complete.

The EID will hold an public hearing on the draft permit in Santa Fe on June 13, 1989. The hearing will be to assess public concerns and to respond to questions. The hearing is scheduled to begin at 9:00 am in Apodaca Hall of the P.E.R.A. Building at Paseo de Peralta and Old Santa Fe Trail.

Questions and comments should be directed to the EID Hazardous Waste Section in Santa Fe. They can be reached at 827-2929 or 1190 St. Francis Drive, Santa Fe, NM 87503. Comments must be received by July 7, 1989 to be considered.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202

May 12, 1989

Ms. Donna M. Lacombe
Environmental Scientist
Technical Programs Branch
U.S. Department of Energy
528 35th Street
Los Alamos, New Mexico 87544

HAZARDOUS WASTE SECTION
MAY 18 1989
RECEIVED

RE: Los Alamos National Laboratory
EPA I.D. Number NMD890010515
HSWA Draft Permit

Dear Ms. Lacombe:

The New Mexico Environmental Improvement Division (NMEID) is authorized to operate a hazardous waste management program in lieu of the Federal program for those portions of the Resource Conservation and Recovery Act of 1976 (RCRA) in effect prior to the passage of the Hazardous and Solid Waste Amendments of 1984 (HSWA). The HSWA imposes additional requirements on hazardous waste management facilities which will be administered and enforced by the Environmental Protection Agency (EPA), Region 6 until NMEID receives additional authorization for these requirements. Therefore, both the EPA and the NMEID must issue a permit to your facility.

Your RCRA Part B permit application and all additions relating to HSWA were reviewed by EPA and found to be technically complete for the requirements of the HSWA. I have enclosed a copy of the HSWA draft permit.

Tentatively, a public hearing is scheduled on the draft permit for June 13, 1989. Request for a public hearing must be received by June 9, 1989. However, if significant request for a public hearing are not received by June 9, 1989, the NMEID reserves the right to cancel the scheduled hearing.

If you have any comments on the HSWA draft permit, please submit the comments, in writing, to:

RCRA Permits Branch (6H-P)
U.S. EPA, Region 6
Allied Bank Tower, 10th floor
1445 Ross Avenue
Dallas, Texas 75202-2733

These comments must be received no later than the date the public comment period closes (July 7, 1989). If you have questions regarding the procedures or need further information, please Mr. Richard Mayer at (214) 655-6785.

for Sincerely yours,

Bill Fuller

William K. Honker
Chief
RCRA Permits Branch

Enclosure

cc: Jack Ellvinger
New Mexico Environmental
Improvement Division

12/01/1989

End of Public Comment.