

General

LIBRARY COPY

LA-13990-SR
Status Report
Issued: January 2003

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 2001

Risk Reduction and Environmental Stewardship Division,
Meteorology and Air Quality Group (RRES-MAQ)



13748

Table of Contents

1.0 Introduction.....	1
2.0 Emissions-Inventory Reporting Requirements.....	2
3.0 Content of the Emissions Inventory Report	2
4.0 Reported Emission Sources	2
4.1 Steam Plants.....	3
4.2 Nonexempt Boilers.....	3
4.3 Asphalt Plant.....	4
4.4 Water Pump	4
4.5 Paper Shredder	4
4.6 Rock Crusher	4
4.7 Degreaser	4
4.8 Air Curtain Destructors	4
4.9 Emissions from Research and Development Activities	5
4.9.1 VOC Emissions	5
4.9.2 HAP Emissions	6
4.10 Permitted Beryllium-Machining Operations	7
5.0 Reporting Exemptions.....	7
5.1 Boilers.....	8
5.2 VOC Emissions.....	8
5.3 HAP Emissions	10
5.4 Paints	10
5.5 Generators.....	10
6.0 Emissions Summary.....	11
Attachment A. Emissions Inventory Summary	15
Attachment B. Emission Calculation Worksheets for Individual Emission Units.....	16
Attachment C. Emissions Inventory Submittal to NMED	22

**Emissions Inventory Report Summary: Reporting Requirements for the
New Mexico Administrative Code, Title 20, Chapter 2, Part 73
(20 NMAC 2.73) for the Calendar Year 2001**

by

**Risk Reduction and Environmental Stewardship Division,
Meteorology and Air Quality Group (RRES-MAQ)**

Abstract

Los Alamos National Laboratory is subject to annual emissions-reporting requirements for regulated air contaminants under Title 20 of the New Mexico Administrative Code, Chapter 2, Part 73 (20.2.73 NMAC), *Notice of Intent and Emissions Inventory Requirements*. The applicability of the requirements 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 2001, the Technical Area 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 20.2.72 NMAC. Hazardous air pollutant emissions from chemical use for research and development activities were also reported.

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 later evolved into Title 20 of the New Mexico Administrative Code, Chapter 2, Part 73 (20.2.73 NMAC), "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 its staff can determine whether LANL meets state and federal air pollutant standards.

The Aerometric Information Retrieval System (AIRS) is used to help ensure ambient air quality standards are maintained and to track the state's air pollutant emissions. AIRS (<http://www.epa.gov/ttn/chief>) 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 program members to access and compare past data and view data from other states. For 2001 emissions reporting, NMED imported data from the AIRS database into spreadsheets and requested that LANL update the sheets with the 2001 information.

This annual emissions inventory report includes air contaminant data for total particulate matter (PM), suspended particulate matter in the size range of 10 microns or less (PM₁₀), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxides (SO_x), volatile organic compounds (VOCs), beryllium, and aluminum. Additionally, at the request of NMED, this report provides data on hazardous air pollutant (HAP) emissions from chemical use for calendar year (CY) 2001.

2.0 EMISSIONS-INVENTORY REPORTING REQUIREMENTS

Annual emissions-inventory reporting requirements under 20.2.73 NMAC 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 PM₁₀, 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, PM₁₀, SO_x, NO_x, CO, or VOCs must be included in the report to NMED. In addition, emissions from all sources permitted under 20.2.72 NMAC construction permits must be included in the report.

3.0 CONTENT OF THE EMISSIONS INVENTORY REPORT

NMED requested that LANL submit emissions data for 2001 via 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 CY 2001.

4.0 REPORTED EMISSION SOURCES

The Laboratory's *2001 Emissions Inventory Report* 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,
- air curtain destructors,
- research and development (R&D) activities, and
- permitted beryllium-machining operations.

Attachment A includes a summary of emissions from LANL, and Attachment B includes worksheets showing emission calculations for individual emissions sources. In addition to Attachment B, descriptions of the sources listed above are provided in the following subsections of this report. The *2001 Emissions Inventory Report* as submitted to NMED is presented in Attachment C.

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 facility 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 AP-42, the U.S. Environmental Protection Agency's *Compilation of Air Pollutant Emission Factors* (Volume 1, *Stationary Point and Area Sources*, Sections 1 and 3, Fifth Edition). 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 operates approximately 200 boilers. Most of the boilers are exempt from permitting requirements because of their size and use as comfort boilers 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 2001 emissions inventory include the following:

- four boilers at TA-16,
- three boilers at TA-48,
- two boilers at TA-53,
- three 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. Ownership of this water pump was transferred to Los Alamos County in November 2001. Emissions data for the full calendar year 2001 are included in this year's inventory.

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 20.2.72 NMAC construction permit (Permit No. 2195) 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. The rock crusher was not operated in 2001. Therefore, there were no PM emissions from crushing activities and no combustion products from the crusher's diesel-fired engine for CY 2001.

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 (AQB) as required under the National Emissions Standards for Hazardous Air Pollutants, 40 CFR 63 Subpart T, "Halogenated Solvent Cleaning." The solvent used in the machine, trichloroethylene (Chemical Abstracts Service [CAS] No. 79-01-6), is a VOC and a HAP. Measured losses were reported. LANL has two additional halogenated solvent cleaning machines registered with NMED; however, these two machines did not operate in 2001.

4.8 Air Curtain Destructors

In 2001, three air curtain destructors were brought on-site for controlled open burning of wood and wood scrap generated from tree thinning activities at LANL. Both wood burning and engine operation emissions were estimated. Wood burning emissions were estimated based on the total tons of wood burned in 2001 and using emission factors

presented in the Notice of Intent (NOI) application submitted to NMED in May 2001. Engine emissions were estimated based on the total diesel fuel consumed and the total horsepower hours operated. The estimates used emission factors presented in the NOI application submitted to NMED. The units were operated under an open burn permit issued by NMED's AQB on June 20, 2001.

4.9 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.

4.9.1 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 2001 data set (chemical containers added to LANL's inventory between January 1, 2001 and December 31, 2002) 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 parentheses) 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 CO₂ and H₂O—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,
- Use of office equipment and products,
- Chemicals used for boiler water treatment operations,
- Chemicals used for oxygen scavenging (deaeration) of water, and
- Chemicals used in bench-scale chemical analysis.*

* This exemption was applied only to biological research solutions. Otherwise, this exemption was not applied. See Table 5.1.

After the elimination of the chemicals and categories of chemicals listed 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 of VOCs at LANL were 18.6 tons. Use of NMED AQB's Operating Permit Program exemptions from the "List of Insignificant Activities" (September 29, 1995) and "List of Trivial Activities" (January 10, 1996) is discussed in Section 5.2 of this report. Chemical mixtures that had incomplete information were not included in the VOC total. For CY 2001, approximately 3.74 tons were not included in the VOC total after best judgment was used to determine the unlikely presence of VOCs. This approach was discussed with and approved by NMED in March of 1998.

4.9.2 HAP Emissions

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

The ACIS CY 2001 data set was analyzed to identify HAPs used in R&D activities. The identification process was similar to that used for the VOCs, described in Section 4.9.1. 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 (MSDS) were reviewed to determine if any HAPs were present and if so, to determine the associated HAP percentages. Listed below are certain chemical types or categories that were classified and removed from this analysis (refer to Section 4.9.1 and Table 5.1 for explanations on the removal of these chemicals).

- Paints,
- Oils,
- Maintenance chemicals,
- Chemicals used to calibrate equipment,
- Container sizes of 1 lb or less,
- Chemicals used in bench-scale chemical analysis,
- Use of office equipment and products,
- Chemicals used for boiler water treatment operations, and
- Chemicals used for oxygen scavenging (deaeration) of water.

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 2001 was 7.4 tons. Based on this analysis, the Laboratory is below the 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 2001 were hydrochloric acid, methanol, and ethylene glycol. In comparison, the total amount of HAPs calculated for 2000 was 6.5 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 mercury and hydrochloric acid were performed and are described below.

Mercury

Large quantities of mercury are used in the shutter systems at the Los Alamos Neutron Science Center (LANSCE) as a barrier for the electron beam. In 2001, the LANSCE shutter system operated as a closed system. No mercury was added to or taken out of the system; therefore, no air emissions of mercury resulted from operations at LANSCE. Mercury is also used in various R&D activities throughout the Laboratory. All purchases of mercury through the ACIS procurement system were evaluated to determine usage and potential air emissions. In 2001, scientists from Oak Ridge National Laboratory conducted experiments at LANL involving mercury. Approximately 300 pounds of mercury was brought on-site, used in the experiments, and then shipped back to Oak Ridge. Air monitoring during the experiments indicated negligible emissions of mercury. Some purchases of mercury are exempt from the emission inventory requirements because of their use as standards for calibrating laboratory equipment. A total of 6.6 lb of mercury was purchased and used in nonexempt activities.

Hydrochloric Acid

Waste Facility Management (TA-50-1) purchased multiple 14-gallon carboys of hydrochloric acid (HCl) totaling approximately 1800 lb. This HCl was used for heat exchanger scale cleaning and for the cleaning of electro dialysis reversal membranes. Emissions from these particular activities were estimated to be 0.1 lb based on specific process information and engineering calculations. The remaining procurements were approximately 3470 lb, resulting in a reported total for HCl of 1.75 tons.

4.10 Permitted Beryllium-Machining Operations

The Laboratory operates under five 20.2.72 NMAC AQB 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-3-35 in 2001; therefore, there were no air emissions reported for the facility.

5.0 REPORTING EXEMPTIONS

Under NMED's 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:

** Permit No. 632, issued December 26, 1985.
Permit No. 632-M2, issued October 30, 1998.
Permit No. 635, issued March 19, 1986.
Permit No. 636, issued March 19, 1986.
Permit No. 1080-M1-R2, issued March 11, 1998.

- “List of Insignificant Activities,” September 29, 1995;
- “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 *2001 Emissions Inventory Report*. 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 or trivial activities are explained in Table 5.1.

Fuels such as propane, kerosene, and acetylene were analyzed separately and are not listed in Table 5.1. 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.

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	<p>Activities that occur strictly for maintenance of grounds or buildings, including the following: lawn care; pest control; grinding; cutting; welding; painting; woodworking; sweeping; general repairs; janitorial activities; plumbing; re-tarring roofs; installing insulation; steam-cleaning and water-washing activities; and paving of roads, parking lots, and other areas.</p> <p>Activities for maintenance and repair of equipment, pollution-control equipment, or motor vehicles either inside or outside of a building.</p>
Use of office equipment and products	Trivial	Use of office equipment and products, not including printers or businesses primarily involved in photographic reproduction.
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	<p>Bench-scale laboratory equipment used for physical or chemical analysis but not lab fume hoods or vents.</p> <p><i>Note: This exemption was applied only to biological research solutions. Otherwise, this exemption was not applied.</i></p>

5.3 HAP Emissions

A HAP R&D activity exemption analysis, similar to the VOC R&D activity exemption analysis, resulted in application of several of the same exemptions from NMED's AQB "List of Trivial Activities" and "List of Insignificant Activities" (refer to Table 5.1).

5.4 Paints

An exemption analysis was performed for VOC and HAP emissions resulting from painting activities conducted at the Laboratory. Paint information for 2001 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 NMED's 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 the following: lawn care; pest control; grinding; cutting; welding; painting; woodworking; sweeping; general repairs; janitorial activities; plumbing; re-tarring 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 nonpaint 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 2001 was determined to be 3135 lb (1.57 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 cleanup 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 *2001 Emissions Inventory Report*.

5.5 Generators

The Laboratory has an inventory of approximately 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 45 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 in NMED's AQB "List of Insignificant Activities" 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

Table 6.1 presents facility-wide actual emissions of criteria pollutants for 2001, as reported in the emission inventory. Table 6.2 presents facility-wide actual emissions for HAPs. Graphical representations of emissions are also provided. 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.

The Laboratory's reported emissions for 2001 are tabulated and summarized in Attachment A. Emission unit information and emissions estimates are included in Attachment B. The *2001 Emissions Inventory Report* as submitted to NMED is presented in Attachment C. As mentioned, it is formatted to be compatible with AIRS.

Table 6.1. LANL Facility-Wide Criteria Pollutant Emissions for 2001

Pollutant	Actual Emissions (tons/yr)
NOx	93.8
SOx	0.8
CO	29.1
PM	5.5
VOC	24.1

Table 6.2. LANL HAPs Emissions from Facility-Wide Chemical Use for 2001

Pollutant	Actual Emissions (tons/yr)
Total HAPs	7.4
Top 5 HAPs	
Hydrochloric Acid	1.74
Methanol	0.91
Ethylene Glycol	0.72
Acetonitrile	0.66
Trichloroethylene	0.51

Attachment C is a copy of the data in spreadsheet form that was submitted to NMED for reportable emission sources. Several notable changes occurred to the emission inventory sources for 2001. First, Stack ID No. 002, which has been used for the three main power plant boilers at TA-3, has been deleted and replaced with three separate Stack ID Nos. (032, 033, 034).

Second, two aging boilers at TA-55 were replaced with new low-NO_x boilers in 2001. Therefore, two new Stack ID Nos. were added to the inventory (037 and 038). Emissions are shown for both the old and the new boilers because this replacement project occurred in the middle of the year.

Finally, LANL installed and operated three new air curtain destructors to burn wood and brush from tree thinning activities. The tree thinning activities are being conducted as part of the Laboratory's wildfire mitigation plan. Emissions from both the wood burned and the diesel fuel used is included. Three new Stack IDs for these sources (not yet assigned numbers) are included in this inventory. Several existing sources (beryllium machining at TA-3-141, degreasers at TA-46-24, and the rock crusher) did not operate in 2001.

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 was anticipated to be completed by end of fiscal year (FY) 2001. As of April 1, 2001, the installation of FGR equipment had not been completed. When this equipment is fully implemented, emissions from the Laboratory's TA-3 steam plant will be significantly reduced.

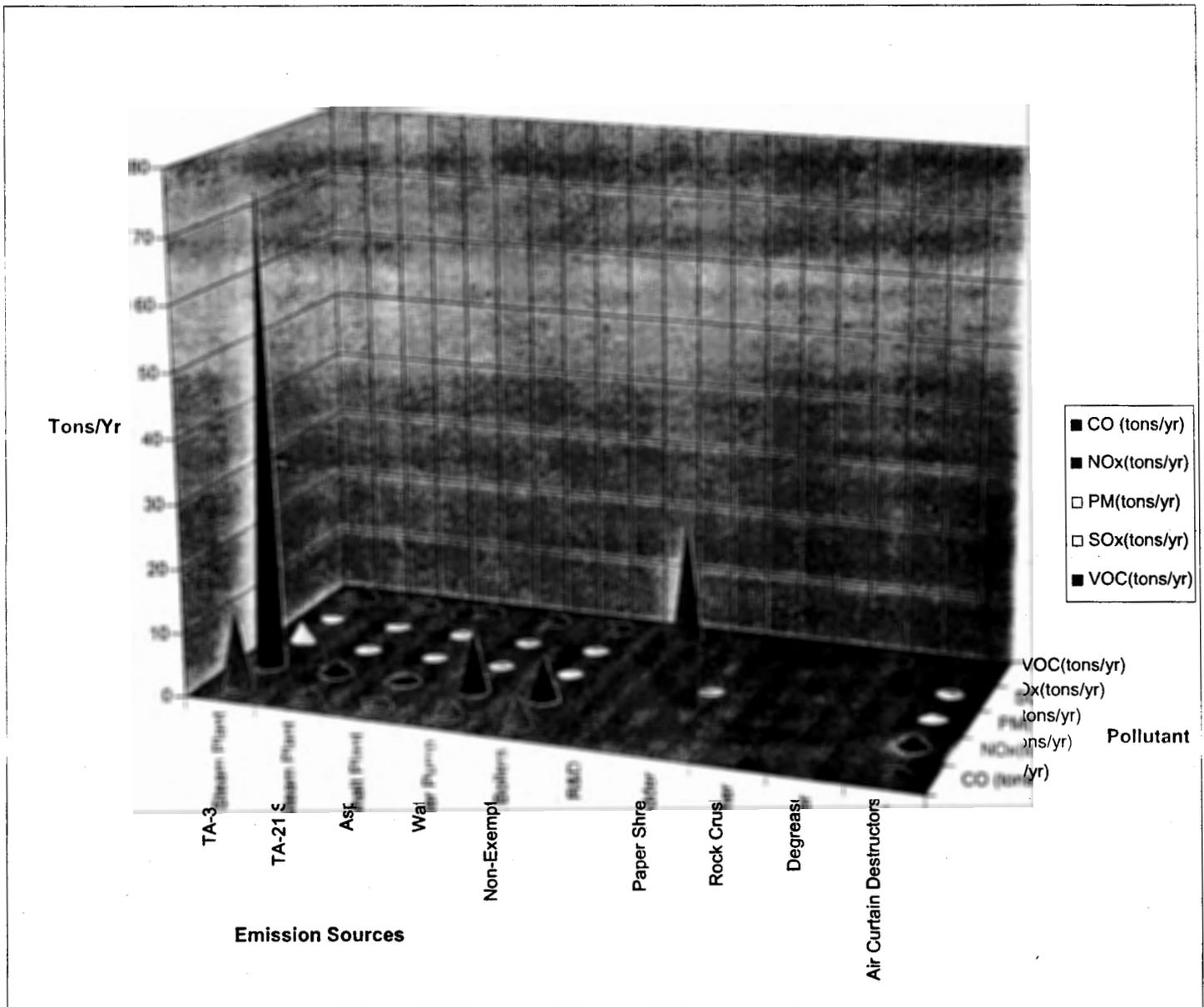


Figure 6.1. Emissions of Criteria Pollutants by Source in 2001.

Figure 6.2 compares the past five years' emissions for criteria air pollutants and VOCs reported to NMED. There are some differences in the emissions from 2000 to 2001. The Laboratory operated at reduced levels for several months in 2000 because of the focus on recovery efforts associated with the Cerro Grande fire. The 2001 emissions are similar to emission levels reported in 1999.

Figure 6.3 represents VOC and HAP emissions from R&D activities. As shown, the VOC and HAP emissions from R&D activities are greater in 2001 than in 2000. The decrease in VOC and HAP emissions from 2000 was largely related to an overall decrease in chemical purchases in 2000 and the reduced level of operations during and immediately after the Cerro Grande fire. Chemical purchases resumed normally during 2001.

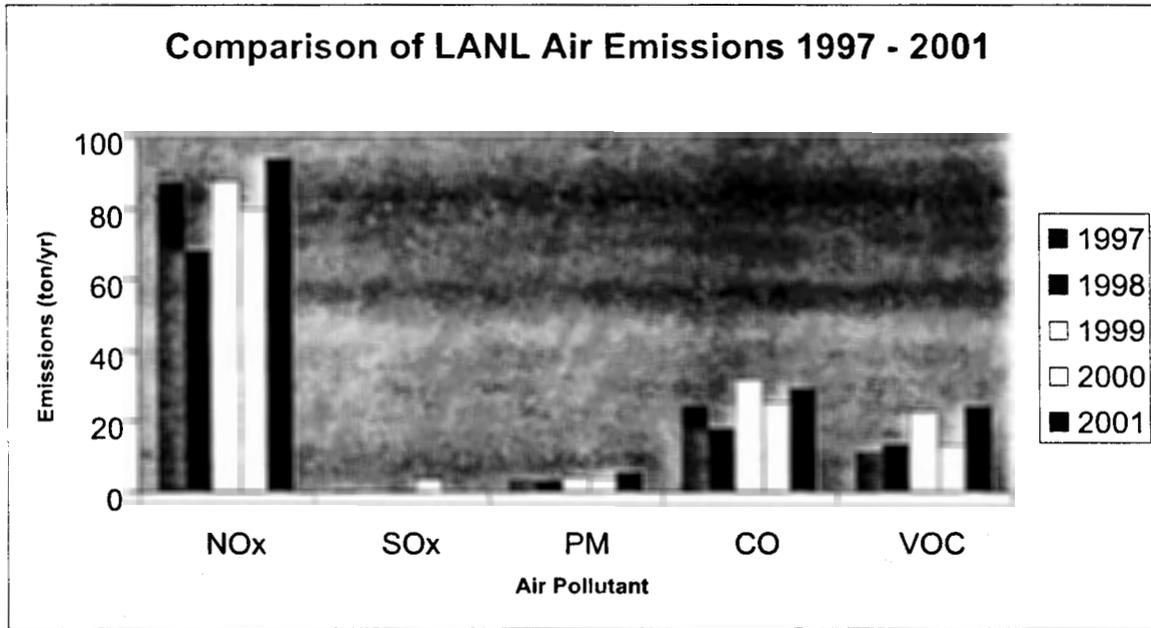


Figure 6.2. Emissions Generated in 1997, 1998, 1999, 2000, and 2001.

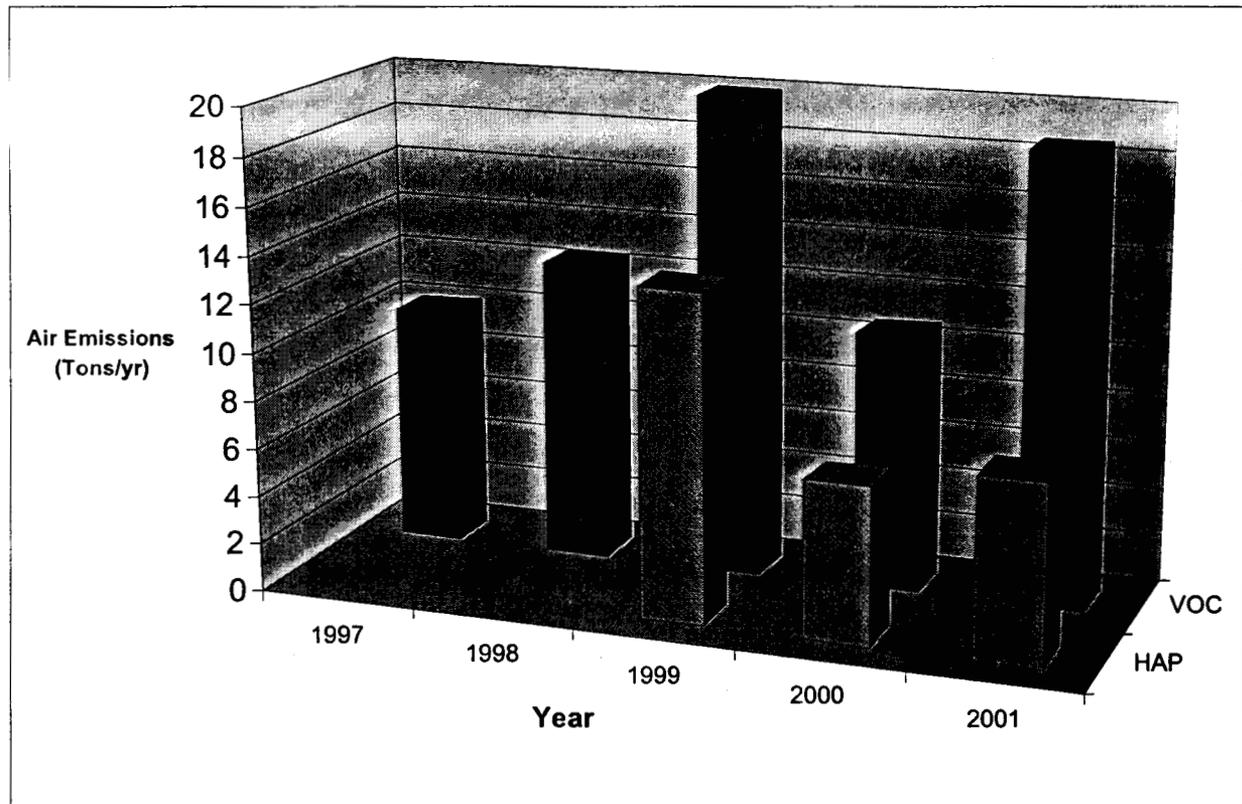


Figure 6.3. VOC and HAP Emissions from R&D Activities.

Attachment A. Emissions Inventory Summary

Stack Number	Source Description	2001 Estimated Actual Emissions						
		Al (lb/yr)	Be (lb/yr)	NOx (ton/yr)	SOx (ton/yr)	PM (ton/yr)	CO (ton/yr)	VOC (ton/yr)
001	BE Shop, TA-3, Bldg 39, Room 16 ^(a)	0.00	0.000	0.00	0.00	0.000	0.00	0.00
002	Edgemoor-BLRS-3EA-TA-3-22 ^(a)	0.00	0.00	0.0	0.0	0.0	0.0	0.0
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	1.85	0.01	0.14	1.55	0.10
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 ^(b)	0.00	0.0008	0.00	0.00	0.0000	0.00	0.00
007	BE Machining TA-3, Bldg 141 ^(b)	0.00	0.0077	0.00	0.00	0.0000	0.00	0.00
008	BE Machining TA-3, Bldg 102 ^(a)	0.00	0.0000	0.00	0.00	0.0000	0.00	0.00
009	BE Shop, TA-3-35 - Not Built	0.00	0.00	0.00	0.00	0.00	0.00	0.00
010	BE Cutting and Bead Dressing ^(b)	0.004	0.004	0.00	0.00	0.0000	0.00	0.00
011	TA-55-4 BE Metallography ^(b)	0.00	0.0066	0.00	0.00	0.0000	0.00	0.00
012	Solid Waste Fired Boiler - Not Built	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	0.03	0.006	0.09	0.52	0.01
014	Water Pump Engine	0.00	0.00	9.41	0.004	0.06	3.01	0.19
015	Boiler (TA-48-1) BS-1	0.00	0.00	0.45	0.003	0.03	0.38	0.02
016	Boiler (TA-48-1) BS-2	0.00	0.00	0.45	0.003	0.03	0.38	0.02
017	Boiler (TA-48-1) BS-6	0.00	0.00	0.60	0.004	0.05	0.50	0.03
018	Boiler (TA-53-365) BHW-1	0.00	0.00	0.60	0.004	0.05	0.50	0.03
019	Boiler (TA-53-365) BHW-2	0.00	0.00	0.60	0.004	0.05	0.50	0.03
020	Boiler (TA-59-1) BHW-1	0.00	0.00	0.45	0.003	0.03	0.38	0.02
021	Boiler (TA-59-1) BHW-2	0.00	0.00	0.45	0.003	0.03	0.38	0.02
022	Boiler (TA-55-6) BHW-1-Removed	0.00	0.00	0.00	0.000	0.00	0.00	0.00
023	Boiler (TA-55-6) BHW-2	0.00	0.00	0.90	0.002	0.03	1.10	0.07
024	Boiler & Backup (TA-16, Plant 5)	0.00	0.00	0.26	0.004	0.05	0.26	0.04
025	Boiler & Backup (TA-16, Plant 6)	0.00	0.00	0.00	0.000	0.00	0.00	0.00
026	Rock Crusher ^(a)	NA	NA	0.00	0.000	0.00	0.00	0.00
027	Paper Shredder	NA	NA	NA	NA	0.0007	NA	NA
028	Degreaser TA-55-4	NA	NA	NA	NA	NA	NA	0.01
029	Degreaser TA-46-24 Cold Ultrasonic ^(a)	NA	NA	NA	NA	NA	NA	0.00
030	Degreaser TA-46-24 Inhouse ^(a)	NA	NA	NA	NA	NA	NA	0.00
031	R&D VOC	NA	NA	NA	NA	NA	NA	18.60
032	TA-3-223 Boiler 1 (Edgemoor Iron Works)	0.00	0.00	19.64	0.516	0.97	4.77	0.63
033	TA-3-223 Boiler 2 (Edgemoor Iron Works)	0.00	0.00	30.16	0.112	1.41	7.40	1.02
034	TA-3-223 Boiler 3 (Edgemoor Iron Works)	0.00	0.00	24.09	0.089	1.12	5.91	0.81
035	Tank TA-3-26 (Fuel Oil)	NA	NA	NA	NA	NA	NA	0.01
036	Tank TA-3-779 (Fuel Oil)	NA	NA	NA	NA	NA	NA	0.03
037	TA-55-6 Sellers Boiler-BHW-1B	0.00	0.00	1.44	0.01	0.15	0.40	0.06
038	TA-55-6 Sellers Boiler-BHW-2B	0.00	0.00	0.54	0.002	0.06	0.15	0.02
New	Air Curtain Destructor S-127	NA	NA	0.19	0.005	0.02	0.10	0.25
New	Air Curtain Destructor-Trench Burner #1	NA	NA	0.97	0.03	0.62	0.50	1.16
New	Air Curtain Destructor-Trench Burner #2	NA	NA	0.72	0.02	0.51	0.39	0.95
Total Emissions (lb/yr):		0.004	0.019					
Total Emissions (tons/yr):		2.05E-06	9.60E-06	93.80	0.82	5.50	29.08	24

(a) Source did not operate in 2001

(b) Emissions based on permit allowables

(c) Stack No. 2 should be deleted from Emission Inventory (originally 1 stack ID assigned for 3 large boilers). It is replaced with separate stack numbers for each boiler (see Stack No. 032, 033 and 034).

Attachment B. Emission Calculation Worksheets

2001 Emissions Inventory --Large Combustion Sources

Stack No. 004		TA-21-357 Steam Plant (Industrial Boilers, 12 MMBTU/hr)						
		Natural Gas Emission Factors (lb/MMSCF) ^a						
	Gas (MMCF) ^b	NO _x	SO _x	PM	PM-10 ^b	CO	VOC	
	3	100	0.6	7.6	7.6	84	5.5	
	Emissions (ton)	1.85	0.01	0.14	0.14	1.55	0.10	
		Fuel Oil Emission Factors (lb/1000 gal) ^d						
	Oil (1000 gal) ^b	NO _x	SO _x ^e	PM	PM-10 ⁿ	CO	VOC ⁱ	
	0	20	49.0	2	1	5	0.2	
	Emissions (ton)	0.0	0.0	0.0	0.0	0.0	0.0	
	TOTAL (ton/yr)	1.85	0.01	0.14	0.14	1.55	0.10	
Stack No. 013		TA-3-73 Asphalt Plant						
		Emission Factors (lb/ton) ^g						
	Asphalt Production (tons)	NO _x	SO _x	PM ^h	PM-10 ^o	CO	VOC	
	2,576	0.025	0.0046	0.07	0.07	0.4	0.0082	
	Emissions (ton)	0.032	0.006	0.090	0.090	0.515	0.01	
Stack No. 014		TA-54 Water Pump					700	Horsepower
		Emission Factors						
Hours of Operation ^j	Gas (MMCF) ^b	NO _x (g/hp-hr) ⁱ	SO _x (lb/MMBTU) ^k	PM (lb/MMBTU) ^k	PM-10 (lb/MMBTU) ^o	CO (g/hp-hr) ⁱ	VOC (g/hp-hr) ⁱ	
2440	12	5	5.88E-04	9.91E-03	9.91E-03	1.6	0.1	
	Emissions (ton)	9.41	0.0037	0.06	0.06	3.01	0.19	
Stack No. 032		TA-3-22 Steam Plant-Boiler # 1 (Edgemoor Boiler, 210 MMBTU/hr)						
		Natural Gas Emission Factors (lb/MMSCF) ^a						
	Gas (MMCF) ^b	NO _x ^c	SO _x	PM	PM-10 ^b	CO ⁱ	VOC	
	223	163	0.6	7.6	7.6	40	5.5	
	Emissions (ton)	18.2	0.1	0.8	0.8	4.5	0.6	
		Fuel Oil Emission Factors (lb/1000 gal) ^d						
	Oil (1000 gal) ^b	NO _x	SO _x ^m	PM	PM-10 ⁿ	CO	VOC ⁱ	
	124	24	7.39	2	1	5	0.2	
	Emissions (ton)	1.46	0.45	0.12	0.06	0.30	0.0	
	TOTAL (ton/yr)	19.6	0.5	1.0	0.9	4.8	0.6	
Stack No. 033		TA-3-22 Steam Plant - Boiler # 2 (Edgemoor Boiler, 210 MMBTU/hr)						
		Natural Gas Emission Factors (lb/MMSCF) ^a						
	Gas (MMCF) ^b	NO _x ^c	SO _x	PM	PM-10 ^b	CO ⁱ	VOC	
	370	163	0.6	7.6	7.6	40	5.5	
	Emissions (ton)	30.2	0.1	1.4	1.4	7.4	1.0	
		Fuel Oil Emission Factors (lb/1000 gal) ^d						
	Oil (1000 gal) ^b	NO _x	SO _x ^m	PM	PM-10 ⁿ	CO	VOC ⁱ	
	0	24	7.39	2	1	5	0.2	
	Emissions (ton)	0.00	0.00	0.00	0.00	0.00	0.00	
	TOTAL (ton/yr)	30.2	0.1	1.4	1.4	7.4	1.0	

Attachment B. Emission Calculation Worksheets

2001 Emissions Inventory --Large Combustion Sources

Stack No. 034	TA-3-22 Steam Plant - Boiler # 3 (Edgemoor Boiler, 210 MMBTU/hr)						
	Natural Gas Emission Factors (lb/MMSCF) ^a						
	Gas (MMCF) ^o	NO _x ^c	SO _x	PM	PM-10 ^o	CO ⁱ	VOC
	295.6	163	0.6	7.6	7.6	40	5.5
	Emissions (ton)	24.1	0.1	1.1	1.1	5.9	0.8
	Fuel Oil Emission Factors (lb/1000 gal) ^d						
	Oil (1000 gal) ^o	NO _x	SO _x ^m	PM	PM-10 ⁿ	CO	VOC ⁱ
	0.06	24	7.39	2	1	5	0.2
	Emissions (ton)	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL (ton/yr)	24.1	0.1	1.1	1.1	5.9	0.8
	TOTAL	85.2	0.7	3.8	3.7	23.2	2.8

^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)

$$\text{Boilers } < 100 \text{ MMBtu/hr: SO}_x \text{ Emission Factor} = 144 * S$$

$$S(\%) = 0.34$$

^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

$$\text{Sample Calculation: (hr of op)(hp)(EF g/hp-hr)/453.593 g/lb}$$

$$\text{Conversion: } 453.593 \text{ g/lb}$$

$$\text{Fuel Rate: } 5000 \text{ scf} = 1 \text{ hour}$$

^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

$$\text{Sulfur content per Analysis on oil in tanks in August 2001}$$

$$S(\%) = 0.05$$

ⁿ AP-42 9/98, Section 1.3, *Fuel Oil Combustion*, Table 1.3-6

^o Emission factors for natural gas of PM-10 are roughly equal to those of PM, *Natural Gas Combustion*, Table 1.4-2

2001 Emissions Inventory Report—Small Boilers with Stack Parameters and Estimated 2001 Emissions

Miscellaneous Small Boilers (Fuel Pro-Rated)										Emission Factors (tons/MMSCF) ¹					
										0.05	0.0003	0.0038	0.0038	0.042	0.00275
										Emissions (tons/yr)					
Stack No.	Location	ID	Stack Height (ft)	Stack Diameter (ft)	Exit Gas Temp (°F)	Flow Rate (CFPM)	Design Rate (BTU/hr)	Natural Gas Consumption (MCF/yr)		NOx	SOx	PM	PM-10 ⁶	CO	VOC
015	TA-48-1	BS-1	50	2.3	300	2400	5,336,300	8964		0.448	0.003	0.034	0.034	0.377	0.025
016	TA-48-1	BS-2	50	2.3	300	2400	5,335,450	8964		0.448	0.003	0.034	0.034	0.376	0.025
017	TA-48-1	BS-6	50	2.3	300	3300	7,140,000	11995		0.600	0.004	0.046	0.046	0.504	0.033
018	TA-53-365	BHW-1	22	1.5	300	3400	7,114,500	11952		0.598	0.004	0.045	0.045	0.502	0.033
019	TA-53-365	BHW-2	22	1.5	300	3400	7,114,500	11952		0.598	0.004	0.045	0.045	0.502	0.033
020	TA-59-1	BHW-1	55	1.7	300	2600	5,335,450	8964		0.448	0.003	0.034	0.034	0.376	0.025
021	TA-59-1	BHW-2	55	1.7	300	2600	5,335,450	8964		0.448	0.003	0.034	0.034	0.376	0.025
Old TA-55-6 Boilers (Fuel Pro-Rated) ¹⁰										Emission Factors (tons/MMSCF) ¹					
										0.121	0.0003	0.0038	0.0038	0.147	0.00275
										Emissions (tons/yr)					
022	TA-55-6	BHW-1	30	1.8	222	3600	7,113,650	0		0.000	0.000	0.000	0.000	0.000	0.000
023	TA-55-6	BHW-2	30	1.8	222	3600	7,113,650	7488		0.904	0.002	0.028	0.028	1.098	0.021
New TA-55-6 Sellers Boilers (Fuel Pro-Rated) ¹¹										Emission Factors (tons/MMSCF) ¹					
										0.069	0.0003	0.0071	0.0071	0.0191	0.00299
										Emissions (tons/yr)					
037	TA-55-6	BHW-1B	30	2	333	5500	12,448,250	20973		1.443	0.006	0.148	0.148	0.399	0.063
038	TA-55-6	BHW-2B	30	2	333	5500	12,448,250	7842		0.541	0.002	0.056	0.056	0.150	0.023
TA-16 Package Boilers (Fuel Metered)										Emission Factors (tons/MMSCF) ¹					
										0.01854	0.0003	0.0038	0.0038	0.01854	0.00275
										Emissions (tons/yr)					
024	TA-16	Plant 5-1	21	1.5	341	2280	6,350,110	14185		0.263	0.004	0.054	0.054	0.263	0.039
	TA-16	Plant 5-2					Stand by								
025	TA-16	Plant 6-1	19	1.8	341	2148	7,842,913			0.000	0.000	0.000	0.000	0.000	0.000
	TA-16	Plant 6-2					Stand by								

¹AP-42, 7/98, Section 1.4, Natural Gas Combustion, Small Boilers

²Natural gas: Sulfur content is <0.1% and ash content is non-applicable.

Heat Value: 1030 BTU/scf
Conversions: 8760 hr/yr

³Stack 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.

⁴AP-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.

⁵AP-42, 7/98, Section 1.4, Natural Gas Combustion, Small Boilers; Emission factors for NOx and CO from Sellers Engineering Co.

⁶Emission factors for natural gas of PM-10 are roughly equal to those of PM, Natural Gas Combustion, Table 1.4-2

⁷Assume all SOx is converted to sulfuric acid

⁸AP-42, Table 1.4-3, July 1998

⁹AP-42, Table 1.4-4, July 1998

¹⁰AP-42, Table 1.4-2, July 1998

¹¹Old TA-55-4 Boilers were replaced with new Sellers Low-NOx Boilers. BHW-1 was replaced in 1998. BHW-2 was replaced in Oct. 2001. Fuel to BHW-2 is pro-rated to reflect partial year operations.

¹²New Sellers Boiler (TA-55-6 BHW-2B) was installed on Oct. 1, 2001. Fuel is pro-rated to reflect 3 months of operation.

¹³EPCRA PAC Guidance Document, Table 2-3

2001 Emissions Inventory Report—Paper Shredder

Source:	SEM-1424 Disintegrator		
Manufacturer:	Security Engineered Machinery (SEM)		
Amount processed:	2345	boxes per Fiscal Year (FY)	
	195.4	boxes per month	
Amount processed:	2345	boxes per Calendar Year (CY)	
Weight Conversion:	60	lb/box	
Amount processed:	140700	lb/CY	
Emission Factor:	1 %		provided by SEM
Uncontrolled emissions:	1407	lb/yr	
Controls:	Cyclone	90 % efficient	Based on engineering judgement
	Baghouse	99 % efficient	Based on engineering judgement
Controlled emissions:	1.407	lb/yr	Controlled PM emissions
	1.407	lb/yr	Controlled PM-10 emissions
Sample Calculations:			
Uncontrolled PM Emissions (lb/yr):	$(\text{lb paper processed/yr}) * (1\%)$		
Controlled PM Emissions (lb/yr):	$(\text{Uncontrolled PM Emissions}) * ((100 - \text{Cyclone Efficiency})/100) * ((100 - \text{Baghouse Efficiency})/100)$		

2001 Emissions Inventory Report—Rock Crusher

Manufactured by Torgerson, Model AX Impact Plant;
 Capacity: 150 tons per hour maximum;
 Dimensions: 50 feet long x 8.5 feet wide x 14 feet high;
 HP rating of Diesel Engine: 200 HP Detroit Diesel Engine*

Unit 1 - Diesel Engine

Fuel: Diesel
 Horse Power: 100 HP
 Maximum fuel use: 10 gallons/hour
 Sulfur Content of Fuel: 0.5%
 Heat Value: 137,000 Btu/gal
 Hours of Operation: 0 hours

Stack Height (ft): 15
 Stack Diameter (ft): 0.25
 Exit Gas Temp (F): 550
 Exit Velocity (ft/sec): 423

2)

	lb/HP/hr	lb/MMBtu
NOx	0.031	4.41
CO	0.0066E	0.95
SOx	0.00205	0.29
PM-10	0.0022	0.31
TOC	0.00247	0.35
CO2	1.15	164
Sulfuric Acid (Assume All SOx leads to Sulfuric Acid)	0.00205	0.29
Benzo(g,h,i)perylene		4.80E-07
PACs		1.10E-05

Actual 2001 Emissions

	lb/hr	tons/yr
NOx	0.00	0.00
CO	0.00	0.00
SOx	0.00	0.00
PM-10	0.00	0.00
TOC	0.00	0.00
CO2	0.00	0.00
Sulfuric Acid	0.00	0.00
Benzo(g,h,i)perylene	0.00	0.00
PACs	0.00	0.00

Potential Emissions

	lb/hr	tons/yr
NOx	3.1	13.58
CO	0.668	2.93
SOx	0.205	0.90
PM-10	0.22	0.96
TOC	0.247	1.08
CO2	115	503.70
Sulfuric Acid	0.205	0.90
Benzo(g,h,i)perylene	6.58E-07	0.00
PACs	1.51E-05	0.00

Unit 2 - Rock Crusher

Maximum Process Rate: 150 tons/hour
 Max Hours of Operation: 2080 hours/year

Control Type: Water Spray
 Manufacturer: Torgerson
 Model Number: Model AX
 Control Efficiency: 92%

2001 Actual Data

Amt of Concrete Crushed: 0 yds³
 Amt of Concrete Crushed: 0 tons (4000 lbs/yd³)

Emission Factors (AP-42, 1/95, Section 11.19.2)

	Uncontrolled		Controlled	
	TSP* (lb/ton)	PM-10 (lb/ton)	TSP* (lb/ton)	PM-10 (lb/ton)
Crusher Loading	0.000042	0.00002	0.000042	0.00002
Crushing-Wet	0.00504	0.0024	0.001239	0.00059
Screening**	0.0315	0.015	0.001764	0.00084
Conveyor	0.00294	0.0014	0.0001008	0.000048
Load & Fill	0.00021	0.0001	0.00021	0.0001

Actual Emissions

	Uncontrolled		Controlled		Uncontrolled		Controlled	
	TSP total lbs	TSP total tons	TSP total lbs	TSP total tons	PM-10 total lbs	PM-10 total tons	PM-10 total lbs	PM-10 total tons
Crusher Loading	0.00	0.000	0.00	0.000	0.00	0.000	0.000	0.000
Crushing-Wet	0.0	0.000	0.00	0.000	0.00	0.000	0.000	0.000
Screening**	0.0	0.000	0.00	0.000	0.00	0.000	0.000	0.000
Conveyor	0.0	0.000	0.00	0.000	0.00	0.000	0.000	0.000
Load & Fill	0.0	0.000	0.00	0.000	0.00	0.000	0.000	0.000
TOTAL:	0.0	0.0	0.00	0.00	0.0	0.00	0.00	0.00

*Based on manufacturer operating instructions, the diesel engine must be operated at a maximum of 100 HP at 1000 rpm

* In the 1995 Version of AP-42, Section 11.19.2 controlled and uncontrolled emission factors are provided for PM-10 for each process.

Footnotes to the table specify that the PM-10 values should be multiplied by 2.1 to estimate TSP.

**The crusher at LANL does not have a screening operation. Crushed material is gravity fed through a funnel-shaped exit point.

Material which does not fit through the funnel is further crushed until all material exits the unit. Emissions from screening are included to provide worst case emission estimates.

Air Curtain destructors Burn Emissions

Air Curtain destructors-Emissions from Burning Wood

S-127 Air Curtain Destructor	Total Wood Burned (ton) ²	NOx	CO	SOx	TSP	PM-10	CO ₂	VOC
Emissions Factors (Burn) (lb/ton)	127	2	1.4	0.0075	0.2	0.15	1.4	3.8
Emissions (lb/yr)		254.5	178.2	1.0	25.6	19.1	178.2	483.6
Emissions Total (ton/yr)		0.127	0.089	0.000	0.013	0.010	0.089	0.242

T-350 Trench Burner # 1	Total Wood Burned (ton) ²	NOx	CO	SOx	TSP	PM-10	CO ₂	VOC
Emissions Factors (Burn) (lb/ton)	597	2	1.4	0.0075	0.2	1.5	1.4	3.8

Emissions (lb/yr)	1193.6	835.5	4.5	1193.6	895.2	835.5	2267.9
Emissions Total (ton/yr)	0.597	0.418	0.002	0.597	0.448	0.418	1.134

T-350 Trench Burner # 2	Total Wood Burned (ton) ²	NOx	CO	SOx	TSP	PM-10	CO ₂	VOC
Emissions (lb/yr)	492	983.6	688.5	3.7	983.6	737.7	688.5	1868.9
Emissions Total (ton/yr)		0.492	0.344	0.002	0.492	0.369	0.344	0.934

conversion (lb/ton) 2000

¹ Emissions Factors from Notice of Intent (NOI) application submitted to NMED on 05/07/01

² Wood totals obtained from air curtain destructor operating logs maintained by FWO.

Air Curtain destructors - Emissions from Diesel Fuel

S-127 Air Curtain Destructor	Diesel Fuel Used (Gal) ²	NOx	CO	SOx	TSP	PM-10	CO ₂	Aldehyde s	VOC
Emission Factors (Engine) lb/hp-hr	75	0.031	0.0067	0.0021	0.0022	0.0022	1.15	0.00046	0.0025
Surface Unit S-127 John Deere									
Emissions (lb/year) ³		126.4	27.3	8.6	9.0	9.0	4690.9	1.9	10.2
Emissions Total Ton/Year		0.063	0.014	0.004	0.004	0.004	2.345	0.001	0.005

T-350 Air Curtain destructors	Diesel Fuel Used (Gal) ²	NOx	CO	SOx	TSP	PM-10	CO ₂	Aldehyde s	VOC
Emission Factors (Engine) lb/hp-hr	446	0.031	0.0067	0.0021	0.0022	0.0022	1.15	0.00046	0.0025
Trench Unit # 1 T-350 John Deere									
Emissions (lb/year) ³		752.0	162.5	50.9	53.4	53.4	27895.0	11.2	60.6
Emissions Total Ton/Year		0.376	0.081	0.025	0.027	0.027	13.947	0.006	0.030

Trench Unit # 2 T-350 John Deere	Diesel Fuel Used (Gal) ²	NOx	CO	SOx	TSP	PM-10	CO ₂	Aldehyde s	VOC
Emissions (lb/year) ³	267	450.2	97.3	30.5	31.9	31.9	16699.4	6.7	36.3
Emissions Total Ton/Year		0.225	0.049	0.015	0.016	0.016	8.350	0.003	0.018

heat value (BTU/gal)	138,500
conversion (hp*sec/BTU)	1.414
conversion (min/sec)	0.017
conversion (hr/min)	0.017
conversion (lb/ton)	2000

¹ Emissions Factors from Notice of Intent (NOI) application submitted to NMED on 05/07/01

² Sample Calculation: (1.341 * 10³ hp*sec/9.486*10⁴ btu) * (1 min/60 sec) * (1 hr/60 min) * 138500 btu/gal * 75 gal * 0.031 lb/hp-hr=126.4 lb/yr

³ Heat Value of diesel fuel = 138,500 btu/gal . Fuel values obtained from Robert Garcia of ESA-WMM.

Air Curtain destructors Emission Totals

S-127 Surface Air Curtain Destructor	NOx	CO	SOx	TSP	PM-10	CO ₂	Aldehyde s	VOC
Wood Burning Emissions Factors (lb/ton)	2	1.4	0.0075	0.2	0.15	1.4		
Engine Emission Factors lb/hp-hr	0.031	0.0067	0.0021	0.0022	0.0022	1.15	0.00046	0.0025
Wood Burning Emissions (Tons/year)	0.127	0.089	0.000	0.013	0.010	0.089		0.242
Engine Burning Emissions (Tons/year)	0.063	0.014	0.004	0.004	0.004	2.345	0.001	0.005
Total S-127 Emissions	0.190	0.103	0.005	0.017	0.014	2.435	0.003	0.247
Trench # 1 T-350 Air Curtain Destructor	NOx	CO	SOx	TSP	PM-10	CO ₂	Aldehyde s	VOC
Wood Burning Emissions Factors (lb/ton)	2	1.4	0.0075	0.2	1.5	1.4		
Engine Emission Factors lb/hp-hr	0.031	0.0067	0.0021	0.0022	0.0022	1.15	0.00046	0.0025
Wood Burning Emissions (Tons/year)	0.597	0.418	0.002	0.597	0.448	0.418		1.134
Engine Burning Emissions (Tons/year)	0.376	0.081	0.025	0.027	0.027	13.947	0.006	0.030
Total T-350-1 Emissions	0.973	0.499	0.028	0.624	0.475	14.363	0.006	1.164
Trench # 2 T-350 Air Curtain Destructor	NOx	CO	SOx	TSP	PM-10	CO ₂	Aldehyde s	VOC
Wood Burning Emissions (Tons/year)	0.492	0.344	0.002	0.492	0.369	0.344		0.934
Engine Burning Emissions (Tons/year)	0.225	0.049	0.015	0.016	0.016	8.350	0.003	0.018
Total T-350-2 Emissions	0.717	0.393	0.017	0.508	0.385	8.694	0.003	1.052
Total for 3 Air Curtain destructors	1.880	0.995	0.050	1.149	0.873	25.494	0.010	2.364

¹ Emissions Factors from Notice of Intent (NOI) application submitted to NMED on 05/07/01

Attachment C. Emissions Inventory Submittal to NMED

**LOS ALAMOS NATIONAL LABORATORY'S
2001 EMISSIONS INVENTORY**

Submitted as Required by:

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

Prepared by:

The University of California

For:

**The National Nuclear Security Administration of the
United States Department of Energy**

Information Contacts:

**Margie Stockton, (505) 667-9359
Jackie Hurtle, (505) 665-4380**

Certification Statement

I, James Lee McAtee, 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.



**James Lee McAtee
Deputy Division Leader
Environmental Safety and Health Division
University of California
Los Alamos National Laboratory
(505) 667-4218**

3-29-02
Date

County	AFS/ NEDS	Inventory Year	Air Program Status	SIC	Company Name	Street Line 1	Street Name 2	City	State	Zip Code
Los Alamos	028	0001	2001	O	9711 Los Alamos National Laboratory	P.O. Box 1663 Air Quality Group	Mail Stop J978	Los Alamos	NM	87545-

Contact Person	Contact Person	Contact Person (mail)	UTM	UTMH	UTMV	Elevation	Street Line 1	City	Permit Number	strClass
Hurtle Jackie	5056654380		13	381.19	3970.3	7380	MIS 60	Los Alamos	1081M1R3, 02195, 02195B, 0632, 0634M2, 0635, 0636, 2597	A

LANL Point Activity 2001

Count FIR	AES/NEP E	Event Year	Company Name	Description	AIRS Point ID	AIRS Sta.	Scorp	2001 Actual Throughput	Throughput Unit	Max Operating Rate Per Hour	Material	Material IC	strClass
028	0001	2001	Los Alamos National Laboratory	BE Machining TA 3-39	001	001	01	0	Unknown	0000000			A
028	0001	2001	Los Alamos National Laboratory	TA-3 Power Plant Boilers (3)	002	002	01	737	E6FT3S	0000006			A
028	0001	2001	Los Alamos National Laboratory	TA-21 Boilers (3)	004	004	01	37	E6FT3S	0000033	Nat Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler NOT BUILT	005	005	01	0	E6FT3S	0000000			A
028	0001	2001	Los Alamos National Laboratory	BE Machining TA 35-213	006	006	01	0	Unknown	0000000			A
028	0001	2001	Los Alamos National Laboratory	BE Machining TA 3-141	007	007	01	0	Unknown	0000000			A
028	0001	2001	Los Alamos National Laboratory	BE Machining TA 3-102	008	008	01	0	Unknown	0000000			A
028	0001	2001	Los Alamos National Laboratory	BE Shop TA 3-35 NOT BUILT	009	009	01	0	Unknown	0000000			A
028	0001	2001	Los Alamos National Laboratory	BE Cut & Bead Dress TA 55-4	010	010	01	1100	LB	0000000			A
028	0001	2001	Los Alamos National Laboratory	North	011	011	01	1100	LB	0000000			A
028	0001	2001	Los Alamos National Laboratory	Asphalt Plant TA 3-73	013	013	01	2576	TON	0000000	Asphalt		A
028	0001	2001	Los Alamos National Laboratory	Caterpillar Water Pump	014	014	01	12.2	E6FT3S	0000005	Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler TA-48-1BS-1	015	015	01	8.9	E6FT3S		Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler TA-48-1BS-2	016	016	01	8.9	E6FT3S		Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler TA-48-1BS-6	017	017	01	11.8	E6FT3S		Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler TA-53-365 BHW-1	018	018	01	11.8	E6FT3S		Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler TA-53-365 BHW-2	019	019	01	11.8	E6FT3S		Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler TA-59-1 BHW-1	020	020	01	8.9	E6FT3S		Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler TA-59-1 BHW-2	021	021	01	8.9	E6FT3S		Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler TA-55-6 BHW-1	022	022	01	0	E6FT3S		Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler TA-55-6 BHW-2	023	023	01	7.5	E6FT3S		Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler & Backup TA-16 Plant 5	024	024	01	14.2	E6FT3S		Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Boiler & Backup TA-16 Plant 6	025	025	01	0	E6FT3S		Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Rock Crusher	026	026	01	0	tons		Rock		A
028	0001	2001	Los Alamos National Laboratory	Paper Shredder TA-52-11	027	027	01	140,700	lb	0	Paper		A
028	0001	2001	Los Alamos National Laboratory	Degreaser TA-55-4	028	028	01	82	L		Solvent		A
028	0001	2001	Los Alamos National Laboratory	Degreaser TA-46-24	029	029	01	0	L				A
028	0001	2001	Los Alamos National Laboratory	Degreaser TA-49-24	030	030	01	0	L				A
028	0001	2001	Los Alamos National Laboratory	Edgemoor Iron Works Boiler	031	031	01	0	tons				A
028	0001	2001	Los Alamos National Laboratory	Edgemoor Iron Works Boiler	032	032	01	223.1	E6FT3S	0.184	Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Edgemoor Iron Works Boiler	033	033	01	370.0	E6FT3S	0.184	Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Edgemoor Iron Works Boiler	034	034	01	295.6	E6FT3S	0.184	Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Tank TA-03-026 (No. 2 fuel oil)	035	035	01	48,784	Gallons		Fuel Oil		A
028	0001	2001	Los Alamos National Laboratory	Tank TA-03-029 (No. 2 fuel oil)	038	038	01	73,176	Gallons		Fuel Oil		A
028	0001	2001	Los Alamos National Laboratory	Seller boiler TA-55-6 BHW-1B	037	037	01	20.9	E6FT3S	0.012	Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Seller boiler TA-55-6 BHW-2B	038	038	01	7.8	E6FT3S	0.012	Nat. Gas		A
028	0001	2001	Los Alamos National Laboratory	Arc Furnace Reactor SR127	New	New	01	12	tons	20	Wood		A
028	0001	2001	Los Alamos National Laboratory	Arc Furnace Reactor SR350-1	New	New	01	37	tons	20	Wood		A
028	0001	2001	Los Alamos National Laboratory	Arc Furnace Reactor SR350-2	New	New	01	16	tons	20	Wood		A

LANL Emission Units 2001

County	AFSNEDS Code	Inventory Year (YY)	Company Name	AIRS Point ID	Description	Design Capacity	Design Capacity Unit Numerator	Design Capacity Unit Denominator	Max Nameplate Capacity	Installation Date	Removal Date	Shut Down?	StrClass
028	0001	2001	Los Alamos National Laboratory	001	Be MACHINING TA-3 BLDG 39	0			0	01-Jan-83		FALSE	A
028	0001	2001	Los Alamos National Laboratory	002	TA3-22 Boilers (3 Each)	178.5	E6BTU	HR	210			FALSE	A
028	0001	2001	Los Alamos National Laboratory	003	TA18 Boilers (3 Each) REMOVED	96	E6BTU	HR	96	01-Jan-50	01-Jan-97	TRUE	A
028	0001	2001	Los Alamos National Laboratory	004	STEAM Plant Boiler TA21 BLDG357 (3)	30.6	E6BTU	HR	36	01-Jan-83		FALSE	A
028	0001	2001	Los Alamos National Laboratory	005	TD SITE Boiler NOT BUILT	0	E6BTU	HR	0			TRUE	A
028	0001	2001	Los Alamos National Laboratory	006	Be MACHINING TA35 BLDG213	0			0	26-Dec-85		FALSE	A
028	0001	2001	Los Alamos National Laboratory	007	Be MACHINING TA3 BLDG 141	0			10000	19-Mar-85		FALSE	A
028	0001	2001	Los Alamos National Laboratory	008	Be MACHINING TA3 BLDG 102	0			0	19-Mar-88		FALSE	A
028	0001	2001	Los Alamos National Laboratory	009	Be SHOP TA3-35 NOT BUILT	0			0			TRUE	A
028	0001	2001	Los Alamos National Laboratory	010	Be CUTTING & BEAD Dressing TA-55-4	0			1100	01-Jan-78		FALSE	A
028	0001	2001	Los Alamos National Laboratory	011	METALLOGRAPHY TA55-4 NORTH STACK	0			1100	01-Jan-78		FALSE	A
028	0001	2001	Los Alamos National Laboratory	012	Not Built - SOLID WASTE FIRED Boiler	0			0			TRUE	A
028	0001	2001	Los Alamos National Laboratory	013	Asphalt Plant TA-3-73	60	TON	HR	60	01-Jan-60		FALSE	A
028	0001	2001	Los Alamos National Laboratory	014	Caterpillar HCR TA SI PUMP Engine	700	HP		700	01-Jan-82		FALSE	A
028	0001	2001	Los Alamos National Laboratory	015	Boiler (TA-48-1) BS-1	5.3	E6BTU	HR	6.3	01-Aug-87		FALSE	A
028	0001	2001	Los Alamos National Laboratory	016	Boiler (TA-48-1) BS-2	5.3	E6BTU	HR	6.3	01-Oct-76		FALSE	A
028	0001	2001	Los Alamos National Laboratory	017	Boiler (TA-48-1) BS-6	7.1	E6BTU	HR	8.4	01-Oct-94		FALSE	A
028	0001	2001	Los Alamos National Laboratory	018	Boiler (TA-53-365) BHW-1	7.1	E6BTU	HR	8.4	01-Jan-88		FALSE	A
028	0001	2001	Los Alamos National Laboratory	019	Boiler (TA-53-365) BHW-2	7.1	E6BTU	HR	8.4	01-Jan-88		FALSE	A
028	0001	2001	Los Alamos National Laboratory	020	Boiler (TA-59-1) BHW-1	5.3	E6BTU	HR	6.3	01-Sep-78		FALSE	A
028	0001	2001	Los Alamos National Laboratory	021	Boiler (TA-59-1) BHW-2	5.3	E6BTU	HR	6.3	01-Oct-94		FALSE	A
028	0001	2001	Los Alamos National Laboratory	022	Boiler (TA-55-6) BHW-1	7.1	E6BTU	HR	8.4	01-Jan-76	01-Oct-88	TRUE	A
028	0001	2001	Los Alamos National Laboratory	023	Boiler (TA-55-6) BHW-2	7.1	E6BTU	HR	8.4	01-Jan-76	01-Oct-88	TRUE	A
028	0001	2001	Los Alamos National Laboratory	024	Boiler and backup, Plant 5	12.7	E6BTU	HR	15	01-Nov-96		FALSE	A
028	0001	2001	Los Alamos National Laboratory	025	Boiler and Backup, Plant 6 (TA-16-14R5)	15.6	E6BTU	HR	18.4	01-Nov-96		FALSE	A
028	0001	2001	Los Alamos National Laboratory	026	Rock Crusher	150	TON	hour	150	01-Jun-98		FALSE	A
028	0001	2001	Los Alamos National Laboratory	027	11)	300	LB	HR	300	01-Jan-91		FALSE	A
028	0001	2001	Los Alamos National Laboratory	028	Degreaser - cold ultrasonic bath TA-55-4	20	L	0	20	01-Sep-98		FALSE	A
028	0001	2001	Los Alamos National Laboratory	029	Degreaser - cold ultrasonic bath TA-46-24	18	L	0	18	03-Jun-00	06-Dec-01	TRUE	A
028	0001	2001	Los Alamos National Laboratory	030	Degreaser - cold ultrasonic bath TA-55-4	6	L	0	6	01-Dec-99	26-Jan-01	TRUE	A
028	0001	2001	Los Alamos National Laboratory	031	R & D activities - Labwide	0		0	0	01-Jan-50		FALSE	A
028	0001	2001	Los Alamos National Laboratory	032	Edgemoor Iron Works Boiler	189.5	E6BTU	HR	210	01-Jan-50		FALSE	A
028	0001	2001	Los Alamos National Laboratory	033	Edgemoor Iron Works Boiler	189.5	E6BTU	HR	210	01-Jan-50		FALSE	A
028	0001	2001	Los Alamos National Laboratory	034	Edgemoor Iron Works Boiler	189.5	E6BTU	HR	210	01-Jan-52		FALSE	A
028	0001	2001	Los Alamos National Laboratory	035	Tank TA-03-026 (No. 2 fuel oil)	3770	BBL		3770	01-Jan-50		FALSE	A
028	0001	2001	Los Alamos National Laboratory	036	Tank TA-03-779 (No. 2 fuel oil)	5455	BBL		5455	01-Aug-98		FALSE	A
028	0001	2001	Los Alamos National Laboratory	037	Sellers boiler BHW-1B(TA 55, Bldg. PF6)	12.4	E6BTU	HR	14.6	01-Oct-98		FALSE	A
028	0001	2001	Los Alamos National Laboratory	038	Sellers boiler BHW-2B(TA 55, Bldg. PF6)	12.4	E6BTU	HR	14.6	06-Sep-01		FALSE	A
028	0001	2001	Los Alamos National Laboratory	New 1	Air Curtain Destructor S-127	20	tons	hr	20	29-Oct-01		FALSE	A
028	0001	2001	Los Alamos National Laboratory	New 2	Air Curtain Destructor S-350-1	20	tons	hr	20	26-Sep-01		FALSE	A
028	0001	2001	Los Alamos National Laboratory	New 2	Air Curtain Destructor S-350-2	20	tons	hr	20	11-Oct-01		FALSE	A

LANL 2001 Emission Process Information

County FIPS	AES/EIS ID	Inventory Year	Facility Name	SCC AFS	Description	AIRS Point ID	AIRS Stack ID	Segment ID
028	0001	2001	Los Alamos National Laboratory	30903004	BE MACHINING TA-3 BLDG 39	001	001	01
028	0001	2001	Los Alamos National Laboratory	10100601	EDGEMOOR BLRS 3EA-TA3-22	002	002	01
028	0001	2001	Los Alamos National Laboratory	10100602	UNION BOILRS 3EA TA16-540	003	003	01
028	0001	2001	Los Alamos National Laboratory	10100602	INDUSTRIAL BLRS 3 TA21-357	004	004	01
028	0001	2001	Los Alamos National Laboratory	10100602	TD SITE - NOT OPERATING	005	005	01
028	0001	2001	Los Alamos National Laboratory	30903004	BE MACHINING TA35 BLDG213	006	006	01
028	0001	2001	Los Alamos National Laboratory	30903004	BE MACHINING TA3 BLDG 141	007	007	01
028	0001	2001	Los Alamos National Laboratory	30903004	BE MACHINING TA3 BLDG 102	008	008	01
028	0001	2001	Los Alamos National Laboratory	30903004	BE SHOP TA3-35 NOT BUILT	009	009	01
028	0001	2001	Los Alamos National Laboratory	30903004	BE CUTTING/DRESS TA 55-4	010	010	01
028	0001	2001	Los Alamos National Laboratory	30900303	METALLOG & BE PREP TA55-4	011	011	01
028	0001	2001	Los Alamos National Laboratory	30500211	ASPHALT ROTRY DRYR TA3-73	013	013	01
028	0001	2001	Los Alamos National Laboratory	20200202	CAT HCR-TA-SI PUMP ENGINE	014	014	01
028	0001	2001	Los Alamos National Laboratory	0	Boiler (TA-48-1) BS-1	015	015	01
028	0001	2001	Los Alamos National Laboratory	0	Boiler (TA-48-1) BS-2	016	016	01
028	0001	2001	Los Alamos National Laboratory	0	Boiler (TA-48-1) BS-6	017	017	01
028	0001	2001	Los Alamos National Laboratory	0	Boiler (TA-53-365) BHW-1	018	018	01
028	0001	2001	Los Alamos National Laboratory	0	Boiler (TA-53-365) BHW-2	019	019	01
028	0001	2001	Los Alamos National Laboratory	0	Boiler (TA-59-1) BHW-1	020	020	01
028	0001	2001	Los Alamos National Laboratory	0	Boiler (TA-59-1) BHW-2	021	021	01
028	0001	2001	Los Alamos National Laboratory	0	Boiler (TA-55-6) BHW-1	022	022	01
028	0001	2001	Los Alamos National Laboratory	0	Boiler (TA-55-6) BHW-2	023	023	01
028	0001	2001	Los Alamos National Laboratory	0	Boiler and backup, TA-16, Plant-5	024	024	01
028	0001	2001	Los Alamos National Laboratory	0	Boiler and Backup, Plant-6 (TA-16-1485)	025	025	01
028	0001	2001	Los Alamos National Laboratory	0	Rock Crusher	026	026	01
028	0001	2001	Los Alamos National Laboratory	0	SEM-1424 Disintegrator paper shredder (TA-52-11)	027	027	01
028	0001	2001	Los Alamos National Laboratory	0	Degreaser - cold ultrasonic bath TA-55-4	028	028	01
028	0001	2001	Los Alamos National Laboratory	0	Degreaser - cold ultrasonic bath TA-48-24	029	029	01
028	0001	2001	Los Alamos National Laboratory	0	Degreaser - inhouse cold	030	030	01
028	0001	2001	Los Alamos National Laboratory	0	R & D	031	031	01
028	0001	2001	Los Alamos National Laboratory	10100601	Edgemoor Iron Works Boiler	032	032	01
028	0001	2001	Los Alamos National Laboratory	10100601	Edgemoor Iron Works Boiler	033	033	01
028	0001	2001	Los Alamos National Laboratory	10100601	Edgemoor Iron Works Boiler	034	034	01
028	0001	2001	Los Alamos National Laboratory	0	Tank TA-33-026 (No. 2103-0)	035	035	01
028	0001	2001	Los Alamos National Laboratory	0	Tank TA-33-026 (No. 2103-0)	036	036	01
028	0001	2001	Los Alamos National Laboratory	10100602	Sellers boiler BHW-1B(TA 55, Bldg. PF6)	037	037	01
028	0001	2001	Los Alamos National Laboratory	10100602	Sellers boiler BHW-2B(TA 655, Bldg. PF6)	038	038	01
028	0001	2001	Los Alamos National Laboratory	0	AR Curtain Destructor 5-22	New-1	New-1	01
028	0001	2001	Los Alamos National Laboratory	0	AR Curtain Destructor 5-25	New-2	New-2	01
028	0001	2001	Los Alamos National Laboratory	0	AR Curtain Destructor 5-26	New-3	New-3	01

LANL 2001 Emission Process Information

Winter Throughput	Spring Throughput	Summer Throughput	Fall Throughput	Annual Avg Hours Per Week	Annual Avg Days Per Week	Annual Avg Hours Per Week	Annual Avg Hours Per Year	Heat Content	Sulfur Content	Ash Content	AirClass
25	25	25	25	24	5	52	2400	0	0	0	A
25	25	25	25	24	7	52	8760	1030	0	0	A
0	0	0	0	0	0	0	0	0	0	0	A
25	25	25	25	24	7	52	8760	1030	0	0	A
0	0	0	0	0	0	0	0	0	0	0	A
15	20	30	35	24	7	52	1920	0	0	0	A
25	25	25	25	24	7	52	8760	0	0	0	A
25	25	25	25	24	7	52	2400	0	0	0	A
0	0	0	0	0	0	0	0	0	0	0	A
25	25	25	25	24	7	52	8760	0	0	0	A
25	25	25	25	24	7	52	8760	0	0	0	A
15	20	30	35	24	7	52	60	0	0	0	A
15	35	35	15	24	7	52	2400	1030	0	0	A
40	20	0	40	24	7	33	5500	1030	0	0	A
40	20	0	40	24	7	33	5500	1030	0	0	A
40	20	0	40	24	7	33	5500	1030	0	0	A
40	20	0	40	24	7	33	5500	1030	0	0	A
40	20	0	40	24	7	33	5500	1030	0	0	A
40	20	0	40	24	7	33	5500	1030	0	0	A
0	0	0	0	0	0	0	0	0	0	0	A
40	20	0	40	24	7	33	5500	1030	0	0	A
25	25	25	25	24	7	52	8760	1030	0	0	A
25	25	25	25	24	7	52	8760	1030	0	0	A
0	0	0	0	0	0	0	0	0	0	0	A
25	25	25	25	24	7	52	0	0	0	0	A
25	25	25	25	24	7	52	1	0	0	0	A
0	0	0	0	0	0	0	0	0	0	0	A
0	0	0	0	0	0	0	0	0	0	0	A
25	25	25	25	24	7	52	8760	0	0	0	A
30	20	20	30	24	7	52	8760	1030			A
30	20	20	30	24	7	52	8760	1030			A
30	20	20	30	24	7	52	8760	1030			A
30	20	20	30	24	7	52	8760	1030			A
30	20	20	30	24	7	52	8760	1030			A
10	20	0	40	24	7	33	5500	1030			A
10	20	0	40	24	7	33	5500	1030			A
0	40	0	40	24	5	30	1500				
0	40	0	40	24	5	30	1500				
0	40	0	40	24	5	30	1500				

**LANL 2001 Emission Inventory
Control Equipment Information**

County FIPS C	AQS/NEL P	Inventory Year Y	Company Name	AQS Poll R	AQS Stack S	Segment ID	Pollutant	Primary PCT Control E	Primary Device V	Secondary Device V	Description	Class
028	0001	2001	Los Alamos National Laboratory	001	001	01	BE	99.9	101	101	Cyclone, Baghouse, and HEPA	A
						01	SO ₂				NO-EQUIPMENT	A
028	0001	2001	Los Alamos National Laboratory	006	006	01	BE	99.9	101	101	HEPA	A
028	0001	2001	Los Alamos National Laboratory	007	007	01	BE	99.95	101	101	HEPA	A
028	0001	2001	Los Alamos National Laboratory	008	008	01	BE	99.97	101	101	HEPA	A
028	0001	2001	Los Alamos National Laboratory	009	009	01	BE	99.96	101	101	HEPA	A
028	0001	2001	Los Alamos National Laboratory	010	010	01	AL-PT	99.95			HEPA	A
028	0001	2001	Los Alamos National Laboratory	010	010	01	BE	99.95	101	101	HEPA	A
028	0001	2001	Los Alamos National Laboratory	011	011	01	BE	99.95	101	101	HEPA	A
028	0001	2001	Los Alamos National Laboratory	013	013	01	PM10	93	008	002	cyclone and wet scrubber	A
028	0001	2001	Los Alamos National Laboratory	013	013	01	PT	93	008	002	cyclone and wet scrubber	A
						01	SO ₂				NO-EQUIPMENT	A
028	0001	2001	Los Alamos National Laboratory	026	026	01	PM10	92			water spray	A
028	0001	2001	Los Alamos National Laboratory	026	026	01	PT	92			water spray	A
028	0001	2001	Los Alamos National Laboratory	027	027	01	PM10	99			cyclone and baghouse	A
028	0001	2001	Los Alamos National Laboratory	027	027	01	PT	99			cyclone and baghouse	A

LANL Emission Inventory 2001, Stack Parameters

County FIPS Code	AFS/NEDS Plant	Inventory Year (YY)	Company Name	Description	AIRS Stack	State Local Stack ID	Stack Height	Stack Diameter	Exit Gas Temperature	Exit Gas Velocity	strClass
028	0001	2001	Los Alamos National Laboratory	BE MACHINING TA-3 BLDG 39	001	001	54	0.9	70	38 A	
028	0001	2001	Los Alamos National Laboratory	BE MACHINING TA-3 BLDG 39	002	002	68	7.7	416	12 A	
028	0001	2001	Los Alamos National Laboratory	TA16 BOILERS (3)	003	003	65	5	0	0 A	
028	0001	2001	Los Alamos National Laboratory	(3)	004	004	41	2	68	13 A	
028	0001	2001	Los Alamos National Laboratory	TD SITE BOILER NOT BUILT	005	005	0	0	0	0 A	
028	0001	2001	Los Alamos National Laboratory	BE MACHINING TA35 BLDG213	006	006	71	1	70	38 A	
028	0001	2001	Los Alamos National Laboratory	BE MACHINING TA3 BLDG 141	007	007	50	5	70	47 A	
028	0001	2001	Los Alamos National Laboratory	BE MACHINING TA3 BLDG 102	008	008	45	3	70	19 A	
028	0001	2001	Los Alamos National Laboratory	BE SHOP TA3-35 NOT BUILT	009	009	0	0	0	0 A	
028	0001	2001	Los Alamos National Laboratory	BE CUTTING & BEAD DRESSING TA-55-4	010	010	32	3.6	77	30 A	
028	0001	2001	Los Alamos National Laboratory	STACK	011	011	49	3.6	77	39 A	
028	0001	2001	Los Alamos National Laboratory	ASPHALT PLANT TA-3-73	013	013	30	4.5	130	27 A	
028	0001	2001	Los Alamos National Laboratory	CAT HCR-TA-SI PUMP ENGINE	014	014	17	0.83	977	75 A	
028	0001	2001	Los Alamos National Laboratory	Boiler (TA-48-1) BS-1	015	015	50	2.3	300	10 A	
028	0001	2001	Los Alamos National Laboratory	Boiler (TA-48-1) BS-2	016	016	50	2.3	300	10 A	
028	0001	2001	Los Alamos National Laboratory	Boiler (TA-48-1) BS-6	017	017	50	2.3	300	13 A	
028	0001	2001	Los Alamos National Laboratory	Boiler (TA-53-365) BHW-1	018	018	22	1.5	300	32 A	
028	0001	2001	Los Alamos National Laboratory	Boiler (TA-53-365) BHW-2	019	019	22	1.5	300	32 A	
028	0001	2001	Los Alamos National Laboratory	Boiler (TA-59-1) BHW-1	020	020	55	1.7	300	19 A	
028	0001	2001	Los Alamos National Laboratory	Boiler (TA-59-1) BHW-2	021	021	55	1.7	300	19 A	
028	0001	2001	Los Alamos National Laboratory	Boiler (TA-55-6) BHW-1	022	022	30	1.8	222	24 A	
028	0001	2001	Los Alamos National Laboratory	Boiler (TA-55-6) BHW-2	023	023	30	2	333	29 A	
028	0001	2001	Los Alamos National Laboratory	Boiler & Backup, Plant 5 (TA-16-1485)	024	024	21	1.5	341	22 A	
028	0001	2001	Los Alamos National Laboratory	Boiler and Backup, Plant 6, (TA-16-1485)	025	025	19	1.8	341	14 A	
028	0001	2001	Los Alamos National Laboratory	Rock Crusher	026	026	3	3	70	0.01 A	
028	0001	2001	Los Alamos National Laboratory	(TA-52-11)	027	027	26	1	70	29 A	
028	0001	2001	Los Alamos National Laboratory	Degreaser - cold ultrasonic bath TA-55-4	028	028	32	3.6	77	30 A	
028	0001	2001	Los Alamos National Laboratory	Degreaser - cold ultrasonic bath TA-46-24	029	029	32	1	70	2.6 A	
028	0001	2001	Los Alamos National Laboratory	Degreaser - inhouse cold batch TA-46-24	030	030	32	1	70	2.6 A	
028	0001	2001	Los Alamos National Laboratory	R & D activities - Labwide	031	031	0	0	0	0 A	
028	0001	2001	Los Alamos National Laboratory	Edgemoor Iron Works Boiler	032	001	68	7.7	416	29 A	
028	0001	2001	Los Alamos National Laboratory	Edgemoor Iron Works Boiler	033	001	68	7.7	416	29 A	
028	0001	2001	Los Alamos National Laboratory	Edgemoor Iron Works Boiler	034	001	68	7.7	416	29 A	
028	0001	2001	Los Alamos National Laboratory	Sellers boiler TA-55-6, BHW-1B	037	BWH-1B	30	2	334	7.8 A	
028	0001	2001	Los Alamos National Laboratory	Sellers boiler TA-55-6, BHW-2B	038	BWH-2B	30	2	334	7.8 A	
028	0001	2001	Los Alamos National Laboratory	Air Curtain Destructor S-127	New-1	New-1	0	16.9	2500	1.3 A	
028	0001	2001	Los Alamos National Laboratory	Air Curtain Destructor T-350-1	New-2	New-2	0	24.6	2500	0.7 A	
028	0001	2001	Los Alamos National Laboratory	Air Curtain Destructor T-350-2	New-3	New-3	0	24.6	2500	0.7 A	

**LANL Emission Inventory 2001
Point Source Actual Emissions**

County (FIPS Code)	AQS/NEDS Plant	Inventory Year	Company Name	AIRS Point ID	AIRS Stack ID	Pollutant Code	2001 Actual Emissions	Emission Unit Number
028	0001	2001	Los Alamos National Laboratory	001	001	BE	0	TY
028	0001	2001	Los Alamos National Laboratory	001	001	PT	0	TY
028	0001	2001	Los Alamos National Laboratory	002	002	CO	84.3	TY
028	0001	2001	Los Alamos National Laboratory	002	002	NO2	99.6	TY
028	0001	2001	Los Alamos National Laboratory	002	002	PM10	15.7	TY
028	0001	2001	Los Alamos National Laboratory	002	002	PT	15.7	TY
028	0001	2001	Los Alamos National Laboratory	002	002	SO2	36.9	TY
028	0001	2001	Los Alamos National Laboratory	002	002	VOC	11.4	TY
028	0001	2001	Los Alamos National Laboratory	004	004	CO	1.55	TY
028	0001	2001	Los Alamos National Laboratory	004	004	NO2	1.85	TY
028	0001	2001	Los Alamos National Laboratory	004	004	PM10	0.14	TY
028	0001	2001	Los Alamos National Laboratory	004	004	PT	0.14	TY
028	0001	2001	Los Alamos National Laboratory	004	004	SOx	0.01	TY
028	0001	2001	Los Alamos National Laboratory	004	004	VOC	0.1	TY
028	0001	2001	Los Alamos National Laboratory	005	005	CO	0	TY
028	0001	2001	Los Alamos National Laboratory	005	005	NO2	0	TY
028	0001	2001	Los Alamos National Laboratory	005	005	PT	0	TY
028	0001	2001	Los Alamos National Laboratory	005	005	VOC	0	TY
028	0001	2001	Los Alamos National Laboratory	006	006	BE	0.000004	TY
028	0001	2001	Los Alamos National Laboratory	006	006	PT	0.000004	TY
028	0001	2001	Los Alamos National Laboratory	007	007	BE	0.000004	TY
028	0001	2001	Los Alamos National Laboratory	007	007	PT	0.000004	TY
028	0001	2001	Los Alamos National Laboratory	008	008	BE	0	TY
028	0001	2001	Los Alamos National Laboratory	008	008	PT	0	TY
028	0001	2001	Los Alamos National Laboratory	009	009	BE	0	TY
028	0001	2001	Los Alamos National Laboratory	009	009	PT	0	TY
028	0001	2001	Los Alamos National Laboratory	010	010	AL-PT	0.000002	TY
028	0001	2001	Los Alamos National Laboratory	010	010	BE	0.000002	TY
028	0001	2001	Los Alamos National Laboratory	011	011	AL-PT	0.000001	TY
028	0001	2001	Los Alamos National Laboratory	011	011	BE	0.000001	TY
028	0001	2001	Los Alamos National Laboratory	013	013	CO	0.52	TY
028	0001	2001	Los Alamos National Laboratory	013	013	NO2	0.03	TY
028	0001	2001	Los Alamos National Laboratory	013	013	PM10	0.09	TY
028	0001	2001	Los Alamos National Laboratory	013	013	PT	0.09	TY
028	0001	2001	Los Alamos National Laboratory	013	013	SOx	0.06	TY
028	0001	2001	Los Alamos National Laboratory	013	013	VOC	0	TY

**LANL Emission Inventory 2001
Point Source Actual Emissions**

028	0001	2001	Los Alamos National Laboratory	014	014	CO	3.01	TY
028	0001	2001	Los Alamos National Laboratory	014	014	NO2	9.41	TY
028	0001	2001	Los Alamos National Laboratory	014	014	PM10	0.06	TY
028	0001	2001	Los Alamos National Laboratory	014	014	PT	0.06	TY
028	0001	2001	Los Alamos National Laboratory	014	014	SOx	0.004	TY
028	0001	2001	Los Alamos National Laboratory	014	014	VOC	0.19	TY
028	0001	2001	Los Alamos National Laboratory	015	015	CO	0.38	TY
028	0001	2001	Los Alamos National Laboratory	015	015	NO2	0.45	TY
028	0001	2001	Los Alamos National Laboratory	015	015	PM10	0.03	TY
028	0001	2001	Los Alamos National Laboratory	015	015	PT	0.03	TY
028	0001	2001	Los Alamos National Laboratory	015	015	SOX	0.003	TY
028	0001	2001	Los Alamos National Laboratory	015	015	VOC	0.02	TY
028	0001	2001	Los Alamos National Laboratory	016	016	CO	0.38	TY
028	0001	2001	Los Alamos National Laboratory	016	016	NO2	0.45	TY
028	0001	2001	Los Alamos National Laboratory	016	016	PM10	0.03	TY
028	0001	2001	Los Alamos National Laboratory	016	016	PT	0.03	TY
028	0001	2001	Los Alamos National Laboratory	016	016	SOX	0.003	TY
028	0001	2001	Los Alamos National Laboratory	016	016	VOC	0.02	TY
028	0001	2001	Los Alamos National Laboratory	017	017	CO	0.5	TY
028	0001	2001	Los Alamos National Laboratory	017	017	NO2	0.6	TY
028	0001	2001	Los Alamos National Laboratory	017	017	PM10	0.05	TY
028	0001	2001	Los Alamos National Laboratory	017	017	PT	0.05	TY
028	0001	2001	Los Alamos National Laboratory	017	017	SOX	0.004	TY
028	0001	2001	Los Alamos National Laboratory	017	017	VOC	0.03	TY
028	0001	2001	Los Alamos National Laboratory	018	018	CO	0.5	TY
028	0001	2001	Los Alamos National Laboratory	018	018	NO2	0.6	TY
028	0001	2001	Los Alamos National Laboratory	018	018	PM10	0.05	TY
028	0001	2001	Los Alamos National Laboratory	018	018	PT	0.05	TY
028	0001	2001	Los Alamos National Laboratory	018	018	SOx	0.004	TY
028	0001	2001	Los Alamos National Laboratory	018	018	VOC	0.03	TY
028	0001	2001	Los Alamos National Laboratory	019	019	CO	0.5	TY
028	0001	2001	Los Alamos National Laboratory	019	019	NO2	0.6	TY
028	0001	2001	Los Alamos National Laboratory	019	019	PM10	0.05	TY
028	0001	2001	Los Alamos National Laboratory	019	019	PT	0.05	TY
028	0001	2001	Los Alamos National Laboratory	019	019	SOx	0.004	TY
028	0001	2001	Los Alamos National Laboratory	019	019	VOC	0.03	TY
028	0001	2001	Los Alamos National Laboratory	020	020	CO	0.38	TY
028	0001	2001	Los Alamos National Laboratory	020	020	NO2	0.45	TY

**LANL Emission Inventory 2001
Point Source Actual Emissions**

028	0001	2001	Los Alamos National Laboratory	020	020	PM10	0.03	TY
028	0001	2001	Los Alamos National Laboratory	020	020	PT	0.03	TY
028	0001	2001	Los Alamos National Laboratory	020	020	SOx	0.003	TY
028	0001	2001	Los Alamos National Laboratory	020	020	VOC	0.02	TY
028	0001	2001	Los Alamos National Laboratory	021	021	CO	0.38	TY
028	0001	2001	Los Alamos National Laboratory	021	021	NO2	0.45	TY
028	0001	2001	Los Alamos National Laboratory	021	021	PM10	0.03	TY
028	0001	2001	Los Alamos National Laboratory	021	021	PT	0.03	TY
028	0001	2001	Los Alamos National Laboratory	021	021	SOX	0.003	TY
028	0001	2001	Los Alamos National Laboratory	021	021	VOC	0.02	TY
028	0001	2001	Los Alamos National Laboratory	022	022	CO	0	TY
028	0001	2001	Los Alamos National Laboratory	022	022	NO2	0	TY
028	0001	2001	Los Alamos National Laboratory	022	022	PM10	0	TY
028	0001	2001	Los Alamos National Laboratory	022	022	PT	0	TY
028	0001	2001	Los Alamos National Laboratory	022	022	SOX	0	TY
028	0001	2001	Los Alamos National Laboratory	022	022	VOC	0	TY
028	0001	2001	Los Alamos National Laboratory	023	023	CO	1.1	TY
028	0001	2001	Los Alamos National Laboratory	023	023	NO2	0.9	TY
028	0001	2001	Los Alamos National Laboratory	023	023	PM10	0.03	TY
028	0001	2001	Los Alamos National Laboratory	023	023	PT	0.03	TY
028	0001	2001	Los Alamos National Laboratory	023	023	SOX	0.002	TY
028	0001	2001	Los Alamos National Laboratory	023	023	VOC	0.02	TY
028	0001	2001	Los Alamos National Laboratory	024	024	CO	0.26	TY
028	0001	2001	Los Alamos National Laboratory	024	024	NO2	0.26	TY
028	0001	2001	Los Alamos National Laboratory	024	024	PM10	0.05	TY
028	0001	2001	Los Alamos National Laboratory	024	024	PT	0.05	TY
028	0001	2001	Los Alamos National Laboratory	024	024	SOX	0.004	TY
028	0001	2001	Los Alamos National Laboratory	024	024	VOC	0.04	TY
028	0001	2001	Los Alamos National Laboratory	025	025	CO	0	TY
028	0001	2001	Los Alamos National Laboratory	025	025	NO2	0	TY
028	0001	2001	Los Alamos National Laboratory	025	025	PM10	0	TY
028	0001	2001	Los Alamos National Laboratory	025	025	PT	0	TY
028	0001	2001	Los Alamos National Laboratory	025	025	SOX	0	TY
028	0001	2001	Los Alamos National Laboratory	025	025	VOC	0	TY
028	0001	2001	Los Alamos National Laboratory	026	026	CO	0	TY
028	0001	2001	Los Alamos National Laboratory	026	026	NO2	0	TY
028	0001	2001	Los Alamos National Laboratory	026	026	PM10	0	TY
028	0001	2001	Los Alamos National Laboratory	026	026	PT	0	TY

**LANL Emission Inventory 2001
Point Source Actual Emissions**

028	0001	2001	Los Alamos National Laboratory	026	026	SOX	0	TY	
028	0001	2001	Los Alamos National Laboratory	026	026	VOC	0	TY	
028	0001	2001	Los Alamos National Laboratory	027	027	PM10	0.0007	TY	
028	0001	2001	Los Alamos National Laboratory	027	027	PT	0.0007	TY	
028	0001	2001	Los Alamos National Laboratory	028	028	3CLET	0.014	TY	
028	0001	2001	Los Alamos National Laboratory	029	029	3CLET	0	TY	
028	0001	2001	Los Alamos National Laboratory	030	030	3CLET	0	TY	
028	0001	2001	Los Alamos National Laboratory	031	031	VOG	18.6	TY	
028	0001	2001	Los Alamos National Laboratory	031	031	THAP	7.37	TY	
028	0001	2001	Los Alamos National Laboratory	031	031	7647-01-0	1.735	TY	Hydrochloric acid
028	0001	2001	Los Alamos National Laboratory	031	031	67-56-1	0.910	TY	Methanol
028	0001	2001	Los Alamos National Laboratory	031	031	107-21-1	0.718	TY	Ethylene glycol
028	0001	2001	Los Alamos National Laboratory	031	031	75-05-8	0.663	TY	Acetonitrile
028	0001	2001	Los Alamos National Laboratory	031	031	79-01-6	0.507	TY	Trichloroethylene
028	0001	2001	Los Alamos National Laboratory	031	031	75-09-2	0.436	TY	Methylene chloride (Dichloromethane)
028	0001	2001	Los Alamos National Laboratory	031	031	110-54-3	0.398	TY	Hexane
028	0001	2001	Los Alamos National Laboratory	031	031	108-88-3	0.340	TY	Toluene
028	0001	2001	Los Alamos National Laboratory	031	031	78-93-3	0.297	TY	Methyl ethyl ketone (2-Butanone)
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.275	TY	Manganese Compounds
028	0001	2001	Los Alamos National Laboratory	031	031	540-84-1	0.234	TY	2,2,4-Trimethylpentane
028	0001	2001	Los Alamos National Laboratory	031	031	74-87-3	0.16	TY	Methyl chloride (Chloromethane)
028	0001	2001	Los Alamos National Laboratory	031	031	67-66-3	0.094	TY	Chloroform
028	0001	2001	Los Alamos National Laboratory	031	031	7664-39-3	0.094	TY	Hydrogen fluoride (Hydrofluoric acid)
028	0001	2001	Los Alamos National Laboratory	031	031	123-91-1	0.087	TY	1,4-Dioxane (1,4-Diethyleneoxide)
028	0001	2001	Los Alamos National Laboratory	031	031	1330-20-7	0.069	TY	Xylenes (isomers and mixture)
028	0001	2001	Los Alamos National Laboratory	031	031	68-12-2	0.060	TY	Dimethyl formamide
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.056	TY	Chromium Compounds
028	0001	2001	Los Alamos National Laboratory	031	031	7782-50-6	0.043	TY	Chlorine
028	0001	2001	Los Alamos National Laboratory	031	031	71-55-8	0.031	TY	Methyl chloroform (1,1,1-Trichloroethane)
028	0001	2001	Los Alamos National Laboratory	031	031	79-06-1	0.025	TY	Acrylamide
028	0001	2001	Los Alamos National Laboratory	031	031	108-90-7	0.025	TY	Chlorobenzene
028	0001	2001	Los Alamos National Laboratory	031	031	100-41-4	0.020	TY	Ethyl benzene
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.018	TY	Cyanide Compounds
028	0001	2001	Los Alamos National Laboratory	031	031	107-06-2	0.017	TY	Ethylene dichloride (1,2-Dichloroethane)
028	0001	2001	Los Alamos National Laboratory	031	031	71-43-2	0.012	TY	Benzene (including benzene from gasoline)
028	0001	2001	Los Alamos National Laboratory	031	031	56-23-5	0.012	TY	Carbon tetrachloride
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.010	TY	Glycol ethers
028	0001	2001	Los Alamos National Laboratory	031	031	100-42-5	0.008	TY	Styrene

**LANL Emission Inventory 2001
Point Source Actual Emissions**

028	0001	2001	Los Alamos National Laboratory	031	031	123-31-9	0.006	TY	Hydroquinone
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.006	TY	Lead Compounds
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.004	TY	Mercury Compounds
028	0001	2001	Los Alamos National Laboratory	031	031	1634-04-4	0.004	TY	Methyl tert butyl ether
028	0001	2001	Los Alamos National Laboratory	031	031	95-47-6	0.004	TY	o-Xylenes
028	0001	2001	Los Alamos National Laboratory	031	031	108-95-2	0.003	TY	Phenol
028	0001	2001	Los Alamos National Laboratory	031	031	50-00-0	0.003	TY	Formaldehyde
028	0001	2001	Los Alamos National Laboratory	031	031	108-10-1	0.003	TY	Methyl isobutyl ketone (Hexone)
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.003	TY	Cadmium Compounds
028	0001	2001	Los Alamos National Laboratory	031	031	121-44-8	0.002	TY	Triethylamine
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.002	TY	Arsenic Compounds (inorganic including arsine)
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.002	TY	Nickel Compounds
028	0001	2001	Los Alamos National Laboratory	031	031	106-88-7	0.002	TY	1,2-Epoxybutane
028	0001	2001	Los Alamos National Laboratory	031	031	79-00-5	0.002	TY	1,1,2-Trichloroethane
028	0001	2001	Los Alamos National Laboratory	031	031	7550-45-0	0.001	TY	Titanium tetrachloride
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.001	TY	Cobalt Compounds
028	0001	2001	Los Alamos National Laboratory	031	031	680-31-9	0.001	TY	Hexamethylphosphoramide
028	0001	2001	Los Alamos National Laboratory	031	031	108-36-3	0.001	TY	m-Xylenes
028	0001	2001	Los Alamos National Laboratory	031	031	79-10-7	0.001	TY	Acrylic acid
028	0001	2001	Los Alamos National Laboratory	031	031	106-51-4	0.001	TY	Quinone
028	0001	2001	Los Alamos National Laboratory	031	031	74-88-4	0.001	TY	Methyl iodide (Iodomethane)
028	0001	2001	Los Alamos National Laboratory	031	031	156-62-7	0.001	TY	Calcium cyanamide
028	0001	2001	Los Alamos National Laboratory	031	031	111-42-2	0.001	TY	Diethanolamine
028	0001	2001	Los Alamos National Laboratory	031	031	101-68-8	0.001	TY	Methylene diphenyl diisocyanate (MDI)
028	0001	2001	Los Alamos National Laboratory	031	031	85-44-9	0.001	TY	Phthalic anhydride
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.001	TY	Polycyclic Organic Matter
028	0001	2001	Los Alamos National Laboratory	031	031	106-42-3	0.000	TY	p-Xylenes
028	0001	2001	Los Alamos National Laboratory	031	031	75-58-9	0.000	TY	Propylene oxide
028	0001	2001	Los Alamos National Laboratory	031	031	79-11-8	0.000	TY	Chloroacetic acid
028	0001	2001	Los Alamos National Laboratory	031	031	98-82-8	0.000	TY	Cumene
028	0001	2001	Los Alamos National Laboratory	031	031	75-07-0	0.000	TY	Acetaldehyde
028	0001	2001	Los Alamos National Laboratory	031	031	75-25-2	0.000	TY	Bromoform
028	0001	2001	Los Alamos National Laboratory	031	031	122-66-7	0.000	TY	1,2-Diphenylhydrazine
028	0001	2001	Los Alamos National Laboratory	031	031	822-06-0	0.000	TY	Hexamethylene-1,6-diisocyanate
028	0001	2001	Los Alamos National Laboratory	031	031	106-44-5	0.000	TY	p-Cresol
028	0001	2001	Los Alamos National Laboratory	031	031	106-50-3	0.000	TY	p-Phenylenediamine
028	0001	2001	Los Alamos National Laboratory	031	031	75-55-8	0.000	TY	1,2-Propylenimine (2-Methyl aziridine)
028	0001	2001	Los Alamos National Laboratory	031	031	100-02-7	0.000	TY	4-Nitrophenol

**LANL Emission Inventory 2001
Point Source Actual Emissions**

028	0001	2001	Los Alamos National Laboratory	031	031	80-62-6	0.000	TY	Methyl methacrylate
028	0001	2001	Los Alamos National Laboratory	031	031	62-53-3	0.000	TY	Aniline
028	0001	2001	Los Alamos National Laboratory	031	031	107-30-2	0.000	TY	Chloromethyl methyl ether
028	0001	2001	Los Alamos National Laboratory	031	031	51-28-5	0.000	TY	2,4-Dinitrophenol
028	0001	2001	Los Alamos National Laboratory	031	031	80-34-4	0.000	TY	Methyl hydrazine
028	0001	2001	Los Alamos National Laboratory	031	031	NA	0.000	TY	Antimony Compounds
028	0001	2001	Los Alamos National Laboratory	031	031	106-99-0	0.000	TY	1,3-Butadiene
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0004	2001	Los Alamos National Laboratory	031	031			TY	
028	0001	2001	Los Alamos National Laboratory	032	032	CO	4.77	TY	
028	0001	2001	Los Alamos National Laboratory	032	032	NO2	19.64	TY	
028	0001	2001	Los Alamos National Laboratory	032	032	PM10	0.97	TY	
028	0001	2001	Los Alamos National Laboratory	032	032	PT	0.97	TY	
028	0001	2001	Los Alamos National Laboratory	032	032	SOx	0.52	TY	
028	0001	2001	Los Alamos National Laboratory	032	032	VOC	0.63	TY	
028	0001	2001	Los Alamos National Laboratory	033	033	CO	7.4	TY	
028	0001	2001	Los Alamos National Laboratory	033	033	NO2	30.16	TY	
028	0001	2001	Los Alamos National Laboratory	033	033	PM10	2.4	TY	
028	0001	2001	Los Alamos National Laboratory	033	033	PT	2.4	TY	
028	0001	2001	Los Alamos National Laboratory	033	033	SOx	0.5	TY	
028	0001	2001	Los Alamos National Laboratory	033	033	VOC	0.2	TY	
028	0001	2001	Los Alamos National Laboratory	034	034	CO	5.9	TY	
028	0001	2001	Los Alamos National Laboratory	034	034	NO2	24.09	TY	
028	0001	2001	Los Alamos National Laboratory	034	034	PM10	1.62	TY	
028	0001	2001	Los Alamos National Laboratory	034	034	PT	1.62	TY	
028	0001	2001	Los Alamos National Laboratory	034	034	SOx	0.2	TY	

**LANL Emission Inventory 2001
Point Source Actual Emissions**

028	0001	200	Los Alamos National Laboratory	026	026	VOC	TV
028	0001	200	Los Alamos National Laboratory	026	026	VOC	TV
028	0001	200	Los Alamos National Laboratory	026	026	VOC	TV
028	0001	200	Los Alamos National Laboratory	027	027	CO	TV
028	0001	200	Los Alamos National Laboratory	027	027	NO2	TV
028	0001	200	Los Alamos National Laboratory	027	027	SOx	TV
028	0001	200	Los Alamos National Laboratory	027	027	PM10	TV
028	0001	200	Los Alamos National Laboratory	027	027	PT	TV
028	0001	200	Los Alamos National Laboratory	027	027	VOC	TV
028	0001	200	Los Alamos National Laboratory	028	028	CO	TV
028	0001	200	Los Alamos National Laboratory	028	028	NO2	TV
028	0001	200	Los Alamos National Laboratory	028	028	SOx	TV
028	0001	200	Los Alamos National Laboratory	028	028	PM10	TV
028	0001	200	Los Alamos National Laboratory	028	028	PT	TV
028	0001	200	Los Alamos National Laboratory	028	028	VOC	TV
028	0001	200	Los Alamos National Laboratory	029	029	PT	TV
028	0001	200	Los Alamos National Laboratory	029	029	PM10	TV
028	0001	200	Los Alamos National Laboratory	029	029	NO2	TV
028	0001	200	Los Alamos National Laboratory	029	029	SOx	TV
028	0001	200	Los Alamos National Laboratory	029	029	CO	TV
028	0001	200	Los Alamos National Laboratory	029	029	VOC	TV
028	0001	200	Los Alamos National Laboratory	029	029	PT	TV
028	0001	200	Los Alamos National Laboratory	029	029	PM10	TV
028	0001	200	Los Alamos National Laboratory	029	029	NO2	TV
028	0001	200	Los Alamos National Laboratory	029	029	SOx	TV
028	0001	200	Los Alamos National Laboratory	029	029	CO	TV
028	0001	200	Los Alamos National Laboratory	029	029	VOC	TV
028	0001	200	Los Alamos National Laboratory	029	029	PT	TV
028	0001	200	Los Alamos National Laboratory	029	029	PM10	TV
028	0001	200	Los Alamos National Laboratory	029	029	NO2	TV
028	0001	200	Los Alamos National Laboratory	029	029	SOx	TV
028	0001	200	Los Alamos National Laboratory	029	029	CO	TV
028	0001	200	Los Alamos National Laboratory	029	029	VOC	TV

**LANL 2001 Emission Inventory
LANL Site Totals**

County FIP	AFS/NEDS PU	strC	Inventory Year YYYY	Company Name	Emission Type	CAS Number	Pollutant Code	Emission Numeric Value	Emission Unit Numerator
028	0001	A	2001	Los Alamos National Laboratory	12		PM10	5.5	TY
028	0001	A	2001	Los Alamos National Laboratory	12		PT	5.5	TY
028	0001	A	2001	Los Alamos National Laboratory	12		VOC	24.1	TY
028	0001	A	2001	Los Alamos National Laboratory	12		THAPs	7.4	TY
028	0001	A	2001	Los Alamos National Laboratory	12	630080	CO	29.1	TY
028	0001	A	2001	Los Alamos National Laboratory	12	10102440	NO2	93.8	TY
028	0001	A	2001	Los Alamos National Laboratory	12		SOx	0.82	TY
028	0001	A	2001	Los Alamos National Laboratory	12	7440417	BE	9.60E-06	TY
028	0001	A	2001	Los Alamos National Laboratory	12	7429905	AL-PT	2.05E-06	TY

This report has been reproduced directly from the best available copy. It is available electronically on the Web (<http://www.doe.gov/bridge>).

Copies are available for sale to U.S. Department of Energy employees and contractors from:

Office of Scientific and Technical Information
P.O. Box 62
Oak Ridge, TN 37831
(865) 576-8401

Copies are available for sale to the public from:

National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22616
(800) 553-6847



Los Alamos NM 87545