#### LA-13764-PR Progress Report

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1999 Toxic Chemical Release Inventory Report for the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Section 313





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ESH-17 Air Quality Group



Los Alamos, New Mexico 87545

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**1999 Toxic Chemical Release Inventory Report** 

for the

#### **Emergency Planning and**

Community Right-to-Know Act of 1986,

Title III, Section 313

ESH-17 Air Quality Group

#### ABSTRACT

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. Section 313 of EPCRA specifically requires facilities to submit a Toxic Chemical Release Inventory report (Form R) to the U.S. Environmental Protection Agency (EPA) and state agencies if the owners and operators manufacture, process, or otherwise use any of the listed toxic chemicals above listed threshold quantities. EPA compiles this data in the Toxic Release Inventory (TRI) database. 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 year. For 1999, Los Alamos National Laboratory (LANL) submitted a Form R for nitric acid. No other EPCRA Section 313 chemicals were used in 1999 above the reportable thresholds. This document was prepared to provide a description of the evaluation of EPCRA Section 313 chemical usage and threshold determinations for LANL for calendar year 1999 as well as provide information supplied on the Form R report.

## **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. EPA compiles this data 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. 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 year. Even though federal facilities were not required to report under EPCRA Section 313 until 1995, Los Alamos National Laboratory (LANL) has been reporting under EPCRA Section 313 since 1987. For 1999, LANL submitted a Form R for nitric acid. No other EPCRA Section 313 chemicals were used in 1999 above the reportable thresholds. Toxic chemicals used in exempt activities as defined by the regulation, are excluded from analysis. Descriptions of these exempt activities are included in Section 4.0 of this report.

This report summarizes the data evaluation, exemption analysis, activity determinations, and threshold determinations for toxic chemical use in 1999 at LANL, and describes what was reported on the Form R report. Individual sections for certain toxic chemicals used at LANL are also included in the report. Appendix A presents a summary table of EPCRA Section 313 chemicals procured at LANL. Appendix B includes a copy of the Form R submitted to EPA and the state agency. Appendix C provides more detailed information on the calculation of air emissions for nitric acid. Appendix D provides a list of references used in this analysis.

# 2.0 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 Department of Energy (DOE) and is operated by the University of California (UC). LANL's TRI facility ID number is 87545LSLMSLOSAL. The TRI facility number for the Los Alamos DOE complex is 87544SDLSL52835. The 1999 EPCRA Section 313 contacts are Leland Maez, UC technical contact at (505) 665-1240; George Van Tiem, UC public contact at (505) 667-6211; Joseph Vozella, DOE technical contact at (505) 665-5027; and Mary J. Byrne, DOE public contact at (505) 665-5025.

# 3.0 ACTIVITY DETERMINATIONS AND ASSOCIATED THRESHOLDS

EPCRA Section 313 chemical usage is evaluated against three activity determinations.

## 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 value for manufacture 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 process 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 value for otherwise use is 10,000 lb.

#### 4.0 EXEMPTIONS AND QUALIFIERS

#### 4.1 Exemptions

Exemptions from EPCRA Section 313 toxic chemical reporting applicable to LANL include the following.

#### Laboratory Activities Exemption

Listed 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 the chemicals for laboratory support activities, do not qualify for this laboratory activities exemption.

#### **Otherwise Use Exemption**

Certain "Otherwise Uses" of listed EPCRA Section 313 chemicals are specifically exempted:

- 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 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 upon 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. In addition, total releases from any item or like items qualifying as an article exemption must be equal to or less than 0.5 lb to remain exempt as articles.<sup>1</sup>

## 4.2 Qualifiers

In addition to exemptions, certain EPCRA Section 313 chemicals have parenthetic "qualifiers." These 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 found in Table 4-1.

Chemical	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.

Table 4-1. Examples of EPCRA Section 313 Chemical Qualifiers

## 5.0 PROCESS OF ANALYSIS

There are several steps in determining if a Form R report and release calculations are required. Figure 5.1 is a flowchart that shows the steps that must be performed to determine if reporting under EPCRA Section 313 is required.

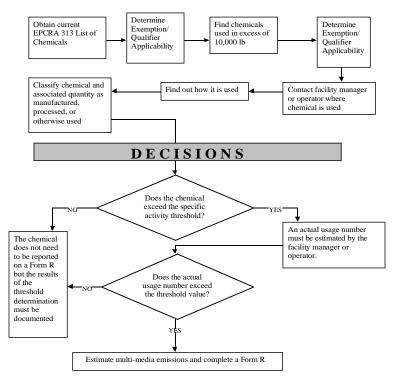


Figure 5-1. Flowchart of Process of Analysis for EPCRA Section 313 Reporting.

## 6.0 THRESHOLD DETERMINATIONS

## 6.1 Chemical Analysis

Chemicals at LANL may be purchased through various procurement systems. These systems include Just-in-Time (JIT), Local Vendor Agreements (LVAs), and Purchase Orders (POs). Purchase Card (PC) orders are not used for chemical purchases. However, as a conservative measure, PC records were also analyzed to determine if any EPCRA Section 313 chemicals were purchased via this system.

LANL's Automated Chemical Inventory System (ACIS) tracks the majority of chemicals purchased through the JIT and PO systems. However, in order to ensure that all EPCRA Section 313 chemicals are being captured, LANL's Air Quality Group, in coordination with LANL's Business Operations Division, developed an automated procurement tracking tool in 1999. This tool allows the capture of specific chemical purchases directly from the JIT and PO procurement systems and compiles the data in a Chemical Order Report. This report was used to capture any chemical procurements not in ACIS. LVA vendors were evaluated for the potential to sell EPCRA Section 313 chemicals. Additionally, LANL subcontractors that may potentially use chemicals were also contacted to determine chemical usage. Procurement records from all of these sources were combined to compare the amount of toxic chemicals brought on-site to the EPCRA Section 313 thresholds.

In 1999, over 126,000 total records were analyzed from the various procurement and tracking systems for EPCRA Section 313 chemicals. The breakdown of the total number of records analyzed per data source is in Figure 6-1.

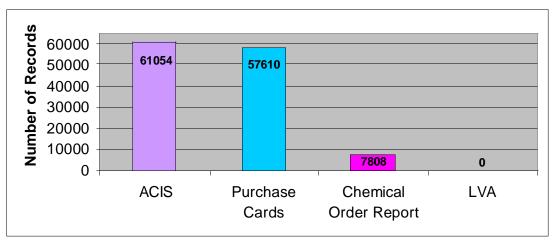


Figure 6-1. Number of Records from Procurement and Tracking Systems.

Chemicals with identifiable Chemical Abstract Service (CAS) numbers are considered pure chemicals. The total quantity of each pure EPCRA Section 313 chemical procured at LANL was summed by CAS number and compared to the most conservative chemical threshold of 10,000 lb. Any chemicals that were exempt or did not meet the chemical qualifiers were taken out of the analysis. Chemicals that do not have CAS numbers are considered mixtures. As with the pure chemicals, any mixtures that were exempt or did not meet the chemical qualifiers were taken out of the analysis. Material Safety Data Sheets (MSDSs) for the remaining chemical mixtures purchased in quantities over 200 lb were reviewed to determine the presence and percent amount of EPCRA Section 313 chemicals as constituents. If EPCRA Section 313 chemical constituents were identified, the weight of each chemical component in the mixture was calculated and added to the quantities of pure EPCRA Section 313 chemicals.

A separate analysis for those mixtures less than 200 lb was performed. The sum of these unevaluated mixtures is less than the 10,000 lb threshold.

## 6.2 Threshold Determination Results

#### **Procurement Totals**

The ten highest EPCRA Section 313 chemicals procured in 1999 are listed in Table 6-1. Appendix A includes a listing of all EPCRA Section 313 chemicals purchased at LANL in 1999.

Total Sum (Ib)	Chemical Name	CAS Number
124,562	sulfuric acid (liquid form)	7664-93-9
31,932	nitric acid	7697-37-2
31,793	copper	7440-50-8
6,794	hydrochloric acid (liquid form)	7647-01-0
5,831	mercury	7439-97-6
3,566	phosphoric acid	7664-38-2
3,306	chlorodifluoromethane, Freon 22	75-45-6
1,815	methanol	67-56-1
1,674	acetonitrile	75-05-8
1,560	methylene chloride	75-09-2

 Table 6-1.
 Top Ten EPCRA Section 313 Chemicals Procured in 1999

As can be seen from the table, there are three chemicals that exceed the most conservative threshold value of 10,000 lb. They are sulfuric acid, nitric acid, and copper. A Form R report is required for nitric acid. Due to the applicability of exemptions and chemical qualifiers, Form R reports are not required for sulfuric acid and copper. The detailed analyses for these chemicals are included in Section 8.0.

# 7.0 NITRIC ACID AND FORM R REPORTING

A total of 21,393 lb of nitric acid was used at LANL in 1999. A total of 31,932 lb was procured. The difference between usage and procurement is in storage. At the end of 1999, approximately 10,000 lb of nitric acid were in the nitric acid storage tank (see Figure 7-1).



Figure 7-1. Nitric Acid Tank.

Of the amount of nitric acid used, 13,000 lb was used for plutonium processing. The remainder, 8,393 lb, was evaluated by contacting the large purchasers and end users to determine usage. It was determined that 70% (5,875 lb) of the remaining nitric acid purchases was used in laboratory exempt activities. Therefore, this amount is not included in threshold determinations or release reporting. The remaining 30% (2,518 lb) of nitric acid is considered "Otherwise Used" and is subject to the 10,000 lb threshold.

The nitric acid used for plutonium processing is used to recover plutonium through a multistep desolution and ion exchange process. The nitric acid is considered "Otherwise Used" in this application and is also subject to the 10,000 lb reporting threshold. Since the threshold of 10,000 lb is exceeded, a Form R report is required. A copy of the Form R report is in Appendix B.

Plutonium processing has been considered a production-type operation in previous years for the purpose of EPCRA Section 313 Form R reporting. However, most of the operations conducted at the plutonium processing facility involve projects related to actinide research. Nitric acid used to process plutonium has historically exceeded the 10,000 lb reporting threshold. Figure 7-2 shows the reporting history of nitric acid since LANL began reporting in 1987.

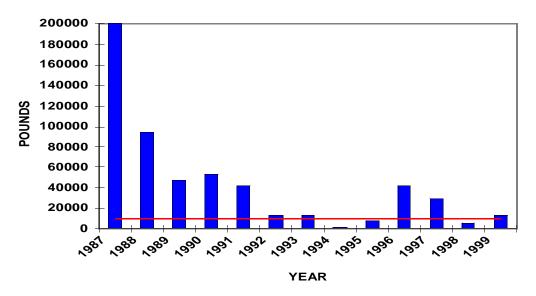
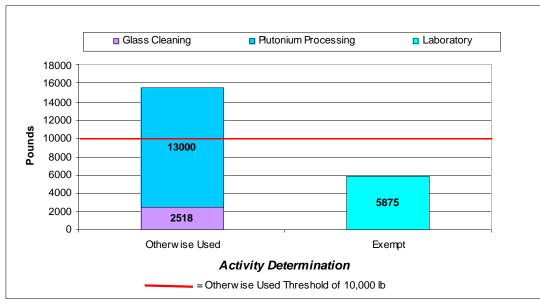


Figure 7-2. Historic Nitric Acid Use in Plutonium Processing 1987–1999.

The nitric acid quantity reported in 1987 was overestimated. The information obtained was based on the best data available at that time. In the years immediately after 1987, data collection, tracking, and calculation methodologies improved. Changes in more recent years are due to fluctuations in operational processes.

It was determined that the amount of nitric acid reported for 1997 was also overestimated. The amount was updated and the appropriate updated information submitted to the EPA and state agency in June 2000.



A summary of 1999 nitric acid use and applicable thresholds are shown in Figure 7-3.

Figure 7-3. Summary of Nitric Acid Use at LANL in 1999.

## 7.1 Emission Calculations

In 1988, LANL conducted an emissions source test for the plutonium processing activities. During the test, processes using the most nitric acid were run at maximum operating conditions. Because the processes have not changed significantly since that test, the emission factors determined from the source test were applied to the 1999 usage quantity to calculate stack emissions. Mass balances and engineering judgment were used to estimate the emissions for several processes that were not tested. Controlled emissions from the plutonium processing activities totaled 97 lb.

Nitric acid emissions from the storage tank are calculated using EPA's TANKS 4.0 software. Calculated emissions from the tank are based on the amount of acid stored, the size of the storage tank, and the number of tank turnovers. For 1999, an estimated 9.1 lb of nitric acid emissions were released from the storage tank.

# 7.2 Form R Report

In the Form R report, the total release of the chemical is reported in Section 5, *Quantity of the Toxic Chemical Entering each Environmental Medium Onsite*. On-site releases to the environment include emissions to the air, discharges to surface waters, and releases to land and underground injection wells. For 1999, nitric acid was reported as being released to the air. All releases to the air must be classified as either point or non-point emissions. A point source release is a release of the chemical to the air that is released through a stack, vent, duct, pipe, or any other confined air stream. For total annual releases less than 1,000 lb, the amount may be reported either as an estimate or by using range codes. The total release reported by LANL for air emissions is summarized in Table 7-1.

Release Description	Code	Range (lb)
Fugitive or non-point air emissions	А	1–10
Stack or point air emissions	В	11–499

Table 7-1. Total Reported Releases for Nitric Acid Air Emissions in 1995	Table 7-1.	Total Reported Releases for Nitric Acid Air Emissions in 1999
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Transfers of the reported chemical to off-site locations, on-site waste treatment methods and efficiency, on-site energy recovery and recycling processes, and source reduction and recycling activities were also required in the Form R report, if applicable. No off-site transfers or on-site recovery and recycling processes of nitric acid were applicable. However, the on-site waste treatment methods and efficiencies were reported. On-site waste treatment methods must be reported for each type of waste stream being treated (i.e., gaseous, aqueous, liquid nonaqueous, and solids) as well as for each waste treatment method. The concentration of nitric acid as it enters the waste treatment process and the percent efficiency of the waste treatment is also reported. Table 7-2 shows the reported information in this section of the Form R report.

General Waste Stream	Waste Treatment Methods	Range of Waste Stream Concentration (%)	Waste Treatment Efficiency (%)
Wastewater	Neutralization	>1	100
Gaseous	Scrubber	0.0001 – 0.01	70
Gaseous	Condenser	0.0001 - 0.01	50
Gaseous	Scrubber	0.0001 – 0.01	50

 Table 7-2.
 On-site Waste Treatment Methods and Efficiency for Nitric Acid in 1999

The final section of the Form R report, Section 8, *Source Reduction and Recycling Activities*, is required and must be completed. Information must be provided about source reduction activities and quantities of the reported chemical managed as waste. In addition, quantities of the reported chemical for the prior year, current year, as well as the following year and second following year must also be reported. For the 1999 Form R report, quantities for nitric acid in pounds were reported for 1998, 1999, 2000, and 2001. Table 7-3 shows the information supplied in this section of the Form R report.

Table 7-3. Source Reduction and Recycling Activities for Nitric Acid in 1999

Description of Activity	1998	1999	2000	2001
Quantity Released (lb)	71	106	106	106
Quantity Treated On-site (lb)	6680	9964	9964	9964

Because the use of nitric acid is dependent on many factors, it is difficult to predict future use. Therefore, LANL typically reports the current year's quantities as a conservative measure for future years' uses.

When nitric acid is used in the plutonium processing activities, nitrate compounds are also coincidentally manufactured. The analysis of nitrate compounds is included in Section 8.6.

# 8.0 ADDITIONAL EVALUATION OF CERTAIN TOXIC CHEMICALS

The toxic chemicals described below are either used in relatively high volumes at LANL, are of special interest, or have been historically reported in the past. Additional analyses were required to determine total usage of these chemicals. None of these chemicals presented in this section exceeded any of the applicable thresholds in 1999 and therefore no reporting was required.

## 8.1 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 the combustion of fuel oil. Descriptions of sulfuric acid usage and emissions at LANL are provided below. Table 8-1 provides a summary of sulfuric acid threshold determinations for 1999.

#### Demineralizer Regeneration

In 1999, LANL used 9,387 gallons of 93.1% sulfuric acid for demineralizer regeneration of the water at the main steam plant. This represents approximately 140,000 lb of sulfuric acid. However, because the sulfuric acid used is in liquid form, it is not reportable under EPCRA Section 313.

#### Aerosol Tank Emissions

Sulfuric acid stored in storage tanks generates a small amount of sulfuric acid mist in the vapor space of the tank. Calculations on the amount of sulfuric acid mist generated are based on the amount of sulfuric acid stored, the size of the storage tank, and the number of tank turnovers. Using EPA's TANKS 4.0 software, an estimated 0.002 lb of sulfuric acid mist was generated in LANL's sulfuric acid tank in 1999.

#### Fuel Combustion Byproducts

Sulfuric acid mist is generated from the combustion of fuel oil, and to a lesser extent, natural gas. Because EPA guidance does not discuss or provide emission factors for sulfuric acid aerosol emissions from the combustion of fuel oil or natural gas, all sulfur oxides (SOx) are assumed to be sulfuric acid mist as a worst-case assumption for determining EPCRA Section 313 reporting requirements. Based on the amount of fuel oil and natural gas combusted in 1999, an estimated 1,092 lb of sulfuric acid mist was generated at LANL.

## Sample Analysis at the Sanitary Waste Systems Consolidation (SWCS) Plant

Approximately 60 lb of liquid sulfuric acid were used at the analytical laboratory at the SWSC plant for the analysis of water samples. None of the laboratory techniques used converted the liquid sulfuric acid to an aerosolized form. Therefore this quantity is not reportable under EPCRA Section 313.

#### Procurements

An additional 31,868 lb of liquid sulfuric acid was procured at LANL at various locations for miscellaneous uses. It is unlikely that any operations using these quantities of sulfuric acid generate an aerosol. Therefore, these quantities are considered exempt for threshold determinations.

Description	Amount of Sulfuric Acid (Ib)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (Ib)
Demineralizer Regeneration	140,000	JCNNM	Not in aerosol NA form and not subject to EPCRA	NA
Water Analysis at the SWSC Plant	60	JCNNM		
Procurement	31,868	Procurement Data	Section 313	
Storage Tank Air Emissions	0.002	EPA, TANKS 4.0 Software	Manufactured	25,000
Fuel Combustion Byproducts	1,092	1999 20 NMAC 2.73 Report <sup>2</sup>		,

#### 8.2 Chlorine

Chlorine historically has been reported in the past due to its primary use in water treatment at LANL. With new treatment methodologies and chemicals, along with transfers of some utilities, the use of chlorine gas has significantly decreased. As such, chlorine has not been reported under EPCRA Section 313 since 1995. The use of chlorine gas has been replaced with new treatment chemicals such as the use of bromine/chlorine tablets for treating cooling tower water, and mixed oxidants generated from sodium chloride that is being used for sewage water treatment. Chlorine is produced as a byproduct from these new treatment methods and is therefore subject to the "manufactured" threshold of 25,000 lb. It is estimated that the amount of chlorine manufactured from all of the water treatments combined in 1999 is less than 2,000 lb. This amount is significantly less than the threshold of 25,000 lb, and is not subject to reporting.

The potable water treatment system uses chlorine gas to disinfect the water. This system was turned over to Los Alamos County in September 1998. According to the 1998 EPCRA Section 313 Questions and Answers (EPA 745-B-98-004), question number 256: "You are not required to account for amounts of listed toxic chemical present in water that you draw into your facility from the environment or municipal sources." <sup>3</sup> Therefore, LANL need not evaluate the chlorine in the potable water purchased from Los Alamos County.

In 1999, only 47 lb of chlorine gas was purchased for miscellaneous use at LANL compared to more than 3,000 lb of chlorine gas purchased in 1998. The change in procurement amounts is primarily due to the transfer of the potable water treatment system to Los Alamos County. The 47 lb is subject to the "Otherwise Used" threshold of 10,000 lb and is not subject to reporting.

For additional information, refer to the 1998 EPCRA Section 313 report (LA-13655-PR).<sup>4</sup> The report provides detail on the various water treatment methodologies and the byproducts from these operations.

## 8.3 Lead and Lead Compounds

Lead and lead compounds were identified in procurement records and in activities that take place at LANL. These activities include melting of lead, decontamination of lead shields, and firing of ammunition containing lead. According to facility representatives, no lead melting activities occurred in 1999. Therefore, the remaining two activities and analysis from the procurement records are described in the following sections.

## Lead Shielding Decontamination

In 1999, LANL decontaminated 17,780 lb of lead shielding. This treatment of lead qualifies for the article exemption because the specific shape and design of the lead shielding is not changed. In addition, the amount of lead released to the environment from these decontamination activities was calculated to be 0.02 lb, which is less than the 0.5 lb qualifier for the article exemption.

# Lead Shot at the Firing Range

Lead is a component in various types of bullets. In 1999, approximately 7,294 lb of lead contained in ammunition was shot at the firing range. This resulted in emissions of lead to the air of approximately 13 lb in 1999. This is considered an "Otherwise Used" activity and subject to the 10,000 lb reporting threshold.

# Procurement

Approximately 1,165 lb of lead and lead compounds was purchased through LANL's procurement systems. As a conservative assumption, the use of this lead was considered "Otherwise Used" and subject to the 10,000 lb reporting threshold.

The thresholds for the different activity determinations involving lead are listed in Table 8-2.

Description	Amount of Lead (Ib)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (Ib)
Lead Melting	0	Facility Representatives	Processed	25,000
Firing Range	7,294	Facility Representatives		
Procurement	1,165	Procurement Data	Otherwise Used	10,000
Decontamination	17,780	Facility Representatives	Article Exemption	NA

## 8.4 Beryllium and Beryllium Compounds

Less than 205 lb of beryllium was processed at LANL in 1999. Therefore, the use of beryllium at LANL did not exceed the "processed" threshold of 25,000 lb.

#### 8.5 Cyanide and Cyanide Compounds

#### Explosives

Explosives are evaluated because many contain cyanides that are regulated under EPCRA Section 313. Facility reports were used to determine the types and amounts of explosives detonated and burned. Analyses showed that 20 lb of cyanide compounds were generated from the detonation of explosives, and 56 lb of cyanide compounds were generated from the burning of explosives.

#### Procurements

An additional 695 lb of cyanide compounds obtained from the various procurement systems were assumed to be "Otherwise Used." Since this amount is less than the 10,000 lb threshold, no reporting is required. Table 8-3 provides a summary of the cyanide threshold determinations for 1999.

Description	Amount of Cyanide Compounds (Ib)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (Ib)
Explosives Expended	20	Facility Representatives	Manufactured	25,000
Explosives Burned	56	Facility Representatives		
Procurement	695	Procurement Data	Otherwise Used	10,000

#### Table 8-3. Cyanide and Cyanide Compounds Threshold Determinations for 1999

## 8.6 Nitrate Compounds

Nitrate compounds are reportable only when in aqueous solutions based on the EPCRA Section 313 qualifier. Nitrate compounds are used or generated in three different processes at LANL, as described below.

## Plutonium Processing

Nitric acid is used to recover plutonium through a multistep desolution and ion exchange process. The nitric acid used in the desolution process is converted to a concentrated solution containing metal ions and nitrate ions. This solution is then run through an ion exchange process that also utilizes nitric acid to recover the desired metals. Once all of the metal of concern is recovered, a concentrated, nonaqueous nitrate solution remains (the solution contains very little water, only enough to maintain it as a solution rather

than a salt). This nitrate solution is mixed with dry concrete and allowed to solidify in 55-gallons drums prior to disposal.

An aqueous waste stream containing nitric acid is also generated by these desolution and ion exchange processes. This waste stream is neutralized with sodium hydroxide and the nitrates are precipitated and collected prior to discharge in accordance with LANL's NPDES permit. This waste stream is considered the incidental manufacture of an aqueous nitrate compound and is subject to the 25,000 lb reporting threshold. In 1999, 9,964 lb of nitric acid from plutonium processing were neutralized to form 13,440 lb of sodium nitrate. This is less than the 25,000 lb reporting threshold and therefore reporting of nitrate compounds is not required for 1999.

## Procurements

Approximately 1,488 lb of nitrate compounds was procured at LANL. This total was applied to the 10,000 lb threshold of "Otherwise Used."

# Explosives

According to the EPCRA 313, Toxic Chemical Release Inventory, nitrate compounds are reportable only when in aqueous solution. The nitrate components that are a part of or are produced from explosive activities are not in aqueous solutions and therefore are not subject to the threshold determinations.

Table 8-4 provides a summary of the threshold determinations for nitrate compounds in 1999.

Description	Amount of Nitrates (Ib)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (Ib)
Plutonium Processing	13,440	Facility Representatives	Manufactured	25,000
Procurement	1,488	Procurement Data	Otherwise Used	10,000
Explosives	NA	Facility Representatives	Not in liquid form and therefore exempt from reporting	NA

## Table 8-4. Nitrate Threshold Determinations for 1999

# 8.7 Copper and Copper Compounds

In 1999, over 30,000 lb of copper was procured at LANL. The large purchasers were contacted to verify the quantities of copper purchased and gain an understanding of how the copper is used. A description of how the large quantities of copper are used is provided below.

## Accelerator Components

Copper is machined, brazed, and used in various accelerator components. In 1999, over 10,000 lb of copper were purchased for this purpose. However, only 2,000 lb of this copper was actually used. Since the remaining 8,000 lb of copper has not yet been used and remains in its original shape and form, this copper qualifies for an article exemption and is not subject to EPCRA Section 313 reporting requirements. In addition, because the copper is not being used and is just in inventory, the 8,000 lb of copper will not result in a release greater than 0.5 lb.

# Diagnostic Testing

Copper is used as a component for diagnostic testing at LANL. The copper is sent off-site for machining and sent back to LANL when the final product is finished. Nondestructive diagnostics testing such as vacuum leak testing is then performed on-site. In 1999, LANL used 20,893 lb of copper for this operation. However, because the testing performed on-site is nondestructive, the use of the copper qualifies as an article exemption and is not subject to EPCRA Section 313 reporting requirements. Because there is no cutting, grinding, or melting of the product, emissions from these activities will not result in a release greater than 0.5 lb.

# Procurement

Additional copper purchases were made in 1999 totaling 653 lb. This amount was assumed to be "Otherwise Used" and is less than the 10,000 lb threshold.

Table 8-5 provides a summary of the copper threshold determinations for 1999.

Description	Amount of Copper (Ib)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (Ib)
Accelerator Components	2,000	Facility Representatives	Processed	25,000
Procurement	653	Procurement Data	Otherwise Used	10,000
Diagnostic Testing	20,893	Facility Representatives	Article Exemption	NA
Storage for Accelerator Components	8,000	Facility Representatives	Article Exemption	NA

Table 8-5. Co	opper Threshold Determinations for 1999
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# 8.8 Chlorodifluoromethane

Chlorodifluoromethane (R-22) is used in chillers, refrigerators, and HVAC systems throughout LANL. In addition to the quantities that come on-site through the procurement system, refrigeration maintenance contractors may fill or "top-off" units when they conduct maintenance. In 1998, approximately 8,500 lb of R-22 was purchased

at LANL. Because this amount was close to the most conservative threshold of 10,000 lb, detailed analyses were performed on the usage of R-22 in 1998. However, in 1999, procurement systems show that 3,306 lb of R-22 was purchased by LANL, with an additional 140 lb brought on-site by outside maintenance contractors. All uses, estimated to be 3,446 lb, of R-22 are considered "Otherwise Used" and are less than the 10,000 lb threshold for EPCRA Section 313 reporting. Table 8-6 provides a summary of the threshold determinations for R-22 in 1999.

Description	Amount of R-22 (lb)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (Ib)
Use in Various Appliances	3,306	Procurement Data	Otherwise Used	10,000
Use by Outside Contractors	140	Facility Representatives		

# APPENDIX A

EPCRA Section 313 List of Chemicals Procured at LANL in 1999

Total Sum (Ib)	Chemical Name	CAS number 7664-93-9	
124,562	sulfuric acid		
31,932	nitric acid	7697-37-2	
31,792	copper	7440-50-8	
6,794	hydrochloric acid	7647-01-0	
5,831	mercury	7439-97-6	
3,566	phosphoric acid, solid	7664-38-2	
3,306	chlorodifluoromethane, freon 22	75-45-6	
1,815	methanol	67-56-1	
1,674	acetonitrile	75-05-8	
1,560	methylene chloride	75-09-2	
1,288	aluminum oxide	1344-28-1	
1,287	zinc shot	7440-66-6	
1,181	isopropyl alcohol	67-63-0	
1,139	2-butanone	78-93-3	
808	fluorotrichloromethane	75-69-4	
808	hydrofluoric acid 48%–51%	7664-39-3	
806	trichloroethylene	79-01-6	
730	1,1,1-trichloroethane	71-55-6	
637	n-hexane	110-54-3	
613	ethylene glycol	107-21-1	
600	dichlorotrifluoroethane	34077-87-7	
456	toluene	108-88-3	
438	carbon tetrachloride	56-23-5	
342	acrylamide	79-06-1	
306	chloro-1,1,1,2-tetrafluoroethane	2837-89-0	
279	chloroform	67-66-3	
232	methyl chloride	74-87-3	
221	n,n-dimethylformamide	68-12-2	
186	methyl isobutyl ketone	108-10-1	
127	n-methylolacrylamide	924-42-5	
112	ethylene	74-85-1	
103	perchlorethylene	127-18-4	
99	ethylene dichloride	107-06-2	
86	hydrogen sulfide	7783-06-4	
79	formic acid	64-18-6	
73	1-methyl-2-pyrrolidinone	872-50-4	

Total Pounds of EPCRA Section 313 Chemicals Procured at LANL in 1999

Total Sum (lb)	Chemical Name	CAS number
69	aluminum foil	7429-90-5
62	propylene	115-07-1
57	ammonia	7664-41-7
52	formaldehyde	50-00-0
51	cadmium	7440-43-9
47	chlorine	7782-50-5
46	di-(2-ethylhexyl) phthalate	117-81-7
41	sodium azide	26628-22-8
36	1,1-dichloro-1-fluoroethane	1717-00-6
34	butadiene, inhibited	106-99-0
30	peracetic acid	79-21-0
30	methyl tert-butyl ether	1634-04-4
30	1,1,2-trichloro-1,2,2-trifluoroethane	76-13-1
30	1,2-dichloroethylene	540-59-0
29	cyclohexane	110-82-7
29	phenol	108-95-2
28	xylenes	1330-20-7
25	barium	7440-39-3
24	p-dioxane	123-91-1
24	benzene	71-43-2
23	fluorine	7782-41-4
23	antimony	7440-36-0
23	pyridine	110-86-1
21	silver foil	7440-22-4
20	hydroquinone	123-31-9
19	diethanolamine	111-42-2
18	nickel	7440-02-0
18	tert-butyl alcohol	75-65-0
15	sodium nitrite	7632-00-0
14	carbon disulfide	75-15-0
13	styrene monomer, inhibited	100-42-5
13	triethylamine	121-44-8
12	dichlorodifluromethane (freon 12)	75-71-8
12	chromium	7440-47-3
10	phosphine	7803-51-2
10	chlorobenzene	108-90-7
10	ethylene glycol monomethyl ether	109-86-4

Total Pounds of EPCRA Section 313 Chemicals Procured at LANL in 1999 (cont'd)

Total Sum (lb)	Chemical Name	CAS number	
9	dimethyl sulfate	77-78-1	
8	titanium tetrachloride	7550-45-0	
8	1,1,2,2-tetrachloroethane	79-34-5	
7	cobalt	7440-48-4	
7	thallium	7440-28-0	
7	bromide standard solution	7726-95-6	
6	1,2-epoxybutane	106-88-7	
6	n-butyl alcohol	71-36-3	
6	alpha-naphthylamine	134-32-7	
5	chloroacetic acid	79-11-8	
5	lithium carbonate	554-13-2	
5	iodomethane (methyl iodide)	74-88-4	
5	benzyl chloride	100-44-7	
5	dibutyl phthalate	84-74-2	
4	arsenic	7440-38-2	
4	catechol	120-80-9	
4	molybdenum (vi)oxide	1313-27-5	
4	p-xylene	106-42-3	
4	phosphorus, red	7723-14-0	
4	tolylene 2,4-diisocyanate	584-84-9	
3	epichlorohydrin	106-89-8	
3	nitrilotriacetic acid	139-13-9	
3	1,1,2-trichloroethane	79-00-5	
3	benzoyl chloride	98-88-4	
3	nitrobenzene	98-95-3	
3	boron trichloride	10294-34-5	
3	sec-butyl alcohol	78-92-2	
3	methyl methacrylate	80-62-6	
2	ethylene dibromide	106-93-4	
2	Chloroethane	75-00-3	
2	methylene bis(4-cyclohexylisocyanate)	5124-30-1	
2	p-nitrophenol	100-02-7	
2	Biphenyl	92-52-4	
2	phthalic anhydride	85-44-9	
2	sodium pentachlorophenate	131-52-2	
2	2-ethoxyethanol	110-80-5	
2	vinyl acetate	108-05-4	

Total Sum (lb)	Chemical Name	CAS number
2	Acrylonitrile	107-13-1
2	ethyl acrylate	140-88-5
2	o-xylene	95-47-6
2	allyl alcohol	107-18-6
2	vanadium metal	7440-62-2
2	1,2-dichlorotetrafluoroethane	76-14-2
2	trypan blue stain (0.4%)	72-57-1
1	benzoyl peroxide	94-36-0
1	dimethylamine, anhydrous	124-40-3
1	Aniline	62-53-3
1	Manganese	7439-96-5
1	Thiourea	62-56-6
1	acrylic acid	79-10-7
1	methyl bromide	74-83-9
1	carbonyl sulfide	463-58-1
1	2,6-dimethylaniline	87-62-7
1	p-phenylenediamine	106-50-3
1	hydrazine sulfate	10034-93-2
1	Safranin	77-73-6
1	methyl acrylate	96-33-3
1	2-picoline	109-06-8
1	selenium powder	7782-49-2
1	hydrazine, anhydrous	302-01-2
1	Propionaldehyde	123-38-6
1	hexamethylene diisocyanate	822-06-0
1	lead powder	7439-92-1
1	Urethane	51-79-6
1	osmium tetroxide	20816-12-0
<1	Cumene	98-82-8
<1	tetracycline hydrochloride	64-75-5
<1	2,4-dinitrophenol	51-28-5
<1	m-cresol	108-39-4
<1	p-chloroaniline	106-47-8
<1	p-nitroaniline	100-01-6
<1	propargyl alcohol (2-propyn-1-ol)	107-19-7
<1	Methanethiol	74-93-1
<1	Acetamide	60-35-5

Total Pounds of EPCRA Section 313 Chemicals Procured at LANL in 1999 (cont'd)

Total Sum (lb)	Chemical Name	CAS number		
<1	Pentachlorophenol	87-86-5		
<1	o-dichlorobenzene	95-50-1		
<1	3,3'-dimethylbenzidine	119-93-7		
<1	2,6-dinitrotoluene	606-20-2		
<1	chloromethyl methyl ether	107-30-2		
<1	Acetaldehyde	75-07-0		
<1	Amitrole	61-82-5		
<1	Quinone	106-51-4		
<1	Hexamethylphosphoramide	680-31-9		
<1	rhodamine 590 chloride	989-38-8		
<1	o-cresol	95-48-7		
<1	n-butyraldehyde	123-72-8		
<1	Malononitrile	109-77-3		
<1	picric acid (2,4,6-trinitrophenol)	88-89-1		
<1	p-dichlorobenzene	106-46-7		
<1	1,1-dimethylhydrazine	57-14-7		
<1	o-nitrophenol	88-75-5		
<1	methyl chloroformate	79-22-1		
<1	fast garnet gbc	97-56-3		
<1	ethyl chloroformate	541-41-3		
<1	2,4-dinitrotoluene	121-14-2		
<1	2,2'-dichloroethyl ether	111-44-4		
<1	2,4-dichlorophenoxyacetic acid	94-75-7		
<1	allyl chloride	107-05-1		
<1	Crotonaldehyde	4170-30-3		
<1	2,4,6-trichlorophenol	88-06-2		
<1	p-phenylenediamine dihydrochloride	624-18-0		
<1	propane sultone	1120-71-4		
<1	Acrolein	107-02-8		
<1	hydrogen cyanide	74-90-8		
<1	Beryllium	7440-41-7		
<1	1,2-diphenylhydrazine	122-66-7		
<1	Hexachlorocyclopentadiene	77-47-4		
<1	2,4-dimethylphenol	105-67-9		
<1	3-chloro-2-methylpropene	563-47-3		
<1	Acetophenone	98-86-2		
<1	methyl viologen hydrate	1910-42-5		

Total Pounds of EPCRA Section 313 Chemicals Procured at LANL in 1999 (cont'd)

Total Sum (lb)	Chemical Name	CAS number		
<1	Phosgene	75-44-5		
<1	Quinoline	91-22-5		
<1	m-dinitrobenzene	99-65-0		
<1	Hexachloroethane	67-72-1		
<1	Anthracene	120-12-7		
<1	Benzamide	55-21-0		
<1	propylene oxide	75-56-9		
<1	beta-naphthylamine	91-59-8		
<1	1-nitropyrene	5522-43-0		
<1	rhodamine 610 chloride	81-88-9		
<1	vinyl chloride	75-01-4		
<1	Hexachlorobutadiene	87-68-3		

Total Pounds of EPCRA Section 313 Chemicals Procured at LANL in 1999 (	cont'd)
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# **APPENDIX B**

# Form R Report for Nitric Acid

2.1       Yes       Attach substantiation forms)       X       No       Construction answer 2.2.       2.2       (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 stached documents and that, to the best of my knowledge and beief, the submitted information is the amounts and values in this report are accurate based on reasonable estimates using data available to the preparers of this report.         Non @Do not answer 2.2.         I hereby certify that I have reviewed the stached documents and using and this report are accurate based on reasonable estimates using data available to the preparers of this report.         Non @Do not answer 22.2.         Non @Do not answer 22.2.         (Answer only if "YES" in 2.1)         Section 3. CERTIFICATION (Important: Read and sign after completing all form sections.)         Interstore of management official:         Signature:         Data         Signature:         Output         Signature:         Output         Signature:         Output         Signature:         Output         Signature:	MICAL RELEASE	es: 01/01/	al Expires	Approvi			(molt g	completiv	ions be	instruc	print; read	ATANT: Type or I	MPO		
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Are you claiming the toxic chemical identified on page 2 trade secret?       2.2       is this copy       Sanitized       Unsantis         Yes       (Answer question 2.2: Attach substantiation forma)       x       No (Do not answer 2.2: Go to Section 3)       2.2       is this copy       Sanitized       Unsantis         SECTION 3. CERTIFICATION (important: Read and sign after completing all form sections.)       In this copy       Sanitized       Unsantis         Are you can be and complete and that the amounts and values in this report are accurate based on reasonable estimates       In this copy       Data         and official title of owner/operator or serior management official:       Signature:       Data         OBEFARTEENT OF ENERGY. LOS ALMOS NATIONAL LADDRATORY       The facility ID Number of Mailing Address (f different from streel address)         Statistical information for: (Important: check a or b; obeck of if applicable)       a.       X       An entire tackity       Pacify or Establishment Name or Mailing Address (f offerent (induce area or for a c. X       A Foderal for address)         Autors       LOS ALMOS       Net with a statul       Signature:       Data         All This report contains information for: (Important: check a or b; obeck of if applicable)       a.       X       An entire tackity       No food if ac. X       A Foderal         3.3       Technical Contact Name       STEVE FONG<									199	YEA	ORTING	TION 1. REP	SEC		
2.1       Yes       (Answer question 2.2: Attach substantiation forma)       No (Do not answer 2.2: Go to Section 3)       2.2       (Answer only if "YES" in 2.1)         SECTION 3. CERTIFICATION (important: Read and sign after completing all form sections.)         hereby certify that I have mainwed 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 sing data available to the preparets of this report.         4ame and official title of owner/operator or serior management official:       Signature:       Data         06694 C VO20LLA       Attestant AREA HAVAGEA FOR Development       06694         SECTION 4. FACILITY IDENTIFICATION       The facility ID Number       87544-501.51-52035         Attestant AREA HAVAGEA FOR Development       0694         SECTION 4. FACILITY IDENTIFICATION       The facility ID Number       87544-501.51-52035         Attestant attestant       Facility or Establishment Name or Mailing Address(f different from street address)       0694         1:3 DEFARTMENT OF EXERCY. LOS ALAMOS       Mailing Address       C. X. A Federal       A Federal         1:3       The seport contains information for: (Important : check a or b, check of applicable)       a. X. An entire tackity       b. Part of a (20) 665 - 5034       X. A Federal         1:3       Technical Contact Name       STEVE FONG       Tele								TION	FOR	RETI	DE SEC	CTION 2. TRA	SEC		
Newsy 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.     Date       Name and official title of owner/operator or serior management official:     Signature:     Date       Description     Addition and approximate addition or serior management official:     Signature:     Date       Description     Addition and approximate addition or serior management official:     Signature:     Date       SECTION 4.     FACILITY IDENTIFICATION     Material addition of the report.     Oddition of the report.       11     TPU Facility to Number     87544 SDLSL-S2055     States addition of the report.       12     DEFARTMENT OF DEEROF. LOS ALAMOS NATIONAL LABORATORY     Pacing to Establishment Name     Pacing to Establishment Name or Mailing Address (I'different from streel address)       13     DEFARTMENT OF DEEROF. LOS ALAMOS NATIONAL LABORATORY     Dety:CountyState/Dp Dode     C     X     A Federal       14.     This neport contains information for: (Important: check a or it; check of a pipicable)     a.     X     An entire facility     Part of a facility     c.     X     A Federal facility       13.     Technical Contact Name     STEVE FONG     Technical Contact Name     STEVE FONG     (502) 665 - 5534       14.     <		ES* in 2.1	niy il "YE!	(Answer or		1722 3)	not answer to Section 3	] No (Do	ms) [	on 2.2; Nation R	wer questo h substant	Yes (Ander Albect			
The second seco	r.)	1 sectio	all form	pleting a	er com	gn aft	d and sig	nt: Rea	impo	TION	TIFICAT	CTION 3. CER	EC		
OSEPH C VOZELLA     ASSISTANT AREA MANADOR FOR ENVIROPMENT     OB01       SECTION 4. FACILITY IDENTIFICATION     ITRI Facility ID Number (ITS44-SDLSL-52035)     ISECRIP C Establishment Name (ITS44-SDLSL-52035)       ASSISTANT AREA MANADOR FOR ENVIROPMENT     ITRI Facility ID Number (ITS44-SDLSL-52035)     ISECRIP C Establishment Name or Mailing Actives(IT offerent from streel address)       Is DEFARTMENT OF ENERGY. LOS ALAHOS HATTONAL LABORATORY     Mailing Actives     ISECRIP C Establishment Name or Mailing Actives(IT offerent from streel address)       Is DEFARTMENT OF ENERGY. LOS ALAHOS HATTONAL LABORATORY     Mailing Actives     ISECRIP C Establishment Name or Mailing Actives(IT offerent from streel address)       Is DEFARTMENT OF ENERGY. LOS ALAHOS HATTONAL LABORATORY     Mailing Actives     ISECRIP C Establishment Name or Mailing Actives(IT offerent from streel address)       Is DEFARTMENT OF ENERGY. LOS ALAHOS HATTONAL LABORATORY     Mailing Actives     ISECRIP C Establishment Name or Mailing Actives(IT offerent from streel address)       Is a STIN ETHERT     Mailing Actives     ISECRIP C Establishment Name or Mailing Actives(IT offerent from streel address)       1.2     This report contacts is information for: (Important: check a or 5; check c if applicable)     IX     An entire facility     Part of a facility     IX     A Federal facility       1.3     Technical Contact Name     STEVE FONG     Itelephone Number (induce area or (S03) 693 - 5534     Itelephone Number (induce area or (S03) 693 - 5534       1.4     Degrees <t< td=""><td></td><td></td><td></td><td></td><td>1.2.2.4.02</td><td></td><td>C</td><td></td><td>the am</td><td>and that</td><td>complete a</td><td>mation is true and</td><td>nom</td></t<>					1.2.2.4.02		C		the am	and that	complete a	mation is true and	nom		
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Image: Stability or Establishment Name     THI Facility ID Number     #TS44-SDL SL-52835       acliny or Establishment Name     Facility or Establishment Name or Mailing Address(if different from street address)       is DEFARTMENT OF ENERGY, LOS ALAHOS HATIONAL LABORATORY     Mailing Address       is astin street     Dis ALAHOS       is astin street     Dis ALAHOS       is astin street     LOS ALAHOS       is astin street     Dis ALAHOS       is astin street     LOS ALAHOS       is astin street     Dis ALAHOS       is astin street     Interpret contains information for: (Important: check a or b; check c if applicable)       i.2     This report contact Name       is astin street FDNG     Telephone Number (indude area or (sol) 005 - 5034       i.3     Technical Contact Name       is TEVE FDNG     Telephone Number (indude area or (sol) 005 - 5034       i.4     Public Contact Name       is Streve FDNG     Telephone Number (indude area or (sol) 005 - 5034       i.5     Streve FDNG       is Streve FDNG     Telephone Number (indude area or (sol) 005 - 5034       is Streve FDNG     Telephone Number (indude area or (sol) 005 - 5034       is Streve FDNG     is seconds     Degrees	06/26/20				ROHMENT	OR ENV	MANADER FI	STANT ARE				PHIC VOZEULA	DSEP		
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Bitest     Mailing Astiress       Dis 25TH STREET     Dis/Courty/State/Zp Code       Ob/Courty/State/Zp Code     Dis/Courty/State/Zp Code       05 ALANOS     LOS ALANOS       1.2     This report contains information for: Important : check a or b; check c if applicable)     a.       1.3     Technical Contact Name     STEVE FONG       1.4     Public Contact Name     STEVE FONG       1.4     Public Contact Name     STEVE FONG       1.5     SIC Code (s) (4 digits)     Primary a. 9711     b.     c.     d.       1.5     Latitude     Degrees     Minutes     Seconds     Longhore	offerent from street address)	ng Address	e or Mailin	Ashment Nem	y or Existe	Facilit			ē						
In South STREET       ChylCourty/State/Zp Code       Telephone Number (Inducto assa colspan="2">(Polsic Contact Name)       Streve FONG       Telephone Number (Inducto assa colspan="2">(Sol2) 005 · 5534       ChylCourty Contact Name)       Streve FONG </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td>ATORY</td> <td>IONAL LA</td> <td>AHOS NA</td> <td>IGH, LOS ALA</td> <td></td> <td>_</td>						-		ATORY	IONAL LA	AHOS NA	IGH, LOS ALA		_		
ChylCourty/State/Zp Cose     City/Courty/State/Zp Code       06 ALANOS     LOS ALANOS       1.2     This report contains information for: (important : check a or it; check c if applicable)     a.     X     An entire facility     b.     Part of a facility     c.     X     A Federal facility       1.3     Technical Contact Name     STEVE FONG     Telephone Number (include area or (502) 005 - 5534       1.4     Public Contact Name     STEVE FONG     Telephone Number (include area or (502) 005 - 5534       1.4     Public Contact Name     STEVE FONG     Telephone Number (include area or (502) 005 - 5534       1.5     SIC Code (s) (4 digits)     Primary a. 9711     b.     c.     d.     e.     f.       1.6     Latitude     Degrees     Minutes     Seconds     Longhorfe     Degrees     Minutes     Seconds	17				g ADDIESS	Main						_			
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Primary         Primary         d.         e.         f.           55         SIC Code (s) (4 digits)         a. 9711         b.         c.         d.         e.         f.           1.5         Latitude         Degrees         Minutes         Seconds         Longholde         Degrees         Minutes         Seconds         Longholde         Seconds	hone Number (include area code)	Th				_		23		-	13201				
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1.7 Duri & Bradstreet Number(s) (9 digits) 4.8 (RCRA 1.0. No.) (12 characters) 4.9 Number(s) (9 characters) 4.10 (UIC) 1.0. Number(s) (12 digits)	-		and 1	4.9		4.9					1.1.1	12 mil 11 mil	7		
NA a. NM0890010515 a. NM0028355 a. NA	Minutes Second 14 15 derground Injection Well Code			(s) (9 chara	NUMBER	a. NM0028355 a. N									
	Minutes Second 14 15 derground Injection Well Code	4.10 a. NA	cters)	65	M00283	a. 9		15	and the second sec			(n	N		
SECTION 5. PARENT COMPANY INFORMATION	Minutes Second 14 15 derground Injection Well Code	4.10	cters)	65	M00283	a. 9			1	b. 1	ENT CO				
1.1 Name of Parent Company NA U.S. DEPARTMENT OF ENERGY	Minutes Second 14 15 derground Injection Well Code	4.10 a. NA	cters)	65 78	vM00283 vM00285	a 5 b, 5			Y INF	MPAN		TION 5. PARI	SEC		
2 Parent Company's Dun & Bradstreet Number NA, X	Minutes Second 14 15 derground Injection Well Code	4.10 a. NA	cters)	65 78	vM00283 vM00285	a 5 b, 5			Y INF	MPAN		TION 5. PARI	_		

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10/17/2008

		Page	2 of 5							
		TRI Facility ID Number								
EPA FORM		87544-SDLSL-52835								
PART II. CHEMICAL-SPECI	IC INFORMATION	Toxic Chemical, Category or Generic Nam	ne							
		NITRIC ACID								
SECTION 1. TOXIC CHEMICAL IDENTITY	(Important: DO NOT complete th	is 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.)										
007697372										
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 Nan	ne must be structurally descriptive.)								
NA										
SECTION 2. MIXTURE COMPONENT IDENT	TTY (Important: DO NOT complete th	nis section if you completed Section 1 above.)								
2.1 Generic Chemical Name Provided by Supplier (Important: Maximur	n of 70 characters, including numbers, letters, spaces, a	nd punctuation.)								
Z.I NA										
SECTION 3. ACTIVITIES AND USES OF TH (Important: Check all that apply.)	E TOXIC CHEMICAL AT THE FAC	CILITY								
3.1 Manufacture the toxic chemical: 3.2	Process the toxic chemical:	<b>3.3</b> Otherwise use the toxic chemical:								
a. Produce b. Import										
If produce or import:										
c. For on-site use/processing a.	As a reactant	a. As a chemical processing aid	As a chemical processing aid							
d. For sale/distribution b.	As a formulation component	b. As a manufacturing aid	As a manufacturing aid							
e. As a byproduct c.	As an article component	c. X Ancillary or other use								
f. As an impurity d.	Repackaging									
SECTION 4. MAXIMUM AMOUNT OF THE T	OXIC CHEMICAL ONSITE AT AN	Y TIME DURING THE CALENDAR YEA	١R							
4.1 04 (Enter two-digit code from	instruction package.)	en e								
SECTION 5. QUANTITY OF THE TOXIC CHI	EMICAL ENTERING EACH ENVIR	ONMENTAL MEDIUM ONSITE								
		Basis of Estimate C. % From Stormwater enter code)								
5.1 Fugitive or non-point air emissions NA	A	O								
5.2         Stack or point air emissions         NA	В	0								
5.3 Discharges to receiving streams or water bodies (enter one name per box)			· .							
Stream or Water Body Name										
5.3.1 <sup>NA</sup>										
5.3.2										
5.3.3										
5.4.1 Underground Injection onsite to Class I Wells NA X	NA		2 							
5.4.2 Underground Injection onsite to Class II-V Wells NA X	NA	the second s	87							
If additional pages of Part II, Section 5.3 are attached, and indicate the Part II, Section 5.3 page number in thi		s box 1								

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

									Page 3 of 5
					r 1/			TRI Facility ID Numb	er
			ORM			87544-SDLSL-52835			
PART	T II. CHEMICAL	- SPECIFI	C INFC	ORMA	TION (	ON (CONTINUED)			egory or Generic Name
								NITRIC ACID	
SECTIO	N 5. QUANTITY O	F THE TOXIC	CHEM	ICAL E	NTERIN	IG EACH	ENVIRG	ONMENTAL MEDIUM	IONSITE (Continued)
		NA	A. Tota	I Releas		s/year) (ent or estimate)	-	B. Basis of Estimate (enter code)	
5.5	Disposal to land onsite	) 1	1795.		far y U.S.A.		n transformation Maria		
5.5.1A	RCRA Subtitle C landf	ills X	NA						
5.5.1B	Other landfills	X	] NA						
5.5.2	Land treatment/applica farming	ation X							
5.5.3	Surface Impoundment	X	NA						
5.5.4	Other disposal	X	NA						
SECTIC	N 6. TRANSFERS	OF THE TO	XIC CHE	MICAL	IN WA	STES TO	OFF-SI	TE LOCATIONS	
6.1 DIS	CHARGES TO PU	BLICLY OWN	IED TRE	ATME	NT WO	RKS (PO	TWs)		
6.1.A To	tal Quantity Transfe	erred to POTW	s and Ba	asis of E	stimate				
6.1.A.1.	Total Transfers (por	unds/year)			6.1.	A.2 Basis	of Estim	nate	
(enter range code* or estimate) (enter code)									
NA									
6.1.B.1	POTW Name	NA							
POTW Ad	ddress							· · · · · · · · · · · · · · · · · · ·	
City				State		County			Zip -
6.1.B.2									
POTW Ad	ldress								
City				State		County			Zip
If addition	nal pages of Part II, Se	ction 6.1 are att	ached, in	dicate th	e total nu	Imber of pa	iges		
in this bo	x 1 and indicate	the Part II, Sec	tion 6.1 p	age num	ber in thi	is box	1 (ex	ample: 1,2,3, etc.)	
SECTIO	N 6.2 TRANSFER	S TO OTHER	OFF-SI	TE LOO	CATION	IS			
6.2. <u>1</u>	Off-Site EPA Identifi	cation Number	(RCRA II	D No.)		NA			
Off-Site Lo	ocation Name NA	\							
Off-Site Ad	ddress								······
City			State		County				Zip
Is location	under control of report	ng facility or pare	ent compa	ny?				Yes	No

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												Page	
EPA FORM R									TRI Facility ID Number				
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)								87544-SDLSL-52835 Toxic Chemical, Category or Generic Name					
PART II. CHEINICAL-SPECIFIC INFORMATION (CONTINUED)							20)	NITRIC ACID					
SECTION 6	.2 TRANSFER	S TO OTH	IER OFF	-SITE	LOCATI	0	NS (Con	inued)	L	anan kila titi an an la sha ka ka ka ka			
A. Total Trans				sis of E					-	pe of Waste Treat	-		
	e code* or estimate	:)	· ·	nter code	e)					ecycling/Energy R	Recovery	(enter cod	
1.			1.						1.				
2.			2.						2.				
3.			3.						3.				
4.			4.		. 1			4	4.				
6.2. <u>2</u> Off-	Site EPA Identific	cation Num	ber (RCF	A ID N	o.)								
Off-Site locatio	n Name												
Off-Site Addres	SS												
City	<u>I</u>				State		County			·		Zip -	
Is location u	nder control of	reporting f	acility or	paren	t compar	٦y?	?			Yes			
A. Total T	ransfers (pounds	s/year)		B. Basis of Estimate					C. 7	C. Type of Waste Treatment/Disposal/			
(enter r	range code* or estin	mate)		(enter code)					Recycling/Energy Recovery (enter code				
1.			1.						1.				
2.			2.	2.					2.				
3.				3.					3.				
4.				4.					4.				
SECTION 7	A. ON-SITE W									-			
Not A	Applicable (NA) -						pplied to any						
General				containing the toxic chemical or chemical catego ethod(s) Sequence c. Range of Influ				of Influent	nt d. Waste Treatment e. Based or				
Waste Stream (enter code)	[enter	3-character	code(s)]				Concen	tration		Efficiency Estimate	Opera	ing Data ?	
7A.1a	7A.1b	1	C11	2	NA	Γ	7A.	1c	-	7A.1d		7A.1e	
w	3	] 4	5	5		].	1			100 %	Yes	No	
••	6	7		8							X		
7A.2a	7A.2b	1	A03	2	NA		7A.:	2c		7A.2d		'A.2e	
	3	4		5 8			3			70 %	Yes No		
. A		1 1	400	2	NA	H	7A.:	3c		7A.3d	<u> </u>	J L 'A.3e	
• ••••••••••••••••••••••••••••••••••••	7A.3b	1	AUZ			1			+		Yes	No	
7A.3a	7A.3b	1	A02										
• ••••••••••••••••••••••••••••••••••••	I	1 4 7	A02	5			3			50 %		X	
7A.3a	7A.3b	] 4	A02 A03	5	NA		3 7A.4			50 %		r	
7A.3a A 7A.4a	7A.3b	4		5	NA		7A.4	łc		7A.4d		X X.4e	
7 <b>A.3a</b>	7A. 3b 3 6 7A. 4b 3 6 5	4		5 8 2	NA			łc				X X.4e	
7A.3a A 7A.4a	7A.3b 3 6 7A.4b 3			5 8 2 5	NA		7A.4	1c		7A.4d	Yes	X X.4e No	
7A.3a A 7A.4a A	7A. 3b 3 6 7A. 4b 3 6 5	4		5 8 2 5 8	NA		7A.4 3	1c		<b>7A.4d</b> 50 %	Yes	X XA.4e No X	

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

8.10.2     a.     b.     c.       8.10.3     a.     b.     c.       8.10.4     a.     b.     c.       1s additional information on source reduction, recycling, or pollution control activities     YES NO						Page 5 of 5				
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINCED)      Toxic Chemical, Category or Genetic Name     Intrinc.ACG      SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES      X Not Applicable (NA) - Check here if no on-sile energy recovery is applied to any waste     stream containing the toxic chemical or chemical category.  Energy Recovery Methods (enter 3-character code(s))      NA 2      SECTION 7C. ON-SITE ENERGY LING PROCESSES      X Not Applicable (NA) - Check here if no on-sile energy recovery is applied to any waste     stream containing the toxic chemical or chemical category.  Recycling Methods (enter 3-character code(s))      NA 2      X Not Applicable (NA) - Check here if no on-sile recycling is applied to any waste     stream containing the toxic chemical or chemical category.  Recycling Methods (enter 3-character code(s))      X Not Applicable (NA) - Check here if no on-sile recycling is applied to any waste     stream containing the toxic chemical or chemical category.  Recycling Methods (enter 3-character code(s))      X Not Applicable (NA) - Check here if no on-sile recycling is applied to any waste     stream containing the toxic chemical or chemical category.  Recycling Methods (enter 3-character code(s))      X Not Applicable (NA) - Check here if no on-sile recycling is applied to any waste     stream containing the toxic chemical or chemical category.  Recycling Methods (enter 3-character code(s))      X NA      XA      Column A     Column A     Column A     Column A     Column A     Column A     NA     NA		EPA								
SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES  Section 7B. ON-SITE ENERGY RECOVERY PROCESSES  Not Applicable (NA). Check here if no on-site energy recovery is applied to any waste state-anonalinal the toxic chemical or chemical category.  Energy Recovery Methods [enter 3-character code(s)]  1 NA 2 3 SECTION 7C. ON-SITE RECYCLING PROCESSES  Not Applicable (NA). Check here if no on-site recycling is applied to any waste stream ontaining the toxic chemical or chemical category.  Recycling Methods [enter 3-character code(s)]  1. NA 2 3 Country and the toxic chemical or chemical category.  Recycling Methods [enter 3-character code(s)]  1. NA 2 3 Country and anon and an any asset stream ontaining the toxic chemical or chemical category.  Recycling Methods [enter 3-character code(s)]  1. NA 2 3 Country and anon and any asset stream ontaining the toxic chemical or chemical category.  Recycling Methods [enter 3-character code(s)]  1. NA 2 3 Column A 4 3 Column B Column B Column C Column B Column C Column D Column B Column C Column D Second Following Year (poundsyear)  8 1 Quantity released ** 7 1 1 0 Column A Column A Column A Column A Column A Column A A A A A A A A A A A A A A A A A A A	P	ART II. CHEMICAL-SPEC								
SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES           Image: Section 7B. ON-SITE ENERGY RECOVERY PROCESSES         Image: Section 7D. ON-SITE ENERGY Methods [enter 3-character code(s)]         1       Image: Section 7D. ON-SITE RECYCLING PROCESSES         Section 7D. ON-SITE RECYCLING PROCESSES         Image: Section 7D. ON-SITE RECYCLING Construction or chemical category.         Recycling Methods [enter 3-character code(s)]         1.       NA         2.       3.         4.       5.         Image: Section 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES         Section 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES         Image: Section 9.         6.1       Column 8         Cluantity released **       71         106       106         8.2       Column 9         goundityean       Column 9         orbits       NA         8.3       Columity released **         71       106       106         8.4       Cuantity released 10*       106         8.5       Cuantity recycled onsite       NA         8.4       Cuantity recycled onsite										
Not Applicable (A).       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         NA       2       3       4         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.       Section 7.         Recycling Methods [enter 3-character code(s)]       1.       NA       2       3       4       5					NITRIC ACID					
And Applicable (MA) - steam containing the toxic chemical or chemical category.         Energy Recovery Methods [enter 3-character code(s)]         1       NA         2       3         4         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.       NA         2       3         4       5.         6       7.         8       9.         9       10.         SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITES         Second Following Year (pounds/year)       Column A Prior Year (pounds/year)         9       10.6         10       Column A Prior Year (pounds/year)         10       Column A NA NA NA         8.1       Quantity released **         71       106       106         8.2       Quantity used for energy recovery NA NA NA NA NA         8.3       Quantity used for energy recovery         NA       NA         8.4       Quantity released offsite         NA       NA         8.4       Quantity treleased offsite	SEC	TION 7B. ON-SITE ENERGY R	ECOVERY PROCES	SES						
1       NA       2       3       4         SECTION 7.C. ON-SITE RECYCLING PROCESSES         X       Not Applicable (NA) - Check here if no on-site recycling is applied to any waste steam containing the toxic chemical or chemical category.         Recycling Methods [enter 3-character code(s)]         1       NA       2       3       4       5.	X	NOT ADDIICADIE (NA) -			•					
SECTION 7.C. ON-SITE RECYCLING PROCESSES         X       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(5)]         1.       NA       2.       3.       4.       5.       .         6.       7.       8.       9.       10.       .         SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES         Column A Prior Year (coundyear)       Column B Column P Source (coundyear)         8.1       Quantity released **       7.1       106       106       106         8.2       Quantity released **       7.1       106       106       106       106         8.2       Quantity used for energy recovery       NA       NA       NA       NA       NA         8.4       Quantity recycled onsite       NA       NA       NA       NA       NA         8.4       Quantity recycled onsite       NA       NA       NA       NA       NA         8.5       Quantity recycled onsite       NA       NA       NA       NA       NA         8.6       Quantity recycled onsite       NA       NA       NA       NA	E	nergy Recovery Methods [enter 3-chara	cter code(s)]							
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X         stream containing the toxic chemical or chemical category.           Recycling Methods [enter 3-character code(s)]           1.         NA         2.         3.         4.         5.         .           6.         7.         8.         9.         10.         .         .           SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES           Column A Prior Year (pounds/year)         Column C Following Year (pounds/year)         Column D Second Following Year (pounds/year)           8.1         Quantity released **         71         106         106         106           8.2         Quantity used for energy recovery ofsite         NA         NA         NA         NA           8.3         Quantity recycled onsite         NA         NA         NA         NA           8.4         Quantity recycled offsite         NA         NA         NA         NA           8.4         Quantity recycled offsite         NA         NA         NA         NA           8.7         Quantity recycled offsite         NA         NA         NA         NA           8.6         Quantity recycled offsite         NA         NA         NA         NA           8.7	SEC	TION 7C. ON-SITE RECYCLING	PROCESSES							
1.       NA       2.       3.       4.       5.         8.       7.       8.       9.       10.         SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES         SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES         Column A Prior Year (poundsyear)       Column B Current Reporting Year (poundsyear)       Column C Following Year (poundsyear)       Second Following Year (poundsyear)         8.1       Quantity released **       71       106       106       106         8.2       Quantity used for energy recovery offsite       NA       NA       NA       NA         8.3       Quantity recycled onsite       NA       NA       NA       NA         8.4       Quantity recycled offsite       NA       NA       NA       NA         8.4       Quantity relead offsite       NA       NA       NA       NA         8.5       Quantity relead offsite       NA       NA       NA       NA         8.4       Quantity relead offsite       NA       NA       NA       NA         8.7       Quantity relead offsite       NA       NA       NA       NA         8.8       Catatrypic events, or one-time events not associated with production processes (pounds/year) <td< td=""><td>X</td><td></td><td></td><td></td><td></td><td></td></td<>	X									
Km         N         N         N         N           SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES         Column A Prior Year (poundsyear)         Column B Current Reporting Year (poundsyear)         Column D Second Following Year (poundsyear)         Second Following Year (poundsyear)         S	F	Recycling Methods [enter 3-character code(s)]								
SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES         Second Following Year (pounds/year)       Column B Current Reporting Year (pounds/year)       Column D Second Following Year (pounds/year)       Second Following Year (pounds/year)         8.1       Quantity released **       71       106       106       106         8.2       Quantity used for energy recovery offsite       NA       NA       NA       NA         8.3       Quantity recycled onsite       NA       NA       NA       NA         8.4       Quantity recycled onsite       NA       NA       NA       NA         8.5       Quantity reated onsite       6680       9964       9964       9964         8.7       Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes       001.49       001.49         8.9       Production ratio or activity index       0001.49       001.49       001.49       0         8.10.1 <t< td=""><td>1. 🔽</td><td>IA 2.</td><td>3.</td><td>4.</td><td></td><td>5.</td></t<>	1. 🔽	IA 2.	3.	4.		5.				
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         Quantity released **         71         106         106         106           8.2         Quantity used for energy recovery onsite         NA         NA         NA         NA         NA           8.3         Cuantity used for energy recovery onsite         NA         NA         NA         NA         NA           8.4         Quantity recycled onsite         NA         NA         NA         NA         NA           8.4         Quantity recycled offsite         NA         NA         NA         NA         NA           8.4         Quantity recycled offsite         NA         NA         NA         NA           8.6         Quantity recycled offsite         NA         NA         NA         NA           8.7         Quantity released to the environment as a result of remedial actions, catastrophic vents, or one-time events not associated with production processes (pounds/year)         0         0           8.8         Oduantity released to the environment as a result of remedial actions, catastrophic vents, or one-time events not associated with production active remet.         0         0           8.10	6.	7.	8.	9.	10.					
Prior Year (pounds/year)         Current Reporting Year (pounds/year)         Following Year (pounds/year)         Second Following Year (pounds/year)           8.1         Quantity released **         71         106         106         106           8.2         Quantity used for energy recovery onsite         NA         NA         NA         NA           8.3         Quantity used for energy recovery onsite         NA         NA         NA         NA           8.3         Quantity recycled onsite         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 recede offsite         NA         NA         NA         NA           8.7         Quantity released to the environment as a result of remedial actions, classrophic events, or one-time events not associated with production processes (pounds/year)         0         0           8.9         Production ratio or activity index         0001.49         001.49           Bid our facility engage in any source reduction activities for this chemical during the reporting year? If not, [enter code(s)]         E.         c.           8.10.1         NA	SECT	TION 8. SOURCE REDUCTION	AND RECYCLING	ACTIVITIES						
(pounds/year)         (pounds/year)         (pounds/year)         (pounds/year)         (pounds/year)           8.1         Quantity released **         71         106         106         106           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           8.4         Quantity recycled onsite         NA         NA         NA         NA           8.5         Quantity recycled offsite         NA         NA         NA         NA           8.6         Quantity recedentitie         6680         9964         9964         9964           8.7         Quantity released to the environment as a result of remedial actons, catastrophic events, or one-time events not associated with production processes         0         0           8.8         Cauntity released to the environment as a result of remedial actons, catastrophic events, or one-time events not associated with production processes         0         0001.49           8.9         Production ratio or activity index         0001.49         0001.49         0001.49           8.10			Column A	Column B	Column C	Column D				
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ansite       a.       b.       c.         8.10.1       NA       NA       NA       NA         NA       NA       NA       NA       NA         NA       NA       NA       NA       NA         8.3       Quantity recycled onsite       NA       NA       NA         8.4       Quantity recycled onsite       NA       NA       NA         8.5       Quantity recycled offsite       NA       NA       NA         8.6       Quantity retated onsite       6680       9964       9964       9964         8.7       Quantity retated offsite       NA       NA       NA       NA         8.8       Catastrophic events, or one-time events not associated with production processes (pounds/year)       0       0         8.9       Production ratio or activity index       0001.49       0       0         8.9       Production ratio or activity index       0001.49       0       0         8.10       Source Reduction 8.10.1 and answer Section 8.11.       0       c.       0         8.10.1       NA       a.       b.       c.       0         8.10.2       a.       b.       c.       0       0       0	8.1	Quantity released **								
and       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 recycled offsite       NA       NA       NA       NA         8.6       Quantity released to the environment as a result of remedial actions, actastrophic events, or one-time events not associated with production processes (pounds/year)       0       0         8.8       chastrophic events, or one-time events not associated with production processes (pounds/year)       0       0         8.9       Production ratio or activity index       0001.49       0001.49       0         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.       0001.49         Source Reduction Activities         8.10.1       NA       a.       b.       c.         8.10.2       a.       b.       c.       1         8.10.3       a.       b.       c.       1         8.10.4       a.       b.       c.       1         8.11       Is additional information on source reduction, recycling, o	8.2		NA	NA	NA	NA				
8.5       Quantity recycled offsite       NA       NA       NA       NA         8.6       Quantity receded onsite       6680       9964       9964       9964         8.7       Quantity treated onsite       6680       9964       9964       9964         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)       0       0         8.9       Production ratio or activity index       0001.49       0001.49         Bid 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)]         8.10.1       NA       a.       b.       c.         8.10.2       a.       b.       c.       a.         8.10.3       a.       b.       c.       c.         8.10.4       a.       b.       c.       c.         8.10.4       a.       b.       c.       c.         8.11       Is additional information on source reduction, recycling, or pollution control activities included with this report ? (Check o	8.3		NA	NA	NA	NA				
8.6       Quantity treated onsite       6680       9964       9964       9964         8.7       Quantity treated offsite       NA       NA       NA       NA         8.7       Quantity treated offsite       NA       NA       NA       NA         8.8       cluantity released to the environment as a result of remedial actions, clastrophic events, or one-time events not associated with production processes (pounds/year)       0       0         8.9       Production ratio or activity index       0001.49       0001.49         bid 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.         8.10.1       sadditional information on source reduction, recycling, or pollution control activities included with this report ? (Check one box)       YES       NO         * Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, numping, emptying, discharging.       YES       NO         ** Report releases pursuant to EPC	8.4	Quantity recycled onsite	NA	NA	NA	NA				
8.7       Quantity treated offsite       NA       NA       NA       NA       NA         8.7       Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds/year)       0         8.8       Production ratio or activity index       0001.49         8.9       Production ratio or activity index       0001.49         B.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.       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         ** Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging.       YES       NO	8.5	Quantity recycled offsite	NA	NA	NA	NA				
Builty released to the environment as a result of remedial actions. catastrophic events, or one-time events not associated with production processes (pounds/year)       0         8.9       Production ratio or activity index       0001.49         Bid 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.       0         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.       C.         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         * Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emiting, emptying, discharging.       ************************************	8.6	Quantity treated onsite	6680	9964	9964	9964				
8.8       catastrophic events, or one-time events not associated with production processes (pounds/year)       0         8.9       Production ratio or activity index       0001.49         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.       Methods to Identify Activity (enter codes)         8.10       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         ** Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emiting, emptying, discharging.       X	8.7	Quantity treated offsite	NA	NA	NA	NA				
Bid 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.         8.10.4       a.       b.       c.         8.11.4       Is additional information on source reduction, recycling, or pollution control activities included with this report ? (Check one box)       YES NO         ** Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emiting, emptying, discharging.       ************************************	8.8	8 catastrophic events, or one-time events not associated with production 0								
8.10       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.         8.10.4       a.       b.       c.         8.11.1       Is additional information on source reduction, recycling, or pollution control activities       YES NO         8.11       Is additional information on source reduction, recycling, or pollution control activities       YES NO         ** Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emiting, emptying, discharging.       tischarging.	8.9	Production ratio or activity index 0001.49								
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.         8.10.4       a.       b.       c.         8.10.4       a.       b.       c.         8.10.1       Is additional information on source reduction, recycling, or pollution control activities       YES NO         8.11       Is additional information on source reduction, recycling, or pollution control activities       YES NO         ** Report releases pursuant to EPCRA Section 329(8) including 'any spilling, leaking, pumping, pouring, emitting, emptying, discharging.       tischarging.	8 10	enter "NA" in Section 8.10.1 and answer Section 8.11.								
8.10.2     a.     b.     c.       8.10.3     a.     b.     c.       8.10.4     a.     b.     c.       8.10.4     a.     b.     c.       8.11     Is additional information on source reduction, recycling, or pollution control activities included with this report ? (Check one box)     YES NO X	0.10									
8.10.3     a.     b.     c.       8.10.4     a.     b.     c.       8.10.4     a.     b.     c.       8.11     Is additional information on source reduction, recycling, or pollution control activities     YES NO       8.11     NO     X	8.10.1	NA	a.	b.	с.					
8.10.4     a.     b.     c.       8.11     Is additional information on source reduction, recycling, or pollution control activities     YES     NO       8.11     "Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging.     X	8.10.2		a.	b.	с.					
Is additional information on source reduction, recycling, or pollution control activities       YES       NO         8.11       Included with this report ? (Check one box)       X         ** Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging,	8.10.3		а.	b.	c.	с.				
8.11       included with this report ? (Check one box)         ** Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging,	8.10.4		c.							
	8.11	8.11 included with this report ? (Check one box)								
					g.					

EPA Form 9350-1 (Rev. 04/97) - Previous editions are obsolete.

## **APPENDIX C**

### Air Emission Estimates for Nitric Acid

### C-1. NITRIC ACID AIR EMISSIONS

To better determine nitric acid emissions, LANL conducted a source test in 1988.<sup>5</sup> During the test, processes using the most nitric acid were run at maximum operating conditions. Because the processes have not changed significantly since that test, the emission factors determined from the source test were applied to the 1999 usage quantities to calculate 1999 emissions. Mass balances and engineering judgment were used to estimate the emissions for several processes that used only small amounts of nitric acid and, therefore, were not tested. Table C-1 shows the controlled emissions and the emission factors used for the estimates. Table C-2 provides a description of the processes and the basis for the emissions factors.

Process (Room No.)	HNO <sub>3</sub> (lb)	Emission Factors (Ib/Ib)			Controlled Emissions (Ib/yr)			
		Nitric Acid	Nitrogen Oxide	Nitrogen Dioxide	Nitric Acid	Nitrogen Oxide	Nitrogen Dioxide	
Waste Immobilization (401)	41	0	0.001	0.0047	0.00	0.04	0.19	
Cascade Dissolution (401)	3398	0.00136	0.00109	0.003	4.62	3.70	10.19	
Cascade Dissolution (420)	0	0.075	0.0099	0.095	0.00	0.00	0.00	
Distillation (401) <sup>a</sup>	6477	0.0016	0.0012	0.0034	10.36	7.77	22.02	
Alpha Counting (116)	12	0	0.015	0.0442	0.00	0.18	0.53	
Residue Leaching (209)	70	0.15	0.0104	0.112	10.50	0.73	7.84	
Scrap Dissolution (209)	365	0.027	0.00675	0.0185	9.86	2.46	6.75	
MPD (401)	291	0.15	0.0104	0.112	43.65	3.03	32.59	
Anion Exchange (409)	8233	0.0012	0	0	9.88	0.00	0.00	
ICP (106)	12	0	0.01	0.03	0.00	0.12	0.36	
OH Cake Dissolution (409)	0	0.014	0.0069	0.019	0.00	0.00	0.00	
Filtrate Concentration (209) <sup>a</sup>	14	0.0016	0.0012	0.0034	0.02	0.02	0.05	
ATLAS (409)	570	0.0138	0.0069	0.019	7.87	3.93	10.83	
Metallography (115)	9	0.0099	0	0	0.09	0.00	0.00	
TOTAL	13001				96.85	21.98	91.36	

#### Table C-1. Controlled 1999 Nitric Acid Emissions from Plutonium Processing

<sup>a</sup> Usage total does not include distillation of filtrate concentration processes, which uses recovered nitric acid from other processes.

Process (Room)	Description	Emission Basis		
Waste Immobilization (401)	Ammonia-containing chemical waste is stored in a glovebox for a few days prior to its neutralization and solidification with cement in open cans. Nitric acid is used to clean the glovebox and is left in the cement-containing cans to oxidize overnight. The cans are loaded in lead-lined drums and shipped to TA-54 for waste disposal.	99.14% of nitric acid remains in product. The difference converts to nitrogen oxide and nitrogen dioxide (Ref. 5—see Appendix D).		
Cascade Dissolution (401)	Plutonium oxide dissolved in 15.6 M of nitric acid with calcium difluoride at 96°C.	Use 1988 emission factors.		
Cascade Dissolution (420)	Plutonium dioxide and magnesium oxide dissolved in 10 M of nitric acid at 100°C.	Use 1988 emission factors.		
Distillation (401)	Waste nitric acid, ammonia, and water are condensed before disposal. The distillate is condensed in a one-shell, two-pass condenser and sent to TA-50. Bottoms are sent to TA-54 for disposal.	Use 1988 emission factors.		
Alpha Counting (116)	Radioactive samples are dissolved in nitric acid and heated to 122°C during analytical processing.	87.59% of nitric acid remains in product or waste. The difference converts to nitrogen oxide and nitrogen dioxide (Ref. 5).		
Residue Leaching (209)	Plutonium-containing residues are leached in 15.6 M nitric acid with calcium difluoride or hydrofluoric acid at 103°C.	Use plutonium oxide dissolution (cascade dissolution) emission factors.		
Scrap Dissolution (209)	Plutonium is leached from metal scrap in 15.6 M nitric acid and hydrochloric acid at 110°C.	Use 1988 emission factors.		
Multi-Purpose Dissolution (MPD) (401)	Plutonium oxide is dissolved in nitric acid and calcium difluoride at 96°C. Plutonium dioxide is dissolved in nitric acid and magnesium oxide at 98°C.	Use cascade dissolution emission factors.		
Anion Exchange (409)	Plutonium solution is passed through a resin bed after the pH and concentration is adjusted to 7 M using a 15.6-M solution of nitric acid.	Assume the volume of nitric acid used displaces an equal volume of air saturated with nitric acid.		
Inductively Coupled Plasma (ICP) Atomic Emission Spectroscopy (106)	An 8-M nitric acid solution is used to dilute plutonium solution samples and as a blank standard for ICP analysis.	Lab personnel estimate 4% of the nitric acid remains in the plasma and is emitted as nitrogen oxides (Ref. 5).		
OH Cake Dissolution (409)	Plutonium hydroxide precipitates from various plutonium recovery processes are filtered, concentrated, and redissolved.	Use "Scrap Dissolution and Plutonium Oxide Dissolution (209)" emission factors (1988).		
Filtrate Concentration (209)	Plutonium hydroxide precipitates from various plutonium recovery processes are filtered, concentrated, and redissolved.	Use "Distillation (401)" emission factors (1988).		
Advanced Testing Line for Actinide Separation (ATLAS) (409)	Samples prepared for research and development with an integrated module of dissolution, ion exchange, precipitation, and calcination.	Use "OH Cake Dissolution (409)" emission factors (1988).		
Metallography (115)	Cut plutonium samples are placed in a nitric acid etching solution to clean the cut surfaces.	Assume 1% evaporates, based on engineering judgement.		

Table C-2. Nitric Acid Operations in Plutonium Processing

## **APPENDIX D**

# References

### References

- 1. U.S. Environmental Protection Agency, "Toxic Chemical Release Inventory Reporting Form R and Instructions," Revised 1999 Version, EPA 745-B-00-001, February 2000.
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- 3. U.S. Environmental Protection Agency. "EPCRA Section 313 Questions and Answers," Revised 1998, EPA 745-B-98-004, March 1998.
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- 5. PEI Associates, "Process Emission Rates, Plutonium Processing Facility, Area 400 Ventilation Exhaust, Technical Area 55," PN 3003-26-7, February 1989.

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