

# LEAD-ACID BATTERIES

2<sup>ND</sup>  
EDITION

THE ULTIMATE REPORTING KIT

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GUIDEBOOK

ENCAMP

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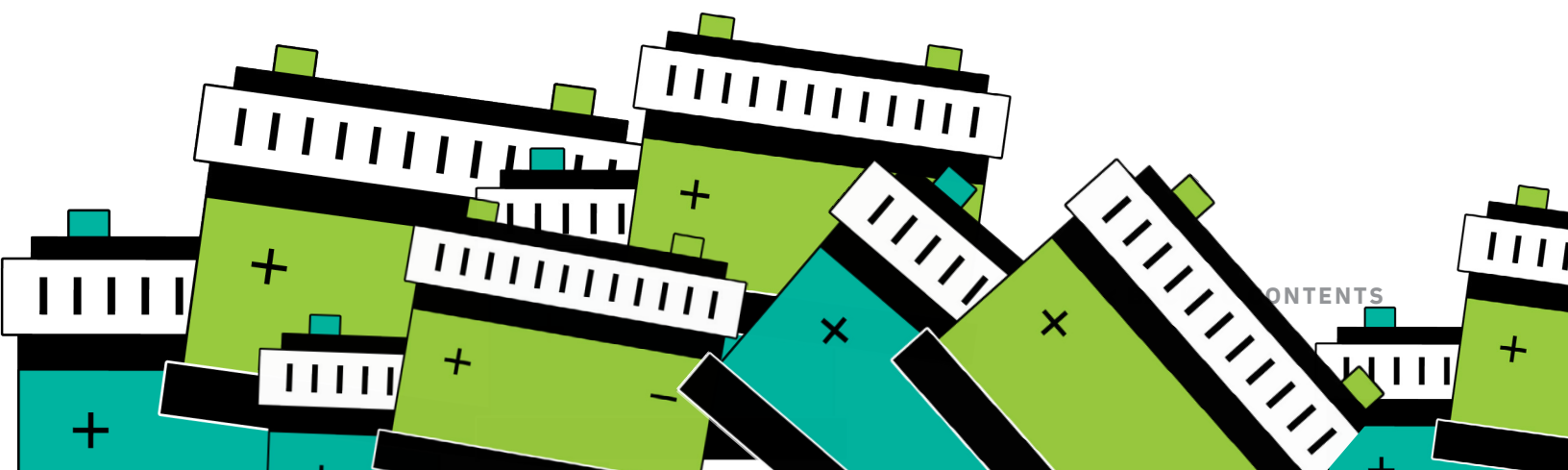
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# The Lifecycle of a Lead-Acid Battery

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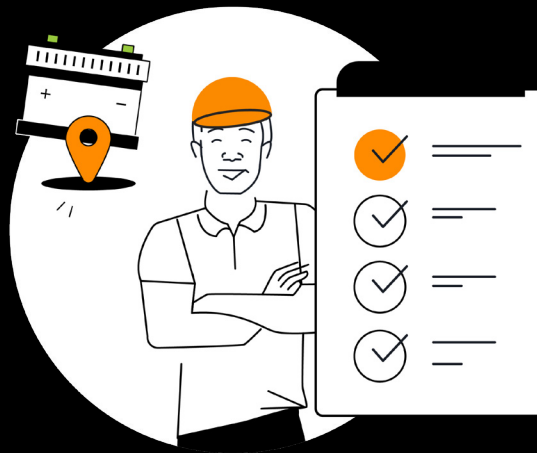
Lead-acid batteries are commonly used to power cars, industrial trucks, such as forklifts or lift trucks, and even to serve as backup power sources to cell towers. Generally, these batteries are comprised of lead-based plates that sit in a bath of sulfuric acid and water, called electrolyte. Lead-acid batteries are used to power so many different devices and vehicles because of their ability to be recharged and their low cost.

In fact, lead-acid batteries are becoming a sustainable choice for businesses that want to lessen their environmental impact. Particularly in the circular economy, lead-acid batteries can be recycled indefinitely. However, maintaining and discarding them is still highly-regulated because of their sulfuric acid contents.



SECTION 1

# Bringing a Lead-Acid Battery On-Site



# Bringing a Lead-Acid Battery On-Site

When a new chemical is brought on-site, there are several regulations to consider that can trigger additional requirements for your facility and organization.

One of those regulations is the Emergency Planning and Community Right-to-Know Act (EPCRA). EPCRA's purpose is to encourage local committees and states to plan for emergencies caused by potential chemical hazards present in their communities. In order for the **Local Emergency Planning Committee (LEPC)** and the **State Emergency Response Commission (SERC)** to become aware of these chemical hazards, facilities are required to report certain chemicals above a certain threshold to these entities. **Extremely Hazardous Substances (EHSs)** are of particular concern. These are chemicals that "could cause serious irreversible health effects from accidental releases," defined by the EPA. EPA publishes a list of EHSs in [Appendix A & B](#). Sulfuric acid is listed with a **Threshold Planning Quantity (TPQ)** of 1,000 pounds, the threshold at which a facility must report an EHS to their SERC and LEPC.



Because lead-acid batteries are generally considered a mixture, the amount of sulfuric acid needs to be aggregated across all batteries and other sources of sulfuric acid. Once the 1,000 pounds threshold is hit, federal EPCRA rules state that the notification to the SERC and LEPC must be made within 60 days after a shipment is received or it's produced on-site. Federal regulations also state that the following information must be submitted to the SERC and/or LEPC:

- **Emergency Planning Notification** - The notice that says your facility is subject to the emergency planning requirements of EPCRA Section 302.
- **Facility Emergency Coordinator Designation** - The designation of a facility representative who will participate in the local emergency planning process as a facility emergency response coordinator.
- **Changes Relevant to Emergency Planning (to the LEPC only)** - A notice regarding any other changes occurring at your facility that may be relevant to emergency planning. This notification must happen within 30 days after the changes have occurred. Note this would be for any changes occurring after your initial sulfuric acid Emergency Planning Notification
- **Requested Information (to the LEPC only)** - Additional information requested by the LEPC to help develop or implement their local emergency plan.

- 1 The format to submit the above information is not specified by the EPA.
- 2 The format varies based on what SERC and LEPC your facility must coordinate with.
- 3 Read additional Encamp guidance on EPCRA **Section 302**.

SECTION 2

# Chemical Inventory Reporting for Lead-Acid Batteries



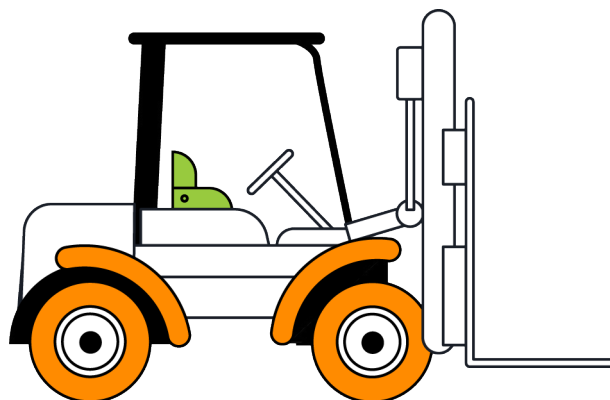
# Chemical Inventory Reporting for Lead-Acid Batteries

Once lead-acid batteries are on-site and you've made the appropriate notification to the SERC and LEPC to satisfy EPCRA Section 302 requirements, the next step is to confirm your Section 311-312 reporting requirements.

If you do report under Section 302 (threshold 1,000 pounds), then you must also report under EPCRA Sections 311-312 (threshold 500 lbs) to satisfy hazardous chemical inventory reporting requirements.

If you did not report under Section 302, note that Sections 311 and 312 require any facility with chemicals in quantities that equal or exceed the following thresholds to report:

- For EHSs, the TPQ listed in Appendix A and B or 500 pounds, whichever is lower.
- For other hazardous chemicals (that require a Safety Data Sheet (SDS)), the threshold is 10,000 pounds.





# Threshold Calculation

Before we dive into how to report the batteries, let's take a look at a typical SDS for a lead-acid battery. Most SDSs will break out the components as they are designated below:

SECTION 3 - COMPOSITION		
Chemical Name	CAS No.	Percentage %
Lead and/or Lead Oxide	7439-92-1	43-70
Electrolyte (Sulfuric Acid and water)	7664-93-9	20-44
Antimony	7440-36-0	0-4
Polypropylene	9003-07-0	5-10

The main components are lead and/or lead oxide and the electrolyte (sulfuric acid and water). The other components should be reviewed as well, however neither antimony or polypropylene are listed in Appendix A and B, so the general threshold of 10,000 pounds would apply to them if you're reporting by component (unless your state has specific thresholds). Lead and/or lead oxide is not listed as an EHS in Appendix A or B either, and therefore does not need to be aggregated across different sources of lead per [EPA's guidance document](#). Primarily, sulfuric acid will be the chemical used to determine if you must report because of the TPQ. For sulfuric acid, the TPQ is 1,000 pounds. Because the reporting threshold for EHSs is the TPQ or 500 pounds (whichever is lower), the lower threshold of 500 pounds should be used.



To calculate whether or not the battery(s) you have on-site exceed the reporting threshold, you will need the total weight of the battery. For this calculation, let's assume the battery weighs 60 pounds. To calculate the total amount of sulfuric acid in the battery, multiply the weight (60 pounds) by the percentage of sulfuric acid (44%). Note that although the percentage of sulfuric acid in our example is listed as a range (20-44%), best practice is to use the maximum amount of the range. The result is 26.4 pounds of sulfuric acid.

$$60 \text{ lbs} \times .44 = 26.4 \text{ pounds}$$

Generally, one battery will not push you over the threshold unless it's very large. Let's say you have 20 of these batteries because you're using them to power forklifts on-site and you always have batteries on the charging station. In this situation, you would take the 26.4 pounds of sulfuric acid and multiply it by the number of batteries you have on-site (which is 20).

$$26.4 \text{ pounds of sulfuric acid} \times 20 \text{ batteries} = 528 \text{ pounds of sulfuric acid}$$

The result is that the amount of batteries you have on-site have exceeded the threshold and you are required to report the sulfuric acid.

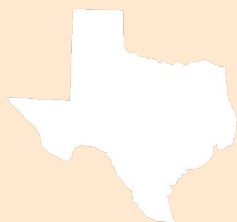


SECTION 3

# Mixture Reporting vs. Component Reporting



\*Here are some **state sources** that have published guidance on how they expect lead-acid batteries to be reported:



Texas Source



California Source



Oregon Source

## Mixture Reporting vs. Component Reporting

There are two ways of reporting lead-acid batteries for Tier II reporting according to the EPA. Some states\* have published guidance on how they expect lead-acid batteries to be reported.

**EPA's recommended approach** states that a facility should be consistent in reporting between 311 (SDS Reporting) and 312 (Chemical Inventory Reporting). EPA also **states** that the submission of the Tier II form can be used for 311 purposes for hazardous chemicals brought on-site between October 1 and December 31, but (confirm with your SERC and LEPC).

For 311, when a new chemical is brought or produced on-site and it exceeds its threshold:

- Facilities must submit the Safety Data Sheet (SDS) of the chemical to their SERC, LEPC, and local fire department within 3 months.
- For lead-acid batteries, all components of the battery are generally combined into one SDS. This can differ if you manufacture, refill, recycle, or provide maintenance on lead-acid batteries at your facility, in which case you might have bulk ingredients on-site, with individual SDSs per ingredient.
- For the general use case, facilities must submit SDSs for the entire lead-acid battery to comply with 311.

Based on EPA's guidance (mentioned previously), reporting between 311 and 312 should be consistent:

- You submitted an SDS for the entire battery to comply with 311, so you must report the entire battery (i.e., as a mixture) on your 312 report, not the components.
- However, if you brought other sulfuric acid sources on-site later, how those sources are reported (individual vs. mixture) would be determined independent of batteries, which are “locked in” as being reported as a mixture.

## Mixture Reporting

When reporting lead-acid batteries as a mixture, be sure to include physical and health hazards associated with every mixture component listed on the SDS. Depending on what state your facility is in and what reporting system they have chosen to use, you may have to report the overall mixture as an EHS or only the mixture component (sulfuric acid, in this case) as an EHS.

## Tier2 Submit

If you're required to use EPA's Tier2 Submit software to file your Tier II report, here is what your lead-acid battery will look like reported as a mixture.

<input type="checkbox"/> Pure	<input checked="" type="checkbox"/> Mixture	CAS Number <small>⓪</small>	Mixture or Product Name <small>* ⓪</small>	EHS <small>* ⓪</small>
		<input type="text"/>	<input type="text" value="Lead-Acid Battery"/>	<input checked="" type="radio"/> Yes <input type="radio"/> No

EHS is marked as Yes because they require the overall chemical to be marked as an EHS if one of the mixture components is an EHS.

## E-plan

If your SERC uses E-plan for submissions, the system will require the overall chemical to be marked as an EHS, just like Tier2 Submit. Below is an excerpt from their instructions.

- Mixture:
  1. Provide the name of the mixture, product name or trade name as provided on the MSDS sheet.
  2. Enter the CAS number of the mixture or product, if available. If not, leave it BLANK.
  3. Check box for the appropriate descriptor: solid, liquid, or gas.
  4. If the mixture contains any EHS, check the box "yes", and then enter the name and CAS number of each EHS in the mixture.
  5. You are not required to list non-EHSs in the mixture, but may report if you wish to do so.

### Source

## Tier II Manager

If your SERC uses Tier II Manager for submissions, the system will require the overall chemical to be marked as an EHS, just like Tier2 Submit. Below is a screenshot from a Tier II Manager report.

CAS #:		N/A
Trade Secret:	<input type="checkbox"/>	
Chemical Name:		LEAD-ACID BATTERIES
EHS:	<input type="checkbox"/>	Contains EHS: <input checked="" type="checkbox"/> Exceeds TPQ: <input checked="" type="checkbox"/>
EHS Name:		
<input type="checkbox"/> Pure	<input checked="" type="checkbox"/> Mix	<input checked="" type="checkbox"/> Solid <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Gas <a href="#">SDS</a>

## Component Reporting

If you decide to report the sulfuric acid separately, the reporting is a little more straightforward. Since sulfuric acid is an EHS, you will simply check the EHS box on whichever system your SERC uses.

SECTION 4

# Damaged Lead-Acid Batteries



# Damaged Lead-Acid Batteries

Lead-acid batteries are known to break from time to time. When they do, and the electrolyte begins to leak from its casing, you'll need to know how to react immediately and the necessary next steps.

## Do I need to do a 304 Notification?

**EPCRA Section 304** is the **Emergency Release Notification** section of EPCRA. You are subject to this rule if your facility “produces, uses, or stores a hazardous chemical” and you “release a reportable quantity (RQ) of any EHS or of a hazardous substance as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at your facility.”

*Note: The quantity of sulfuric acid to consider is the total quantity of chemical that leaves the facility, not just the quantity spilled and contained within the facility.*

Sulfuric acid is the main chemical of concern in regards to 304 notifications. The RQs for 304 notifications are listed in **Appendices A** and **B** (“Reportable Quantity” column) and also on the **List of Lists** (“Section 304 EHS RQ” column). For sulfuric acid, the RQ is 1,000 pounds. It may be hard to quantify the total gallons or pounds of the spill, but if the battery shell is left with only the plates inside, you can work backwards to determine if the spill has exceeded the RQ based on similar calculations that you performed for your threshold determination in Section 2.

## Who do I notify?

Once you've determined that the spill has exceeded the RQ and you are subject to 304, you'll need to determine your next steps.



## Do I need to do a 304 Notification?

The federal regulations state that you must notify the “SERC and LEPC of any area(s) that are likely to be affected by the **release**.” If the substance is also listed on the CERCLA list (i.e., if it has a value in the “CERCLA RQ” column on the List of Lists), the National Response Center (NRC) must be notified as well. The NRC’s report hotline number is (800)424-8802. EPA has also published a list of State Contact Information for 304 Notifications, which you can find [here](#).

## What should I include in the Notification?

EPA’s website states you must include the following information. Check with your state as well, in case they require additional information.

**1**

The chemical **name**

**2**

An **indication** of whether the substance is **extremely hazardous**

**3**

An **estimate** of the **quantity** released into the environment

**4**

The **time** and duration of the release

**5**

Whether the release occurred into **air, water, and/or land**

**6**

Any known or anticipated acute or chronic **health risks** associated with the emergency, and where necessary, advice regarding medical attention for exposed individuals

**7**

Proper **precautions**, such as evacuation or sheltering in place

**8**

**Name and telephone number** of contact person

The regulations also say that gathering this information should not impede the notification on emergency response. If you have hazardous chemicals at your facility, it’s best to prepare for this type of notification well ahead of a spill. Many facilities choose to post this information by a facility phone or in an accessible area so the information can be gathered quickly. The immediate notification must be conducted orally, over the phone.

## Follow Up

After the initial notification is made and the release has been contained, a follow-up written report must be submitted to the SERC and LEPC. Unless the event occurred during transportation or from storage incident to transportation, the written follow-up must be submitted as soon as practicable, typically within 30 days. In the written notice, you must provide and update the information that was reported in the immediate notification and include the following additional information:

- 1 Actions taken to respond and contain the release
- 2 Any known or anticipated acute or chronic health risks associated with the release
- 3 Where appropriate, advice regarding medical attention necessary for exposed individuals

EPA does not have a prescribed format for this notification, and only states that it should be written. Check with your SERC to see if they have a required or preferred format. For example, Indiana requires the 304 follow-up notification to be submitted via their Tier II Manager portal. Some states, like Kansas, have specified a shorter timeframe (7 days, instead of 30 days) for the follow-up notification.



Read additional Encamp guidance on **EPCRA Section 304**

[Read the article →](#)

## Cleanup

In the midst of notifying the appropriate parties and keeping everyone safe, cleaning up the spill is another task you'll need to complete to mitigate the situation. Most SDSs provide cleanup information in case of a spill or release, so be sure to check those well in advance. It's recommended to have the proper PPE and spill kit items handy in case of an emergency, so you can clean up the spill quickly.

## Some items you may need to clean up the spill:

- Proper PPE (safety glasses, gloves, Tyvek suit, etc.)
- First aid kit nearby
- Eye wash station and/or safety shower
- Empty drums or buckets for spill cleanup material (make sure they are rated for the waste that you are adding to it; i.e, corrosive waste in plastic vs. metal)
- Neutralizing absorbent
- Absorbent mats, socks, or barriers
- Waste labels



When the absorbed acid and cleanup material are packaged up into a bucket or drum, be sure to label it appropriately. If the acid was neutralized, it's possible the waste can be considered non-hazardous, but be sure to do your due diligence with analysis, if necessary. If the acid wasn't neutralized and just absorbed, the waste can be considered hazardous depending on your state's regulations, such as in [California](#), which has stricter waste regulations than the Federal RCRA program.

Once packaged and properly labeled, work with your hazardous waste contractor to pick up the containers for disposal. The broken lead-acid battery casing might be salvaged. Most hazardous waste treatment companies have contracts with lead-acid battery recyclers, so they can potentially arrange for recycling.

SECTION 4

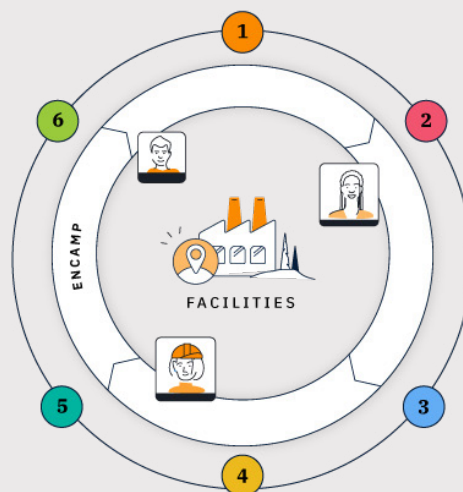
# Encamp's Solution



# Encamp's Solution

## How Encamp Works

A platform that makes it simple to manage your environmental compliance tasks, validate your data, and submit your compliance reports to all 50 state portals, on time, every time – especially for lead-acid batteries.



- 1** **Get Started Quickly**  
Encamp automates facility and Tier II report importing, which makes onboarding and adoption easy, efficient and quick.

- 2** **Single Pane of Glass**  
Encamp provides you with the ability to validate, standardize, and centralize your EPCRA related programs and processes to ensure proactive compliance and data quality.

- 3** **Near Real-Time Monitoring**  
Utilize encamp to track on-site chemical inventories against federal, state and local TPQs.

- 4** **Management Review**  
One application to QA/QC data for all of your facilities - eliminate the need for back-and-forth emails and sharing spreadsheets.

- 5** **Automated Reporting**  
Whether you are reporting for one location or hundreds, we've got you covered. Encamp automates the entire reporting process, ensures that your reports are sent to the proper state, territory, tribal, and local agencies, and provides you with an itemized fee schedule for easy allocation.

- 6** **Business Continuity**  
Encamp eliminates institutional knowledge and data silos and provides users with an auditable record for internal and external audits.

TRACK CHEMICAL INVENTORIES, LIKE LEAD-ACID BATTERIES!

ENCAMP

Tier II Reporting,  
Automated.

Find out more: [encamp.com/demo](https://encamp.com/demo)