LA-14186-PR
Progress Report

2003 Toxic Chemical Release Inventory Report for the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Section 313

Los Alamos
NATIONAL LABORATORY
EST. 1943

The World's Greatest Science Protecting America

The two most recent reports in this unclassified series are LA-14071-PR and LA-14096-PR.

Edited by Hector Hinojosa, Group IM-1

LA-14186-PR
Progress Report
Issued: December 2004

2003 Toxic Chemical Release Inventory Report for the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Section 313

RRES-MAQ (Meteorology and Air Quality Group)

Los Alamos
NATIONAL LABORATORY
EST.1943

The World's Greatest Science Protecting America

CONTENTS

LIST OF TABLES

LIST OF FIGURES

2003 Toxic Chemical Release Inventory Report

for the

Emergency Planning and

Community Right-to-Know Act of 1986,

Title III, Section 313

RRES-MAQ (Meteorology and Air Quality Group)

Abstract

For reporting year 2003, Los Alamos National Laboratory (LANL or the Laboratory) submitted Form R reports for lead, mercury, and nitric acid as required under the Emergency Planning and Community Right-to-Know Act (EPCRA), Section 313. No other EPCRA Section 313 chemicals were used in 2003 above the reportable thresholds. This document was prepared to provide a description of the evaluation of EPCRA Section 313 chemical use and threshold determinations for LANL for calendar year 2003, as well as provide background information about data included on the Form R reports.

Section 313 of EPCRA specifically requires facilities to submit a Toxic Chemical Release Inventory Report (Form R) to the U.S. Environmental Protection Agency (EPA) and state agencies if the owners and operators manufacture, process, or otherwise use any of the listed toxic chemicals above listed threshold quantities. EPA compiles this data in the Toxic Release Inventory database. Form R reports for each chemical over threshold quantities must be submitted on or before July 1 each year and must cover activities that occurred at the facility during the previous year.

In 1999, EPA promulgated a final rule on persistent bioaccumulative toxics (PBTs). This rule added several chemicals to the EPCRA Section 313 list of toxic chemicals and established lower reporting thresholds for these and other PBT chemicals that were already reportable under EPCRA Section 313. These lower thresholds became applicable in reporting year 2000. In 2001, EPA expanded the PBT rule to include a lower reporting threshold for lead and lead compounds. Facilities that manufacture, process, or otherwise use more than 100 lb of lead or lead compounds must submit a Form R. The new lead threshold became applicable with reporting year 2001.

1.0 INTRODUCTION

On April 21, 2000, President Clinton signed Executive Order (EO) 13148, which requires all federal facilities to comply with the provisions of the Emergency Planning and Community Right-to-Know Act (EPCRA), or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986. EO 13148 supersedes EO 12856 of 1995. Section 313 of EPCRA specifically requires facilities to submit a Toxic Chemical Release Inventory report (Form R) to the U.S. Environmental Protection Agency (EPA) and state agencies if the owners and operators manufacture, process, or otherwise use any of the listed toxic chemicals above listed threshold quantities. On October 19, 1999, EPA promulgated a final rule on persistent bioaccumulative toxics (PBTs). This rule added several chemicals to the EPCRA Section 313 list of toxic chemicals and established lower reporting thresholds for these and other PBT chemicals that were already reportable under EPCRA Section 313. These lower thresholds became applicable in reporting year 2000. On January 17, 2001, the PBT rule was amended to include lead and lead compounds. The rule lowered the reporting threshold for lead and lead compounds to 100 lb. The lower threshold for lead became applicable in reporting year 2001.

EPA compiles the data submitted on the Form R reports in a Toxic Release Inventory (TRI) database. The TRI database provides the public with information on the releases of EPCRA Section 313 chemicals in their communities as well as provides EPA with release information to assist in determining the need for future regulations (http://www.epa.gov/tri/). A Form R must be submitted on or before July 1 each year and must cover activities that occurred at the facility during the previous calendar year. Even though federal facilities were not required to report under EPCRA Section 313 until 1995, Los Alamos National Laboratory (LANL) has been voluntarily reporting under EPCRA Section 313 since 1987. For reporting year 2003, LANL submitted Form R reports for lead, mercury, and nitric acid. No other EPCRA Section 313 chemicals were used in 2003 above the reportable thresholds. Toxic chemicals used in exempt activities as defined by the regulation are excluded from the threshold determinations and release calculations. Descriptions of these exempt activities are included in Section 2.2 of this report.

This report summarizes the data evaluation, exemption analysis, activity determinations, and threshold determinations for toxic chemical use at LANL in 2003, and describes the environmental release data reported on the Form R reports. Individual sections for certain toxic chemicals used at LANL are included in this report. Appendix A presents a summary table of EPCRA Section 313 chemicals procured at LANL in 2003. Appendix B includes copies of Form R reports submitted to EPA and the New Mexico Environment Department.

Facility Information and Contacts

LANL is located at latitude of 35°49'51" and longitude of 106°14'15" in Los Alamos County, New Mexico. LANL is owned by the U.S. Department of Energy (DOE) and is operated by the University of California (UC). Because the Laboratory is owned and operated by different entities, duplicate Form Rs are submitted by the DOE and UC. Facility information is as follows:

- LANL UC
  - TRI facility identification number: 87545LSLMSLOSAL
  - UC technical contact: Ms. Jean Dewart at (505) 665-0239
  - UC public contact: Mr. Dennis Armstrong at (505) 667-6211

- Los Alamos DOE complex
  - The TRI facility identification number: 87544SDLSL52835
  - DOE technical and public contact: Mr. Gene Turner at (505) 667-5794.

2.0 Activity Determinations, Exemptions, and Qualifiers

2.1 Activity Determinations

EPCRA Section 313 chemical usage is evaluated against three activity determinations. For listed chemicals that are not PBTs, the thresholds are described below.

Manufacture

The term manufacture means to produce, prepare, compound, or import an EPCRA Section 313 chemical. The term manufacture also includes coincidental production of an EPCRA Section 313 chemical as a result of the manufacture, processing, otherwise use, or treatment of other chemical substances. The threshold for reporting manufactured chemicals is 25,000 lb.

Process

The term process means the preparation of a listed EPCRA Section 313 chemical, after its manufacture, for distribution in commerce. Processing is usually the intentional incorporation of an EPCRA Section 313 chemical into a product. The threshold for reporting processed chemicals is 25,000 lb.

Otherwise Use

The term otherwise use usually means any use of an EPCRA Section 313 chemical, including in a mixture or trade name product or waste that is not covered by the terms manufacture or process. The threshold for reporting otherwise used chemicals is 10,000 lb.

Persistent Bioaccumulative Toxics (PBTs)

For the subset of chemicals listed as PBTs, lower reporting thresholds have been established for individual chemicals ranging from 100 lb to 0.1 gram. These lower thresholds apply to each of the activity determinations: manufacture, process, and otherwise use. Although the threshold for each activity is the same, each chemical must be evaluated against the activity determinations to determine which activity the chemical is used under. Threshold determinations for PBTs are evaluated separately against the manufacture, process, and otherwise use activities described above.

2.2 Exemptions

Exemptions from EPCRA Section 313 toxic chemical reporting applicable to LANL are discussed below.

Laboratory Activities Exemption

EPCRA Section 313 chemicals that are manufactured, processed, or otherwise used in laboratory activities at a covered facility under the direct supervision of a technically qualified individual do not have to be considered for threshold determinations and release calculations. However, pilot plant scale, specialty chemical production, or the use of chemicals for laboratory support activities do not qualify for this laboratory activities exemption.

Otherwise Use Exemption

Certain activities involving EPCRA Section 313 chemicals qualify as otherwise used and are specifically exempted. These include the following:

- otherwise use as a structural component of the facility,
- otherwise use in routine janitorial or facility grounds maintenance,
- personal uses by employees or other persons,
- otherwise use of products containing EPCRA Section 313 chemicals for the purpose of maintaining motor vehicles operated by the facility, or
- otherwise use of EPCRA Section 313 chemicals contained in intake water (used for processing or noncontact cooling) or in intake air (used either as compressed air or for combustion).

Article Exemption

EPCRA Section 313 chemicals contained in articles that are processed or otherwise used are exempt from threshold determinations and release calculations. For an item to be exempt as part of an article, it must satisfy the following three criteria:

- be a manufactured item that is formed to a specific shape or design during manufacture,

- have end-use functions dependent in whole or in part on its shape or design during end use, and
- must not release an EPCRA Section 313 chemical under normal circumstances of processing or otherwise use of the item at the facility. Total releases from any item or like items qualifying as article exempt must be equal to or less than 0.5 lb to remain exempt as articles.[1]

De Minimis Exemption

The *de minimis* exemption allows facilities to exempt certain minimal concentrations of EPCRA Section 313 chemicals contained in mixtures or other trade name products when making threshold determinations and release calculations. The *de minimis* concentrations are set by EPA at either 1% or 0.1%, depending on whether the chemical is a carcinogen or suspected carcinogen.

EPA eliminated the *de minimis* exemption for the list of PBT chemicals. This means that facilities must include all amounts of PBTs in threshold determinations and release and other waste management calculations regardless of the concentration of the PBTs in mixtures or trade name products.

2.3 Qualifiers

In addition to exemptions, certain EPCRA Section 313 chemicals have qualifiers. Qualifiers indicate that these chemicals are subject to the reporting requirements only if manufactured, processed, or otherwise used in a specific form or when a certain activity is performed. Examples of qualifiers are shown in Table 2-1.

Table 2-1. Examples of EPCRA Section 313 Chemical Qualifiers

Chemical Name	Chemical Abstract Service (CAS) Number	Qualifier
Aluminum	7429-90-5	Only if it is a fume or dust form.
Hydrochloric Acid	7647-01-0	Only if it is an aerosol form.
Isopropyl Alcohol	67-63-0	Only if it is being manufactured by the strong acid process.
Sulfuric Acid	7664-93-9	Only if it is an aerosol form.
Nitrate Compounds	NA	Only when in aqueous solution.
Vanadium	7440-62-2	Except when contained in an alloy.

NA = not applicable

3.0 ANALYSIS FOR THRESHOLD DETERMINATIONS

There are several steps in determining when a chemical triggers reporting under EPCRA 313. When a chemical is manufactured, processed, or otherwise used in amounts greater than the threshold quantity, a Form R report and release calculations are required. Figure 3-1 presents a flowchart that shows the steps LANL performs to determine which chemicals must be reported under EPCRA Section 313.

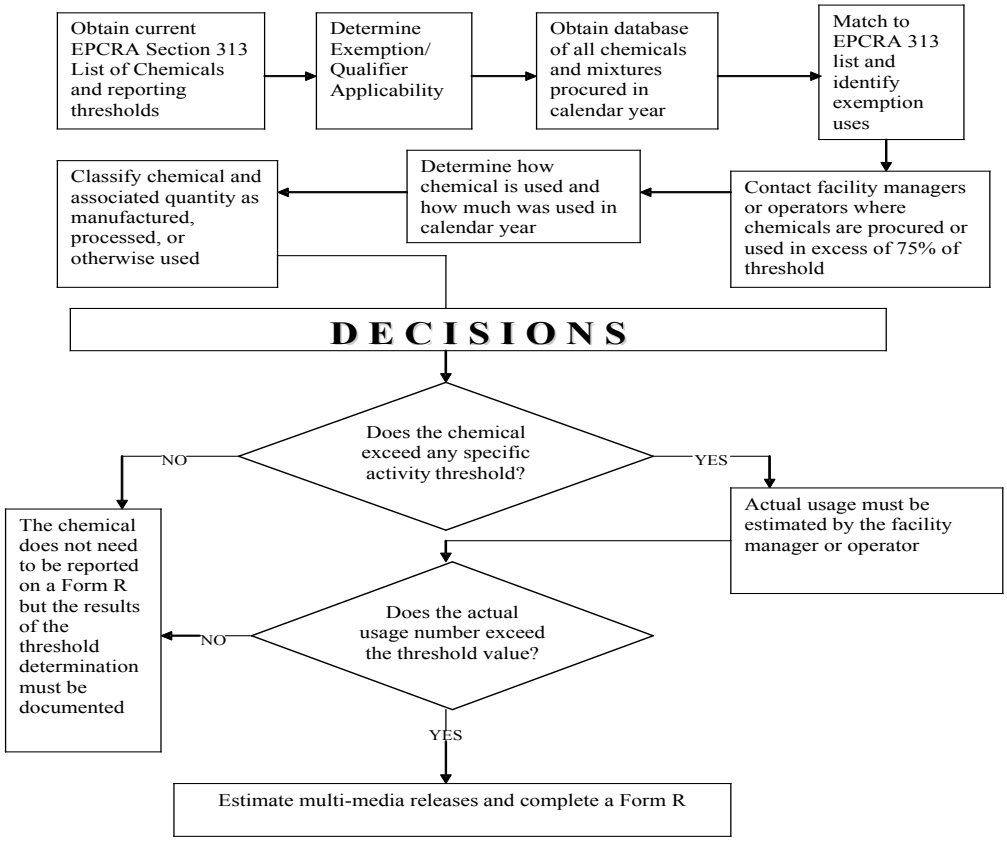


Figure 3-1. Flowchart of Process of Analysis for EPCRA Section 313 Reporting

3.1 Threshold Determinations for Chemical Use

Chemicals are purchased at the Laboratory through a variety of procurement systems. These systems include Just-In-Time, Purchase Orders, Local Vendor Agreements, and STOREs (onsite gas facility). In 2002, LANL converted their chemical management to new software called ChemLog. The ChemLog system replaced the Automated Chemical Inventory System (ACIS) database for tracking chemicals brought onsite at the Laboratory. ChemLog captures the majority of procured chemicals and provides relevant data (e.g., chemical name, CAS number, quantity, etc.) to assist in threshold determinations. The underlying assumption used in the preliminary threshold determinations for reporting under EPCRA 313 is that chemicals are purchased and used in the same calendar year. If unusually large purchases are noted in this preliminary analysis, further investigation is done to determine if bulk chemicals were purchased and only a portion of them used in the calendar year.

Inventory

For calendar year 2003, a total of 43,702 records were added to ChemLog and evaluated; 24,923 were pure chemicals and 18,779 records were mixtures. Individual items with identifiable CAS numbers in ChemLog were considered pure chemicals. These items were matched by CAS number to the list of EPCRA Section 313 chemicals. The resulting records were summed in pounds for each pure chemical.

Individual items that did not have CAS numbers in ChemLog were considered mixtures. The exemptions discussed in Section 2.2 of this report were applied to the mixtures and each qualifying item was classified according to the applicable exemption. Material Safety Data Sheets (MSDSs) for the remaining mixtures purchased in quantities greater than 50 lb were reviewed to determine the presence and amount of EPCRA Section 313 constituents. This was done to ensure that the chemicals with thresholds greater than 100 lb would be identified. Chemicals with thresholds less than 100 lb were examined individually, based on process knowledge and known potential sources. Each mixture that contained an EPCRA Section 313 chemical was further evaluated to determine the weight of each constituent. The totals for these amounts were then added to the quantities of pure EPCRA Section 313 chemicals.

Procurement

In previous years, purchasing procurement systems were evaluated in order to capture chemicals that may not have been entered into the chemical tracking system. The purchasing procurement systems include the Chemical Order Report (Just-in-Time and Purchase Orders), Local Vendor Agreements, and purchase cards. In previous years the chemical tracking system, ACIS, contained a Purchase Order Number field that was used to match to the Purchase Order Number field in the purchasing procurement systems. All matches could be eliminated from further analysis of the purchasing procurements because they had already been captured in the chemical tracking system. However, a Purchase Order Number field was not added to the ChemLog system until January 5,

2004. Therefore, the ChemLog records for 2003 did not have a purchase order number associated with them and could not easily be matched with purchasing procurement records. Without the ability to eliminate the majority of the records, the task of analyzing the purchasing procurements would require significantly more time and effort. For EPCRA 313 2003, the analysis of purchasing procurement systems to identify chemicals not captured in ChemLog was not done for the following reasons: without a purchase order number and the ability to eliminate records already captured in Chemlog, the time and effort to analyze the purchasing procurements records increases significantly; with the new chemical tracking system, and increased management attention and training, the switch from ACIS to Chemlog has increased the overall percentage of chemicals captured; historically, the additional quantity of EPCRA 313 chemicals identified via purchasing procurements has always been very small; and it is a requirement in the Laboratory's Chemical Management Laboratory Implementation Requirement (LIR 402-510-01) that, "timely updates of location and ownership of newly arrived chemicals must be performed" and "chemicals arriving without ChemLog barcodes shall have them applied, and the necessary data must be entered into ChemLog."

An assessment was made of chemicals brought onsite through contractors. For example, KSL, the Site Support Contractor, purchased 134,000 lb of sulfuric acid in liquid form that was not captured in ChemLog. This amount was added to the sum of listed chemicals.

Additional Analysis

Certain high-usage chemicals, as well as chemicals with low thresholds (i.e., PBTs), were evaluated beyond inventory and procurement (e.g., operational processes) and are addressed in Section 4.0 of this report.

3.2 Threshold Determination Results

Procurement Totals

The amounts of EPCRA Section 313 chemicals identified through inventory and procurement were summed together to develop preliminary threshold determinations. The resulting totals for the top 10 EPCRA Section 313 chemicals procured in 2003 are summarized in Table 3-1.

The total amounts of lead and mercury procured are not shown in Table 3-1. Because both lead and mercury are PBTs, their thresholds for reporting were lowered to 100 lb and 10 lb, respectively. Detailed analyses of lead and mercury and the Form R reporting are discussed in later sections of this report.

Sulfuric acid was the only EPCRA Section 313 chemical purchased above the 10,000-lb otherwise used threshold and required further investigation. Hydrochloric acid and nitric acid were evaluated separately with additional operational information not available in ChemLog. Although less than 5,000 lb of nitric acid was purchased in 2003, almost

50,000 lb was actually used. This is due to a large nitric acid storage tank that was full at the beginning of the year and the majority of the contents used in 2003. The analysis for nitric acid is described in Section 7 of this report. Section 4 provides individual analyses of other chemicals that did not trigger reporting for 2003.

Table 3-1. Top 10 EPCRA Section 313 Chemicals Procured in 2003

CAS Number	Chemical Name	Total Procured (lb)
7664-93-9	Sulfuric acid (liquid form)	7,166[(a)]
NA	Zinc compounds	5,565
7697-37-2	Nitric acid	4,969[(b)]
7647-01-0	Hydrochloric acid (liquid form)	4,932
NA	Manganese compounds	4,503
NA	Polychlorinated Alkanes	1,796
75-09-2	Dichloromethane	1,538
67-56-1	Methanol	1,472
10222-01-2	2,2-Dibromo-3-nitrilopropionamide	1,285
75-05-8	Acetonitrile	1,182

NA = Not applicable

(a) Additional 134,000 lb of sulfuric acid purchased and used by Site Support Contractor.

(b) Additional 49,780 lb of nitric acid used in 2003 from inventory.

4.0 ADDITIONAL EVALUATION OF CERTAIN TOXIC CHEMICALS

The toxic chemicals described below are either used in relatively high volumes at LANL, have very low reporting thresholds, are of special interest, or have been reported in the past. Additional analyses were required to determine total usage of these chemicals. None of the chemicals presented in this section exceeded any of the applicable thresholds in 2003 and therefore no reporting was required.

4.1 Sulfuric Acid

EPCRA Section 313 reporting guidelines state that sulfuric acid must be reported only if it is in an aerosol form, including mists, vapors, gas, fog, and other airborne forms of any particle size. This would include acid aerosols generated in storage tanks and from fuel combustion. Large purchases of sulfuric acid are used in liquid form for demineralizer regeneration and for sample analysis at the Sanitary Waste Systems Consolidation (SWSC) Plant. Because this sulfuric acid is used in liquid form, it is not subject to EPCRA 313 reporting. Sulfuric acid aerosols are generated as a result of storage tank emissions and fuel combustion byproducts. The total amount of sulfuric acid mist generated for both of these activities is less than the 25,000-lb manufacture threshold and is not reportable.

Based on EPA guidance for fuel oil combustion, it is assumed that all sulfur trioxide (SO_3) emissions are in the form of sulfuric acid.[2] For natural gas combustion, it is conservatively assumed that all sulfur oxides emissions are in the form of sulfuric acid

mist because separate SO_3 emission factors are not available. Procurements of sulfuric acid captured in ChemLog are assumed to be in aerosol form since the specific usage is unknown. Total purchases do not exceed the otherwise use reporting threshold. A summary of the threshold determinations for sulfuric acid is provided in Table 4-1.

Table 4-1. Sulfuric Acid Threshold Determinations for 2003

Description	Amount of Sulfuric Acid (lb)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lb)
Demineralizer Regeneration	134,000	Site Support Contractor Logs	Not in aerosol form and not subject to EPCRA Section 313	NA
Water Analysis at the SWSC Plant	100.5	Site Support Contractor Logs		
Procurement	7,166*	Procurement Data	Otherwise Used	10,000
Storage Tank Air Emissions	0.002	EPA, Tanks 4.0 Software	Manufactured	25,000
Fuel Combustion Byproducts	715	AP-42 and fuel use records[2]		

*Assumed to be in aerosol form.

4.2 Hydrochloric Acid

Hydrochloric acid is purchased for numerous processes and is also generated as a combustion byproduct. The total amount of hydrochloric acid procured in 2003 was 4,933 lb. This includes hydrochloric acid from pure chemicals and mixtures in ChemLog. Additionally, the air curtain destructors (ACDs) generated 3,193 lb of hydrochloric acid emissions. The total hydrochloric acid from chemical usage and the ACDs for 2003 is 8,126 lb, which is below the 10,000-lb EPCRA threshold for hydrochloric acid. However, because the initial evaluation was above 75% of the reporting threshold, based on guidance in LANL Meteorology and Air Quality Group Procedure No. 310, hydrochloric acid purchases and emissions were analyzed further.

In 1995, EPA added a modifier to the listing of hydrochloric acid to exclude nonaerosol forms. The listing now reads "hydrochloric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)."[3] Therefore, if hydrochloric acid is present in the form of a gas, fog, vapor, mist, or any other airborne form, then it is considered to be in the aerosol form and is covered by the EPCRA Section 313 hydrochloric acid aerosols listing.

Procurement of Hydrochloric Acid

Facility and Waste Operations Division Waste Facility Management purchased approximately 2,535 lb of aqueous hydrochloric acid in 2003. This hydrochloric acid was used for heat exchanger scale cleaning and for cleaning of electrodialysis reversal membranes and is considered exempt under the routine maintenance exemption. However, the use of the aqueous hydrochloric acid does generate a small amount of aerosol mist. The amount of hydrochloric acid aerosol generated from these particular activities was estimated to be 0.24 lb based on specific process information and engineering calculations. This quantity of hydrochloric acid is considered manufactured and is subject to the 25,000-lb manufactured threshold.

The amount of hydrochloric acid evaluated against the 10,000-lb otherwise used threshold was the total amount of hydrochloric acid procured (4,933 lb), minus the aqueous hydrochloric acid used by Waste Facility Management discussed above (2,535 lb), which is 2,398 lb. This quantity of hydrochloric acid likely includes aqueous forms of hydrochloric acid, not just aerosol forms. To be conservative, the entire amount of 2,398 lb was assumed to be in aerosol form and was evaluated against the 10,000-lb otherwise use threshold, which it does not exceed.

Hydrochloric Acid from Combustion Sources

In 2003, LANL operated three ACDs to burn piles of downed trees, stumps, and slash from forest thinning projects. The ACDs work by blowing a curtain of air over materials as they burn within a semi-enclosed environment. The fan-driven curtain of air introduces a steady oxygen supply into the fuel and helps ensure that nearly all fuel and gasses are consumed.

A total of 18,671 tons of wood and brush generated from forest thinning activities was burned in the ACDs in 2003. An AP-42 emission factor for hydrochloric acid emissions for burning wood residue in boilers was used to estimate emissions from the wood burning in the ACDs.[4] An emission factor of 1.90×10^{-2} lb per MMBtu heat input was used. Assuming an average heat content of the wood at 0.0045 MMBtu/lb wood, emissions of hydrochloric acid were estimated to be 3,193 lb. The creation of hydrochloric acid as a byproduct from wood combustion is considered manufactured and is compared to the 25,000-lb EPCRA threshold.

Table 4-2 summarizes the analysis for hydrochloric acid.

Table 4-2. Hydrochloric Acid Threshold Determinations for 2003

Description	Amount of Hydrochloric Acid (lb)	Data Source	EPCRA 313 Activity Determination	EPCRA 313 Activity Threshold (lb)
Aqueous hydrochloric acid	2,535	Procurement and interviews	Exempt based on nonaerosol qualifier	NA
Other procurement	2,398*	Procurement records	Otherwise Used	10,000
Aerosol generated from use of aqueous hydrochloric acid	0.24	Engineering calculations	Manufactured	25,000
Air curtain destructors	3,193	Operating logs and AP-42 emission factors	Manufactured	25,000

*Assumed to be in aerosol form.

4.3 Polycyclic Aromatic Compounds

Polycyclic aromatic compounds (PACs) are a chemical category added to the EPCRA Section 313 list in 2000 as part of the PBT rule. The threshold for reporting PACs is 100 lb. Benzo(g,h,i)perylene is a PAC that has its own separate threshold. The threshold for benzo(g,h,i)perylene is 10 lb.

According to EPA's "EPCRA Section 313 Guidance for Reporting Toxic Chemicals: Polycyclic Aromatic Compounds Category,"[5] fuel oil and paving asphalt contain PACs. In addition, PACs may be generated from the combustion of natural gas, fuel oil, and wood and the manufacture of asphalt. Each of these sources of PACs was evaluated and is described below.

Procurement of PACs

The total amount of materials potentially containing PACs procured from ChemLog in 2003 was approximately 626 lb. Under EPCRA 313, the PAC category includes 21 specific chemicals and an additional 51 chemical mixtures that are listed as may contain PACs. The 626 lb procured in 2003 were entirely from the purchase of two chemical mixtures, Trim E 190 and Trim Sol. Both chemicals are used as a cutting fluid for machine tools and both contain petroleum oil (CAS # 8002-05-9), which is listed as one of the 51 chemical mixtures that may contain PACs. The MSDSs for both Trim E 190 and Trim Sol do not list the petroleum oil mixture contained in the chemicals as the type listed as one of the 51 chemicals that may contain PACs. The manufacturer of both chemicals was contacted to obtain more information about the petroleum oil in these compounds. The manufacturer confirmed that neither Trim E 190 nor Trim Sol contain the type of petroleum oil that contains PACs. Therefore, total PACs from the chemical procurement analysis is zero.

PACs from Air Curtain Destructors

As described in Section 4-2, LANL burned a total of 18,671 tons of wood and brush generated from forest thinning activities in ACDs in 2003. EPA guidance provides an emission factor for PACs of 1.35×10^{-4} lb/ton wood burned and an emission factor for benzo(g,h,i)perylene of 1.2×10^{-6} lb/ton wood burned.[6] Using these emission factors it was estimated that approximately 2.5 lb of PACs and 0.022 lb of benzo(g,h,i)perylene were manufactured from the burning of wood in 2003.

PACs from Asphalt Production

In 2003, LANL produced approximately 1,204 tons of asphalt and used 23,543 gallons (213,070 lb) of asphalt tar. This was much lower than previous years, as the onsite asphalt plant was shutdown in June 2003, and a new asphalt plant is planned. However, the new asphalt plant was not constructed or operational in 2003. For the second half of 2003, contractors were hired to bring asphalt onsite for LANL's paving needs. A review of records for 2003 identified projects that involved the purchase of asphalt from outside contractors. Work tickets and project management records were reviewed to identify asphalt jobs that qualify as routine facility maintenance and are exempt under EPCRA 313. Routine facility maintenance includes patching of potholes, repair of roads and parking lots, and resurfacing of existing parking lots. After reviewing these records, only two projects were identified that did not fall under the facility maintenance exemption. These projects were for construction of new roads and parking lots. The two projects accounted for 7,420 tons of asphalt.

According to EPA guidance, asphalt tar may contain as high as 178 ppm of PACs.[5] However, Chevron-Texaco, the supplier of the asphalt tar provided information specific to their product.[7] The information indicated the PACs concentration in the asphalt tar was significantly lower than that listed as a default value in the EPA's PACs guidance. These manufacturer-supplied values were used in the LANL calculation of PACs. The concentration of PACs in the asphalt tar is 8 ppm (versus EPA default value of 178 ppm).

Using the 8-ppm concentration, the total amount of PACs otherwise used at LANL in asphalt brought in from offsite is 2.13 lbs. The concentration of benzo(g,h,i)perylene in asphalt, from EPA's Guidance on PACs, is 1.2 ppm.[8] This figure gives 0.9 lb of benzo(g,h,i)perylene reportable towards its 10 lb otherwise use threshold. All use of asphalt from the LANL-owned asphalt plant was determined to be exempt from threshold calculations.

In addition, the use of asphalt generates emissions of PACs that apply to the manufacture threshold. Using AP-42 emission factors,[9] it was calculated that 9.5×10^{-4} lb of PACs and 2.5×10^{-6} lb of benzo(g,h,i)perylene were generated. This is applied to the manufactured threshold.

PACs from Fuel Oil Combustion

The main power plant at LANL used 25,500 gallons of fuel oil in 2003. An additional 8,000 gallons is estimated to have been used in diesel-fired generators throughout LANL, 279 gallons in the Technical Area (TA) 21 boilers, and 1,053 gallons in the ACDs, totaling 34,832 gallons. According to EPA guidance, fuel oil may contain 10 ppm of PACs.[5] However, data provided by Chevron-Texaco indicate diesel may contain 22 ppm of PACs.[7] The 22 ppm was used in our calculations. This equates to 5.40 lb of PACs that applies to the otherwise use threshold. The value for benzo(g,h,i)perylene was found to be 0.05 ppm according to EPA guidance.[8] The data provided by Chevron-Texaco indicated concentrations of 9 ppm. The 9 ppm was used in our calculations and results in 2.21 lb of this particular PAC, applicable to the 10-lb otherwise use threshold.

In addition, combustion of fuel oil generates emissions of PACs that apply to the manufacture threshold. Using AP-42 emission factors,[2] these amounts were calculated to be 0.001 lb for total PACs and 0.0002 lb for benzo(g,h,i)perylene.

PACs from Natural Gas

Approximately 1,149.7 million standard cubic feet of natural gas was burned at LANL facilities in 2003. Using AP-42 emission factors[10] and fuel records, approximately 0.019 lb of PACs was produced from natural gas combustion, which is applied to the manufacture threshold. Approximately 0.001 lb of benzo(g,h,i)perylene applies toward the 10-lb manufacture threshold. Due to the absence of information regarding total PAC and benzo(g,h,i)perylene concentrations in natural gas, it was assumed that these substances are negligible in natural gas before combustion.

Summary of PACs

Diesel fuel combustion accounts for 5.4 lb of PACs toward the otherwise used threshold. Concentrations of PACs in asphalt account for 2.13 lb. The total is 7.53 lb, well below the otherwise used reporting threshold of 100 lb.

The ACDs accounted for 2.52 lb of PACs towards the manufactured threshold. Other sources that contribute to this threshold include fuel-burning processes. The amount of PACs applied toward the manufactured threshold through all the combustion processes equals less than 3 lb, well below the 100 lb manufactured reporting threshold.

Both threshold quantities for otherwise used and manufactured were below the 100-lb threshold, therefore, it was determined that reporting of PACs under EPCRA Section 313 was not necessary.

Benzo(g,h,i)perylene concentrations in asphalt tar and diesel fuel totaled 3.11 lb towards the otherwise used threshold. Combustion processes accounted for 0.022 lb, which is considered to be manufactured. These values are well below the reporting threshold of 10 lb. Therefore, benzo(g,h,i)perylene reporting was not necessary under EPCRA Section 313.

Table 4-3 summarizes the PACs and benzo(g,h,i)perylene threshold determinations.

Table 4-3. PACs Threshold Determinations for 2003

Description	Used in/Produced from	Amount (lb)	Total (lb)	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lb)
Total PACs	Natural Gas	0	7.53	Otherwise Used	100
	Asphalt	2.13			
	Fuel Oil	5.4			
	Natural Gas	0.019	2.53	Manufactured	100
	Asphalt	9.5×10^{-4}			
	Fuel Oil	0.001			
	ACDs	2.52			
Benzo(g,h,i) perylene	Natural Gas	0	3.1	Otherwise Used	10
	Asphalt	0.9			
	Fuel Oil	2.2			
	Natural Gas	0.001	0.022	Manufactured	10
	Asphalt	2.5×10^{-6}			
	Fuel Oil	0.0002			
	ACDs	0.022			

4.4 Dioxins

Dioxins are a group of PBTs formed during combustion processes. The EPCRA 313 reporting threshold for the dioxins category was established as 0.1 gram manufactured, processed, or otherwise used. This limit applies to toxic-equivalent compounds, a category of dioxins consisting of 17 specific dioxin and dioxin-like compounds. These "compounds with chlorine substitution in the 2, 3, 7, 8-positions on the molecule are reportable under the EPCRA Section 313 dioxin and dioxin-like compounds category."[11]

Activities at LANL that were evaluated for dioxins include explosives activities, fuel combustion, and use of the ACDs. Each is described below.

Explosives Activities

Dioxins are formed by burning chlorine-based chemical compounds with hydrocarbons producing an unintentional byproduct in many industrial processes involving chlorine. One potential source of dioxin formation at LANL is open burn/open detonation (OB/OD) of high explosives (HE). This is because many binders and plasticizers found in HE materials have chlorine in their chemical make-up. Therefore, analysis of HE materials and associated binders/plasticizers was performed to estimate dioxin emissions.

Information on the various HE materials, such as explosive type, explosive name and composition, and chemical formula, was obtained from laboratory personnel and

textbooks. Several HE materials contain binders and plasticizers. These binders and plasticizers were evaluated and screened for those that contained chlorine. For those chlorine-containing binders/plasticizers, the weight percent chlorine in each was determined and the HE materials having chlorine-containing binders were further evaluated. Knowing the weight percent binder/plasticizer in these explosives and the weight percent chlorine in each binder, the amount of binder and amount of chlorine in each HE material containing chlorine was determined. Due to the unique nature of these materials, no specific dioxin emission factors are available. Therefore, a dioxin emission factor for burning of polyvinyl chloride in accidental fires was used to estimate dioxin emissions from burning of the chlorine-containing materials.[12] An emission factor of 4 ug dioxin emitted/ton of material burned was used.

Based on available information, estimated emissions from dioxins formed by OB/OD of HE materials totaled 2.45×10^{-7} g/yr. Furthermore, burning of HE materials was evaluated separately for dioxin formation. Based on estimated emissions from the materials containing chlorine, dioxin emissions were 3.08×10^{-9} g/yr. Combining estimated emissions from HE expended and HE burned, total dioxin emissions were 2.48×10^{-7} g/yr.

Fuel Combustion

LANL burns natural gas and diesel fuel in numerous boilers, heaters, and generators. No emission factors for dioxins were found for natural gas combustion. However, the EPA EPCRA guidance for dioxins provides an emission factor of 3,178.6 picograms/liter of diesel fuel burned.[11] The Laboratory burned a total of 34,832 gallons (131,839 Liters) of diesel fuel in 2003. Multiplying by the dioxin emission factor, a total of 4.19×10^{8} picograms (0.0004 grams) of dioxin was formed due to fuel combustion.

Air Curtain Destructors

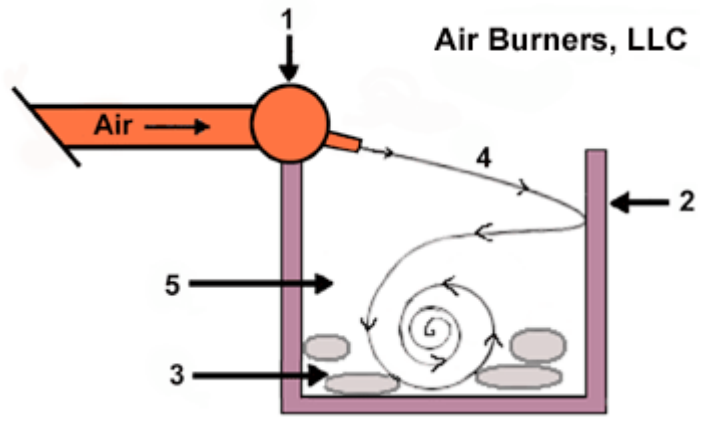
As described in earlier sections, in 2003 LANL burned 18,671 tons of wood and brush from fire mitigation and tree thinning activities in three ACDs. The ACDs potentially emit dioxins during the wood burning process. No specific information is available on dioxin emissions from ACDs.

In order to determine a reasonable dioxins emission factor, a literature review was conducted. Several factors influence dioxin formation during the combustion of wood. These factors include the following: temperature of the burn, amount of air available to the fire, and specific properties of the material being burned. In a letter from Air Burners LLC, which manufactures the ACDs, the company addresses the production of dioxins from use of the ACDs. It states that the following conditions are present when the ACDs are in use:

1. Over-oxygenation of fire
2. Very turbulent environment in firebox
3. Very high temperatures (1,200 °C to 1,500 °C)
4. Very long retention time

Higher-temperature burns result in more complete combustion and lower dioxin formation rates. Within a temperature range of 200 °C to 450 °C, the concentration of dioxins increases to some maxima; outside this range, the concentration diminishes. The ACDs burn at extremely high temperatures. Assuming the fire spends very little time between 200 and 450 °C when cooling, it can be concluded that production of dioxins would be particularly low due to the ACD's high burning temperatures.

The amount of oxygen available to the fire also affects the amount of dioxins formed during the combustion process. Decreases in oxygen during combustion generally increases dioxin yield. The ACDs increase the flow of oxygen to the combustion chamber by constantly directing a high-velocity airflow onto the fire, thus continually circulating the air within the ACD chamber. This flow of air helps keep the combustion products in the heat for a longer time, allowing for more complete combustion of the wood and fewer environmentally degrading emissions, including dioxins. Figure 4-1 illustrates the airflow within the ACD.



1 Air curtain machine manifold and nozzles directing high velocity air flow into refractory lined fire box or earthen trench.

2 Refractory lined wall as on the S-Series machines, or earthen wall as used with the T-Series trench burners.

3 Material to be burned.

4 Initial airflow forms a high velocity "curtain" over fire.

5 Continued air flow over-oxygenates fire keeping temperatures high. Higher temperatures provide a cleaner and more complete burn.[4]

Figure 4-1. Diagram of Air Curtain Destructor

Within the EPA's "Database of Sources of Environmental Releases of Dioxin-like Compounds in the United States,"[13] the dioxin emission factor given for industrial wood combustion is 0.5952 ng/kg. This value is based on an average of several source tests for industrial wood-fired boilers and incinerators. The ACDs only burn clean wood while the wood burned by the industrial boilers and incinerators contains more treated wood, causing the emission factor to be larger for industrial wood combustion. Also, the boilers and incinerators operate at lower temperatures and with less air available to the fire.

As a result of researching the factors that affect emissions of dioxins and comparing them to the burning parameters of the ACDs, an emissions factor was determined. An emission factor of 0.5 ng/kg wood burned was used to estimate dioxins emissions from the ACDs. Using the tons of wood burned by the ACDs in 2003 (18,671 tons), and the chosen emission factor, the amount of dioxins emitted in 2003 was calculated to be 0.0085 grams.

Table 4-4 summarizes the amount of dioxins formed from all sources characterized for 2003.

Table 4-4. Dioxins Threshold Determinations for 2003

Description	Amount of Dioxin Formed (grams)	EPCRA 313 Activity Determination	EPCRA 313 Threshold (grams)
HE Expended	2.45×10^{-7}	Manufactured	0.1
HE Burned	3.08×10^{-9}	Manufactured	0.1
Fuel Combustion	4.19×10^{-4}	Manufactured	0.1
Wood Combustion in ACDs	0.0085	Manufactured	0.1
Total Dioxin Formed	0.009		0.1

4.5 Nitrate Compounds

According to EPA's EPCRA Section 313 Guidance, "List of Toxic Chemicals within the Water Dissociable Nitrate Compounds Category and Guidance for Reporting,"[14] nitrate compounds may be manufactured through the elemental neutralization of nitric acid and through the collection and treatment of sanitary wastewater. The reporting thresholds for nitrate compounds are 25,000 lb for manufacture or process and 10,000 lb for otherwise used. The EPA guidance provides a list of approximately 50 nitrate compounds that are included as water-dissociable nitrate compounds. Although this list is not exhaustive, it provides commonly identified nitrate compounds. Only those compounds in aqueous solution (>50% water) are required to be reported.

After a thorough examination of the various sources of nitrate compounds at LANL, it was determined that reporting was not required. For the manufacture threshold, sources reviewed included waste nitric acid treated at the Radioactive Liquid Waste Treatment Facility (RLWTF), which uses sodium hydroxide in an elementary neutralization process. The other source was the SWSC. The nitrate compounds that were applied to the otherwise used threshold included nitrate compounds purchased or used during 2003. Other nitrate compounds evaluated were determined to be nonaqueous and were not required to be included in threshold determinations.

Procurement of Nitrate Compounds

A query of the LANL chemical tracking system (ChemLog) was performed to determine the amount of nitrate compounds applied to the otherwise used threshold. Without determining if the various nitrate compounds were water dissociable, or if they fell under the nonaqueous exemption, it was determined that the threshold was not met. Less than 200 lb of nitrate compounds were identified through purchasing during 2003. No additional sources were identified that would contribute to this threshold.

Explosives Activities

For several years LANL reviewed explosives activities, including OB/OD, and prepared detailed calculations to estimate the amount of nitrate compounds manufactured, processed, or otherwise used in these activities. The amounts were always very low, on the order of a couple hundred pounds. In 1998 it was determined that none of the nitrate compounds associated with these activities are in aqueous form and are not reportable under EPCRA. Therefore, these detailed calculations were discontinued.

Sanitary Wastewater

The SWSC collects the sanitary waste (sewage and other allowable discharges) from several LANL facilities and treats the waste in a standard primary (physical), secondary (biological) treatment system. EPA guidance for nitrate compounds provides information on calculating nitrate compounds in sanitary wastewater. Information was collected from the SWSC on nitrate influent concentrations and flow rates. The average nitrate concentration was 1.25 mg/L and total flow into the system during 2003 was 70,754,000 gallons. Using this data and EPA guidance, the total amount of sodium nitrate was calculated to be 937 lb in 2003. Although the nitrate values from the influent do not reflect what was manufactured at the SWSC, they are the only analytical data available for nitrate compounds. It is assumed that 937 lb is a conservative number. There is a possibility that other nitrogen species are converted to nitrate compounds during the treatment process, but the mass of nitrogen/nitrate is assumed to remain fairly constant. During processing at the SWSC, most of the nitrogen-containing materials are broken down and released as nitrogen gas in the digestion process. Requests were made for analytical data of the sludge from the process, but this analysis did not contain information on nitrates.

Nitric Acid Neutralization

The amount of nitric acid used in plutonium processing was significantly higher than in previous years at 23,000 liters (see Section 7). This increase was due to the ramping up of a process for purification of old weapons-grade plutonium into material that can be used in generating electrical power. The process is called mixed oxide (MOx) fuels. Nitric acid is used to dissolve plutonium and to regenerate ion exchange beds.

Waste acid from the MOx process and from the Nitric Acid Recycling System (NARS), also located at the plutonium processing facility, is sent to the RLWTF for treatment. The quantity of nitric acid received at the RLWTF in 2003 was 43,000 liters. The difference in the amount used versus the amount of waste acid treated is due to dilution. The acid used is 70% nitric acid and the waste is 9.5% (approximately 7 molar) nitric acid. The amount of nitric acid in the waste stream that was treated at the RLWTF was calculated using a formula from the EPA Nitrate Compound Guidance document.[14] The total amount of nitric acid treated was calculated to be 13,500 lb. The nitrate compounds (sodium nitrate) generated from the neutralization process totaled 18,200 lb.

Summary

Table 4-5 summarizes the threshold determination for nitrate compounds for 2003.

Table 4-5. Nitrate Compounds Threshold Determination for 2003

Description	Amount of Nitrate Compounds (lbs)	EPCRA 313 Activity Determination	EPCRA 313 Threshold (lbs)
Procurement	163	Otherwise Used	10,000
Explosives Activities	Not calculated	Not in aqueous form	--
SWSC	937	Manufactured	25,000
RLWTF	18,200		
Total Manufactured	19,137		

5.0 LEAD AND FORM R REPORTING

5.1 Threshold Determination

Lead and lead compounds are used in various places throughout LANL. Procurement records were evaluated and users of large quantities of lead were interviewed to gain an understanding of how lead was actually used in 2003. As part of the PBT rule, the threshold for EPCRA Section 313 reporting of lead was reduced to 100 lb starting calendar year 2001. In 2003, lead was used at several locations within the Laboratory and exceeded the otherwise used threshold for EPCRA 313 reporting. Each use is described below.

Lead Procurements

A listing of all procurements in 2003 of lead and lead compounds was extracted from ChemLog. Line items containing a CAS number for lead (7439-92-1) were included, as well as any line items containing the word "lead" or the symbol "Pb" in the text description.

The total amount of lead and lead compounds added to ChemLog in 2003 was 36.3 and 1.6 lb, respectively. According to EPCRA 313 guidance documents, the laboratory exemption is applied to the quantity of a listed toxic chemical that is manufactured, processed, or otherwise used in a laboratory under the supervision of a technically qualified person. Line items in ChemLog that were clearly described as *lead standards* were assumed to be used in a laboratory setting and exempt from reporting. This accounted for 33.4 lb. The total amount of lead from procurements applied to the otherwise used threshold is 2.9 lb.

Lead Use at the Firing Range

Lead is a component in various types of bullets. LANL maintains an onsite firing range for training security personnel. The firing range at LANL keeps detailed records of the amount and type of munitions expended. The U.S. Department of Defense developed software for estimating usage and releases of EPCRA 313 chemicals from various munitions activities,[15] The TRI-Data Delivery System (TRI-DDS) software was used to calculate the amounts of toxic chemicals associated with munitions used at LANL for comparison with EPCRA 313 reporting thresholds and calculation of environmental releases. Some ammunition used at LANL was not represented in TRI-DDS. In these cases, the manufacturer was contacted to obtain specific information on lead for that ammunition. Using this software and manufacturer data, it was determined that 5,832 lb of lead were shot at the firing range in 2003. For EPCRA threshold determinations the amount of pure lead used, as well as the amount of any lead compounds "coincidentally manufactured," was evaluated. This resulted in approximately 5.8 lb of lead compounds emitted to the air and 5,832 lb of lead released to land, both of which are included in the Form R report.

Lead-Bismuth Test Loop

There are two lead-bismuth test loops located at LANL. The smaller loop was not operated or opened and no new lead-bismuth was added or used in 2003. A new lead-bismuth test loop was filled with approximately 8,000 lb of the lead-bismuth alloy in late 2001. No additional lead-bismuth was added to this test loop in 2003. The lead-bismuth in the test loops is contained in a closed system and no environmental releases of lead occurred in 2003. Therefore, the article exemption applies to this equipment.

Air Curtain Destructors

As described in previous sections, in 2003, LANL burned a total of 18,671 tons of wood and wood scrap in ACDs. EPA guidance for reporting releases of lead and lead compounds states that the typical concentration of lead in wood is 20 ppm.[16] Using this lead concentration it was calculated that 747 lb of lead were processed from the burning of wood in the ACDs. The 747 lb were applied to the otherwise use threshold. Additionally, the burning of wood generates lead compound emissions. Emissions of lead compounds from the ACDs totaled 8.1 lb, which applies to the manufactured threshold.

Fuel Combustion

Lead can be found in trace amounts in many materials. Fuel oil and natural gas are two materials used at LANL that contain trace quantities of lead. Because lead is one of the PBTs and the *de minimis* exemption does not apply, these trace quantities must also be evaluated against the 100-lb lead threshold. According to EPA guidance,[16] the concentration of lead in diesel fuel is 0.5 ppm and 0.05 mg/m^3 in natural gas. In 2003, LANL used 1,149.7 million standard cubic feet of natural gas, which contained 3.58 lb of lead. LANL also burned 34,832 gallons of diesel fuel, which contained 0.07 lb of lead.

Therefore, a total of 3.65 lb is applied to the otherwise used threshold for lead. Additionally, during fuel combustion, lead in the fuel is converted into various lead compounds, which is considered to be coincidental manufacture. In 2003, LANL emitted lead compound emissions from the following combustion sources: the TA-21 steam plant, the asphalt plant, the TA-3 power plant, and numerous small natural gas-fired boilers. The lead compound emissions from these sources totaled 0.58 lb toward the manufactured threshold.

Lead Bricks and Lead Shielding

LANL continues to maintain an inventory of lead shielding and lead bricks throughout the Laboratory. Based on a 2001 wall-to-wall inventory, LANL has an inventory of approximately 879,500 lbs of lead shielding and lead bricks. This lead is considered article exempt and does not count towards any EPCRA 313 thresholds unless it is processed in some way (melting, cutting, grinding, etc.) that would result in 0.5 lb or greater releases to the environment. In 2003, there was no onsite processing of lead bricks or shielding.

Lead Melting and Lead Shielding Decontamination

Historically at LANL, lead has been melted and formed into specific shapes for glove box and exposure shielding. Lead melting as an activity is applied to the otherwise used threshold and subject to the 25,000-lb threshold. No lead melting activities occurred onsite at LANL in 2003. Lead shielding decontamination was discontinued at LANL. The activity did not operate in 2003.

Summary

Based on the firing range activities and wood burning in the ACDs, LANL otherwise used more than 100 lb of lead in 2003. LANL did not trigger reporting for lead compounds. The thresholds for the different activity determinations involving lead and lead compounds are summarized in Tables 5-1 and 5-2.

Table 5-1. Lead Threshold Determinations for 2003

Description	Amount of Lead (lb)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lb)
Purchasing of Lead Standards and Instruments	33.4	Procurement data and interviews with facility representatives	Laboratory Exempt	NA
Lead Melting	0	Facility Representatives	Otherwise Used	100
Lead Shielding Decontamination	0	Facility Representatives		
Fuel Use	3.65	Fuel Use Records and EPA Guidance		
Firing Range	5,832	Firing Range Logbooks and TRI-DDS		
Procurement	2.9	Procurement Data		
Air Curtain Destructors	747	ACD Operating Records and EPA Guidance		
Total Lead Otherwise Used	**6,585**			**100**

Table 5-2. Lead Compound Threshold Determinations for 2003

Description	Amount of Lead Compounds (lb)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lb)
Fuel Combustion	0.58	Fuel Use Records and EPA AP-42	Manufactured	100
Firing Range	5.8	Firing Range Logbooks and TRI-DDS		
Air Curtain Destructors	8.1	ACD Operating Records and EPA AP-42		
Procurement	1.6	Procurement Data	Otherwise Used	100
Lead-Bismuth Test Loop	0	Procurement and Facility Interviews		
Total Lead Compound Use	**16.1**			**100**

5.2 Environmental Releases and Offsite Disposal

Air Emissions

Lead emissions were calculated from three operations at the Laboratory: the firing range, the ACDs, and fuel combustion. Lead air emissions from the firing range were calculated using the TRI DDS.[15] Using this model, the total amount of lead released as fugitive air emissions was 5.8 lb.

The ACDs at LANL burned 18,671 tons of wood and slash from forest thinning activities and 1,053 gallons of diesel fuel used as a fire starter. Using AP-42 emission factors for wood burning in boilers,[4] emissions of lead compounds from the ACDs were calculated to be 8.1 lb. These are considered fugitive emissions.

In 2003, LANL emitted lead compound emissions from the following combustion sources: TA-21 steam plant, asphalt plant, TA-3 power plant, stand-by stationary generators, and numerous small boilers and heaters. Using fuel use records and AP-42 emission factors, emissions from these combustion sources totaled 0.58 lb of lead compounds. Table 5-3 summarizes lead air emissions from LANL as reported on the Form R.

Table 5-3. Lead Air Emissions from LANL in 2003

Emission Source	Total Lead Emissions (lbs)	Fugitive or Stack
Firing Range	5.8	Fugitive
Air Curtain Destructors	8.1	Fugitive
Fuel Combustion	0.58	Stack

Releases to Water

Releases to receiving streams are a result of storm water run-off and wastewater released from various LANL sites through permitted National Pollutant Discharge Elimination System (NPDES) outfalls.

Wastewater Discharges

Data collected as part of the 2003 NPDES Outfall Monitoring Program were used to calculate the mass of lead discharged. The tabular data from LANL's NPDES program include total annual flows and analytical results for numerous parameters from samples collected at a number of NPDES outfalls. Samples for lead were collected once annually from 16 outfall locations and multiple samples were collected from NPDES Outfalls 021, 048, and 051. Data for each of these three outfalls were averaged. For each NPDES outfall, lead discharges were calculated by multiplying total yearly flow by the average concentration of lead from that outfall. The resulting mass from each outfall was then summed, resulting in a total discharge of 0.12 lb of lead from NPDES outfalls in 2003.

One of the permitted outfalls (051), the RLWTF, pretreats the influent to remove a large portion of the lead (and other metals) prior to discharge. Analytical data for influent prior to treatment compared with analytical data after treatment indicate the facility is removing approximately 76% of lead prior to discharge based on 2003 analytical results. Water is treated at the facility through precipitation, filtration, and reverse osmosis.

Storm Water

Lead concentration data for storm water released to receiving streams during calendar year 2003 were obtained from the Water Quality Database Reports web site (http://wqdbworld.lanl.gov/) using the Chemistry/Metals/Surface Water Runoff lookup tables. The data set provided location name, sample type, date sample was collected, and analytical results in µg/L. For many of the sample locations, total annual flow in acre-feet was obtained from the report titled "Surface Water Data at Los Alamos National Laboratory, 2003 Water Year."[17] For samples collected from locations not included in LANL's water year report, LANL's Water Quality and Hydrology Group provided estimates of total discharge.

In 2003, a correction was made for the volume of water released from the Los Alamos County Municipal Wastewater Treatment Facility in Pueblo Canyon. This County facility is just

upstream of the LANL sampling/flow station "Pueblo at SR-502." It was assumed that all of the flow recorded at the "Pueblo at SR-502" station was attributable to treated municipal wastewater effluent and not representative of release from LANL. While this flow adjustment was made for the sampling station downstream of the wastewater treatment plant, sampling stations upstream of the wastewater treatment facility were included in the analysis.

Additionally, analytical results from surface water samples collected at locations upstream from or outside the potential zone of impact from LANL releases were not included in total calculated amounts of lead released from LANL in 2003. The locations include those outside Laboratory property boundaries where no known Laboratory activities or operations have occurred or upstream of current or historic Laboratory activities. Data from stations located within Frijoles Canyon were excluded. Portions of Guaje/Rendija and Pueblo Canyons, which are not located on Laboratory property but are known to have been impacted by historical Laboratory activities, were included in this analysis.

As mercury and lead are naturally occurring elements and previous LANL studies have established background concentrations for mercury and lead in various media including sediment, the analytical concentrations were adjusted to account for background concentrations. Background concentrations, or upper threshold levels (UTL), for sediments in canyons within the LANL boundary are 0.1 μg/g and 19.7 μg/g for mercury and lead, respectively (Bruce Gallaher, Water Quality and Hydrology Group, personal communication). Water samples collected as part of LANL's annual surveillance program always contain a significant amount of solid particulate entrained within the surface water stream at the time of sampling. This particulate mass contains a natural amount, or background concentration, of mercury and lead. As this natural amount of mercury and lead is not attributable to LANL operations, it is necessary to estimate the amount of natural mercury and lead in each sample by multiplying the weight of solids in each sample, as represented by total suspended solids, by the LANL UTL. Following estimation of background concentrations of mercury and lead in each sample, the background amount was subtracted from the analytical metal concentration for each sample.

Once background-adjusted concentrations for each applicable location were established, the concentration was then multiplied by the measured or estimated annual flow at each sampling location. A single mass value for each sampling location was then derived by averaging all samples collected from each location during 2003. The average mass for each location was used as representative in calculating a total LANL release to the environment.

Once the average mass was calculated for each sampling location, the mass from all locations was summed. Based on this sum, the total estimated mass of lead released from LANL in base flow and storm water during 2003 was 120 lb. Results were then summed by major drainage on the Pajarito Plateau. Each major drainage area is comprised of several tributary drainages.

For Form R reporting, the total amount of lead released to each receiving stream is reported. For both permitted outfall and storm water data, the receiving stream was determined by finding the monitoring site on a map and determining the nearest canyon. All canyons were assumed to be tributaries of the Rio Grande. Total lead released to canyon tributaries from

LANL property was 120 lb in calendar year 2003. Table 5-4 summarizes lead releases to receiving streams by canyon as reported on the Form R.

Table 5-4. Summary of 2003 Lead Discharges to Receiving Streams by Canyon

Canyon	Storm water (lb)	NPDES Discharges (lb)	Total (lb)
Ancho Canyon Tributary to Rio Grande	8.80	0.0	8.80
Cañada del Buey	0.29	0.0	0.29
Los Alamos Canyon Tributary to Rio Grande	25.21	0.023	25.22
Mortandad Tributary to Rio Grande	1.43	0.045	1.48
Pajarito Canyon Tributary to Rio Grande	0.09	0.0	0.09
Sandia Canyon Tributary to Rio Grande	83.91	0.081	83.99
Water Canyon Tributary to Rio Grande	0.0	0.001	0.001
Totals	**119.74**	**0.12**	**119.86**

Releases to Land

Lead releases to land occur onsite at LANL as a result of firing range activities. Lead releases to land are based on the amount of munitions used during the year and the lead content of the munitions used. Lead content for munitions used at LANL was estimated by matching the munitions types with those listed in the TRI-DDS. A total of 5,832 lb of lead was released to land at the firing range at LANL in 2003.

Offsite Waste Disposal

LANL performed no onsite waste disposal of lead-contaminated wastes in 2003. All lead-contaminated waste was sent offsite to EPA-approved facilities for disposal or recycling. Data, including shipment weight and lead concentration, were obtained for all lead-contaminated wastes sent offsite for disposal in 2003. Waste disposal records were evaluated to determine any waste shipments exempt from reporting. Intact light bulbs sent offsite for disposal are exempt under the article exemption. Waste generated in a laboratory under the direct supervision of a technically qualified individual is also exempt from reporting.

In 2003, LANL completed a large decontamination and decommission (D&D) project of the Omega West Reactor. This D&D project resulted in disposal of 38,700 lb of radioactively contaminated lead. This legacy lead waste was shipped to Envirocare of Utah, Inc., where it was macroencapsulated with grout, coated with a plastic layer, and placed in a landfill disposal cell.

Total reportable lead weight from all nonexempt waste disposal was calculated to be 50,790 lb. Table 5-5 provides a summary of lead waste streams that were sent offsite to various disposal and recycling companies in 2003. For the purposes of Form R reporting, each

receiving facility was contacted to determine final disposition of lead in the waste that was shipped offsite.

Table 5-5. Summary of Lead Waste Sent Offsite from LANL in 2003

Company	Location	Facility EPA ID	Ultimate Fate of Waste	Total Lead (lb)
Clean Harbors, Aragonite, LLC. (Formerly Safety Kleen)	Aragonite, UT	UTD981552177	Landfill	1,090
Envirocare of Utah, Inc.	Clive, UT	UTD982598898	Landfill	49,559
Diversified Scientific Services, Inc.	Kingston, TN	TND982109142	Landfill	0.3
Material and Energy Corporation	Oak Ridge, TN	TNR000005397	Landfill	5.29×10^{-7}
Onyx Environmental Services, LLC.	Henderson, CO	COD980591184	Recycled for liquids; Landfill for Solids	127
Onyx Environmental Services, LLC. (Formerly Superior Special Services)	Phoenix, AZ	AZ0000337360	Recycled	7.5
Perma-Fix, Inc.	Gainesville, FL	FLD980711071	Landfill	0.5
Phibro-Tech, Inc.	Santa Fe Springs, CA	CAD008488025	Recycled	4.1
Waste Control Specialists	West, Andrews County, TX	TXD988088464	Landfill	2.6
Los Alamos County Landfill	Los Alamos, NM	NA	Landfill	1.24
		Total		**50,792**

5.3 Other Information Provided on Form R Report

Environmental releases of lead as air emissions, to surface waters, and onsite land releases were reported to be 14.5 lb, 120 lb, and 5,832 lb, respectively. These values are included in Section 5 of the Form R, *Quantity of the Toxic Chemical Entering Each Environmental Medium Onsite*. A total of 50,792 lb of lead was reported in Section 6.2 of the Form R, *Transfers to Other Offsite Locations.*

Methods of treating lead in wastewater effluent prior to discharge were included in Section 7A of the Form R. This section details onsite waste treatment methods and efficiency. Wastewater from industrial processes at LANL is discharged to the RLWTF prior to discharge to NPDES permitted Outfall 051. The RLWTF conducts a series of treatment steps that reduce the amount of metals in the effluent prior to discharge. The wastewater stream goes through precipitation, filtration, and reverse osmosis treatment. All wastewater is sampled for lead before and after treatment. Based on analytical results for 2003, the RLWTF resulted in a 76% treatment efficiency of lead in the wastewater. Sections 7B and 7C of the Form R relate to onsite energy recovery and recycling. LANL performed no onsite processes applicable to these sections for lead in 2003.

Section 8 of the Form R refers to source reduction and recycling activities. The information provided by EPA for this section states that no energy recovery is possible for lead, either onsite or offsite. LANL also reported no onsite recycling or treatment. Approximately 11 lb of the lead shipped offsite were recycled. Estimates based on this year's releases were given for the subsequent two reporting years. In addition to lead released to the environment for offsite disposal, air, and water emissions, LANL reported 42,575 lb of lead in waste shipped offsite for disposal as a result of one-time activities such as the D&D of the Omega West Reactor.

Section 8.9 of the Form R reports the production or activity ratio, an estimated measure of production or activity involving the reported chemical, as compared to the previous year. Because LANL is not a production facility, a surrogate measure was needed to complete this section of the Form R. To determine this value, the firing range was used as a representative activity that would maintain a consistent use of lead. The amount of lead munitions used in 2003 was divided by the amount used in 2002 to obtain an activity ratio of 0.7.

6.0 MERCURY AND FORM R REPORTING

6.1 Threshold Determination

Mercury and mercury compounds are used in various places throughout LANL. Procurement records were evaluated and users of large quantities of mercury were interviewed to gain an understanding of how mercury was actually used in 2003. As part of the PBT rule, the threshold for reporting mercury was reduced to 10 lb starting calendar year 2000. In 2003, mercury use at the Laboratory exceeded the otherwise used threshold for EPCRA 313 reporting. Each use is described below.

Mercury Procurements

A listing of 2003 procurements of mercury and mercury compounds was extracted from ChemLog. Line items containing a CAS number for mercury (7439-97-6) were included, as well as line items containing the word "mercury" or the symbol "Hg" in the text description. The total amount of mercury and mercury compounds added to ChemLog in 2003 was 47.6 lb. However, upon investigation of these mercury-containing purchases, many of the purchases were actually for laboratory standards containing parts per million quantities of mercury and other metals. Additionally, according to EPCRA Section 313 guidance documents, the laboratory exemption applies to the quantity of a listed toxic chemical that is manufactured, processed, or otherwise used in a laboratory under the supervision of a technically qualified person. Line items in ChemLog described as *mercury standards* or *instruments* were assumed to be used in a laboratory setting and exempt from reporting. This accounted for 46.7 lb. The total amount of mercury from procurements applied to the otherwise used threshold is 0.9 lbs.

Los Alamos Neutron Science Center Shutter System

The largest use of mercury at the Laboratory is in the Los Alamos Neutron Science Center (LANSCE) shutter system. Reservoirs of mercury are used as shields on the neutron beam shutter system. When the beam is operated, pressurized helium is forced into the mercury reservoir, pushing the mercury up into a headspace and allowing the neutron beam to pass through the shutter. LANSCE maintains 12 neutron beam shutter systems, each with a reservoir of mercury. The total amount of mercury in these reservoirs is approximately 12,000 lb. Each reservoir is a closed system and only opened occasionally when minor repairs or maintenance are needed.

During 2003, several of the mercury shutter systems were dismantled and replaced with new closed systems. Mercury was drained from the systems during the upgrade project, stored in temporary storage containers, and then added back into the retrofitted shutters. The total amount of mercury removed and added to mercury shutter systems in 2003 is 2,200 lb, which is above the 10-lb EPCRA 313 otherwise used threshold for reporting.

Fuel Combustion

In 2003, LANL emitted mercury emissions from the following combustion sources: TA-21 steam plant, asphalt plant, TA-3 power plant, and numerous small boilers that used approximately 1,149.7 million standard cubic feet of natural gas. Mercury emissions from these sources totaled 0.31 lb towards the manufactured threshold. Additionally, mercury is found in diesel fuel as an impurity. According to EPA guidance, the concentration of mercury in diesel fuel is 0.001 ppm.[18] LANL burned 34,832 gallons of diesel fuel in 2003 and this equates to 0.00025 lb of mercury.

Air Curtain Destructors

As described in previous sections, in 2003 LANL burned 18,671 tons of wood and wood scrap in ACDs. Wood burning generates a small quantity of mercury compound

emissions. An AP-42 emission factor for mercury compound emissions for burning wood residue in boilers was used to estimate emissions from the wood burning in the ACDs.[4] An emission factor of 3.5×10^{-6} lb per MMBtu heat input was used. Assuming an average heat content of the wood at 0.0045 MMBtu/lb wood, emissions of mercury compounds from wood burning were estimated to be 0.6 lb.

Table 6-1 summarizes uses of mercury at LANL in 2003.

Table 6-1. Mercury Threshold Determinations for 2003

Description	Amount of Mercury (lb)	Data Source	EPCRA 313 Activity Determination	EPCRA 313 Activity Threshold (lb)
Purchasing of Mercury Standards and Instruments	46.7	Procurement data and facility personnel interviews	Laboratory Exempt	NA
Other Procurement	0.9	Procurement Records	Otherwise Used	10
LANSCE Shutter System	2,200	LANSCE Facility Records		
Fuel Combustion	0.00025	Fuel Use Records and EPA Guidance		
Fuel Combustion	0.3	Fuel Use Records and EPA AP-42	Manufactured	10
Air Curtain Destructors	0.6	ACD Operating logs and EPA AP-42		

6.2 Environmental Releases and Offsite Disposal

Air Emissions

Mercury emissions were calculated from three operations at the Laboratory: LANSCE shutter system activities, the ACDs, and fuel combustion.

In April 2002, a mercury monitor was installed at LANSCE in the area near the mercury shutters. This monitor collects five-minute readings of mercury concentrations in room air in nanograms of mercury per cubic meter. Concentration data recorded from this monitor were used to develop an average concentration of mercury in room air during work days, i.e., days when the shutters were opened for maintenance, and an average concentration for non-work days, i.e., days when the shutter systems remained closed. The flow rate from the stack at the Lujan Center at LANSCE is 12,000 cubic feet per

minute. This stack includes ventilation from two different rooms at the Lujan Center. As a conservative assumption, the total 12,000 cubic feet per minute flow was assumed to have mercury concentrations similar to those monitored in the room air near the shutters. The total concentration of mercury for each day was calculated with the following formula:

$$\sum [(\text{monitor reading}) * (\text{flow rate}) * (5 \text{ min. interval})]$$

The sum of all daily monitoring results equates to 0.096 lb for a conservative estimate of mercury stack emissions from LANSCE activities in 2003.

In 2003, LANL burned 18,671 tons of wood, and 1,053 gallons of diesel fuel in the ACDs. Using AP-42 emission factors,[4] emissions of mercury from the ACDs for 2003 were calculated to be 0.6 lb. These are considered fugitive emissions.

In 2003, LANL emitted mercury emissions from the following combustion sources: TA-21 steam plant, asphalt plant, TA-3 power plant, and numerous small boilers. The emissions from these sources totaled 0.3 lb of mercury stack emissions.

Table 6-2 summarizes mercury air emissions from LANL, as reported on the Form R.

Table 6-2. Mercury Air Emissions from LANL in 2003

Emission Source	Total Mercury Emissions (lbs)	Fugitive or Stack
LANSCE Shutter System Activities	0.096	Stack
Air Curtain Destructors	0.6	Fugitive
Fuel Combustion	0.3	Stack

Releases to Water

Releases to receiving streams are a result of storm water run-off and from wastewater released from various LANL sites through permitted NPDES outfalls. The methodology used to calculate releases of mercury to receiving streams is the same as that described in Section 5.2 for lead releases. Refer to Section 5.2 of this report for a detailed description of how water discharges were calculated.

Wastewater Discharges

A total discharge of 0.0001 lbs of mercury from NPDES outfalls was reported on the Form R for 2003.

Storm Water

A total discharge of 1.36 lb of mercury from storm water was reported on the Form R for 2003.

For Form R reporting, the total amount of mercury released to each receiving stream is reported. For both permitted outfall and storm water data, the receiving stream was determined by finding the monitoring site on a map and determining the nearest canyon. All canyons were assumed to be tributaries of the Rio Grande. The total amount of mercury released to canyon tributaries from LANL property was 1.36 lb in calendar year 2003. Table 6-3 summarizes mercury releases to receiving streams by canyon, as reported on the Form R.

Table 6-3. Summary of 2003 Mercury Discharges to Receiving Streams by Canyon

Canyon	Storm water (lb)	NPDES Outfall Discharges (lb)	Total (lb)
Ancho Canyon Tributary to Rio Grande	8.97×10^{-05}	0.00	8.97×10^{-05}
Los Alamos Canyon Tributary to Rio Grande	0.02	0.00	0.02
Mortandad Tributary to Rio Grande	0.029	0.00014	0.029
Pajarito Canyon Tributary to Rio Grande	0.0026	0.00	0.003
Pueblo Canyon Tributary to Rio Grande	0.035	0.00	0.035
Sandia Canyon Tributary to Rio Grande	1.28	0.00	1.28
Water Canyon Tributary to Rio Grande	0.0	0.00	0.00
Total	**1.37**	**0.00014**	**1.37**

Releases to Land

There were no onsite releases of mercury to land.

Offsite Disposal of Waste

LANL performed no onsite waste disposal of mercury-contaminated wastes in 2003. All mercury-contaminated waste is sent offsite to EPA-approved facilities for disposal or recycling. Data, including shipment weight and mercury concentration, were obtained for all mercury-contaminated wastes sent offsite for disposal in 2003. The waste disposal records were evaluated to determine any waste shipments that were exempt from reporting. Intact light bulbs or thermometers sent offsite for disposal are exempt under the article exemption. Waste generated in a laboratory under the direct supervision of a technically qualified individual is also exempt from reporting.

Total reportable mercury weight from all nonexempt waste disposal was calculated to be 6,958 lb. Of this, 6,907 pounds of pure mercury were due to an inventory cleanout at the LANSCE facility. The 6,907 pounds of mercury were shipped offsite for recycle and reuse and were not ultimately released to the environment. Table 6-4 provides a summary of

mercury waste streams sent offsite to various disposal and recycling companies in 2003. For the purposes of Form R reporting, each receiving facility was contacted to determine final disposition of the mercury in the waste shipped offsite.

Table 6-4. Summary of Mercury Waste Sent Offsite from LANL in 2003

Company	Location	Facility EPA ID	Ultimate Fate of Waste	Total Mercury (lb)
Clean Harbors, Aragonite, LLC. (Formerly Safety Kleen)	Aragonite, UT	UTD981552177	Landfill	19.2
Envirocare of Utah, Inc.	Clive, UT	UTD982598898	Landfill	5.3
Diversified Scientific Services, Inc.	Kingston, TN	TND982109142	Landfill	5.55×10^{-5}
Onyx Environmental Services, LLC.	Henderson, CO	COD980591184	Landfill for Solids	26.96
Onyx Environmental Services, LLC. (Formerly Superior Special Services)	Phoenix, AZ	AZ0000337360	Recycle	6,907
Perma-Fix, Inc.	Gainesville, FL	FLD980711071	Landfill	0
Waste Control Specialists	Andrews County, TX	TXD988088464	Landfill	0.05
		Total		**6,958**

6.3 Other Information Provided on Form R Report for Mercury

Environmental releases of mercury as air emissions and to surface waters were reported to be 1.0 lb and 1.4 lb, respectively. These values are included in Section 5 of the Form R, *Quantity of the Toxic Chemical Entering Each Environmental Medium Onsite*. A total of 6,958 lb of mercury was reported in Section 6.2 of the Form R, *Transfers to Other Offsite Location,* with 6,907 lb of this being shipped offsite for recycle.

Methods of treating NPDES outfall mercury amounts were included in Section 7A of the Form R. This section details onsite waste treatment methods and efficiency. Wastewater from industrial processes at LANL is discharged to the RLWTF prior to discharge to NPDES permitted Outfall 051. The RLWTF conducts a series of treatment steps that reduce the amount of metals in the effluent prior to discharge. The wastewater stream goes through precipitation, filtration, and reverse osmosis treatment. All wastewater is sampled for mercury before and after treatment. Based on analytical results for 2003, the RLWTF resulted in a 99% treatment efficiency of mercury in the wastewater. Sections 7B and 7C of the Form R relate to

onsite energy recovery and recycling. LANL performed no onsite processes applicable to these sections for mercury in 2003.

Section 8 of the Form R refers to source reduction and recycling activities. The information provided by EPA for this section states that no energy recovery is possible for mercury, either onsite or offsite. LANL also reported no onsite recycling or treatment. Approximately 6,907 lb of the mercury shipped offsite were recycled. Estimates based on this year's releases were given for the subsequent two reporting years.

Section 8.9 of the Form R reports the production or activity ratio, an estimated measure of the production or activity of the reported chemical at the facility, as compared to the previous year. Because LANL is not a production facility a surrogate measure was used to complete this section of the Form R. The mercury in shutter systems at LANSCE is the largest amount of mercury at LANL. When the beam operates, mercury is moved through the shutter system. Therefore, the operation of the beam at LANSCE was chosen to estimate the activity ratio for mercury. Comparing beam operations in 2002 to 2003, an activity ratio of 0.85 was calculated.

7.0 NITRIC ACID AND FORM R REPORTING

In general, nitric acid is used in high volume at the Laboratory every year. The main uses are research and development activities, sample preparation, plutonium processing, and the Laboratory's bioassay program. Small amounts of nitric acid are used for cleaning glassware. The total amount of nitric acid used at LANL in 2003 exceeded the EPCRA Section 313 otherwise used threshold of 10,000 lb.

7.1 Threshold Determination

Procurement

In 2003, a total of 5,291 lb of nitric acid was procured at the Laboratory based on queries of the ChemLog system. Some of the purchase records indicate nitric acid is actually 69% to 71% nitric acid in an aqueous solution or more dilute solutions. After taking into account the percent nitric acid in solution, the total amount of nitric acid purchased was determined to be 4,969 lb.

Large users of nitric acid were contacted to determine how the nitric acid was used. Relatively large quantities of nitric acid continue to be used for the bioassay program (monitoring employees for radioactive elements). In 2003 this accounted for 2,804 lb of the nitric acid. Numerous other users within the Chemistry Division were contacted and verified the use of nitric acid for sample preparation and analysis. In 2003, this use totaled 585 lb. Both of these activities qualify as laboratory exempt. Based on conversations with laboratory personnel, it was assumed approximately 10% of the nitric acid used for sample preparation and analysis (58.5 lb) was used for cleaning laboratory glassware. The quantity of nitric acid used by personnel that were not contacted, or that described their use of nitric acid as non-laboratory related, totaled 1,639 lb. As a conservative assumption, this amount is assumed to be otherwise used.

The quantity of nitric acid that was verified as qualifying for the laboratory exemption is 3,330.5 lb (2,804 + 585 – 58.5). The amount of nitric acid not verified, or determined to be non-laboratory related, is 1,639 lb.

Plutonium Processing

In 2003, the plutonium processing facility ramped up operation of a process called MOx fuels.[19] The MOx project uses existing equipment in the plutonium processing facility. The goal of the project is to demonstrate that surplus plutonium can be used in the form of mixed-oxide fuel to generate electricity in existing commercial reactors. The phase of the project being done at LANL is polishing, or final purification of plutonium oxide, to provide material for fabrication of MOx lead test assemblies to support fuel qualification and licensing.

The MOx process uses nitric acid to dissolve impure plutonium oxide and it is then run through ion exchange beds. The ion exchange beds are also washed using nitric acid. The ion exchange removes impurities in the metals. The facility operates a nitric acid recycle loop that was installed in 2001. However the MOx process is not currently able to use the recycled nitric acid because confirmation testing has not been completed to demonstrate that it meets the quality standards for MOx fuels. Although very little new nitric acid was purchased in 2003, the MOx process used virtually all inventory of nitric acid that was in the nitric acid tank. Table 7-1 provides a summary, and Figure 7-1 shows the nitric acid tank. Facility records indicate 23,000 liters of 70% nitric acid were used in 2003. This equates to 49,780 lbs of pure nitric acid.

Table 7-1. Nitric Acid Threshold Determinations for 2003

Description	Amount of Nitric Acid (lb)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lb)
Laboratory Use	3,330	Procurement Records and Interviews	Laboratory Exempt*	NA
Plutonium Processing	49,780	Facility Records	Otherwise Used	10,000
Other Procurement	1,639	Procurement Records and Interviews		
Total Otherwise Used	**51,419**			**10,000**

*EPCRA 313 laboratory exempt for chemicals used in a laboratory setting under the supervision of a technically qualified individual.

Figure 7-1. Nitric Acid Tank at LANL

7.2 Environmental Releases and Offsite Disposal

Air Emissions

There are two sources of nitric acid air emissions from plutonium processing: storage tank emissions and process emissions. Storage tank emissions were estimated using the EPA Tanks 4.0 software and site-specific information on the nitric acid tank. Total air emissions from the nitric acid storage tank were estimated to be 9.5 lb for 2003.

Emissions from plutonium processing were estimated using emission factors for each processing step and the amount of nitric acid processed in each step in 2003. The amount of nitric acid processed in each step was provided from facility operating logs and is shown in Table 7-2. LANL reported under EPCRA 313 for nitric acid for many years in the 1990s. Research and test data were collected to develop methods for estimating emissions from the various processing steps. The process steps and equipment at the facility have not changed, and therefore the emission factors developed in the 1990s were used to estimate 2003 emissions. The emission factors and resulting emissions are shown in Table 7-2.

Table 7-2. Emission Factors and Emissions from Nitric Acid Use in Plutonium Processing

Process	Amount of Nitric Acid Used[a] (lb)	Emission Factors (lb/lb)			Controlled Emissions (lb/yr)		
		HNO3	NO	NO2	HNO3	NO	NO2
Waste Immobilization	41	0	0.001	0.0047	0.00	0.04	0.19
Cascade Dissolution 1	4,000	0.00136	0.00109	0.003	5.44	4.36	12.00
Cascade Dissolution 2	0	0.075	0.0099	0.095	0.00	0.00	0.00
Distillation	13,295	0.0016	0.0012	0.0034	21.27	15.95	45.20
Alpha Counting	12	0	0.015	0.0442	0.00	0.18	0.53
Residue Leaching	70	0.15	0.0104	0.112	10.50	0.73	7.84
Scrap Dissolution	365	0.027	0.00675	0.0185	9.86	2.46	6.75
Anion Exchange	49,470	0.0012	0	0	59.36	0.00	0.00
ICP[b]	12	0	0.01	0.03	0.00	0.12	0.36
MPD[b]	291	0.15	0.0104	0.112	43.65	3.03	32.59
OH Cake Dissolution	0	0.014	0.0069	0.019	0.00	0.00	0.00
Filtrate Concentration	14	0.0016	0.0012	0.0034	0.02	0.02	0.05
ATLAS[b]	650	0.0138			8.97		
Metallography	9	0.0099	0	0	0.09	0.00	0.00
TOTAL	**54,920**				**159.2**	**26. 9**	**105.5**

(a) The sum of nitric acid used in each process is greater than the total amount of nitric acid used, as shown in Table 7-1. This is because some nitric acid is used in more than one process.
(b) ICP = Inductively Coupled Plasma Atomic Emission Spectroscopy; MPD = multipurpose dissolution; ATLAS = Advanced Testing Line for Actinide Separation.

Table 7-3 provides a summary of nitric acid air emissions at LANL in 2003.

Table 7-3. Nitric Acid Air Emissions from LANL in 2003

Nitric Acid Air Emissions	Amount (lb)	Stack or Fugitive
Storage Tank	9.5	Stack
Plutonium Processing	159.2	Stack
TOTAL	**168.7**	

Water Releases

According to EPA guidance, "discharges of listed acids (hydrochloric acid, nitric acid, etc.) may be reported as zero if the discharges have been neutralized to a pH of 6 or above."[1] All wastewater monitoring data for LANL water discharges in 2003 show pH greater than 6. Therefore, zero was entered on the Form R for nitric acid discharges to water.

Releases to Land

There were no onsite releases of nitric acid to land.

Offsite Waste Disposal

LANL performed no onsite waste disposal of nitric acid-contaminated wastes in 2003. All nitric acid waste is sent offsite to EPA-approved facilities for disposal or recycling. Data, including shipment weight and nitric acid concentration, were obtained for all nitric acid-contaminated wastes sent offsite for disposal in 2003. The waste disposal records were evaluated to determine any waste shipments that were exempt from reporting such as waste generated in a laboratory under the direct supervision of a technically qualified individual.

Total reportable nitric acid from all non-exempt waste disposal was calculated to be 162 lb. Table 7-4 provides a summary of the nitric acid waste streams that were sent offsite to various disposal and recycling companies in 2003. For the purposes of Form R reporting, each receiving facility was contacted to determine the disposition of the nitric acid in the waste shipped offsite.

Table 7-4. Summary of Nitric Acid Waste Sent Offsite from LANL in 2003

Company	Location	Facility EPA ID	Ultimate Fate of Waste	Total Nitric Acid (lb)
Clean Harbors, Aragonite, LLC.	Aragonite, UT	UTD981552177	Incineration	14.15
Onyx Environmental Services, LLC.	Henderson, CO	COD980591184	Incineration	143.55
Waste Control Specialists	Andrews County, TX	TXD988088464	Stabilized in cement and landfilled	4.20
			Total	**161.9**

7.3 Other Information Provided on Form R Report for Nitric Acid

Environmental releases of nitric acid as air emissions and to surface waters were reported to be 169 lb and 0 lb, respectively. These values are included in Section 5 of the Form R, *Quantity of the Toxic Chemical Entering Each Environmental Medium Onsite*. A total of 162

lb of nitric acid was reported in Section 6.2 of the Form R, *Transfers to Other Offsite Location*.

Methods of treating nitric acid in wastewater effluent prior to discharge were included in Section 7A of the Form R. This section details onsite waste treatment methods and efficiency. Wastewater from industrial processes at LANL is discharged to the RLWTF prior to discharge to NPDES permitted Outfall 051. The RLWTF conducts wastewater treatment processes to neutralize the effluent prior to discharge. The wastewater stream is treated with sodium hydroxide to neutralize pH. All wastewater is sampled for pH before and after treatment and is only discharged if pH is greater than 6. Therefore, treatment of nitric acid is considered 100%, and this information is included in Section 7A of the Form R. Sections 7B and 7C relate to onsite energy recovery and recycling. LANL performed no onsite processes applicable to these sections for nitric acid in 2003.

Section 8 of the Form R includes information on source reduction and recycling activities. Nitric acid does not have a significant energy recovery value, and therefore no energy recovery activities were claimed from offsite incineration of the waste nitric acid streams. However, LANL conducts onsite recycling of nitric acid. In 2003, 5,400 lb of nitric acid were recycled for reuse in the plutonium processing facility. LANL also conducts wastewater treatment to neutralize nitric acid in the wastewater as described above. A total of 13,000 lb of nitric acid was treated through neutralization. This is included in Section 8.6 of the Form R.

Section 8.9 of the Form R reports the production or activity ratio, an estimated measure of the production or activity associated with the use of the reported chemical at the facility, as compared to the previous year. Plutonium processing is the largest user of nitric acid and results in the largest releases. Therefore, this process was used to develop a production/activity ratio. Because nitric acid is actually what is processed, the total amount of nitric acid processed each year was used to develop the activity ratio.

In 2002, 3,153 liters of new nitric acid and approximately 9,000 liters of recycled nitric acid were used, totaling 12,153 liters. Due to the start-up of the MOx project, in 2003 a total of 23,000 liters of new nitric acid was used, plus an additional 2,500 liters of recycled nitric acid used in other plutonium processing activities, totaling 25,500 liters. An activity ratio of 2.1 was calculated and reported on Section 8.9 of the Form R.

Finally, Section 8.10 of the Form R provides an opportunity to describe source reduction activities accomplished during the reporting year. The NARS, shown in Figure 7-2, is included in this section of the Form.

Figure 7-2. Nitric Acid Recycling System at LANL

8.0 EPCRA 313 SUMMARY AND TRENDS

LANL has submitted EPCRA Section 313 data to EPA since 1987. From 1987 to 1994, this information was submitted by the UC, operator of LANL. Starting with reporting year 1995, EO 12856 required all federal facilities to comply with EPCRA Section 313 requirements. As of 1995, EPCRA Section 313 information for LANL has been submitted by the DOE. Historical information on LANL-reported Section 313 releases is included in the EPA TRI and can be accessed at: http://www.epa.gov/tri

On April 21, 2000, EO 13148 was signed, which, in addition to requiring all federal facilities to comply with EPCRA Section 313 requirements, also requires federal facilities to reduce releases of EPCRA Section 313 chemicals to the environment. In response to EO 13148, the DOE developed Pollution Prevention Leadership Goals that include the following:

- Reduce release of toxic chemicals subject to Toxic Chemical Release Inventory (EPCRA 313) reporting by 90% by 2005, using a 1993 baseline.

LANL has implemented numerous pollution prevention projects to reduce use and releases of EPCRA Section 313 chemicals. However, two regulatory changes have been made by EPA in recent years that impact EPCRA Section 313 reporting:

- On October 19, 1999, EPA promulgated a final rule on PBTs. This rule added several chemicals to the EPCRA Section 313 list and established lower reporting thresholds for PBT chemicals. These lower thresholds became applicable in reporting year 2000.

- On January 17, 2001, EPA expanded the PBT rule to reduce the EPCRA Section 313 reporting threshold for lead and lead compounds to 100 lb (from 10,000 lb). The new lead threshold became applicable with reporting year 2001.

As a result of these regulatory changes, LANL has triggered EPCRA Section 313 reporting for lead and mercury. The regulatory changes resulted in reporting thresholds of 10 lb for mercury and 100 lb for lead. Therefore, for the past two years LANL has submitted environmental release data on these two chemicals. Figure 8-1 provides a summary of LANL reported releases for the period from 1993 through 2003. Several points are worth noting from this chart:

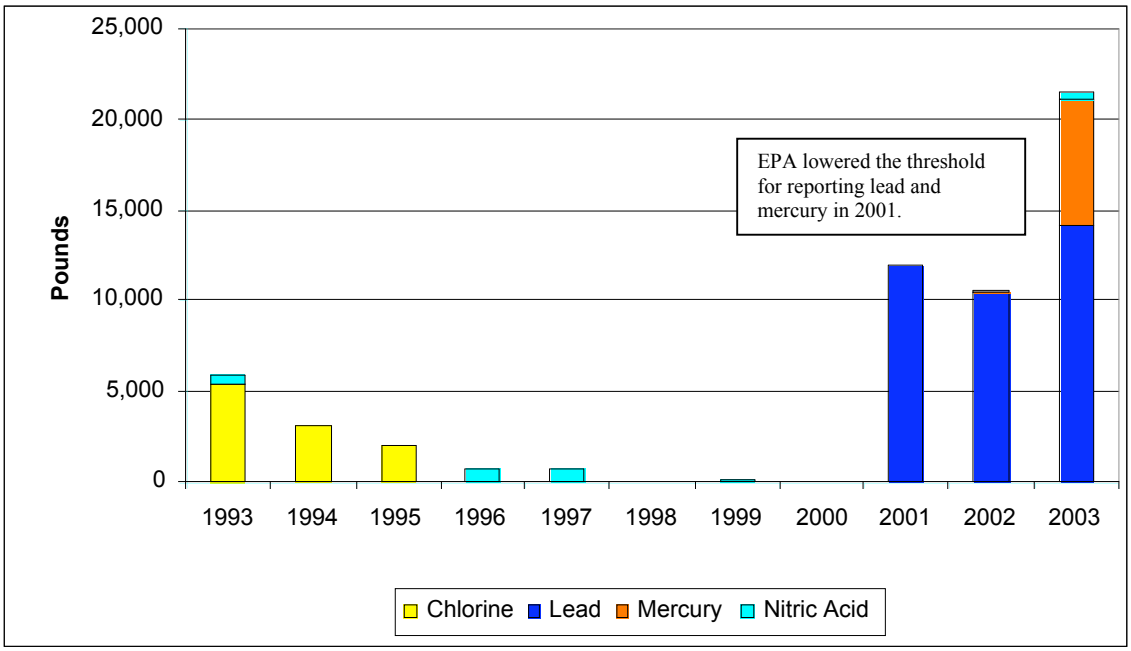
- In the early 1990s LANL implemented a new wastewater disinfection system that eliminated the use of chlorine. Chlorine gas was replaced with bromine tablets and mixed oxidants generated from sodium chloride. This pollution prevention project decreased use of chlorine to well below reporting thresholds.

- In the late 1990s LANL implemented NARS to reduce the amount of new nitric acid needed for plutonium processing. This closed-loop recycle system greatly reduced the need to purchase nitric acid, and due to recycling efforts, nitric acid use has been below reporting thresholds for several years. However, in 2003 a new process to produce MOx fuels was implemented and, due to quality specifications, was not able to use recycled nitric acid. Therefore, nitric acid was reportable in 2003.

- Although the use of lead and lead compounds has been relatively constant over the years at LANL, the threshold for reporting was lowered to 100 lb in 2001. LANL first began EPCRA 313 reporting on lead in that year. About that same time, LANL made a concerted effort to reduce onsite inventory of lead bricks and shielding that is no longer needed. Much of this lead shielding is radioactively contaminated and cannot be recycled. Therefore, large amounts of legacy lead were shipped offsite for disposal and reported on the Form Rs.

- The reported releases of mercury in 2003 are actually inventory cleanout of mercury no longer needed that was shipped offsite to a metal recycling facility.

Another metric used at LANL is tracking of EPCRA 313 reportable chemical use. Figure 8-2 shows the amount of reportable chemicals used at LANL from 1993 through 2003. The UC, operator of LANL, set a pollution prevention goal of reducing the use of EPCRA 313 reportable chemicals by 90% by 2005 using 1993 as a baseline. The straight blue line shows the 90% reduction goal. The pink line shows the actual amount of EPCRA 313 reportable chemicals used each year. Each year LANL evaluates the EPCRA 313 reportable chemical use and uses this information to prioritize pollution prevention projects to reduce use of these chemicals. As shown in Figure 8-2, LANL has made good progress towards the 90% chemical use reduction goal. However, the MOx project in 2003 was not able to recycle nitric acid for reuse and resulted in a substantial increase in use of nitric acid. Work is in progress to complete the laboratory analytical quality assessment requirements to demonstrate the recycled nitric acid meets the quality standards for MOx fuels.



(a) For 2003, one-time waste disposal of lead from D&D activities is not included in this chart.

Figure 8-1. Trends in LANL's Reported Releases to EPA TRI[a]

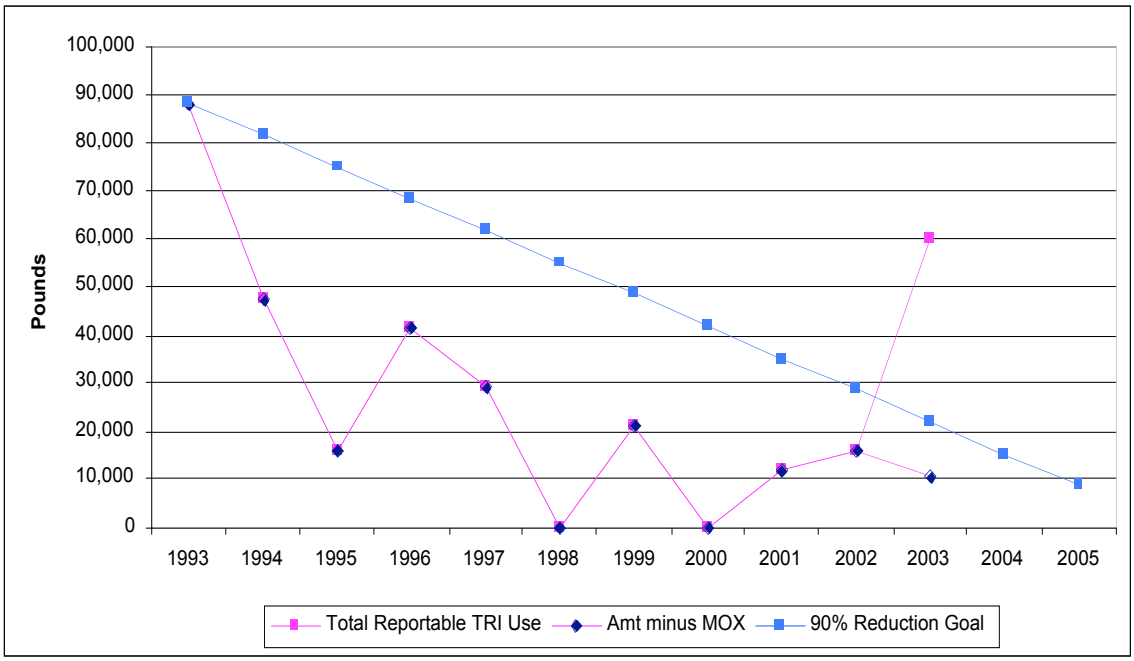


Figure 8-2. Trends in TRI Reportable Chemical Use at LANL

References

1. U.S. Environmental Protection Agency, "Toxic Chemical Release Inventory Reporting Form R and Instructions," Revised 2003 Version, EPA 260-B-04-001, March 2004.

2. U.S. Environmental Protection Agency, "Compilation of Air Pollutant Emission Factors," AP-42, Chapter 1.3—Fuel Oil Combustion, September 1998.

3. U.S. Environmental Protection Agency, "Emergency Planning and Community Right-to-Know Act—Section 313: Guidance for Reporting Hydrochloric Acid," EPA-745-B-014, December 1999.

4. U.S. Environmental Protection Agency, "Compilation of Air Pollutant Emission Factors," AP-42, Chapter 1.6—Wood Residue Combustion in Boilers, March 2002.

5. U.S. Environmental Protection Agency, "Emergency Planning and Community Right-to-Know Act—Section 313: Guidance for Reporting Toxic Chemicals: Polycyclic Aromatic Compounds Category," EPA 260-B-01-03, June 2001.

6. U.S. Environmental Protection Agency, "Locating and Estimating Air Emissions from Sources of Polycyclic Organic Materials," EPA-454/R-98-014, 1998.

7. Chevron-Texaco Guidance Recommendations for SARA 313 Reporting of Polycyclic Aromatic Compounds (PACs) and Benzo(g,h,i)perylene. Lyman Young, May 2, 2001.

8. U.S. Environmental Protection Agency "Emergency Planning and Community Right-to-Know Act—Section 313: Guidance for Reporting Toxic Chemicals: Pesticides and Other Persistent Bioaccumulative Toxic (PBT) Chemicals," EPA 260-B-01-005, August 2001.

9. U.S. Environmental Protection Agency, "Compilation of Air Pollutant Emission Factors," AP-42, Fifth Edition, Section 11.1—Hot Mix Asphalt Plants, December 2000.

10. U.S. Environmental Protection Agency, "Compilation of Air Pollutant Emission Factors," AP-42, Fifth Edition, Section 1.4—Natural Gas Combustion, July 1998.

11. U.S. Environmental Protection Agency, "Emergency Planning and Community Right-To-Know Act—Section 313: Guidance for Reporting Toxic Chemicals within the Dioxin and Dioxin-like Compounds Category," EPA-745-B-00-021. December 2000.

12. American Society of Mechanical Engineers, "Relationship Between Chlorine in Waste Streams and Dioxin Emissions from Combustors," CRTD-Vol. 36. December 1995.

13. U.S. Environmental Protection Agency, "Database of Sources of Environmental Releases of Dioxin-like Compounds in the United States," EPA-600-C-01-012, March 2001.

14. U.S. Environmental Protection Agency, "List of Toxic Chemicals within the Water Dissociable Nitrate Compounds Category and Guidance for Reporting," EPA 745-R-00-006, December 2000.

15. U.S. Department of Defense, TRI-DDS Software, http://www.dod.tridds.org.

16. U.S. Environmental Protection Agency, "Emergency Planning and Community Right-to-Know Act—Section 313: Guidance for Reporting Releases and Other Waste Management Quantities of Toxic Chemicals: Lead and Lead Compounds," EPA 260-B-01-027, December 2001.

17. Los Alamos National Laboratory. "Surface Water Data at Los Alamos National Laboratory 2003 Water Year," LA-14131-PR, May 2004.

18. U.S. Environmental Protection Agency, "Emergency Planning and Community Right-to-Know Act—Section 313: Guidance for Reporting Releases and Other Waste Management Quantities of Toxic Chemicals: Mercury and Mercury Compounds," EPA 260-B-01-004, August 2001.

19. Los Alamos National Laboratory, "Actinide Research Quarterly, 1st/2nd Quarter 2003, Nuclear Fuels," LA-LP-03-067, December 2003.

Appendix A:

EPCRA Section 313 Chemicals Used or Procured in 2003

CAS Number	Chemical Name	EPCRA Threshold	2003 Amount Purchased or Used (lbs)
7664-93-9	Sulfuric acid (aerosol forms only)	10000	141,266.5[a]
7697-37-2	Nitric acid	10000	54,749.3[b]
Zinc Compounds	Zinc Compounds	10000	5565.4
7647-01-0	Hydrochloric acid (aerosol forms only)	10000	4932.5
Manganese Compounds	Manganese Compounds	10000	4502.6
Polychlorinated Alkanes	Polychlorinated alkanes	10000	1795.6
75-09-2	Dichloromethane	10000	1537.8
67-56-1	Methanol	10000	1471.6
10222-01-2	2,2-Dibromo-3-nitrilopropionamide	10000	1285.2
75-05-8	Acetonitrile	10000	1182.4
120-12-7	Anthracene	10000	1129.1
110-54-3	n-Hexane	10000	1116.4
67-63-0	Isopropyl alcohol (mfg-strong acid process)	10000	938.7
7726-95-6	Bromine	10000	929.7
78-93-3	Methyl ethyl ketone	10000	913.7
872-50-4	N-Methyl-2-pyrrolidone	10000	726.8
7664-38-2	Phosphoric acid	10000	636.8
108-88-3	Toluene	10000	330.8
7632-00-0	Sodium nitrite	10000	322.3
67-66-3	Chloroform	10000	292.8
1344-28-1	Aluminum oxide (fibrous forms)	10000	198.6
Nitrate Compounds	Nitrate compounds (water dissociable)	10000	149.7
7440-47-3	Chromium	10000	137.6
7664-41-7	Ammonia	10000	104.6
Glycol Ethers Compounds	Glycol Ethers	10000	68.8
68-12-2	N,N-Dimethylformamide	10000	68.5
7440-22-4	Silver	10000	58.5
7429-90-5	Aluminum (fume or dust)	10000	50.9
108-10-1	Methyl isobutyl ketone	10000	49.2
7439-97-6	Mercury	10	47.6
7664-39-3	Hydrogen fluoride	10000	45.1
95-50-1	1,2-Dichlorobenzene	10000	40.6
7440-50-8	Copper	10000	39.4
71-43-2	Benzene	10000	39.1
7439-92-1	Lead	100	36.3
Cyanide Compounds	Cyanide Compounds	10000	34.8
110-86-1	Pyridine	10000	33.3
1330-20-7	Xylene (mixed isomers)	10000	28.3
Silver Compounds	Silver Compounds	10000	26.5

(a) 134,000 lbs of the sulfuric acid purchased is in aqueous form, and not reportable under EPCRA 313.
(b) 4,969 lbs of nitric acid were purchased in 2003, an additional 49,780 lbs were used from inventory.

CAS Number	Chemical Name	EPCRA Threshold	2003 Amount Purchased (lbs)
126-72-7	Tris(2,3-dibromopropyl) phosphate	10000	22.0
Nickel Compounds	Nickel Compounds	10000	21.6
71-36-3	n-Butyl alcohol	10000	21.1
108-90-7	Chlorobenzene	10000	17.3
7440-66-6	Zinc (fume or dust)	10000	16.4
Barium Compounds	Barium Compounds	10000	16.3
79-06-1	Acrylamide	10000	15.8
95-47-6	o-Xylene	10000	15.5
56-23-5	Carbon tetrachloride	10000	14.4
79-01-6	Trichloroethylene	10000	13.2
110-82-7	Cyclohexane	10000	12.1
Chromium Compounds	Chromium Compounds	10000	11.5
121-44-8	Triethylamine	10000	10.9
100-41-4	Ethylbenzene	10000	10.4
Copper Compounds	Copper Compounds	10000	9.8
64-18-6	Formic acid	10000	9.7
7783-06-4	Hydrogen sulfide	10000	8.7
Cadmium Compounds	Cadmium Compounds	10000	8.1
7782-50-5	Chlorine	10000	7.9
7440-28-0	Thallium	10000	7.8
98-82-8	Cumene	10000	7.2
7439-96-5	Manganese	10000	6.4
7440-43-9	Cadmium	10000	5.7
108-95-2	Phenol	10000	5.5
100-42-5	Styrene	10000	4.7
Cobalt Compounds	Cobalt Compounds	10000	4.2
98-95-3	Nitrobenzene	10000	4.2
7440-62-2	Vanadium (fume or dust)	10000	4.2
74-87-3	Chloromethane	10000	4.0
554-13-2	Lithium carbonate	10000	3.9
1313-27-5	Molybdenum trioxide	10000	3.8
7440-38-2	Arsenic	10000	3.7
123-91-1	1,4-Dioxane	10000	3.4
75-15-0	Carbon disulfide	10000	3.3
106-42-3	p-Xylene	10000	3.2
124-40-3	Dimethylamine	10000	3.1
75-56-9	Propylene oxide	10000	3.0
50-00-0	Formaldehyde	10000	2.6
7440-48-4	Cobalt	10000	2.6
79-10-7	Acrylic acid	10000	2.5
74-88-4	Methyl iodide	10000	2.4
80-62-6	Methyl methacrylate	10000	2.2
7550-45-0	Titanium tetrachloride	10000	1.9

CAS Number	Chemical Name	EPCRA Threshold	2003 Amount Purchased (lbs)
74-85-1	Ethylene	10000	1.9
75-25-2	Bromoform	10000	1.8
75-65-0	tert-Butyl alcohol	10000	1.7
91-20-3	Naphthalene	10000	1.7
Lead Compounds	Lead Compounds	100	1.6
7440-02-0	Nickel	10000	1.6
7440-36-0	Antimony	10000	1.5
95-63-6	1,2,4-Trimethylbenzene	10000	1.4
107-06-2	1,2-Dichloroethane	10000	1.4
Diisocyanates (includes 20 specific chemicals)	Diisocyanates	10000	1.3
302-01-2	Hydrazine	10000	1.3
7782-49-2	Selenium	10000	1.2
107-13-1	Acrylonitrile	10000	1.2
7440-41-7	Beryllium	10000	1.2
77-73-6	Dicyclopentadiene	10000	1.2
Chlorophenol Compounds	Chlorophenols	10000	1.1
Selenium Compounds	Selenium Compounds	10000	1.1
123-31-9	Hydroquinone	10000	1.1
541-73-1	1,3-Dichlorobenzene	10000	1.0
60-35-5	Acetamide	10000	0.8
75-44-5	Phosgene	10000	0.7
115-07-1	Propylene	10000	0.7
Antimony Compounds	Antimony Compounds	10000	0.6
108-39-4	m-Cresol	10000	0.6
Mercury Compounds	Mercury Compounds	10	0.5
26628-22-8	Sodium azide	10000	0.5
106-93-4	1,2-Dibromoethane	10000	0.5
87-62-7	2,6-Xylidine	10000	0.5
94-36-0	Benzoyl peroxide	10000	0.4
95-54-5	1,2-Phenylenediamine	10000	0.4
Arsenic Compounds	Arsenic Compounds	10000	0.4
10294-34-5	Boron trichloride	10000	0.3
77-78-1	Dimethyl sulfate	10000	0.3
Beryllium Compounds	Beryllium Compounds	10000	0.3
98-88-4	Benzoyl chloride	10000	0.3
81-88-9	C.I. Food Red 15	10000	0.2
62-53-3	Aniline	10000	0.2
104-94-9	p-Anisidine	10000	0.2
7758-01-2	Potassium bromate	10000	0.2
106-89-8	Epichlorohydrin	10000	0.2
7637-07-2	Boron trifluoride	10000	0.2
100-01-6	p-Nitroaniline	10000	0.2
79-22-1	Methyl chlorocarbonate	10000	0.2

CAS Number	Chemical Name	EPCRA Threshold	2003 Amount Purchased (lbs)
108-38-3	m-Xylene	10000	0.2
107-11-9	Allylamine	10000	0.2
Thallium Compounds	Thallium Compounds	10000	0.2
96-09-3	Styrene oxide	10000	0.1
106-51-4	Quinone	10000	0.06
107-30-2	Chloromethyl methyl ether	10000	0.06
105-67-9	2,4-Dimethylphenol	10000	0.05
108-93-0	Cyclohexanol	10000	0.05
989-38-8	C.I. Basic Red 1	10000	0.03
75-07-0	Acetaldehyde	10000	0.02
84-74-2	Dibutyl phthalate	10000	0.01
74-83-9	Bromomethane	10000	0.002

Appendix B:

Form R Reports for Lead, Mercury, and Nitric Acid

Department of Energy
National Nuclear Security Administration
Los Alamos Site Office
Los Alamos, New Mexico 87544

04 JUN 24 PM 2:25

TRI Data Processing Center
c/o Computer Sciences Corporation, Suite 300
8400 Corporate Drive
Landover, MD 20785-2294

To Whom It May Concern:

Subject: Toxic Chemical Release Inventory
TRI Magnetic Media Submission

Enclosed is one (1) microcomputer diskette containing toxic chemical release reporting information (Form R reports) for Los Alamos National Laboratory (LANL) for mercury, lead, and nitric acid for calendar year 2003. This information is submitted in response to Executive Order 13148 signed April 21, 2000 by President Clinton requiring all federal facilities to comply with the provisions of the Emergency Planning and Community Right-to-Know Act (EPCRA), or Title III of the Superfund Amendments and Reauthorization Act (SARA).

This report was completed using the latest available information including an electronic download of the Automated Form R provided by the Environmental Protection Agency (EPA) on the Internet at http://www.epa.gov/tri/report/trime. Guidance used to complete the form was obtained from the EPA's Toxic Chemical Release Inventory Reporting Forms and Instructions booklet, Revised 2003 Version, March 2004, EPA 260-B-04-001.

A hard copy and microcomputer diskette of the Form R reports has been submitted to Mr. Jerry Lazzari, the State of New Mexico's EPCRA TRI Coordinator.

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate, based on reasonable estimates using data available to the preparers of this report.

If you have any questions, please contact me at (505) 667-5794 or by email at gturner@doeal.gov.

Sincerely,

Gene Turner
Environmental Permitting Manager
Office of Facility Operations

OFO:5GT-006

cc:
See Page 2

Andrew Lawrence, EH-4, HQ/FORS
Joseph Vozella, OFO, LASO
Beverly Ramsey, RRES-DO, LANL, MS-J591
Deb Woitte, LC-GL, LANL, MS-A187
Jean Dewart, RRES-MAQ, LANL, MS-J978
RRES-MAQ File, MS-J978

04 JUN 24 PM 3:25

Signature Certification for U.S. EPA Diskette Submission

U.S. DEPARTMENT OF ENERGY, LOS ALAMOS
NATIONAL LABORATORY
528 35TH STREET
LOS ALAMOS, NM 87544
87544SDLSL52835

June 22, 2004

TRI Data Processing Center
c/o Computer Sciences Corportation
Suite 300
8400 Corporate Drive
Landover, MD 20785

(301) 429-5005

To Whom It May Concern:

Enclosed please find one (1) microcomputer diskette containing toxic chemical release reporting information for:

U.S. DEPARTMENT OF ENERGY, LOS ALAMOS NATIONAL LABORATORY

This information is submitted as required under section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and the Pollution Prevention Act of 1990.

We are submitting a total of 3 chemical report(s) for our facility.

These 3 chemical report(s) are described below:

TRI Chemical or Chemical Category	Reporting Year	CAS Number	Report
Lead	2003	7439-92-1	Form R
Mercury	2003	7439-97-6	Form R
Nitric acid	2003	7697-37-2	Form R

Our technical point of contact is:

GENE TURNER
(505) 667-5794
GTURNER@LANL.GOV

and is available should any questions or problems arise in the processing of this diskette.

If the enclosed diskette contains one or more Form R chemicals, then I hereby certify that I have reviewed the enclosed documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report(s) are accurate based on reasonable estimates using data available to the preparers of this report(s).

If the enclosed diskette contains one or more Form A chemicals, then I hereby certify that to the best of my knowledge and belief, for each toxic chemical listed in the Form A statement, the annual reportable amount as defined in 40 CFR 372.27(a) did not exceed 500 pounds for this reporting year and that the chemical was manufactured, processed or otherwise used in an amount not exceeding 1 million pounds during the reporting year.

Sincerely,

GENE TURNER
OFFICE OF FACILITY OPS.

Enclosure: Diskette

Form Approved OMB Number:2070-0093
Approval Expires: 1/31/2006

(IMPORTANT: Type or print; read instructions before completing form)

EPA United States Environmental Protection Agency

FORM R

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act

TRI Facility ID Number
87544SDLSL52835
Toxic Chemical, Category or Generic Name
Lead

WHERE TO SEND COMPLETED FORMS: 1. TRI Data Processing Center, P.O.Box 1513, Lanham, MD 20703-1513 2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

Enter "X" here if this is a revision: [ ]

For EPA use only

Important: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR 2003

SECTION 2. TRADE SECRET INFORMATION

2.1 Are you claiming the toxic chemical identified on page 2 trade secret?
[ ] Yes (Answer question 2.2; Attach substantiation forms) [X] NO (Do not answer 2.2; Go to Section 3)

2.2 Is this copy [ ] Sanitized [ ] Unsanitized (Answer only if "YES" in 2.1)

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data availble to the preparers of this report.

Name and official title of owner/operator or senior management official:	Signature:	Date Signed:
Gene Turner Office of Facility Ops.		06/24/2004

SECTION 4. FACILITY IDENTIFICATION

4.1 TRI Facility ID Number: 87544SDLSL52835

Facility or Establishment Name	Facility or Establishment Name or Mailing Address (if different from street address)
U.S. Department of Energy, LOS ALAMOS NATIONAL LABORATORY	
Street: 528 35th Street	Mailing Address: NA
City/County/State/Zip Code: LOS ALAMOS LOS ALAMOS NM 87544	City/State/Zip Code: Country (Non-US):

4.2 This report contains information for: (Important: check a or b; check c or d if applicable) a. [X] An entire facility b. [ ] Part of a facility c. [X] A Federal facility d. [ ] GOCO

4.3	Technical Contact Name: Gene Turner	Telephone Number (include area code): (505) 667-5794
	Email Address: gturner@lanl.gov	
4.4	Public Contact Name: Gene Turner	Telephone Number (include area code): (505) 667-5794

		Primary	b.	c.	d.	e.	f.
4.5	SIC Code (s) (4 digits)	a. 9711					

		Degrees	Minutes	Seconds		Degrees	Minutes	Seconds
4.6	Latitude	35	49	51	Longitude	106	14	15

	Dun & Bradstreet Number(s) (9 digits)		EPA Identification Number (RCRA I.D. No.) (12 characters)		Facility NPDES Permit Number(s) (9 characters)		Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)
4.7 / **4.8** / **4.9** / **4.10**	a. NA		a. NM0890010515		a. NM0028355		a. NA
	b.		b.		b.		b.

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company	NA [ ]	U.S. DEPARTMENT OF ENERGY
5.2	Parent Company's Dun & Bradstreet Number	NA [X]	

EPA FORM R

PART II. CHEMICAL - SPECIFIC INFORMATION

TRI Facility ID Number: 87544SDLSLC283*

Toxic Chemical, Category or Generic Name: Lead

SECTION 1. TOXIC CHEMICAL IDENTITY (Important: DO NOT complete this section if you completed Section 2 below.)

1.1 CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
7439-92-1

1.2 Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
Lead

1.3 Generic Chemical Name (Important: Complete only if Part 1, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive.)
NA

1.4 Distribution of Each Member of the Dioxin and Dioxin-like Compounds Category.
(If there are any numbers in boxes 1-17, then every field must be filled in with either 0 or some number between 0.01 and 100. Distribution should be reported in percentages and the total should equal 100%. If you do not have speciation data available, indicate NA.)

NA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
☐																	

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above.)

2.1 Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)
NA

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY
(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:
- a. ☐ Produce b. ☐ Import
- If produce or import:
- c. ☐ For on-site use/processing
- d. ☐ For sale/distribution
- e. ☐ As a byproduct
- f. ☐ As an impurity

3.2 Process the toxic chemical:
- a. ☐ As a reactant
- b. ☐ As a formulation component
- c. ☐ As an article component
- d. ☐ Repackaging
- e. ☐ As an impurity

3.3 Otherwise use the toxic chemical:
- a. ☐ As a chemical processing aid
- b. ☐ As a manufacturing aid
- c. ☒ Ancillary or other use

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ONSITE AT ANY TIME DURING THE CALENDAR YEAR

4.1 04 (Enter two-digit code from instruction package.)

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ONSITE

			A. Total Release (pounds/year*) (Enter range code or estimate**)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA ☐	13.9	C	
5.2	Stack or point air emissions	NA ☐	0.6	E	
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1	ANCHO CANYON TRIBUTARY TO RIO GRA		8.8	M	100
5.3.2	LOS ALAMOS CANYON TRIBUTARY TO RIO		25.2	M	99
5.3.3	PAJARITO CANYON TRIBUTARY TO RIO G		0.1	M	100

If additional pages of Part II, Section 5.3 are attached, indicate the total number of pages in this box: 3
and indicate the Part II, Section 5.3 page number in this box: 1 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL - SPECIFIC INFORMATION

TRI Facility ID Number
87144SDLSL6283
Toxic Chemical, Category or Generic Name
Lead

SECTION 1. TOXIC CHEMICAL IDENTITY (Important: DO NOT complete this section if you completed Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete only if Part 1, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive.)

1.4 Distribution of Each Member of the Dioxin and Dioxin-like Compounds Category.
(If there are any numbers in boxes 1-17, then every field must be filled in with either 0 or some number between 0.01 and 100. Distribution should be reported in percentages and the total should equal 100%. If you do not have speciation data available, indicate NA.)

NA ☐	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY
(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. ☐ Produce b. ☐ Import		
If produce or import:	a. ☐ As a reactant	a. ☐ As a chemical processing aid
c. ☐ For on-site use/processing	b. ☐ As a formulation component	b. ☐ As a manufacturing aid
d. ☐ For sale/distribution	c. ☐ As an article component	c. ☐ Ancillary or other use
e. ☐ As a byproduct	d. ☐ Repackaging	
f. ☐ As an impurity	e. ☐ As an impurity	

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ONSITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	☐ (Enter two-digit code from instruction package.)

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ONSITE

		A. Total Release (pounds/year*) (Enter range code or estimate**)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions NA ☐			
5.2	Stack or point air emissions NA ☐			
5.3	Discharges to receiving streams or water bodies (enter one name per box)			
	Stream or Water Body Name			
5.3.1	SANDIA CANYON TRIBUTARY TO RIO GRA	84	M	99
5.3.2	WATER CANYON TRIBUTARY TO RIO GRA	0	M	0
5.3.3	CANADA DEL BUEY	0.3	M	100

If additional pages of Part II, Section 5.3 are attached, indicate the total number of pages in this box: 3
and indicate the Part II, Section 5.3 page number in this box: 2 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL - SPECIFIC INFORMATION

TRI Facility ID Number
87455DLSL2835
Toxic Chemical, Category or Generic Name
Lead

SECTION 1. TOXIC CHEMICAL IDENTITY (Important: DO NOT complete this section if you completed Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete only if Part 1, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive.)

1.4 Distribution of Each Member of the Dioxin and Dioxin-like Compounds Category.
(If there are any numbers in boxes 1-17, then every field must be filled in with either 0 or some number between 0.01 and 100. Distribution should be reported in percentages and the total should equal 100%. If you do not have speciation data available, indicate NA.)

NA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
☐																	

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY
(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. ☐ Produce b. ☐ Import		
If produce or import:	a. ☐ As a reactant	a. ☐ As a chemical processing aid
c. ☐ For on-site use/processing	b. ☐ As a formulation component	b. ☐ As a manufacturing aid
d. ☐ For sale/distribution	c. ☐ As an article component	c. ☐ Ancillary or other use
e. ☐ As a byproduct	d. ☐ Repackaging	
f. ☐ As an impurity	e. ☐ As an impurity	

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ONSITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	☐	(Enter two-digit code from instruction package.)

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ONSITE

			A. Total Release (pounds/year*) (Enter range code or estimate**)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA ☐			
5.2	Stack or point air emissions	NA ☐			
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1	MORTANDAD TRIBUTARY TO RIO GRANDE		1.5	M	98
5.3.2					
5.3.3					

If additional pages of Part II, Section 5.3 are attached, indicate the total number of pages in this box 3
and indicate the Part II, Section 5.3 page number in this box. 3 **(example: 1,2,3, etc.)**

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL - SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
84044SDLSL2835
Toxic Chemical, Category, or Generic Name
Lead

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ONSITE (Continued)

		NA	A. Total Release (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)
5.4.1	Underground Injection onsite to Class I Wells	X		
5.4.2	Underground Injection onsite to Class II-V Wells	X		
5.5	Disposal to land onsite			
5.5.1.A	RCRA Subtitle C landfills	X		
5.5.1.B	Other landfills	X		
5.5.2	Land treatment/application farming	X		
5.5.3A	RCRA Subtitle C Surface Impoundments	X		
5.5.3B	Other surface impoundments	X		
5.5.4	Other disposal		5832	C

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)

6.1.A Total Quantity Transferred to POTWs and Basis of Estimate

6.1.A.1. Total Transfers (pounds/year*) (enter range code** or estimate)	6.1.A.2 Basis of Estimate (enter code)
NA	

6.1.B. 1	POTW Name	NA					
POTW Address							
City		State		County		Zip	
6.1.B.	POTW Name						
POTW Address							
City		State		County		Zip	

If additional pages of Part II, Section 6.1 are attached, indicate the total number of pages in this box [ ] and indicate the Part II, Section 6.1 page number in this box [ ] (example: 1,2,3, etc.)

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2. 1	Off-Site EPA Identification Number (RCRA ID No.)	UT982598898							
Off-Site Location Name	ENVIROCARE OF UTAH, INC.								
Off-site Address	I80 EXIT 49 WEST OF SALT LAKE CITY								
City	CLIVE	State	UT	County	TOULE	Zip	84083	Country (Non-US)	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number: 87144SDSL2835

Toxic Chemical, Category, or Generic Name: Lead

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 49566.5	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 2 Off-Site EPA Identification Number (RCRA ID No.): COD980591184

Off-Site location Name: ONYX ENVIRONMENTAL SERVICES L.L.C.

Off-site Address: 9131 EAST 96TH AVENUE

City	State	County	Zip	Country (Non-US)
HENDERSON	CO	DENVER	80640	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 122.9	1. M	1. M65
2. 3.9	2. M	2. M24
3. NA	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.1a	7A.1b: 1 C09, 2 P12, 3 P31, 4 NA, 5, 6, 7, 8	7A.1c: 04	7A.1d: 76.5 %	7A.1e: Yes [X] No [ ]
W				
7A.2a	7A.2b: 1, 2, 3, 4, 5, 6, 7, 8	7A.2c	7A.2d: %	7A.2e: Yes [ ] No [ ]
7A.3a	7A.3b: 1, 2, 3, 4, 5, 6, 7, 8	7A.3c	7A.3d: %	7A.3e: Yes [ ] No [ ]
7A.4a	7A.4b: 1, 2, 3, 4, 5, 6, 7, 8	7A.4c	7A.4d: %	7A.4e: Yes [ ] No [ ]
7A.5a	7A.5b: 1, 2, 3, 4, 5, 6, 7, 8	7A.5c	7A.5d: %	7A.5e: Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 9

and indicate the Part II, Section 6.2/7A page number in this box: 1 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number: 90744SDLSL2835

Toxic Chemical, Category, or Generic Name: Lead

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 3 Off-Site EPA Identification Number (RCRA ID No.): CAD008488025

Off-Site location Name: PHIBRO-TECH, INC.

Off-site Address: 8851 DICE ROAD

City	State	County	Zip	Country (Non-US)
SANTA FE SPRINGS	CA	LOS ANGELES	90670	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 4.1	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.6a	7A.6b: 1 2 3 4 5 6 7 8	7A.6c	7A.6d %	7A.6e Yes [ ] No [ ]
7A.7a	7A.7b: 1 2 3 4 5 6 7 8	7A.7c	7A.7d %	7A.7e Yes [ ] No [ ]
7A.8a	7A.8b: 1 2 3 4 5 6 7 8	7A.8c	7A.8d %	7A.8e Yes [ ] No [ ]
7A.9a	7A.9b: 1 2 3 4 5 6 7 8	7A.9c	7A.9d %	7A.9e Yes [ ] No [ ]
7A.10a	7A.10b: 1 2 3 4 5 6 7 8	7A.10c	7A.10d %	7A.10e Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 9

and indicate the Part II, Section 6.2/7A page number in this box: 2 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
87144SDLSLL2835
Toxic Chemical, Category, or Generic Name
Lead

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 4 Off-Site EPA Identification Number (RCRA ID No.)	TXD988088464
Off-Site location Name	WASTE CONTROL SPECIALISTS
Off-site Address	9998 HIGHWAY 176 WEST

City	ANDREWS	State	TX	County	ANDREWS	Zip	79714	Country (Non-US)	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 2.6	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.11a	7A.11b: 1 2 3 4 5 6 7 8	7A.11c	7A.11d %	7A.11e Yes [ ] No [ ]
7A.12a	7A.12b: 1 2 3 4 5 6 7 8	7A.12c	7A.12d %	7A.12e Yes [ ] No [ ]
7A.13a	7A.13b: 1 2 3 4 5 6 7 8	7A.13c	7A.13d %	7A.13e Yes [ ] No [ ]
7A.14a	7A.14b: 1 2 3 4 5 6 7 8	7A.14c	7A.14d %	7A.14e Yes [ ] No [ ]
7A.15a	7A.15b: 1 2 3 4 5 6 7 8	7A.15c	7A.15d %	7A.15e Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 9

and indicate the Part II, Section 6.2/7A page number in this box: 3 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
84744SDSLL2835
Toxic Chemical, Category, or Generic Name
Lead

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 5 Off-Site EPA Identification Number (RCRA ID No.)	UTD981552177
Off-Site location Name	CLEAN HARBORS ARAGONITE LLC
Off-site Address	11600 NORTH APTUS ROAD

City	ARAGONITE	State	UT	County	TOOELE	Zip	84029	Country (Non-US)	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 1088	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.16a	7A.16b: 1 2 3 4 5 6 7 8	7A.16c	7A.16d %	7A.16e Yes [ ] No [ ]
7A.17a	7A.17b: 1 2 3 4 5 6 7 8	7A.17c	7A.17d %	7A.17e Yes [ ] No [ ]
7A.18a	7A.18b: 1 2 3 4 5 6 7 8	7A.18c	7A.18d %	7A.18e Yes [ ] No [ ]
7A.19a	7A.19b: 1 2 3 4 5 6 7 8	7A.19c	7A.19d %	7A.19e Yes [ ] No [ ]
7A.20a	7A.20b: 1 2 3 4 5 6 7 8	7A.20c	7A.20d %	7A.20e Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box [9]

and indicate the Part II, Section 6.2/7A page number in this box: [4] **(example: 1,2,3, etc.)**

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
37744SDLSL2835
Toxic Chemical, Category, or Generic Name
Lead

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 6 Off-Site EPA Identification Number (RCRA ID No.)	TND982109142
Off-Site location Name	DIVERSIFIED SCIENTIFIC SERVICES INC
Off-site Address	657 GALLAHER RD

City	KINGSTON	State	TN	County	ROANE	Zip	37763	Country (Non-US)	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 0.3	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]								c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.21a	7A.21b	1		2		3		4	7A.21c	7A.21d	7A.21e
	5		6		7		8			%	Yes [ ] No [ ]
7A.22a	7A.22b	1		2		3		4	7A.22c	7A.22d	7A.22e
	5		6		7		8			%	Yes [ ] No [ ]
7A.23a	7A.23b	1		2		3		4	7A.23c	7A.23d	7A.23e
	5		6		7		8			%	Yes [ ] No [ ]
7A.24a	7A.24b	1		2		3		4	7A.24c	7A.24d	7A.24e
	5		6		7		8			%	Yes [ ] No [ ]
7A.25a	7A.25b	1		2		3		4	7A.25c	7A.25d	7A.25e
	5		6		7		8			%	Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box [9]
and indicate the Part II, Section 6.2/7A page number in this box: [5] (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
37744SDLSL12835
Toxic Chemical, Category, or Generic Name
Lead

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 7 Off-Site EPA Identification Number (RCRA ID No.)	TNR000005397
Off-Site location Name	MATERIAL AND ENERGY CORPORATION
Off-site Address	2010 HIGHWAY 58 SUITE 1020

City	OAK RIDGE	State	TN	County	ANDERSON	Zip	37830	Country (Non-US)	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 0	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]								c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.26a	7A.26b	1		2		3		4	7A.26c	7A.26d	7A.26e
	5		6		7		8			%	Yes [ ] No [ ]
7A.27a	7A.27b	1		2		3		4	7A.27c	7A.27d	7A.27e
	5		6		7		8			%	Yes [ ] No [ ]
7A.28a	7A.28b	1		2		3		4	7A.28c	7A.28d	7A.28e
	5		6		7		8			%	Yes [ ] No [ ]
7A.29a	7A.29b	1		2		3		4	7A.29c	7A.29d	7A.29e
	5		6		7		8			%	Yes [ ] No [ ]
7A.30a	7A.30b	1		2		3		4	7A.30c	7A.30d	7A.30e
	5		6		7		8			%	Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box [9]
and indicate the Part II, Section 6.2/7A page number in this box: [6] (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number: 85744SDLL2835

Toxic Chemical, Category, or Generic Name: Lead

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 8 Off-Site EPA Identification Number (RCRA ID No.): AZ0000337360

Off-Site location Name: ONYX SPECIAL SERVICES INC

Off-site Address: 5752 W JEFFERSON ST

City: PHOENIX | State: AZ | County: MARICOPA | Zip: 85043 | Country (Non-US):

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 7.5	1. M	1. M24
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]								c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.31a	7A.31b	1		2		3		4	7A.31c	7A.31d	7A.31e
	5		6		7		8			%	Yes [ ] No [ ]
7A.32a	7A.32b	1		2		3		4	7A.32c	7A.32d	7A.32e
	5		6		7		8			%	Yes [ ] No [ ]
7A.33a	7A.33b	1		2		3		4	7A.33c	7A.33d	7A.33e
	5		6		7		8			%	Yes [ ] No [ ]
7A.34a	7A.34b	1		2		3		4	7A.34c	7A.34d	7A.34e
	5		6		7		8			%	Yes [ ] No [ ]
7A.35a	7A.35b	1		2		3		4	7A.35c	7A.35d	7A.35e
	5		6		7		8			%	Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 9

and indicate the Part II, Section 6.2/7A page number in this box: 7 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number: 32744SDLSL2835

Toxic Chemical, Category, or Generic Name: Lead

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 9 Off-Site EPA Identification Number (RCRA ID No.): FLD980711071

Off-Site location Name: PERMA FIX INC

Off-site Address: 1940 NW 67TH PLACE

City	State	County	Zip	Country (Non-US)
GAINESVILLE	FL	ALACHU	32653	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 0.5	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]								c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.36a	7A.36b	1		2		3		4	7A.36c	7A.36d	7A.36e
	5		6		7		8			%	Yes [ ] No [ ]
7A.37a	7A.37b	1		2		3		4	7A.37c	7A.37d	7A.37e
	5		6		7		8			%	Yes [ ] No [ ]
7A.38a	7A.38b	1		2		3		4	7A.38c	7A.38d	7A.38e
	5		6		7		8			%	Yes [ ] No [ ]
7A.39a	7A.39b	1		2		3		4	7A.39c	7A.39d	7A.39e
	5		6		7		8			%	Yes [ ] No [ ]
7A.40a	7A.40b	1		2		3		4	7A.40c	7A.40d	7A.40e
	5		6		7		8			%	Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 9

and indicate the Part II, Section 6.2/7A page number in this box: 8 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number: 87544SDLSL2835

Toxic Chemical, Category, or Generic Name: Lead

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 10 Off-Site EPA Identification Number (RCRA ID No.): NA

Off-Site location Name: LOS ALAMOS COUNTY LANDFILL

Off-site Address: EAST JEMEZ ROAD

City: LOS ALAMOS | State: NM | County: LOS ALAMOS | Zip: 87544 | Country (Non-US):

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 1.24	1. M	1. M64
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]								c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.41a	7A.41b	1		2		3		4	7A.41c	7A.41d	7A.41e
	5		6		7		8			%	Yes [ ] No [ ]
7A.42a	7A.42b	1		2		3		4	7A.42c	7A.42d	7A.42e
	5		6		7		8			%	Yes [ ] No [ ]
7A.43a	7A.43b	1		2		3		4	7A.43c	7A.43d	7A.43e
	5		6		7		8			%	Yes [ ] No [ ]
7A.44a	7A.44b	1		2		3		4	7A.44c	7A.44d	7A.44e
	5		6		7		8			%	Yes [ ] No [ ]
7A.45a	7A.45b	1		2		3		4	7A.45c	7A.45d	7A.45e
	5		6		7		8			%	Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 9

and indicate the Part II, Section 6.2/7A page number in this box: 9 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION CONTINUED

TRI Facility ID Number: [redacted]

Toxic Chemical, Category, or Generic Name: Lead

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

X Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods [enter 3-character code(s)]

1 | 2 | 3

SECTION 7C. ON-SITE RECYCLING PROCESSES

X Not Applicable (NA) - Check here if no on-site recyling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods [enter 3-character code(s)]

1 | 2 | 3 | 4 | 5

6 | 7 | 8 | 9 | 10

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

		Column A Prior Year (pounds/year*)	Column B Current Reporting Year (pounds/year*)	Column C Following Year (pounds/year*)	Column D Second Following Year (pounds/year*)
8.1					
8.1a	Total on-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	NA	NA	NA	NA
8.1b	Total other on-site disposal or other releases	9907.8	5966.3	5000	4000
8.1c	Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	413.6	8238.1	8000	8000
8.1d	Total other off-site disposal or other releases	NA	NA	NA	NA
8.2	Quantity used for energy recovery onsite	NA	NA	NA	NA
8.3	Quantity used for energy recovery offsite	NA	NA	NA	NA
8.4	Quantity recycled onsite	NA	NA	NA	NA
8.5	Quantity recycled offsite	30.1	15.5	20	20
8.6	Quantity treated onsite	NA	NA	NA	NA
8.7	Quantity treated offsite	NA	NA	NA	NA
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with productionprocesses (pounds/year)	42544			
8.9	Production ratio or activity index	0.70			
8.10	Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11.				

	Source Reduction Activities [enter code(s)]	Methods to Identify Activity (enter codes)		
8.10.1	W42	a. T05	b.	c.
8.10.2	NA	a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.

8.11	Is additional information on source reduction, recycling, or pollution control activities included with this report ? (Check one Box)	Yes	No
			X

*For Dioxin or Dioxin-like compounds, report in grams/year

(IMPORTANT: Type or print; read instructions before completing form)

United States Environmental Protection Agency

FORM R

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act

TRI Facility ID Number
87544SDLSL52835
Toxic Chemical, Category or Generic Name
Mercury

WHERE TO SEND COMPLETED FORMS: 1. TRI Data Processing Center, P.O.Box 1513, Lanham, MD 20703-1513 2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

Enter "X" here if this is a revision: [ ]

For EPA use only

Important: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR 2003

SECTION 2. TRADE SECRET INFORMATION

2.1	Are you claiming the toxic chemical identified on page 2 trade secret? [ ] Yes (Answer question 2.2; Attach substantiation forms) [X] NO (Do not answer 2.2; Go to Section 3)	2.2	Is this copy [ ] Sanitized [ ] Unsanitized (Answer only if "YES" in 2.1)

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data availble to the preparers of this report.

Name and official title of owner/operator or senior management official:	Signature:	Date Signed:
Gene Turner Office of Facility Ops.		06/24/2004

SECTION 4. FACILITY IDENTIFICATION

4.1		TRI Facility ID Number	87544SDLSL52835
Facility or Establishment Name	U.S. Department of Energy, LOS ALAMOS NATIONAL LABORATORY	Facility or Establishment Name or Mailing Address (if different from street address)	
Street	528 35th Street	Mailing Address	NA
City/County/State/Zip Code	LOS ALAMOS LOS ALAMOS NM 87544	City/State/Zip Code	Country (Non-US

4.2 This report contains information for: (Important: check a or b; check c or d if applicable) a. [X] An entire facility b. [ ] Part of a facility c. [X] A Federal facility d. [ ] GOCO

4.3	Technical Contact Name	Gene Turner	Telephone Number (include area code) (505) 667-5794
	Email Address	gturner@lanl.gov	
4.4	Public Contact Name	Gene Turner	Telephone Number (include area code) (505) 667-5794

4.5 SIC Code (s) (4 digits)	Primary	b.	c.	d.	e.	f.
	a. 9711					

4.6	Latitude	Degrees	Minutes	Seconds	Longitude	Degrees	Minutes	Seconds
		35	49	51		106	14	15

4.7 Dun & Bradstreet Number(s) (9 digits)	4.8 EPA Identification Number (RCRA I.D. No.) (12 characters)	4.9 Facility NPDES Permit Number(s) (9 characters)	4.10 Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)
a. NA	a. NM0890010515	a. NM0028355	a. NA
b.	b.	b.	b.

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company	NA [ ]	U.S. DEPARTMENT OF ENERGY
5.2	Parent Company's Dun & Bradstreet Number	NA [X]	

EPA FORM R

PART II. CHEMICAL - SPECIFIC INFORMATION

TRI Facility ID Number: 87544SNLSL52835

Toxic Chemical, Category or Generic Name: Mercury

SECTION 1. TOXIC CHEMICAL IDENTITY (Important: DO NOT complete this section if you completed Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.) 7439-97-6
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.) Mercury
1.3	Generic Chemical Name (Important: Complete only if Part 1, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive.) NA

1.4 **Distribution of Each Member of the Dioxin and Dioxin-like Compounds Category.**
(If there are any numbers in boxes 1-17, then every field must be filled in with either 0 or some number between 0.01 and 100. Distribution should be reported in percentages and the total should equal 100%. If you do not have speciation data available, indicate NA.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
NA ☐																

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.) NA

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY
(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. ☐ Produce b. ☐ Import		
If produce or import:	a. ☐ As a reactant	a. ☐ As a chemical processing aid
c. ☐ For on-site use/processing	b. ☐ As a formulation component	b. ☐ As a manufacturing aid
d. ☐ For sale/distribution	c. ☐ As an article component	c. ☒ Ancillary or other use
e. ☐ As a byproduct	d. ☐ Repackaging	
f. ☐ As an impurity	e. ☐ As an impurity	

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ONSITE AT ANY TIME DURING THE CALENDAR YEAR

4.1 [04] (Enter two-digit code from instruction package.)

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ONSITE

		A. Total Release (pounds/year*) (Enter range code or estimate**)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions NA ☐	0.6	E	
5.2	Stack or point air emissions NA ☐	0.4	E	
5.3	Discharges to receiving streams or water bodies (enter one name per box)			
	Stream or Water Body Name			
5.3.1	ANCHO CANYON TRIBUTARY TO RIO GRA	0	M	0
5.3.2	LOS ALAMOS CANYON TRIBUTARY TO RIO	0	M	100
5.3.3	PAJARITO CANYON TRIBUTARY TO RIO G	0	M	100

If additional pages of Part II, Section 5.3 are attached, indicate the total number of pages in this box [2]
and indicate the Part II, Section 5.3 page number in this box. [1] (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION

TRI Facility ID Number
87144SLLSL02838
Toxic Chemical, Category or Generic Name
Mercury

SECTION 1. TOXIC CHEMICAL IDENTITY (Important: DO NOT complete this section if you completed Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete only if Part 1, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive.)

1.4 Distribution of Each Member of the Dioxin and Dioxin-like Compounds Category.
(If there are any numbers in boxes 1-17, then every field must be filled in with either 0 or some number between 0.01 and 100. Distribution should be reported in percentages and the total should equal 100%. If you do not have speciation data available, indicate NA.)

NA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
☐																	

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY
(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. ☐ Produce b. ☐ Import		
If produce or import:	a. ☐ As a reactant	a. ☐ As a chemical processing aid
c. ☐ For on-site use/processing	b. ☐ As a formulation component	b. ☐ As a manufacturing aid
d. ☐ For sale/distribution	c. ☐ As an article component	c. ☐ Ancillary or other use
e. ☐ As a byproduct	d. ☐ Repackaging	
f. ☐ As an impurity	e. ☐ As an impurity	

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ONSITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	☐ (Enter two-digit code from instruction package.)	

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ONSITE

		A. Total Release (pounds/year*) (Enter range code or estimate**)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions NA ☐			
5.2	Stack or point air emissions NA ☐			
5.3	Discharges to receiving streams or water bodies (enter one name per box)			
	Stream or Water Body Name			
5.3.1	PUEBLO CANYON TRIBUTARY TO RIO GRA	0	M	100
5.3.2	SANDIA CANYON TRIBUTARY TO RIO GRA	1.3	M	100
5.3.3	MORTANDAD TRIBUTARY TO RIO GRANDE	0	M	99

If additional pages of Part II, Section 5.3 are attached, indicate the total number of pages in this box 2
and indicate the Part II, Section 5.3 page number in this box. 2 **(example: 1,2,3, etc.)**

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL - SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
84544SDSLT2835
Toxic Chemical, Category, or Generic Name
Mercury

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ONSITE (Continued)

		NA	A. Total Release (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)
5.4.1	Underground Injection onsite to Class I Wells	X		
5.4.2	Underground Injection onsite to Class II-V Wells	X		
5.5	Disposal to land onsite			
5.5.1.A	RCRA Subtitle C landfills	X		
5.5.1.B	Other landfills	X		
5.5.2	Land treatment/application farming	X		
5.5.3A	RCRA Subtitle C Surface Impoundments	X		
5.5.3B	Other surface impoundments	X		
5.5.4	Other disposal		0	O

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY-OWNED TREATMENT WORKS (POTWs)

6.1.A Total Quantity Transferred to POTWs and Basis of Estimate

6.1.A.1. Total Transfers (pounds/year*) (enter range code** or estimate)	6.1.A.2 Basis of Estimate (enter code)
NA	

6.1.B. 1	POTW Name	NA					
POTW Address							
City		State		County		Zip	
6.1.B.	POTW Name						
POTW Address							
City		State		County		Zip	

If additional pages of Part II, Section 6.1 are attached, indicate the total number of pages in this box [ ] **and indicate the Part II, Section 6.1 page number in this box** [ ] **(example: 1,2,3, etc.)**

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2. 1	Off-Site EPA Identification Number (RCRA ID No.)	UT982598898							
Off-Site Location Name	ENVIROCARE OF UTAH, INC.								
Off-site Address	I80 EXIT 49 WEST OF SALT LAKE CITY								
City	CLIVE	State	UT	County	TOULE	Zip	84083	Country (Non-US)	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
87544SDLSL2835
Toxic Chemical, Category, or Generic Name
Mercury

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 5.3	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 2 Off-Site EPA Identification Number (RCRA ID No.) COD980591184

Off-Site location Name: ONYX ENVIRONMENTAL SERVICES L.L.C.

Off-site Address: 9131 EAST 96TH AVENUE

City: HENDERSON | State: CO | County: DENVER | Zip: 80640 | Country (Non-US):

Is location under control of reporting facility or parent company? ☐ Yes ☒ No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 1.8	1. M	1. M24
2. 25	2. M	2. M65
3. NA	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

☐ Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.1a	7A.1b: 1 C09, 2 P12, 3 P31, 4 NA, 5, 6, 7, 8	7A.1c	7A.1d	7A.1e
W		04	99.1 %	Yes X / No
7A.2a	7A.2b: 1, 2, 3, 4, 5, 6, 7, 8	7A.2c	7A.2d	7A.2e
			%	Yes / No
7A.3a	7A.3b: 1, 2, 3, 4, 5, 6, 7, 8	7A.3c	7A.3d	7A.3e
			%	Yes / No
7A.4a	7A.4b: 1, 2, 3, 4, 5, 6, 7, 8	7A.4c	7A.4d	7A.4e
			%	Yes / No
7A.5a	7A.5b: 1, 2, 3, 4, 5, 6, 7, 8	7A.5c	7A.5d	7A.5e
			%	Yes / No

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 5

and indicate the Part II, Section 6.2/7A page number in this box: 1 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number: 87544SDLSL2835

Toxic Chemical, Category, or Generic Name: Mercury

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 3 Off-Site EPA Identification Number (RCRA ID No.): TXD988088464

Off-Site location Name: WASTE CONTROL SPECIALISTS

Off-site Address: 9998 HIGHWAY 176 WEST

City	State	County	Zip	Country (Non-US)
ANDREWS	TX	ANDREWS	79714	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 0	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.6a	7A.6b: 1 2 3 4 5 6 7 8	7A.6c	7A.6d %	7A.6e Yes [ ] No [ ]
7A.7a	7A.7b: 1 2 3 4 5 6 7 8	7A.7c	7A.7d %	7A.7e Yes [ ] No [ ]
7A.8a	7A.8b: 1 2 3 4 5 6 7 8	7A.8c	7A.8d %	7A.8e Yes [ ] No [ ]
7A.9a	7A.9b: 1 2 3 4 5 6 7 8	7A.9c	7A.9d %	7A.9e Yes [ ] No [ ]
7A.10a	7A.10b: 1 2 3 4 5 6 7 8	7A.10c	7A.10d %	7A.10e Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 5

and indicate the Part II, Section 6.2/7A page number in this box: 2 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number: 84744SDSLL2835

Toxic Chemical, Category, or Generic Name: Mercury

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 4 Off-Site EPA Identification Number (RCRA ID No.): UTD981552177

Off-Site location Name: CLEAN HARBORS ARAGONITE LLC

Off-site Address: 11600 NORTH APTUS ROAD

City	State	County	Zip	Country (Non-US)
ARAGONITE	UT	TOOELE	84029	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 19.2	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]								c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.11a	7A.11b	1		2		3		4	7A.11c	7A.11d	7A.11e
	5		6		7		8			%	Yes [ ] No [ ]
7A.12a	7A.12b	1		2		3		4	7A.12c	7A.12d	7A.12e
	5		6		7		8			%	Yes [ ] No [ ]
7A.13a	7A.13b	1		2		3		4	7A.13c	7A.13d	7A.13e
	5		6		7		8			%	Yes [ ] No [ ]
7A.14a	7A.14b	1		2		3		4	7A.14c	7A.14d	7A.14e
	5		6		7		8			%	Yes [ ] No [ ]
7A.15a	7A.15b	1		2		3		4	7A.15c	7A.15d	7A.15e
	5		6		7		8			%	Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 5

and indicate the Part II, Section 6.2/7A page number in this box: 3 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
37744SDLSL2835
Toxic Chemical, Category, or Generic Name
Mercury

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 5 Off-Site EPA Identification Number (RCRA ID No.): TND982109142

Off-Site location Name	DIVERSIFIED SCIENTIFIC SERVICES INC							
Off-site Address	657 GALLAHER RD							
City	KINGSTON	State	TN	County	ROANE	Zip	37763	Country (Non-US)

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 0	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]								c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.16a	7A.16b	1		2		3		4	7A.16c	7A.16d	7A.16e
	5		6		7		8			%	Yes [ ] No [ ]
7A.17a	7A.17b	1		2		3		4	7A.17c	7A.17d	7A.17e
	5		6		7		8			%	Yes [ ] No [ ]
7A.18a	7A.18b	1		2		3		4	7A.18c	7A.18d	7A.18e
	5		6		7		8			%	Yes [ ] No [ ]
7A.19a	7A.19b	1		2		3		4	7A.19c	7A.19d	7A.19e
	5		6		7		8			%	Yes [ ] No [ ]
7A.20a	7A.20b	1		2		3		4	7A.20c	7A.20d	7A.20e
	5		6		7		8			%	Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 5

and indicate the Part II, Section 6.2/7A page number in this box: 4 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number: 87144SDLSL2835

Toxic Chemical, Category, or Generic Name: Mercury

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 6 Off-Site EPA Identification Number (RCRA ID No.): AZ0000337360

Off-Site location Name: ONYX SPECIAL SERVICES INC

Off-site Address: 5752 W JEFFERSON ST

City	State	County	Zip	Country (Non-US)
PHOENIX	AZ	MARICOPA	85043	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 6906.4	1. M	1. M24
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]								c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data?
7A.21a	7A.21b	1		2		3		4	7A.21c	7A.21d	7A.21e
	5		6		7		8			%	Yes [ ] No [ ]
7A.22a	7A.22b	1		2		3		4	7A.22c	7A.22d	7A.22e
	5		6		7		8			%	Yes [ ] No [ ]
7A.23a	7A.23b	1		2		3		4	7A.23c	7A.23d	7A.23e
	5		6		7		8			%	Yes [ ] No [ ]
7A.24a	7A.24b	1		2		3		4	7A.24c	7A.24d	7A.24e
	5		6		7		8			%	Yes [ ] No [ ]
7A.25a	7A.25b	1		2		3		4	7A.25c	7A.25d	7A.25e
	5		6		7		8			%	Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 5

and indicate the Part II, Section 6.2/7A page number in this box: 5 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number: 37644SBLSD2835

Toxic Chemical, Category, or Generic Name: Mercury

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

[X] Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods [enter 3-character code(s)]

1 [ ] 2 [ ] 3 [ ]

SECTION 7C. ON-SITE RECYCLING PROCESSES

[X] Not Applicable (NA) - Check here if no on-site recyling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods [enter 3-character code(s)]

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

6 [ ] 7 [ ] 8 [ ] 9 [ ] 10 [ ]

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

		Column A Prior Year (pounds/year*)	Column B Current Reporting Year (pounds/year*)	Column C Following Year (pounds/year*)	Column D Second Following Year (pounds/year*)
8.1					
8.1a	Total on-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	NA	NA	NA	NA
8.1b	Total other on-site disposal or other releases	0.6	2.4	2	2
8.1c	Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	149.5	49.6	50	50
8.1d	Total other off-site disposal or other releases	NA	NA	NA	NA
8.2	Quantity used for energy recovery onsite	NA	NA	NA	NA
8.3	Quantity used for energy recovery offsite	NA	NA	NA	NA
8.4	Quantity recycled onsite	NA	NA	NA	NA
8.5	Quantity recycled offsite	26.7	6908.2	140	140
8.6	Quantity treated onsite	NA	NA	NA	NA
8.7	Quantity treated offsite	NA	NA	NA	NA
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with productionprocesses (pounds/year)			NA	
8.9	Production ratio or activity index			0.85	

8.10 Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11.

	Source Reduction Activities [enter code(s)]	Methods to Identify Activity (enter codes)		
8.10.1	NA	a.	b.	c.
8.10.2		a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.

8.11 Is additional information on source reduction, recycling, or pollution control activities included with this report ? (Check one Box) — Yes [ ] No [X]

*For Dioxin or Dioxin-like compounds, report in grams/year

Form Approved OMB Number:2070-0093
Approval Expires: 1/31/2006

(IMPORTANT: Type or print; read instructions before completing form)

EPA United States Environmental Protection Agency

FORM R

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act

TRI Facility ID Number
87544SDLSL52835
Toxic Chemical, Category or Generic Name
Nitric acid

WHERE TO SEND COMPLETED FORMS: 1. TRI Data Processing Center, P.O.Box 1513, Lanham, MD 20703-1513 2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

Enter "X" here if this is a revision: [ ]

For EPA use only

Important: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR 2003

SECTION 2. TRADE SECRET INFORMATION

2.1 Are you claiming the toxic chemical identified on page 2 trade secret?
[ ] Yes (Answer question 2.2; Attach substantiation forms) [X] NO (Do not answer 2.2; Go to Section 3)

2.2 Is this copy [ ] Sanitized [ ] Unsanitized (Answer only if "YES" in 2.1)

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data availble to the preparers of this report.

Name and official title of owner/operator or senior management official:	Signature:	Date Signed:
Gene Turner Office of Facility Ops.		06/24/2004

SECTION 4. FACILITY IDENTIFICATION

4.1 TRI Facility ID Number: 87544SDLSL52835

Facility or Establishment Name: U.S. Department of Energy, LOS ALAMOS NATIONAL LABORATORY

Facility or Establishment Name or Mailing Address (if different from street address):

Street: 528 35th Street

Mailing Address: NA

City/County/State/Zip Code: LOS ALAMOS LOS ALAMOS NM 87544

City/State/Zip Code:

Country (Non-US):

4.2 This report contains information for: (Important: check a or b; check c or d if applicable) a. [X] An entire facility b. [ ] Part of a facility c. [X] A Federal facility d. [ ] GOCO

4.3	Technical Contact Name	Gene Turner	Telephone Number (include area code): (505) 667-5794
	Email Address	gturner@lanl.gov	
4.4	Public Contact Name	Gene Turner	Telephone Number (include area code): (505) 667-5794

4.5 SIC Code (s) (4 digits)	Primary	b.	c.	d.	e.	f.
	a. 9711					

4.6	Latitude	Degrees	Minutes	Seconds	Longitude	Degrees	Minutes	Seconds
		35	49	51		106	14	15

4.7 Dun & Bradstreet Number(s) (9 digits)	4.8 EPA Identification Number (RCRA I.D. No.) (12 characters)	4.9 Facility NPDES Permit Number(s) (9 characters)	4.10 Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)
a. NA	a. NM0890010515	a. NM0028355	a. NA
b.	b.	b.	b.

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company	NA [ ]	U.S. DEPARTMENT OF ENERGY
5.2	Parent Company's Dun & Bradstreet Number	NA [X]	

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION

TRI Facility ID Number: 87544SDLSL52835

Toxic Chemical, Category or Generic Name: Nitric acid

SECTION 1. TOXIC CHEMICAL IDENTITY (Important: DO NOT complete this section if you completed Section 2 below.)

1.1 CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
7697-37-2

1.2 Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
Nitric acid

1.3 Generic Chemical Name (Important: Complete only if Part 1, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive.)
NA

1.4 Distribution of Each Member of the Dioxin and Dioxin-like Compounds Category.
(If there are any numbers in boxes 1-17, then every field must be filled in with either 0 or some number between 0.01 and 100. Distribution should be reported in percentages and the total should equal 100%. If you do not have speciation data available, indicate NA.)

NA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
☐																	

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above.)

2.1 Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)
NA

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY
(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:
- a. ☐ Produce b. ☐ Import
- If produce or import:
- c. ☐ For on-site use/processing
- d. ☐ For sale/distribution
- e. ☐ As a byproduct
- f. ☐ As an impurity

3.2 Process the toxic chemical:
- a. ☐ As a reactant
- b. ☐ As a formulation component
- c. ☐ As an article component
- d. ☐ Repackaging
- e. ☐ As an impurity

3.3 Otherwise use the toxic chemical:
- a. ☐ As a chemical processing aid
- b. ☐ As a manufacturing aid
- c. ☒ Ancillary or other use

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ONSITE AT ANY TIME DURING THE CALENDAR YEAR

4.1 04 (Enter two-digit code from instruction package.)

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ONSITE

			A. Total Release (pounds/year*) (Enter range code or estimate**)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA ☐	A	O	
5.2	Stack or point air emissions	NA ☐	169	E	
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1	MORTANDAD TRIBUTARY TO RIO GRANDE		0	M	NA
5.3.2					
5.3.3					

If additional pages of Part II, Section 5.3 are attached, indicate the total number of pages in this box ☐ and indicate the Part II, Section 5.3 page number in this box. ☐ (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL - SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
87544SDLSL2835
Toxic Chemical, Category, or Generic Name
Nitric acid

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ONSITE (Continued)

		NA	A. Total Release (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)
5.4.1	Underground Injection onsite to Class I Wells	X		
5.4.2	Underground Injection onsite to Class II-V Wells	X		
5.5	Disposal to land onsite			
5.5.1.A	RCRA Subtitle C landfills	X		
5.5.1.B	Other landfills	X		
5.5.2	Land treatment/application farming	X		
5.5.3A	RCRA Subtitle C Surface Impoundments	X		
5.5.3B	Other surface impoundments	X		
5.5.4	Other disposal		0	0

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)

6.1.A Total Quantity Transferred to POTWs and Basis of Estimate

6.1.A.1. Total Transfers (pounds/year*) (enter range code** or estimate)	6.1.A.2 Basis of Estimate (enter code)
NA	

6.1.B. 1	POTW Name	NA					
	POTW Address						
	City		State		County		Zip
6.1.B.	POTW Name						
	POTW Address						
	City		State		County		Zip

If additional pages of Part II, Section 6.1 are attached, indicate the total number of pages in this box [ ] and indicate the Part II, Section 6.1 page number in this box [ ] (example: 1,2,3, etc.)

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2. 1 Off-Site EPA Identification Number (RCRA ID No.)	COD980591184
Off-Site Location Name	ONYX ENVIRONMENTAL SERVICES L.L.C.
Off-site Address	9131 EAST 96TH AVENUE

City	HENDERSON	State	CO	County	DENVER	Zip	80640	Country (Non-US)	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number: 79744SDSL2835

Toxic Chemical, Category, or Generic Name: Nitric acid

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 144	1. M	1. M54
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 2 Off-Site EPA Identification Number (RCRA ID No.): TXD988088464

Off-Site location Name: WASTE CONTROL SPECIALISTS

Off-site Address: 9998 HIGHWAY 176 WEST

City	State	County	Zip	Country (Non-US)
ANDREWS	TX	ANDREWS	79714	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 4	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A. ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]								c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.1a	7A.1b	1	C11	2	NA				7A.1c	7A.1d	7A.1e
W	3	4		5		6	7	8	01	100 %	Yes [X] No [ ]
7A.2a	7A.2b	1		2					7A.2c	7A.2d	7A.2e
	3	4		5		6	7	8		%	Yes [ ] No [ ]
7A.3a	7A.3b	1		2					7A.3c	7A.3d	7A.3e
	3	4		5		6	7	8		%	Yes [ ] No [ ]
7A.4a	7A.4b	1		2					7A.4c	7A.4d	7A.4e
	3	4		5		6	7	8		%	Yes [ ] No [ ]
7A.5a	7A.5b	1		2					7A.5c	7A.5d	7A.5e
	3	4		5		6	7	8		%	Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 2

and indicate the Part II, Section 6.2/7A page number in this box: 1 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number: 84744SDLSL2835

Toxic Chemical, Category, or Generic Name: Nitric acid

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 3 Off-Site EPA Identification Number (RCRA ID No.): UTD981552177

Off-Site location Name: CLEAN HARBORS ARAGONITE LLC

Off-site Address: 11600 NORTH APTUS ROAD

City	State	County	Zip	Country (Non-US)
ARAGONITE	UT	TOOELE	84029	

Is location under control of reporting facility or parent company? [ ] Yes [X] No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 14	1. M	1. M65
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

SECTION 7A ONSITE WASTE TREATMENT METHODS AND EFFICIENCY

[ ] Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data ?
7A.6a	7A.6b: 1 2 3 4 5 6 7 8	7A.6c	7A.6d %	7A.6e Yes [ ] No [ ]
7A.7a	7A.7b: 1 2 3 4 5 6 7 8	7A.7c	7A.7d %	7A.7e Yes [ ] No [ ]
7A.8a	7A.8b: 1 2 3 4 5 6 7 8	7A.8c	7A.8d %	7A.8e Yes [ ] No [ ]
7A.9a	7A.9b: 1 2 3 4 5 6 7 8	7A.9c	7A.9d %	7A.9e Yes [ ] No [ ]
7A.10a	7A.10b: 1 2 3 4 5 6 7 8	7A.10c	7A.10d %	7A.10e Yes [ ] No [ ]

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box: 2

and indicate the Part II, Section 6.2/7A page number in this box: 2 (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1- 10 pounds; B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
37643SRLBD5283S
Toxic Chemical, Category, or Generic Name
Nitric acid

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

[X] Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods [enter 3-character code(s)]

1 [ ] 2 [ ] 3 [ ]

SECTION 7C. ON-SITE RECYCLING PROCESSES

[ ] Not Applicable (NA) - Check here if no on-site recyling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods [enter 3-character code(s)]

1 [R40] 2 [ ] 3 [ ] 4 [ ] 5 [ ]

6 [ ] 7 [ ] 8 [ ] 9 [ ] 10 [ ]

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

		Column A Prior Year (pounds/year*)	Column B Current Reporting Year (pounds/year*)	Column C Following Year (pounds/year*)	Column D Second Following Year (pounds/year*)
8.1					
8.1a	Total on-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	NA	NA	NA	NA
8.1b	Total other on-site disposal or other releases	85	169	170	170
8.1c	Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	10	18	20	20
8.1d	Total other off-site disposal or other releases	NA	NA	NA	NA
8.2	Quantity used for energy recovery onsite	NA	NA	NA	NA
8.3	Quantity used for energy recovery offsite	NA	NA	NA	NA
8.4	Quantity recycled onsite	19500	5400	10000	20000
8.5	Quantity recycled offsite	NA	NA	NA	NA
8.6	Quantity treated onsite	4000	13000	10000	5000
8.7	Quantity treated offsite	NA	144	NA	NA
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with productionprocesses (pounds/year)			NA	
8.9	Production ratio or activity index			2.10	

8.10 Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11.

	Source Reduction Activities [enter code(s)]	Methods to Identify Activity (enter codes)		
8.10.1	W51	a. T04	b.	c.
8.10.2	NA	a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.

		Yes	No
8.11	Is additional information on source reduction, recycling, or pollution control activities included with this report ? (Check one Box)	[ ]	[X]

*For Dioxin or Dioxin-like compounds, report in grams/year


Los Alamos
NATIONAL LABORATORY
EST. 1943