

LA-14273-PR
Progress Report
Approved for public release;
distribution is unlimited.

2004 Toxic Chemical Release Inventory Report
for the Emergency Planning and Community
Right-to-Know Act of 1986,
Title III, Section 313

The three most recent reports in this unclassified series are LA-14071-PR, LA-14096-PR, and LA-14186-PR.

Edited by Hector Hinojosa, Group IM-1

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the University of California for the United States Department of Energy under contract W-7405-ENG-36.

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the Regents of the University of California, the United States Government nor any agency thereof, nor any of their employees make any warranty, express or implied, or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represent that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the Regents of the University of California, the United States Government, or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the Regents of the University of California, the United States Government, or any agency thereof. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

LA-14273-PR
Progress Report
Issued: January 2006

2004 Toxic Chemical Release Inventory Report
for the Emergency Planning and Community
Right-to-Know Act of 1986,
Title III, Section 313

ENV-MAQ (Meteorology and Air Quality Group)

CONTENTS

LIST OF TABLES	vi
LIST OF FIGURES	vi
LIST OF ACRONYMS.....	vii
ABSTRACT	1
1.0 INTRODUCTION.....	2
2.0 Activity Determinations, Exemptions, and Qualifiers	3
2.1 Activity Determinations.....	3
2.2 Exemptions.....	4
2.3 Qualifiers.....	5
3.0 ANALYSIS FOR THRESHOLD DETERMINATIONS.....	6
3.1 Threshold Determinations for Chemical Use.....	7
3.2 Threshold Determination Results.....	8
4.0 ADDITIONAL EVALUATION OF CERTAIN TOXIC CHEMICALS	9
4.1 Sulfuric Acid	9
4.2 Hydrochloric Acid.....	10
4.3 Polycyclic Aromatic Compounds.....	11
4.4 Dioxins.....	14
4.5 Mercury and Mercury Compounds	15
5.0 LEAD COMPOUNDS AND FORM R REPORTING	17
5.1 Threshold Determination	17
5.2 Environmental Releases and Offsite Disposal	20
5.3 Other Information Provided on Form R Report.....	25
6.0 NITRIC ACID AND FORM R REPORTING	26
6.2 Environmental Releases and Offsite Disposal	28
6.3 Other Information Provided on Form R Report for Nitric Acid	30
7.0 NITRATE COMPOUNDS AND FORM R REPORTING	31
7.1 Threshold Determination	31
7.2 Environmental Releases and Offsite Disposal	33
7.3 Other Information Provided on Form R Report for Nitrate Compounds	36
8.0 EPCRA SECTION 313 SUMMARY AND TRENDS	37
References	40
Appendix A: EPCRA Section 313 Chemicals Used or Procured in 2004	43
Appendix B: Form R Reports for Lead Compounds, Nitric Acid, and Nitrate Compounds	49

LIST OF TABLES

2-1	Examples of EPCRA Section 313 Chemical Qualifiers.....	5
3-1	Top 10 Listed EPCRA Section 313 Chemicals Procured in 2004.....	8
4-1	Sulfuric Acid Threshold Determinations for 2004.....	10
4-2	Hydrochloric Acid Threshold Determinations for 2004	11
4-3	PACs Threshold Determinations for 2004	13
4-4	Dioxins Threshold Determinations for 2004	15
4-5	Mercury Threshold Determinations for 2004	17
5-1	Lead Threshold Determinations for 2004.....	20
5-2	Lead Air Emissions from LANL in 2004.....	21
5-3	Summary of 2004 Lead Discharges to Receiving Streams by Canyon.....	23
5-4	Summary of Lead Waste Sent Offsite from LANL in 2004.....	24
6-1	Nitric Acid Threshold Determinations for 2004	27
6-2	Emission Factors and Emissions from Nitric Acid Use in Plutonium Processing	29
6-3	Nitric Acid Air Emissions from LANL in 2004	29
6-4	Summary of Nitric Acid Waste Sent Offsite from LANL in 2004	30
7-1	Nitrate Compounds Threshold Determinations for 2004	33
7-2	Summary of 2004 Nitrate Compound Discharges to Receiving Streams	35
7-3	Summary of Nitrate Compound Waste Sent Offsite from LANL in 2004	36
A-1	EPCRA Section 313 Chemicals Used or Procured in 2004	43

LIST OF FIGURES

3-1	Flowchart of Process of Analysis for EPCRA Section 313 Reporting	6
8-1	Trends in LANL's Reported Releases to EPA TRI	39
8-2	Trends in TRI Reportable Chemical Use at LANL.....	39

LIST OF ACRONYMS

ATLAS	Advanced Testing Line for Actinide Separation
CAS	Chemical Abstract Service
DOE	U.S. Department of Energy
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
HE	high explosive
JIT	Just-in-Time
LANL	Los Alamos National Laboratory
LANSCC	Los Alamos Neutron Science Center
LVA	Local Vendor Agreements
MOx	mixed oxide (fuels)
MSDS	Material Safety Data Sheets
NMT	Nuclear Materials Technology (Division)
NPDES	National Pollutant Discharge Elimination System
OB/OD	open burn/open detonation
RLWTF	Radioactive Liquid Waste Treatment Facility
SARA	Superfund Amendments and Reauthorization Act
SO ₃	sulfur trioxide
SWSC	Sanitary Waste Systems Consolidation
PACs	polycyclic aromatic compounds
PBTs	persistent bioaccumulative toxics
TA	Technical Area
TRI	Toxic Release Inventory
TRI-DDS	Toxic Release Inventory-Data Delivery System
UC	University of California
UTL	upper threshold level

**2004 Toxic Chemical Release Inventory Report
for the
Emergency Planning and
Community Right-to-Know Act of 1986,
Title III, Section 313**

ENV-MAQ (Meteorology and Air Quality Group)

Abstract

Section 313 of Emergency Planning and Community Right-to-Know Act (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.

For reporting year 2004, Los Alamos National Laboratory (LANL or the Laboratory) submitted Form R reports for lead compounds, nitric acid, and nitrate compounds as required under the EPCRA Section 313. No other EPCRA Section 313 chemicals were used in 2004 above the reportable thresholds. This document provides a description of the evaluation of EPCRA Section 313 chemical use and threshold determinations for LANL for calendar year 2004, as well as background information about data included on the Form R reports.

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 2004, LANL submitted Form R reports for lead, nitric acid, and nitrate compounds. No other EPCRA Section 313 chemicals were used in 2004 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 data evaluation, exemption analysis, activity determinations, and threshold determinations for toxic chemical use at LANL in 2004, 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 2004. 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: Mr. Steve Story at (505) 665-2169
 - UC public contact: Ms. Lorrie Bonds Lopez at (505) 667-0216
- 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 Section 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.

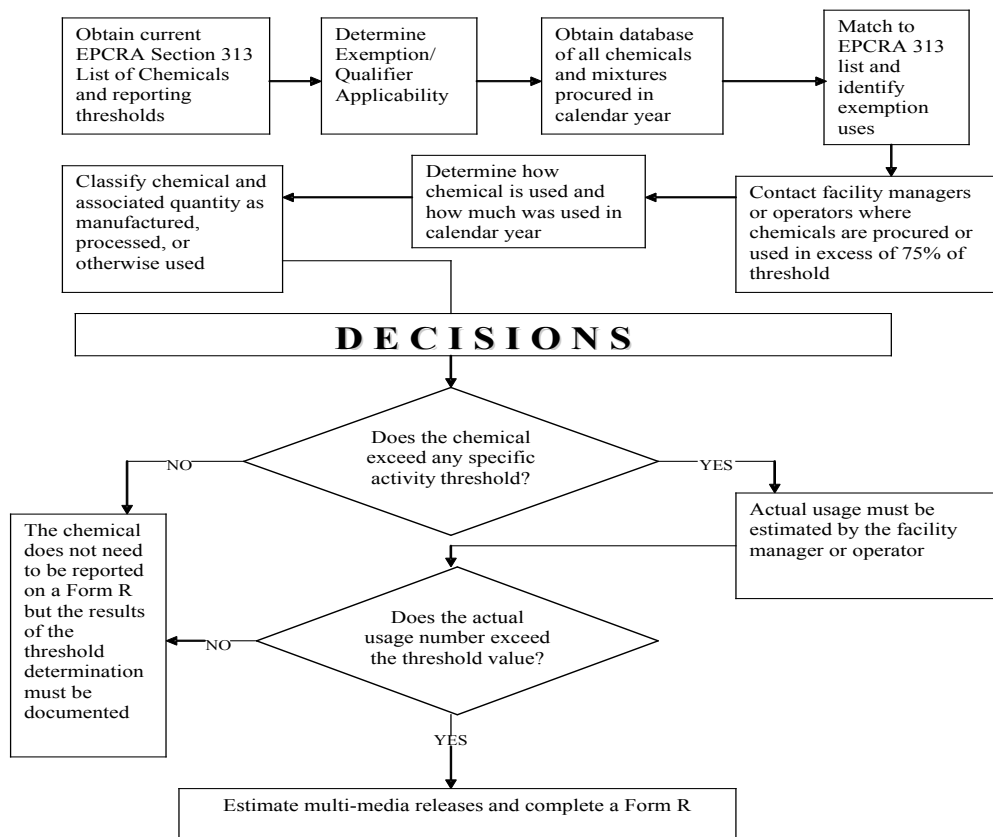


Figure 3-1. Flowchart of Process of Analysis for EPCRA Section 313 Reporting

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 (JIT), Purchase Orders, Local Vendor Agreements (LVAs), and STOREs (onsite gas facility). The Laboratory tracks chemicals brought onsite using a custom-made software called ChemLog. 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 Section 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 2004, a total of 37,179 records were added to ChemLog and evaluated; 19,702 were pure chemicals and 17,477 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, an effort was made to analyze purchasing procurements to capture chemicals that may not have been entered into the ChemLog database system. The purchasing procurements included: the Chemical Order Report (JIT and Purchase Orders), LVAs, and purchase cards. For 2004, LANL did not use the purchasing procurements to identify chemicals not captured in ChemLog because (1) the new ChemLog and extensive training conducted has increased the overall percentage of chemicals captured; (2) historically, the additional quantity of EPCRA Section 313 chemicals identified via purchasing procurements has always been very small; and (3) there has been increased management attention to the requirement in LANL's Chemical Management Laboratory Implementation Requirement (LIR 402-510-01)² 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.”

In addition to data evaluated in the ChemLog, an assessment was made of chemicals brought onsite through the site support contractor (KSL). KSL purchased 10,474 lb of sulfuric acid in liquid form that was not captured in ChemLog. This amount was added to the sum of listed chemicals. Furthermore, a nitric acid storage tank was filled during 2004 and this added 42,000 lb to the nitric acid total.

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 2004 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.

Nitric acid and sulfuric acid were the only EPCRA Section 313 chemicals purchased above the 10,000-lb otherwise used threshold and required further investigation. Section 4.0 provides individual analyses of other chemicals that did not trigger reporting for 2004.

Table 3-1. Top Ten Listed EPCRA Section 313 Chemicals Procured in 2004

CAS No	Chemical Name	Total Procured (lb)
7697-37-2	Nitric Acid	52,150
7664-93-9	Sulfuric Acid (liquid form)	18,334
7647-01-0	Hydrochloric acid (liquid form)	8,857
NA	Manganese Compounds	2,551
7782-50-5	Chlorine	2,490
NA	Nickel Compounds	2,019
67-56-1	Methanol	1,463
75-05-8	Acetonitrile	1,406
75-09-2	Dichloromethane	1,389
7664-38-2	Phosphoric Acid	1,346

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 2004 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. In previous years over 100,000 lb of sulfuric acid was used. In 2004, a total of 10,474 lb was used. The reason for the significant decrease is the installation of a reverse osmosis system in late 2003 that resulted in much lower use of caustics and acids. Because this sulfuric acid is used in liquid form, it is not subject to EPCRA Section 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 (SO₃) emissions are in the form of sulfuric acid.³ For natural gas combustion, it is conservatively assumed that all sulfur oxides emissions are in the form of sulfuric acid mist because separate SO₃ 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 2004

Description	Amount of Sulfuric Acid (lb)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lb)
Demineralizer Regeneration	10,474	Site Support Contractor Logs	Not in aerosol form and not subject to EPCRA Section 313	NA
Water Analysis at the SWSC Plant	81	Site Support Contractor Logs		
Procurement	7,860*	Procurement Data	Otherwise Used	10,000
Storage Tank Air Emissions	0.003	EPA, Tanks 4.0 Software	Manufactured	25,000
Fuel Combustion Byproducts	704	AP-42 and fuel use records ³		

*Assumed to be in aerosol form.

4.2 Hydrochloric Acid

Hydrochloric acid is purchased for numerous processes. The total amount of hydrochloric acid procured in 2004 was 8,857 lb. This includes hydrochloric acid from pure chemicals and mixtures in ChemLog. The total 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).”⁴ 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 3,356 lb of aqueous hydrochloric acid in 2004. 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 less than 1 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 (8,857 lb), minus the aqueous hydrochloric acid used by Waste Facility Management discussed above (3,356 lb), which is 5,501 lb. This quantity of hydrochloric acid likely includes aqueous forms of hydrochloric acid, not just aerosol forms. To be conservative, the entire amount was assumed to be in aerosol form and was evaluated against the 10,000-lb otherwise use threshold, which it does not exceed.

Table 4-2 summarizes the analysis for hydrochloric acid.

Table 4-2. Hydrochloric Acid Threshold Determinations for 2004

Description	Amount of Hydrochloric Acid (lb)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lb)
Aqueous hydrochloric acid	3,356	Procurement and interviews	Exempt based on nonaerosol qualifier	NA
Other procurement	5,501*	Procurement records	Otherwise Used	10,000
Aerosol generated from use of aqueous hydrochloric acid	< 1	Engineering calculations	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 2004 was 29 lb. Under EPCRA Section 313, the PAC category includes 21 specific chemicals and an additional 51 chemical mixtures that are listed as may contain PACs. The 29.2 lbs procured in ChemLog was entirely from the purchase of one chemical mixture, Trim Sol. Trim Sol is used as a cutting fluid for machine tools and it contains petroleum oil (CAS # 8002-05-9), which is listed as one of the 51 chemical mixtures that may contain PACs.

PACs from Asphalt Production

LANL did not make any asphalt onsite in 2004. The old asphalt plant was shutdown and dismantled in 2003, and the new asphalt plant did not start up in 2004. Therefore, all asphalt layed at LANL was purchased from outside contractors.

During 2004, contractors were hired to bring asphalt onsite for LANL's paving needs. A review of records for 2004 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 Section 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. The two projects accounted for 11,912 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.⁶ 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 2.1 lbs. The concentration of benzo(g,h,i)perylene in asphalt, from EPA's Guidance on PBTs, is 1.2 ppm.⁷ This figure gives 0.9 lb of benzo(g,h,i)perylene reportable towards its 10-lb otherwise use threshold.

PACs from Fuel Oil Combustion

The main power plant at LANL used 34,051 gallons of fuel oil in 2004. An additional 8,000 gallons is estimated to have been used in diesel-fired generators throughout LANL, totaling 42,051 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.⁶ The 22 ppm was used in our calculations. This equates to 6.6 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.⁷ The data provided by Chevron-Texaco

indicated concentrations of 9 ppm. The 9 ppm was used in our calculations and results in 2.7 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,³ these amounts were calculated to be 0.0007 lb for total PACs and 0.00009 lb for benzo(g,h,i)perylene.

PACs from Natural Gas

Approximately 1,128 million standard cubic feet of natural gas was burned at LANL in 2004. Using AP-42 emission factors⁸ and fuel records, approximately 0.018 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 6.6 lb of PACs toward the otherwise used threshold. Concentrations of PACs in asphalt account for 2.1 lb. The total is 8.7 lb, well below the otherwise used reporting threshold of 100 lb.

Benzo(g,h,i)perylene concentrations in asphalt tar and diesel fuel totaled 3.6 lb towards the otherwise used threshold. Combustion processes accounted for 0.002 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 2004

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	8.7	Otherwise Used	100
	Asphalt	2.1			
	Fuel Oil	6.6			
	Natural Gas	0.018	0.019	Manufactured	100
	Fuel Oil	0.0007			
Benzo(g,h,i)perylene	Natural Gas	0	3.6	Otherwise Used	10
	Asphalt	0.9			
	Fuel Oil	2.7			
	Natural Gas	0.001	0.001	Manufactured	10
	Fuel Oil	9.5×10^{-5}			

4.4 Dioxins

Dioxins are a group of PBTs formed during combustion processes. The EPCRA Section 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.”⁹

Activities at LANL that were evaluated for dioxins include explosives activities and fuel combustion. 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.¹⁰ An emission factor of 4 µg dioxin emitted/ton of material burned was used.

Based on available information, estimated emissions from dioxins formed by OB/OD of HE materials totaled 1.43×10^{-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 3.58×10^{-9} g/yr. Combining estimated emissions from HE expended and HE burned, total dioxin emissions were 1.46×10^{-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.⁹ The Laboratory burned a total of 42,051 gallons (159,163 liters) of diesel fuel in 2004. Multiplying by the dioxin emission factor, a total of 5.06×10^8 picograms (0.0005 grams) of dioxin was formed due to fuel combustion.

Table 4-4 summarizes the amount of dioxins formed from all sources characterized for 2004.

Table 4-4. Dioxins Threshold Determinations for 2004

Description	Amount of Dioxin Formed (grams)	EPCRA Section 313 Activity Determination	EPCRA Section 313 Threshold (grams)
HE Expended	1.43×10^{-7}	Manufactured	0.1
HE Burned	3.58×10^{-9}	Manufactured	0.1
Fuel Combustion	5.06×10^{-4}	Manufactured	0.1
Total Dioxin Formed	0.0005		0.1

4.5 Mercury and Mercury Compounds

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 2004. As part of the PBT rule, the threshold for reporting mercury was reduced to 10 lb starting calendar year 2000. In 2004 mercury use at the Laboratory was below the otherwise used threshold for EPCRA Section 313 reporting. Each use is described below.

Mercury Procurements

A listing of 2004 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 2004 was 25.6 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 24.2 lb. The total amount of mercury from procurements applied to the otherwise used threshold is 1.4 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 2004, there were no mercury transfers in the reservoirs in the LANSCE shutter system. There was some minor maintenance that involved replenishing gas pressure, but the actual transfer of mercury into or out of the closed system did not occur. Therefore, there will be no addition to the otherwise used threshold for mercury from activities at LANSCE.

Fuel Combustion

In 2004, LANL emitted mercury emissions from the following combustion sources: Technical Area (TA) 21 steam plant, TA-3 power plant, and numerous small boilers that burned 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.¹¹ LANL burned 42,051 gallons of diesel fuel in 2004 and this equates to 0.0003 lb of mercury.

Table 4-5 summarizes uses of mercury at LANL in 2004.

Table 4-5. Mercury Threshold Determinations for 2004

Description	Amount of Mercury (lb)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lb)
Purchasing of Mercury Standards and Instruments	24.2	Procurement data and facility personnel interviews	Laboratory Exempt	NA
Other Procurement	1.4	Procurement Records	Otherwise Used	10
LANSCE Shutter System	0	LANSCE Facility Records		
Fuel Combustion	0.0003	Fuel Use Records and EPA Guidance		
Fuel Combustion	0.31	Fuel Use Records and EPA AP-42	Manufactured	10

5.0 LEAD COMPOUNDS AND FORM R REPORTING

5.1 Threshold Determination

Lead and lead compounds are used in various activities throughout the Laboratory. Procurement records were evaluated and users of large quantities of lead were interviewed to gain an understanding of how lead was actually used in 2004. 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 2004, lead and lead compounds were used at several locations within the Laboratory and exceeded the otherwise used threshold for EPCRA Section 313 reporting. Each use is described below.

Lead Procurements

A listing of all procurements in 2004 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 2004 was 10.1 lb. According to EPCRA Section 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 8.1 lb. The total amount of lead from procurements applied to the otherwise used threshold is 2.0 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 Section 313 chemicals from various munitions activities.¹² 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 Section 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 content for that ammunition. Using this software and manufacturer data, it was determined that 5,536 lb of lead and 8.9 lb of lead compounds were shot at the firing range in 2004. For EPCRA threshold determinations, the amount of pure lead used, as well as the amount of any lead compounds “coincidentally manufactured,” was evaluated.

Lead-Bismuth Test Loop

There are two lead-bismuth test loops located at LANL. No additional lead-bismuth was added to the test loops in 2004. The lead-bismuth in the test loops is contained in a closed system and no environmental releases of lead compounds occurred in 2004. Therefore, the article exemption applies to this equipment.

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 be evaluated against the 100-lb lead threshold. According to EPA guidance,¹³ the concentration of lead in diesel fuel is 0.5 ppm and 0.05 mg/m³ in natural gas. In 2004, LANL used 1,128.3 million standard cubic feet of natural gas, which contained 3.52 lb of lead. LANL also burned 42,051 gallons of diesel fuel, which contained 0.15 lb of lead. Therefore, a total of 3.67 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 2004, LANL emitted lead compounds from the following combustion sources: TA-21 steam plant, TA-3 power plant, and numerous small natural gas-fired boilers. The lead compound emissions from these sources totaled 0.61 lb toward the manufactured threshold.

Lead Bricks and Lead Shielding

The Laboratory continues to maintain an inventory of lead shielding and lead bricks at LANSCE. In recent years, LANL has reduced the inventory by sending some of the lead offsite to be recycled and reused. According to EPA’s web-based TRI advanced training course presented on May 10, 2005, “the recovery of a listed Section 313 chemical for further

distribution in commerce or commercial use is ‘processing’ of that chemical.” Also, materials sent offsite for direct “reuse” are not reported on Form R as environmental releases, but material sent offsite for recycling are reported on Form R in Part II, Section 6.2. EPA considers the direct recirculation of a toxic chemical within a process or between processes without any intervening reclamation or recovery to be “reuse.”¹⁴ Furthermore, “reclamation or recovery” does not include simple phase changing of the toxic chemical before further reuse (e.g., simple remelting of scrap metal).

The following is a list of lead that was shipped offsite to Ace Metals to be reused in 2004:

- 1,000 lb from MPF-18 Pb bismuth loop,
- 10,000 lb from MPF-744 mini lead shed, and
- 200,000 lb from MPF-621 lead shed.

The 210,000 lb of lead and 1,000 lb of lead bismuth is considered “processed” because it was distributed for commercial use and therefore must be included in the threshold determination. Ace Metals repackaged the lead and sent it to a lead smelter. Because the lead is simply remelted, it is defined as “reused”. Therefore, it is not reported as an environmental release on the Form R in Part II, Section 6.2.

Additionally, 40,200 lb of lead shielding was transferred to Duratek’s Bear Creek facility in Tennessee and this lead was melted down and formed into new shielding. Therefore, this lead is also considered “processed” and must be included in the threshold determination. However it is not reported on Form R as an environmental release because it will be “reused.”

Finally, LANL received 40,000 lb of lead from France for the Pb Cooling Project and it will be returned to France when the project ends. This lead is otherwise used.

Lead Melting and Lead Shielding Decontamination

Historically at LANL, lead shielding 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 2004. Lead shielding decontamination was discontinued at LANL. The activity did not operate in 2004.

Summary

The largest source of lead use at LANL is from the lead recycling project at LANSCE, which accounted for 250,200 lb of lead and 1,000 lb of lead compounds towards the processed threshold. In 2004, the firing range accounted for 5,536 lb of lead and the Pb Cooling Project accounted for 40,000 lb of lead towards the otherwise used threshold. Based on these operations, it was determined that both lead and lead compounds were processed or used over threshold quantities. EPA guidance states that “if the threshold is exceeded for both the elemental metal and the metal category compound, you may file one combined report as the metal category compound.” Therefore, a Form R for lead compounds was submitted for

2004. The thresholds for the different activity determinations involving lead and lead compounds are summarized in Table 5-1.

Table 5-1. Lead Threshold Determinations for 2004

Activity	Lead Use (lbs)	Lead Compound Use (lbs)	Comments
Firing Range	5,536	8.9	Otherwise Used
Air Curtain Destructors	0	0	Shutdown
Lead Purchases (ChemLog)	1.14	0.89	Purchased = 10.1 lb Lab exempt = 8.1 lb Otherwise Used = 2.0 (1.14 lead, 0.89 lead compounds)
Lead Re-Use from LANSCE (sold to Ace Metals)	250,200	1,000	Processed
Lead Re-Use from LANSCE (DOE inter- complex transfer)	40,000	0	Processed for re-use
Fuel Combustion	0	0.61	Manufactured
Fuel Combustion	3.67	0	Otherwise Used
TOTAL Nonexempt Use	Otherwise Used - 5,540 Processed- 290,200	Otherwise Used – 9.8 Processed - 1,000 Manufactured - 0.61	Reporting Thresholds = 100 lb

5.2 Environmental Releases and Offsite Disposal

Air Emissions

Lead emissions were calculated from two activities at the Laboratory: the firing range and fuel combustion. Lead air emissions from the firing range were calculated using the TRI DDS.¹² Using this model, the total amount of lead compounds released as fugitive air emissions was 4.4 lb.

In 2004, LANL emitted lead compound emissions from the following combustion sources: TA-21 steam 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 0.61 lb of lead compounds. Table 5-2 summarizes lead air emissions from LANL as reported on the Form R.

Table 5-2. Lead Air Emissions from LANL in 2004

Emission Source	Total Lead Emissions (lbs)	Fugitive or Stack
Firing Range	4.4	Fugitive
Fuel Combustion	0.61	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 2004 NPDES Outfall Monitoring Program were used to calculate the mass of lead discharged via permitted outfalls. 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 0.008 lb of lead from NPDES outfalls in 2004.

One of the permitted outfalls (051), the Radioactive Liquid Waste Treatment Facility (RLWTF), pretreats the influent to remove a large portion of the lead (and other metals) before discharge. Analytical data for influent before treatment compared with analytical data after treatment indicate the facility is removing approximately 99% of lead before discharge based on 2004 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 2004 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, 2004 Water Year."¹⁵ 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 2004, 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 2004. 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 lead is a naturally occurring element and previous LANL studies have established a background concentration for lead in various media including sediment, the analytical concentration was adjusted to account for the background concentration. Background concentration, or upper threshold level (UTL), for sediments in canyons within the LANL boundary is 19.7 µg/g for lead (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 lead. As this natural amount of lead is not attributable to LANL operations, it is necessary to estimate the amount of natural 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 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 2004. 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 2004 was 422 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 422 lb in calendar year 2004. Table 5-3 summarizes lead releases to receiving streams by canyon as reported on the Form R.

Table 5-3. Summary of 2004 Lead Discharges to Receiving Streams by Canyon

Receiving Canyon	Lead Discharges from NPDES Outfalls (lb)	Lead Discharges from Stormwater (lb)	Total Lead Discharges to Water (lbs)
Cañada del Buey	0	4.93	4.93
Los Alamos Canyon Tributary to Rio Grande	0	198.4	198.4
Mortandad Tributary to Rio Grande	0.008	3.2	3.2
Pajarito Canyon Tributary to Rio Grande	0	48.5	48.5
Sandia Canyon Tributary to Rio Grande	0	124.4	124.4
Water Canyon Tributary to Rio Grande	1.22E-05	42.8	42.8
Total By Canyon	0.008	422.2	422.2

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 5,536 lb of lead was released to land at the firing range at LANL in 2004.

Offsite Waste Disposal

LANL performed no onsite waste disposal of lead-contaminated wastes in 2004. 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 2004. 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.

The 2004 totals for lead are significantly greater than amounts shipped offsite from LANL in previous years. In 2003, a total of 50,570 lbs was shipped offsite. In 2002, a total of 465 lbs of lead contained in waste was shipped offsite and in 2001, 7,790 lbs of lead was shipped offsite by LANL. The increase in waste shipments in 2003 and 2004 reflects the Laboratory's recent efforts to expunge legacy waste, particularly lead bricks

and lead shielding. Specifically in 2004, a large cleanup effort was conducted at the DX firing sites and 45,008 lbs of lead bricks and lead shielding were disposed. This lead was potentially rad-contaminated with depleted uranium and beryllium and was not able to be recycled or reused.

Total reportable lead weight from all nonexempt waste disposal was calculated to be 52,518 lb. Table 5-4 provides a summary of lead waste streams that were sent offsite to various disposal and recycling companies in 2004. 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 5-4. Summary of Lead Waste Sent Offsite from LANL in 2004

Company	Facility EPA ID	EPCRA Disposal/ Treatment Code	Total Pb (lb)
Clean Harbors, Aragonite, LLC. (Formerly Safety Kleen)	UTD981552177	Other landfill	58.0
Clean Harbors, Grassy Mount LLC.	UTD991301748	Landfill	0.67
Diversified Scientific Services, Inc.	TND982109142	Stabilized and placed in landfill	2.3
Duretek, Inc. Bear Creek Facility	TND982157570	Macro-encapsulated and placed in landfill cell M41	6,371
Envirocare of Utah, Inc.	UTD982598898	Macro-encapsulated and placed in landfill cell	45,965
Material and Energy Corporation	TNR000005397	Treated and placed in landfill	81.9
Onyx Environmental Services, LLC.	COD980591184	Waste broker for disposal	29.5
Perma-Fix, Inc.	FLD980711071	Stabilized and placed in landfill	8.2
Phibro-Tech, Inc.	CAD008488025	Recycled	1.6
Waste Control Specialists	TXD988088464	Stabilized and placed in landfill	0.2
	Total		52,518.1

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 5.0 lb, 422 lb, and 5,536 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 52,518 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 2004, the RLWTF resulted in a 99% 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 2004.

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 1.6 lb of the lead waste shipped offsite was 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 45,008 lb of lead in waste shipped offsite for disposal as a result of one-time activities to clean up and dispose of old lead bricks and shielding from the DX firing sites

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 2004 was divided by the amount used in 2003 to obtain an activity ratio of 0.95.

6.0 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 2004 exceeded the EPCRA Section 313 otherwise used threshold of 10,000 lb.

6.1 Threshold Determination

Procurement

In calendar year 2004, a total of 52,268 lb of nitric acid was procured at the Laboratory, based on queries of the ChemLog system. Some of the purchase records indicate the 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 36,308 lb.

A large user of nitric acid at LANL continues to be Nuclear Materials Technology (NMT) Division, where nitric acid is used in various projects for plutonium processing. Historically, the nitric acid has been purchased in bulk and stored in a nitric acid storage tank at TA-55. However, during the first half of 2004 the nitric acid storage tank was empty and undergoing some modifications to ensure accurate level controls. In June 2004, a bulk shipment of 42,000 lbs of 70% nitric acid (29,400 lb pure nitric acid) was added to the tank. For the first half of 2004, nitric acid was purchased in cases of bottle containers for NMT Division, approximately 1,240 lbs.

Other large users of nitric acid were contacted to determine how the nitric acid was used. The second largest user of nitric acid in 2004 was Materials Science Technology Division with approximately 5,120 lbs added to ChemLog in 2004. Relatively large quantities of nitric acid continue to be used for the bioassay program (monitoring employees for radioactive elements). Numerous other users within the Chemistry Division were contacted and verified the use of nitric acid for sample preparation and analysis. In 2004, this use totaled 2,597 lb. Based on conversations with the Laboratory personnel, it was assumed that approximately 10% of the nitric acid used in the laboratory setting was used for cleaning laboratory glassware, which is not an exempt activity. Therefore, 260 lbs ($2,597 \times 10\%$) will be added to the otherwise used totals.

The quantity of nitric acid used by personnel that were not contacted, or that described their use of nitric acid as process related totaled 3,061 lb. As a conservative assumption, this amount is assumed to be otherwise used.

In conclusion, the quantity of nitric acid that was verified as qualifying for the laboratory exemption is 2,337 lb (2,597 - 260). The amount used for cleaning glassware is 260 lb. The amount of nitric acid not verified, or determined to be process related (not including NMT Division), is 3,061 lb.

Plutonium Processing

In 2004, two plutonium processing projects were active: the Mixed Oxides fuels (MOx) project and the Advanced Testing Line for Actinide Separation (ATLAS) project used large quantities of nitric acid. The goal of the MOx 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.¹⁶

A total of 25,465 liters of 70% nitric acid was used in various unit operations at NMT in 2004. From MSDS review, the density is 11.5 lb/gal for 70% nitric acid. This equates to 54,159 lb of pure nitric acid.

$$(25,465 \times 0.7) / (3.785 \text{ L/gal}) \times (11.5 \text{ lb/gal}) = 54,159 \text{ lb}$$

This value is used in the EPCRA Section 313 threshold evaluation instead of the purchasing records for NMT. This number is larger than the amount purchased by NMT for two reasons: (1) the nitric acid is used in more than one process and may be double, or triple counted, and (2) nitric acid that was purchased in 2003 was used in 2004.

Additionally, a total of 62,881 liters of 7 Molar nitric acid (approximately 40% solution in water) was run through distillation in 2004. Spent, diluted nitric acid from various unit operations is distilled to concentrate it. The distillate is then either stored for future use, or sent to the RLWTF for disposal. In 2004, all distillate was sent to RLWTF for disposal. This 62,881 liters of dilute nitric acid is not included in the total usage value because it is the same nitric acid used in other operations, and this would be double counting. However, the amount of nitric acid going through distillation is included in the emission calculations. The thresholds for the different activity determinations involving nitric acid are summarized in Table 6-1.

Table 6-1. Nitric Acid Threshold Determinations for 2004

Nitric Acid Use	Amount (lb)	EPCRA Status	Threshold for Reporting (lb)
Laboratory Use	2,337	Lab Exempt*	Exempt
Otherwise Use		Otherwise Use	
• Non-lab, or unknown use	3,061		
• Plutonium processing	<u>54,159</u>		
Total Otherwise Use	57,220		10,000

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

6.2 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 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 9.3 lb for 2004.

Emissions from plutonium processing were estimated using emission factors for each processing step and the amount of nitric acid processed in each step in 2004. The amount of nitric acid processed in each step was provided from facility operating logs. LANL reported under EPCRA Section 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 2004 emissions. Based on 2004 operations, emissions were calculated to be 238.6 lb from plutonium processing. The emission factors and resulting emissions are shown in Table 6-2.

It was assumed that while handling and transferring nitric acid a small percent evaporates and is released into the atmosphere as fugitive air emissions. Engineering judgment was used to estimate that these emissions are between 1 and 10 lbs.

Table 6-3 provides a summary of nitric acid air emissions at LANL in 2004.

Table 6-2. 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	0	0	0.001	0.0047	0	0	0
Cascade Dissolution 1	445	0.00136	0.00109	0.003	0.60	0.48	1.33
Cascade Dissolution 2	0	0.075	0.0099	0.095	0	0	0
Distillation	63,795	0.0016	0.0012	0.0034	102.07	76.55	216.90
Alpha Counting	0	0	0.015	0.0442	0	0	0
Residue Leaching	26	0.15	0.0104	0.112	3.83	0.27	2.86
Scrap Dissolution	0	0.027	0.00675	0.0185	0	0	0
Anion Exchange	48,320	0.0012	0	0	57.98	0	0
ICP ^b	0	0	0.01	0.03	0	0	0
MPD ^b	0	0.15	0.0104	0.112	0	0	0
OH Cake Dissolution	0	0.014	0.0069	0.019	0	0	0
Filtrate Concentration	0	0.0016	0.0012	0.0034	0	0	0
ATLAS	5,369	0.0138			74.09		
Metallography	0	0.0099	0	0	0	0	0
TOTAL	54,159				238.58	77.30	221.09

(a) The sum of nitric acid used in each process is greater than the total amount of nitric acid used, as shown in Table 6-

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.

Table 6-3. Nitric Acid Air Emissions from LANL in 2004

Nitric Acid Air Emissions	Amount (lb)	EPCRA Form R Reporting Section
Storage Tank	9.3	Stack air emissions – Section 5.2
Plutonium Processing	238.6	Stack air emissions – Section 5.2
Fugitive Emissions	Between 1 and 10	Fugitive air emissions – Section 5.1
TOTAL	252.9*	Section 8.1b

*For the total, 5 lbs was used for fugitive emissions.

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 2004 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 2004. 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 2004. 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 416 lb. Table 6-4 provides a summary of the nitric acid waste streams that were sent offsite to various disposal and recycling companies in 2004. 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 6-4. Summary of Nitric Acid Waste Sent Offsite from LANL in 2004

Company	Address	Facility EPA ID	EPCRA Disposal/ Treatment Code	Total Nitric Acid (lb)
Clean Harbors, Aragonite, LLC	Aragonite, UT	UTD981552177	Incineration	392.5
Onyx Environmental Services, LLC	Henderson, CO	COD980591184	Transferred to waste broker for treatment	23.6
Waste Control Specialists	Andrews County, TX	TXD988088464	Stabilized and placed in landfill	All lab exempt
			Total	416.1

6.3 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 253 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 416 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 2004.

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. However, in 2004 no nitric acid was recycled. LANL also conducts wastewater treatment to neutralize nitric acid in the wastewater as described above. A total of 17,400 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 2003, 49,780 lb of nitric acid was used. In 2004, a total of 54,159 lb of nitric acid was used. An activity ratio of 1.09 was calculated and reported on Section 8.9 of the Form R.

7.0 NITRATE COMPOUNDS AND FORM R REPORTING

According to EPA's EPCRA Section 313 Guidance, "List of Toxic Chemicals within the Water Dissociable Nitrate Compounds Category and Guidance for Reporting,"¹⁷ 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.

7.1 Threshold Determination

After a thorough examination of the various sources of nitrate compounds at LANL, it was determined that reporting was required. For the manufacture threshold, sources reviewed included waste nitric acid treated at the 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 2004. 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. A total of 580 lb of

nitrate compounds were identified through purchasing records for 2004. No additional effort was made to determine if the various nitrate compounds were water dissociable, or if they fell under the nonaqueous exemption.

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 0.89 mg/L and total flow into the system during 2004 was 91,277,000 gallons. Using this data and EPA guidance, the total amount of sodium nitrate in the influent was calculated to be 862 lb in 2004.

The information provided for the SWSC also included the amount and nitrate concentration of the treated water. The total amount of treated water out of SWSC in 2004 was 103,770,000 gallons. The average nitrate concentration was 3.3 mg/L. This calculates out to a total of 3,572 lbs of nitrates manufactured.

Nitric Acid Neutralization

The amount of nitric acid used in plutonium processing was significantly higher than in previous years at 30,730 liters of 4 Molar nitric acid. 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. Nitric acid is used to dissolve plutonium and to regenerate ion exchange beds.

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.¹⁷ The total amount of nitric acid treated was calculated to be 17,371 lb. The nitrate compounds (sodium nitrate) generated from the neutralization process totaled 23,429 lb.

Summary

Table 7-1 summarizes the threshold determination for nitrate compounds for 2004.

Table 7-1. Nitrate Compounds Threshold Determinations for 2004

Description	Amount of Nitrate Compounds (lbs)	EPCRA Section 313 Activity Determination	EPCRA Section 313 Threshold (lbs)
Procurement	580	Otherwise Used	10,000
Explosives Activities	Not calculated	Not in aqueous form	--
SWSC	930	Processed as an impurity	25,000
RLWTF	17,371		
Total Processed	18,301		
SWSC	3,572	Manufactured	25,000
RLWTF	23,429		
Total Manufactured	27,001		

Based on the total amount of nitrate compounds manufactured of just over 27,000 lb, it was determined that the manufacturing threshold was exceeded and reporting of nitrate compounds was required for 2004.

7.2 Environmental Releases and Offsite Disposal

Air Emissions

No air emissions are expected from aqueous nitrate compounds. Nitrate compounds have very low volatility and tend to stay in the aqueous form. Therefore, a "0" was entered on the Form R for air emissions from handling of nitrate compounds.

Water Releases

To calculate releases of nitrate compounds to surface waters, both NPDES data and storm water monitoring data were evaluated.

Wastewater Discharges

The tabular data from LANL's NPDES program included total annual flows and NO₂+NO₃ (as N) analytical results from samples collected at a number of NPDES outfalls at LANL. Samples for NO₂+NO₃ (as N) were collected once annually from 16 outfall locations. Flow rate was reported by LANL in million gal/year for each outfall location. For each NPDES outfall, nitrate discharges were calculated by multiplying the total yearly flow, in L, for each outfall by the NO₂+NO₃ (as N) concentration, in mg/L. This provided the mass of NO₂+NO₃ (as N). This value was conservatively assumed to consist exclusively of nitrate (NO₃) and was then scaled up by the molecular weight of NO₃ to reflect the mass of nitrate. The resulting mass from each outfall was then summed, resulting in a total discharge of 912 lbs of nitrate from LANL NPDES outfalls in 2004.

Storm Water Discharges

NO₂+NO₃ (as N) concentrations for storm water released to receiving streams during calendar year 2004 were obtained from the Water Quality Database Reports web site (<http://wqdbworld.lanl.gov/>) by querying for Chemistry/Surface Water/Nitrate. The resulting data set provided the location name, the sample type, sample date, and the analytical result in mg/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 2004 Water Year (LA-14211-PR).¹⁵ For samples collected from locations not included in LANL's 2004 water year report, total annual flow in acre feet was estimated based on information provided for these stations by the Laboratory's Water Quality and Hydrology Group.

Analytical results from surface water samples collected at locations upstream from or outside of the potential zone of impact from LANL were considered to be representative of background levels of nitrate in storm water. These 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 the stations located at Starmers above Pajarito, Rito de los Frijoles at Bandelier, Gauje Canyon, and Pajarito above SR 501 were averaged together to develop an average background concentration for the area. Data from other sampling locations considered potentially impacted by LANL activities were then adjusted to account for background concentrations.

Once the background-adjusted concentrations for each applicable location were established, the concentration was then multiplied by the measured or estimated annual flow at each surface water sampling location in acre-feet. Using this calculation, each storm water sampling data point was multiplied by the annual flow through the canyon. Because each sample was multiplied by the total annual flow through each sample station, it would be a drastic overestimation to then sum all sample data. Therefore, the single highest mass value for each canyon group was identified. This single highest mass from each canyon group was used as representative in calculating a conservative total LANL release to the environment for 2004. This provided the mass of NO₂+NO₃ as Nitrogen.

The resulting values were conservatively assumed to consist exclusively of nitrate (NO₃) and were then scaled up by the molecular weight of NO₃ to reflect the mass of nitrate using the same approach as described for the NPDES analysis above.

Once the average mass was calculated for each sampling location, the mass from all locations were summed. Based on this sum, the total estimated mass of nitrate released from LANL NPDES outfalls and among surface water base flows during 2004 was 912 and 11,653 lbs, respectively. Results were then summed by major drainage on the Pajarito Plateau. Each major drainage, which is comprised of several tributary drainages, contributes water to the Rio Grande. This information is summarized in Table 7-2.

Table 7-2. Summary of 2004 Nitrate Compound Discharges to Receiving Streams

Canyon Group	NPDES NO₃ (lbs)	Surface Water NO₃ (lbs)	Total NO₃ (lbs)	% from Stormwater
Los Alamos Canyon	52		52	0.0
Mortandad Canyon	109	2,588	2,698	95.9
Sandia Canyon	749	9,065	9,814	92.4
Water Canyon	1.1		1.1	0.0
TOTAL	912	11,653	12,565	

Onsite Waste Disposal

Evaporator bottoms containing nitrate compounds from the RLWTF are collected in tanker trucks and transferred to Duretek Bear Creek facility in Tennessee. At the Duretek facility the bottoms are further evaporated to near dryness. The concentrated bottoms are then mixed with cement, packaged in 55-gallon drums, and returned to LANL for land disposal at TA-54. LANL disposes of this waste at the TA-54 landfill. Detailed records on the amount of stabilized nitrate waste received back at TA-54 in 2004 were reviewed. The total amount of nitrates disposed of onsite at LANL's TA-54 landfill in 2004 was calculated to be 11,524 lb. This value is entered on the Form R on Section 5.5 – Disposal to Land Onsite, Section 5.5.1.B – Other Landfills.

Offsite Waste Disposal

Waste characterization and disposal data for nitrate containing wastes that were shipped offsite for treatment and/or disposal in 2004 were reviewed. Laboratory exempt waste was separated from reportable waste. For most reportable waste items containing nitrates, information included an estimate of the percent of the nitrate compound in the waste. The percentage nitrate compound was then multiplied by the mass (kg) of the waste item.

EPA Guidance states that: *"Once a reporting threshold is met for the water dissociable nitrate compound category, releases and other waste management estimates are calculated based on the pounds of the nitrate ion in aqueous solution rather than the total weight of the compound."*¹⁷

Therefore, a second calculation was done to determine the weight of the nitrate ion in the nitrate compounds. This could only be done where the waste description provided clear information on which nitrate compounds were in the waste stream. Where specific information was provided, the total weight of the nitrate compound was ratio'd by the molecular weight of nitrate (NO₃) to the molecular weight of the specific nitrate compound to calculate the weight of the nitrate ion.

In 2004, LANL sent out two shipments of evaporator bottoms to the Duretek Bear Creek facility in Tennessee. The volume of each shipment (in gallons) and the concentration of

nitrates in each shipment were used to calculate the total weight of nitrates as NO₃ shipped offsite to Duretek. The total amount of reportable nitrates contained in waste that was shipped offsite from LANL is shown in Table 7-3.

Table 7-3. Summary of Nitrate Compound Waste Sent Offsite from LANL in 2004

Company	Facility EPA ID	Disposal Treatment Method	Total Nitrate (lb)
Clean Harbors Aragonite, LLC	UTD981552177	Incineration	204.1
Perma-Fix	FLD980711071	Unknown	1.7
Onyx Environmental Services, LLC	COD980591184	Transfer to waste broker	109.5
Duratek, Inc. Bear Creek Facility	TND982157570	Stabilization	13,163
		Total	13,478

7.3 Other Information Provided on Form R Report for Nitrate Compounds

Environmental releases of nitrate compounds as air emissions, to surface waters, and onsite waste disposal were reported to be 0 lb, 12,565 lb, and 11,524 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 13,478 lb of nitrate compounds was reported in Section 6.2 of the Form R, *Transfers to Other Offsite Location*.

Section 7A of the Form R includes information for onsite treatment methods. The nitrate compounds are formed as a result of onsite treatment of nitric acid. There is no additional treatment of the nitrate compounds. Sections 7B and 7C relate to onsite energy recovery and recycling. LANL performed no onsite processes applicable to these sections for nitrate compounds in 2004.

Section 8 of the Form R includes information on source reduction and recycling activities. The Laboratory did not conduct any operations on source reduction or recycling of nitrate compounds. Section 8.9 of the Form R reports a production or activity ratio, an estimated measure of the production or activity associated with use of the reported chemical at the facility. Nitric acid is transferred to the RLWTF where it is neutralized with sodium hydroxide, and sodium nitrate is formed. Therefore, the amount of nitric acid used in plutonium processing was used to develop a production/activity ratio for nitrate compound formation. In 2003, 49,780 lb of nitric acid was used and in 2004 a total of 54,159 lb of nitric acid was used. An activity ratio of 1.09 was calculated and reported on Section 8.9 of the Form R.

8.0 EPCRA SECTION 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 Section 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.

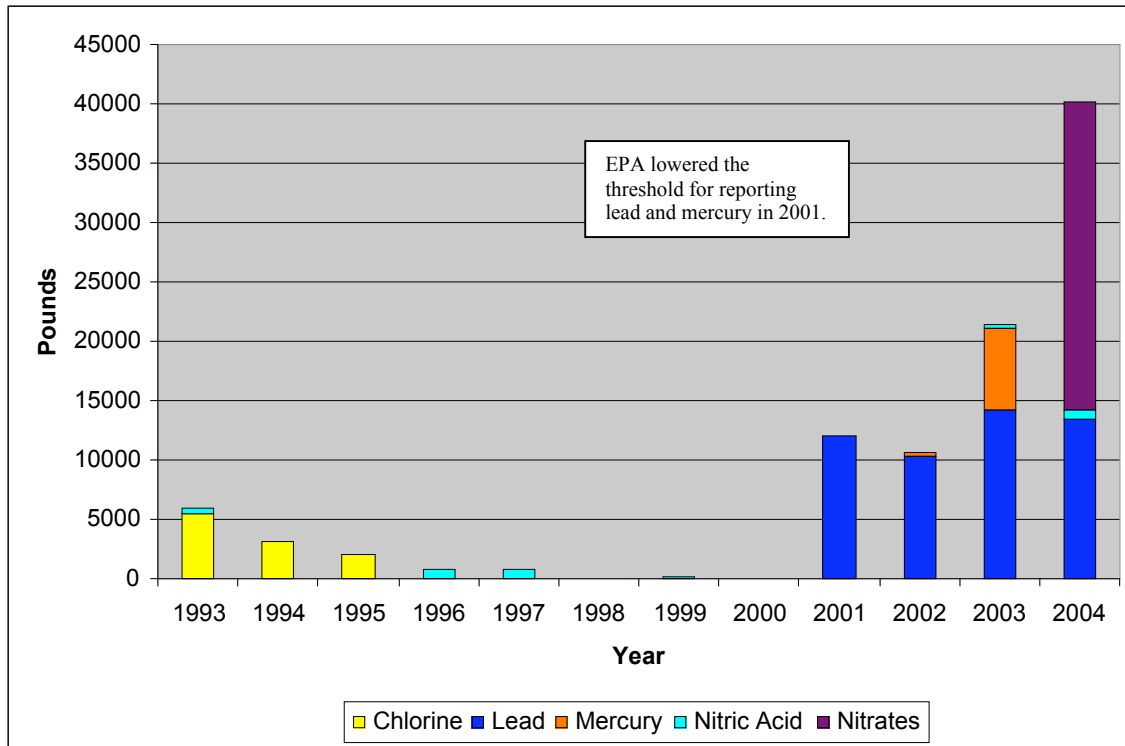
As a result of these regulatory changes, LANL has triggered EPCRA Section 313 reporting for lead and mercury. The regulatory changes resulted in reporting thresholds of 10 lb for mercury and 100 lb for lead. Therefore, in 2002 and 2003 LANL submitted environmental release data on these two chemicals. Mercury use has decreased and did not trigger reporting for 2004, however lead and lead compounds continue to be reportable under the lower regulatory thresholds. Figure 8-1 provides a summary of LANL reported releases for the period from 1993 through 2004. 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 a nitric acid recycle system 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 was 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 and 2004.

- Because there were no identified users of recycled nitric acid, and limited storage capacity, in 2004 spent nitric acid from plutonium processing was sent to the RLWTF for treatment and disposal. Through the treatment process nitric acid was neutralized and resulted in formation of nitrate compounds. For the first time in 2004, nitrate compounds were manufactured above reportable quantities and triggered reporting.
- 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 Section 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 are 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.

Another metric used at LANL is tracking of EPCRA Section 313 reportable chemical use. Figure 8-2 shows the amount of reportable chemicals used at LANL from 1993 through 2004. The UC, operator of LANL, set a pollution prevention goal of reducing the use of EPCRA Section 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 Section 313 reportable chemicals used each year. Each year LANL evaluates the EPCRA Section 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 and 2004, one-time waste disposal of lead from decontamination and demolition activities is not included in this chart.

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

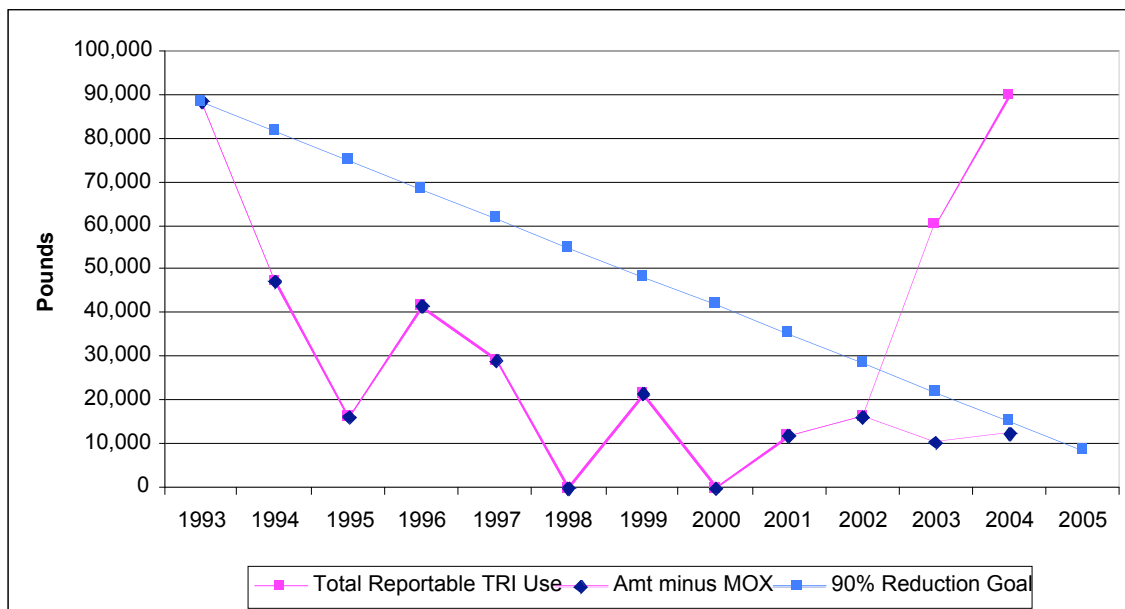


Figure 8-2. Trends in TRI Reportable Chemical Use at LANL

References

1. U.S. Environmental Protection Agency, "Toxic Chemical Release Inventory Reporting Form R and Instructions," Revised 2004 Version, EPA 260-B-05-001, January 2005.
2. Los Alamos National Laboratory, "Chemical Management Laboratory Implementation Requirement," LIR 402-510-01, August 2003.
3. U.S. Environmental Protection Agency, "Compilation of Air Pollutant Emission Factors," AP-42, Chapter 1.3—Fuel Oil Combustion, September 1998.
4. 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.
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. Chevron-Texaco Guidance Recommendations for SARA 313 Reporting of Polycyclic Aromatic Compounds (PACs) and Benzo(g,h,i)perylene. Lyman Young, May 2, 2001.
7. 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.
8. U.S. Environmental Protection Agency, "Compilation of Air Pollutant Emission Factors," AP-42, Fifth Edition, Section 1.4—Natural Gas Combustion, July 1998.
9. 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.
10. American Society of Mechanical Engineers, "Relationship Between Chlorine in Waste Streams and Dioxin Emissions from Combustors," CRTD Vol. 36, December 1995.
11. 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.

12. U.S. Department of Defense, TRI-DDS Software, <http://www.dod.tridss.org>.
13. 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.
14. U.S. Environmental Protection Agency, "EPCRA Section 313 Questions and Answers," EPA 745-B-98-004, December 1998.
15. Los Alamos National Laboratory. "Surface Water Data at Los Alamos National Laboratory 2004 Water Year," LA-14211-PR, April 2005.
16. Los Alamos National Laboratory, "Actinide Research Quarterly, 1st/2nd Quarter 2003, Nuclear Fuels," LA-LP-03-067, December 2003.
17. 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.

Appendix A:
EPCRA Section 313 Chemicals Used or Procured in 2004

CAS Number	Chemical Name	EPCRA Threshold	2004 Amount Purchased or Used (lbs)
7697-37-2	Nitric acid	10000	52,150.0
7664-93-9	Sulfuric acid (aerosol forms only)	10000	18,334.0
7647-01-0	Hydrochloric acid (aerosol forms only)	10000	8,856.7
Manganese Compounds	Manganese Compounds	10000	2,551.2
7782-50-5	Chlorine	10000	2,490.0
Nickel Compounds	Nickel Compounds	10000	2,019.1
67-56-1	Methanol	10000	1,462.8
75-05-8	Acetonitrile	10000	1,406.0
75-09-2	Dichloromethane	10000	1,389.4
7664-38-2	Phosphoric acid	10000	1,345.7
Copper Compounds	Copper Compounds	10000	1,198.5
Zinc Compounds	Zinc Compounds	10000	1,128.3
75-45-6	Chlorodifluoromethane	10000	1,056.1
67-63-0	Isopropyl alcohol (mfg-strong acid process)	10000	892.7
Glycol Ethers Compounds	Glycol Ethers	10000	876.4
78-93-3	Methyl ethyl ketone	10000	728.2
Polychlorinated Alkanes	Polychlorinated alkanes (C10 to C13)	10000	688.0
Chromium Compounds	Chromium Compounds	10000	669.2
Nitrate Compounds	Nitrate compounds (water dissociable)	10000	581.5
108-88-3	Toluene	10000	558.8
110-54-3	n-Hexane	10000	396.1
67-66-3	Chloroform	10000	328.3
68-12-2	N,N-Dimethylformamide	10000	280.1
1344-28-1	Aluminum oxide (fibrous forms)	10000	256.0
76-13-1	Freon 113	10000	142.9
95-63-6	1,2,4-Trimethylbenzene	10000	125.2
872-50-4	N-Methyl-2-pyrrolidone	10000	93.8
Cyanide Compounds	Cyanide Compounds	10000	90.9
7664-41-7	Ammonia	10000	85.3
71-43-2	Benzene	10000	78.6
79-01-6	Trichloroethylene	10000	43.8
7664-39-3	Hydrogen fluoride	10000	41.8
71-36-3	n-Butyl alcohol	10000	33.4
8002-05-9	Petroleum PACs	100	29.2
1634-04-4	Methyl tert-butyl ether	10000	20.6
110-86-1	Pyridine	10000	19.5
79-06-1	Acrylamide	10000	18.1
56-23-5	Carbon tetrachloride	10000	17.6
Silver Compounds	Silver Compounds	10000	16.7
101-68-8	Methylenebis(phenylisocyanate)	10000	16.5
126-72-7	Tris(2,3-dibromopropyl) phosphate	10000	13.2

CAS Number	Chemical Name	EPCRA Threshold	2004 Amount Purchased or Used (lbs)
121-44-8	Triethylamine	10000	12.3
7440-50-8	Copper	10000	12.2
95-47-6	o-Xylene	10000	11.6
64-18-6	Formic acid	10000	11.6
107-06-2	1,2-Dichloroethane	10000	9.5
7429-90-5	Aluminum (fume or dust)	10000	9.4
75-65-0	tert-Butyl alcohol	10000	9.2
1330-20-7	Xylene (mixed isomers)	10000	8.3
Barium Compounds	Barium Compounds	10000	8.2
7440-66-6	Zinc (fume or dust)	10000	8.1
5124-30-1	1,1'-Methylene bis(4-isocyanatocyclohexane)	10000	8.0
123-91-1	1,4-Dioxane	10000	6.9
78-92-2	sec-Butyl alcohol	10000	6.7
7440-39-3	Barium	10000	6.6
84-74-2	Dibutyl phthalate	10000	6.6
80-62-6	Methyl methacrylate	10000	6.3
Chlorophenols Compounds	Chlorophenols	10000	6.2
100-42-5	Styrene	10000	4.5
7783-06-4	Hydrogen sulfide	10000	4.4
110-82-7	Cyclohexane	10000	4.3
106-42-3	p-Xylene	10000	4.2
7440-47-3	Chromium	10000	4.0
50-00-0	Formaldehyde	10000	3.7
108-38-3	m-Xylene	10000	3.0
95-50-1	1,2-Dichlorobenzene	10000	2.9
Cobalt Compounds	Cobalt Compounds	10000	2.8
98-88-4	Benzoyl chloride	10000	2.7
98-95-3	Nitrobenzene	10000	2.6
75-71-8	Dichlorodifluoromethane	10000	2.6
7440-48-4	Cobalt	10000	2.5
107-21-1	Ethylene glycol	10000	2.4
7440-02-0	Nickel	10000	2.4
302-01-2	Hydrazine	10000	2.2
554-13-2	Lithium carbonate	10000	2.2
141-32-2	Butyl acrylate	10000	2.0
Arsenic Compounds	Arsenic Compounds	10000	1.7
95-54-5	1,2-Phenylenediamine	10000	1.7
7782-49-2	Selenium	10000	1.6
7439-96-5	Manganese	10000	1.6
51-79-6	Urethane	10000	1.5
Mercury Compounds	Mercury Compounds	10	1.5
108-95-2	Phenol	10000	1.4

CAS Number	Chemical Name	EPCRA Threshold	2004 Amount Purchased or Used (lbs)
7440-38-2	Arsenic	10000	1.3
62-53-3	Aniline	10000	1.3
111-42-2	Diethanolamine	10000	1.2
Lead Compounds	Lead Compounds	100	1.1
98-86-2	Acetophenone	10000	1.1
77-73-6	Dicyclopentadiene	10000	1.1
120-80-9	Catechol	10000	1.1
541-73-1	1,3-Dichlorobenzene	10000	1.1
7440-36-0	Antimony	10000	1.1
106-50-3	p-Phenylenediamine	10000	1.1
Cadmium Compounds	Cadmium Compounds	10000	1.1
7723-14-0	Phosphorus (yellow or white)	10000	1.0
7550-45-0	Titanium tetrachloride	10000	0.95
7439-92-1	Lead	100	0.89
Selenium Compounds	Selenium Compounds	10000	0.66
91-20-3	Naphthalene	10000	0.56
7726-95-6	Bromine	10000	0.52
Beryllium Compounds	Beryllium Compounds	10000	0.50
72-57-1	Trypan blue	10000	0.44
989-38-8	C.I. Basic Red 1	10000	0.41
106-88-7	1,2-Butylene oxide	10000	0.35
10294-34-5	Boron trichloride	10000	0.30
74-85-1	Ethylene	10000	0.28
100-44-7	Benzyl chloride	10000	0.24
91-22-5	Quinoline	10000	0.23
1314-20-1	Thorium dioxide	10000	0.23
106-44-5	p-Cresol	10000	0.22
108-39-4	m-Cresol	10000	0.22
Antimony Compounds	Antimony Compounds	10000	0.22
2524-03-0	Dimethyl chlorothiophosphate	10000	0.22
541-41-3	Ethyl chloroformate	10000	0.22
79-22-1	Methyl chlorocarbonate	10000	0.22
109-77-3	Malononitrile	10000	0.22
70-30-4	Hexachlorophene	10000	0.22
106-93-4	1,2-Dibromoethane	10000	0.22
90-94-8	Michler's ketone	10000	0.22
115-07-1	Propylene	10000	0.22
7440-43-9	Cadmium	10000	0.22
78-84-2	Isobutyraldehyde	10000	0.18
75-25-2	Bromoform	10000	0.16
7440-41-7	Beryllium	10000	0.15
7440-22-4	Silver	10000	0.12
123-31-9	Hydroquinone	10000	0.11

CAS Number	Chemical Name	EPCRA Threshold	2004 Amount Purchased or Used (lbs)
7632-00-0	Sodium nitrite	10000	0.11
7440-62-2	Vanadium (fume or dust)	10000	0.10
135-20-6	Cupferron	10000	0.08
75-56-9	Propylene oxide	10000	0.08
75-15-0	Carbon disulfide	10000	0.07
100-02-7	4-Nitrophenol	10000	0.06
822-06-0	Hexamethylene-1,6-diisocyanate	10000	0.06
81-88-9	C.I. Food Red 15	10000	0.06
109-06-8	2-Methylpyridine	10000	0.05
77-78-1	Dimethyl sulfate	10000	0.03
75-07-0	Acetaldehyde	10000	0.02
1313-27-5	Molybdenum trioxide	10000	0.011
122-39-4	Diphenylamine	10000	0.011
64-75-5	Tetracycline hydrochloride	10000	0.011
Thallium Compounds	Thallium Compounds	10000	0.011
117-81-7	Di(2-ethylhexyl) phthalate	10000	0.011
88-89-1	Picric acid	10000	0.004
55-63-0	Nitroglycerin	10000	0.004
121-14-2	2,4-Dinitrotoluene	10000	0.003
75-34-3	Ethylidene Dichloride	10000	0.003

Appendix B:
Form R Reports for Lead Compounds, Nitric Acid and Nitrate Compounds



DEPARTMENT OF ENERGY
National Nuclear Security Administration
Los Alamos Site Office
Los Alamos, New Mexico 87544



JUN 27 2005

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

ATTN: Toxic Chemical Release Inventory
TRI Magnetic Media Submission

Dear Sir or Madam:

Subject: Calendar Year 2004 Form R Submittal

Enclosed is one (1) microcomputer diskette containing toxic chemical release reporting information (Form R reports) for the Los Alamos National Laboratory (LANL) for lead, nitric acid, and nitrate compounds for calendar year 2004. 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 2004 Version, January 2005, EPA 260-B-05-001.

A hard copy and microcomputer diskette of the Form R report has been submitted to Mr. Don Shainin who is the State of New Mexico's EPCRA TRI Coordinator. Note that this submittal, signed by a representative of the University of California, operator of LANL, is a duplicate of the submittal signed by the Department of Energy for LANL.

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

Sincerely,

Gene Turner
Environmental Permitting Manager
Office of Environmental Stewardship

ES: 2GT-009

Enclosures

cc w/o enclosures:

John Ordaz, ES, LASO

Andrew Lawrence, EH-4, HQ/FORS

Doug Stavert, ENV-DO, LANL, MS-J591

Deb Woitte, LC-GL, LANL, MS-A187

Dave Fuehne, ENV-MAQ, LANL, MS-J978

File

Signature Certification for U.S. EPA Diskette Submission

DISK

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

June 27, 2005

TRI Data Processing Center
c/o Computer Sciences Corporation
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:

<u>TRI Chemical or Chemical Category</u>	<u>Reporting Year</u>	<u>CAS Number</u>	<u>Report</u>
Lead Compounds	2004	N420	Form R
Nitrate compounds	2004	N511	Form R
Nitric acid	2004	7697-37-2	Form R

Our technical point of contact is:

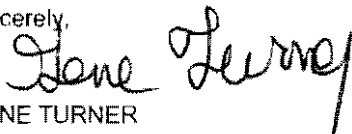
GENE TURNER
(505) 667-5794
GTURNER@LANL.GOV

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 ENVIRONMENTAL STEWARDSHIP

Enclosure: Diskette

(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 Compounds

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 2004

SECTION 2. TRADE SECRET INFORMATION

2.1	Are you claiming the toxic chemical identified on page 2 trade secret?	2.2	Is this copy	☐ Sanitized	☐ Unsanitized
	☐ Yes (Answer question 2.2; Attach substantiation forms) ☒ NO (Do not answer 2.2; Go to Section 3)		(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 available to the preparers of this report.

Name and official title of owner/operator or senior management official:	Signature:	Date Signed:
Gene Turner Office of Environmental Stewardship		06/27/2005

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 LABORATOR		
Street		Mailing Address
528 35TH STREET		NA
City/County/State/Zip Code		Country (Non-US)
LOS ALAMOS LOS ALAMOS NM 87544		

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

4.3	Technical Contact Name	GENE TURNER	Telephone Number (include area code)
	Email Address	GTURNER@LANL.GOV	(505) 667-5794

4.4	Public Contact Name	GENE TURNER	Telephone Number (include area code)
			(505) 667-5794

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

EPA FORM R PART II. CHEMICAL - SPECIFIC INFORMATION	TRI Facility ID Number 17-44-50-15-2835 Toxic Chemical, Category or Generic Name Lead Compounds
--	--

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.) N420
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.) Lead Compounds
1.3	Generic Chemical Name (Important: Complete only if Part 1, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive.) NA

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
1.4	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: 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	05 (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 ☐	4.4	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	0	M	0
5.3.2	LOS ALAMOS CANYON TRIBUTARY TO RIO	198.4	M	100
5.3.3	PAJARITO CANYON TRIBUTARY TO RIO G	48.5	M	100

 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.

3

1 (example: 1,2,3, etc.)

EPA FORM R PART II. CHEMICAL - SPECIFIC INFORMATION	TRI Facility ID Number 27-4-51152834 Toxic Chemical, Category or Generic Name Lead Compounds
--	---

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.)
	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.)
------------	--

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	(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	0
5.3.2	SANDIA CANYON TRIBUTARY TO RIO GRA	124.4	M	100
5.3.3	WATER CANYON TRIBUTARY TO RIO GRA	42.8	M	100

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.

2 (example: 1,2,3, etc.)

3

EPA FORM R PART II. CHEMICAL - SPECIFIC INFORMATION	TRI Facility ID Number 37-4-SD-LS-2835 Toxic Chemical, Category or Generic Name Lead Compounds
--	---

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.)

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
1.4	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.)
------------	--

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	(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	CANADA DEL BUEY	4.9	M
5.3.2	MORTANDAD TRIBUTARY TO RIO GRANDE	3.2	M
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 87144SD SL 2835 Toxic Chemical, Category, or Generic Name Lead Compounds
--	--

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

			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	☒		
5.4.2	Underground Injection onsite to Class II-V Wells	☒		
5.5	Disposal to land onsite			
5.5.1.A	RCRA Subtitle C landfills	☒		
5.5.1.B	Other landfills	☒		
5.5.2	Land treatment/application farming	☒		
5.5.3A	RCRA Subtitle C Surface Impoundments	☒		
5.5.3B	Other surface impoundments	☒		
5.5.4	Other disposal		5536	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.)	UTD982598898								
Off-Site Location Name	ENVIROCARE OF UTAH, INC.								
Off-site Address	180 EXIT 49 WEST OF SALT LAKE CITY								
City	CLIVE	State	UT	County	Tooele	Zip	84029	Country (Non-US)	
Is location under control of reporting facility or parent company?						☐	Yes	☒	No

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

EPA FORM R
PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
 67-4450-9L-2835
 Toxic Chemical, Category, or Generic Name
 Lead Compounds

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. 45965	1. M	1. M41
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. 29.5	1. M	1. M94
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	C09	2	P12	7A.1c	7A.1d	7A.1e	
W	3	P31	4	NA	5	04	99.9 %	Yes	No
	6		7		8			☐	☒
7A.2a	7A.2b	1		2		7A.2c	7A.2d	7A.2e	
	3		4		5		%	Yes	No
	6		7		8			☐	☐
7A.3a	7A.3b	1		2		7A.3c	7A.3d	7A.3e	
	3		4		5		%	Yes	No
	6		7		8			☐	☐
7A.4a	7A.4b	1		2		7A.4c	7A.4d	7A.4e	
	3		4		5		%	Yes	No
	6		7		8			☐	☐
7A.5a	7A.5b	1		2		7A.5c	7A.5d	7A.5e	
	3		4		5		%	Yes	No
	6		7		8			☐	☐

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

9

1 (example: 1,2,3, etc.)

EPA FORM R
PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
 87-44SD, SL-2835
 Toxic Chemical, Category, or Generic Name
 Lead Compounds

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 SANTA FE SPRINGS State CA County LOS ANGELES Zip 90670 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. 1,6	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.6a	7A.6b	7A.6c	7A.6d	7A.6e
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
			%	Yes No ☐ ☐
7A.7a	7A.7b	7A.7c	7A.7d	7A.7e
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
			%	Yes No ☐ ☐
7A.8a	7A.8b	7A.8c	7A.8d	7A.8e
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
			%	Yes No ☐ ☐
7A.9a	7A.9b	7A.9c	7A.9d	7A.9e
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
			%	Yes No ☐ ☐
7A.10a	7A.10b	7A.10c	7A.10d	7A.10e
	1			
	2			
	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

9

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

EPA FORM PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number 67445D-SL-283E Toxic Chemical, Category, or Generic Name Lead Compounds
--	---

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 ☒ 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. 0.2	1. M	1. M41
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	7A.11c	7A.11d	7A.11e	
	1				2
	3				4
	5			Yes No	
	6			☐ ☐	
7A.12a	7A.12b	7A.12c	7A.12d	7A.12e	
	1				2
	3				4
	5			Yes No	
	6			☐ ☐	
7A.13a	7A.13b	7A.13c	7A.13d	7A.13e	
	1				2
	3				4
	5			Yes No	
	6			☐ ☐	
7A.14a	7A.14b	7A.14c	7A.14d	7A.14e	
	1				2
	3				4
	5			Yes No	
	6			☐ ☐	
7A.15a	7A.15b	7A.15c	7A.15d	7A.15e	
	1				2
	3				4
	5			Yes No	
	6			☐ ☐	

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

3 (example: 1,2,3, etc.)

9

EPA FORM R PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number 87-445D-9L-2835 Toxic Chemical, Category, or Generic Name Lead Compounds
--	--

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 ☒ 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. 58	1. M	1. M79
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 6 7 8	7A.16c	7A.16d	7A.16e
			%	Yes ☐ No ☐
7A.17a	7A.17b 1 2 3 4 6 7 8	7A.17c	7A.17d	7A.17e
			%	Yes ☐ No ☐
7A.18a	7A.18b 1 2 3 4 6 7 8	7A.18c	7A.18d	7A.18e
			%	Yes ☐ No ☐
7A.19a	7A.19b 1 2 3 4 6 7 8	7A.19c	7A.19d	7A.19e
			%	Yes ☐ No ☐
7A.20a	7A.20b 1 2 3 4 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 and indicate the Part II, Section 6.2/7A page number in this box:

9

4 (example: 1,2,3, etc.)

EPA FORM R PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number 8744 SD SL 2835 Toxic Chemical, Category, or Generic Name Lead Compounds
--	--

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 ☒ 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. 2,3	1. M	1. M41
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	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">7A.21b</td> <td style="width:10%;">1</td> <td style="width:10%;">2</td> </tr> <tr> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>6</td> <td>7</td> <td>8</td> </tr> </table>	7A.21b	1	2	3	4	5	6	7	8	7A.21c	7A.21d	7A.21e
7A.21b	1	2											
3	4	5											
6	7	8											
			%	Yes ☐ No ☐									
7A.22a	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">7A.22b</td> <td style="width:10%;">1</td> <td style="width:10%;">2</td> </tr> <tr> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>6</td> <td>7</td> <td>8</td> </tr> </table>	7A.22b	1	2	3	4	5	6	7	8	7A.22c	7A.22d	7A.22e
7A.22b	1	2											
3	4	5											
6	7	8											
			%	Yes ☐ No ☐									
7A.23a	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">7A.23b</td> <td style="width:10%;">1</td> <td style="width:10%;">2</td> </tr> <tr> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>6</td> <td>7</td> <td>8</td> </tr> </table>	7A.23b	1	2	3	4	5	6	7	8	7A.23c	7A.23d	7A.23e
7A.23b	1	2											
3	4	5											
6	7	8											
			%	Yes ☐ No ☐									
7A.24a	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">7A.24b</td> <td style="width:10%;">1</td> <td style="width:10%;">2</td> </tr> <tr> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>6</td> <td>7</td> <td>8</td> </tr> </table>	7A.24b	1	2	3	4	5	6	7	8	7A.24c	7A.24d	7A.24e
7A.24b	1	2											
3	4	5											
6	7	8											
			%	Yes ☐ No ☐									
7A.25a	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">7A.25b</td> <td style="width:10%;">1</td> <td style="width:10%;">2</td> </tr> <tr> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>6</td> <td>7</td> <td>8</td> </tr> </table>	7A.25b	1	2	3	4	5	6	7	8	7A.25c	7A.25d	7A.25e
7A.25b	1	2											
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 and indicate the Part II, Section 6.2/7A page number in this box:

5 (example: 1,2,3, etc.)

9

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

EPA FORM R PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number 87-44SD-9L-2835 Toxic Chemical, Category, or Generic Name Lead Compounds
--	--

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 ☒ 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. 81.9	1. M	1. M41
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 6 7	7A.26c	7A.26d	7A.26e
			%	Yes ☐ No ☐
7A.27a	7A.27b 1 2 3 4 6 7	7A.27c	7A.27d	7A.27e
			%	Yes ☐ No ☐
7A.28a	7A.28b 1 2 3 4 6 7	7A.28c	7A.28d	7A.28e
			%	Yes ☐ No ☐
7A.29a	7A.29b 1 2 3 4 6 7	7A.29c	7A.29d	7A.29e
			%	Yes ☐ No ☐
7A.30a	7A.30b 1 2 3 4 6 7	7A.30c	7A.30d	7A.30e
			%	Yes ☐ No ☐

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

9

6 (example: 1,2,3, etc.)

EPA FORM R
PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
 87-443C, FL 2835
 Toxic Chemical, Category, or Generic Name
 Lead Compounds

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.) FLD980711071

Off-Site location Name	PERMA FIX INC		
Off-site Address	1940 NW 67TH PLACE		
City	GAINESVILLE	State	FL
County	Alachua	Zip	32653
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. 8.2	1. M	1. M41
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	7A.31c	7A.31d	7A.31e
	1 2 3 4 5 6 7 8		%	Yes No
7A.32a	7A.32b	7A.32c	7A.32d	7A.32e
	1 2 3 4 5 6 7 8		%	Yes No
7A.33a	7A.33b	7A.33c	7A.33d	7A.33e
	1 2 3 4 5 6 7 8		%	Yes No
7A.34a	7A.34b	7A.34c	7A.34d	7A.34e
	1 2 3 4 5 6 7 8		%	Yes No
7A.35a	7A.35b	7A.35c	7A.35d	7A.35e
	1 2 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 and indicate the Part II, Section 6.2/7A page number in this box:

9

7 (example: 1,2,3, etc.)

EPA FORM R PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number 87-44-SC-SL-2835 Toxic Chemical, Category, or Generic Name Lead Compounds
--	---

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.) UTD991301748

Off-Site location Name	CLEAN HARBORS GRASSY MOUNT LLC.		
Off-site Address	EXIT 41 INTERSTATE 80		
City	GRASSY MOUNTAIN	State	UT
County	Tooele	Zip	84029
		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. 0.67	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.36a	7A.36b	7A.36c	7A.36d	7A.36e
	1 2			
	3 4		%	Yes No
	6 7			☐ ☐
7A.37a	7A.37b	7A.37c	7A.37d	7A.37e
	1 2			
	3 4		%	Yes No
	6 7			☐ ☐
7A.38a	7A.38b	7A.38c	7A.38d	7A.38e
	1 2			
	3 4		%	Yes No
	6 7			☐ ☐
7A.39a	7A.39b	7A.39c	7A.39d	7A.39e
	1 2			
	3 4		%	Yes No
	6 7			☐ ☐
7A.40a	7A.40b	7A.40c	7A.40d	7A.40e
	1 2			
	3 4		%	Yes No
	6 7			☐ ☐

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

9

8 (example: 1,2,3, etc.)

EPA FORM R PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number 87-443C-SL-2835 Toxic Chemical, Category, or Generic Name Lead Compounds
--	--

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.) TND982157570

Off-Site location Name	DURETEK INC BEAR CREEK FACILITY		
Off-site Address	1560 BEAR CREEK RD.		
City	OAK RIDGE	State	TN
County	Anderson	Zip	37830
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. 6371	1. M	1. M41
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	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">7A.41b</td> <td style="width:10%;">1</td> <td style="width:10%;">2</td> <td style="width:10%;">3</td> <td style="width:10%;">4</td> <td style="width:10%;">5</td> <td style="width:10%;">6</td> <td style="width:10%;">7</td> <td style="width:10%;">8</td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	7A.41b	1	2	3	4	5	6	7	8	3									6									7A.41c	7A.41d	7A.41e
7A.41b	1	2	3	4	5	6	7	8																							
3																															
6																															
			%	Yes ☐ No ☐																											
7A.42a	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">7A.42b</td> <td style="width:10%;">1</td> <td style="width:10%;">2</td> <td style="width:10%;">3</td> <td style="width:10%;">4</td> <td style="width:10%;">5</td> <td style="width:10%;">6</td> <td style="width:10%;">7</td> <td style="width:10%;">8</td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	7A.42b	1	2	3	4	5	6	7	8	3									6									7A.42c	7A.42d	7A.42e
7A.42b	1	2	3	4	5	6	7	8																							
3																															
6																															
			%	Yes ☐ No ☐																											
7A.43a	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">7A.43b</td> <td style="width:10%;">1</td> <td style="width:10%;">2</td> <td style="width:10%;">3</td> <td style="width:10%;">4</td> <td style="width:10%;">5</td> <td style="width:10%;">6</td> <td style="width:10%;">7</td> <td style="width:10%;">8</td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	7A.43b	1	2	3	4	5	6	7	8	3									6									7A.43c	7A.43d	7A.43e
7A.43b	1	2	3	4	5	6	7	8																							
3																															
6																															
			%	Yes ☐ No ☐																											
7A.44a	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">7A.44b</td> <td style="width:10%;">1</td> <td style="width:10%;">2</td> <td style="width:10%;">3</td> <td style="width:10%;">4</td> <td style="width:10%;">5</td> <td style="width:10%;">6</td> <td style="width:10%;">7</td> <td style="width:10%;">8</td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	7A.44b	1	2	3	4	5	6	7	8	3									6									7A.44c	7A.44d	7A.44e
7A.44b	1	2	3	4	5	6	7	8																							
3																															
6																															
			%	Yes ☐ No ☐																											
7A.45a	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">7A.45b</td> <td style="width:10%;">1</td> <td style="width:10%;">2</td> <td style="width:10%;">3</td> <td style="width:10%;">4</td> <td style="width:10%;">5</td> <td style="width:10%;">6</td> <td style="width:10%;">7</td> <td style="width:10%;">8</td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	7A.45b	1	2	3	4	5	6	7	8	3									6									7A.45c	7A.45d	7A.45e
7A.45b	1	2	3	4	5	6	7	8																							
3																															
6																															
			%	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.)

EPA FORM R PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number 3754-SEL 3L5283 Toxic Chemical, Category, or Generic Name Lead Compounds
--	--

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES
☒

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 recycling 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	5966.3	5963	5000	4000
8.1c	Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	8238.1	0.67	100	100
8.1d	Total other off-site disposal or other releases	NA	7508	8000	8000
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	15.5	1.6	15	15
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 production processes (pounds/year)	45008			
8.9	Production ratio or activity index	0.95			
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 ☒	

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



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

87544SDL52835

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 2004

SECTION 2. TRADE SECRET INFORMATION

2.1	Are you claiming the toxic chemical identified on page 2 trade secret?		2.2	Is this copy ☐ Sanitized ☐ Unsanitized	
	☐ Yes (Answer question 2.2; Attach substantiation forms)	☒ NO (Do not answer 2.2; Go to Section 3)		(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 available to the preparers of this report.

Name and official title of owner/operator or senior management official:	Signature:	Date Signed:
Gene Turner Office of Environmental Stewardship		06/27/2005

SECTION 4. FACILITY IDENTIFICATION

4.1	TRI Facility ID Number		87544SDL52835				
Facility or Establishment Name		Facility or Establishment Name or Mailing Address (if different from street address)					
U.S. DEPARTMENT OF ENERGY, LOS ALAMOS NATIONAL LABORATOR							
Street		Mailing Address					
528 35TH STREET		NA					
City/County/State/Zip Code		City/State/Zip Code		Country (Non-US)			
LOS ALAMOS LOS ALAMOS NM 87544							
4.2	This report contains information for: (Important: check a or b; check c or d if applicable) a. ☒ An entire facility b. ☐ Part of a facility c. ☒ 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 a. 9711	b.	c.			
4.6	Latitude	Degrees 35	Minutes 49	Seconds 51			
	Longitude	Degrees 106	Minutes 14	Seconds 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 ☒	

EPA FORM R PART II. CHEMICAL - SPECIFIC INFORMATION	TRI Facility ID Number 774-514-1283 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

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
1.4	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: 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 ☐	248	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	0
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.

File Copy EPA FORM R Do Not Submit to EPA

PART II. CHEMICAL - SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number

875445D, SL 2835

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	☒		
5.4.2	Underground Injection onsite to Class II-V Wells	☒		
5.5	Disposal to land onsite			
5.5.1.A	RCRA Subtitle C landfills	☒		
5.5.1.B	Other landfills	☒		
5.5.2	Land treatment/application farming	☒		
5.5.3.A	RCRA Subtitle C Surface Impoundments	☒		
5.5.3.B	Other surface impoundments	☒		
5.5.4	Other disposal	☒		

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	☒	No

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

EPA FORM R
PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
 87-44SL-9L-2835
 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. 24	1. M	1. M95
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 2 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 ☒ 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. 393	1. M	1. M50
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	7A.1c	7A.1d	7A.1e
W	1 C11 2 NA	01	100 %	Yes ☒ No ☐
7A.2a	7A.2b	7A.2c	7A.2d	7A.2e
	1 2 3 4 5 6 7 8		%	Yes ☐ No ☐
7A.3a	7A.3b	7A.3c	7A.3d	7A.3e
	1 2 3 4 5 6 7 8		%	Yes ☐ No ☐
7A.4a	7A.4b	7A.4c	7A.4d	7A.4e
	1 2 3 4 5 6 7 8		%	Yes ☐ No ☐
7A.5a	7A.5b	7A.5c	7A.5d	7A.5e
	1 2 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
 and indicate the Part II, Section 6.2/7A page number in this box: (example: 1,2,3, etc.)

EPA FORM R PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number 3754-SL-SL283 Toxic Chemical, Category, or Constituent Name Nitric acid
--	---

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES
☒

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 recycling 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	169	253	250	250
8.1c	Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	18	NA	0	0
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	5400	0	5000	5000
8.5	Quantity recycled offsite	NA	NA	NA	NA
8.6	Quantity treated onsite	13000	17400	12000	12000
8.7	Quantity treated offsite	144	417	200	200
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds/year)			NA	
8.9	Production ratio or activity index			1.09	
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 ☒

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



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

Nitrate compounds

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

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 2004

SECTION 2. TRADE SECRET INFORMATION

2.1	Are you claiming the toxic chemical identified on page 2 trade secret?		2.2	Is this copy ☐ Sanitized ☐ Unsanitized	
	☐ Yes (Answer question 2.2; Attach substantiation forms)	☒ NO (Do not answer 2.2; Go to Section 3)		(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 available to the preparers of this report.

Name and official title of owner/operator or senior management official:	Signature:	Date Signed:
Gene Turner Office of Environmental Stewardship		06/27/2005

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 LABORATOR		
Street	Mailing Address	
528 35TH STREET	NA	
City/County/State/Zip Code	City/State/Zip Code	Country (Non-US)
LOS ALAMOS LOS ALAMOS NM 87544		

4.2	This report contains information for: (Important: check a or b; check c or d if applicable)																			
	a. ☒ An entire facility	b. ☐ Part of a facility	c. ☒ 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)		<table border="1"> <tr> <th colspan="2">Primary</th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> <tr> <td>a. 9711</td> <td>b.</td> <td>c.</td> <td>d.</td> <td>e.</td> <td>f.</td> <td></td> </tr> </table>				Primary							a. 9711	b.	c.	d.	e.	f.	
Primary																				
a. 9711	b.	c.	d.	e.	f.															
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 ☒	

EPA FORM R PART II. CHEMICAL - SPECIFIC INFORMATION	TRI Facility ID Number 074-511-512835 Toxic Chemical, Category or Generic Name Nitrate compounds
--	---

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.) N511																																		
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.) Nitrate compounds																																		
1.3	Generic Chemical Name (Important: Complete only if Part 1, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive.) NA																																		
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.)																																			
1.4	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">1</td><td style="width: 5%;">2</td><td style="width: 5%;">3</td><td style="width: 5%;">4</td><td style="width: 5%;">5</td><td style="width: 5%;">6</td><td style="width: 5%;">7</td><td style="width: 5%;">8</td><td style="width: 5%;">9</td><td style="width: 5%;">10</td><td style="width: 5%;">11</td><td style="width: 5%;">12</td><td style="width: 5%;">13</td><td style="width: 5%;">14</td><td style="width: 5%;">15</td><td style="width: 5%;">16</td><td style="width: 5%;">17</td> </tr> <tr> <td>NA</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	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: 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 ☒		
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 LOS ALAMOS CANYON TRIBUTARY TO RIO	53	M	0
5.3.2 SANDIA CANYON TRIBUTARY TO RIO GRA	9819	M	92.3
5.3.3 WATER CANYON TRIBUTARY TO RIO GRA	1.1	M	0

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.

2

1 (example: 1,2,3, etc.)

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION

TRI Facility ID Number

67744-SL-SL-2835

Toxic Chemical, Category or Generic Name

Nitrate compounds

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.)

Distribution of Each Member of the Dioxin and Dioxin-like Compounds Category.

1.4

(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.)

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:

c. ☐ For on-site use/processingd. ☐ For sale/distributione. ☐ As a byproductf. ☐ As an impuritya. ☐ As a reactantb. ☐ As a formulation componentc. ☐ As an article componentd. ☐ Repackaginge. ☐ As an impuritya. ☐ As a chemical processing aidb. ☐ As a manufacturing aidc. ☐ Ancillary or other use**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 ONSITEA. 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 emissionsNA ☐

5.2

Stack or point
air emissionsNA ☐

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

2698

M

95.9

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.

2

(example: 1,2,3, etc.)

2

EPA FORM R

TRI Facility ID Number

875443DLSL2835

Toxic Chemical, Category, or Generic Name

Nitrate compounds

PART II. CHEMICAL - SPECIFIC INFORMATION (CONTINUED)

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	☒		
5.4.2 Underground Injection onsite to Class II-V Wells	☒		
5.5 Disposal to land onsite			
5.5.1.A RCRA Subtitle C landfills	☒		
5.5.1.B Other landfills	☐	11524	C
5.5.2 Land treatment/application farming	☒		
5.5.3.A RCRA Subtitle C Surface Impoundments	☒		
5.5.3.B Other surface impoundments	☒		
5.5.4 Other disposal	☒		

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)

NA

6.1.A.2 Basis of Estimate
(enter code)

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

☒

No

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

EPA FORM R **PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)**

TRI Facility ID Number

E7445D L 2835

Toxic Chemical, Category, or Generic Name

Nitrate compounds

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. 110	1. C	1. M95
2. NA	2.	2.
3.	3.	3.
4.	4.	4.

6.2. 2 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 ☒ 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. 204	1. C	1. M50
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	7A.1c	7A.1d	7A.1e
	1			Yes No
	2			
	3			
	4			
	5			
	6			
	7			
	8			
7A.2a	7A.2b	7A.2c	7A.2d	7A.2e
	1			Yes No
	2			
	3			
	4			
	5			
	6			
	7			
	8			
7A.3a	7A.3b	7A.3c	7A.3d	7A.3e
	1			Yes No
	2			
	3			
	4			
	5			
	6			
	7			
	8			
7A.4a	7A.4b	7A.4c	7A.4d	7A.4e
	1			Yes No
	2			
	3			
	4			
	5			
	6			
	7			
	8			
7A.5a	7A.5b	7A.5c	7A.5d	7A.5e
	1			Yes No
	2			
	3			
	4			
	5			
	6			
	7			
	8			

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

EPA FORM R

PART II. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number

87-445D-5L-2835

Toxic Chemical, Category, or Generic Name

Nitrate compounds

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.) FLD980711071

Off-Site location Name PERMA FIX INC

Off-site Address 1940 NW 67TH PLACE

City	GAINESVILLE	State	FL	County	Alachua	Zip	32653	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. 1.7	1. C	1. M99
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	7A.6c	7A.6d	7A.6e
	1 2			
	3 4		%	Yes No
	6 7			☐ ☐
7A.7a	7A.7b	7A.7c	7A.7d	7A.7e
	1 2			
	3 4		%	Yes No
	6 7			☐ ☐
7A.8a	7A.8b	7A.8c	7A.8d	7A.8e
	1 2			
	3 4		%	Yes No
	6 7			☐ ☐
7A.9a	7A.9b	7A.9c	7A.9d	7A.9e
	1 2			
	3 4		%	Yes No
	6 7			☐ ☐
7A.10a	7A.10b	7A.10c	7A.10d	7A.10e
	1 2			
	3 4		%	Yes No
	6 7			☐ ☐

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

2

(example: 1,2,3, etc.)

3

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
 67-44SD, SL 2835
 Toxic Chemical, Category, or Generic Name
 Nitrate compounds

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.) TND982157570

Off-Site location Name DURETEK INC
 BEAR CREEK FACILITY

Off-site Address 1560 BEAR CREEK RD.

City OAK RIDGE State TN County Anderson Zip 37830 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. 13163	1. M	1. M40
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	7A.11c	7A.11d	7A.11e
	1 2 3 4 5 6 7 8			Yes No ☐ ☐
7A.12a	7A.12b	7A.12c	7A.12d	7A.12e
	1 2 3 4 5 6 7 8		%	Yes No ☐ ☐
7A.13a	7A.13b	7A.13c	7A.13d	7A.13e
	1 2 3 4 5 6 7 8		%	Yes No ☐ ☐
7A.14a	7A.14b	7A.14c	7A.14d	7A.14e
	1 2 3 4 5 6 7 8		%	Yes No ☐ ☐
7A.15a	7A.15b	7A.15c	7A.15d	7A.15e
	1 2 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
 and indicate the Part II, Section 6.2/7A page number in this box:

3

3 (example: 1,2,3, etc.)

EPA FORM R
PART IV. CHEMICAL SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number

37-94-0015283

Toxic Chemical, Category, or Generic Name

Nitrate compounds

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

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 recycling 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	10500	11524	10000	8000
8.1b	Total other on-site disposal or other releases	11500	12571.1	10000	8000
8.1c	Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	NA	NA	NA	NA
8.1d	Total other off-site disposal or other releases	NA	1.7	10	10
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	NA	NA	NA	NA
8.6	Quantity treated onsite	NA	NA	NA	NA
8.7	Quantity treated offsite	12000	13477	11000	9000
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds/year)			NA	
8.9	Production ratio or activity index			1.09	
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 ☒

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

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

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

Copies are available for sale to the public from:

National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
(800) 553-6847

