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2012 Toxic Chemical Release Inventory Report for the Emergency Planning and Community Right-To-Know Act of 1986, Title III, Section 313

Prepared by the Environmental Stewardship Services Group,
Environmental Protection Division

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Acronyms and Terms

CAS	Chemical Abstracts Service
ChemLog	chemical inventory-tracking database
DEHP	di-(2-ethylhexyl) phthalate
DOE	Department of Energy
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
Form R	Toxic Chemical Release Inventory Report
HCl	Hydrochloric Acid
HE	high explosive
LANL	Los Alamos National Laboratory
LANSCE	Los Alamos Neutron Science Center
lbs	pounds
MMscf	million standard cubic feet
MO_x	mixed oxide
MRF	Material Recycle Facility
MSDS	material safety data sheet
MST-6	Materials Science and Technology – Metallurgy
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
OB/OD	open burn/open detonation
PACs	polycyclic aromatic compounds
PBTs	bioaccumulative toxics
PMT-2	Actinide Process Chemistry Group (in the Plutonium Manufacturing & Technology Division)
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RLWTF	Radioactive Liquid Waste Treatment Facility
SERF	Sanitary Effluent Reuse Facility

SNS	Spallation Neutron Source
SO_3	sulfur trioxide
SWSC	Sanitary Wastewater Systems Consolidation
TA	Technical Area
TRI	Toxic Release Inventory
TRI-DDS	TRI-Data Delivery System (software)
US	United States

2012 TOXIC CHEMICAL RELEASE INVENTORY REPORT FOR THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986, TITLE III, SECTION 313

By
Environmental Stewardship Group

ABSTRACT

For reporting year 2012, Los Alamos National Laboratory (LANL) submitted a Toxic Chemical Release Inventory Report (Form R) for lead as required under the Emergency Planning and Community Right-to-Know Act (EPCRA) Section 313. No other EPCRA Section 313 chemicals were used in 2012 above the reportable thresholds. This document was prepared to provide a description of the evaluation of EPCRA Section 313 chemical use and threshold determinations for LANL for calendar year 2012, as well as to provide background information about data included on the Form Rs.

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

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

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 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 United States (US) Environmental Protection Agency (EPA) and state agencies if the owners and operators manufacture, process, or otherwise use any of the listed toxic chemicals above listed threshold quantities. On October 19, 1999, EPA promulgated a final rule on persistent bioaccumulative toxics (PBTs) (EPA 1999). This rule added several chemicals to the EPCRA Section 313 list of toxic chemicals and established lower reporting thresholds for these and other

PBT chemicals that were already reportable under EPCRA Section 313. These lower thresholds became applicable in reporting year 2000. On January 17, 2001, the PBT rule was amended to include lead and lead compounds. The rule lowered the reporting threshold for lead and lead compounds to 100 lbs. The lower threshold for lead became applicable in reporting year 2001.

EPA compiles the data submitted on the Form Rs in a Toxic Release Inventory (TRI) database. The TRI database provides the public with information on the releases of EPCRA Section 313 chemicals in their communities as well as provides EPA with release information to assist in determining the need for future regulations (http://www.epa.gov/tri/). Form R must be submitted on or before July 1 each year and must cover activities that occurred at the facility during the previous calendar year. Even though federal facilities were not required to report under EPCRA Section 313 until 1995, Los Alamos National Laboratory (LANL or the Laboratory) had been voluntarily reporting under EPCRA Section 313 since 1987.

For reporting year 2012, the Laboratory submitted a Form R for lead. No other EPCRA Section 313 chemicals were used in 2012 above the reportable thresholds. Toxic chemicals used in exempt activities as defined by the regulation are excluded from the threshold determinations and release calculations. Descriptions of these exempt activities are included in Section 2.2 of this report.

This report summarizes the data evaluation, exemption analysis, activity determinations, and threshold determinations for toxic chemical use at the Laboratory in 2012 and describes the environmental release data reported on the Form R. Individual sections for certain toxic chemicals used at the Laboratory are included in this report. Appendix A presents a summary table of EPCRA Section 313 chemicals procured at the Laboratory in 2012. Appendix B includes a copy of the Form R submitted to the EPA and the New Mexico Environment Department (NMED).

1.1 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. The Laboratory is owned by the US Department of Energy (DOE) and operated by Los Alamos National Security, LLC.

Facility information is as follows:

- LANL
  - TRI facility identification number: 87545LSLMSLOSAL
  - LANL technical contact: Mr. Steve Story at (505) 665-2169
  - LANL public contact: Ms. Lorrie Bonds Lopez at (505) 667-0216
- Los Alamos DOE complex
  - TRI facility identification number: 87544SDLSL52835
  - DOE technical and public contact: Mr. Gene Turner at (505) 667-5794

2.0 ACTIVITY DETERMINATIONS, EXEMPTIONS, AND QUALIFIERS

2.1 Activity Determinations

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

2.1.1 Manufacture

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

2.1.2 Process

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

2.1.3 Otherwise Use

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

2.1.4 Persistent Bioaccumulative Toxics

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

2.2 Exemptions

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

2.2.1 Laboratory Activities Exemption

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

2.2.2 Otherwise Use Exemption

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

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

2.2.3 Article Exemption

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

- be a manufactured item that is formed to a specific shape or design during manufacture,
- have end-use functions dependent in whole or in part on its shape or design during end use, and
- must not release an EPCRA Section 313 chemical under normal circumstances of processing or otherwise use of the item at the facility. Total releases from any item or like items qualifying as article exempt must be equal to or less than 0.5 lbs to remain exempt as articles (EPA 2006).

2.2.4 *De Minimis* Exemption

The *de minimis* exemption allows facilities to exempt certain minimal concentrations of EPCRA Section 313 chemicals contained in mixtures or other trade name products when making threshold determinations and release calculations. The *de minimis* concentrations are set by EPA at either 1% or 0.1%, depending on whether or not the chemical is a suspected carcinogen or carcinogen.

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

2.3 Qualifiers

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

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

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

* NA = not applicable.

3.0 ANALYSIS FOR THRESHOLD DETERMINATIONS

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

3.1 Threshold Determinations for Chemical Use

The Laboratory tracks chemicals brought onsite using a chemical inventory-tracking database called ChemLog. ChemLog captures the majority of procured chemicals and provides relevant data (e.g., chemical name, CAS number, quantity, etc.) to assist in threshold determinations. The underlying assumption used in the preliminary threshold determinations for reporting under EPCRA Section 313 is that chemicals are purchased and used in the same calendar year. If unusually large purchases are noted in this preliminary analysis, further investigation is performed to determine if bulk chemicals were purchased and only a portion of them used in the calendar year.

3.1.1 Inventory

For calendar year 2012, a total of 37,428 records were added to ChemLog and evaluated; 14,621 were pure chemicals and 22,807 records were mixtures. Individual items with identifiable CAS numbers in ChemLog were considered pure chemicals. These items were matched by CAS number to the list of EPCRA Section 313 chemicals. The resulting records were summed in pounds for each pure chemical.

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

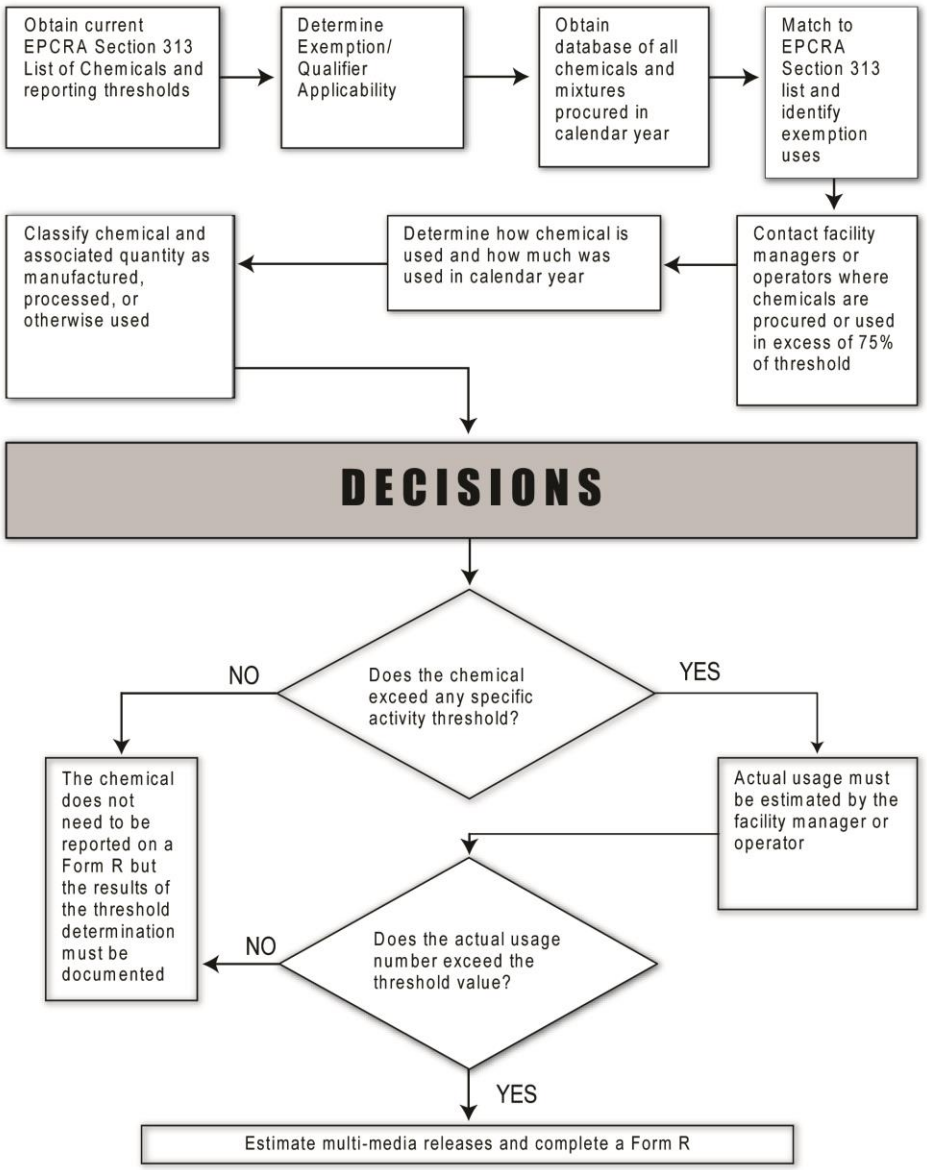


Figure 3-1. Flowchart process of analysis for EPCRA Section 313 reporting.

3.1.2 EPCRA Reporting Tool

An automated search tool was developed using Microsoft Access to refine the data in ChemLog. The EPCRA reporting tool performs the following steps in the ChemLog data download:

- Identifies and labels exemptions through electronic text searches. The exemptions are from 40 Code of Federal Regulations 372.38, Exemptions for Toxic Release Reporting. When a chemical is exempt, it is not considered when determining whether an applicable threshold has been met. Specifically, chemical containers were classified as follows:
  - **Maintenance**—routine janitorial or facility grounds maintenance (e.g., cleaning supplies, paints, fertilizers, and pesticides);
  - **Maintaining Motor Vehicles** (e.g., antifreeze, brake fluid);

  - **Personal Uses**—non-process related items for employee personal use;
  - ***De Minimus***—the percent of a non-PBT Section 313 chemical in a mixture is less than 1% for a non-carcinogen or 0.1% for a carcinogen;
  - **Article**—structural component exemption; and
  - **Laboratory Activities**—if a toxic chemical is manufactured, processed, or used in a laboratory at a covered facility under the supervision of technically qualified individual.

- Identifies and labels EPCRA Section 313 compounds. There are 30 different chemical categories included on the EPCRA Section 313 list. Many of these categories do not have specific CAS numbers associated with them, except for polycyclic aromatic compounds (PACs) and dioxins. These two categories were evaluated in ChemLog as part of the pure chemical evaluation since they have searchable CAS numbers for compounds included in their categories. The other classes of compounds were searched in the 2012 ChemLog dataset by using chemical-specific text searches in the chemical name field.
- Matches pure chemicals (chemical containers with an identifiable CAS number) with the list of EPCRA Section 313 chemicals by matching CAS numbers.

A few EPCRA Section 313 chemicals were selected for further analysis to determine if they were used in exempt activities. For 2012, the chemicals that were analyzed in more detail included the following:

- mercury compounds,
- sulfuric acid,
- PACs,
- nitric acid,
- hydrochloric acid,
- dioxins, and
- lead compounds.

3.2 Threshold Determination Results

3.2.1 Procurement Totals

The amounts of listed EPCRA Section 313 chemicals identified in the ChemLog, direct procurement, and other sources were all summed together to perform preliminary threshold determinations. The resulting totals for the top 10 listed EPCRA Section 313 chemicals are summarized in Table 3-1.

A complete table of EPCRA Section 313 chemicals showing all contributing sources is provided in Appendix A. Chemicals that were procured in amounts greater than 75% of the applicable EPCRA Section 313 threshold were evaluated further and the analyses are summarized in Section 4 of this report.

Table 3-1. Top 10 EPCRA Section 313 Chemicals Procured in 2012

CAS No	Chemical Name	Total Procured (lbs)
7647-01-0	Hydrochloric acid (aerosol forms only)	150,949*
Polychlorinated Alkanes	Polychlorinated alkanes (C10 to C13)	4,280
Cyanide	Cyanide Compounds	4,013
7697-37-2	Nitric acid	3,977
7664-93-9	Sulfuric acid (aerosol forms only)	2,149
7782-50-5	Chlorine	1,873
107-21-1	Ethylene Glycol	1,027
78-93-3	Methyl Ethyl Ketone	888
67-56-1	Methanol	828
110-54-3	n-Hexane	775

* The total procured for HCl includes both aerosol and aqueous forms. Please see Section 4.6 for additional analysis.

4.0 ADDITIONAL EVALUATION OF CERTAIN TOXIC CHEMICALS

The toxic chemicals described below either are used in relatively high volumes at the Laboratory, have very low reporting thresholds, are of special interest, or have been reported in the past. Additional analyses were required to determine total usage of these chemicals. None of the chemicals presented in this section exceeded any of the applicable thresholds in 2012 and therefore no reporting was required.

4.1 Mercury

Mercury and mercury compounds are used in various places throughout the Laboratory. As part of the PBT rule, the threshold for EPCRA Section 313 reporting of mercury was reduced to 10 lbs. In 2012, mercury was used in four areas at the Laboratory. Each is described below.

4.1.1 Mercury Procurements

A listing of all procurements in 2012 of mercury and mercury compounds was extracted from ChemLog. Line items containing a CAS number for mercury (7439-97-6) were included, as well as any line items containing the word “mercury” or the symbol “Hg” in the text description.

The total amount of mercury and mercury compounds in ChemLog for 2012 was 5.33 lbs. The purchasers or users of the mercury and mercury compounds were contacted to determine the following:

- If the purchase was actually mercury or contained mercury or mercury compounds,
- If a mixture or solution, what concentration of mercury the mixture or solution contained, and
- If the mercury was used in a laboratory experiment setting, if so, it is subject to the laboratory exemption under EPCRA Section 313.

According to EPCRA Section 313 guidance documents, the laboratory exemption is applied to the quantity of a listed toxic chemical that is manufactured, processed, or otherwise used in a laboratory under the supervision of a technically qualified person. A total of 5.28 lbs of mercury was determined to be laboratory exempt. Although 5.28 lbs was determined to be laboratory exempt, the actual amount of

mercury in chemical containers is considerably less. The chemical names of the exempted containers are "mercury standard solutions" which contain only parts per million (ppm) quantities of mercury.

In 2009, a purchase of 55.1 lbs of mercury from MST-6: Materials Science and Technology – Metallurgy was investigated further. The mercury was not "used" in 2012 and is still in storage. The mercury might be used next year and will be tracked for reporting in 2013. The mercury will be used for electroplating operations.

The remaining 0.05 lbs of mercury from the ChemLog analysis was assumed to be "otherwise used" and applied to the 10 lb threshold.

4.1.2 Los Alamos Neutron Science Center Shutter System

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

During 2012, minor maintenance was performed on the mercury shutter system. A total of 2.0 lbs was removed or added to the shutter system in 2012. Similar maintenance is anticipated in 2013.

4.1.3 Spallation Neutron Source Target Development Experiment

The Spallation Neutron Source (SNS) Target Development Experiment began operations at the Laboratory in December 2001. The experiment also operated in 2002, 2005, 2006, 2008, and 2011. The experiment studied issues associated with using mercury as the target material for the SNS. The loop is a closed system and it is not opened to the atmosphere. Additionally, the entire experiment is contained within a secondary container which includes an exhaust system that filters mercury vapor from inside the secondary container that might escape the primary mercury boundary. The exhaust system also ensures a negative pressure inside the compartment and is activated whenever the secondary compartment is opened to prevent possible mercury vapor emissions. The filtering system includes mercury and high-efficiency particulate air filters.

The mercury added to the system has always been considered laboratory exempt. We assume that any mercury air emissions generated during the experiment are captured with the filtering system and, therefore, no mercury air emissions are released during the experiment. LANSCE personnel confirmed that the experiment did not operate in 2012 and operated for the last time in July 2011.

4.1.4 Fuel Combustion

In 2012, the Laboratory generated mercury compound emissions from the following combustion sources: the asphalt plant, the Technical Area (TA) 3 power plant, the TA-3 combustion turbine, and from numerous small boilers. The mercury compound emissions from these sources totaled 1.33 lbs towards the manufactured threshold. Additionally, mercury is found in diesel fuel as an impurity. According to EPA guidance, the concentration of mercury in diesel fuel is 0.001 ppm (EPA 2001a). LANL used

approximately 44,349.2 gallons of diesel fuel in 2012 and this equates to 0.00032 lbs of mercury towards the otherwise used threshold.

4.1.5 Conclusion

The total amount of mercury qualifying as otherwise used equals 0.30 lbs, which is below the reporting threshold value of 10 lbs. The total amount of mercury compounds manufactured was 0.77 lbs and is also below the reporting threshold of 10 lbs. Therefore, it was determined that reporting mercury under EPCRA Section 313 is not necessary for 2012. A summary of the 2012 mercury threshold determination is provided in Table 4-1.

Table 4-1. Summary of 2012 Mercury Threshold Determination

Description	Amount of Mercury (lbs)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lbs)
Purchasing of Mercury Standards and Instruments	5.28	Procurement data and facility personnel interviews	Laboratory Exempt	NA*
Other Procurement	0.05	Procurement Records	Otherwise Used	10
LANSCE Shutter System	2.0	LANSCE Facility Records		
Fuel Combustion	0.00032	Fuel Use Records and EPA Guidance	Manufactured	10
Fuel Combustion	1.33	Fuel Use Records and EPA AP-42		

* NA = not applicable.

4.2 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 category would include acid aerosols generated in storage tanks and from fuel combustion.

Sulfuric acid is purchased in large quantities for demineralizer regeneration at TA-3-22. In 2012, 982 lbs of sulfuric acid was used at TA-3-22. Because the sulfuric acid used at the Sanitary Wastewater Systems Consolidation (SWSC) Plant and TA-3-22 is used in liquid form, it is not subject to EPCRA Section 313 reporting. TA-3-22 stores sulfuric acid in a 4,500-gallon tank. The EPA Tanks 4.0 model was used to make a very conservative estimate that 0.003 lbs of sulfuric acid mist was generated inside the tank at TA-3-22.

Sulfuric acid aerosols are generated as a result of storage tank emissions, fuel combustion byproducts, natural gas combustion, and asphalt production. The total amount of sulfuric acid mist generated from these activities was 1,130.4 lbs, less than the 25,000-lb manufacture threshold and, therefore, not reportable under EPCRA. Based on EPA guidance for fuel oil (diesel fuel) combustion, it is assumed that all sulfur trioxide (SO_3) emissions are in the form of sulfuric acid (EPA 1998a). For natural gas combustion, it is conservatively assumed that all sulfur oxides emissions are in the form of sulfuric acid mist because separate SO_3 emission factors are not available.

In 2012, numerous small purchases totaling 410 lbs of sulfuric acid were procured at the Laboratory. These numerous small purchases of sulfuric acid captured in ChemLog are assumed to be in aerosol form since the specific usage is unknown. Total purchases do not exceed the otherwise use reporting threshold. A summary of the threshold determinations for sulfuric acid is provided in Table 4-2.

Table 4-2. Sulfuric Acid Threshold Determination for 2012

Description	Amount of Sulfuric Acid (lbs)	Data Source	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lbs)
TA-3-22 Demineralizer Regeneration	982	Site Support Contractor Logs	Not in aerosol form and not subject to EPCRA Section 313	NA[a]
Storage Tank Air Emissions	0.003	EPA, Tanks 4.0 Software	Manufactured	25,000
Fuel Combustion Byproducts	0.16	AP-42 and fuel use records		
Asphalt Plant Production	3.92	AP-42 and facility records		
Natural Gas Combustion	1,130.4	AP-42 and facility records		
Procurement Not Evaluated	410	ChemLog	Otherwise used[b]	10,000

[a] NA = not applicable. [b] Assumed to be in aerosol form.

4.3 Polycyclic Aromatic Compounds (PACs)

PACs are a chemical category included on the EPCRA Section 313 list as part of the PBT rule. The threshold for reporting PACs is 100 lbs. Benzo(g,h,i)perylene is a PAC that has its own separate threshold. The threshold for benzo(g,h,i)perylene is 10 lbs.

According to EPA's "EPCRA Section 313 Guidance for Reporting Toxic Chemicals: Polycyclic Aromatic Compounds Category" (EPA 2001b), fuel oil and paving asphalt contain PACs. In addition, PACs may be generated from the combustion of natural gas and fuel oil and the manufacture of asphalt. Each of these sources of PACs was evaluated and is described below.

4.3.1 Procurement of PACs

Under EPCRA Section 313, the PAC category includes 25 specific chemicals and an additional 51 chemical mixtures that are listed as potentially containing PACs. A search of the ChemLog dataset was done using CAS numbers for the 25 chemicals and text searches for the 51 chemical mixtures. No matches were identified and the total PACs from the ChemLog analysis for 2012 is zero.

4.3.2 PACs from Asphalt Production

In 2012, the Laboratory's onsite asphalt plant produced approximately 852 tons of asphalt. Additionally, Española Transit Mix provided 4,475 tons of asphalt amounts to LANL and LaFarge Plant from Bernalillo, New Mexico, provided 2,092 tons of asphalt. Therefore, a total of 7,419 tons of asphalt was used at LANL in 2012.

A review of project management records for 2012 identified projects that involved the purchase of asphalt from outside contractors. Work tickets and project management records were reviewed to identify asphalt jobs that qualify as routine facility maintenance and are exempt under EPCRA Section 313. Routine facility maintenance includes patching of potholes, repair of roads and parking lots, and resurfacing of existing parking lots.

According to EPA guidance, asphalt tar (used in making asphalt) may contain as high as 178 ppm of PACs (EPA 2001b). However, Chevron-Texaco, the supplier of the asphalt tar, provided information specific to their product (Chevron-Texaco 2001). The concentration of PACs in the asphalt tar is 8 ppm, which is significantly lower than the default value listed in the EPA's PACs guidance. The manufacturer-supplied value was used in the calculation of PACs.

For the 2012 reporting year, it was decided to include all projects, exempt and non-exempt; therefore, the amount of PACs emitted is a bit higher than previous years. In 2012, using the 8 ppm concentration, the total amount of PACs otherwise used at LANL in asphalt is 12.84 lbs of PACs which is far below the reporting threshold of 100 lbs.

The concentration of benzo(g,h,i)perylene in asphalt, from "EPA's Guidance for Reporting on Pesticides and other Persistent Bioaccumulative Toxics" (EPA 2001c), is 1.2 ppm. This figure adds 3.72 lbs of benzo(g,h,i)perylene reportable towards its 10-lb otherwise use threshold.

4.3.3 PACs from Fuel Oil Combustion

Approximately 44,349 gallons of diesel fuel were used in 2012 in the Laboratory's power plant and miscellaneous boilers and generators. According to EPA guidance, fuel oil may contain 10 ppm of PACs (EPA 2001b). However, data provided by Chevron-Texaco indicate diesel may contain 22 ppm of PACs (Chevron-Texaco 2001). The 22 ppm was used in these calculations. This equates to 6.93 lbs of PACs that apply to the otherwise use threshold. The concentration for benzo(g,h,i)perylene was found to be 0.05 ppm according to EPA guidance (EPA 2001c). Data provided by Chevron-Texaco indicated concentrations of 9 ppm. The 9 ppm value was used in these calculations and results in 2.83 lbs of benzo(g,h,i)perylene applicable to the 10-lb otherwise use threshold.

Combustion of fuel oil generates emissions of PACs that apply to the manufacture threshold. Using AP-42 emission factors (EPA 1998a), these amounts were calculated to be 7.3×10^{-4} lbs for total PACs and 1.0×10^{-4} lbs for benzo(g,h,i)perylene.

4.3.4 PACs from Natural Gas

Approximately 1,092 million standard cubic feet of natural gas were burned at the Laboratory facilities in 2012. Using AP-42 emission factors (EPA 1998b) and fuel records, approximately 0.018 lbs of PACs were produced from natural gas combustion, which is applied to the manufacture threshold. Approximately 0.001 lbs of benzo(g,h,i)perylene applies toward the 10-lb manufacture threshold. Due to the absence of information regarding total PAC and benzo(g,h,i)perylene concentrations in natural gas, it was assumed these substances are negligible in natural gas before combustion.

4.3.5 Summary of PACs

The largest source of PACs at the Laboratory in 2012 was from fuel oil. The total amount used from all sources is 6.93 lbs. The total amount manufactured from combustion of fuel oil and natural gas is 0.019 lbs. Both threshold quantities for otherwise use and manufacture were below the 100-lb threshold; therefore, it was determined that reporting of PACs under EPCRA Section 313 was not necessary.

Benzo(g,h,i)perylene concentrations in asphalt tar and diesel fuel totaled 3.72 lbs towards the otherwise used threshold. Combustion processes accounted for 0.001 lbs, which is considered to be manufactured. These values are below the reporting threshold of 10 lbs. Therefore, benzo(g,h,i)perylene reporting was not necessary under EPCRA Section 313 in 2012. Table 4-3 summarizes the PACs and benzo(g,h,i)perylene threshold determinations.

Table 4-3. LANL 2012 Threshold Determinations for PACs and Benzo(g,h,i)perylene

EPCRA Chemical/ Compound	Process or Material	Amount (lbs)	Total (lbs)	EPCRA Section 313 Activity Determination	EPCRA Activity Threshold (lbs)
Total PACs	Impurity in natural gas	0.0	12.84	Otherwise Used	100
	Asphalt tar	5.91			
	Impurity in fuel oil	6.93			
	Natural gas combustion	0.018	0.019	Manufactured	100
	Fuel oil combustion	7.32×10^{-4}			
Benzo(g,h,i)perylene	Impurity in natural gas	0.0	3.72	Otherwise Used	10
	Asphalt tar	0.89			
	Impurity in fuel oil	2.83			
	Natural gas combustion	0.01	0.001	Manufactured	10
	Fuel oil combustion	1.0×10^{-4}			

4.4 Nitric Acid

In general, nitric acid is used in high volume at the Laboratory every year. The main uses are research and development activities, sample preparation, plutonium processing, and the Laboratory's bioassay program. Small amounts of nitric acid are used for cleaning glassware. The total amount of nitric acid used at LANL in 2012 did not exceed the EPCRA Section 313 otherwise use threshold of 10,000 lbs.

4.4.1 Procurement

Nitric acid procured and used at the Laboratory in 2012 was evaluated to determine the amounts that could be applied to the EPCRA Section 313 laboratory exemption. According to EPCRA Section 313 guidance documents, the laboratory exemption is applied to the quantity of a listed toxic chemical that is manufactured, processed, or otherwise used in a laboratory under the supervision of technically qualified personnel. However, quantities of a listed toxic chemical used for cleaning glassware do not qualify for this exemption.

In 2012, a total of 4,502 lbs of nitric acid was procured at the Laboratory, based on queries of the ChemLog system. Some of the purchase records indicate the nitric acid is actually 69% to 71% nitric acid

in an aqueous solution, or more dilute solutions. In almost all cases, the nitric acid is purchased as "lab grade," which is 65% to 70% nitric acid in water. The concentration of the nitric acid purchases was taken into account and the resulting amount of pure nitric acid purchased was calculated to be 2,836 lbs.

The Actinide Process Chemistry (PMT-2) Group is the largest user of nitric acid and they had very limited operations due to facility and maintenance upgrades. Historically, PMT-2 purchased nitric acid in bulk and stored it in a nitric acid storage tank. In 2012, no additional nitric acid was purchased for the TA-55 tank.

Other large users of nitric acid were contacted to determine how the nitric acid was used. Relatively large quantities of nitric acid continue to be used for the bioassay program (monitoring employees for radioactive elements). Numerous other users within the Chemistry Division were contacted and verified the use of nitric acid for sample preparation and analysis. In 2012, this use totaled 2,006 lbs. Information was also obtained on the approximate amount of nitric acid used for cleaning laboratory glassware, which is not considered a laboratory exempt activity. The total amount calculated to be used for cleaning glassware was 475 lbs.

The quantity of nitric acid used by personnel that were not contacted (except for plutonium processing, which is described in Section 4.4.2) or that described their use of nitric acid as process related (including cleaning glassware) totaled 355 lbs. As a conservative assumption, this amount is assumed to be otherwise used.

4.4.2 TA-55 Plutonium Processing

Plutonium processing facility management was contacted to obtain information on the amount of nitric acid used in plutonium processing in 2012. TA-55 personnel did not purchase any bulk nitric acid for their bulk storage tank in 2012, nor did the facility perform any plutonium processing activities. The bulk nitric acid system was out of service for most of 2012. Approximately, 360 liters of nitric acid was moved from the bulk storage tank to smaller storage tanks within some of the processing areas, but was not used in 2012.

4.4.3 Summary

Nitric acid use in 2012 is below the EPCRA 313 10,000-lb otherwise used threshold, and therefore is not reportable. Table 4-4 provides a summary of nitric acid use at LANL in 2012.

Table 4-4. Nitric Acid Threshold Determination for 2012

Description	Amount of Nitric Acid (lbs)	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lbs)
Laboratory Use	2,006	Lab Exempt	Exempt
Otherwise Use		Otherwise Use	10,000
• Non-Lab, or unknown use	830		
• Plutonium Processing (TA-55 actual use)	0		
Total Otherwise Use	830		

4.5 Nitrate Compounds

According to the EPA's EPCRA Section 313 Guidance "List of Toxic Chemicals within the Water Dissociable Nitrate Compounds Category and Guidance for Reporting" (EPA 2000a), nitrate compounds may be manufactured through the elemental neutralization of nitric acid and through the collection and treatment of sanitary wastewater. These sources of nitrate compounds are applicable to the Laboratory and are discussed in this section. The reporting thresholds for nitrate compounds are 25,000 lbs for manufacture/import or process and 10,000 lbs for otherwise used. Only the manufacture and otherwise used thresholds apply to the Laboratory for 2012 EPCRA reporting.

The above listed guidance provides a list of approximately 50 nitrate compounds that are included as water dissociable nitrate compounds. Although this list is not exhaustive, it provides commonly identified nitrate compounds. Only those compounds in aqueous solution (>50% water) are required to be reported. Also, a *de minimis* concentration of 1% is applied to all nitrate compounds found in mixtures. When determining the reporting threshold for nitrate compounds, the entire nitrate compound is included (both the nitrate and its counter ion) toward determining the threshold. If the threshold is exceeded, only the nitrate portion of the compound is reported.

For the manufacture threshold, the sources reviewed included waste nitric acid treated at the Radioactive Liquid Waste Treatment Facility (RLWTF), which uses sodium hydroxide in an elementary neutralization process. The other source was the SWSC Plant. The nitrate compounds that were applied to the otherwise used threshold included nitrate compounds purchased or used during 2012. Other nitrate compounds evaluated were determined to be non-aqueous and were not required to be included in threshold determinations.

4.5.1 Chemical Review

A query of ChemLog was performed to determine the amount of chemicals applied to the otherwise used threshold. Approximately, 314.6 lbs of nitrate compounds were purchased in 2012. A few of the larger quantity purchases were clearly nitrate compounds in a powder (non-aqueous) form and do not count towards the EPCRA threshold. These purchases are typically removed from the threshold totals. However, since the total pounds purchased was so small, all purchases were counted towards the threshold.

4.5.2 Sanitary Wastewater

The SWSC Plant collects sanitary wastewater (sewage and other allowable discharges) from several LANL facilities and treats the wastewater in a standard primary (physical), secondary (biological) treatment system. Information was collected from the SWSC Plant on nitrate influent concentration and total flow rate for the purpose of EPCRA Section 313 threshold determination. The information provided indicated an average nitrate concentration of the influent of 1.09 milligrams per liter and total flow into the system during 2012 was 84,646,000 gallons.

Using the flow rate given by the plant, the total annual average amount of nitrate compound (as sodium nitrate) was calculated. At the average nitrate concentration of 1.09 milligrams per liter, and adjusting the weight to include the sodium ion, the total sodium nitrate processed as an impurity was 1,055 lbs in 2012.

The information provided by the SWSC Plant also included the amount and the nitrate concentration of the effluent treated water. The total amount of treated water out of the SWSC Plant in 2012 was 101,989,000 gallons. The average nitrate concentration was 1.77 milligrams per liter. This calculates to a total of 2,063 lbs of nitrates (as sodium nitrate) manufactured.

The SWSC Plant is a zero discharge facility and all treated water is kept in a holding pond and pumped to the TA-3 power plant for use in cooling towers. Therefore, there are no releases to the environment from the SWSC Plant.

4.5.3 Nitric Acid Neutralization

Typically, waste nitric acid from the mixed oxide (MO_x) fuel process and from the Nitric Acid Recycling System, both located at the Plutonium Facility, is sent to the RLWTF for treatment. The RLWTF received 730 liters of nitric acid waste from the Plutonium Facility in 2012. The amount of nitrate compounds formed due to nitric acid treated at the RLWTF is usually calculated using the formula found in the EPA "Nitrate Compound Guidance" (EPA 2000a). However, the RLWTF did not treat acid waste in 2012. The acid that was received in 2012 will be stored and treated in the future.

4.5.4 Summary

Nitrate compounds that apply to the otherwise used reporting threshold of 10,000 lbs include the chemicals found in ChemLog. A total of 314.6 lbs of nitrate compounds was purchased and assumed to be in aqueous form. This is well below the 10,000-lb EPCRA Section 313 threshold.

Nitrate compounds that apply to the manufacture reporting threshold of 25,000 lbs include those identified in the sanitary wastewater at the SWSC Plant and the nitrate compounds identified during the elementary neutralization of nitric acid at the RLWTF. The activity at the SWSC Plant totaled 2,063 lbs of nitrate compounds manufactured. The amount of nitrate compounds formed due to nitric acid neutralization activities at the RLWTF in 2012 is 0 lbs. The amount of nitrate compounds processed as an impurity from this activity was 1.055 lbs. The total amount of manufactured nitrate compounds was 1,675 lbs; therefore, it was determined that no thresholds for nitrate compounds were exceeded in 2012. Table 4-5 provides a summary of nitrate compounds at LANL in 2012.

Table 4-5. Summary of Nitrate Compounds at LANL in 2012

Description	Amount of Nitrate Compounds (lbs)	EPCRA Section 313 Activity Determination	EPCRA Section 313 Activity Threshold (lbs)
Purchased in ChemLog (assumed in aqueous form and otherwise used)	314.6	Otherwise Used	10,000
Processed at SWSC Plant	1,055	Processed	25,000
Manufactured at SWSC Plant	2,063	Manufactured	25,000
Manufactured at RLWTF	0		
Total Manufactured	2,063		

4.6 Hydrochloric Acid

The total amount of hydrochloric acid (HCl) procured in calendar year 2012 was 150,949 lbs. This is a large increase from previous years due to the re-start of the expanded Sanitary Effluent Reuse Facility (SERF) in August 2012. A total of 150,000 lbs of 31% HCl was used at the SERF. This equals 46,500 lbs of pure HCl. The remaining 949 lbs is attributed to many small users and is 34–38% HCl and is used in various laboratory settings.

The large quantity of hydrochloric acid used at SERF is used for ph adjustment of treated sanitary effluent, and in the microfilter cleaning tanks. The HCl is received as a 31% aqueous solution in 300–330 gallon totes and transferred to a 1,500-gallon HCl storage tank where it is then piped to the two processes in a nearly closed system. The aqueous form of HCl is exempt from EPCRA 313 reporting and HCl in aerosol form needs to be considered for threshold determinations. However, when the HCl is transferred into the storage tank, HCl vapors in the head space of the tank are vented in aerosol form. Therefore the EPA TANKS 4.09 was run to estimate the amount of HCl vapors formed based on the number of turnovers of the tank and tank and site conditions.

Results from the TANKS Emission estimating software showed a total of 67 lbs of HCl vapor formed and emitted from the tank. Note that this is the amount of HCl vapors formed or "manufactured." For emission inventory purposes it should be noted that this tank is then vented through a sodium hydroxide scrubber prior to release to atmosphere, and therefore emissions of HCl reported in the LANL emissions inventory will be lower than this. This amount of HCl vapor formed is counted towards the "manufactured" threshold for reporting under EPCRA 313.

Using a worst case assumption that all "minor" purchases of HCl end up in vapor form, we have a total of 361 lbs of HCl towards the otherwise used threshold, and 67 lbs of HCl from the SERF tank counted towards the manufactured threshold. Both of these are well below the reporting thresholds of 10,000 lbs for otherwise used, and 25,000 lbs for manufactured. Therefore, it is not necessary to report HCl in 2012.

4.7 DEHP

A capacitor bank located at TA-55 contains 18 capacitors that hold 1.8 gallons of GE Dilektrol oil each for a total of 32.4 gallons. A major component of the Dilektrol oil is di-(2-ethylhexyl) phthalate or DEHP. This material is reportable under EPCRA 313.

The threshold for DEHP is 10,000 lbs and capacitors are article exempt. Therefore, based on the quantity contained in the capacitor bank and the article exemption, it's not necessary to report DEHP in 2012.

4.8 Dioxins

Dioxins are a group of PBTs formed during combustion processes. The EPCRA Section 313 reporting threshold for the dioxins category is 0.1 gram manufactured, processed, or otherwise used. This limit applies to toxic-equivalent compounds, a category of dioxins consisting of 17 specific dioxin and dioxin-like compounds. These "compounds with chlorine substitution in the 2, 3, 7, 8-positions on the molecule are reportable under the EPCRA Section 313 dioxin and dioxin-like compounds category" (EPA 2000b).

Activities at the Laboratory that were evaluated for dioxins include explosives activities and fuel combustion. Each is described below.

4.8.1 Explosives Activities

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

Information on HE materials, such as explosive type, explosive name, composition, and chemical formula, was obtained from Laboratory personnel and textbooks. Some HE materials contain binders and plasticizers. These binders and plasticizers were evaluated and screened for those that contained chlorine. For those chlorine-containing binders/plasticizers, the weight percent chlorine in each was determined and the HE materials having chlorine-containing binders were further evaluated. Knowing the weight percent binder/plasticizer in these explosives and the weight percent chlorine in each binder, the amount of binder and amount of chlorine in each HE material containing chlorine was determined. Due to the unique nature of these materials, no specific dioxin emission factors are available. Therefore, a dioxin emission factor for burning of polyvinyl chloride in accidental fires was used to estimate dioxin emissions from burning of the chlorine-containing materials (ASME 1995). An emission factor of 4 micrograms dioxin emitted per ton of material burned was used.

Based on available information, estimated emissions from dioxins formed by OB/OD of HE materials totaled 1.25×10^{-7} grams in 2012. Furthermore, burning of HE materials at the LANL Burn Ground was evaluated separately for dioxin formation. A more conservative approach was used to estimate dioxin emissions from burning of HE materials. The assumption was made that all HE-contaminated waste could potentially result in dioxin formation. Emission factors developed by the EPA for the burning of ammonium perchlorate propellant were used (EPA 1998c). Based on estimating emissions from all waste materials burned, dioxin emissions were 1.85×10^{-04} grams in 2012.

4.8.2 Fuel Combustion

The Laboratory burns natural gas and diesel fuel in numerous boilers, heaters, and generators. No emission factors for dioxins were found for natural gas combustion. However, EPA EPCRA guidance for dioxins provides an emission factor of 3,178.6 picograms per liter of diesel fuel burned (EPA 2000b). The Laboratory burned a total of 44,349 gallons of diesel fuel in 2012. Total dioxin formation from burning diesel fuel was calculated to be 534 micrograms (0.00053 grams) for 2012.

The total calculated dioxin emissions in 2012 are below the 0.1-gram threshold and, therefore, reporting under EPCRA Section 313 is not required. Table 4-6 summarizes the amount of dioxins formed from all sources characterized for 2012.

Table 4-6. Dioxin Threshold Determination for 2012

Description	Amount of Dioxin Formed (grams)	EPCRA Section 313 Activity Determination	EPCRA Section 313 Threshold (grams)
HE Expended	1.25×10^{-7}	Manufactured	0.1
HE Burned	1.85×10^{-4}		
Fuel Combustion	5.34×10^{-4}		
Total Dioxin Formed	0.00072		

5.0 LEAD AND FORM R REPORTING

5.1 Threshold Determination

Lead and lead compounds are used in various processes throughout the Laboratory. In January 2001, the EPA promulgated a rule lowering the threshold for EPCRA Section 313 reporting of lead and lead compounds to 100 lbs, effective for reporting year 2001. In 2012, lead and lead compounds were otherwise used, processed, or manufactured in the following operations at the Laboratory.

5.1.1 Lead Procurements

A listing of all procurements in 2012 of lead and lead compounds was extracted from ChemLog. Line items containing a CAS number for lead (7439-92-1) were included, as well as any line items containing the word "lead" or the symbol "Pb" in the text description.

The total amount of lead and lead compounds added to ChemLog for 2012 was 2.87 lbs. Line items in ChemLog that were clearly described as lead standards were assumed to be used in a laboratory setting and exempt from reporting. Purchasers were also contacted to determine if their lead was used for exempt activities. This accounted for 0.83 lbs. The total amount of lead and lead compounds from procurements applied to the otherwise used threshold is 2.04 lbs. This includes 0.22 lbs applied to the lead threshold and 1.82 lbs applied to the lead compound threshold.

5.1.2 Lead Use at the Firing Range

Lead is a component in various types of ammunition. The Laboratory maintains an onsite firing range for training security personnel. The firing range keeps detailed records of the amount and type of munitions expended. The US Department of Defense developed software for estimating usage and releases of EPCRA Section 313 chemicals from various munitions activities (www.epa.gov/tri). The TRI-Data Delivery System (TRI-DDS) software was used to calculate the amounts of toxic chemicals associated with munitions used at LANL for comparison with EPCRA Section 313 reporting thresholds and calculation of environmental releases. Some ammunition used at LANL was not represented in TRI-DDS. In these cases, the manufacturer was contacted to obtain specific information on lead for that ammunition.

The total lead released to the environment at the firing range in 2012 was lower than the previous year. Using the TRI-DDS software, it was determined that 3,659 lbs of lead and 9.9 lbs of lead compounds were otherwise used.

The 2012 amount of lead released to land (non-air) was 3,659 lbs. This amount equals the amount otherwise used. Lead compounds are also manufactured through the firing of ammunition. These lead

compounds were calculated using the TRI-DDS software. Additionally, firing of ammunition containing lead created (manufactured) 5.2 lbs of lead compounds as air emissions.

5.1.3 Lead from Fuel Combustion

In 2012, the Laboratory emitted lead compound emissions from the following combustion sources: the TA-3 power plant, the TA-3 combustion turbine, and from numerous small boilers, which used approximately 1,091.6 million standard cubic feet (MMscf) of natural gas. The AP-42 emission factor for lead compounds from natural gas combustion in both large and small boilers is 0.0005 lbs/MMscf. The lead compound emissions from these sources totaled 0.55 lbs towards the manufactured threshold. The Laboratory also burned an estimated 44,349.2 gallons of diesel fuel in boilers, heaters, and diesel-fired generators. The AP-42 emission factor for diesel fuel combustion is 0.00123 lbs per 1,000 gallons; this equates to 0.05 lbs of lead compound manufactured.

Additionally, lead is found in fuel oil and natural gas as an impurity. According to EPA guidance (EPA 2001d), the concentration of lead in No. 2 fuel oil is 0.5 ppm and in natural gas is 0.05 milligrams per cubic meter. The 44,349.2 gallons of fuel oil contained 0.16 lbs of lead and 1,091.6 MMscf of natural gas contained 3.37 lbs of lead, which are added to the otherwise used threshold.

5.1.4 Lead from Asphalt Plant

A total of 852 tons of asphalt were produced in 2012. The AP-42 emission factor for lead from hot mix asphalt plants is 8.90E-7 lbs per ton asphalt (EPA 2004). This equates to 0.001 lbs of lead compounds manufactured.

5.1.5 Lead Use at LANSCE

The Laboratory continues to maintain an inventory of lead shielding and lead bricks at LANSCE and other areas of the Laboratory. In recent years, the Laboratory has attempted to reduce the inventory by sending some of the lead offsite to be reused. According to the EPA's web-based TRI advanced training course presented by Science Applications International Corporation on May 10, 2005, "the recovery of a listed Section 313 chemical for further distribution in commerce or commercial use is 'processing' of that chemical." Also, materials sent offsite for direct "reuse" are not reported on Form R, but materials sent offsite for recycling are reported on Form R in Part II, Section 6.2. The EPA considers the direct recirculation of a toxic chemical within a process or between processes without any intervening reclamation or recovery to be "reuse." Furthermore, "reclamation or recovery" does not include simple phase changing of the toxic chemical before further reuse (e.g., simple remelting of scrap metal).

The process for shipping scrap metal for "reuse" has been centralized at the Material Recycle Facility (MRF), part of LANL's salvage process. The MRF stages the metal and coordinates pick-up by a metal recycling company. The MRF estimates that 776 lbs of lead were shipped offsite for "reuse" in 2012.

The lead sent to the metal recycling company is considered processed because it is distributed for commercial use. The metal recycling company repackages the lead and then sends it to a lead smelter. Because the lead is simply remelted, it is defined as "reused." Therefore, it will not be reported on Form R in Part II, Section 6.2.

5.1.6 Other LANL Operations Using Lead and Lead Compounds

The Sigma Foundry, located at TA-3-66, melts lead in order to declassify parts. In 2012, the foundry did not melt any lead.

In previous years, the Laboratory has conducted operations to decontaminate lead shielding and lead melting and cutting operations to form new shielding. Onsite processing of both of these activities was suspended in 2000. However, LANSCE reports that 3,000 lbs of lead was sent to Ace Metals for recycling in 2012.

The Laboratory installed a lead-bismuth test loop at LANSCE in 2001. The test loop contains approximately 8,000 lbs of lead bismuth. In 2012, 2,000 lbs of lead bismuth was purchased and 1,500 lbs of that lead bismuth was added to the loop. The other 500 lbs was put in storage. The 1,500 lbs is considered to be "otherwise used" and added to the lead compound threshold.

5.1.7 Conclusion

The largest source of lead use at the Laboratory is from the firing range which accounted for 3,659 lbs of lead towards the otherwise used threshold. Table 5-1 summarizes the threshold determination for lead and lead compounds for 2012. Based on these operations, it was determined that lead was processed and otherwise used over threshold quantities. Also, LANL exceeded the otherwise used reporting threshold for lead compounds.

Table 5-1. Summary of Threshold Determination for Lead and Lead Compounds for 2012

Activity	Lead "Use"(lbs)	Lead Compound "Use"(lbs)	Comments
Lead Purchases (ChemLog)	0.22	1.82	Otherwise Used 46.62 lbs purchased, 46.24 lbs Lab Exempt
Firing Range	3,659	9.9	Otherwise Used
Firing Range	0	5.2	Manufactured
Fuel Combustion	0	0.60	Manufactured (sum of natural gas, diesel, and propane from asphalt plant)
Fuel Combustion	3.53	0	Otherwise Used
Lead Recycle/Resale from MRF (sold to Ace Metals)	776	0	Processed, all of it is "reused" and not reported on the Form Rs
Lead Recycle/Resale from LANSCE (sold to Ace Metals)	3,000	0	Processed, all of it is "reused" and not reported on the Form Rs
Asphalt Production	0	0.001	Otherwise Used
Sigma Foundry	0	0	Processed
Lead-Bismuth Test Loop LANSCE	0	1,500	Manufactured
TOTALS	**Otherwise Used – 3,662.8** **Processed – 3,776**	**Otherwise Used – 1,511.7** **Processed – 0** **Manufactured – 5.2**	**Reporting Thresholds = 100 lbs**

According to EPA's EPCRA 313 "Guidance for Reporting Releases and Other Waste Management Quantities of Toxic Chemicals: Lead and Lead Compounds," if a reporting threshold is exceeded for both lead and the lead compound category, only a single EPCRA section 313 report needs to be prepared, and this would be for lead compounds. Therefore, LANL will complete a Form R for lead compounds.

5.2 Environmental Releases and Offsite Disposal

For 2012, LANL exceeded the "otherwise used" threshold of 100 lbs for both lead and lead compounds. According to EPA's EPCRA 313 "Guidance for Reporting Releases and Other Waste Management Quantities of Toxic Chemicals: Lead and Lead Compounds," if a reporting threshold is exceeded for both lead and the lead compound category, only a single EPCRA section 313 report needs to be prepared, and this would be for lead compounds.

Therefore, a Form R for lead compounds must be submitted and the totals will include both lead and lead compounds. The Form R includes reporting on air emissions, water discharges, land disposal and offsite waste disposal.

5.2.1 Air Emissions

In 2012, LANL emitted lead compound emissions to the atmosphere in the form of both fugitive and stack emissions. The sources for the lead compound air emissions include the firing range, fuel combustion, and the RLWTF evaporator.

5.2.1.1 Firing Range

The Laboratory operates a firing range onsite for security personnel training. Monthly records are maintained detailing the type and amount of ammunition used at the firing range. For EPCRA Section 313 reporting purposes, the ammunition records are input to the US Department of Defense TRI-DDS software (www.epa.gov/tri) to estimate the amount of EPCRA chemical used and released to the environment. Based on the results of the TRI-DDS software, a total of 4.8 lbs of lead compounds were emitted as fugitive air emissions from the firing range in 2012.

5.2.1.2 Fuel Combustion

In 2012, the Laboratory emitted lead compounds from the following combustion sources: the asphalt plant, the TA-3 power plant, generators, and from numerous small boilers and heaters. Emissions from the burning of both natural gas and diesel fuel were calculated. The total emissions from these combustion sources totaled 0.60 lbs of lead compound stack emissions.

The Sigma Foundry, located at TA-3-66, melts lead in order to declassify parts. In 2012, the foundry did not melt any lead.

5.2.1.3 RLWTF Evaporator

In 2012, the RLWTF installed an effluent evaporator at TA-55 in order to evaporate off water collected at the effluent outfall directly to the atmosphere. The effluent water contained 1.2 grams of lead which equates to 0.003 lbs of lead emitted as stack air emissions.

5.2.1.4 Conclusion

In 2012, the Laboratory emitted a total of 5.4 lbs of lead to the atmosphere. The fugitive emissions are from the firing range. The stack emissions include emissions from fuel oil/diesel combustion sources and natural gas combustion sources, and from the RLWTF Evaporator. Table 5-2 summarizes lead air emissions from the Laboratory as reported on Form R.

Table 5-2. Lead Air Emissions from LANL in 2012

Emission Source	Total Lead Emissions (lbs)	Fugitive or Stack
Firing Range	4.8	Fugitive
Fuel Combustion	0.60	Stack
Sigma Foundry	0	Stack
RLWTF Evaporator	0.003	Stack
Total	**5.4**	

5.2.2 Releases to Water

This section describes the amount of lead released to the environment from the Laboratory during 2012, as measured at LANL's National Pollutant Discharge Elimination System (NPDES) outfalls, which quantifies the amount of listed chemicals released due to facility operations during the reporting period.

During prior year assessments, a second data source has been included in release estimates. The quantity of lead present in surface and storm water has been estimated and reported. These estimates were derived from analytical and flow volume data collected at surface water sampling stations, as well as flow estimates for stations where flow is not measured. Further calculations were performed to quantify the amount of lead attributable to naturally occurring sources, and then convert the anthropogenic fraction to derive a mass. The detailed methodology for the analysis of lead in surface and storm water and mass calculations is documented in annual EPCRA Summary Reports for calendar years 2001 through 2005.

EPCRA requires the reporting of TRI listed chemicals released to the environment during the year in which they are originally released. The inclusion of surface and storm water data within the annual release dataset is an overestimate as these data do not represent current year releases, but measure the migration and transport of existing contaminant inventory that 1) was released to the environment before initiation of annual EPCRA reporting, 2) is unrelated to the original environmental release, and 3) cannot be differentiated from, and likely effectively masks, actual environmental releases. Therefore, annual EPCRA reporting will only include annual original release data as directly measured at NPDES outfalls.

NPDES outfall data, generated as part of the Laboratory's Outfall Monitoring Program, were obtained from the Water Quality and Resource Conservation and Recovery Act (RCRA) Group. Outfall 051 is the only LANL outfall that has discharge limits for lead. Since there are no limits at the other outfalls, LANL does not analyze for lead at these outfalls. In 2012, LANL sampled for a full slate of analytes (including lead) at each outfall as part of the NPDES Permit renewal process. NMED analyzes the concentration and determines if it is likely that the surface water standard for each analyte could be exceeded. If the standard is not likely to be exceeded then there is no permit limit for that constituent. Based on the 2004 sampling, there were no permit limits for lead at any outfall other than Outfall 051, so there are no data on lead

concentrations for water sent to those outfalls from 2005–2010. In 2012, lead was below the detection limit for all of the outfalls except Outfall 03A199 where the single sample showed 0.67 micrograms per liter. Since a value is available, the amount of lead discharged through that outfall could be calculated.

For the EPCRA Section 313 Form R, Section 5.3 reporting, the total amount of lead released to each receiving stream is reported. For NPDES outfall data, the receiving stream associated with each sample location was determined through the use of the Laboratory's Environmental Surveillance Report maps and information received from LANL's Water Quality and RCRA Group. The following table summarizes the total lead discharged from each of the three tributaries on Pajarito Plateau that LANL discharged to during 2012. Total lead release to streams was 0.373 lbs. Table 5-3 was used to complete Section 5.3.1 of the Form R.

Table 5-3. Lead Releases to Water in 2012 from LANL NPDES Outfall

Canyon	LANL NPDES Outfall Lead (lbs)
Mortandad Tributary to Rio Grande	0.0035
Sandia Tributary to Rio Grande	0.3346
Los Alamos Tributary to Rio Grande	0.0353
Total of NPDES Discharges	**0.3733**

5.2.3 Releases to Land

Lead releases to land at the Laboratory occur as a result of firing range activities. Lead releases to land are based on the amount of munitions used during the year and the lead content of the munitions used. Lead content for munitions used at the Laboratory was estimated by matching the munitions types with those listed in the TRI-DDS. A total of 3,659 lbs of lead was released to land at the firing range at LANL in 2012.

5.2.4 Offsite Waste Disposal

The Solid Waste Operations Group provided waste characterization and disposal data for lead wastes that were shipped offsite in 2012. Laboratory and article exempt waste was removed from the dataset. EPCRA article and laboratory exemptions have been documented in previous years' memos and are described in the EPA/TRI Guidance Document "Toxic Chemical Release Inventory Reporting Forms and Instructions for RY2008" (EPA 2008).

The data provided by Solid Waste Operations included the percent of lead for most of the waste shipments. However, this information was lacking for many of the waste items, and the Environmental Compliance Group had to obtain the necessary information from MSDSs or the Merck Index (1989). In most cases, the waste profile form provided sufficient information to complete the lead calculation. For some waste items, estimates of the percentage of lead were made by matching it with similarly described waste shipments from previous years' analyses. For those waste items weighing less than 1 kilogram, lead concentrations were estimated based on the item description. For example, lead percentage by weight in waste items comprised of a chemical compound, such as lead nitrate, were determined from the Merck Index (1989). In other wastes, where the description provided sufficient information about the nature of

the item (e.g., lead pellets), the percentage of lead was estimated (e.g., lead pellets = 100% lead). If the MSDS did not give the percentage of lead, the most conservative was assumed from the range given.

5.2.4.1 Results

The amount of lead contained in waste that was shipped offsite from the Laboratory in 2012 was 2,377 lbs. This total weight of lead was calculated by multiplying the total waste weight (kilograms) by the percentage of lead within each waste item, and then converted to pounds.

EPCRA reportable waste items shipped offsite from the Laboratory to several waste treatment/disposal facilities in 2012 are summarized in Table 5-4. As per EPCRA guidelines, only those disposal facilities that received more than 0.5 lbs of lead in 2012 were included in the summary table and on the Form R.

Table 5-4. Summary of Waste Disposal Facilities Receiving LANL Waste in 2012

Company	Address	Facility EPA ID	Ultimate Fate of Waste	Total Lead (lbs)
Clean Harbors, Aragonite, LLC	11600 North Aptus Rd., Aragonite, UT 84029	UTD981552177	Solidification/Stabilization of metals	278
Clean Harbors, Deer Trail, LLC	108555 East Highway 36, Deer Trail, CO 80105	COD991300484	Landfill	0
Clean Harbors, El Dorado, LLC	309 American Circle, El Dorado, AR 71730	ARD069748192	Landfill	87.4
Energy Solutions, LLC	Tooele County, I-80, Exit 49, Clive, UT 84029	UTD982598898	Landfill	1,199
Energy Solutions Tennessee	1560 Bear Creek Road, Oak Ridge, TN 87830	TND982157570	“Other” Land Disposal	319.3
Material and Energy Corporation	2012 Highway 58, Suite 1020, Oak Ridge, TN. 37830	TNR000005397	Landfill	0
Permafix Northwest, Inc.	2025 Batelle Rd, Richland, WA. 99354	WAR000010355	“Other” Land Disposal	216
Perma-Fix, Inc.	1940 NW 67th Place, Gainesville, FL 32653	FLD980711071	”Other” Land Disposal	276
Phibro-Tech, Inc.	8851 Dice Rd., Santa Fe Springs, CA 90670	CAD008488025	Metal Recovery/Recycle	0.8
			Total	**2,377**

LANL continues to make a concerted effort to clean-up and dispose of legacy material. However, the 2012 totals for lead offsite waste disposal are lower than last year’s total.

5.2.4.2 Disposal Fate

The EPCRA Form R requires information about each treatment/disposal facility that received waste from the Laboratory, including how much was sent to each waste treatment/disposal facility and additional information regarding waste treatment, recycling, or disposal conducted at each facility. A Waste Disposal/Treatment Code must be entered in Section 6.2.C of the Form R for each facility receiving waste. The Waste Disposal/Treatment Codes were updated by the EPA in 2005 and are included on pages 54 and 55 of the “Toxic Chemical Release Inventory Reporting Forms and Instructions for RY2008” (EPA 2008) guidance document.

5.3 Other Information Provided on Form R

Environmental releases of lead as air emissions, to surface waters, and onsite land releases were reported to be 5.4 lbs, 0.37 lbs, and 3,659 lbs, respectively. These values are included in Section 5 of the Form R, Quantity of the Toxic Chemical Entering Each Environmental Medium Onsite. A total of 2,377 lbs of lead was reported in Section 6.2 of the Form R, Transfers to Other Offsite Locations.

Methods of treating lead in wastewater effluent before discharge were included in Section 7A of the Form R, which details onsite waste treatment methods and efficiency. Wastewater from industrial processes at the Laboratory is discharged to the RLWTF before discharge to NPDES-permitted Outfall 051. The RLWTF conducts a series of treatment steps that reduce the amount of metals in the effluent. The wastewater stream goes through precipitation, filtration, neutralization, and reverse osmosis treatment. All wastewater is sampled for lead before and after treatment. Based on analytical results for 2012, the RLWTF resulted in a 99.8% treatment efficiency of lead in the wastewater. Sections 7B and 7C of the Form R relate to onsite energy recovery and recycling. The Laboratory performed no onsite processes applicable to these sections for lead in 2012.

Section 8 of the Form R refers to source reduction and recycling activities. The information provided by the EPA for this section states that no energy recovery is possible for lead, either onsite or offsite. The Laboratory also reported no onsite recycling or treatment.

Section 8.9 of the Form R reports the production or activity ratio, an estimated measure of production or activity involving the reported chemical, as compared to the previous year. Because the Laboratory is not a production facility, a surrogate measure was needed to complete this section of the Form R. To determine this value, the firing range was used as a representative activity that would maintain a consistent use of lead. The amount of lead munitions used in 2012 was divided by the amount used in 2011 to obtain an activity ratio of 0.84.

6.0 EPCRA SECTION 313 SUMMARY AND TRENDS

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

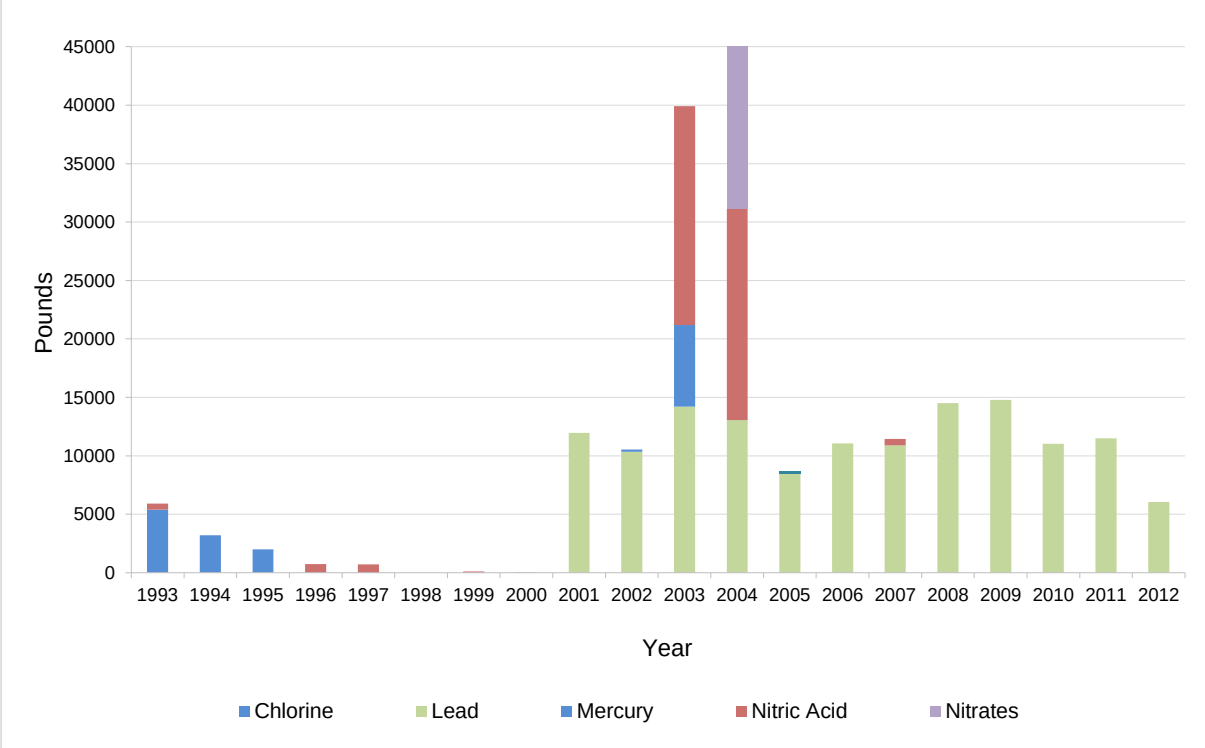
On April 21, 2000, President Clinton signed EO 13148, which requires all federal facilities to comply with EPCRA Section 313 requirements and additionally requires federal facilities to reduce releases of EPCRA Section 313 chemicals to the environment. In response to EO 13148, the DOE developed Pollution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

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

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

- On October 19, 1999, the EPA promulgated a final rule on PBTs. This rule added several chemicals to the EPCRA Section 313 list and established lower reporting thresholds for PBT chemicals (EPA 1999). These lower thresholds became applicable in reporting year 2000.
- On January 17, 2001, the EPA changed the PBT rule to reduce the EPCRA Section 313 reporting threshold for lead and lead compounds to 100 lbs (from 10,000 lbs). The new lead threshold became applicable with reporting year 2001.

As a result of these regulatory changes, the Laboratory has triggered EPCRA Section 313 reporting for lead and mercury in recent years. The regulatory changes resulted in reporting thresholds of 10 lbs for mercury and 100 lbs for lead. Therefore, for the past seven years LANL has submitted environmental release data on lead and, three out of the last seven years, has reported on mercury. Figure 6-1 provides a summary of LANL-reported releases for the period from 1993 through 2012.



Note: For 2003 through 2006, one-time waste disposal of lead from decontamination and demolition activities is not included on this chart.

Figure 6-1. Trends in LANL's reported releases to EPA TRI.

Several points are worth noting from this chart:

- In the early 1990s, the Laboratory implemented a new wastewater disinfection system that eliminated the use of chlorine. Chlorine gas was replaced with bromine tablets and mixed oxidants generated from sodium chloride. This pollution prevention project decreased use of chlorine to well below reporting thresholds.
- In the late 1990s, the Laboratory implemented a Nitric Acid Recycling System to reduce the amount of new nitric acid needed for plutonium processing. This closed-loop recycle system greatly reduced the need to purchase nitric acid, and due to recycling efforts, nitric acid use was below

reporting thresholds for several years. However, in 2003 and 2004 a new process to convert weapons-grade plutonium to MO_x fuels for nuclear power plants was implemented. Due to quality specifications and facility constraints, this project was unable to use recycled nitric acid. Therefore, nitric acid was reportable for 2003 and 2004.

- In 2005, the plutonium processing facility had very limited operations due to ongoing facility maintenance and equipment upgrades. Therefore, nitric acid use was well below reporting thresholds for 2005. In late 2006, the maintenance and equipment upgrades were completed and operations restarted. Nitric acid use for 2006 was still just below reporting thresholds. In 2007 nitric acid was again reportable due to resumption of higher levels of plutonium processing activities.
- Because there were no identified users of recycled nitric acid, and limited storage capacity, in 2004, spent nitric acid from plutonium processing was sent to the RLWTF for treatment and disposal. Although, the treatment process nitric acid was neutralized and resulted in formation of nitrate compounds. For the first time in 2004, nitrate compounds were manufactured above reportable quantities and triggered reporting.
- Although the use of lead and lead compounds has been relatively constant over the years at the Laboratory, the threshold for reporting was lowered to 100 lbs in 2001. The Laboratory first began EPCRA Section 313 reporting on lead in that year. About that same time, LANL made a concerted effort to reduce onsite inventory of lead bricks and shielding that is no longer needed. Much of this lead shielding is radioactively contaminated and cannot be recycled. Therefore, large amounts of legacy lead were shipped offsite for disposal and reported on the Form Rs.
- The largest use of mercury at the Laboratory is in the LANSCE shutter system. Reservoirs of mercury are used as shields on the neutron beam shutter system. Each reservoir is a closed system and only opened occasionally when minor repairs or maintenance are needed. Mercury has only triggered reporting during the years that maintenance activities have occurred on the shutter systems. Environmental releases of mercury are very low.

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APPENDIX A:

EPCRA Section 313 Chemicals Used or Procured in 2012

Appendix A: EPCRA Section 313 Chemicals Used or Procured in 2012

Cas no	Chemical Name	Sec 313	Threshold	Total (lb)
7647-01-0	Hydrochloric acid (aerosol forms only)	313	10000	150949
Polychlorinated Alkanes	Polychlorinated alkanes (C10 to C13)	N583	10000	4279.86
Cyanide	Cyanide Compounds	N106	10000	4013.19
7697-37-2	Nitric acid	313	10000	3977.15
7664-93-9	Sulfuric acid (aerosol forms only)	313	10000	2149.22
7782-50-5	Chlorine	313	10000	1872.68
107-21-1	Ethylene glycol	313	10000	1027.1
78-93-3	Methyl ethyl ketone	313	10000	887.75
67-56-1	Methanol	313	10000	827.97
110-54-3	n-Hexane	313	10000	774.88
67-63-0	Isopropyl alcohol (mfg-strong acid process)	313	10000	627.87
872-50-4	N-Methyl-2-pyrrolidone	313	10000	556.18
Silver	Silver Compounds	N740	10000	547.46
108-88-3	Toluene	313	10000	513.89
67-66-3	Chloroform	313	10000	463.87
75-09-2	Dichloromethane	313	10000	325.05
Nitrate	Nitrate compounds (water dissociable)	N511	10000	314.64
1344-28-1	Aluminum oxide (fibrous forms)	313	10000	254.72
Thallium	Thallium Compounds	N760	10000	250.88
79-01-6	Trichloroethylene	313	10000	230.12
7664-41-7	Ammonia	313	10000	101.35
10222-01-2	2,2-Dibromo-3-nitrilopropionamide	313	10000	100
1330-20-7	Xylene (mixed isomers)	313	10000	90.17
75-05-8	Acetonitrile	313	10000	51.36
108-90-7	Chlorobenzene	313	10000	50.07
74-85-1	Ethylene	313	10000	50
Nickel	Nickel Compounds	N495	10000	46.85
68-12-2	N,N-Dimethylformamide	313	10000	46.13
7664-38-2	Phosphoric acid	313	10000	44.44
95-63-6	1,2,4-Trimethylbenzene	313	10000	43.51
123-31-9	Hydroquinone	313	10000	43.1
Copper	Copper Compounds	N100	10000	39.03
101-68-8	Methylenebis(phenylisocyanate)	Diisocyanate	<10000	36.96
Barium	Barium Compounds	N040	10000	33.49
110-82-7	Cyclohexane	313	10000	23.78
Chromium	Chromium Compounds	N090	10000	23.61
Zinc	Zinc Compounds	N982	10000	22.69
71-36-3	n-Butyl alcohol	313	10000	22.08
7429-90-5	Aluminum (fume or dust)	313	10000	21.37
Manganese	Manganese Compounds	N450	10000	19.88

1634-04-4	Methyl tert-butyl ether	313	10000	19.59
56-23-5	Carbon tetrachloride	313	10000	17.55
7664-39-3	Hydrogen fluoride	313	10000	16.8
75-45-6	Chlorodifluoromethane	313	10000	16.68
91-20-3	Naphthalene	313	10000	13.29
120-12-7	Anthracene	313	10000	11.92
7632-00-0	Sodium nitrite	313	10000	9.02
78-87-5	1,2-Dichloropropane	313	10000	7.62
78-92-2	sec-Butyl alcohol	313	10000	7.05
7440-66-6	Zinc (fume or dust)	313	10000	6.72
121-44-8	Triethylamine	313	10000	6.08
100-42-5	Styrene	313	10000	5.97
123-91-1	1,4-Dioxane	313	10000	5.68
7440-50-8	Copper	313	10000	5.32
7440-62-2	Vanadium (fume or dust)	313	10000	5.28
7440-48-4	Cobalt	313	10000	5.22
Mercury	Mercury Compounds	Mercury N458	10	5.05
100-41-4	Ethylbenzene	313	10000	4.5
Cobalt	Cobalt Compounds	N096	10000	4.07
71-43-2	Benzene	313	10000	3.96
7440-47-3	Chromium	313	10000	3.74
110-86-1	Pyridine	313	10000	3.67
127-18-4	Tetrachloroethylene	313	10000	3.57
108-93-0	Cyclohexanol	313	10000	3.21
64-18-6	Formic acid	313	10000	2.94
95-50-1	1,2-Dichlorobenzene	313	10000	2.87
98-95-3	Nitrobenzene	313	10000	2.64
26628-22-8	Sodium azide (Na(N3))	313	10000	2.58
7440-43-9	Cadmium	313	10000	2.38
79-11-8	Chloroacetic acid	313	10000	2.2
108-95-2	Phenol	313	10000	2.09
110-80-5	2-Ethoxyethanol	313	10000	2.04
75-56-9	Propylene oxide	313	10000	1.98
106-42-3	p-Xylene	313	10000	1.89
Lead	Lead Compounds	N420	100	1.69
75-65-0	tert-Butyl alcohol	313	10000	1.58
77-78-1	Dimethyl sulfate	313	10000	1.46
106-88-7	1,2-Butylene oxide	313	10000	1.4
79-21-0	Peracetic acid	313	10000	1.26
108-38-3	m-Xylene	313	10000	1.14
26471-62-5	Toluenediisocyanate (mixed isomers)	313	10000	1.12
554-13-2	Lithium carbonate	313	10000	1.1
7782-49-2	Selenium	313	10000	1.1
120-80-9	Catechol	313	10000	1.1

106-46-7	1,4-Dichlorobenzene	313	10000	1.1
109-86-4	2-Methoxyethanol	313	10000	1.06
107-18-6	Allyl alcohol	313	10000	0.93
7440-02-0	Nickel	313	10000	0.76
7550-45-0	Titanium tetrachloride	313	10000	0.73
88-06-2	2,4,6-Trichlorophenol	313	10000	0.66
95-80-7	2,4-Diaminotoluene	313	10000	0.55
Cadmium	Cadmium Compounds	N078	10000	0.54
79-22-1	Methyl chlorocarbonate	313	10000	0.52
7440-41-7	Beryllium	313	10000	0.5
75-52-5	Nitromethane	313	10000	0.47
74-88-4	Methyl iodide	313	10000	0.45
108-05-4	Vinyl acetate	313	10000	0.45
1313-27-5	Molybdenum trioxide	313	10000	0.44
Chlorophenols	Chlorophenols	N084	10000	0.44
1120-71-4	Propane sultone	313	10000	0.44
7440-22-4	Silver	313	10000	0.28
62-55-5	Thioacetamide	313	10000	0.27
7440-28-0	Thallium	313	10000	0.26
79-44-7	Dimethylcarbamyl chloride	313	10000	0.22
62-53-3	Aniline	313	10000	0.22
7439-92-1	Lead	313	100	0.22
75-86-5	2-Methyllactonitrile	313	10000	0.22
90-04-0	o-Anisidine	313	10000	0.22
50-00-0	Formaldehyde	313	10000	0.22
100-01-6	p-Nitroaniline	313	10000	0.22
7723-14-0	Phosphorus (yellow or white)	313	10000	0.22
110-00-9	Furan	313	10000	0.2
Antimony	Antimony Compounds	N010	10000	0.16
88-89-1	Picric acid	313	10000	0.13
Arsenic	Arsenic Compounds	N020	10000	0.11
Selenium	Selenium Compounds	N725	10000	0.1
98-88-4	Benzoyl chloride	313	10000	0.06
87-86-5	Pentachlorophenol	313	10000	0.06
128-04-1	Sodium dimethyldithiocarbamate	313	10000	0.05
1918-02-1	Picloram	313	10000	0.02
100-02-7	4-Nitrophenol	313	10000	0.01
98-86-2	Acetophenone	313	10000	0
55-21-0	Benzamide	313	10000	0
1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin	Dioxin	<0.1 g	0

APPENDIX B:

Form R for Lead (DOE and LANL)

Los Alamos
NATIONAL LABORATORY

To/MS: Distribution List
From/MS: Steven Story, ENV-ES, J978
Thru/MS: Alison M. Dorries, ENV-DO, K491
Phone/Fax: 7-2211/Fax 7-7031

Memorandum

Environmental Protection Division
Environmental Stewardship Group

Symbol: ENV-DO-13-038
LAUR: LA-UR-13-24428
Date: JUN 24 2013

SUBJECT: CONFIRMATION OF ELECTRONIC SUBMITTAL OF 2012 TOXIC CHEMICAL RELEASE INVENTORY REPORT TO USEPA

To whom it may concern:

Los Alamos National Laboratory submitted their 2012 Toxic Chemical Release Inventory Report, Form R, to the EPA using the online reporting tool, TRIMEweb. The report is required by Emergency Planning and Community Right-to-Know Act, Title III, Section 313. This year the EPA's deadline is July 1st and it was submitted on June 17th.

Should you have any questions or comments regarding the information provided in this report, please contact Steve Story at (505) 665-2169.

Enclosure: 2012 Toxic Chemical Release Inventory Report for the Emergency Planning and Community Right-to-Know Act, Title III, Section 313

AD/WW:tv

Cy: Hai Shen, LASO-EO, w/enc., A316
Carl A. Beard, PADOPS, w/enc., A102
Michael T. Brandt, ADESH, w/enc., K491
Cynthia Blackwell, LC-LESH, w/enc., A187
Lorraine B. Lopez, CGA-COM, w/enc., M996
Tony Grieggs, ENV-CP, w/enc., K490
Steven L. Story, ENV-CP, w/enc., J978
Walter Whetham, ENV-CP, w/enc., J978
IRM-RMMSO, w/enc., A150
ENV-DO Correspondence File, w/enc., K404
EPCRA Project File, w/enc., J978

Enclosure

2012 Toxic Chemical Release Inventory Report for the Emergency Planning and Community Right-to-Know Act, Title III, Section 313

Electronic Submittal

Form Status: Certified and Sent to USEPA
Validation Status: Passed w/ Data Quality Alerts

Form Approved OMB Number: **2025-0009**
(IMPORTANT: Read instructions before completing form; type or use fill-and-print form) Approval Expires: **10/31/2014**

EPA United States Environmental Protection Agency	**FORM R** Section 313 of the Emergency Planning and Community Right-to-know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act.	TRI Facility ID Number **87545LSLMSLOSAL**
		Toxic Chemical, Category, or Generic Name **Lead Compounds**

WHERE TO SEND COMPLETED FORMS:	1. TRI Data Processing Center P.O. Box 10163 Fairfax, VA 22038 *** **File Copy Only: Do Not Submit Paper Form to EPA** ***	2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

This section only applies if you are revising or withdrawing a previously submitted form, otherwise leave blank:	Revision (Enter up to two code(s)) [**RR5**][ ]	Withdrawal (Enter up to two code(s)) [ ][ ]

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

Part I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR : **2012**

SECTION 2. TRADE SECRET INFORMATION

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

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

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

Name and official title of owner/operator or senior management official:	Signature:	Date Signed:
File Copy Only: Do Not Submit Paper Form to EPA	**File Copy Only: Do Not Submit Paper Form to EPA**	**XX/XX/XXXX**

SECTION 4. FACILITY IDENTIFICATION

4.1		TRI Facility ID Number	**87545LSLMSLOSAL**

Facility or Establishment Name: **Los Alamos National Security, LLC, Los Alamos National Lab**

Street	Mailing Address (if different from physical street address)	
Bikini Atoll Rd SM30	**PO Box 1663**	
City/County/Tribe/State/ZIP Code: **LOS ALAMOS / Los Alamos / BIA Code: / NM / 87545**	City/State/ZIP Code: **Los Alamos / NM / 87545**	Country (Non-US):

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

4.3	Technical Contact name	**Steve Story**	Email Address: **story@lanl.gov**	Telephone Number (include area code): **5056652169**	
4.4	Public Contact name	**Lorrie Bonds Lopez**	Email Address: **lorriel@lanl.gov**	Telephone Number (include area code): **5056670216**	
4.5	NAICS Code(s) (6 digits)	a. **928110 (Primary)**	b.	c.	d.	e.	f.

4.6	Dun and Bradstreet Number(s) (9 digits)
a.	**NA**
b.	

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of U.S. Parent Company (for TRI Reporting purposes)	**U.S. Department of Energy**	No U.S. Parent Company (for TRI Reporting purposes) [ ]
5.2	Parent Company's Dun & Bradstreet Number	NA [**X**]	

EPA Form 9350-1 (Rev. 10/2012) - Previous editions are obsolete. Printed using TRIMEweb

EPA FORM R PART II. CHEMICAL - SPECIFIC INFORMATION	TRI Facility ID Number 87545LSLMSLOSAL Toxic Chemical, Category, or Generic Name Lead Compounds

SECTION 1. TOXIC CHEMICAL IDENTITY (Important: DO NOT complete this section if you are reporting a mixture component in Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.) **N420**
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.) **Lead Compounds**
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive). **NA**

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

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

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

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

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	[**05**] (Enter two-digit code from instruction package.)

SECTION 5.QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ON-SITE

			A. Total Release (pounds/year*) (Enter range code or estimate**)	B. Basis of Estimate (Enter code)	C. Percent from Stormwater
5.1	Fugitive or non-point air emissions	NA [ ]	**4.8**	**C**	
5.2	Stack or point air emissions	NA [ ]	**0.6**	**E1**	
5.3	Discharges to receiving streams or water bodies (Enter one name per box)	NA [ ]			
	Stream or Water Body Name				
5.3.1	**Sandia Tributary to Rio Grande**		**0.335**	**M2**	**0%**
5.3.2	**Mortandad Tributary to Rio Grande**		**0.004**	**M2**	**0%**
5.3.3	**Los Alamos Tributary to Rio Grande**		**0.035**	**M2**	**0%**

*For Dioxin and Dioxin-like Compounds, report in grams/year

EPA Form 9350-1 (Rev. 10/2012) - Previous editions are obsolete.

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

EPA FORM R PART II. CHEMICAL - SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number 87545LSLMSLOSAL Toxic Chemical, Category, or Generic Name Lead Compounds

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ON-SITE (Continued)

		NA	A. Total Release (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)
5.4.1	Underground Injection on-site to Class I wells	[X]		
5.4.2	Underground Injection on-site to Class II-V wells	[X]		
5.5	Disposal to land on-site			
5.5.1.A	RCRA subtitle C landfills	[X]		
5.5.1.B	Other landfills	[X]		
5.5.2	Land treatment/application farming	[X]		
5.5.3A	RCRA Subtitle C surface impoundments	[X]		
5.5.3B	Other surface impoundments	[X]		
5.5.4	Other disposal	[]	3659	C

SECTION 6. TRANSFER(S) OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)	NA [X]

*For Dioxin and Dioxin-like Compounds, report in grams/year

EPA Form 9350-1 (Rev. 10/2012) - Previous editions are obsolete.

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

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

TRI Facility ID Number: **87545LSLMSLOSAL**

Toxic Chemical, Category, or Generic Name: **Lead Compounds**

6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS — NA [ ]

6.2.1 Off-Site EPA Identification Number (RCRA ID No.)	WAR000010355
Off-Site Location Name:	PERMA-FIX NORTHWEST RICHLAND INC
Off-Site Address:	2025 BATTELLE BOULEVARD

City	County	State	Zip	Country (Non-US)
RICHLAND	Benton	WA	993545313	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . 216	1 . O	1 . M79

6.2.2 Off-Site EPA Identification Number (RCRA ID No.)	TND982157570
Off-Site Location Name:	ENERGYSOLUTIONS BEAR CREEK FACILITY
Off-Site Address:	1560 BEAR CREEK ROAD

City	County	State	Zip	Country (Non-US)
OAK RIDGE	Roane	TN	378307374	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . 319.3	1 . O	1 . M79

6.2.3 Off-Site EPA Identification Number (RCRA ID No.)	ARD069748192
Off-Site Location Name:	CLEAN HARBORS EL DORADO LLC
Off-Site Address:	309 AMERICAN CIRCLE

City	County	State	Zip	Country (Non-US)
EL DORADO	Union	AR	717306554	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . 87.4	1 . O	1 . M65

6.2.4 Off-Site EPA Identification Number (RCRA ID No.)	CAD008488025
Off-Site Location Name:	PHIBRO-TECH
Off-Site Address:	8851 DICE RD

City	County	State	Zip	Country (Non-US)
SANTA FE SPRINGS	Los Angeles	CA	90670	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . .8	1 . O	1 . M24

6.2.5 Off-Site EPA Identification Number (RCRA ID No.)	UTD981552177
Off-Site Location Name:	CLEAN HARBORS ARAGONITE LLC
Off-Site Address:	11600 NORTH APTUS ROAD

City	County	State	Zip	Country (Non-US)
GRANTSVILLE	Tooele	UT	84029	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . **278**	1 . **O**	1 . **M41**

6.2.6 Off-Site EPA Identification Number (RCRA ID No.)				**FLD980711071**					
Off-Site Location Name:				**PERMA-FIX OF FLORIDA INC.**					
Off-Site Address:				**1940 NW 67TH PLACE**					
City	**GAINESVILLE**	County	**Alachua**	State	**FL**	Zip	**326531649**	Country (Non-US)	
Is location under control of reporting facility or parent company?				[ ] Yes [**X**] No					

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . **276**	1 . **O**	1 . **M79**

6.2.7 Off-Site EPA Identification Number (RCRA ID No.)				**UTD982598898**					
Off-Site Location Name:				**ENERGYSOLUTIONS AKA ENVIROCARE OF UTAH**					
Off-Site Address:				**46 WEST BROADWAY**					
City	**SALT LAKE CITY**	County	**Salt Lake**	State	**UT**	Zip	**841012028**	Country (Non-US)	
Is location under control of reporting facility or parent company?				[ ] Yes [**X**] No					

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . **1199**	1 . **O**	1 . **M65**

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

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

a. General Waste Stream (Enter code)	b. Waste Treatment Method(s) Sequence (Enter 3- or 4-character code(s))	c. Waste Treatment Efficiency (Enter 2 character code)
7A.1a	**7A.1b**	**7A.1c**
S	2 : **H101**	**E6**
7A.2a	**7A.2b**	**7A.2c**
W	2 : **H077** 3 : **H124** 4 : **H121** 5 : **H129**	**E3**

*For Dioxin and Dioxin-like Compounds, report in grams/year

EPA Form 9350-1 (Rev. 10/2012) - Previous editions are obsolete.

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

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

TRI Facility ID Number: **87545LSLMSLOSAL**

Toxic Chemical, Category, or Generic Name: **Lead Compounds**

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

[X] NA - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

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

SECTION 7C. ON-SITE RECYCLING PROCESSES

[X] 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)]

SECTION 8. DISPOSAL OR OTHER RELEASES, SOURCE REDUCTION, AND RECYCLING ACTIVITIES

		Column A Prior Year (pounds/year*)	Column B Current Reporting Year (pounds/year*)	Column C Following Year (pounds/year*)	Column D Second Following Year (pounds/year*)
8.1					
8.1a	Total on-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	NA	NA	NA	NA
8.1b	Total other on-site disposal or other releases	5711.898	3664.774	4000	4000
8.1c	Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	2796.14	1286.4	2000	2000
8.1d	Total other off-site disposal or other releases	2978	1089.3	2000	2000
8.2	Quantity used for energy recovery on-site	NA	NA	NA	NA
8.3	Quantity used for energy recovery off-site	NA	NA	NA	NA
8.4	Quantity recycled on-site	NA	NA	NA	NA
8.5	Quantity recycled off-site	1.1	.8	1	1
8.6	Quantity treated on-site	NA	NA	NA	NA
8.7	Quantity treated off-site	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)		NA		
8.9	Production ratio or activity index		0.84		
8.10	Did your facility engage in any newly implemented source reduction activities for this chemical during the reporting year? If so, complete the following section; if not, check NA.		NA [X]		

	Source Reduction Activities (Enter code(s))	Methods to Identify Activity (Enter code(s))		
8.10. 1	NA			

EPA Form 9350-1 (Rev. 10/2012) - Previous editions are obsolete.

*For Dioxin and Dioxin-like Compounds, report in grams/year

TRI Facility ID Number
87545LSLMSLOSAL
Toxic Chemical, Category, or Generic Name
Lead Compounds

Additional optional information on source reduction, recycling, or pollution control activities.

Miscellaneous, additional, or optional information regarding the Form R submission
For this reporting year, the facility was above reporting thresholds for both lead and lead compounds. According to EPA guidance, in this case the facility only needs to complete a single Form R and should report on "lead compounds". The prior year data in Section 8, Column A are the reporting values for "lead" only from 2011.

Form Status: Certified and Sent to USEPA
Validation Status: Passed w/ Data Quality Alerts

(IMPORTANT: Read instructions before completing form; type or use fill-and-print form)

Form Approved OMB Number: **2025-0009**
Approval Expires: **10/31/2014**

EPA United States Environmental Protection Agency	**FORM R** Section 313 of the Emergency Planning and Community Right-to-know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act.	TRI Facility ID Number: **87544SDLSL52835**; Toxic Chemical, Category, or Generic Name: **Lead Compounds**

WHERE TO SEND COMPLETED FORMS:	1. TRI Data Processing Center P.O. Box 10163 Fairfax, VA 22038 *** **File Copy Only: Do Not Submit Paper Form to EPA** ***	2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

This section only applies if you are revising or withdrawing a previously submitted form, otherwise leave blank:	Revision (Enter up to two code(s)) [ ][ ]	Withdrawal (Enter up to two code(s)) [ ][ ]

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

Part I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR : **2012**

SECTION 2. TRADE SECRET INFORMATION

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

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

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

Name and official title of owner/operator or senior management official:	Signature:	Date Signed:
File Copy Only: Do Not Submit Paper Form to EPA	**File Copy Only: Do Not Submit Paper Form to EPA**	**XX/XX/XXXX**

SECTION 4. FACILITY IDENTIFICATION

4.1		TRI Facility ID Number	**87544SDLSL52835**

Facility or Establishment Name: **U.S. Department of Energy, Los Alamos National Laboratory**

Street	Mailing Address (if different from physical street address)	
3747 West Jemez Road, TA-3, Bldg. 1410, MS-A316		
City/County/Tribe/State/ZIP Code	City/State/ZIP Code	Country (Non-US)
Los Alamos / Los Alamos / BIA Code: / NM / 87544	/ /	

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

4.3	Technical Contact name	**Gene Turner**	Email Address: **gene.turner@nnsa.doe.gov**	Telephone Number (include area code): **5056675794**	
4.4	Public Contact name	**Gene Turner**	Email Address: **gene.turner@nnsa.doe.gov**	Telephone Number (include area code): **5056675794**	
4.5	NAICS Code(s) (6 digits)	a. **928110 (Primary)**	b.	c.	d.
		e.	f.		

4.6	Dun and Bradstreet Number(s) (9 digits)
a.	**NA**
b.	

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of U.S. Parent Company (for TRI Reporting purposes)	**US DEPARTMENT OF ENERGY**	No U.S. Parent Company (for TRI Reporting purposes) [ ]
5.2	Parent Company's Dun & Bradstreet Number	NA [**X**]	

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EPA FORM R PART II. CHEMICAL - SPECIFIC INFORMATION	TRI Facility ID Number 87544SDLSL52835 Toxic Chemical, Category, or Generic Name Lead Compounds

SECTION 1. TOXIC CHEMICAL IDENTITY (Important: DO NOT complete this section if you are reporting a mixture component in Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.) N420
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.) Lead Compounds
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive). NA

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

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

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

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

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1 [05] (Enter two-digit code from instruction package.)

SECTION 5.QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ON-SITE

			A. Total Release (pounds/year*) (Enter range code or estimate**)	B. Basis of Estimate (Enter code)	C. Percent from Stormwater
5.1	Fugitive or non-point air emissions	NA [ ]	4.8	C	
5.2	Stack or point air emissions	NA [ ]	0.6	E1	
5.3	Discharges to receiving streams or water bodies (Enter one name per box)	NA [ ]			
	Stream or Water Body Name				
5.3.1	Sandia Tributary to Rio Grande		0.335	M2	0%
5.3.2	Mortandad Tributary to Rio Grande		0.004	M2	0%
5.3.3	Los Alamos Tributary to Rio Grande		0.035	M2	0%

*For Dioxin and Dioxin-like Compounds, report in grams/year

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

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

TRI Facility ID Number: **87544SDLSL52835**

Toxic Chemical, Category, or Generic Name: **Lead Compounds**

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ON-SITE (Continued)

		NA	A. Total Release (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)
5.4.1	Underground Injection on-site to Class I wells	[X]		
5.4.2	Underground Injection on-site to Class II-V wells	[X]		
5.5	Disposal to land on-site			
5.5.1.A	RCRA subtitle C landfills	[X]		
5.5.1.B	Other landfills	[X]		
5.5.2	Land treatment/application farming	[X]		
5.5.3A	RCRA Subtitle C surface impoundments	[X]		
5.5.3B	Other surface impoundments	[X]		
5.5.4	Other disposal	[]	3659	C

SECTION 6. TRANSFER(S) OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs) NA [X]

*For Dioxin and Dioxin-like Compounds, report in grams/year

EPA Form 9350-1 (Rev. 10/2012) - Previous editions are obsolete.

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

EPA FORM R PART II. CHEMICAL - SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number 87544SDLSL52835 Toxic Chemical, Category, or Generic Name Lead Compounds

6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS	NA [ ]
6.2.1 Off-Site EPA Identification Number (RCRA ID No.)	FLD980711071
Off-Site Location Name:	PERMA-FIX OF FLORIDA INC.
Off-Site Address:	1940 NW 67TH PLACE

City	GAINESVILLE	County	Alachua	State	FL	Zip	326531649	Country (Non-US)	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . 276	1 . O	1 . M79

6.2.2 Off-Site EPA Identification Number (RCRA ID No.)	UTD982598898
Off-Site Location Name:	ENERGYSOLUTIONS AKA ENVIROCARE OF UTAH
Off-Site Address:	46 WEST BROADWAY

City	SALT LAKE CITY	County	Salt Lake	State	UT	Zip	841012028	Country (Non-US)	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . 1199	1 . O	1 . M65

6.2.3 Off-Site EPA Identification Number (RCRA ID No.)	TND982157570
Off-Site Location Name:	ENERGYSOLUTIONS BEAR CREEK FACILITY
Off-Site Address:	1560 BEAR CREEK ROAD

City	OAK RIDGE	County	Roane	State	TN	Zip	378307374	Country (Non-US)	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . 319.3	1 . O	1 . M79

6.2.4 Off-Site EPA Identification Number (RCRA ID No.)	WAR000010355
Off-Site Location Name:	PERMA-FIX NORTHWEST RICHLAND INC
Off-Site Address:	2025 BATTELLE BOULEVARD

City	RICHLAND	County	Benton	State	WA	Zip	993545313	Country (Non-US)	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . 216	1 . O	1 . M79

6.2.5 Off-Site EPA Identification Number (RCRA ID No.)	CAD008488025
Off-Site Location Name:	PHIBRO-TECH
Off-Site Address:	8851 DICE RD

City	SANTA FE SPRINGS	County	Los Angeles	State	CA	Zip	90670	Country (Non-US)	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . .8	1 . O	1 . M24

6.2.6 Off-Site EPA Identification Number (RCRA ID No.)	UTD981552177
Off-Site Location Name:	CLEAN HARBORS ARAGONITE LLC
Off-Site Address:	11600 NORTH APTUS ROAD

City	GRANTSVILLE	County	Tooele	State	UT	Zip	84029	Country (Non-US)	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . 278	1 . O	1 . M41

6.2.7 Off-Site EPA Identification Number (RCRA ID No.)	ARD069748192
Off-Site Location Name:	CLEAN HARBORS EL DORADO LLC
Off-Site Address:	309 AMERICAN CIRCLE

City	EL DORADO	County	Union	State	AR	Zip	717306554	Country (Non-US)	

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

A. Total Transfer (pounds/year*) (Enter range code** or estimate)	B. Basis of Estimate (Enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (Enter code)
1 . 87.4	1 . O	1 . M65

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

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

a. General Waste Stream (Enter code)	b. Waste Treatment Method(s) Sequence (Enter 3- or 4-character code(s))	c. Waste Treatment Efficiency (Enter 2 character code)
7A.1a	7A.1b	7A.1c
W	2 : H077 3 : H124 4 : H121 5 : H129	E3
7A.2a	7A.2b	7A.2c
S	2 : H101	E6

*For Dioxin and Dioxin-like Compounds, report in grams/year

EPA Form 9350-1 (Rev. 10/2012) - Previous editions are obsolete.

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

EPA FORM R PART II. CHEMICAL - SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number 87544SDLSL52835 Toxic Chemical, Category, or Generic Name Lead Compounds

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

[X] NA - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

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

SECTION 7C. ON-SITE RECYCLING PROCESSES

[X] 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)]

SECTION 8. DISPOSAL OR OTHER RELEASES, SOURCE REDUCTION, AND RECYCLING ACTIVITIES

		Column A Prior Year (pounds/year*)	Column B Current Reporting Year (pounds/year*)	Column C Following Year (pounds/year*)	Column D Second Following Year (pounds/year*)
8.1					
8.1a	Total on-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	NA	NA	NA	NA
8.1b	Total other on-site disposal or other releases	5711.898	3664.774	4000	4000
8.1c	Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	2796.14	1286.4	2000	2000
8.1d	Total other off-site disposal or other releases	2978	1089.3	2000	2000
8.2	Quantity used for energy recovery on-site	NA	NA	NA	NA
8.3	Quantity used for energy recovery off-site	NA	NA	NA	NA
8.4	Quantity recycled on-site	NA	NA	NA	NA
8.5	Quantity recycled off-site	1.1	.8	1	1
8.6	Quantity treated on-site	NA	NA	NA	NA
8.7	Quantity treated off-site	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)		NA		
8.9	Production ratio or activity index		0.84		
8.10	Did your facility engage in any newly implemented source reduction activities for this chemical during the reporting year? If so, complete the following section; if not, check NA.		NA [X]		

	Source Reduction Activities (Enter code(s))	Methods to Identify Activity (Enter code(s))		
8.10. 1	NA			

EPA Form 9350-1 (Rev. 10/2012) - Previous editions are obsolete.

*For Dioxin and Dioxin-like Compounds, report in grams/year

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

Additional optional information on source reduction, recycling, or pollution control activities.

Miscellaneous, additional, or optional information regarding the Form R submission
For this year, the facility exceeded thresholds for both lead and lead compounds. According EPA guidance, the facility only needs complete a single Form R and should report on Lead compounds. The prior year data in Section 8, Column A are the reporting values for lead from 2011.