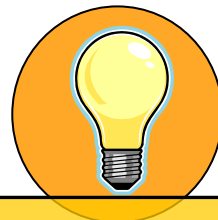


HOW TO CONSIDER BATTERIES UNDER EPCRA

This section provides general guidance for identifying sources of batteries at the installation, applying exemptions, calculating thresholds, and complying with reporting requirements under the Emergency Planning and Community Right-to-Know Act (EPCRA) Sections 302, 311, 312, and 313. This section should be used in conjunction with ‘Getting Started with the Emergency Planning and Community Right-to-Know Act (EPCRA): A Primer for Navy Facilities,’ May 2009. In addition, an Excel spreadsheet, ‘Calculation Manual – Batteries’ (Attachment A), provides a template for calculations and documentation for an EPCRA battery analysis. Sample values (that must be deleted when used for a facility) are included in italics in the spreadsheet to assist the user.



MSDSs are the best source of composition information for batteries.

BACKGROUND

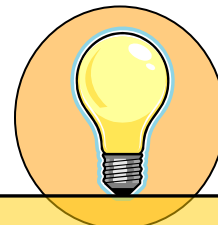
Many different sizes and types of batteries are used in various applications at every military installation. Consumer size batteries, such as A, AA, C, or D sizes or rechargeable nickel-cadmium batteries, are used in laptop computers, radios, and other electronics. Gel cell and wet cell lead-acid batteries are used in vehicles, generators, and other equipment. Large lead-acid batteries are used in forklifts, cranes, and uninterruptable power supply (UPS) systems. These batteries contain chemical components that are significant to the EPCRA regulations. Specifically, sulfuric acid (CAS 7664-93-9) is considered an extremely hazardous substance (EHS) for Sections 302, 311, and 312, and a toxic chemical for Section 313 when in aerosol, mist, or vapor form. Lead (CAS 7439-92-1), all lead compounds, and other metals and metal compounds that may be in the battery casing are also considered toxic chemicals under Section 313.

GENERAL GUIDANCE

Even though every battery must be evaluated against each EPCRA requirement separately, there is a common path for that analysis. The following steps provide guidance in gathering the necessary data and suggest an effective way to use the data.

- Step 1: List, as reasonably as possible, the areas where batteries are used and the sizes and types of batteries stored and used. Enough data should be collected to support each EPCRA reporting requirement and any exemption that could be applied.
- Step 2: Using the full list of batteries developed in Step 1, evaluate every battery against each EPCRA reporting requirement.

— Examine exemptions – Which batteries can be eliminated from further consideration?



No battery is automatically exempt from all EPCRA requirements since each section of EPCRA contains different requirements. For example, a battery may be exempt from Section 312 as a consumer product but it cannot be exempt from Section 302 because there is no consumer product exemption under that section.

- Identify applicable thresholds – What threshold applies to the non-exempt batteries (or chemical components in the batteries)?
- Calculate thresholds – Calculate threshold amounts including all non-exempt batteries and compare to the applicable threshold level that triggers reporting.
- Step 3: Prepare and submit report (if required) – If the threshold is exceeded, prepare the required reports.
- Step 4: Complete documentation – Ensure the evaluation (including calculations) and reports are documented and filed in recordkeeping for each section of EPCRA.

STEP 1: DEVELOP LIST OF BATTERIES STORED AND USED

Because EPCRA requires that the best information available be used for compliance efforts, a review of data readily available at the installation such as hazardous material tracking software program, hazardous material inventory lists maintained by shop personnel, and authorized use lists (AULs) should be utilized to develop a list of batteries at the installation. In addition, batteries in storage and in use in vehicles and equipment must all be considered (Figure 1).

Figure 1: Battery Sources

- Base white fleet or GSA vehicles – These vehicles often contain standard size lead-acid or gel cell batteries.
- Other vehicles and light-duty equipment – In addition to standard size lead-acid or gel cell batteries, these vehicles and equipment may use larger batteries.
- Base vehicle and equipment maintenance shops – These work areas may store small numbers of batteries and battery electrolyte.
- Battery shops – These work areas will have batteries and battery electrolyte.
- UPS systems – UPS systems may consist of a large number of standard size lead-acid or gel cell batteries, or a large single or double cell, wet cell lead-acid battery.
- Communication shops – These work areas will use batteries, but often they are small consumer sizes (e.g., A, AA, watch batteries).
- Large equipment (e.g., cranes, heavy equipment) – This equipment often uses large, wet cell lead-acid batteries.

A detailed list of every battery and exact numbers of quantities is not needed to assess EPCRA requirements; however, **there must be enough information to justify use of an exemption and a report/no report determination** (Figure 2). For example, the general types of batteries used in a motor vehicle maintenance shop (e.g., standard size lead-acid batteries, standard size gel cell batteries, large forklift batteries) should be documented. Although this is enough information to get started with each section of EPCRA, collecting more information on the number of batteries and their weight will save

Figure 2: What to Collect

- Building/activity name
- Battery name and any identification number
- Battery type (provide comment such as car-sized, large, double cell, etc.)
- Amounts of batteries present/used/stored
- Weight of battery
- MSDS or MSDS number
- Manufacturer (in case MSDS is not available and must be researched)

time and eliminate the need to go back and collect this information if it is needed later for a threshold determination. Finally, MSDSs which contain information on chemical constituents and weight percentages should be collected. All this information can be entered into the EPCRA Battery Master Sheet, the first worksheet in the ‘Calculation Manual – Batteries’ spreadsheet. Once populated, this list of batteries will be the starting point for each EPCRA analysis.

STEP 2: EVALUATION OF EACH SECTION OF EPCRA

The list of batteries developed in Step 1 will be evaluated against each section of EPCRA to determine exemptions, thresholds, and reporting requirements.

Section 302: Emergency Planning Requirements

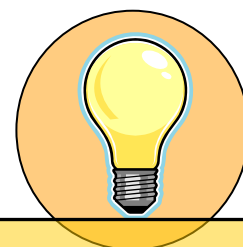
Under Section 302, it is only necessary to identify one EHS present on-site at any one time at the entire installation over its EHS-specific threshold planning quantity (TPQ) to trigger reporting. The best approach is to start where there are known EHSs in large quantities. The most common EHSs at military installations are chlorine, formaldehyde, hydrazine, and sulfuric acid. Therefore, if the installation already exceeds the threshold for chlorine (for example), then further calculations on any other EHSs (including sulfuric acid in batteries and electrolytes) are not needed. It is not necessary or required to identify and calculate quantities for every EHS.

Apply Exemptions

There is only one exemption under Section 302 – the *de minimis* exemption. If an EHS is present in a mixture or solution in an amount less than or equal to 1% by weight, then the EHS is exempt from Section 302. Exemptions from other sections of EPCRA (e.g., consumer product exemption under Section 312) DO NOT apply to Section 302.

Beginning with the EPCRA Battery Master Sheet developed in Step 1, the MSDS for each battery should be reviewed to determine if the battery contains sulfuric acid and the weight percent of sulfuric acid. Wet cell lead-acid batteries, gel cell batteries, large forklift batteries, and UPS batteries often contain sulfuric acid.

- If the weight percent of sulfuric acid present in the battery is less than or equal to 1%, then it is exempt under the *de minimis* exemption and the sulfuric acid is not included in the Section 302 threshold calculation.
- If the weight percent of sulfuric acid present in the battery is greater than 1%, then the sulfuric acid must be included in the Section 302 threshold calculation.



Most lead-acid batteries contain sulfuric acid at concentrations that are above the de minimis level and are not exempt from Section 302.

In the EPCRA Section 302 worksheet, the second worksheet in the ‘Calculation Manual – Batteries’ spreadsheet, note the *de minimis* exemption in the exemption column and remove the quantity from any further Section 302 threshold calculations. Only non-exempt batteries will continue through the remaining steps of the Section 302 analysis.

Identify Applicable Thresholds

The only EHS found in batteries is sulfuric acid. The TPQ for sulfuric acid is 1,000 pounds. If the TPQ is exceeded, reporting is required.

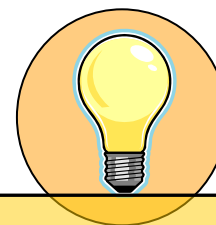
Calculate Thresholds

Beginning with the list of non-exempt batteries from the EPCRA Section 302 worksheet, a threshold calculation must be made to include every non-exempt battery containing sulfuric acid using the battery weight and weight percent of sulfuric acid as given on the MSDS. This is called a component-based calculation, which is required for EPCRA Section 302.

The basic threshold calculation consists of four steps:

- Step 1: Identify significant quantities of sulfuric acid by the largest amount or largest number of batteries.
- Step 2: Calculate the amount (in pounds) of those significant contributions of sulfuric acid.
- Step 3: Calculate the amount of sulfuric acid using the weight percent.
- Step 4: Compare the maximum amount present against the TPQ of 1,000 pounds for sulfuric acid.

If the threshold is exceeded, then cease calculations – reporting is required. However, if the threshold is not exceeded, continue calculations until the reporting is triggered or until all contributions of sulfuric acid from the entire installation (not just batteries) have been calculated. Figure 3 provides a sample calculation for batteries.



If the amount of sulfuric acid from all sources does not trigger reporting, all other EHSs (not just sulfuric acid) must be identified and quantified before an installation can unquestionably document that reporting is NOT REQUIRED under Section 302.

Prepare and Submit Report

If reporting is triggered, the facility must submit an emergency planning notification letter to the State Emergency Response Committee (SERC) and Local Emergency Planning Committee (LEPC) within 60 days of becoming subject to Section 302. This notification letter simply identifies the facility as being subject to Section 302. The regulations do not require the identification of EHSs or provision of quantity information. In addition, the facility must identify a Facility Emergency Coordinator and provide updates to the original notice if any information changes.

A detailed discussion of the Section 302 notification requirements, a sample notification letter, and additional guidance are provided in Chapter 2 of Getting Started with EPCRA.

Figure 3: Section 302 Sample Calculation for Batteries

Step 1: Identify the largest battery or the batteries present in the largest numbers. This calculation will give the 'most bang' for the effort.

Based on the example in the EPCRA Section 302 worksheet, the UPS system contains 54 wet cell lead-acid batteries (50 batteries in the UPS system with an additional 4 batteries in storage as backup, as detailed in the Battery Master worksheet). There are four very large wet cell lead-acid batteries for cranes (one battery in each of the three cranes and one backup battery in the warehouse). In vehicle maintenance, there are a total of 58 batteries.

Step 2: Calculate largest amount in pounds of that battery present at any one time.

In vehicle maintenance, there are a total of 58 batteries. Each battery weighs 25 or 30 lbs.

$$(5 \text{ batteries}) \times 30 \text{ lbs/battery} = 150 \text{ lbs batteries}$$

$$(53 \text{ batteries}) \times 25 \text{ lbs/battery} = 1,325 \text{ lbs batteries}$$

In the UPS system, there are a total of 54 batteries (50 in use; 4 in storage). Each battery weighs 90 lbs.

$$(54 \text{ batteries}) \times 90 \text{ lbs/battery} = 4,860 \text{ lbs batteries}$$

In the warehouse, there are a total of 4 batteries (3 in the cranes; one in storage). Each battery weighs 900 lbs.

$$(4 \text{ batteries}) \times 900 \text{ lbs/battery} = 3,600 \text{ lbs batteries}$$

Step 3: Calculate the amount of sulfuric acid in the batteries using weight percent.

The MSDS for the vehicle maintenance batteries lists sulfuric acid at 15% and 20% (by weight).

$$1,325 \text{ lbs batteries} \times 0.15 \text{ sulfuric acid/battery} = 199 \text{ lbs}$$

$$150 \text{ lbs batteries} \times 0.2 \text{ sulfuric acid/battery} = 30 \text{ lbs}$$

The MSDS for the UPS system batteries lists sulfuric acid at 8% (by weight).

$$4,860 \text{ lbs batteries} \times 0.08 \text{ sulfuric acid/battery} = 389 \text{ lbs}$$

The MSDS for the crane batteries lists sulfuric acid at 43% (by weight).

$$3,600 \text{ lbs batteries} \times 0.43 \text{ sulfuric acid/battery} = 1,548 \text{ lbs}$$

$$\text{TOTAL} = 30 \text{ lbs} + 199 \text{ lb} + 389 \text{ lbs} + 1548 \text{ lbs} = 2,166 \text{ lbs}$$

Step 4: Compare maximum amount present against the TPQ.

$$\text{Sulfuric acid TPQ} = 1,000 \text{ lbs}$$

$$\text{Maximum amount present at one time} = 2,166 \text{ lbs}$$

REPORTING IS REQUIRED

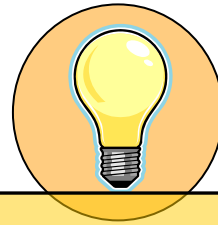
In this example, it was not necessary to include the GSE or Public Works contributions. The crane batteries alone exceeded the threshold and were the only calculation needed. If the crane batteries were not at the installation or present in smaller amounts, every battery and every other source of sulfuric acid (not just batteries) would have to be included in the calculations until reporting is triggered or until it is fully documented that sulfuric acid does not exceed the TPQ.

Sections 311 & 312: Hazardous Chemical Inventory Reporting

Under Sections 311 and 312, it is necessary to consider all hazardous chemicals present at the installation (those having an MSDS), including batteries as they often require MSDSs and contain sulfuric acid (an EHS subject to lower thresholds).

Apply Exemptions

Under Sections 311 and 312, it is recommended that exemptions be applied before any calculations are performed to remove exempt batteries from any further calculation efforts. Beginning with the EPCRA Battery Master Sheet developed in Step 1, review the list for the exemptions below and then consider only the non-exempt batteries in calculations.



Remember, the documentation must contain enough information (e.g., battery name, size) to justify that the exemption was used correctly.

There are two exemptions commonly applied to batteries under Sections 311 and 312: the solid manufactured item exemption and the consumer product exemption (Figure 4). In addition, the *de minimis* exemption is also available if using the component-based approach for calculating thresholds (see Figure 6).

Figure 4: Sections 311 and 312 Battery Exemptions

Solid manufactured item exemption

- Applies to:
 - Gel cell batteries
 - Other non-liquid sealed batteries
 - Rechargeable or disposable dry cell batteries such as A, AA, C, or D
- Does not apply to:
 - Wet cell lead-acid batteries

Consumer product exemption

- Applies to:
 - Standard size lead-acid batteries
 - Gel cell batteries
 - Sealed batteries
 - Rechargeable or disposable dry cell batteries such as A, AA, C, or D
 - Other batteries considered readily-available consumer products
- Does not apply to:
 - Very large batteries (e.g., used in cranes or forklifts) and batteries containing industrial or special concentrations which are not readily-available consumer products (e.g., batteries in emergency lighting equipment, emergency power generators, forklifts, scissor lifts, carts, heavy equipment)

- Solid manufactured item – Batteries can be exempted from Sections 311 and 312 if they are present as solids and there is no exposure to hazardous chemicals contained within the battery due to a release under normal conditions of use. In general, EPA and OSHA have

determined that wet cell lead-acid batteries DO NOT meet the terms of this exemption as they have the potential to leak, spill, or break during normal conditions of use.

- Consumer product exemption – Batteries can be exempted if used for personal, family or household purposes (such as in a home or office area), or are present in the same general form of packaging and concentration (i.e., same size, type, and composition) as batteries packaged for distribution and use by the general public (i.e., ready available consumer product that can be purchased from an auto parts store, general merchandise store, warehouse store, etc.). In general, all small batteries, such as A, AA, C, and D cell, and standard size car or pickup truck batteries (regardless of whether it is a gel cell or wet cell lead-acid battery) can be exempted.

In the EPCRA Sections 311-312 Exempt worksheet, the third worksheet in the ‘Calculation Manual – Batteries’ spreadsheet, note the exemption in the exemption column and remove the quantity from any further Section 311 and 312 threshold calculations. Different colors can be used to highlight exempt versus non-exempt batteries (i.e., grayed out to denote exempt). **Only non-exempt batteries will continue through the remaining steps of the Sections 311 and 312 analysis.**

Identify Applicable Thresholds

Under Sections 311 and 312, there are two threshold levels for batteries – both of which must be calculated each reporting year.

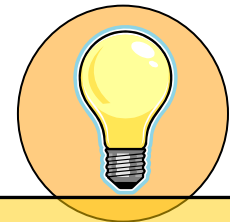
- Hazardous chemicals
 - 10,000 lbs of any one type of battery at any one time (if using the mixture approach (see section below))
 - 10,000 lbs of Lead and Lead compounds (if using the component approach (see section below))
- EHSs
 - 500 lbs of sulfuric acid (must use component approach (see section below))

If any of these thresholds are exceeded, reporting is required. Note that many states have adopted lower threshold levels. It is important for the installation to identify state-specific thresholds. Additional guidance on complying with state-programs is provided in Chapter 4 of Getting Started with EPCRA.

Calculate Thresholds

For hazardous chemical calculations, there are two calculation approaches:

- Mixture approach – Calculations are based on the mixture as a whole, meaning the threshold is based on the weight of the battery and the number of batteries.



Any one battery type present on-site at any one time in an amount equal to or greater than the 10,000-lb threshold will trigger reporting.



Regardless of the approach used for hazardous chemicals, the threshold for sulfuric acid (an EHS) must be calculated using the component approach.

- Component approach – Calculations are based on using the weight percent of Lead and Lead compounds in the battery to calculate the total amount of Lead and Lead compounds. This amount is then added to all other Lead contributions across the installation.

The choice between a mixture versus component approach for thresholds is usually made by the data available at the installation.

Hazardous Chemicals – Mixture Approach

When using the mixture approach (Figure 5), each unique battery is a unique mixture with its own 10,000-lb threshold. The MSDS is one way to identify different battery types. For example, a gel cell battery will have a different MSDS than a wet cell lead-acid battery. Batteries present in an amount greater than or equal to the 10,000-lb threshold must be reported.

Figure 5: Sample Calculation for Mixture Approach

Step 1: Use list of non-exempt batteries to sort batteries into types by MSDS.

Based on the example of non-exempt batteries from the EPCRA 311-312 Exempt worksheet, sort the batteries by type using the MSDS (e.g., identify all wet cell lead-acid batteries).

The UPS system contains 50 wet cell lead-acid batteries with an additional four in storage as backups. The three cranes each contain one very large wet cell lead-acid battery with another backup battery in the shop.

Step 2: Calculate maximum amount (in lbs) on-site at any one time for each battery type.

In the UPS system, there are a total of 54 batteries (50 in use; 4 in storage). Each battery weighs 90 lbs.

$$(54 \text{ batteries}) \times 90 \text{ lbs/battery} = 4,860 \text{ lbs batteries}$$

In the warehouse, there are a total of 4 batteries (3 in the cranes; one in storage). Each battery weighs 900 lbs.

$$(4 \text{ batteries}) \times 900 \text{ lbs/battery} = 3,600 \text{ lbs batteries}$$

Step 3: Compare maximum amount present against the threshold.

$$\text{Threshold} = 10,000 \text{ lbs}$$

$$\text{Maximum amount of wet cell lead-acid batteries present at one time} = 4,860 \text{ lbs} + 3,600 \text{ lbs} = 8,460 \text{ lbs}$$

REPORTING IS NOT REQUIRED

This calculation must be repeated for every non-exempt battery type.

Note: The bank of batteries used in the UPS system is non-exempt; however, batteries used in small UPS units for the protection of individual computers could be considered consumer items and therefore exempt from reporting.

Component Approach

If a component approach is used, begin by calculating the weight of the battery and then use the weight percent to calculate the pounds of each component in the battery. The MSDS is the best source of composition information. The amount of each component must then be added to all other contributions, including contributions from other non-battery sources at the installation. For example, Lead from all non-exempt batteries types must be added to any other contributors of Lead at the installation. The sum is then compared to the threshold. Any components present in an amount greater than or equal to the 10,000-lb threshold must be reported.

Hazardous Chemicals – Component Approach

Many installations that use a component based approach for non-EHS hazardous chemicals (Figure 6) have a hazardous material management software program that performs these calculations; however, batteries are often not tracked in this software. Many batteries are managed through a battery exchange program with a local vendor or batteries that were put into service years ago are not tracked as being on-site. As a result, many installations use a mixture approach for batteries.

EHSs – Component Approach (Required)

A component approach must be used for EHSs (Figure 7) and the sum of all non-exempt sources for the EHS must be calculated, including any items also considered as mixtures. Batteries are first considered as a mixture and compared to the 10,000-lb threshold as part of the hazardous chemical assessment. Then, the sulfuric acid in the battery must be calculated as part of the EHS assessment and added to all other sulfuric acid contributions at the installation.

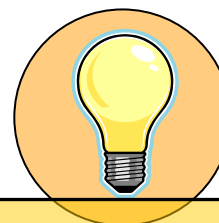
In the EPCRA Sections 311-312 EHSs worksheet, the fourth worksheet in the ‘Calculation Manual – Batteries’ spreadsheet, note the exemption in the exemption column and remove the quantity from any further Section 311 and 312 threshold calculations. Different colors can be used to highlight exempt versus non-exempt batteries (i.e., grayed out to denote exempt). Only non-exempt batteries will continue through the remaining steps of the Sections 311 and 312 analysis.

Prepare and Submit Report

Section 311 requires a one-time MSDS or list submission of all hazardous chemicals (including EHSs) that triggered reporting. This MSDS or list submission must be updated for any significant changes at the installation – such as when a new hazardous chemical (including EHSs) triggers reporting for the first time. If sulfuric acid or batteries have already been reported, then an update is not required. If it has not been reported, then an update must be submitted within 3 months.



Any one nonexempt battery type present on-site at any one time in an amount equal to or greater than the 10,000-lb threshold will trigger reporting.



Be sure to report only what triggered reporting (i.e., should match the threshold determination). For example, if sulfuric acid triggered reporting but the batteries did not, then only report the sulfuric acid.

Figure 6: Sample Calculation for Component Approach (Hazardous Chemicals)

Step 1: Use list of non-exempt batteries to sort batteries into types by MSDSs.

Based on the example of non-exempt batteries from the EPCRA Sections 311-312 Exempt worksheet, sort the batteries by type using MSDS (e.g., identify all wet cell lead-acid batteries).

The UPS system contains a bank of 50 wet cell lead-acid batteries with an additional four in storage as backups. The three cranes each contain one very large wet cell lead-acid battery with another backup battery in the shop.

Step 2: Calculate maximum amount (in lb) on-site at any one time for each battery type.

In the UPS system, there are a total of 54 batteries (50 in use; 4 in storage). Each battery weighs 90 lbs.

$$(54 \text{ batteries}) \times 90 \text{ lbs/battery} = 4,860 \text{ lbs batteries}$$

In the warehouse, there are a total of 4 batteries (3 in the cranes; one in storage). Each battery weighs 900 lbs.

$$(4 \text{ batteries}) \times 900 \text{ lbs/battery} = 3,600 \text{ lbs batteries}$$

Step 3: For each component on the MSDS, calculate the maximum amount present using weight percent.

The MSDS lists the following components:

- Sulfuric acid (EHS) – 8% (for the UPS system batteries) and 43% (for the crane batteries) [This is an EHS and the calculations are shown separately in the next section]
- Lead – 10 % (for the UPS system batteries) and 10% (for the crane batteries)

$$\text{Total weight of UPS system batteries} = 4,860 \text{ lbs}$$

$$\text{Total weight of crane batteries} = 3,600 \text{ lbs}$$

Step 4: Sum amount present for Lead across the installation from all non-exempt sources.

In this example, the only source of Lead at the installation is the batteries.

$$\text{Maximum amount present for Lead} = (4,860 \text{ lbs} \times .10) + (3,600 \text{ lbs} \times .10) = 846 \text{ lbs}$$

Step 5: Compare maximum amount present against the 10,000-lb threshold (or state-specific) threshold.

The amount of Lead at the installation is below the 10,000-lb threshold.

REPORTING IS NOT REQUIRED

Note: In this example, the only sources of Lead are the batteries. At an installation, there may be other contributions of Lead. These other hazardous chemicals need to be broken into components and added to the other contributions of Lead for an installation-wide calculation.

Most state emergency response commissions (SERCs) and local emergency planning committees (LEPCs) require a list submission under Section 311. Additional information and sample submissions for Section 311 reporting is provided in Chapter 4 of Getting Started with EPCRA.

Section 312 requires an annual report due on or before 1 March of each year. The annual report includes hazardous chemicals (including EHSs) present on-site in amounts that trigger reporting

Figure 7: Sample Calculation for Component Approach (EHSs)

Step 1: Use list of non-exempt batteries to sort batteries into types by MSDSs.

Based on the example of the list of non-exempt batteries from the EPCRA Sections 311-312 Exempt worksheet, sort the batteries by type using MSDSs (e.g., identify all wet cell lead-acid batteries).

The UPS system contains a bank of 50 wet cell lead-acid batteries with an additional four in storage as backups. The three cranes each contain one very large wet cell lead-acid battery with another backup battery in the shop.

Step 2: Review the MSDSs to identify EHSs.

The UPS batteries and the crane batteries contain sulfuric acid (an EHS) and must be included in the threshold calculations.

Step 3: Calculate maximum amount (in lbs) on-site at any one time for each battery type.

In the UPS system, there are a total of 54 batteries (50 in use; 4 in storage). Each battery weighs 90 lbs.

$$(54 \text{ batteries}) \times 90 \text{ lbs/battery} = 4,860 \text{ lbs batteries}$$

In the warehouse, there are a total of 4 batteries (3 in the cranes; one in storage). Each battery weighs 900 lbs.

$$(4 \text{ batteries}) \times 900 \text{ lbs/battery} = 3,600 \text{ lbs batteries}$$

Step 4: For each EHS component on the MSDS, calculate the maximum amount present using weight percent.

The MSDSs list sulfuric acid at 8% for the UPS batteries and 43% for the crane batteries.

$$\text{Maximum amount present} = (4,860 \text{ lbs UPS batteries} \times 0.08) + (3,600 \text{ lbs crane batteries} \times 0.43) = 1,937 \text{ lbs}$$

Step 5: Sum amount present for sulfuric acid across the installation from all non-exempt sources.

In this example, the only source of sulfuric acid at the installation is the batteries.

$$\text{Maximum amount present for sulfuric acid} = 1,937 \text{ lbs}$$

Step 6: Compare maximum amount present against the threshold.

The threshold for sulfuric acid under Sections 311/312 is 500 lbs or the TPQ, whichever is lower. The TPQ for sulfuric acid is 1,000 lbs. This value is greater than 500 lbs, and for the purposes of Sections 311-312, the threshold defaults to 500 lbs.

The 1,937 lbs of sulfuric acid is over the 500-lb threshold.

REPORTING IS REQUIRED

Note: In this example, the only sources of sulfuric acid are the batteries and there were enough batteries to exceed the threshold. At an installation, many batteries will be exempt as consumer products and it will be large heavy equipment batteries or UPS batteries that will significantly impact thresholds. In addition, other sulfuric acid sources such as battery electrolyte, need to be calculated and added to the other contributions for an installation-wide calculation.

any time during the previous calendar year. Most SERCs and LEPCs require using EPA's Tier II form, the Tier2 Submit software, or a state-specific form. Additional information and a sample Tier II report are provided in Chapter 4 of Getting Started with EPCRA.

Section 313: Toxic Release Inventory Reporting

Under Section 313, sulfuric acid is only considered a toxic chemical when it exists in an aerosol, mist, or vapor form. Therefore, the Section 313 assessment for sulfuric acid from batteries must focus on where sulfuric acid is manufactured, processed, or otherwise used in one of these forms. In addition, Lead and Lead compounds are toxic chemicals subject to EPCRA Section 313 and are designated as persistent, bioaccumulative and toxic (PBT) with a lower threshold of 100 lbs/year. As a result, Lead and Lead compounds must be carefully assessed. Note that Section 313 applies to installations with ten or more full-time equivalents (FTEs) or hourly equivalents.



The key to 313 exemptions is the ACTIVITY in which the battery is used, not the size, shape, or composition.

Apply Exemptions

Under Section 313, it is recommended that exemptions (Figure 8) be applied before any calculations are performed to remove exempt batteries from any further calculation efforts. Beginning with the EPCRA Battery Master Sheet developed in Step 1, review the list of Section 313 exemptions and

Figure 8: Section 313 Battery Exemptions

Activity-related exemption – Motor vehicle maintenance

- Applies to:
 - Organizational-level maintenance
 - Batteries used in motor vehicles regardless of battery size. Motor vehicles include cars, trucks, and aircraft that can be driven under their own propulsion (i.e., the engine is used for propulsion and the vehicle does not have to be towed)
- Does not apply to:
 - Depot-level and intermediate-level maintenance
 - Batteries used in most aerospace ground equipment (AGE), ground support equipment (GSE), and auxiliary power units (APUs) since they are not motor vehicles (i.e., they may have engines but cannot be driven and must be towed to their location of use)

Article exemption

- Applies to:
 - Maintenance-free batteries (i.e., there is no release of sulfuric acid)
 - Batteries on which NO maintenance is performed (based on work center activities)
 - Batteries in which less than 0.5 pounds of toxic chemicals are released from all maintenance activities performed on the battery (e.g., acid or water top-off)
 - Dry cell consumer batteries such as A, AA, C, or D
- Does not apply to:
 - Activities where electrolyte is added to a dry battery or extensive battery maintenance (such as refilling) which will cause a release of sulfuric acid as an aerosol, mist vapor, etc. If the activity is performed routinely, then the release of sulfuric acid could exceed 0.5 lbs over the year. In this case, the article exemption is negated and BOTH the sulfuric acid and Lead/Lead compounds and any other toxic chemicals in the battery are subject to thresholds.

then consider only the non-exempt batteries in calculations. Be sure to include enough information in the documentation and recordkeeping to justify the use of an exemption and a report/no report determination.

In the EPCRA Section 313 – Exempt worksheet, the fifth worksheet in the ‘Calculation Manual – Batteries’ spreadsheet, note the exemption in the exemption column and remove the quantity from any further Section 313 threshold calculations. Different colors can be used to highlight exempt versus non-exempt batteries (i.e., grayed out to denote exempt). **Only non-exempt batteries will continue through the remaining steps of the Sections 313 analysis.**

Under Section 313, most batteries should be exempt under one of the following exemptions – activity-related exemption (motor vehicle maintenance) and article exemption. A detailed exemption example is provided below (Figure 9). It is rare that a facility triggers reporting for a toxic chemical in a battery.

- Activity-related exemption (motor vehicle maintenance) – Batteries can be exempted from Section 313 if used in installation-owned or operated motor vehicles in an organization-level (o-level) maintenance activity (intermediate or depot level maintenance activities cannot use this exemption).

Figure 9: Detailed Section 313 Batteries Exemption Example

Step 1: Use data collected on the number of batteries used at the installation from the hazardous materials software, site visits to work areas, and other sources at the facility. The batteries come in many different types and sizes, including wet cell lead-acid batteries, gel cell sealed batteries, and small dry cell batteries, such as those used in flashlights, radios, and other equipment.

Step 2: Exempt all batteries that are used in motor vehicles as part of operational-level maintenance under the motor vehicle maintenance exemption, regardless of size.

Step 3: Exempt all maintenance-free batteries, such as gel cell and other sealed batteries (e.g., AA, C, D size batteries) under the article exemption, regardless of size.

Step 4: Examine the remaining batteries – most of them will be wet cell lead-acid batteries. The only remaining applicable exemption is the article exemption. The one criterion of the article exemption affecting lead-acid batteries is the battery does not release a toxic chemical under normal conditions of use. If there is a release from the battery, the only way to reinstate the article exemption is to document that less than 0.5 lbs of sulfuric acid is released from the use of like batteries during the reporting year.

- A battery will remain exempt as an article if no maintenance was performed on that type of battery.
- If maintenance was performed, the amount of sulfuric acid released during maintenance activities must be estimated. If the amount is less than 0.5 lbs, then that type of battery will remain exempt as an article.

If the article exemption is negated, it is negated for all toxic chemicals in the battery. All toxic chemicals (e.g., sulfuric acid aerosol, Lead and Lead compounds, other toxic chemicals), in the now non-exempt batteries, must be included in the threshold determinations.

Step 5: Sort remaining batteries by type. The National Stock Number (NSN) can be used to identify different types of batteries. At the end of this step, the remaining list of batteries should only contain NON-EXEMPT batteries that must be included in threshold determinations.

- Article exemption – Batteries can be exempted if it is an article (i.e., manufactured item that is formed to a specific shape or design during manufacture, has end–use functions dependent in whole or in part upon its shape or design during end use) used as it is received by the installation and does not release a toxic chemical under normal conditions of processing or otherwise use of that item at the installation (i.e., no battery maintenance or other release-causing activities are conducted). [This exemption can be applied regardless of the level of vehicle maintenance performed.]

Identify Applicable Thresholds

Under Section 313, there are three threshold levels that apply to the different toxic chemicals in batteries – all of which must be calculated each reporting year. The use of batteries in equipment and motor vehicles (use or maintenance) is an Otherwise Use activity with the following thresholds:

- Lead and Lead compounds – Lead and Lead compounds have been designated as PBT chemicals with a threshold of 100 lbs.
- Sulfuric acid – Sulfuric acid has a threshold of 10,000 lbs.
- Any other toxic chemical – Other metals and metal compounds may be in a battery. These toxic chemicals are likely subject to the 10,000-lb threshold.

Again, it is important to repeat that only non-exempt batteries are included in this and any subsequent assessment steps.

Calculate Thresholds

Section 313 thresholds are applied using the component approach only – there is no mixture approach (Figure 10). Every non-exempt battery must be broken into toxic chemicals and the toxic chemicals evaluated using an installation-wide component approach. In addition, the thresholds are based on the amount used over the entire calendar year (not at any one time). Installations must estimate the amount of sulfuric acid and Lead and Lead compounds from all non-exempt batteries and uses under each threshold activity.

In the EPCRA Section 313 - Threshold worksheet, the sixth worksheet in the ‘Calculation Manual – Batteries’ spreadsheet, note the exemption in the exemption column and remove the quantity from any further Section 313 threshold calculations. Different colors can be used to highlight exempt versus non-exempt batteries (i.e., grayed out to denote exempt). Only non-exempt batteries will continue through the remaining steps of the Sections 313 analysis.

Prepare and Submit Report

Section 313 requires an annual Form R report due on or before 1 July of each year. The Form R reports on toxic chemicals that exceeded any of the threshold activities for the previous calendar year. Installations must submit the EPA’s Form R report; however, there are multiple options for reporting. Navy policy requires reporting to EPA using the TRI-MEweb reporting system. Each installation must check with their state to determine what they are able to accept.

Additional details on reporting under Section 313 are provided in Chapter 5 of Getting Started with EPCRA.

Special Note on Lead and Lead Compounds and Form R

Reporting for Lead, and sometimes Lead compounds, is often triggered by range activities. Where the range is part of the installation, reporting for Lead is triggered for the entire installation, including non range activities. Based on the Consolidated Emergency Planning and Community Right-to-Know Act Policy for DoD Installations, Munitions, Activities, and

Figure 10: Section 313 Sample Calculation for Batteries

Steps 1 and 2: Using the example of the list of non-exempt batteries from the EPCRA Section 313 - Exempt worksheet, determine the amount put into service in the reporting year and identify toxic chemicals.

The three cranes each contain one very large wet cell lead-acid battery with another backup battery in the shop. These batteries are not consumer product size and are not exempt. They contain sulfuric acid and maintenance is performed. This example assumes that more than 0.5 lbs of sulfuric acid vapor is created during maintenance activities and the article exemption does not apply. During the reporting year, one new battery was put into service. The batteries contain 43% sulfuric acid and 10% Lead.

The sulfuric acid in the battery is a liquid and is not a covered form of sulfuric acid – it is not an aerosol, mist vapor, etc. Therefore, no further calculations for liquid sulfuric acid are needed.

The sulfuric acid released (the amount that exceeded the 0.5 lb rule and negated the article exemption) is considered manufactured; however, the manufacturing threshold is 25,000 lbs. The amount created and released is well below the threshold. This conclusion should be clearly documented and no further calculations are needed.

Finally, the battery contains 10% Lead that must be included in threshold calculations.

Step 3: Calculate the amount of Lead otherwise used during the reporting year.

During the reporting year, one new battery was put into service. The battery contains 10% Lead and weighs 900 lbs.

$$1 \text{ battery} \times 900 \text{ lbs/battery} \times 0.10 = 90 \text{ lbs of Lead otherwise used}$$

Step 4: Sum the amount of Lead otherwise used across the installation from all non-exempt contributors.

In this example, the only contribution of Lead is the crane batteries.

$$\text{Otherwise used} = 90 \text{ lbs Lead}$$

Step 5: Compare amount otherwise used to threshold.

Lead is a PBT with a threshold of 100 lbs. The installation otherwise used 90 lbs of Lead.

REPORTING IS NOT REQUIRED

In this example, the only contributors are the crane batteries and reporting was not triggered. At an installation, there will be many sources of Lead but most will be exempted. If the installation has an adjacent range, reporting will easily be triggered for Lead and other activities will need to be captured for the Form R.

Operational Ranges, two Form Rs are required – one for releases from range activities and one for releases from all non-range activities.

When considering releases and transfers off-site for the installation non-range Form R, only consider NON-EXEMPT sources of Lead. Any battery that has been exempted remains exempt and is not reported on the Form R. For example, if the installation has exempted batteries as articles or under motor vehicle maintenance, then the transfer off-site for recycling is not reported on the Form R.