1/1/1977

1096 General

LOS ALAMOS SCIENTIFIC LABORATORY

TRANSURANIC AND LOW-LEVEL WASTE MANAGEMENT ALTERNATIVES

Attached for your information is a copy of the Notice of Intent to prepare a Draft Environmental Impact Statement (DEIS) for the alternatives for the management of transuranic (TRU) and low-level wastes (LLW) currently stored or buried at the Los Alamos Scientific Laboratory (LASL), Los Alamos, New Mexico. The notice describes the process by which comments or suggestions in connection with the preparation of this DEIS may be submitted and provides information on a public scoping meeting at _____
(location of meeting)
on _____.

12118

DEPARTMENT OF ENERGY

Compliance with the National Environmental Policy Act

Intent to Prepare Environmental Impact Statement

AGENCY: Department of Energy

ACTION: Notice of Intent to prepare a Draft Environmental Impact Statement (DEIS) for Management Alternatives for Transuranic (TRU) and Low-Level (LL) Waste buried and stored in Los Alamos County, Los Alamos, New Mexico.

SUMMARY: The Department of Energy (DOE) announces its intent to prepare a DEIS to assess the environmental implications of a proposed DOE action to fund a study of the various possible alternatives for the ultimate disposal of TRU and LL wastes currently buried or stored at the Los Alamos Scientific Laboratory (LASL) in Los Alamos County, Los Alamos, New Mexico.

Interested agencies, organizations, and the general public desiring to submit comments or suggestions for consideration in connection with the preparation of this DEIS are invited to do so. The purpose of the comments will be to assist DOE in identifying significant environmental issues and the appropriate scope of the EIS. Upon completion of the DEIS, its availability will be announced in the Federal Register, at which time comments will be solicited.

Written comments may be submitted to:

Dr. Goetz K. Oertel
Division of Waste Products
Mail Station B-107, GTN
U.S. Department of Energy
Washington, D.C. 20545
(301) 353-3641

For general information on the EIS process, contact:

NEPA Affairs Division
Office of the Assistant Secretary for Environment
U.S. Department of Energy
ATTN: Ms. Carol M. Borgstrom
Room 4G-064, Forrestal Building
1000 Independence Avenue, S.W.
Washington, D.C. 20585
(202) 252-4600

DATES: Scoping meeting, _____ (date), in _____ (location);

written comments due _____ (date).

BACKGROUND INFORMATION: The Los Alamos Scientific Laboratory is located on a remote mountain plateau 40 kilometers (km) (25 miles) by air northwest of Santa Fe, New Mexico.

This remote site was chosen in the interests of safety and security when LASL was established in the early 1940s for the development of nuclear weapons as a part of the U.S. weapons program in World War II. Prior to this, the site had been used as a private school and ranch for boys. Following the end of World War II, LASL research and development work has broadened to include considerable non-nuclear work, including the development of alternative energy systems, biomedical research, laser fusion, and many other non-weapons programs.

The plateau on which Los Alamos is located is approximately 16 to 24 km (10 to 15 miles) wide and 40 to 48 km (25 to 30 miles) long, lying on the eastern flank of the Jemez Mountains. The LASL occupies about 111 km^2 (about 43 square miles) of this plateau area, which slopes easternly from an altitude of about 2400 m (about 7875 feet) above sea level along the western margin, to about 1800 m (about 5900 feet) to the east, where it terminates above the Rio Grande rim. The surface of

the plateau is cut into numerous "finger mesas" by southeast-trending intermittent streams. The dissected eastern margin stands about 90 to 300 m (about 300 to 1000 ft) above the Rio Grande.

The radioactive wastes are buried or stored at several sites located in the transition zone between the Canadian habitat in the upper elevations of the Jemez Mountains to the west and the Senora habitat of the Rio Grande Valley to the east. Rainfall in the area is sparse, and typically transpiration of water upward exceeds the annual rainfall and snowfall.

Prior to 1970 both TRU and LL wastes were commonly bured in pits, trenches, or shafts dug or drilled in from the tops of the mesas. A 1970 ruling by the AEC required that all TRU wastes greater than 10 nanoCuries per gram of waste (10 nCi/g) be segregated and retrievably stored for a 20 year period.

Typical pits or trenches are about 6 to 10 m (20 to 30 ft) deep, although some are more shallow than this, and from several to hundreds of meters in length. The wastes are placed in the pits and stacked to not closer than 3 ft of the surface of the pit with the surrounding undisturbed terrain. Then 1 m (3 ft) of clean tuff or soil is placed and compacted over the wastes. In areas where subsidence has occurred, additional soil cover has or is to be added to bring the surface to at least even with the surrounding terrain.

Shafts typically range in depth from a few meters to approximately 20 m (65 ft) and from a few meters to about 2.5 m (8 ft) in diameter. Wastes are placed in the shafts and cement slurry is added to fix the wastes in place. In many cases the wastes are mixed with cement slurry prior to the mix being placed in the shaft. Wastes are placed to not closer than 1 m (3 ft) from the top of the shaft, and then a cement cap poured to seal the shaft.

In the early days of LASL, the singular, pressing mission was to make a nuclear bomb. Wastes were handled by the best available methods, but relatively little was known about some of the materials and time and manpower were limited. Solid wastes were buried in pits dug into the tuff on mesa tops--a practice that, with refinements, is still considered the most effective method for this area. Gaseous wastes were filtered using the technology of the time. Liquids with low levels of contamination were discharged into a canyon area unused for other purposes; liquids with higher levels of contamination were discharged into rock-filled pits dug into the tuff. Many of these practices would not be considered adequate by today's standards; fortunately they did not continue for long and led to research into more suitable procedures. Furthermore, continued monitoring over the years has shown that no safety or environmental hazards have resulted from these practices. For additional details, the interested reader is referred to the Final Environmental Impact Statement, Los Alamos Scientific Laboratory Site, Los Alamos, New Mexico, U.S. Department of Energy, December 1979, DOE/EIS-0018.

The waste areas to be addressed in the proposed DEIS are six of the areas considered to possibly contain low levels of TRU wastes and seven other areas either because they may contain small amounts of low level wastes or because they are temporary storage for radioactive equipment or materials. A brief description of each of these is given in Table I.

Typical wastes include tools, instruments, building materials (from the decontamination and decommissioning of older facilities) and general refuse which are lightly contaminated or suspected of being contaminated.

TABLE I

DESCRIPTION OF THE LAS WASTE DISPOSAL AND STORAGE AREAS TO BE ADDRESSED IN THE EIS

Waste Area	Use Dates	Disposal Method	Surface Area	Waste Volume	Contents/Remarks
A	1945-1946	4 buried Pits	2,600 m^2 (28,000 ft^2)	14,159 m^3 (500,000 ft^3)	First disposal area used under an organized waste management section. Because Pu was so scarce during this time period, the waste probably contains very little Pu. Fifth pit opened for demolition wastes. Underground tanks contain about 94 grams of Pu.
		2 buried Tanks	186 m^2 (2,000 ft^2)	7.2 m^3 (254. ft^3)	
	1969-1977	1 buried Pit			
B	1946-1948	buried Pits	4,650 m^2 (50,000 ft^2)	21,240m^3 (750,000 ft^3)	Number of Pits and locations uncertain. May contain TRU and some hazardous chemical wastes, such as compressed gas cylinders.
C	1948-1964 (shafts to 1974)	6 buried Pits	20,900 m^2 (225,000 ft^2)	103,400 m^3 (3,650,000 ft^3)	Separate pits for chemical and radioactive wastes from laboratories. Vertical shafts are 6 to 20 m (20-65 ft) deep; 42 thought to contain TRU, 55 to not contain TRU. One shaft used solely for Strontium disposal.
		97 unlined Shafts		136 m^3 (4,800 ft^3)	
		10 cement/steel lined shafts		5 m^3 (175 ft^3)	
		1 unlined shaft		0.7 m^3 (25 ft^3)	
E	1949-1962	4 buried Pits	307 m^2 (3,300 ft^2)	340 m^3 12,000 ft^3)	Thought to contain some Uranium (U-238) and Beryllium (Be) with all the Po-210 decayed due to its short half-life.
F	1946-early 1950s	buried Pits	743.5m^2 (8,000 ft^2)	2,832 m^3 (100,000 ft^3)	Thought to possibly contain some Sr-90, Cs-137 and some high explosives wastes/ 2 sites but number of Pits uncertain.

TABLE I (contd)

Waste Area	Use Dates	Disposal Method	Surface Area	Waste Volume	Contents/Remarks
G	1957-present	6 buried Pits	33,440 m^2 (360,000 ft^2) (Total of 7 Pits)	170,000 m^3 (6,000,000 ft^3)	Mixed TRU and LLW. About 600 grams Pu-239 in a drum in Pit 1. Drums with sludge and concrete in Pit 2 contain > 10 nCi/g.
		9 buried Pits	18,587 m^2 (200,000 ft^2)	79,288 m^3 (2,800,000 ft^3)	Some TRU activity, but below 10 nCi/g level.
		1 buried Pit (#9)	1,115 m^2 (12,000 ft^2)	1,730 m^3 (47,000 ft^3)	General wastes and sludge.
		3 buried Pits	5,576 m^2 (60,000 ft^2)	28,317 m^3 (1,000,000 ft^3)	Pits 16, 21 and 14; Uranium disposal only.
		Trenches (TRU Storage)	3,250 m^2 (35,000 ft^2)	240 m^3 (8,400 ft^3)	Actual waste about 2250 ft^3. Pu-238 contaminated wastes in 30-gal drums, 2 drums per concrete cask.
		66 buried Shafts	580 m^2 (6,200 ft^2)	425 m^3 (15,000 ft^3)	Probably some TRU and some H-3.
H		Vertical Shafts			Uncontaminated classified wastes, however thought to also contain some radioactive materials.
J					Thought to contain LLW.
T	1945-1967	4 absorption beds	890 m^2 (96,00 ft^2)	2,720 m^3 (96,000 ft^3)	Received liquid wastes from Pu recovery operations.
	1968-1975	62 unlined shafts	840 m^2 (9,000 ft^2)	3,820 m^3 (135,000 ft^3)	Cement slurry from pug mill, pumped into shafts. 56 may contain TRU while 6 probably do not.
		175 CMP shafts	140 m^2 (1,500 ft^2)	480 m^3 (17,000 ft^3)	2-1/2 ft x 20 ft long concrete monoliths.
U	1945-1968	2 absorption beds	167 m^2 (1,800 ft^2)	510 m^3 (18,000 ft^3)	Actinium contaminated subsurface beds.

TABLE I (contd)

Waste Area	Use Dates	Disposal Method	Surface Area	Waste Volume	Contents/Remarks
V	1945-1961	3 absorption beds	1390 m^2 (15,000 ft^2)	4250 m^3 151,000 ft^3)	Liquid wastes from DP-site laundry, an estimated total of 3 Ci of Sr-90, Ba-140 and La-140, but probably not TRU wastes, but may have some low levels of Pu-239.
W	1963-present	2 buried Tanks		2.8 m^3 (100 ft^3)	Two tanks 8 in x 100 ft long, containing a total of about 6-9 ft^3 of irradiated sodium, in temporary storage. Not TRU waste. Buried 1963.
x	1964-present	buried reactor vessel			Storage of LAMPRE reactor vessel, buried in 1964. Residual amount of U-235 and possibly some activation products.
Y	1966-present				Dynamic testing operation wastes, principally high-explosive contaminated wastes and possibly some depleted Uranium.

14 Areas with J in and K out.

Identification of Environmental and Socioeconomic Issues

The following issues will be analyzed during the preparation of the EIS. This list is not intended to be all inclusive, nor is it intended to be a predetermination of impacts.

(1) The effects of the proposed action on the community of Los Alamos County, New Mexico, including labor immigration.

(2) The exposure of the public to radiation.

(3) The effects of potential accidents and radioactive releases on human health, water supply and ecology.

(4) The effects of the project on present and future land use.

(5) The effects of the project on local water resources including the intermittent streams in the area and tributaries to the Rio Grande and other rivers and water bodies possibly affected.

(6) The effects of potential natural phenomena.

(7) The effects of off-site transportation of the immobilized waste.

ALTERNATIVES INCLUDING THE PROPOSED ACTION:

The alternatives to be considered in the DEIS are summarized in Table II.

Description of the Processes

1. Exhumation

The approximate volume of intermixed potential TRU waste and contaminated soil to be exhumed is estimated to be 46,200 m^3 (1,650,000 ft^3) at Technical Area 21 (including Areas A, B, T, U, and V), 103,000 m^3 (3,650,000 ft^3) at Area C, and 225,000 m^3 (8,000,000 ft^3) at Area G. Because of the geographical separation of these three locations, three separate exhumation facilities will be required unless the work could be performed sequentially.

TABLE II

ALTERNATIVES TO BE COVERED IN THE EIS

Alternative:	Buried Wastes (TRU and LLW)	Stored Wastes: (TRU)
1. Continue Present Practices	Maintenance and surveillance over the 100 year institutional control period.	Maintenance and surveillance over the 100 year institutional control period.
2. Engineered Improvement	1. Remove top cover of soil/tuff. 2. Cover with a minumum of 1.5 m (5 ft) of crushed tuff. 3. Compact cover to 90% of theoretical density, to level of adjacent surface. 4. Cover with 0.3 m (1 ft) of 20 to 30 cm (10-12 in.) native riprap.	1. Add additional cover to a minimum of 4.5 m (15 ft) over the wastes. 2. Compact cover to 90% of theoretical density. Note: By 1990 it is planned that all presently stored TRU wastes will be located in one pit and on several pads.
3. Buried-Continue Present Practices Stored-Retrieve, Package, Disposal in Deep Pits at LASL	Maintenance and surveillance over the 100 year institutional control period.	1. Retrieve the stored wastes from pits and pads and repackage as necessary. 2. Bury in deep pits at LASL. Note: Deep Pits signifies pits to about 12.2 m (40 ft) deep, with a minimum of about 6 m (20 ft) of cover over the stacked wastes.
4. Buried-Continue Present Practices Stored-Retrieve, Package, Disposal by Shipment to an Off-site Deep Geological Disposal Repository.	Maintenance and surveillance over the 100 year institutional control period.	1. Retrieve the stored wastes from pits and pads and repackage or overpack as necessary. 2. Ship by truck to a Federally-owned deep geological repository, such as WIPP.

TABLE II (contd)

Alternative	Buried Wastes: (TRU and LLW)	Stored Wastes: (TRU)
5. Buried-Continue Present Practices Stored-Retrieve, Treat, Disposal in Deep Pit at LASL.	Maintenance and surveillance over the 100 year institutional control period.	1. Retrieve TRU wastes from pits and pads 2. Sort wastes with incineration of combustibles and decontamination of metals. Immobile residues in cement. 3. Repackage. 4. Ship by truck to deep pit burial at LASL.
6. Buried-Continue Present Practices Stored-Retrieve, Treat, Disposal to an Off-Site Deep Geological Repository.	Same as above	Same as Alternative 5, except treated shipped by truck to a federally-owned Deep Geological Repository, such as WIPP.
7. Buried-Engineered Improvement Stored-Retrieve, Package, and Disposal in Deep Pits at LASL	Same as Alternative 2.	Same as Alternative 3.
8. Buried-Engineered Improvement Stored-Retrieve, Package, and Disposal in Deep Geological Disposal in Federal Repository	Same as Alternative 2.	Same as Alternative 4.
9. Buried-Engineered Improvement Stored-Retrieve, Treat, Disposal in Deep Pits at LASL	Same as Alternative 2.	Same as Alternative 5.

TABLE II (contd)

Alternative:	Buried Wastes: (TRU and LLW)	Stored Wastes: (TRU)
10. Buried-Engineered Improvement Stored-Retrieve, Treat, Disposal in Deep Federally-owned Geological Repository	Same as Alternative 2.	Same as Alternative 6.
11. Buried-Exhume, Package Disposal in Deep Pits at LASL Stored-Retrieve, Package, Disposal in Deep Pits at LASL	1. Exhume buried wastes 2. Sort, separating TRU and LLW 3. Place LLW back into deep pits (but not into Area B) and select best pit closure method. 4. Package TRU wastes and bury in Deep Pits at LASL.	1. Retrieve TRU wastes from storage. 2. Repackage or overpack as necessary. 3. Burial in Deep Pits at LASL.
12. Buried-Exhume, Package Transport to an Off-Site Deep Geological Repository. Stored-Retrieve, Package, Transport to an Off-Site Deep Geological Repository	Same as Alternative 11, except burial at an Off-Site Repository as described under Alternative 4.	Same as Alternative 11, except burial at an Off-Site Repository.
13. Buried-Exhume, Treat, Disposal in Deep Pits at LASL. Stored-Retrieve, Treat, Disposal in Deep Pits at LASL.	1. Exhume and sort into combustibles, metals and remainder. 2. Incinerate combustibles, decontaminate metals. 3. Immobilize residues and remainder in cement. 4. Package and disposal in Deep Pits at LASL.	Same as Alternative 5, except burial in Deep Pits at LASL.

TABLE II (contd)

Alternative:	Buried Wastes: (TRU and LLW)	Stored Wastes: (TRU)
14. Buried-Exhume, Treat, Disposal by Burial in an Off-Site Deep Geological Repository. Stored-Retrieve, Treat, Disposal by Burial in an Off-Site Deep Geological Repository.	Same as Alternative 13, except disposal off-site in a Deep Geological Repository, such as WIPP.	Same as Alternative 5, except disposal Off-Site in a Deep Geological Repository, such as WIPP.

Waste exhumation involves excavation of the buried waste known or suspected to contain TRU, segregating the TRU waste from the LL waste, and returning the LL waste to the excavated pits. The exhumation facility would be similar to that proposed for use at Idaho National Engineering Laboratory (INEL) and be subject to all applicable ventilation and contamination control criteria.

2. Retrieval of Stored Waste

Stored waste at LASL by 1990 will be contained in one pit, several aboveground asphalt pads, in buried corrugated metal pipe, and in concrete casks in trenches. TRU waste intermixed with beta-gamma wastes will be located in shafts.

To retrieve these wastes from the pits, a front-end loader would be used to remove the 1 to 1.5 m (3 to 5 ft) of overburden, followed by removal of the soil starting at one end of the pit until the waste material became exposed. The stacked wastes would then be carefully removed in the original containers and placed into overpacks for delivery to the next step in the procedure being followed (shipment to LASL deep pit, Off-Site shipment, etc.). Excavation of the casks would be quite similar. Retrieval of the corrugated metal pipe would require the use of a crane to lift the 20-ft long pipes out of the ground.

3. Waste Processing Facility (WPF)

All wastes arriving at the WPF will be handled initially as though they were TRU waste. Containers used to deliver the wastes to the WPF would consist primarily of 114 liter (30 gallon) and 210 liter (55 gallon) steel drums and fiberglass-reinforced plastic (FRP) plywood boxes.

a. Sorting

Once inside the double containment of the WPF the containers would be individually opened and the contents sorted into combustibles, metals, and noncombustibles/nonmetals. Combustibles will be incinerated in a rotary kiln incinerator. Metals would be decontaminated with high pressure spray cleansers. Any materials not sufficiently decontaminated would be added to the nontreated wastes and packaged for disposal. In some cases, size reduction would be required prior to treatment.

b. Size Reduction

Any items too large or bulky to be processed through the WPF would be reduced in size by compaction with a press, broken up with a hammermill, or cut into smaller pieces with various hacksaw and/or plasma torch techniques.

c. Fixation

Wastes requiring fixation would include incinerator ash, crushed concrete, tuff, soil, and occasional pieces of noncombustibles. Concrete would be mixed with the wastes to fix them in place, and the concrete plus waste would be placed in steel drums for disposal.

Comments and Suggestions

All interested parties are invited to submit comments or suggestions in connection with the preparation of the EIS. Those desiring to submit comments or suggestions for issues to be addressed in the Draft EIS should submit them to the following address:

Outline for the Management Alternatives for Transuranic
and Low-Level Waste at Los Alamos Scientific Laboratory DEIS
Attn: Dr. Goetz K. Oertel, Director
Division of WAste Products
Mail Station B-107, GTN
U.S. Department of Energy
Washington, D.C. 20545

The dates for submitting of comments are _____.

Upon completion of the Draft EIS (expected to be about October, 1981) its availability will be announced in the Federal Register and public comments will again be solicited.

Those not desiring to submit comments or suggestions during the public comment time, but who would like to receive a copy of the Draft EIS for review and comments when it is issued, should notify G. K. Oertel at the above address. Those seeking further information may inquire with the above contact or:

NEPA Affairs Division
Office of the Assistant Secretary for Environment
U.S. Dept. of Energy
ATTN: Ms. Carol M. Borgstrom
Room 4G-064, Forrestal Building
1000 Independence Avenue, SW
Washington, D.C. 20585
(202) 252-4600

Copies of the documents currently planned to be used in the preparation of the Draft EIS will be available for inspection at the Los Alamos Scientific Laboratory, Los Alamos, New Mexico, 87545; at the Mesa Public Library, Los Alamos, NM; Albuquerque Operations Office, Albuquerque, NM, and at the DOE National Laboratories at the following DOE locations:

Public Reading Room
Room GA-152
1000 Independence AVe., SW
Washington, DC 20585

Chicago Operations Office
9800 South Cass Avenue
Argonne, Illinois 60639

Chicago Operations and Regional Office
175 West Jackson Boulevard
Chicago, Illinois 60604

Idaho Operations Office
550 Second Street
Idaho Falls, Idaho 83401

Nevada Operations Office
2753 South Highland Drive
Las Vegas, Nevada 89114

Albuquerque Operations Office
National Atomic Museum
Kirkland Air Force Base East
Albuquerque, New Mexico 87715

Oak Ridge Operations Office
Federal Building
Oak Ridge, Tennessee 37830

Richland Operations Office
Federal Building
Richland, Washington 99352

Energy Information Center
215 Fremont Street
San Francisco, California 94105

Savannah River Operations Office
Savannah River Plant
Aiken, South Carolina 29801

Regional Energy/Environment Information Center
Denver Public Library
1357 Broadway
Denver, Colorado 80210

All suggestions, comments and questions submitted to G. K. Oertel prior to _____ will be carefully considered in the preparation of the Environmental Impact Statement.

Dated at Washington, D.C. this _____.

For the United States Department of Energy.

Ruth C. Clusen
Assistant Secretary for Environment