



**UNIFIED PROGRAM  
ADMINISTRATION AND  
ADVISORY GROUP (UPAAG)**

**HAZARDOUS MATERIALS BUSINESS PLAN (HMBP)  
STEERING COMMITTEE**

**HAZARDOUS MATERIALS BUSINESS PLAN (HMBP)  
TECHNICAL ADVISORY GROUP**

# **BATTERY REPORTING GUIDANCE**

## **FOR**

# **UNIFIED PROGRAM AGENCIES**

**Edition:**

**March 10, 2022**

**UPAAG Adopted Date:**

**March 10, 2022**

## **INTRODUCTION**

A battery work group was established within the Hazardous Materials Business Plan (HMBP) Technical Advisory Group (TAG) with members of UPAs from across the state to help address the issues associated with reporting batteries in the hazardous materials business plan. A review was conducted of many different types of batteries, the materials contained within them, associated hazards, and the technical challenges of reporting to provide the best practices for battery reporting outlined in this document.

Please consider the contents of this document as guidance and that it tries to cover most scenarios. However, battery technology is rapidly changing and may not fit in your exact situation. When faced with questions, one should consult with your management, HMBP TAG, and/or California Environmental Protection Agency for additional guidance and clarification.

### **I. BACKGROUND**

Hazardous Materials Business Plan reporting for batteries presents a technical challenge because of the mixed chemical (ex. contains sulfuric acid and lead) and physical state (ex. both liquid, and solid) as well as the need to report them in a standardized way across the state. In addition to the technical challenges, another concern is the determination of any given battery as either a hazardous material, an article, or a consumer product as defined by laws and regulations for the hazardous materials business plan.

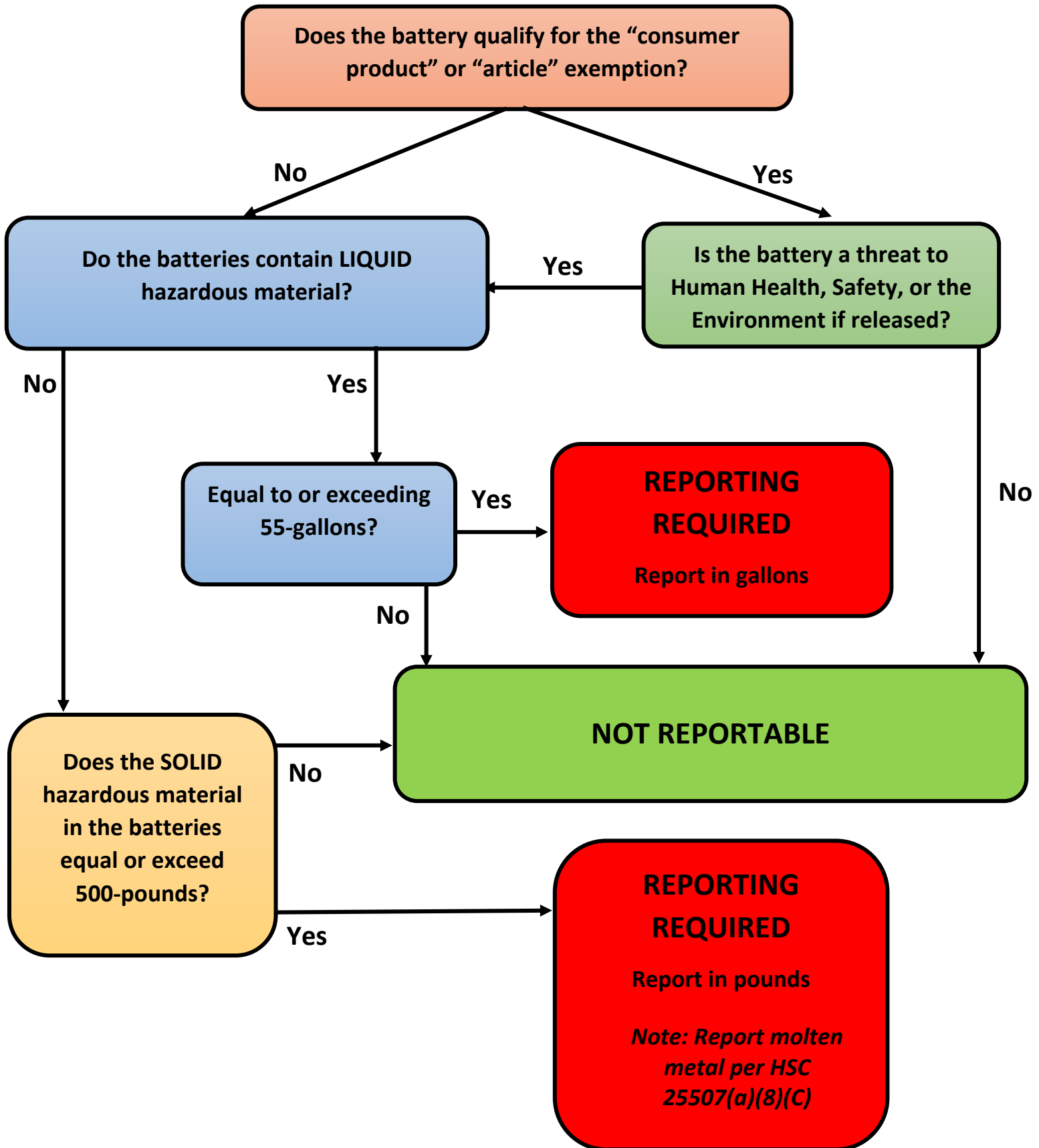
By their nature, batteries are made with a wide variety of materials including solid, liquid, or even molten materials. Although reportable mixtures of hazardous materials in different physical states can occur with some regularity, batteries represent a very frequent example of this reporting issue. Batteries use has continued or increase in many industries for power storage, management, electronic devices, and as a general utility. The battery industry continues to improve and change battery chemistry for residential, commercial, or grid-scale application. This results in significant variation, making it difficult to provide a simple answer as to how batteries should be properly reported on the HMBP.

Another issue is that the manufacturers often state that the battery is an “article” on the data sheet or safety data sheet (SDS). This identification presents a concern because materials determined to be “articles” may not be considered reportable hazardous materials according the California Health and Safety Code (HSC). In addition, consumer products may also be exempt from the definition of a hazardous material. The sections below will explain the exemptions and how to properly report a battery on the HMBP at this time. Section V provides a recommendation from the work group about how the TAG may resolve this concern.

### **II. REPORTING PROCEDURES**

In order to provide concise guidance on how both a regulator and facility should evaluate batteries for proper reporting, this group has created a flow chart, below, which will walk the user through a step-by-step process. The first question determines if the battery is excluded from regulation as a hazardous material. The following questions resolve if the battery should be reported as a solid or liquid and the applicable threshold quantity. Each question on the flow chart is discussed in more detail in section C below. Information about how to calculate the quantity of material is in section B.

# Battery Reporting Flow Chart for HMBP



## A. How to calculate aggregate solid or liquid hazardous material

**Liquid** - Aggregate quantity of electrolyte should be used to determine if the batteries have reached the reportable quantity threshold of 55 gallons. To calculate volume, use tables indicating gallons of electrolyte per battery cell from manufacturer/supplier and/or specification sheets. If electrolyte volume is unknown, multiply the fractional weight of electrolyte (from SDS) times the total battery weight (in pounds) and divide by the minimum specific gravity (from SDS) times 8.34 pounds per gallon;

$$\text{Electrolyte volume} = (X \% / 100)(Y \text{ pounds}) / (Z \text{ Specific Gravity})(8.34 \text{ pounds/gallon})$$

$$\text{Example: } (40\% / 100)(40 \text{ pounds}) / (1.285)(8.34 \text{ pounds/gallon}) = 1.49 \text{ gallons}$$

**Solid** - Total weight of solid hazardous materials in the battery, in pounds, should be used to determine if the batteries have reached the reportable quantity threshold of 500 pounds. Weight of hazardous material can be obtained from the manufacturer or supplier, specification sheets, or safety data sheets. If unknown, fractional weight of inert material can be subtracted from total battery weight to calculate aggregate quantity of hazardous material.

**Molten Metals** - Report total weight of combustible metal, or metal alloy that poses an explosive potential, when in molten form, at or above the reporting threshold of 500 pounds as required in [HSC 25507\(a\)\(8\)\(C\)](#).

### Flow Chart Questions

**Does the battery qualify for the “consumer product” or “article” exemption?**

#### “Consumer product”:

Consumer products are defined in the Health and Safety Code ([HSC 25501\(j\)](#)) and 29 CFR 1910.1200. They may be excluded from the list of hazardous materials in HSC 25507(n) paragraph 2 because they are excluded from the Hazard Communication Standard in [1910.1200\(b\)\(6\)](#) as defined by section (ix).

The Health and Safety Code also considers consumer products to be exempt from reporting at retail establishments, but not at the facility that manufactures the product, the warehouse or the distribution center as specified in [HSC 25507\(b\)\(5\)](#). However, the definition must be applied properly. According to the Hazard Communication standard, the exemption can only apply if “the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended”.

It is foreseeable that many batteries used for commercial and industrial purposes do not meet the definition of a consumer product. In addition, commercial and industrial uses do not seem to fit the definition referenced by the Hazard Communication standard and found in the Consumer Product Safety Act.

The definition states, “any article, or component part thereof, produced or distributed (i) for sale to a consumer for use in or around a permanent or temporary household or residence, a school, in recreation, or otherwise, or (ii) for the personal use, consumption or enjoyment of a consumer in or around a permanent or temporary household or residence, a school, in recreation, or otherwise”

## Definitions:

[HSC 25501\(j\)](#) “Consumer product means a commodity used for personal, family, or household purposes, or is present in the same form, concentration, and quantity as a product prepackaged for distribution to and use by the general public”.

[1910.1200\(b\)\(6\)\(ix\)](#) “Any consumer product or hazardous substance, as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, where the employer can show that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended”.

[15 USC 2052\(a\)\(5\) Consumer Product safety Act](#) “CONSUMER PRODUCT.--The term “consumer product” means any article, or component part thereof, produced or distributed (i) for sale to a consumer for use in or around a permanent or temporary household or residence, a school, in recreation, or otherwise, or (ii) for the personal use, consumption or enjoyment of a consumer in or around a permanent or temporary household or residence, a school, in recreation, or otherwise; but such term does not include—...”

**Examples:** Consumer type batteries may include the familiar sized AAAA to D batteries and button cells which may be formulated as alkaline, lithium ion, nickel metal hydride and could be single-use or rechargeable. These types of batteries typically power consumer type products such as calculators, clocks, flashlights, remotes, radios, toys, and other electronics used for typical consumer-type activities. Keep in mind that if any product is used with a greater frequency or duration than a consumer product or in a way not intended by the manufacturer, it may not qualify as a consumer product.

### “Article”:

“Article” is not defined in the HSC, however, it is excluded from the definition of a hazardous material (HSC 25501(n)(2)) by the [Hazard Communication standard in CFR 1910.1200\(b\)\(6\)\(v\)](#). The key criteria in the definition of an “article” is that, “under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees” (1910.1200(c)). Some batteries have technical or safety data sheets that list them as an “article” and indicate they are exempt from regulation under the hazard communication regulations in 29 CFR 1910.1200. Depending on the type of physical or health hazards the use of a given battery presents, it may or may not be considered an article. The Occupational Health and Safety Administration has provided several interpretations of this, excluding some batteries from the definition of an article including lead-acid batteries and some lithium ion batteries. References to these interpretations can be found below.

[1910.1200\(c\)](#) Article means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

The “[Enfonde letter of interpretation](#)” on this issue, provided by the Occupational Safety and Health Administration in 2004 provides a succinct explanation of when a battery may be considered an article and how banks of sealed UPS batteries for backup power supply are not considered an article.

The [1997 letter of interpretation](#) also provides some examples of why a lead-acid battery is not considered an article, explaining that under normal conditions of use and in foreseeable emergencies (not accidental fires) batteries have the potential to “leak, spill or break” and “have the potential to emit hydrogen gas, which may result in a fire”.

In a [2015 letter response to Labelmaster](#), recorded on their website, the Occupational Health and Safety Administration stated, “lithium-ion batteries (or lithium battery-powered devices) on a whole, although sealed, have the potential to leak, spill, or break during normal conditions of use and foreseeable emergencies and expose employees to chemicals which can pose health (e.g., lithium cobalt, graphite) and/or physical (e.g., burns, fire) hazards, and therefore, cannot be considered an article”

**Examples:** Items containing batteries such as laptops, phones, and other devices which employee exposure does not occur. Batteries handled by maintenance employees and contractors may be excluded from the definition of an article. Batteries for backup power are typically not considered articles.

### **Does the battery pose a threat to human health, safety or the environment if released?**

The intent of the Unified Program (UP) Hazardous Material Disclosure Program is to protect public and environmental health and safety from the releases or threatened releases of hazardous materials [HSC 25500(a)]. This is accomplished through the development of business plans that disclose basic information about a hazard posed by chemicals. The various battery types handled by businesses have inherit physical and chemical hazards (e.g. elevated operating temperatures, corrosive electrolytes, generation of flammable gases, thermal runaway etc.). On the basis of the hazards presented, a battery may still be subject to UP’s hazardous materials disclosure requirements listed in HSC 25501(n)(3) which states that, the “unified program agency may adopt an ordinance that provides that, within the jurisdiction of the unified program agency, a material not listed in paragraph (2) is a hazardous material for purposes of this article if a handler... or if the governing body of the unified program agency has a reasonable basis for believing that the material would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.”

If the contents of the battery could pose a threat to human health, safety, or the environment if released, contact your unified program agency to verify that if the battery is required to be reported. If yes, proceed to questions 3.

### **Does the battery contain liquid hazardous material?**

If the battery contains a liquid hazardous material, the flow chart instructs the user to report the battery as a liquid when the aggregate quantity of battery electrolyte on site is 55-gallons or greater. However, if a battery contains a negligible amount of liquid, for example less than 1%, it is recommended that the battery be reported as a solid when the aggregate quantity of solid hazardous materials is equal to or exceeds 500 pounds.

The instruction to report the aggregate quantity of batteries as a liquid is based on the reporting requirements for lead-acid batteries found in [CCR Title 27 § 15186.1](#) instead of the mixture reporting instructions from [HSC 25507\(a\)\(1\)\(A\)](#). The 2011 guidance document for lead-acid battery reporting stated the basis for this determination is, “The quantity of electrolyte, which is the component of the battery which presents the primary immediate hazard to emergency responders, should be used to determine if the batteries have exceeded the reporting threshold”. This is also found to be true for other types of battery electrolyte.

If the physical state of materials contained within the battery is unclear (e.g. some electrolytes are in gel form), definitions to help distinguish between a solid and liquid can be found in the

California Fire Code Ch. 2 and they are provided here for reference. **Solid** – a material that has a melting point and decomposes or sublimates at a temperature greater than 68°F (20°C). **Liquid** – a material having a melting point that is equal to or less than 68°F (20°C) and a boiling point which is greater than 68°F (20°C) at 14.7 pounds per square inch absolute (psia)(101 kPa). Where not otherwise identified, the term “liquid” includes both flammable and combustible liquid. If a battery contains molten metal, HSC defines specific reporting in [25507\(a\)\(8\)\(C\)](#) and states that reporting is required for a, “combustible metal, or metal alloy, that poses an explosive potential, when in molten form, in a quantity at any one time during the reporting year that is equal to, or greater than, 500 pounds”. This definition was not intended for use with batteries, however it may be used if applicable. A few examples of these metals are lithium, sodium, and potassium.

**Does the solid hazardous material in the battery exceed 500 pounds?**

If the battery is composed of solid hazardous material the battery is to be reported as a solid with the reporting threshold of 500 lbs in aggregate on site.

**Additional Reporting Requirements:**

Discarded batteries are typically universal or hazardous waste. Once deemed a waste, if stored on site at 55 gallons or 500 pounds, they are reportable. See the citations listed for more details: [25501\(n\)\(2\)\(E\)](#), [HSC 25117\(a\)](#), [HSC 25141](#), and [CCR Title 22 66261.1-66261.126](#).

## Inventory Page Guidance

### Liquid Example: Chemical Inventory Page for Nickel Metal Hydride batteries

The following inventory sheet was created as a guidance document and will not be representative of all Nickel Metal Hydride (NiMH) or all liquid batteries. Always consult the SDS for your specific product to ensure chemical components and hazards are correct. Refer to the flow chart to determine if your batteries are reportable. The following example is for large NiMH battery cells. Smaller consumer NiMH batteries may be reported as solids and/or have different chemical components. An asterisk (\*) below indicates a required field in CERS. Please note that more information than the minimum required fields is typically required. Always fill out the inventory pages as completely as possible.

### Chemical Identification and Physical Properties Required Fields:

Chemical Name, Common Name\*, Physical State\*, Hazardous Material Type, Trade Secret. Note: For the Physical state, if battery contains liquid electrolyte at or above the threshold quantity, check “liquid” and report the amounts in gallons.

Chemical Identification and Physical Properties		CERS Chemical Library ID
Chemical Name	Nickel-Metal Hydride "NiMH" Battery	-
Common Name	Nickel-Metal Hydride "NiMH" Battery (Large Battery Cells)	US EPA SRS ID
CAS Number		
Physical State	Hazardous Material Type	Trade Secret
<input type="radio"/> Solid <input checked="" type="radio"/> Liquid <input type="radio"/> Gas	<input type="radio"/> Pure <input checked="" type="radio"/> Mixture <input type="radio"/> Waste	<input type="radio"/> Yes <input checked="" type="radio"/> No



**Chemical Hazard Classification Required Fields:**

EHS (Extremely Hazardous Substance)\*, Radioactive, Fire Code Hazard Class (If available), DOT Hazard Class (If available), 24 Federal Hazard Categories. Note: Ensure 5 (Obsolete) Federal Hazard Categories on the left are unchecked if they are visible to you.

Chemical Hazard Classification		
<b>EHS</b> <input type="radio"/> Yes <input checked="" type="radio"/> No	<b>Fire Code Hazard Classes (by priority)</b> <input type="text" value="Corrosive"/>	<b>DOT Hazard Class</b> <input type="text" value="9 - Misc. Hazardous Materials"/>
<b>Radioactive</b> <input type="radio"/> Yes <input checked="" type="radio"/> No	<input type="text" value="Toxic"/>	<b>State Waste Code</b> <input type="text"/> <a href="#">Lookup Code</a>
<b>Curies</b> <input type="text"/>	<a href="#">View/Edit Additional Firecodes</a>	

Federal Hazard Categories	Federal Hazard Categories
<input type="checkbox"/> Fire ( Obsolete )	<input type="checkbox"/> PHYSICAL: Flammable
<input type="checkbox"/> Reactive ( Obsolete )	<input type="checkbox"/> PHYSICAL: Gas Under Pressure
<input type="checkbox"/> Pressure Release ( Obsolete )	<input type="checkbox"/> PHYSICAL: Explosive
<input type="checkbox"/> Acute Health ( Obsolete )	<input type="checkbox"/> PHYSICAL: Self-heating
<input type="checkbox"/> Chronic Health ( Obsolete )	<input type="checkbox"/> PHYSICAL: Pyrophoric
	<input type="checkbox"/> PHYSICAL: Oxidizer
	<input type="checkbox"/> PHYSICAL: Organic Peroxide
	<input type="checkbox"/> PHYSICAL: Self-reactive
	<input type="checkbox"/> PHYSICAL: Pyrophoric Gas
	<input type="checkbox"/> PHYSICAL: Corrosive to Metal
	<input type="checkbox"/> PHYSICAL: In Contact with Water Emits Flammable Gas
	<input type="checkbox"/> PHYSICAL: Combustible Dust
	<input checked="" type="checkbox"/> PHYSICAL: Hazard Not Otherwise Classified (HNOC)
	<input checked="" type="checkbox"/> HEALTH: Carcinogenicity
	<input type="checkbox"/> HEALTH: Acute Toxicity
	<input type="checkbox"/> HEALTH: Reproductive Toxicity
	<input checked="" type="checkbox"/> HEALTH: Skin Corrosion or Irritation
	<input checked="" type="checkbox"/> HEALTH: Respiratory or Skin Sensitization
	<input checked="" type="checkbox"/> HEALTH: Serious Eye Damage or Eye Irritation
	<input type="checkbox"/> HEALTH: Specific Target Organ Toxicity
	<input type="checkbox"/> HEALTH: Aspiration Hazard
	<input type="checkbox"/> HEALTH: Germ Cell Mutagenicity
	<input type="checkbox"/> HEALTH: Simple Asphyxiant
	<input type="checkbox"/> HEALTH: Hazard Not Otherwise Classified (HNOC)

**Inventory Location and Quantity Required Fields:**

Chemical Location, Average Daily Amount, Maximum Daily Amount\*, Largest Container, Days on Site, Units\*. Note: Amounts are an example and will be different for each location. Maximum daily amount should be the total of all containers on site added together ie: 21 batteries that are each contain 3.5 gallons + 1 battery that contains 1.5 gallons = 75 gallons. Average daily amount is the average daily amount stored on site, not the average daily amount used.

**Inventory Location and Quantity**

Chemical Location North West Shed	Average Daily Amount 70	Maximum Daily Amount 75	Units <input checked="" type="radio"/> gallons <input type="radio"/> cubic feet <input type="radio"/> pounds <input type="radio"/> tons
Chemical Location Confidential EPCRA <input type="radio"/> Yes <input type="radio"/> No	Largest Container 3.5	Annual Waste Amount	
Map # (Optional)	Grid # (Optional)	Days on Site 365	

All amounts should be calculated and reported in gallons as indicated in section II A.

**Inventory Storage Information Required Fields:**

Inventory Storage Information\*, Storage Pressure, Storage Temperature

**Inventory Storage Information**

<input type="checkbox"/> Aboveground Tank	<input type="checkbox"/> Can	<input type="checkbox"/> Box	<input type="checkbox"/> Tank Truck, Tank Wagon
<input type="checkbox"/> Underground Tank	<input type="checkbox"/> Carboy	<input type="checkbox"/> Cylinder	<input type="checkbox"/> Tank Car, Rail Car
<input type="checkbox"/> Tank Inside Building	<input type="checkbox"/> Silo	<input type="checkbox"/> Glass Bottle	<input checked="" type="checkbox"/> Other
<input type="checkbox"/> Steel Drum	<input type="checkbox"/> Fiber Drum	<input type="checkbox"/> Plastic Bottle	battery container
<input type="checkbox"/> Plastic/Non-Metallic Drum	<input type="checkbox"/> Bag	<input type="checkbox"/> Tote Bin	

Storage Pressure:  Ambient  Above Ambient  Below Ambient

Storage Temperature:  Ambient  Above Ambient  Below Ambient  Cryogenic

**Mixture Components:**

Hazardous Component Name, CAS Number (If available), % by Weight, EHS, Additional Mixture Components (If necessary). Note: Refer to Safety Data Sheet Section 3 for this information. % by weight should be reported as the highest percent listed if a range is shown. It is acceptable for the weight to add up to more than 100%.

**Mixture Components**

Hazardous Component Name	CAS Number	% by Weight	EHS
Hydrogen Absorbing Alloy		40.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Nickel-Cobalt-Zinc oxide		25.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Nickel	7440-02-0	15.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Iron	7439-89-6	40.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Potassium Hydroxide	1310-58-3	15.00	<input type="radio"/> Yes <input checked="" type="radio"/> No

Additional Mixture Components  
 Sodium Hydroxide 1310-73-2 0-15%  
 Lithium Hydroxide 1310-65-2 0-15%  
 Carbon Black 1333-86-4 0-1%

(Full inventory page on next page)

## Full Inventory with Required Fields Highlighted – NiMH Liquid

Discard Save Cancel

**Chemical Identification and Physical Properties**

Chemical Name Nickel-Metal Hydride "NiMH" battery CERS Chemical Library ID  
-

Common Name Nickel-Metal Hydride "NiMH" battery (large battery cells) CAS Number  US EPA SRS ID

Physical State  Solid  Liquid  Gas Hazardous Material Type  Pure  Mixture  Waste Trade Secret  Yes  No

**Chemical Hazard Classification**

EHS  Yes  No Fire Code Hazard Classes (by priority)  
Corrosive  Toxic  DOT Hazard Class  9 - Misc. Hazardous Materials

Radioactive  Yes  No State Waste Code  Lookup Code [Lookup Code](#)

Curies

**Federal Hazard Categories**

Fire ( Obsolete )  Reactive ( Obsolete )  Pressure Release ( Obsolete )  Acute Health ( Obsolete )  Chronic Health ( Obsolete )

PHYSICAL: Flammable  PHYSICAL: Gas Under Pressure  PHYSICAL: Explosive  PHYSICAL: Self-heating  PHYSICAL: Pyrophoric  PHYSICAL: Oxidizer  PHYSICAL: Organic Peroxide  PHYSICAL: Self-reactive  PHYSICAL: Pyrophoric Gas  PHYSICAL: Corrosive to Metal  PHYSICAL: in Contact with Water Emits Flammable Gas  PHYSICAL: Combustible Dust  PHYSICAL: Hazard Not Otherwise Classified (HNOC)  HEALTH: Carcinogenicity  HEALTH: Acute Toxicity  HEALTH: Reproductive Toxicity  HEALTH: Skin Corrosion or Irritation  HEALTH: Respiratory or Skin Sensitization  HEALTH: Serious Eye Damage or Eye Irritation  HEALTH: Specific Target Organ Toxicity  HEALTH: Aspiration Hazard  HEALTH: Germ Cell Mutagenicity  HEALTH: Simple Asphyxiant  HEALTH: Hazard Not Otherwise Classified (HNOC)

**Inventory Location and Quantity**

Chemical Location North West Shed Average Daily Amount  70  75 Maximum Daily Amount   Units  gallons  cubic feet  pounds  tons

Chemical Location Confidential EPCRA  Yes  No Largest Container  3.5  Annual Waste Amount

Map # (Optional)  Grid # (Optional)  Days on Site  365

**Inventory Storage Information**

Aboveground Tank  Can  Box  Tank Truck, Tank Wagon  Underground Tank  Carboy  Cylinder  Tank Car, Rail Car  Tank Inside Building  Silo  Glass Bottle  Other  Steel Drum  Fiber Drum  Plastic Bottle  battery container  Plastic/Non-Metallic Drum  Bag  Tote Bin

Storage Pressure  Ambient  Above Ambient  Below Ambient Storage Temperature  Ambient  Above Ambient  Below Ambient  Cryogenic

**Mixture Components**

Hazardous Component Name	CAS Number	% by Weight	EHS
Hydrogen Absorbing Alloy		40.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Nickel-Cobalt-Zinc oxide		25.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Nickel	7440-02-0	15.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Iron	7439-89-6	40.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Potassium Hydroxide	1310-58-3	15.00	<input type="radio"/> Yes <input checked="" type="radio"/> No

Additional Mixture Components  Sodium Hydroxide 1310-73-2 0-15%  Lithium Hydroxide 1310-65-2 0-15%  Carbon Black 1333-86-4 0-1%

## A. Solid Example: Chemical Inventory Page for Lithium Ion (Li-ion) batteries

The following inventory sheet was created as a guidance document and will not be representative of all Lithium Ion (Li-ion) or all solid batteries. Always consult the SDS for your specific product to ensure chemical components and hazards are correct. Refer to the flow chart to determine if your batteries are reportable. An asterisk (\*) below indicates a required field in CERS. Please note that your CUPA may require more than the minimum required fields. Always fill out the inventory pages as completely as possible.

### Chemical Identification and Physical Properties Required Fields:

Chemical Name, Common Name\*, Physical State\*, Hazardous Material Type, Trade Secret. Note: For the Physical state, if battery does not contain liquid electrolyte, check “solid” and report the amounts in pounds.

Chemical Identification and Physical Properties			
Chemical Name	<input type="text" value="Lithium-Ion (li-ion)"/>		CERS Chemical Library ID
Common Name	<input type="text" value="Lithium-Ion Battery"/>		US EPA SRS ID
	CAS Number	<input type="text"/>	<input type="text"/>
Physical State	Hazardous Material Type		Trade Secret
<input checked="" type="radio"/> Solid <input type="radio"/> Liquid <input type="radio"/> Gas	<input type="radio"/> Pure <input checked="" type="radio"/> Mixture <input type="radio"/> Waste		<input type="radio"/> Yes <input checked="" type="radio"/> No

### Chemical Hazard Classification Required Fields:

EHS\*, Radioactive, Fire Code Hazard Class (If available), DOT Hazard Class (If available), 24 Federal Hazard Categories. Note: Ensure 5 (Obsolete) Federal Hazard Categories on the left are unchecked if they are visible to you.

Chemical Hazard Classification		
EHS	Fire Code Hazard Classes (by priority)	DOT Hazard Class
<input type="radio"/> Yes <input checked="" type="radio"/> No	<input type="text" value="Toxic"/>	<input type="text" value="9 - Misc. Hazardous Materials"/>
Radioactive	<input type="text"/>	State Waste Code
<input type="radio"/> Yes <input checked="" type="radio"/> No	<input type="text"/>	<input type="text"/>
Curies	<a href="#">View/Edit Additional Firecodes</a>	<a href="#">Lookup Code</a>
<input type="text"/>		
Federal Hazard Categories		
<input checked="" type="checkbox"/> PHYSICAL: Flammable		
<input type="checkbox"/> PHYSICAL: Gas Under Pressure		
<input checked="" type="checkbox"/> PHYSICAL: Explosive		
<input type="checkbox"/> PHYSICAL: Self-heating		
<input type="checkbox"/> PHYSICAL: Pyrophoric		
<input type="checkbox"/> PHYSICAL: Oxidizer		
<input type="checkbox"/> PHYSICAL: Organic Peroxide		
<input type="checkbox"/> PHYSICAL: Self-reactive		
<input type="checkbox"/> PHYSICAL: Pyrophoric Gas		
<input type="checkbox"/> PHYSICAL: Corrosive to Metal		
<input type="checkbox"/> PHYSICAL: In Contact with Water Emits Flammable Gas		
<input type="checkbox"/> PHYSICAL: Combustible Dust		
<input type="checkbox"/> PHYSICAL: Hazard Not Otherwise Classified (HNOC)		
<input type="checkbox"/> HEALTH: Carcinogenicity		
<input type="checkbox"/> HEALTH: Acute Toxicity		
<input type="checkbox"/> HEALTH: Reproductive Toxicity		
<input checked="" type="checkbox"/> HEALTH: Skin Corrosion or Irritation		
<input checked="" type="checkbox"/> HEALTH: Respiratory or Skin Sensitization		
<input checked="" type="checkbox"/> HEALTH: Serious Eye Damage or Eye Irritation		
<input type="checkbox"/> HEALTH: Specific Target Organ Toxicity		
<input type="checkbox"/> HEALTH: Aspiration Hazard		
<input type="checkbox"/> HEALTH: Germ Cell Mutagenicity		
<input type="checkbox"/> HEALTH: Simple Asphyxiant		
<input type="checkbox"/> HEALTH: Hazard Not Otherwise Classified (HNOC)		

**Inventory Location and Quantity Required Fields:**

Chemical Location, Average Daily Amount, Maximum Daily Amount\*, Largest Container, Days on Site, Units\*. Note: Amounts are an example and will be different for each location. Maximum daily amount should be the total of all containers on site added together (ex. 110 batteries that contain 5 lbs of hazardous materials each = 550 pounds). Average daily amount is the average daily amount stored on site, not the average daily amount used.

**Inventory Location and Quantity**

Chemical Location Battery rack	Average Daily Amount 500	Maximum Daily Amount 550	Units <input type="radio"/> gallons <input type="radio"/> cubic feet <input checked="" type="radio"/> pounds <input type="radio"/> tons
Chemical Location Confidential EPCRA <input type="radio"/> Yes <input checked="" type="radio"/> No	Largest Container 5	Annual Waste Amount	
Map # (Optional)	Grid # (Optional)	Days on Site	

**Inventory Storage Information Required Fields:**

Inventory Storage Information\*, Storage Pressure, Storage Temperature

**Inventory Storage Information**

<input type="checkbox"/> Aboveground Tank	<input type="checkbox"/> Can	<input type="checkbox"/> Box	<input type="checkbox"/> Tank Truck, Tank Wagon
<input type="checkbox"/> Underground Tank	<input type="checkbox"/> Carboy	<input type="checkbox"/> Cylinder	<input type="checkbox"/> Tank Car, Rail Car
<input type="checkbox"/> Tank Inside Building	<input type="checkbox"/> Silo	<input type="checkbox"/> Glass Bottle	<input checked="" type="checkbox"/> Other
<input type="checkbox"/> Steel Drum	<input type="checkbox"/> Fiber Drum	<input type="checkbox"/> Plastic Bottle	battery
<input type="checkbox"/> Plastic/Non-Metallic Drum	<input type="checkbox"/> Bag	<input type="checkbox"/> Tote Bin	

Storage Pressure:  Ambient  Above Ambient  Below Ambient

Storage Temperature:  Ambient  Above Ambient  Below Ambient  Cryogenic

**Mixture Components:**

Hazardous Component Name, CAS Number (If Available), % by Weight, EHS, Additional Mixture Components (If necessary). Note: Refer to Safety Data Sheet Section 3 for this information. The percent by weight should be reported as the highest percent listed if a range is shown. It is acceptable for the weight to add up to more than 100%.

**Mixture Components**

Hazardous Component Name	CAS Number	% by Weight	EHS	Additional Mixture Components
Lithium Cobalt Oxide	12190-79-3	35	<input type="radio"/> Yes <input checked="" type="radio"/> No	Organic Carbonates - 10% Lithium Salts - 6% Biphenyl - 92-52-4 - .3%
Carbon, various forms	7440-44-0	30	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Polymer Binders		1	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Copper	7440-50-8	15	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Aluminum	7429-90-5	10	<input type="radio"/> Yes <input checked="" type="radio"/> No	

**Full Inventory with Required Fields Highlighted - Li-Ion Solid**  
(Next page)

## Full Inventory with Required Fields Highlighted - Li-Ion Solid

**Chemical Identification and Physical Properties**

Chemical Name: Lithium-Ion (Li-ion) CERS Chemical Library ID: -

Common Name: Lithium-Ion Battery CAS Number:  US EPA SRS ID:

Physical State:  Solid  Liquid  Gas Hazardous Material Type:  Pure  Mixture  Waste Trade Secret:  Yes  No

**Chemical Hazard Classification**

EHS:  Yes  No

Radioactive:  Yes  No

Curies:

Fire Code Hazard Classes (by priority): Toxic

DOT Hazard Class: 9 - Misc. Hazardous Materials

State Waste Code:  [Lookup Code](#)

[View/Edit Additional Firecodes](#)

**Federal Hazard Categories**

- PHYSICAL: Flammable
- PHYSICAL: Gas Under Pressure
- PHYSICAL: Explosive
- PHYSICAL: Self-heating
- PHYSICAL: Pyrophoric
- PHYSICAL: Oxidizer
- PHYSICAL: Organic Peroxide
- PHYSICAL: Self-reactive
- PHYSICAL: Pyrophoric Gas
- PHYSICAL: Corrosive to Metal
- PHYSICAL: In Contact with Water Emits Flammable Gas
- PHYSICAL: Combustible Dust
- PHYSICAL: Hazard Not Otherwise Classified (HNOC)
- HEALTH: Carcinogenicity
- HEALTH: Acute Toxicity
- HEALTH: Reproductive Toxicity
- HEALTH: Skin Corrosion or Irritation
- HEALTH: Respiratory or Skin Sensitization
- HEALTH: Serious Eye Damage or Eye Irritation
- HEALTH: Specific Target Organ Toxicity
- HEALTH: Aspiration Hazard
- HEALTH: Germ Cell Mutagenicity
- HEALTH: Simple Asphyxiant
- HEALTH: Hazard Not Otherwise Classified (HNOC)

**Inventory Location and Quantity**

Chemical Location: Battery rack Average Daily Amount: 500 Maximum Daily Amount: 550 Units:  gallons  cubic feet  pounds  tons

Chemical Location Confidential EPCRA:  Yes  No Largest Container: 5 Annual Waste Amount:

Map # (Optional):  Grid # (Optional):  Days on Site: 365

**Inventory Storage Information**

Aboveground Tank  Can  Box  Tank Truck, Tank Wagon

Underground Tank  Carboy  Cylinder  Tank Car, Rail Car

Tank Inside Building  Silo  Glass Bottle  Other

Steel Drum  Fiber Drum  Plastic Bottle

Plastic/Non-Metallic Drum  Bag  Tote Bin

Storage Pressure:  Ambient  Above Ambient  Below Ambient Storage Temperature:  Ambient  Above Ambient  Below Ambient  Cryogenic

**Mixture Components**

Hazardous Component Name	CAS Number	% by Weight	EHS
Lithium Cobalt Oxide	12190-79-3	35.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Carbon, various forms	7440-44-0	30.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Polymer Binders		1.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Copper	7440-50-8	15.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Aluminum	7429-90-5	10.00	<input type="radio"/> Yes <input checked="" type="radio"/> No

Additional Mixture Components: Organic Carbonates - 10%, Lithium Salts - 6%, Biphenyl -92-52-4 - 0.3%

## B. Sample Chemical Inventory Page for Nickel Cadmium Batteries

**Chemical Identification and Physical Properties**

Chemical Name  
 CERS Chemical Library ID  
 -

Common Name  
 CAS Number

US EPA SRS ID

Physical State  
 Solid  Liquid  Gas

Hazardous Material Type  
 Pure  Mixture  Waste

Trade Secret  
 Yes  No

**Chemical Hazard Classification**

EHS  
 Yes  No

Radioactive  
 Yes  No

Curies

Fire Code Hazard Classes (by priority)  
  
  
  
[View/Edit Additional Firecodes](#)

DOT Hazard Class

State Waste Code  
 [Lookup Code](#)

Federal Hazard Categories

- PHYSICAL: Flammable
- PHYSICAL: Gas Under Pressure
- PHYSICAL: Explosive
- PHYSICAL: Self-heating
- PHYSICAL: Pyrophoric
- PHYSICAL: Oxidizer
- PHYSICAL: Organic Peroxide
- PHYSICAL: Self-reactive
- PHYSICAL: Pyrophoric Gas
- PHYSICAL: Corrosive to Metal
- PHYSICAL: In Contact with Water Emits Flammable Gas
- PHYSICAL: Combustible Dust
- PHYSICAL: Hazard Not Otherwise Classified (HNOC)
- HEALTH: Carcinogenicity
- HEALTH: Acute Toxicity
- HEALTH: Reproductive Toxicity
- HEALTH: Skin Corrosion or Irritation
- HEALTH: Respiratory or Skin Sensitization
- HEALTH: Serious Eye Damage or Eye Irritation
- HEALTH: Specific Target Organ Toxicity
- HEALTH: Aspiration Hazard
- HEALTH: Germ Cell Mutagenicity
- HEALTH: Simple Asphyxiant
- HEALTH: Hazard Not Otherwise Classified (HNOC)

**Inventory Location and Quantity**

Chemical Location  
 Average Daily Amount  
 Maximum Daily Amount

Chemical Location Confidential EPCRA  
 Yes  No Largest Container  
 Annual Waste Amount

Map # (Optional)  Grid # (Optional)  Days on Site

Units  
 gallons  
 cubic feet  
 pounds  
 tons

**Inventory Storage Information**

Aboveground Tank  Can  Box  Tank Truck, Tank Wagon  
 Underground Tank  Carboy  Cylinder  Tank Car, Rail Car  
 Tank Inside Building  Silo  Glass Bottle  Other  
 Steel Drum  Fiber Drum  Plastic Bottle   
 Plastic/Non-Metallic Drum  Bag  Tote Bin

Storage Pressure  
 Ambient  Above Ambient  Below Ambient

Storage Temperature  
 Ambient  Above Ambient  Below Ambient  Cryogenic

**Mixture Components**

Hazardous Component Name	CAS Number	% by Weight	EHS
Alkaline Electrolyte		40.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Nickel	7440-02-0	20.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Active Nickel	12054-48-7	15.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Active Cadmium (Cadmium Hydroxide)	21041-95-2	12.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Cobalt	21041-93-0	2.00	<input type="radio"/> Yes <input checked="" type="radio"/> No

Additional Mixture Components

## C. Sample Chemical Inventory for Lead Acid Batteries

### Chemical Identification and Physical Properties

Chemical Name Lead Acid Batteries	CERS Chemical Library ID -
Common Name Lead Acid Batteries	CAS Number -
	US EPA SRS ID -
Physical State <input type="radio"/> Solid <input checked="" type="radio"/> Liquid <input type="radio"/> Gas	Hazardous Material Type <input type="radio"/> Pure <input checked="" type="radio"/> Mixture <input type="radio"/> Waste
	Trade Secret <input type="radio"/> Yes <input checked="" type="radio"/> No

### Chemical Hazard Classification

EHS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fire Code Hazard Classes (by priority) Corrosive	DOT Hazard Class <input checked="" type="checkbox"/> 8 - Corrosives (Liquids and Solids)
Radioactive <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<a href="#">View/Edit Additional Firecodes</a>	State Waste Code <input checked="" type="checkbox"/> 792 <a href="#">Lookup Code</a>
Curies -	Federal Hazard Categories <input type="checkbox"/> Fire ( Obsolete ) <input type="checkbox"/> Reactive ( Obsolete ) <input type="checkbox"/> Pressure Release ( Obsolete ) <input type="checkbox"/> Acute Health ( Obsolete ) <input type="checkbox"/> Chronic Health ( Obsolete )	Federal Hazard Categories <input type="checkbox"/> PHYSICAL: Flammable <input type="checkbox"/> PHYSICAL: Gas Under Pressure <input type="checkbox"/> PHYSICAL: Explosive <input type="checkbox"/> PHYSICAL: Self-heating <input type="checkbox"/> PHYSICAL: Pyrophoric <input type="checkbox"/> PHYSICAL: Oxidizer <input type="checkbox"/> PHYSICAL: Organic Peroxide <input type="checkbox"/> PHYSICAL: Self-reactive <input type="checkbox"/> PHYSICAL: Pyrophoric Gas <input checked="" type="checkbox"/> PHYSICAL: Corrosive to Metal <input type="checkbox"/> PHYSICAL: In Contact with Water Emits Flammable Gas <input type="checkbox"/> PHYSICAL: Combustible Dust <input type="checkbox"/> PHYSICAL: Hazard Not Otherwise Classified (HNOC) <input type="checkbox"/> HEALTH: Carcinogenicity <input type="checkbox"/> HEALTH: Acute Toxicity <input type="checkbox"/> HEALTH: Reproductive Toxicity <input checked="" type="checkbox"/> HEALTH: Skin Corrosion or Irritation <input type="checkbox"/> HEALTH: Respiratory or Skin Sensitization <input checked="" type="checkbox"/> HEALTH: Serious Eye Damage or Eye Irritation <input type="checkbox"/> HEALTH: Specific Target Organ Toxicity <input type="checkbox"/> HEALTH: Aspiration Hazard <input type="checkbox"/> HEALTH: Germ Cell Mutagenicity <input type="checkbox"/> HEALTH: Simple Asphyxiant <input type="checkbox"/> HEALTH: Hazard Not Otherwise Classified (HNOC)

### Inventory Location and Quantity

Chemical Location Shop area	Average Daily Amount <input checked="" type="checkbox"/> 250	Maximum Daily Amount <input checked="" type="checkbox"/> 500	Units <input checked="" type="radio"/> gallons <input type="radio"/> cubic feet <input type="radio"/> pounds <input type="radio"/> tons
Chemical Location Confidential EPCRA <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Largest Container 5	Annual Waste Amount <input checked="" type="checkbox"/> -	
Map # (Optional) -	Grid # (Optional) -	Days on Site 365	

### Inventory Storage Information

<input type="checkbox"/> Aboveground Tank	<input type="checkbox"/> Can	<input type="checkbox"/> Box	<input type="checkbox"/> Tank Truck, Tank Wagon
<input type="checkbox"/> Underground Tank	<input type="checkbox"/> Carboy	<input type="checkbox"/> Cylinder	<input type="checkbox"/> Tank Car, Rail Car
<input type="checkbox"/> Tank Inside Building	<input type="checkbox"/> Silo	<input type="checkbox"/> Glass Bottle	<input checked="" type="checkbox"/> Other
<input type="checkbox"/> Steel Drum	<input type="checkbox"/> Fiber Drum	<input type="checkbox"/> Plastic Bottle	Battery
<input type="checkbox"/> Plastic/Non-Metallic Drum	<input type="checkbox"/> Bag	<input type="checkbox"/> Tote Bin	
Storage Pressure <input checked="" type="radio"/> Ambient <input type="radio"/> Above Ambient <input type="radio"/> Below Ambient	Storage Temperature <input checked="" type="radio"/> Ambient <input type="radio"/> Above Ambient <input type="radio"/> Below Ambient <input type="radio"/> Cryogenic		

### Mixture Components

Hazardous Component Name	CAS Number	% by Weight <input checked="" type="checkbox"/>	EHS	Additional Mixture Components <input checked="" type="checkbox"/>
Sulfuric Acid	7664-93-9	40.00	<input checked="" type="radio"/> Yes <input type="radio"/> No	
			<input type="radio"/> Yes <input type="radio"/> No	
			<input type="radio"/> Yes <input type="radio"/> No	
			<input type="radio"/> Yes <input type="radio"/> No	



## D. Sample Chemical Inventory for Alkaline Batteries

### Chemical Identification and Physical Properties

Chemical Name Alkaline Batteries (Potassium Hydroxide electrolyte)	CERS Chemical Library ID -
Common Name Alkaline Batteries	CAS Number <input type="text"/>
US EPA SRS ID <input type="text"/>	

Physical State:  Solid  Liquid  Gas

Hazardous Material Type:  Pure  Mixture  Waste

Trade Secret:  Yes  No

### Chemical Hazard Classification

EHS:  Yes  No

Radioactive:  Yes  No

Curies:

Fire Code Hazard Classes (by priority):  
Corrosive

DOT Hazard Class: 9 - Misc. Hazardous Materials

State Waste Code:  [Lookup Code](#)

[View/Edit Additional Firecodes](#)

<p>Federal Hazard Categories</p> <p><input type="checkbox"/> Fire ( Obsolete )</p> <p><input type="checkbox"/> Reactive ( Obsolete )</p> <p><input type="checkbox"/> Pressure Release ( Obsolete )</p> <p><input type="checkbox"/> Acute Health ( Obsolete )</p> <p><input type="checkbox"/> Chronic Health ( Obsolete )</p>	<p>Federal Hazard Categories</p> <p><input type="checkbox"/> PHYSICAL: Flammable</p> <p><input type="checkbox"/> PHYSICAL: Gas Under Pressure</p> <p><input type="checkbox"/> PHYSICAL: Explosive</p> <p><input type="checkbox"/> PHYSICAL: Self-heating</p> <p><input type="checkbox"/> PHYSICAL: Pyrophoric</p> <p><input type="checkbox"/> PHYSICAL: Oxidizer</p> <p><input type="checkbox"/> PHYSICAL: Organic Peroxide</p> <p><input type="checkbox"/> PHYSICAL: Self-reactive</p> <p><input type="checkbox"/> PHYSICAL: Pyrophoric Gas</p> <p><input checked="" type="checkbox"/> PHYSICAL: Corrosive to Metal</p> <p><input type="checkbox"/> PHYSICAL: In Contact with Water Emits Flammable Gas</p> <p><input type="checkbox"/> PHYSICAL: Combustible Dust</p> <p><input type="checkbox"/> PHYSICAL: Hazard Not Otherwise Classified (HNOC)</p> <p><input type="checkbox"/> HEALTH: Carcinogenicity</p> <p><input type="checkbox"/> HEALTH: Acute Toxicity</p> <p><input type="checkbox"/> HEALTH: Reproductive Toxicity</p> <p><input checked="" type="checkbox"/> HEALTH: Skin Corrosion or Irritation</p> <p><input checked="" type="checkbox"/> HEALTH: Respiratory or Skin Sensitization</p> <p><input checked="" type="checkbox"/> HEALTH: Serious Eye Damage or Eye Irritation</p> <p><input type="checkbox"/> HEALTH: Specific Target Organ Toxicity</p> <p><input type="checkbox"/> HEALTH: Aspiration Hazard</p> <p><input type="checkbox"/> HEALTH: Germ Cell Mutagenicity</p> <p><input type="checkbox"/> HEALTH: Simple Asphyxiant</p> <p><input checked="" type="checkbox"/> HEALTH: Hazard Not Otherwise Classified (HNOC)</p>
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### Inventory Location and Quantity

Chemical Location Loading Dock Storage Area	Average Daily Amount 27	Maximum Daily Amount 55	Units <input checked="" type="radio"/> gallons <input type="radio"/> cubic feet <input type="radio"/> pounds <input type="radio"/> tons
Chemical Location Confidential EPCRA <input type="radio"/> Yes <input checked="" type="radio"/> No	Largest Container 0.005	Annual Waste Amount <input type="text"/>	
Map # (Optional) <input type="text"/>	Grid # (Optional) <input type="text"/>	Days on Site 365	

### Inventory Storage Information

Aboveground Tank     Can     Box     Tank Truck, Tank Wagon  
 Underground Tank     Carboy     Cylinder     Tank Car, Rail Car  
 Tank Inside Building     Silo     Glass Bottle     Other  
 Steel Drum     Fiber Drum     Plastic Bottle      
 Plastic/Non-Metallic Drum     Bag     Tote Bin

Storage Pressure:  Ambient  Above Ambient  Below Ambient

Storage Temperature:  Ambient  Above Ambient  Below Ambient  Cryogenic

### Mixture Components

Hazardous Component Name	CAS Number	% by Weight	EHS
Graphite	7782-42-5	6.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Manganese Dioxide	1313-13-9	45.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Potassium Hydroxide	1310-58-3	8.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
Zinc	7440-66-6	25.00	<input type="radio"/> Yes <input checked="" type="radio"/> No
			<input type="radio"/> Yes <input type="radio"/> No

Additional Mixture Components:

### Additional Chemical/Material Description

Additional Chemical Description Information

Non-Hazardous Components: Steel (iron CAS# 7439-89-6) Water, Paper, Plastic and Other

Note: 200 batteries per gallon of potassium hydroxide or 11,000 batteries = 55 gallons

## Fire Code

This guidance document is intended to standardize the reporting requirements for batteries as required in the Hazardous Materials Business Plan Program (HMBP) of the California Health & Safety Code. For fire-based Unified Program Agencies that also enforce the California Fire Code, it is important to note that recent changes to the Fire Code impact the quantity of batteries allowed in an occupancy which may have an effect on the reporting of these hazardous substances.

The growth and diversity of energy storage systems (ESS), along with recent fire incidents resulting in injuries to firefighters, has necessitated the development and update of fire-life safety codes to establish a minimum set of criteria to safeguard these systems. Both the California Fire Code (Chapter 12 - *Energy Systems*) and NFPA 855 (*Standard for the Installation of Stationary Energy Storage Systems*), establishes the minimum safety criteria required to mitigate the hazards associated with battery energy systems as it relates to their design, installation, operation, and maintenance. Whereas previous fire codes used the battery's weight or volume of electrolyte to determine code applicability; starting with the 2019 California Fire Code, the energy capacity of the battery system is now used for this purpose with battery storage systems capacities exceeding the Threshold Quantities listed below required to comply with additional fire code requirements.

**2019 California Fire Code Table 1206.2  
Battery Storage System Threshold Quantities**

<b>Battery Technology</b>	<b>Capacity</b>
Flow batteries	20 kWh
Lead acid, all types	70 kWh
Lithium, all types	20 kWh
Nickel cadmium (Ni-Cd)	70 kWh
Sodium, all types	20 kWh
Other battery technologies	10 kWh

### **Analysis of the Health and Safety Code:**

The intent of the HSC 25500 is to provide information about hazardous materials to first responders. However, items that are not specifically contained in HSC [25501\(n\)](#) may not be reportable without an ordinance according to paragraph 3 of that section. The battery work group for the TAG gathered and reviewed a significant amount of information about many different types of batteries in use and available on the market. It was found that most batteries contain hazardous materials in liquid, solid or both forms. It is also determined that these hazardous materials may “pose a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment” (HSC 25501(n)). It would seem they fit the definition of a reportable hazardous material. In some cases, however, these batteries have been excluded from the list of hazardous materials in 25501(n)(2) due to being listed by the manufacturer as an article.

This group considered several different options that could resolve this issue and concluded that the best option may be that the TAG provide guidance that batteries are not considered an “article” for the purposes of HMBP reporting.