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Emissions Inventory Report Summary—

Reporting Requirements for the New Mexico Administrative Code, Title 20, Chapter 2, Part 73 (20 NMAC 2.73) for Calendar Year 2000

13557

Los Alamos
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Emissions Inventory Report Summary—

Reporting Requirements for the New Mexico Administrative Code, Title 20, Chapter 2, Part 73 (20 NMAC 2.73) for Calendar Year 2000

Air Quality Group, ESH-17

Los Alamos
NATIONAL LABORATORY
Los Alamos, New Mexico 87545

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Emissions Inventory Report Summary
Reporting Requirements for the New Mexico Administrative Code, Title 20, Chapter 2, Part 73 (20 NMAC 2.73) for Calendar Year 2000

by

Air Quality Group, ESH-17

Abstract

Los Alamos National Laboratory (LANL or the Laboratory) is subject to emissions-reporting requirements for regulated air contaminants under Title 20 of the New Mexico Administrative Code, Chapter 2, Part 73 (20 NMAC 2.73), *Notice of Intent and Emissions Inventory Requirements*. The applicability of the requirement is based on the Laboratory's potential to emit 100 tons per year of suspended particulate matter, nitrogen oxides, carbon monoxide, sulfur oxides, or volatile organic compounds. For calendar year 2000, the TA-3 steam plant was the primary source of criteria air pollutants from the Laboratory while research and development activities were the primary source of volatile organic compounds. Emissions of beryllium and aluminum were reported for activities permitted under 20 NMAC 2.72. Also, for the first time, hazardous air pollutant emissions were reported this year.

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) has reported on air pollutants generated from its operations since the 1970s when Air Quality Control Regulation 703, *Registration of Air Contaminant Sources*, was promulgated. According to the regulation, the Laboratory was required to register air pollutant sources that emitted more than 2000 lb per year of any air contaminant. This regulatory requirement has evolved into Title 20 of the New Mexico Administrative Code. Chapter 2. Part 73 (20 NMAC 2.73), *Notice of Intent and Emissions Inventory Requirements*. The objective of the reporting requirement is to provide emissions data to the New Mexico Environment Department (NMED) so they can determine whether state and federal air pollutant standards are being met.

To help ensure air quality standards are maintained and to track the state's air pollutant emissions, the Aerometric Information Retrieval System (AIRS) is used. AIRS is a large air pollution database that contains information, requirements, and data on air pollution and air quality in the United States and various World Health Organization (WHO) member countries. The program is operated by the U.S. Environmental Protection Agency (EPA) and state/local air pollution control agencies. The AIRS database tracks each state's progress towards achieving and maintaining the National Ambient Air Quality Standards (NAAQS) for criteria pollutants. The database is also used as a tool to help improve each state's air quality programs by enabling members to access and compare past data and view data from other states.

Attachment A of this report includes correspondence between LANL and NMED; Attachment B includes a summary of emissions from LANL and Attachment C includes descriptions of emissions sources. For the 2000 submittal, NMED requested that emissions data from LANL be submitted in a format that is compatible with AIRS (Attachment D, *Emissions Inventory Submittal to NMED*).

The air contaminants included in the annual *Emissions Inventory Submittal to NMED* (Attachment D) are total particulate matter (PM), suspended particulate matter in the size range of 10 microns or less (PM_{10}), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxides (SO_x), volatile organic compounds (VOCs), beryllium, and aluminum. In addition, and by special request from NMED, LANL has voluntarily included Hazardous Air Pollutant (HAP) emissions from chemical use for calendar year (CY) 2000.

2.0 EMISSIONS INVENTORY-REPORTING REQUIREMENTS

Annual emissions-reporting requirements under 20 NMAC 2.73 apply to any facility that emits or has the potential to emit 5 tons per year or more of lead or lead compounds or 100 tons per year or more of PM_{10}, SO_x, NO_x, CO, or VOCs. Emission units that emit in excess of 1 ton of lead per year or 10 tons per year of PM, PM_{10}, SO_x, NO_x, CO, or VOCs must be included in the

report to NMED. In addition, emissions from all sources permitted under 20 NMAC 2.72, *Construction Permits*, must be included in the report.

3.0 CONTENT OF THE EMISSIONS INVENTORY REPORT

NMED did not require LANL to submit an emissions inventory in 2000 for 1999; however, 1999 emissions data was voluntarily submitted to NMED and summarized in a LANL document (LA-13728-SR). Even though the 2000 emissions data is the focus of this report, NMED requested that LANL submit emissions for both 1999 and 2000 in an electronic format for entry into AIRS. The information required for submittal includes the following:

- company name, address, and physical location for the facility;
- facility contact information;
- signed certification statement by a responsible facility official; and
- specific information for each emission unit such as the type and efficiency of control equipment, schedule of operation, annual process or fuel combustion rates, and estimated actual emissions for CYs 1999 and 2000.

4.0 REPORTED EMISSION SOURCES

The Laboratory's 2000 *Emissions Inventory Submittal to NMED* (Attachment D) includes estimates of actual air emissions for regulated pollutants from the following sources:

- steam plants,
- nonexempt boilers,
- asphalt plant,
- water pump,
- paper shredder,
- rock crusher,
- degreasers,
- research and development (R&D) activities, and
- permitted beryllium machining operations.

Descriptions of the sources listed above are provided in the following subsections of this report.

4.1 Steam Plants

The Laboratory operates two steam plants, one located at Technical Area 3 (TA-3) and the other at TA-21. The TA-3 steam plant produces steam for heating and electricity when sufficient power from outside sources is not available. The steam plant at TA-21 provides steam for heating. The heat produced from both steam plants is used for comfort and hot water and to support processes. Each steam plant has three boilers that are fueled primarily with natural gas and with diesel fuel as a backup. Actual emissions are estimated on the basis of metered fuel

consumption and emission factors. The primary source of emission factors is the U.S. Environmental Protection Agency's *Compilation of Air Pollutant Emission Factors (AP-42)*. However, emission factors from stack tests conducted at the TA-3 steam plant, when it was burning natural gas, were also used as appropriate.

4.2 Nonexempt Boilers

The Laboratory has almost 200 boilers. Most of the boilers are exempt and do not need to be included in the emissions inventory. The exemption analysis applied to the boilers is discussed in Section 5.1 of this report.

The nonexempt boilers reported in the emissions inventory include the following:

- four boilers at TA-16,
- three boilers at TA-48,
- two boilers at TA-53,
- two boilers at TA-55, and
- two boilers at TA-59.

All of the reported boilers burn natural gas. The TA-16 boilers have meters to track the fuel consumption. For all other boilers, the fuel consumption was estimated on the basis of the total natural gas used by the Laboratory minus the amount supplied to the metered sources. Some emission factors were available from stack tests (TA-55), some were provided by the boiler manufacturers (Sellers Engineering Company and Kewanee), and the rest were taken from *AP-42*.

4.3 Asphalt Plant

The asphalt plant produces small amounts of asphalt for road repairs in and around the Laboratory. Emissions from the asphalt plant are based on the amount of asphalt produced for the year. The PM emissions from the asphalt plant were calculated with an emission factor obtained from a source test. Otherwise, emission factors from *AP-42* were used.

4.4 Water Pump

A natural gas-fired water pump is used to pump potable water from underground wells. Emission factors for NO_x, CO, and VOC emissions were obtained from the pump-engine manufacturer. Otherwise, emission factors from *AP-42* were used. The emission factors were used with the metered fuel consumption to estimate actual emissions.

4.5 Paper Shredder

The shredding operations of the paper shredder at TA-52-11 are a source of PM emissions. Estimates of actual emissions are based on an averaged monthly shredding rate and engineering estimates for controlled emissions. These PM emissions are controlled with a cyclone and a baghouse.

4.6 Rock Crusher

In June 1999, the Laboratory was issued a 20 NMAC 2.72 construction permit to operate an impact rock crusher to crush potentially radioactive contaminated concrete removed from buildings as part of the Laboratory's decontamination and decommissioning efforts. However, because the equipment has not been operated since receiving the permit, there were no PM emissions from crushing activities and no combustion products from the crusher's diesel-fired engine for CY 2000.

4.7 Degreaser

The halogenated solvent cleaning machine at TA-55 Building PF-4 has a capacity of 18 liters and is registered with NMED's Air Quality Bureau as required under the National Emission Standards for Hazardous Air Pollutants, 40 CFR 63 Subpart T, *Halogenated Solvent Cleaning*. In addition, LANL registered and operated two new halogenated solvent cleaning machines, with capacities of 6 and 18 liters, in 2000. The solvent used with all three machines, trichloroethylene (CAS No. 79-01-6), is a VOC and a HAP. Measured losses were reported.

4.8 Emissions from Research and Development Activities

The majority of the Laboratory's work is devoted to Research and Development (R&D) activities. Varying operating parameters as well as amounts and types of chemicals are used in these activities. R&D activities occur at virtually all TAs within the Laboratory. R&D activities were evaluated for VOC and HAP emissions and are discussed below.

4.8.1 VOC Emissions

With the exception of specific listed chemicals, VOCs are any compounds of carbon that participate in atmospheric photochemical reactions. VOCs include commonly used chemicals such as ethanol, methanol, trichloroethylene, and isopropanol. The Laboratory's Automated Chemical Inventory System (ACIS) CY 2000 data set (chemical containers added to LANL's inventory between January 1, 2000 and December 31, 2000) was reviewed to identify all VOCs from R&D activities performed at LANL. From this data, certain categories of chemicals were separated and eliminated. The classifications assigned and the corresponding reasons (noted in parenthesis) for the separation of chemicals from inventory records are noted below.

- Solid materials (Solids are not a significant source of air emissions based on their low vapor pressure.)
- Non-VOC materials as defined by 40 CFR 51.100 100 (Specific chemicals that are listed in 40 CFR 51.100 have been determined to have negligible photochemical reactivity and are therefore exempt.)
- Paints (Paints were evaluated separately; see Section 5.4.)
- Inorganic chemicals (Inorganics are not compounds of carbon.)

- Oils (Oils are not a significant source of air emissions based on their low vapor pressure and are used primarily for maintenance.)
- Fuels used for combustion purposes (Almost all fuels burned in open flame are reduced to CO_2 and H_2O; see Section 5.2.)

Furthermore, the following categories of chemicals were eliminated based on guidance from NMED (see exemptions listed in Table 5-1. for further explanation).

- Container sizes of 1 lb or less.
- Chemicals with vapor pressures less than 10-mm Hg.
- Chemicals used to calibrate equipment,
- Maintenance chemicals,
- Chemicals used for fire suppression,
- Chemicals used for boiler water treatment operations,
- Chemicals used for oxygen scavenging (deaeration) of water, and
- Chemicals used in bench scale chemical analysis[1].

After the elimination of the above, the remaining chemical inventory records were assumed to represent VOCs. As a conservative estimate, VOCs identified in the Laboratory's chemical-tracking records were assumed to be 100% emitted to the air. As a result, the estimated emissions from VOCs at LANL were 10.7 tons. The utilization of the NMED Air Quality Bureau's (AQB) Operating Permit Program *List of Insignificant Activities* and *List of Trivial Activities* exemptions is discussed in Section 5.2 of this report. Chemical mixtures that had incomplete information were not included in the VOC total. For CY 2000, 298 chemicals (approximately 3.3 tons), were not included in the VOC total after best judgement was used to determine the unlikely presence of VOCs. This approach was discussed with and approved by NMED in March of 1998.

4.8.2 HAP Emissions

Section 112(b) of the 1990 Clean Air Act Amendments included 189 unique HAPs that were identified for potential regulation by EPA. In 1995, *caprolactum* was delisted as a HAP. Of the remaining 188 listed HAPs, 17 are classes of compounds (e.g., nickel compounds). For the first time and upon special request from NMED, the use of these chemicals in R&D activities at the Laboratory were evaluated and quantified for the annual emission inventory submittal.

Similar to the VOC analysis described in Section 4.8.1, the ACIS CY 2000 data set was analyzed to identify HAPs used in R&D activities. Pure chemicals (i.e., chemicals with CAS numbers), classes of compounds, and mixtures were evaluated to determine if the chemicals themselves were HAPs, or if they had HAP constituents. For mixtures, Material Safety Data Sheets (MSDSs) were reviewed to determine if any HAPs were present and if so, the associated HAP percentages.

[1] This exemption was only applied to biological research solutions. Otherwise, this exemption was not applied. See Table 5-1.

Listed below are certain chemical types or categories that were classified and removed from this analysis (refer to Section 4.8.1 and Table 5-1 for explanations on the removal of these chemicals).

- Paints,
- Oils,
- Maintenance chemicals,
- Chemicals used for fire suppression,
- Chemicals used to calibrate equipment,
- Container sizes of 1 lb or less, and
- Chemicals used in bench scale chemical analysis[1].

Total HAP emissions were estimated by summing (1) pure HAP chemicals, (2) classes of compounds that are HAPs, and (3) the HAP constituents from mixtures. The resulting total amount of HAPs reported for 2000 was 6.5 tons. Based on this analysis, the Laboratory is below the Title V Operating Permit major source threshold of 25 tons for total HAPs and 10 tons for any individual HAP. The top three HAPs used at the Laboratory in 2000 were hydrochloric acid, ethylene glycol, and methanol. Since this report is specific to 2000, 1999 data is not presented here. However, as a comparison, the total amount of HAPs calculated for 1999 was 13.6 tons.

The HAP emissions reported generally reflect the quantities procured in the calendar year. In a few cases, however, procurement values and operational processes were further evaluated so that actual air emissions could be reported instead of the procurement quantities. Additional analyses for lead, mercury, nickel, and hydrochloric acid were performed and are described below.

Lead

In addition to procurement data, the following activities involving the use of lead at the Laboratory were evaluated for reporting under the emissions inventory requirements:

- Melting and forming of lead into shielding for glove boxes and other equipment used to handle radioactive materials,
- Lead electroplating of small parts, and
- Shooting of lead containing ammunition at the firing range.

Each of these activities resulted in small air emission rates. Based on AP-42 emission factors and the amount of lead melted in 2000, emissions from this activity were less than 0.1 lb[2]. There were no emissions from lead electroplating operations because this activity was not conducted in 2000. Finally, firing of ammunition containing lead resulted in 4 lb of lead air emissions in 2000[3].

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[2] AP-42, Fifth Edition, January 1995, Section 12.17, *Miscellaneous Lead Products*, Table 12.17-2.

[3] Engineering calculations from the Toxic Release Inventory - Data Delivery System (TRI-DDS), Version 1, February 2000.

The total from these three activities was added to procurement amounts to provide an estimate of total air emissions for lead.

Mercury

Mercury is used in the shutter systems at LANSCE as a barrier for the electron beam. Small quantities of mercury are also used in various R&D activities throughout the Laboratory. Some of these activities are exempt due to their use as standards for calibrating laboratory equipment. A total of 8.44 lb of mercury was purchased and used in non-exempt activities. In addition, a one-time project to clean the drain and exhaust systems at LANSCE was completed in 2000. Numerous air sampling data were taken during this 3-month project. Based on the sampling data, air emissions of mercury during this clean-up were calculated to be 0.5 lb. This amount was added to the amount purchased to provide an estimate of total air emissions for mercury.

Nickel

Four different nickel electroplating operations are conducted to prepare small parts for use in the LANSCE shutter system. Emissions were estimated using emission factors from *AP-42*[4] and process specific operational data. Nickel emissions from all four nickel plating operations combined were calculated to be 6.7 lb. This amount was added to the amount of nickel purchased in 2000 to provide an estimate of total nickel emissions.

Hydrochloric Acid

Waste Facility Management (TA-50-1) made the majority of procurements for multiple 14-gallon carboys of hydrochloric acid (HCl). This HCl was used for heat exchanger scale cleaning and for the cleaning of electrodialysis reversal membranes. Emissions from these particular activities were estimated to be 1 lb based on specific process information and engineering calculations. Estimated emissions from procurements were approximately 6228 lb, resulting in a reported total for HCl of 3.11 tons.

4.9 Permitted Beryllium-Machining Operations

The Laboratory operates under five 20 NMAC 2.72 construction permits for beryllium-machining operations that are subject to 40 CFR 61, Subpart C, *National Emission Standards for Beryllium*. Emissions from these sources were reported at permitted emission levels; however, actual emissions monitored during initial compliance stack tests were below permitted levels. No beryllium machining was performed at TA-3-141 in 2000; therefore, there were no air emissions reported for the facility.

[4] AP-42, Fifth Edition, July 1996, Section 12.20, Electroplating, Table 12.20-4

5.0 REPORTING EXEMPTIONS

Under NMED AQB Operating Permit Program, specific insignificant or trivial activities are exempt from reporting. NMED has designated exempt sources, activities, or thresholds in the following lists:

- *List of Insignificant Activities,* September 29, 1995; and
- *List of Trivial Activities*, January 10, 1996.

Laboratory sources and activities that qualify as insignificant or trivial as specified in these lists are not included in the *Emissions Inventory Submittal to NMED* (Attachment D). The following subsections of this report provide information and examples of the Laboratory's exempt activities as well as the analyses that were performed to determine the exempt status.

5.1 Boilers

The Laboratory's boiler inventory was evaluated against the *List of Insignificant Activities.* Specifically, a boiler was considered exempt from the emissions inventory reporting requirements if it met one of the following requirements:

- Any emissions unit...that has the potential to emit no more than **one (1) ton per year** of any regulated pollutant...: or
- Fuel burning equipment which uses gaseous fuel, has a design rate less than or equal to five (5) million BTU per hour, and is used solely for heating buildings for personal comfort or for producing hot water for personal use.

Any boiler that was not used exclusively for comfort heating or hot water was evaluated for the **one (1) ton per year** exemption. For purposes of determining the exemption, the boiler design ratings were used to estimate the potential to emit. Any boiler not qualifying for one of these two exemptions was included in the report.

5.2 VOC Emissions

A number of insignificant and trivial activities were applicable for exempting materials from the VOC R&D total in the report. The basis of the exemptions and the corresponding insignificant and trivial activity are explained in Table 5-1.

Table 5-1. Exemptions Applied for R&D Activities

Basis of Exemption	Activity Type	Activity
Container sizes of 1 pound or less	Trivial	Paint or nonpaint materials dispensed from prepackaged aerosol cans of 16-oz. capacity or less.
Chemicals with vapor pressures <10-mm Hg	Insignificant	Any emissions unit, operation, or activity that handles or stores a liquid with a vapor pressure of less than 10 mm Hg or in quantities of less than 500 gal.
Calibration chemicals	Trivial	Routine calibration and maintenance of laboratory equipment or other analytical instruments, including gases used as part of those processes.
Maintenance chemicals and oils	Trivial	Activities that occur strictly for maintenance of grounds or buildings, including lawn care, pest control, grinding, cutting, welding, painting, woodworking, sweeping, general repairs, janitorial activities, plumbing, retarring roofs, installing insulation, steam-cleaning and water-washing activities; and paving of roads, parking lots and other areas. Activities for maintenance and repair of equipment, pollution-control equipment, or motor vehicles either inside or outside of a building.
Fire suppression chemicals	Trivial	Activities used for fire control equipment, including maintenance, testing and training.
Chemicals used for boiler water treatment	Trivial	Boiler water treatment operations, not including cooling towers.
Chemicals used for oxygen scavenging	Trivial	Oxygen scavenging (deaeration) of water.
Chemicals used in bench scale chemical analysis	Trivial	Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents. *Note: This exemption was only applied to biological research solutions. Otherwise this exemption was not applied.*

In addition, fuels such as propane, kerosene, and acetylene were analyzed separately and were not included in this VOC total. When fuels are burned in an open flame, almost all of these fuels are consumed and the emissions are minimal. Furthermore, under normal conditions, fuels burned with oxygen are reduced to carbon dioxide and water, which are not regulated air pollutants.

5.3 HAP Emissions

Similar to the VOC analysis performed for R&D activities, several of the same exemptions from NMED AQB *List of Trivial Activities* were applied to the HAP evaluation (refer to Table 5-1). The exemptions applied were

- Container sizes of 1 lb or less,
- Calibration chemicals,
- Maintenance chemicals and oils,
- Fire suppression chemicals, and
- Chemicals used in bench scale chemical analysis.

5.4 Paints

An exemption analysis was performed for VOC and HAP emissions resulting from painting activities conducted at the Laboratory. Paint information for 2000 was gathered from the work control databases and the Laboratory's procurement and inventory systems. These records were evaluated for applicability of exemptions for trivial and insignificant activities.

The following exemptions from the NMED AQB Operating Permit Program *List of Trivial Activities* were used in the paint analysis.

- Activities that occur strictly for maintenance of grounds or buildings, including: lawn care; pest control; grinding; cutting; welding; **painting**; woodworking; sweeping; general repairs; janitorial activities; plumbing; retarring roofs; installing insulation; steam cleaning and water washing activities; and paving of roads, parking lots, and other areas.
- Activities for maintenance and repair of equipment, pollution control equipment, or motor vehicles either inside or outside of a building.
- Paint or non-paint materials dispensed from prepackaged aerosol cans of 16 ounce or less capacity.

The corresponding amounts of paint were totaled for painting activities that did not qualify for one of the exemptions listed above. This paint total for CY 2000 was determined to be 1967 lb (0.98 tons), which further qualified for the following insignificant activity:

- Surface coating of equipment, including spray painting and roll coating, for sources with facility-wide total clean-up solvent and coating actual emissions of less **than two (2) tons per year.**

All emissions from paints and painting activities were exempt as insignificant or trivial activities and, therefore, were not included in the *Emissions Inventory Submittal to NMED* (Attachment D).

5.5 Generators

The Laboratory has an inventory of 125 portable generators. Portable generators are used at the Laboratory for temporary operations requiring remote power or to provide emergency backup power during power outages at various sites. The portable generators are fueled by gasoline and/or diesel fuel.

In addition to the portable generators, the Laboratory maintains and operates approximately 40 stationary generators. Stationary generators are used on standby (emergency) status to provide power to critical systems at the Laboratory during power outages. The stationary generators are fueled by natural gas, gasoline, or diesel.

The insignificant activity exemptions applicable to the Laboratory's generators are the following:

- Portable engines and portable turbines that have a design capacity...less than or equal to
  - 200-HP engine if fueled by diesel or natural gas, and
  - 500-HP engine if fueled by gasoline....
- Emergency generators that comply with the definition of standby equipment....

Standby equipment is defined as "an emissions unit which on a temporary basis replaces equipment used in normal operation, and which either has an allowable emission rate or potential to emit for each fee pollutant that is equal to or less than the equipment replaced, or which does not operate for a period exceeding 500 hours per calendar year."

On the basis of their size, the portable generators used for temporary power at remote locations are exempt from emissions inventory-reporting requirements. Since all of the stationary generators are designated as standby equipment under the Operating Permit Program and are used solely to provide emergency backup power for less than 500 hours per year, they are insignificant sources and, therefore, are exempt from emissions inventory-reporting requirements.

6.0 EMISSIONS SUMMARY

The *Emissions Inventory Submittal to NMED* is presented in Attachment D. As mentioned, it is formatted to be compatible with AIRS. The Laboratory's reported emissions for 2000 are tabulated and summarized in Attachment B. Emission unit information and emissions estimates are included in Attachment C.

Graphical representations of emissions are illustrated in the following figures. Figures 6.1 and 6.2 show emissions by source and by year respectively. Figure 6.3 represents VOC and HAP emissions from R&D activities.

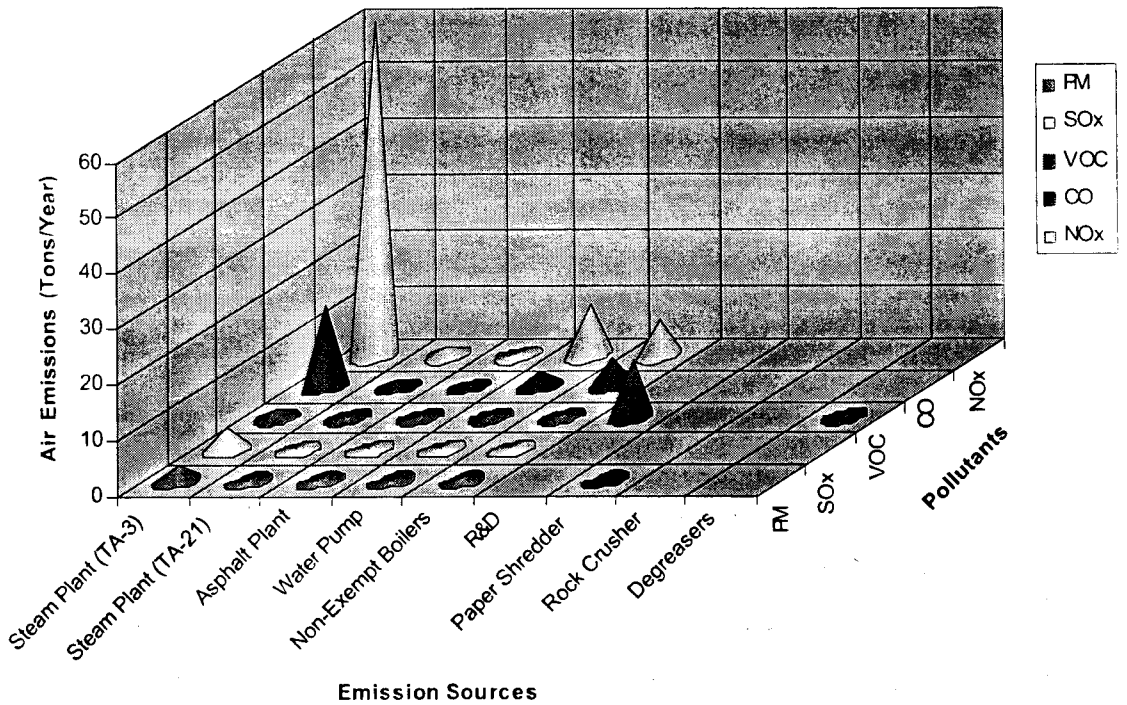

Figure 6.1 Emissions by Source in 2000

Figure 6.1 shows the air-pollutant emissions by source, excluding beryllium, aluminum, and HAPs. As the figure shows, the TA-3 steam plant is the primary source of NO_x, SO_x, PM, and CO emissions. This graph also shows that R&D activities are the primary source of VOC emissions.

The Laboratory has initiated a project to install Flue Gas Recirculation (FGR) equipment on the TA-3 steam plant boilers to reduce the NO_x emissions by approximately 70%. This project was initiated in 1999 and is anticipated to be completed by end of fiscal year (FY) 2001. When this equipment is fully implemented, emissions from the Laboratory's TA-3 steam plant will be reduced significantly.

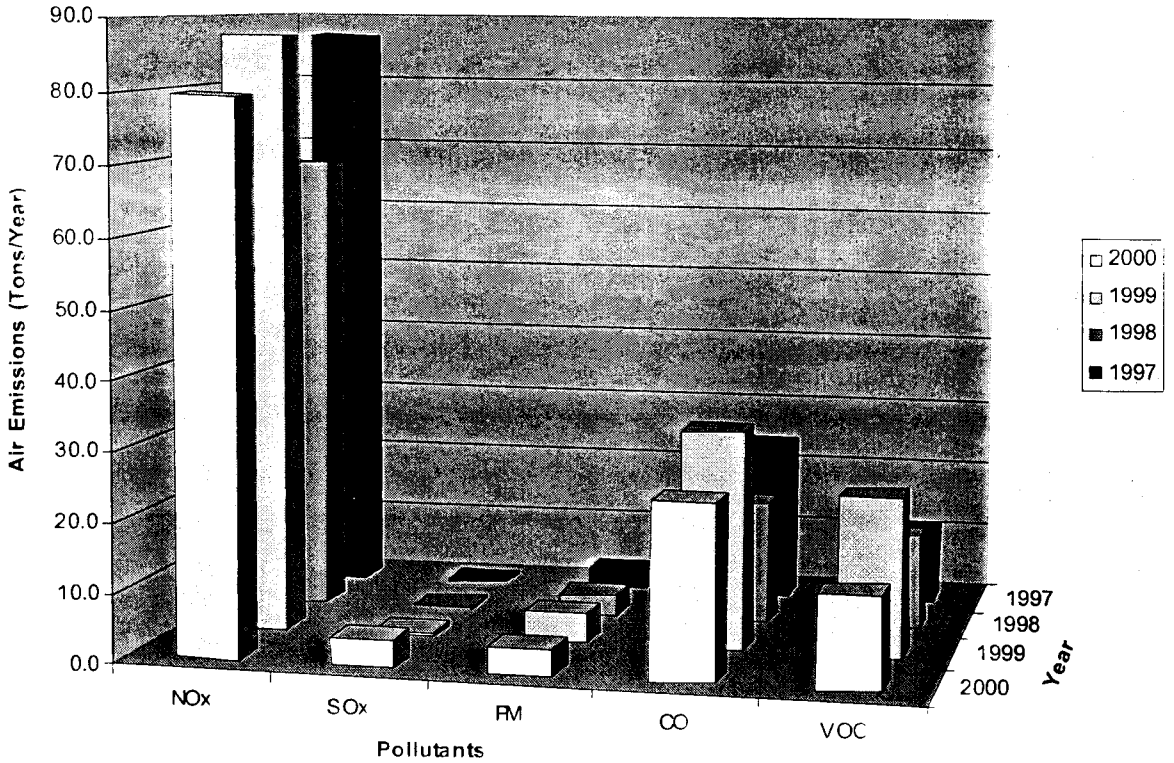

Figure 6.2 Emissions Generated in 1997, 1998, 1999, and 2000

Figure 6.2 compares 1997, 1998, 1999, and 2000 emissions for criteria air pollutants and VOCs reported to NMED. There are some differences in the emissions from 1999 to 2000. In general, emissions were less in 2000 than in 1999. However, SOx emissions from the TA-3 Steam Plant increased from 0.41 tons/yr in 1999 to 3.9 tons/yr in 2000. The reason for the increase in SOx emissions was due to the increased amount of fuel oil used in 2000 (i.e., the TA-3 Steam Plant burned fuel oil when natural gas was not available during the Cerro Grande Fire). Burning fuel oil generates greater amounts of sulfur oxides than burning natural gas, which is typically the fuel that is used at the TA-3 Steam Plant.

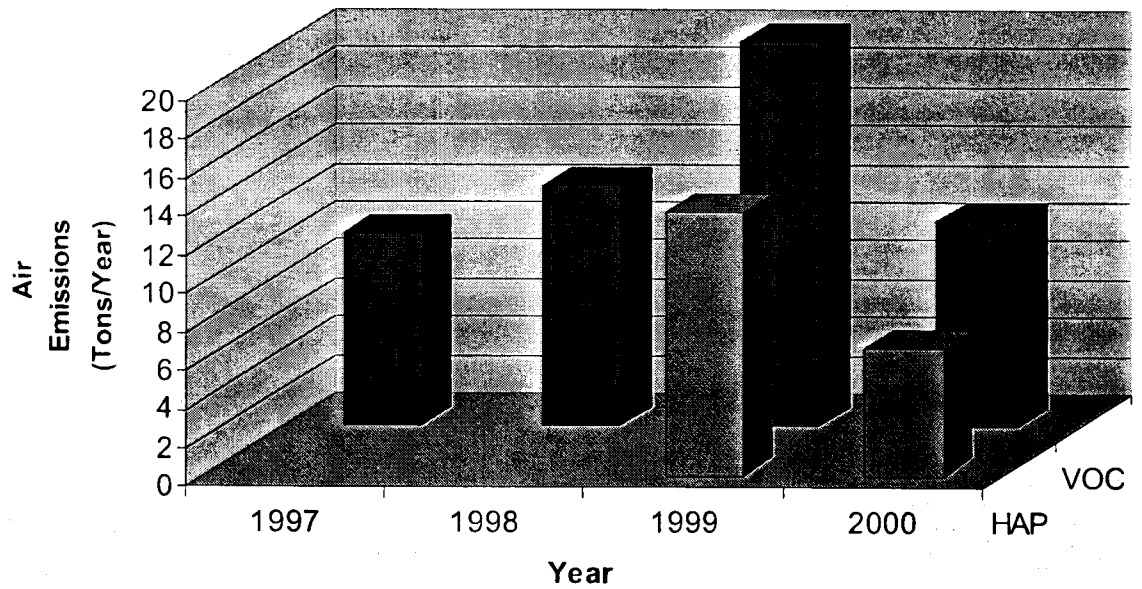

Figure 6.3 VOC and HAP Emissions from R&D Activities

Figure 6.3 represents VOC and HAP emissions from R&D activities. As shown, the VOC and HAP emissions from R&D activities are less in 2000 than in 1999. The decrease in VOC and HAP emissions from 1999 to 2000 is largely related to an overall decrease in chemical purchases in 2000 and the stop of operations during the fire.

As mentioned, HAP emission estimates for 1999 and 2000 are presented here for the first time. Prior to 1999, HAP emission data has not been made available for the annual *Emissions Inventory Submittal to NMED* (Attachment D).

Attachment D lists AIRS data for reportable emission sources. As shown in the AIRS form, six sources are listed with zero emissions. Of these sources, a few of them have never been built or operated (Stack Nos. 005, 009, and 012). In addition, one source is no longer in use (Stack No. 003) and two other sources (Be Machining at TA-3-141 and the Rock Crusher) did not operate in 2000.

ATTACHMENT A

Correspondence between LANL and NMED for the Emissions Inventory Submittal

Information taken from January 16, 2001 email from Leland Maez, LANL, ESH-17 to Mary Uhl, NMED, AQB.

NMED,

In preparation for the completion of the requested emissions inventory data for Los Alamos National Laboratory (LANL or the Laboratory), we would like to present some points of clarification.

Emissions Inventory Updates: All changes are being make electronically and in blue.

HAPs emissions: It is LANL's interpretation that 20 NMAC 2.73 does not require HAP emissions reporting. However, LANL will be voluntarily reporting an estimate of HAP emissions resulting from chemical use for the entire Laboratory. The estimate will be based on the chemical procurement and inventory records. In addition, LANL will make some assumptions to relate usage quantities and corresponding air emissions. HAPs emissions will not be reported for the combustion sources because they are very small, resulting in insignificant levels of HAP emissions. (Reference: October 27, 1995, *Implementation of EPA White Paper for 40 CFR Applications*).

VOC emissions: LANL will report VOC emissions from chemical use for the entire Laboratory. The estimate will be based on the chemical procurement and inventory records. In addition, LANL will make some assumptions to relate usage quantities and corresponding air emissions.

Exemptions: The emissions inventory report will be completed using the following exemptions for Operating Permit Program sources:

'List of Insignificant Activities' dated September 29, 1995; and
'List of Trivial Activities' dated January 10, 1996.

The exclusion of emissions from the emissions inventory report for insignificant sources or activities requires a Departmental waiver as stated in Section 304 of the statute. The use of these exemptions was agreed upon during our March 5th, 1998 meeting with Genevieve Grant and Phyllis Ludi. Please notify us if these lists have been replaced or updated.

Hours Operated: In most cases, operating logs are not available. The data populated in these fields are estimates. In the case of the regulated beryllium machining activities, the field will be populated with the operating hours allowed by permit conditions.

Fuel/material used: The fuel consumption for some of the bigger boilers is metered and actual fuel consumption will be populated in the emissions inventory where available. Otherwise, the fuel data by source will be estimated from the overall metered fuel provided to LANL. In the case of the regulated beryllium machining activities, the field will be populated with the material throughput allowed by permit conditions.

Design Capacity: The design capacities for boilers have been changed from the input rating (off the boiler plate) to the derated design capacity. LANL uses the following methodology to calculate the design capacity:

Design rating of boilers is used to estimate potential to emit in order to determine regulatory applicability under 20 NMAC 2.70 and 2.72.

Design rating for an ***atmospheric boiler*** *is based on an elevation adjustment (7500 ft above sea level) of the input rating as follows:*

Design rating = Boiler plate input rating – 30%

The elevation adjustment is based on manufacturer-provided data of a 4% adjustment for every 1,000 ft above sea level.

The design rating for ***forced draft boilers*** *is based on an elevation adjustment of the input rating as follows:*

Design rating = Boiler plate input rating – 15%

This method of derating boilers for altitude corrections is consistent with the methodology presented in LANL Facility Engineering Manual Chapter 6 - Mechanical.

Max Rated Capacity: The Max Rated Capacity fields for boilers will be updated with input ratings (Boiler plate input ratings). The units will correspond with the Design Capacity Units.

Allowable: The allowable emission rates will be updated to reflect permit limits (20 NMAC 2.72 permit conditions) when applicable. Otherwise, the fields will be updated with potential emission rates.

Information taken from January 24, 2001 email from Leland Maez, LANL, ESH-17 to Mary Uhl, NMED, AQB.

NMED,

I just wanted to get you some more information about the 73 Emissions Inventory Report that LANL is preparing. Also, I would like to formally request from the Department a *'Waiver of Reporting Requirements for Insignificant Emissions'* as outlined in Section 304 of 20 NMAC 2.73.

There have been a number of contract sources (i.e., not owned or operated by LANL) that have been located on LANL property with agreement from NMED to operate under 20 NMAC 2.72 Permits or 20 NMAC 2.73 Notices of Intent (NOI) during the 1999-2000 reporting years.

These outside contract sources not owned or operated by the Laboratory include:

· Flash Evaporation System operated by HydroChem (Air Quality Permit No. 2310);
· 700 TPH Concrete Batch Plant set up, operated, and taken down by Sundt Construction (Air Quality Permit No. 2446);
· 60 Cubic Yard Per Hour Concrete Batch Plant owned and operated by Carrco Custom Crete (Permit Application No. 2479); and
· 350 TPH Portable Rock Crushing Facility operated and owned by Southwest Laser, Inc. (Air Quality Permit No. 2211).

LANL is not planning to report emissions from these contract sources, unless the emissions and source data is requested by your Department.

In our email correspondence on January 16th we discussed the use of the following Exemptions:

· 'List of Insignificant Activities' dated September 29, 1995; and
· 'List of Trivial Activities' dated January 10, 1996.

Would you let me know if the Department concurs with LANL's use of these exemptions. We have discovered over the last few years that preparing this report without using the insignificant emission exemptions under 20 NMAC 2.70 and as allowed under 20 NMAC 2.73, Section 304 with Departmental waiver a very costly and time intensive requirement.

Thanks for your help!

Leland

GARY E. JOHNSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT
AIR QUALITY BUREAU
2048 Galisteo
Santa Fe, New Mexico 87505
Telephone (505) 827-1494
Fax (505) 827-1523

PETER MAGGIORE
SECRETARY

PAUL R. RITZMA
DEPUTY SECRETARY

January 30, 2001

Mr. Leland Maez
U.S. Department of National Labs
Mail Stop J978
Los Alamos, NM 87545

Dear Mr. Maez:

This letter responds to your January 16 and 24, 2001 e-mails regarding LANL emissions inventory reporting. We appreciate LANL's decision to make changes electronically; this will certainly expedite the processing of the inventory.

The Bureau approves the reporting of HAP and VOC emissions for the entire Laboratory, and also concurs that HAP emissions from combustion sources need not be reported, as the emissions are insignificant. LANL may also exclude the reporting of insignificant and trivial activities, as listed by Air Quality Bureau policy.

Per your January 16th e-mail, the methods of estimation of hours operated, fuel consumption, design capacity, maximum rated capacity and allowable emission rates developed by LANL are acceptable to the Bureau.

The contract sources located on LANL property need not be included in your emissions inventory report. It is the responsibility of the owner/operator of each of these facilities to submit inventory reports.

If you have any questions, please do not hesitate to call me at (505) 955-8086.

Sincerely,

Mary Uhl
Program Manager, Modeling Section

ATTACHMENT B

Emissions Inventory Summary

2000 Emissions Inventory Report
Summary of Emissions
(Pounds/Year = PY; shaded = Tons/Year = TY)

Sources		2000 Estimated Actual Emissions (PY)						
	Stack Number	Al	Be	NOx	SOx	PM	CO	VOC
001	BE Shop, TA-3, Bldg 39, Room 16*	0.00	0.008	0.00	0.00	0.00	0.00	0.00
002	Edgemoor BLRS 3EA TA-3-22	0.00	0.00	124451.00	7886.28	5961.20	30380.00	4089.50
003	Steam Plant TA-16-Bldg 540	0.00	0.00	0.00	0.00	0.00	0.00	0.00
004	Industrial BLRS 3 TA-21-357	0.00	0.00	3400.00	20.40	258.40	2856.00	187.00
005	TD Site Not Operating Stack	0.00	0.00	0.00	0.00	0.00	0.00	0.00
006	BE Machining TA-35, Bldg 213*	0.00	0.0008	0.00	0.00	0.00	0.00	0.00
007	BE Machining TA-3, Bldg 141**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
008	BE Machining TA-3, Bldg 102*	0.00	0.00014	0.00	0.00	0.00	0.00	0.00
009	BE Shop, TA-3-35 Not Built Stack	0.00	0.00	0.00	0.00	0.00	0.00	0.00
010	BE Cutting and Bead Dressing*	0.0041	0.0041	0.00	0.00	0.00	0.00	0.00
011	Metallography*	0.00	0.0030	0.00	0.00	0.00	0.00	0.00
012	Solid Waste Fired Boiler	0.00	0.00	0.00	0.00	0.00	0.00	0.00
013	Asphalt Rotary Dryer TA-3-73	0.00	0.00	87.35	16.07	244.58	1397.60	28.65
014	Pump Engine	0.00	0.00	18518.80	7.27	122.49	5926.02	370.38
	Subtotal AIRS (PY):	0.004	0.016	146457.15	7930.02	6586.67	40559.62	4675.53
	Subtotal AIRS (TY):	2.05E-06	8.02E-06	73.2	3.965	3.29	20.3	2.34
	Non-Exempt Boilers (PY):	NA	NA	12822	69	1011	10361	646
	Non-Exempt Boilers (TY):	NA	NA	6.4	0.035	0.51	5.2	0.323
	Paper Shredder*** (PY):	NA	NA	NA	NA	0.93	NA	NA
	Paper Shredder (TY):	NA	NA	NA	NA	0.0005	NA	NA
	Rock Crusher and Diesel Engine** (PY):	NA	NA	0.00	0.00	0.00	0.00	0.00
	Rock Crusher and Diesel Engine** (TY):	NA	NA	0.00	0.00	0.00	0.00	0.00
	Degreaser VOC (PY):	NA	NA	NA	NA	NA	NA	78.6
	Degreaser VOC (TY):	NA	NA	NA	NA	NA	NA	0.039
	R&D VOC (PY):	NA	NA	NA	NA	NA	NA	21314
	R&D VOC (TY):	NA	NA	NA	NA	NA	NA	10.7
	Total Emissions in PY:	0.004	0.016	159279	7999	7599	50921	26635
	Total Emissions in TY:	2.05E-06	8.02E-06	79.6	4.00	3.80	25.5	13.3

* Emissions based on allowables in permits
**Source did not operate in 2000
***Units of measure for emissions reported on the AIRS form were mixed up. The values and units represented on this sheet are correct.

ATTACHMENT C

Source Information

2000
Emissions Inventory Report
Combustion Sources Listed in AIRS Emissions Inventory Report

TA-3-22 Steam Plant (Edgemoor Boilers, 210 MMBTU/hr)						
Stack No. 002		Natural Gas Emission Factors (lb/MMSCF)[a]				
	Gas (MMCF)[b]	NO_x [c]	SO_x	PM	CO[l]	VOC
	737	163	0.6	7.6	40	5.5
	Emissions (ton)	**60.1**	**0.2**	**2.8**	**14.7**	**2.0**
		Fuel Oil Emission Factors (lb/1000 gal)[c]				
	Oil (1000 gal)[b]	NO_x	SO_x[m]	PM	CO	VOC[f]
	180	24	41.36	2	5	0.2
	Emissions (ton)	**2.16**	**3.72**	**0.18**	**0.45**	**0.02**
	TOTAL (ton/yr)	**62.2**	**3.9**	**3.0**	**15.2**	**2.0**
TA-21-357 Steam Plant (Industrial Boilers, 12 MMBTU/hr)						
Stack No. 004		Natural Gas Emission Factors (lb/MMSCF)[a]				
	Gas (MMCF)[b]	NO_x	SO_x	PM	CO	VOC
	34	100	0.6	7.6	84	5.5
	Emissions (ton)	**1.70**	**0.01**	**0.13**	**1.43**	**0.09**
		Fuel Oil Emission Factors (lb/1000 gal)[c]				
	Oil (1000 gal)[b]	NO_x	SO_x[e]	PM	CO	VOC[f]
	0	20	49.0	2	5	0.2
	Emissions (ton)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
	TOTAL (ton/yr)	**1.70**	**0.01**	**0.13**	**1.43**	**0.09**
TA-3-73 Asphalt Plant						
Stack No. 013		Emission Factors (lb/ton)[g]				
	Asphalt Production (tons)	NO_x	SO_x	PM[h]	CO	VOC
	3,494	0.025	0.0046	0.07	0.4	0.0082
	Emissions (ton)	**0.044**	**0.008**	**0.122**	**0.699**	**0.014**
TA-54 Water Pump					700	Horsepower
Stack No. 014		Emission Factors (g/hp-hr)[i]				
Hours of Operation[j]	Gas (MMCF)[b]	NO_x	SO_x (lb/MMBTU)[k]	PM (lb/MMBTU)[k]	CO	VOC
2400	12.0	5	5.88E-04	9.91E-03	1.6	0.1
	Emissions (ton)	**9.26**	**0.0036**	**0.06**	**2.96**	**0.19**

[a] AP-42, 7/98, Section. 1.4, *Natural Gas Combustion*, Tables 1.4-1, 1.4-2
[b] Fuel usage obtained from Jerry Gonzales, FWO-UI
[c] Source Test on Unit 3, 8/29/95 (Title V Application, December 1995)
[d] AP-42, 9/98, Section. 1.3, *Fuel Oil Combustion*, Table 1.3-1 with Errata
[e] S = weight % sulfur in oil (Title V Application, December 1995)
Boilers <100 MMBtu/hr: SO_x Emission Factor = 144 * S, S(%)=0.34
[f] AP-42, 9/98, Section 1.3, *Fuel Oil Combustion*, Table 1.3-3 NMTOC
[g] AP-42, 12/2000, Section 11.1, *Hot Mix Asphalt Plants*, Table 11.1-5 and 11.1-6
[h] Source Test, 8/25/93 (Title V Application, December 1995)
[i] Emission Factors from Manufacturer
Sample Calculation: (hr of op)(hp)(EF g/hp-hr)/453.593 g/lb, Conversion: 453.593 g/lb,
[j] Fuel Rate: 5000 scf= 1hour
[k] AP-42, 8/2000, Section 3.2, *Heavy Duty Nat. Gas-fired Pipeline Compressor Engines and Turbines*, Table 3.2-3
[l] AP-42, 1/95, Section. 1.4, *Natural Gas Combustion*, Table 1.4-2. Consistent with previous stack tests.
[m] Boilers >100 MMBtu/hr: SO_x Emission Factor = 147.7 * S
Sulfur content per email from Paul Parker dated July 20, 2000: S(%)=0.28

2000 Emissions Inventory Report
Non-exempt Boilers with Stack Parameters and Estimated Emissions
(Pounds/Year = PY; shaded = Tons/Year = TY)

Location	ID	Stack Height (ft)	Stack Diameter (ft)	Exit Gas Temp (^{0}F)	Flow Rate (CFPM)	Design Rate (BTU/hr)	Natural Gas Consumption (MCF/yr)	NOx	SOx	PM	CO	VOC
Miscellaneous Boilers (Fuel Pro-Rated)								Emission Factors (tons/MMSCF)[1]				
								0.05	0.0003	0.0038	0.042	0.00275
								Emissions (tons/yr)[2]				
TA-48-1	BS-1	50	2.3	300	2400	5,336,300	8004	0.400	0.002	0.030	0.336	0.022
TA-48-1	BS-2	50	2.3	300	2400	5,335,450	8003	0.400	0.002	0.030	0.336	0.022
TA-48-1	BS-6	50	2.3	300	3300	7,140,000	10710	0.536	0.003	0.041	0.450	0.029
TA-53-365	BHW-1	22	1.5	300	3400	7,114,500	11383	0.569	0.003	0.043	0.478	0.031
TA-53-365	BHW-2	22	1.5	300	3400	7,114,500	11383	0.569	0.003	0.043	0.478	0.031
TA-59-1	BHW-1	55	1.7	300	2600	5,335,450	8537	0.427	0.003	0.032	0.359	0.023
TA-59-1	BHW-2	55	1.7	300	2600	5,335,450	8537	0.427	0.003	0.032	0.359	0.023
							Subtotal (TY):	3.328	0.020	0.253	2.795	0.183
Miscellaneous Boilers (Fuel Pro-Rated)								Emission Factors (tons/MMSCF)[3]				
								0.121	0.0003	0.0038	0.147	0.00275
								Emissions (tons/yr)[2]				
TA-55-6	BHW-1	30	1.8	222	3600	7,113,650	11382	1.377	0.003	0.043	1.673	0.031
							Subtotal (TY):	1.377	0.003	0.043	1.673	0.031
Miscellaneous Boilers (Fuel Pro-Rated)								Emission Factors (tons/MMSCF)[4]				
								0.069	0.0003	0.0071	0.0191	0.00299
								Emissions (tons/yr)[2]				
TA-55-6[6]	BHW-2	30	2	333	5500	12,448,250	19917	1.374	0.006	0.141	0.380	0.060
							Subtotal (TY):	1.374	0.006	0.141	0.380	0.060
TA-16 Package Boilers (Fuel Metered)								Emission Factors (tons/MMSCF)[5]				
								0.0185	0.0003	0.0038	0.01854	0.00275
								Emissions (tons/yr)[2]				
TA-16	Plant 5-1	21	1.5	341	2280	6,350,110	14094	0.261	0.004	0.054	0.261	0.039
TA-16	Plant 5-2	Stand by										
TA-16	Plant 6-1	19	1.8	341	2148	7,842,913	3795	0.070	0.001	0.014	0.070	0.010
TA-16	Plant 6-2	Stand by										
							TA-16 Total (TY):	0.332	0.005	0.068	0.332	0.049
Non-Exempt Boilers Total (TY):								6.4	0.035	0.51	5.2	0.323
Non-Exempt Boilers Total (PY):								12822	69	1011	10361	646

[1]AP-42, 7/98, Section 1.4, *Natural Gas Combustion*, Small Boilers
[2]Natural gas: Sulfur content is <0.1% and ash content is non-applicable.
Heat Value: 1030 BTU/scf
Conversions: 8760 hr/yr
[4]AP-42, 7/98, Section 1.4, *Natural Gas Combustion*, Small Boilers for SOx. Stack test on 3/00 for NOx. Otherwise, Emission factors from Sellers Engineering Co.
[3]Stack test on 3/00 for NOx and CO. Otherwise, Emission factors obtained from AP-42, 7/98, Section 1.4, Natural Gas Combustion, Small Boilers.
[5]AP-42, 7/98, Section 1.4, *Natural Gas Combustion*, Small Boilers; Emission factors for NOx and CO from Sellers Engineering Co.
[6]Boiler substitution took place in 1998.

2000 Emissions Inventory Report
Paper Shredder

Source:	SEM-1424 Disintegrator			
Manufacturer:	Security Engineered Machinery (SEM)			
Amount processed:	1542	boxes per Fiscal Year (FY)		
	128.5	boxes per month		
Amount processed:	1542	boxes per Calendar Year (CY)		
Weight Conversion:	60	lb/box		
Amount processed:	92520	lb/CY		
Emission Factor:	1	%	Provided by SEM	
Uncontrolled emissions:	925.2	lb/yr		
Controls:	Cyclone	90	% efficient	Based on engineering judgement
	Baghouse	99	% efficient	Based on engineering judgement
Controlled emissions:				
	0.9252	lb/yr	Controlled PM emissions	

Sample Calculations

Uncontrolled PM Emissions (lb/yr)

(lb paper processed/yr) * (1%)

Controlled PM Emissions: (lb/yr):

(Uncontrolled PM Emissions) * ((100- Cyclone Efficiency)/100) *((100- Baghouse Efficiency)/100)

ATTACHMENT D

Emissions Inventory Submittal to NMED

Los Alamos National Laboratory

Environment, Safety & Health Division
P.O. Box 1663, Mail Stop K491
Los Alamos, New Mexico 87545
(505) 667-4218 / FAX: (505) 665-3811

Date: February 28, 2001
Refer to: ESH-DO:01-023

Ms. Mary Uhl
New Mexico Environment Department
Air Quality Bureau
2048 Galisteo
Santa Fe, NM 87505

Dear Ms. Uhl:

Enclosed is the 1999 and 2000 Emissions Inventory update for Los Alamos National Laboratory (LANL or Laboratory), required by Title 20, Chapter 2, Part 73 of the New Mexico Administrative Code (20 NMAC 2.73), *Notice of Intent and Emissions Inventory Requirements*.

This update was completed using the following exemptions for Operating Permit Program sources:

- *'List of Insignificant Activities'* dated September 29, 1995; and
- *'List of Trivial Activities'* dated January 10, 1996.

The exclusion of emissions from this report for insignificant sources or activities requires a Departmental waiver as stated in Section 304 of the regulation. The use of exemptions was approved in your January 30th, 2001 letter to Leland Maez. Your letter also accepted LANL's methods of estimating hours operated, fuel consumption, design capacity, maximum rated capacity, and allowable emission rates; and the reporting of hazardous air pollutant (HAP) and volatile organic compound (VOC) emissions for the entire Laboratory.

LANL is voluntarily reporting an estimate of HAP emissions resulting from chemical use for the entire Laboratory. This information, with the exception of the radionuclide emissions, is included as the last emission unit in the attached forms. Emissions of radionuclides other than radon from Laboratory operations, as reported to EPA under 40 CFR 61 Subpart H, resulted in a maximum offsite dose of 0.32 mrem during 1999. For 2000, this offsite dose is estimated to be <0.5 mrem. A final dose for 2000 will be reported to EPA in June 2001. Emissions of radon from our waste sites were estimated to be 0.14 pCi/m^2 in 1993 and 1994. No further measurements of radon are planned.

This submittal includes the updated forms as requested by NMED and a summary report that was prepared at the completion of the voluntary Emissions Inventory submittal for 1999. Since the last submittal, there have been some minor changes at LANL. These changes include the following:

- LANL secured an air quality permit with federally enforceable limits for the power plant (TA-3-22).
- During the Cerro Grande fire, the power plant used larger quantities of fuel oil.
- Two additional degreasers were registered under 40 CFR 63 Subpart T.
- EPA revised AP-42 emission factors applicable to the asphalt plant and the water pump.
- HAPs from chemical use are reported for the first time.
- The method of pro-rating fuel consumption to the un-metered boilers was revised.

Please consider the following reporting conventions when evaluating the information that is included in the attached forms:

- The power plant has two stacks. The stack parameters are averaged and presented as one stack.
- The TA-21 steam plant has three stacks. The stack parameters are averaged and presented as one stack.
- Some of the capacities and material usage quantities were not reported for the beryllium machining activities due to classification issues.
- The VOC emissions reported from research and development (R&D) activities reflect the quantities procured in the calendar year.
- The HAP emissions reported from R&D activities generally reflect the quantities procured in the calendar year. In a few cases, however, procurement values and operational processes were further evaluated so that actual air emissions could be reported instead of the procurement quantities.

If you have any questions regarding this report, please contact Leland Maez (665-1240) or Jackie Hurtle (665-4380) of my staff in the Laboratory's Air Quality Group. Jackie will follow up with you at a later date to discuss the removal of emission units that are no longer applicable.

Sincerely,

LeMaez for DJE

Dennis J. Erickson, Ph.D.
Division Director

DJE:db

Cy:
T. Gunderson, DLDOPS, A100
R. Burick, DLDOPS, A100
D. Woitte, LC-GL, A187
J. Vozella, DOE/LAAO, A316
S. Fong, DOE/LAAO, A316
L. Cummings, DOE/LAAO, A316
D. Stavert, ESH-17, J978
S. Miller, ESH-17, J978
L. Maez, ESH-17, J978
J. Hurtle, ESH-17, J978
S. Roth, S-7, F674
20 NMAC 2.73 Project Files, J978
ESH-17 File, J978
ESH-DO File

LOS ALAMOS NATIONAL LABORATORY'S 1999
and 2000 EMISSIONS INVENTORY REPORT

Submitted as Required by:

Title 20, Chapter 2, Part 73 of the New Mexico Administrative Code

Prepared by:
The University of California

For:
The United States Department of Energy
Information Contacts:
Leland Maez, (505) 665-1240
Jackie Hurtle, (505) 665-4380

Certification Statement

I, Dennis J. Erickson, hereby certify on behalf of Los Alamos National Laboratory and the University of California, that the information and statements contained in this emissions inventory report are true and accurate to the best of my knowledge and belief.

7/28/01

Dennis J. Erickson, Ph.D.
Division Director for Environment, Safety & Health
University of California
Los Alamos National Laboratory
(505) 667-4218

Date

Unit Number: 002 ++++++++++++++++++++++++
Description: 210MMBTU/HR TA3-22 BLRS 3EA
SIC: 9711
Design Capacity: 535.5
Design Capacity Units: MMBTU
Units per .... HR
Max Rated Capacity: 630 MMBTU/HR
Installation Date: 1950 and 1951
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: 002 ++++++++++++++++++++++++
Description: POW TA-3 BLDG 22
Type: 02
LocalStackID: 002

	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
Height(ft) 68	7.7	416	12
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
574	380.5	3971	13

Hours Operated in 1999: 8760
Hours Operated in 2000: 8760
Fuel/material used in 1999: 800 MMCF gas, 6,840 gal oil
Fuel/material used in 2000: 737 MMCF gas, 180,000 gal oil
Fuel/material units of measure: unknown

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	81.3	16	15	NO EQUIPMENT	0
NO2	10102440	99.6	65.3	62	NO EQUIPMENT	0
PM10		15.7	3	3	NO EQUIPMENT	0
PT		15.7	3	3	NO EQUIPMENT	0
VOC		11.1	2.2	2	NO EQUIPMENT	0
SOx		36.9	0.41	3.9		

Stack Number: 003 ++++++++++++++++++++++++
Description: 96MMBTUH TA16 BOILERS 3EA
SIC: 9711
Design Capacity:
Design Capacity Units: MMBTU
Units per ...: HR
Max Rated Capacity: 288
Installation Date: 1950
Removal Date (if removed): 1997 taken off line

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: 003 ++++++++++++++++++++++++
Description: STEAM PLANT TA-16 BLDG540
Type: 02
LocalStackID: 003

	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
Height(ft) 65	5	NA	0
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
NA	378	3968	13

Hours Operated in 1999: 0
Hours Operated in 2000: 0
Fuel/material used in 1999: 0
Fuel/material used in 2000: 0
Fuel/material units of measure: unknown

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080		0	0	NO EQUIPMENT	0
NO2	10102440		0	0	NO EQUIPMENT	0
PM10			0	0	NO EQUIPMENT	0
PT			0	0	NO EQUIPMENT	0
VOC			0	0	NO EQUIPMENT	0

Unit Number: 004 ++++++++++++++++++++++
Description: 12MMBTUH TA21-357 BLRS 3
SIC: 9711
Design Capacity: 30.6
Design Capacity Units: MMBTU
Units per ...: HR
Max Rated Capacity: 36
Installation Date: 1983
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****+++++++++++++++****

Stack Number: 004 ++++++++++++++++++++++
Description: STEAM PLANT TA21 BLDG357
Type: 02
LocalStackID: 004

	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
Height(ft) 41	2	68	13
GasFlowRate(ft3/s) 42	UTMH(km) 385	UTMV(km) 3971	UTM Zone 13

Hours Operated in 1999: 8760
Hours Operated in 2000: 8760
Fuel/material used in 1999: 37 MMCF gas, 1350 gal oil
Fuel/material used in 2000: 34 MMCF gas, 0 gal oil
Fuel/material units of measure: unknown

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	10.9	1.6	1.4	NO EQUIPMENT	0
NO2	10102440	19	1.8	1.7	NO EQUIPMENT	0
PM10		1.9	0.14	0.13	NO EQUIPMENT	0
PT		1.9	0.14	0.13	NO EQUIPMENT	0
VOC		0.7	0.1	0.09	NO EQUIPMENT	0
SOx		47	0.044	0.01	NO EQUIPMENT	0

Unit Number: 005 ++++++++++++++++++++++
Description: TD SITE BOILER NOT BUILT
SIC: 9711
Design Capacity: 8
Design Capacity Units: MILLION BTU
Units per ...:
Max Rated Capacity: 0
Installation Date:
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: 005 ++++++++++++++++++++++
Description: TD SITE-NOT IN OPERATION
Type: 02
LocalStackID: 005

	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
Height(ft) 0	0	0	0
GasFlowRate(ft3/s) 0	UTMH(km) 385	UTMV(km) 3970	UTM Zone 13

Hours Operated in 1999: 0
Hours Operated in 2000: 0
Fuel/material used in 1999: 0
Fuel/material used in 2000: 0
Fuel/material units of measure: unknown

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	0	0	0		0
NO2	10102440	0	0	0		0
PT		0	0	0		0
VOC		0	0	0		0

Unit Number: 006 ++++++++++++++++++++++++
Description: BE MACHINING TA35 BLDG213
SIC: 9711
Design Capacity: 0
Design Capacity Units:
Units per ....
Max Rated Capacity: 0
Installation Date: 1985
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: 006 ++++++++++++++++++++++++
Description: BE SHOP TA-35 BLDG 213
Type: 02
LocalStackID: 006

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
71	1	70	36

GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
30	382.85	3969.39	13

Hours Operated in 1999: 1920
Hours Operated in 2000: 1920
Fuel/material used in 1999:
Fuel/material used in 2000:
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
BE	7440417	0.0000004	0.0000004	0.0000004	HEPA	99.9

Unit Number: 007 ++++++++++++++++++++++++
Description: BE MACHINING TA3 BLDG 141
SIC: 9711
Design Capacity: 0
Design Capacity Units:
Units per ....
Max Rated Capacity: 10,000 lb
Installation Date: 1986
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: 007 ++++++++++++++++++++++++
Description: BE PROCESSING TA3 BLDG141
Type: 02
LocalStackID: 007

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
50	5	70	47

GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
923	381.2	3970.28	13

Hours Operated in 1999: 0
Hours Operated in 2000: 0
Fuel/material used in 1999: 0
Fuel/material used in 2000: 0
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
BE	7440417	0.000004	0	0	HEPA	99.95

Unit Number: 008 ++++++++++++++++++++++++
Description: BE MACHINING TA3 BLDG 102
SIC: 9711
Design Capacity: 0
Design Capacity Units:
Units per ....:
Max Rated Capacity: 0
Installation Date: 1985
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: 008 ++++++++++++++++++++++++
Description: BE SHOP TA-3 BLDG 102
Type: 02
LocalStackID: 008

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
45	3	70	19

GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
134	380.5	3970.16	13

Hours Operated in 1999: 2400
Hours Operated in 2000: 2400
Fuel/material used in 1999:
Fuel/material used in 2000:
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
BE	7440417	7.00E-08	7.00E-08	7.00E-08	HEPA	99.97

Unit Number: 009 ++++++++++++++++++++++++
Description: BE SHOP TA3-35 NOT BUILT
SIC: 9711
Design Capacity: 0
Design Capacity Units:
Units per ...:
Max Rated Capacity: 0
Installation Date:
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++++****

Stack Number: 009 ++++++++++++++++++++++++
Description: BE SHOP TA3-35 NOT BUILT
Type: 02
LocalStackID: 009

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
0	0	0	0
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
0	380	3970.02	13

Hours Operated in 1999: 0
Hours Operated in 2000: 0
Fuel/material used in 1999: 0
Fuel/material used in 2000: 0
Fuel/material units of measure: unknown

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
BE	7440417		0	0		

Unit Number: 010 ++++++++++++++++++++++++
Description: BE CUTTING/DRESS TA-55-4
SIC: 9711
Design Capacity: 0
Design Capacity Units:
Units per ...:
Max Rated Capacity: 1100 lb Be
Installation Date: 1978
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++++****

Stack Number: 010 ++++++++++++++++++++++++
Description: BE CUTTING & BEAD DRESSING
Type: 02
LocalStackID: 010

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
32	3.6	77	30
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
300	382	3969	13

Hours Operated in 1999: <410
Hours Operated in 2000: <8760
Fuel/material used in 1999: <1100 lb Be
Fuel/material used in 2000: <1100 lb Be
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
AL-PT	7429905	0.0000021	0.0000021	0.0000021	HEPA	99.95
BE	7440417	0.0000021	0.0000021	0.0000021	HEPA	99.95

Unit Number: 011 ++++++++++++++++++++++++
Description: METALLOG TA55-4 NRTH STACK
SIC: 9711
Design Capacity: 0
Design Capacity Units:
Units per ...:
Max Rated Capacity: 1100 lb Be
Installation Date: 1978
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++++****

Stack Number: 011 ++++++++++++++++++++++++
Description: METALLOGRAPHY - NORTH STACK
Type: 02
LocalStackID: 011

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
49	3.6	77	39
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
390	382	3969	13

Hours Operated in 1999: <1500
Hours Operated in 2000: <8760
Fuel/material used in 1999: <1100 lb Be
Fuel/material used in 2000: <1100 lb Be
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
BE	7440417	1.50E-06	1.50E-06	1.50E-06	HEPA	99.95

Unit Number: 012 ++++++++++++++++++++++
Description: BOILER - NOT BUILT
SIC: 9711
Design Capacity: 0
Design Capacity Units:
Units per ....
Max Rated Capacity: 0
Installation Date:
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****+++++++++++++++****

Stack Number: 012 ++++++++++++++++++++++
Description: SOLID WASTE FIRED BOILER
Type: 02
LocalStackID: 012

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
0	0	0	0
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
0	380	3970	13

Hours Operated in 1999: 0
Hours Operated in 2000: 0
Fuel/material used in 1999: 0
Fuel/material used in 2000: 0
Fuel/material units of measure: unknown

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency

Unit Number: 013 ++++++++++++++++++++++
Description: ASPHALT PLANT TA 3-73
SIC: 9711
Design Capacity: 60
Design Capacity Units: TONS
Units per....: HR
Max Rated Capacity: 0
Installation Date: 1960
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****+++++++++++++++****

Stack Number: 013 ++++++++++++++++++++++
Description: ASPHALT PLANT TA-3-73
Type: 02
LocalStackID: 013

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
30	4.5	130	27
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
426	380	3970	13

Hours Operated in 1999: 50
Hours Operated in 2000: 60
Fuel/material used in 1999: 2931
Fuel/material used in 2000: 3494
Fuel/material units of measure: tons produced

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	105	0.5	0.7	NO EQUIPMENT	0
NO2	10102440	6.6	0.037	0.04	NO EQUIPMENT	0
PM10		16.4	0.1	0.12	multiple cyclone and wet scrubber	93
PT		16.4	0.1	0.12	multiple cyclone and wet scrubber	93
VOC		2.2	0.025	0.014	NO EQUIPMENT	0
SOx		1.2	0.008	0.008		

Unit Number: 014 ++++++++++++++++++++++
Description: 700HP CAT WATER PUMP ENGN
SIC: 9711
Design Capacity: 700
Design Capacity Units: HORSEPOWER
Units per ....
Max Rated Capacity: 700
Installation Date: 1982
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: 014 ++++++++++++++++++++++
Description: CAT HCR-TA-SI PUMP ENGINE
Type: 02
LocalStackID: 014

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
17	0.85	977	4621
GasFlowRate(ft3/s)	**UTMH(km)**	**UTMV(km)**	**UTM Zone**
2500	386	3968	13

Hours Operated in 1999: 1340
Hours Operated in 2000: 2400
Fuel/material used in 1999: 6.7 MMCF gas
Fuel/material used in 2000: 12 MMCF gas
Fuel/material units of measure: unknown

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	10.8	1.65	2.96	NO EQUIPMENT	0
NO2	10102440	33.8	5.17	9.26	NO EQUIPMENT	0
VOC		0.68	0.1	0.19	NO EQUIPMENT	0
PT		0.08	0.003	0.06	NO EQUIPMENT	0
PM10		0.08	0.003	0.06	NO EQUIPMENT	0
SOx		0.005	0.002	0.0036	NO EQUIPMENT	0

Unit Number: 00XX ++++++++++++++++++++++
Description: Boiler (TA-48-1) BS-1
SIC: 9711
Design Capacity: 5.3
Design Capacity Units: MMBTU
Units per ...: HR
Max Rated Capacity: 6.3 MMBTU/HR
Installation Date: 1987
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: Boiler (TA-48-1)
Type
LocalStackID:

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
50	2.3	300	10
GasFlowRate(ft3/s)	**UTMH(km)**	**UTMV(km)**	**UTM Zone**
40	382	3970	13

Hours Operated in 1999: 5500
Hours Operated in 2000: 5500
Fuel/material used in 1999: 20 MMCF
Fuel/material used in 2000: 8 MMCF
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	1.9	0.84	0.34		
NO2	10102440	2.3	1.0	0.4		
PM10		0.17	0.076	0.03		
PT		0.17	0.076	0.03		
VOC		0.13	0.055	0.02		
SOX		0.014	0.006	0.002		

Unit Number: 00XX ++++++++++++++++++++++++
Description: Boiler (TA-48-1) BS-2
SIC: 9711
Design Capacity: 5.3
Design Capacity Units: MMBTU
Units per .... HR
Max Rated Capacity: 6.3
Installation Date: 1976
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: Boiler (TA-48-1)
Type:
LocalStackID:

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
50	2.3	300	10
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
40	382	3970	13

Hours Operated in 1999: 5500
Hours Operated in 2000: 5500
Fuel/material used in 1999: 20 MMCF
Fuel/material used in 2000: 8 MMCF
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	1.9	0.84	0.34		
NO2	10102440	2.3	1.0	0.4		
PM10		0.17	0.076	0.03		
PT		0.17	0.076	0.03		
VOC		0.13	0.055	0.02		
SOX		0.014	0.006	0.002		

Unit Number: 00XX ++++++++++++++++++++++
Description: Boiler (TA-48-1) BS-6
SIC: 9711
Design Capacity: 7.1
Design Capacity Units: MMBTU
Units per ...: HR
Max Rated Capacity: 8.4
Installation Date: 1994
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: Boiler (TA-48-1)
Type:
LocalStackID:

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
50	2.3	300	10
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
55	382	3970	13

Hours Operated in 1999: 5500
Hours Operated in 2000: 5500
Fuel/material used in 1999: 27 MMCF
Fuel/material used in 2000: 11 MMCF
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	2.55	1.13	0.45		
NO2	10102440	3.04	1.35	0.54		
PM10		0.23	0.10	0.04		
PT		0.23	0.10	0.04		
VOC		0.17	0.074	0.03		
SOX		0.018	0.008	0.003		

Unit Number: 00XX ++++++++++++++++++++++++
Description: Boiler (TA-53-365) BHW-1
SIC: 9711
Design Capacity: 7.1
Design Capacity Units: MMBTU
Units per ...: HR
Max Rated Capacity: 8.4
Installation Date: 1988
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++++****

Stack Number: XX ++++++++++++++++++++++++
Description: Boiler (TA-53-365)
Type:
LocalStackID:

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
22	1.5	300	32
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
57	386	3970	13

Hours Operated in 1999: 5500
Hours Operated in 2000: 5500
Fuel/material used in 1999: 27 MMCF
Fuel/material used in 2000: 11.4 MMCF
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	2.54	1.13	0.48		
NO2	10102440	3.03	1.35	0.57		
PM10		0.23	0.10	0.04		
PT		0.23	0.10	0.04		
VOC		0.17	0.074	0.03		
SOx		0.018	0.008	0.003		

Unit Number: 00XX ++++++++++++++++++++++++
Description: Boiler (TA-53-365) BHW-2
SIC: 9711
Design Capacity: 7.1
Design Capacity Units: MMBTU
Units per ...: HR
Max Rated Capacity: 8.4
Installation Date: 1988
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++++****

Stack Number: XX ++++++++++++++++++++++++
Description:
Type:
LocalStackID:

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
22	1.5	300	32
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
57	386	3970	13

Hours Operated in 1999: 5500
Hours Operated in 2000: 5500
Fuel/material used in 1999: 27 MMCF
Fuel/material used in 2000: 11.4 MMCF
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	2.54	1.13	0.48		
NO2	10102440	3.03	1.35	0.57		
PM10		0.23	0.10	0.04		
PT		0.23	0.10	0.04		
VOC		0.17	0.074	0.03		
SOx		0.018	0.008	0.003		

Unit Number: 00XX ++++++++++++++++++++++
Description: Boiler (TA-59-1) BHW-1
SIC: 9711
Design Capacity: 5.3
Design Capacity Units: MMBTU
Units per .... HR
Max Rated Capacity: 6.3
Installation Date: 1978
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****+++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description:
Type:
LocalStackID:

	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
Height(ft) 55	1.7	300	19
GasFlowRate(ft3/s) 43	UTMH(km) 381	UTMV(km) 3970	UTM Zone 13

Hours Operated in 1999: 5500
Hours Operated in 2000: 5500
Fuel/material used in 1999: 20 MMCF
Fuel/material used in 2000: 8.5 MMCF
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	1.91	0.84	0.36		
NO2	10102440	2.27	1.0	0.43		
PM10		0.17	0.076	0.03		
PT		0.17	0.076	0.03		
VOC		0.13	0.055	0.02		
SOx		0.014	0.006	0.003		

Unit Number: 00XX ++++++++++++++++++++++
Description: Boiler (TA-59-1) BHW-2
SIC: 9711
Design Capacity: 5.3
Design Capacity Units: MMBTU
Units per ...: HR
Max Rated Capacity: 6.3
Installation Date: 1994
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****+++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: Boiler (TA-59-1) BHW-2
Type:
LocalStackID:

	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
Height(ft) 55	1.7	300	19
GasFlowRate(ft3/s) 43	UTMH(km) 381	UTMV(km) 3970	UTM Zone 13

Hours Operated in 1999: 5500
Hours Operated in 2000: 5500
Fuel/material used in 1999: 20 MMCF
Fuel/material used in 2000: 8.5 MMCF
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	1.91	0.84	0.36		
NO2	10102440	2.27	1.0	0.43		
PM10		0.17	0.076	0.03		
PT		0.17	0.076	0.03		
VOC		0.13	0.055	0.02		
SOX		0.014	0.006	0.003		

Unit Number: 00XX ++++++++++++++++++++++++
Description: Boiler (TA-55-6) BHW-1
SIC: 9711
Design Capacity: 7.1
Design Capacity Units: MMBTU
Units per ...: HR
Max Rated Capacity: 8.4
Installation Date: 1976
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++++****

Stack Number: XX ++++++++++++++++++++++++
Description: Boiler (TA-55-6)
Type:
LocalStackID:

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
30	1.6	222	24
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
60	383	3970	13

Hours Operated in 1999: 5500
Hours Operated in 2000: 5500
Fuel/material used in 1999: 27 MMCF
Fuel/material used in 2000: 11.4 MMCF
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	6.89	3.97	1.67		
NO2	10102440	7.32	3.20	1.38		
PM10		0.23	0.10	0.04		
PT		0.23	0.10	0.04		
VOC		0.17	0.07	0.03		
SOX		0.018	0.008	0.003		

Unit Number: 00XX ++++++++++++++++++++++++
Description: Boiler (TA-55-6) BHW-2
SIC: 9711
Design Capacity: 12.4
Design Capacity Units: MMBTU
Units per ...: HR
Max Rated Capacity: 14.6
Installation Date: 1998
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++++****

Stack Number: XX ++++++++++++++++++++++++
Description: Boiler (TA-55-6)
Type:
LocalStackID:

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
3[illegible]	[illegible]	33[illegible]	2[illegible]
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
9[illegible]	383	3970	13

Hours Operated in 1999: 5500
Hours Operated in 2000: 5500
Fuel/material used in 1999: 48 MMCF
Fuel/material used in 2000: 20 MMCF
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	2.02	0.92	0.38		
NO2	10102440	7.31	3.31	1.4	LOW NOX	
PM10		0.75	0.34	0.14		
PT		0.75	0.34	0.14		
VOC		0.32	0.14	0.06		
SOX		0.032	0.01	0.006		

Unit Number: 00XX ++++++++++++++++++++++
Description: Boiler and backup, Plant-5
SIC: 9711
Design Capacity: 12.7
Design Capacity Units: MMBTU
Units per .... HR
Max Rated Capacity: 15.0
Installation Date: 1995
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: Boiler (TA-16-1484)
Type:
LocalStackID:

Height(ft)		Diameter(ft)	Temp(deg F)	Velocity(ft/s)
	21	1.5	341	22
GasFlowRate(ft3/s)		UTMH(km)	UTMV(km)	UTM Zone
	38	379	3967	13

Hours Operated in 1999: 8760
Hours Operated in 2000: 8760
Fuel/material used in 1999: 20 MMCF
Fuel/material used in 2000: 14.1 MMCF
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	1.0	0.37	0.26		
NO2	10102440	1.0	0.37	0.26	LOW NOX	
PM10		0.21	0.08	0.054		
PT		0.21	0.08	0.054		
VOC		0.15	0.06	0.039		
SOX		0.016	0.006	0.004		

Unit Number: 00XX ++++++++++++++++++++++
Description: Boiler and Backup, Plant 6
SIC: 9711
Design Capacity: 15.6
Design Capacity Units: MMBTU
Units per .... HR
Max Rated Capacity: 18.4
Installation Date: 1995
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: Boiler (TA-16-1485)
Type
LocalStackID

Height(ft		Diameter(ft)	Temp(deg F	Velocity(ft/s
	19	1.8	341	14
GasFlowRate(ft3/s)		UTMH(km)	UTMV(km)	UTM Zone
	35.8	379	3967	13

Hours Operated in 1999: 8760
Hours Operated in 2000: 8760
Fuel/material used in 1999: 13.2 MMCF
Fuel/material used in 2000: 3.8 MMCF
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	1.24	0.25	0.07		
NO2	10102440	1.24	0.25	0.07	LOW NOX	
PM10		0.25	0.05	0.014		
PT		0.25	0.05	0.014		
VOC		0.18	0.036	0.01		
SOX		0.02	0.004	0.001		

Unit Number: 00XX ++++++++++++++++++++++
Description: Rock Crusher
SIC: 9711
Design Capacity:
Design Capacity Units:
Units per ....
Max Rated Capacity: 150 ton/hr
Installation Date: 1998
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: Torgerson Model AX Impact Plant, 100 HP diesel engine
Type: NA
LocalStackID: NA

	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
Height(ft) 15	0.25	550	429
GasFlowRate(ft3/s) 21	UTMH(km)	UTMV(km)	UTM Zone

Hours Operated in 1999: 0
Hours Operated in 2000: 0
Fuel/material used in 1999: 0
Fuel/material used in 2000: 0
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
CO	630080	1.4	0	0		
NO2	10102440	6.4	0	0		
PM10		0.48	0	0	water spray	92%
PT		0.75	0	0	water spray	92%
VOC		0.5	0	0		
SOX		0.4	0	0		

Unit Number: 00XX ++++++++++++++++++++++
Description: SEM-1424 Disintegrator paper shredder
SIC: 9711
Design Capacity:
Design Capacity Units:
Units per ....
Max Rated Capacity: 300 lb/hr
Installation Date: 1991
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: SEM-1424 Disintegrator paper shredder (TA-52-11)
Type
LocalStackID

	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
Height(ft) 26	1	70	25
GasFlowRate(ft3/s) 23	UTMH(km) 384	UTMV(km) 3969	UTM Zone 13

Hours Operated in 1999: 360
Hours Operated in 2000: 310
Fuel/material used in 1999: electric
Fuel/material used in 2000: electric
Fuel/material units of measure:

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
PM10		13	1.08	0.93	cyclone and baghouse	90% and 99%
PT		13	1.08	0.93	cyclone and baghouse	90% and 99%

Unit Number: 00XX ++++++++++++++++++++++
Description: Degreaser - cold ultrasonic bath
SIC: 9711
Design Capacity:
Design Capacity Units:
Units per ....
Max Rated Capacity: 20 liters
Installation Date: 1996
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: Degreaser TA-55-4
Type:
LocalStackID:

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
32	3.6	77	30
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
300	382	3969	13

Hours Operated in 1999: 1
Hours Operated in 2000: 1
Fuel/material used in 1999: 90
Fuel/material used in 2000: 74
Fuel/material units of measure: liters

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
Trichloroethylene	79-01-6	<10	0.032	0.035		

Unit Number: 00XX ++++++++++++++++++++++
Description: Degreaser - cold ultrasonic bath
SIC: 9711
Design Capacity:
Design Capacity Units:
Units per ....
Max Rated Capacity: 18 liters
Installation Date: 2000
Removal Date (if removed): regulated solvent removed in July 2000

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: Degreaser TA-46-24
Type:
LocalStackID:

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
32	1	70	2.6
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
2	384	3968	13

Hours Operated in 1999: 0
Hours Operated in 2000: 0.65
Fuel/material used in 1999: 0
Fuel/material used in 2000: 1.7
Fuel/material units of measure: liters

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
Trichloroethylene	79-01-6	<10	0	0.0003		

Unit Number: 00XX ++++++++++++++++++++++
Description: Degreaser - inhouse cold batch
SIC: 9711
Design Capacity:
Design Capacity Units:
Units per ...:
Max Rated Capacity: 6 liters
Installation Date: 1999
Removal Date (if removed):

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: Degreaser TA-46-24
Type:
LocalStackID:

Height(ft)	Diameter(ft)	Temp(deg F)	Velocity(ft/s)
32	1	70	2.6
GasFlowRate(ft3/s)	UTMH(km)	UTMV(km)	UTM Zone
2	384	3968	13

Hours Operated in 1999: 0
Hours Operated in 2000: 1.75
Fuel/material used in 1999: 0
Fuel/material used in 2000: 6.2
Fuel/material units of measure: liters

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
Trichloroethylene	79-01-6	<10	0	0.004		

Unit Number: 00XX ++++++++++++++++++++++
Description: R & D activities
SIC: 9711
Design Capacity: NA
Design Capacity Units: NA
Units per ....
Max Rated Capacity: NA
Installation Date: NA
Removal Date (if removed): NA

Emission Release Point(s)/Stack(s) ****++++++++++++++****

Stack Number: XX ++++++++++++++++++++++
Description: Labwide
Type:
LocalStackID:
Height(ft) Diameter(ft)

GasFlowRate(ft3/s) UTMH(km)

Hours Operated in 1999: 8760
Hours Operated in 2000: 8760
Fuel/material used in 1999: Temp(deg F) Velocity(ft/s)
Fuel/material used in 2000:
Fuel/material units of measure: UTMV(km) UTM Zone

Pollutant	CAS ID #	Allowable Tons/yr	1999 Tons/yr	2000 Tons/yr	Control eqpt	Ctrl efficiency
VOC		<250	20	10.7		
HAP		<25	13.6	6.5		
1,1,2,2-Tetrachloroethane	79-34-5	<10	0.004	0.000		
1,1,2-Trichloroethane	79-00-5	<10	0.002	0.025		
1,1-Dimethyl hydrazine	57-14-7	<10	0.000	0.000		
1,2-Epoxybutane	106-88-7	<10	0.002	0.002		
1,3-Butadiene	106-99-0	<10	0.017	0.000		
1,4-Dioxane (1,4-Diethyleneoxide)	123-91-1	<10	0.012	0.001		
2,2,4-Trimethylpentane	540-84-1	<10	0.024	0.005		
2,4-Toluene diisocyanate	584-84-9	<10	0.002	0.000		
4-Nitrophenol	100-02-7	<10	0.001	0.001		
Acetaldehyde	75-07-0	<10	0.000	0.001		
Acetonitrile	75-05-8	<10	0.859	0.010		
Acetophenone	98-86-2	<10	0.000	0.001		
Acrylamide	79-06-1	<10	0.176	0.063		
Acrylic acid	79-10-7	<10	0.001	0.000		
Acrylonitrile	107-13-1	<10	0.001	0.000		
Aniline	62-53-3	<10	0.001	0.001		
Antimony Compounds	7440-36-0	<10	0.003	0.001		
Arsenic Compounds (inorganic including arsine)	7440-38-2	<10	0.004	0.004		
Benzene (including benzene from gasoline)	71-43-2	<10	0.012	0.034		
Benzyl chloride	100-44-7	<10	0.002	0.001		
Beryllium Compounds	7440-41-7	<10	0.002	0.002		
Biphenyl	92-52-4	<10	0.001	0.000		
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	<10	0.023	0.000		
Cadmium Compounds	7440-43-9	<10	0.027	0.003		
Carbon disulfide	75-15-0	<10	0.007	0.001		
Carbon tetrachloride	56-23-5	<10	0.225	0.015		
Carbonyl sulfide	463-58-1	<10	0.001	0.000		
Catechol	120-80-9	<10	0.002	0.000		
Chlorine	7782-50-5	<10	0.024	0.076		
Chloroacetic acid	79-11-8	<10	0.003	0.000		
Chlorobenzene	108-90-7	<10	0.005	0.024		
Chloroform	67-66-3	<10	0.139	0.079		
Chromium Compounds	7440-47-3	<10	0.072	0.005		
Cobalt Compounds	7440-48-4	<10	0.855	0.004		
Cyanide Compounds	57-12-5	<10	0.347	0.012		
Dibutylphthalate	84-74-2	<10	0.002	0.000		
Diethanolamine	111-42-2	<10	0.009	0.000		
Dimethyl formamide	68-12-2	<10	0.111	0.052		
Dimethyl sulfate	77-78-1	<10	0.005	0.000		
Epichlorohydrin (l-Chloro-2,3-epoxypropane)	106-89-8	<10	0.002	0.000		
Ethyl acrylate	140-88-5	<10	0.001	0.000		
Ethyl chloride (Chloroethane)	75-00-3	<10	0.001	0.000		
Ethylene dibromide (Dibromoethane)	106-93-4	<10	0.001	0.000		
Ethylene dichloride (1,2-Dichloroethane)	107-06-2	<10	0.049	0.023		
Ethylene glycol	107-21-1	<10	0.561	0.754		
Formaldehyde	50-00-0	<10	0.026	0.003		
Glycol ethers		<10	0.037	0.007		
Hexachlorocyclopentadiene	77-47-4	<10	0.000	0.000		
Hexamethylphosphoramide	680-31-9	<10	0.000	0.001		
Hexane	110-54-3	<10	0.370	0.119		
Hydrochloric acid	7647-01-0	<10	4.313	3.114		
Hydrogen fluoride (Hydrofluoric acid)	7664-39-3	<10	0.405	0.025		
Hydroquinone	123-31-9	<10	0.019	0.000		
Lead Compounds	7439-92-1	<10	0.100	0.011		
Manganese Compounds	7439-96-5	<10	0.016	0.012		
m-Cresol	108-39-4	<10	0.000	0.002		
Mercury Compounds	7439-97-6	<10	0.024	0.004		
Methanol	67-56-1	<10	0.961	0.709		
Methyl bromide (Bromomethane)	74-83-9	<10	0.001	0.001		
Methyl chloride (Chloromethane)	74-87-3	<10	0.116	0.232		
Methyl chloroform (1,1,1-Trichloroethane)	71-55-6	<10	0.365	0.001		

Methyl ethyl ketone (2-Butanone)	78-93-3	<10	0.569	0.021
Methyl iodide (Iodomethane)	74-88-4	<10	0.002	0.000
Methyl isobutyl ketone (Hexone)	108-10-1	<10	0.159	0.000
Methyl methacrylate	80-62-6	<10	0.001	0.001
Methyl tert butyl ether	1634-04-4	<10	0.015	0.003
Methylene chloride (Dichloromethane)	75-09-2	<10	0.991	0.341
Methylene diphenyl diisocyanate (MDI)	101-68-8	<10	0.001	0.000
Naphthalene	91-20-3	<10	0.000	0.001
Nickel Compounds	7440-02-0	<10	0.122	0.008
Nitrobenzene	98-95-3	<10	0.001	0.000
o-Xylenes	95-47-6	<10	0.001	0.000
Phenol	108-95-2	<10	0.040	0.009
Phosphine	7803-51-2	<10	0.005	0.000
Phosphorus	7723-14-0	<10	0.006	0.002
Phthalic anhydride	85-44-9	<10	0.001	0.000
Polycyclic Organic Matter		<10	0.044	0.001
p-Phenylenediamine	106-50-3	<10	0.001	0.000
Propylene oxide	75-56-9	<10	0.000	0.000
Selenium Compounds	7782-49-2	<10	0.004	0.001
Styrene	100-42-5	<10	0.008	0.000
Tetrachloroethylene (Perchloroethylene)	127-18-4	<10	0.052	0.000
Titanium tetrachloride	7550-45-0	<10	0.004	0.001
Toluene	108-88-3	<10	0.752	0.038
Trichloroelhylene	79-01-6	<10	0.450	0.406
Triethylamine	121-44-8	<10	0.007	0.001
Vinyl acetate	108-05-4	<10	0.001	0.000
Xylenes (isomers and mixture)	1330-20-7	<10	0.014	0.201

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