



POLLUTION PREVENTION PLAN

COLLIERVILLE POWERHOUSE SUMP

**NORTH FORK STANISLAUS RIVER HYDROELECTRIC DEVELOPMENT PROJECT
(FERC PROJECT NO. 2409-CA)**

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SECTION 1 INTRODUCTION

Similar to Best Management Practices (BMPs), Pollution Prevention Plans (PPPs) (PLAN) are designed to prevent or control the discharge of pollutants. They may include a schedule of activities, prohibition of practices, maintenance procedures, or other management practices. A PLAN is a written document that describes the operator's activities to comply with the requirements in the General Permit. The PLAN is intended to evaluate potential pollutant sources at the site and select and implement appropriate measures designed to prevent or control the discharge of pollutants.

According to Provision VII.3.e of the State Water Resources Control Board's (State Water Board) Order No. 2006-0008-DWQ, utility companies covered by the General Permit are required to implement a PLAN whenever there is a discharge. The PLAN shall include, to the extent possible, at least the following items:

- i. Provisions for Scheduled Discharges, Unscheduled Discharges, Reservoir Discharges (if any), and Emergency Operation Discharges.
- ii. Pollution Prevention Team. Each PLAN shall identify a specific individual or individuals within the utility's organization as members of a Pollution Prevention Team that are responsible for developing the PLAN and assisting the utility or plant manager in its implementation, maintenance, and revision. The PLAN shall clearly identify the responsibilities of the team and shall address all aspects of the utility's PLAN.
- iii. Description of Potential Pollutant Sources. Each PLAN shall provide a description of potential sources that may add significant amounts of pollutants to discharges. Each PLAN shall identify all activities and significant materials that may potentially be significant pollutant sources. Each PLAN shall include at a minimum:
 - a) Drainage Map. Provide a map showing the essential features of the distribution system for the service area within a specific Regional Water Board boundary and showing the corresponding surface waters to which water may be discharged.
 - b) Inventory of Exposed Materials. Include an inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water from 3 years prior to the submission of the NOI for coverage under this General Permit and the present; method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff from 3 years prior to submission of the NOI for coverage under this General Permit and the present; the location and description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.

*Pollution Prevention Plan
Collierville Powerhouse Sump
North Fork Stanislaus River Hydroelectric Development Project
Northern California Power Agency*

- c) Spills and Leaks. Include a list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at areas exposed to precipitation or that otherwise enter the discharge stream from 3 years prior to the date of submission of the NOI to be covered under the terms of this General Permit. The list shall be updated as appropriate during the term of this General Permit.
 - d) Risk Identification and Summary of Potential Pollutant Sources. Include a narrative description of the potential pollutant sources, such as from significant dust or particulate generating processes. The description shall specifically list any significant potential source of pollutants at the site and, for each potential source; any pollutant or pollutant's parameter (for example oil and grease, etc.) of concern shall be identified.
- iv. Measures and Controls. Each discharger covered by this General Permit shall develop a description of PPP's appropriate for the site(s), and implement such controls. The appropriateness and priorities of PPP's in a PLAN must reflect identified potential sources of pollutants at the site. Also, the Discharger should discuss the advantages and limitations of the PPP. If relevant, include a structural diagram. The description of wastewater management controls shall address the following minimum components, including a schedule for implementing such controls:
- a) Good Housekeeping. Maintain areas that may contribute pollutants to discharges so that they are kept clean and orderly. Store and contain liquid materials in such a manner that if the container is ruptured, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters, or groundwater.
 - b) Preventive Maintenance. Inspect and maintain wastewater management devices as well as inspect and test site equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensure appropriate maintenance of such equipment and systems.
 - c) Spill Prevention and Response Procedures. Identify areas where potential spills, which can contribute pollutants to discharge, can occur and their accompanying drainage points. Specify material handling procedures, storage requirements, and use of equipment. Make accessible to the appropriate personnel the procedures for cleaning up spills identified in the PLAN. Make accessible the necessary equipment to implement a clean up. Note that if the spilled material is hazardous, then the clean up materials used are also hazardous and should be disposed of properly. For large spills, a private spill clean up company or Hazmat may be necessary.
 - d) Inspections. Identify qualified personnel, by name or job title, to inspect designated equipment and areas of the site, and ensure that appropriate actions are taken in response to the inspections. Maintain records of inspections. Inventory and inspect each discharge point during dry weather.

*Pollution Prevention Plan
Collierville Powerhouse Sump
North Fork Stanislaus River Hydroelectric Development Project
Northern California Power Agency*

- e) Employee Training. Train employees to implement activities identified in the PLAN. Address topics such as spill response, good housekeeping, and material management practices. Identify how often training will take place.
 - f) Record Keeping and Internal Reporting Procedures. Federal regulation requires that any oil spill into a water body be reported to the National Response Center at (800) 424-8802 (24 hours). The Discharger shall report spills to the appropriate local agency, such as the fire department, to assist in the clean up. Provide a description of incidents (such as spills or other discharges), along with other information describing the quality and quantity of the discharges. Document patterns in time of occurrence, mode of dumping, responsible parties, date and time of incident, weather conditions, duration and cause of spill/leak/discharge, response procedures, resulting environmental problems and persons notified. Document inspections and maintenance activities and maintain records of such activities. Include the date and time the inspection was performed, the name of the inspector, and the items inspected. If problems are noted, include the corrective action required and the date the action was taken.
 - g) Sediment and Erosion Control. Identify areas that, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.
 - h) Management of Runoff. Include a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those that control the generation or source(s) of pollutants) used to divert, infiltrate, reuse, or otherwise manage runoff in a manner that reduces pollutants in discharges from the site. The PLAN shall provide measures that the Discharger determines to be reasonable and appropriate measures.
- v. Comprehensive Site Compliance Evaluation. Qualified personnel shall conduct site compliance evaluations upon each discharge event. Such evaluations shall provide:
- a) The Discharger shall visually inspect for evidence of, or the potential for, pollutants entering the receiving water(s). Evaluate measures to reduce pollutant loadings to determine whether they are adequate and properly implemented in accordance with the terms of this General Permit or whether additional control measures are needed. Ensure that structural wastewater management measures, sediment and erosion control measures, and other structural PPPs identified in the PLAN are operating correctly. Perform a visual inspection of equipment needed to implement the PLAN, such as spill response equipment.
 - b) Based on the results of the evaluation, the Discharger shall revise, as appropriate, the description of potential pollutant sources identified in the PLAN in accordance with item iii of this section (Description of Potential Pollutant Sources) and PPPs identified in the PLAN with item iv of this section (Measures and Controls) within two weeks of such evaluation and shall provide timely implementation of any changes to the PLAN.

*Pollution Prevention Plan
Collierville Powerhouse Sump
North Fork Stanislaus River Hydroelectric Development Project
Northern California Power Agency*

- c) Write and retain for 3 years, a report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the PLAN, and actions taken in accordance with item iv.b, above. Identify any incidents of noncompliance or certify that the site(s) is in compliance with the PLAN, and this General Permit. The report shall be signed in accordance with signatory requirements of this General Permit.

In accordance with Provision VI.3.f of the General Permit, additional requirements include:

- i. The PLAN shall be designed to comply with BAT/BCT and to ensure compliance with WQS.
- ii. The Discharger shall amend the PLAN whenever there is a change in construction, operation, or maintenance, when such amendment is necessary to ensure compliance with BAT/BCT and receiving water limits. The PLAN shall also be amended if it is in violation of any conditions of this General Permit or has not achieved the general objective of controlling pollutants in discharges to surface waters. The Discharger shall submit the amended PLAN to the Regional Water Board.
- iii. The PLAN and any amendments thereto shall be certified in accordance with the signatory requirements of Standard Provision B.2.

SECTION 2 GENERAL DESCRIPTION OF THE PROJECT

The Collierville Powerhouse includes two turbines with a total generating capacity of 253 MW. It is located on the Stanislaus River just upstream of New Melones Reservoir near Camp Nine in Calaveras County (Figure 1). It is owned by the Calaveras County Water District and operated by the Northern California Power Agency.

The powerhouse sump collects drainage from within the powerhouse and ancillary facilities. The two chambered powerhouse sump is an 11-foot wide, 13-foot long, and 36-foot deep concrete pit. It has an 11.5-foot high central baffle which runs from 6 inches from the bottom of the sump to El. 1081, 24 feet from the top of the chamber.

All drainage flows into the eastern most chamber of the powerhouse sump. Water from the western most chamber is pumped by 2 electric pumps, with a combined capacity of 520 gallons per minute, which discharge water into the powerhouse tailrace. The first pump is automatically started when the water elevation in the sump reaches 1,079 feet and the second pump is automatically started when the water elevation in the sump reaches 1,080 feet (1-foot from the top of the baffle and 25 feet from the top of the sump). Both pumps stop when the water level decreases from El. 1,073 feet (2 feet from the bottom of the sump).

The sump is inspected at least once per month. The oil separation chamber (i.e., eastern most chamber) is cleaned out when hand measurements indicate that there is approximately 1-foot of oily substances in the chamber. Waste oils are pumped directly from the sump into a properly licensed service truck which recycles and/or disposes of the waste at approved locations.

The effluent from the sump has been monitored every twelve months for total petroleum hydrocarbons (EPA Method 418.1, detection limit 0.05 mg/l) and oil and grease (EPA Method 413.8¹, detection limit 0.1 mg/l). If detectable levels are found, the California Regional Water Quality Control Board, Central Valley Region (Regional Water Board) is notified and no further discharges from the sump are made until approved by the Regional Water Board.

On July 19, 2006, the State Water Board adopted Order No. 2006-0008-DWQ (NPDES Permit CAG990002), General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges from Utility Vaults and Underground Structures to Surface Waters. That permit requires annual monitoring of the following parameters:

- Total petroleum hydrocarbons as gasoline (BTEX).

¹ Since 2006, EPA Method 1664A has been utilized in the analyses of oil and grease in accordance with the November, 3, 2005 approval by Erin Mustain, State Water Board.

*Pollution Prevention Plan
Collierville Powerhouse Sump
North Fork Stanislaus River Hydroelectric Development Project
Northern California Power Agency*

- Total petroleum hydrocarbons as diesel.
- Total oil and grease.
- pH.
- Total suspended solids.

There are several facilities at the Collierville Powerhouse which drain to the powerhouse sump. In addition, most of these facilities contain various volumes of hazardous materials and/or potentially environmentally damaging substances which have the potential to drain to the sump in case of a spill. A list of these facilities and their associated hazardous materials and/or environmentally damaging substances is provided below:

| Location | Material | Volume | MSDS # |
|--|-------------------------------|-----------------------|--------|
| DC System | Acid | 334 gallons | 1016A |
| Emergency Diesel System | Diesel Fuel | 500 gallons | 1004 |
| | Lubricating Oil | 3 gallons | 1012 |
| | Coolant | 8 gallons | 1003 |
| | Acid | 2 gallons | 1016 |
| Generator Upper Bearing Oil Systems | Bearing Oil | 500 gallons | 1018 |
| Generator Lower Bearing Oil Systems | Bearing Oil | 240 gallons | 1018 |
| Cooling Water System | Heated Effluent and Backflush | Variable | N/A |
| Generator/Rotor Jack Portable Hydraulic System | Hydraulic Fluid | 10 gallons | 1007 |
| Turbine/Valve Hydraulic System | Hydraulic Fluid | 1,800 gallons | 1018 |
| Turbine Guide Bearing Oil System | Lubricating Oil | 476 gallons | 1018 |
| Station Service Water System | 1% Chlorine | 5 gallons | 1002 |
| Gantry Crane | Gear Lube | 2 gallons | 1012 |
| Tailwater Depression System | Lubricating Oil | 12 gallons | 1010 |
| Air Conditioning System | Small amount of Freon | -- | N/A |
| Powerhouse Transformer | Transformer Oil | 18,600 gallons | 1017 |
| Storage/Work Areas | | Variable | N/A |
| Substation Transformer | Transformer Oil | 310 gallons | 1017 |
| Fire Control System | Ammonium Phosphate | 18 Fire Extinguishers | 1005 |
| | Carbon Dioxide | 32 Cubic Feet | 1001 |
| Collierville Switchyard | Sulfur Hexafluoride | Gas | 1019 |
| | Anderol | 1.1 gallons | 1020 |
| Powerhouse Sump | Waste Oil | Variable | 1021 |

*MSDS refers to material safety data sheets contained in Appendix A.

Each of these systems is discussed in detail below. In addition, all piping at the Collierville Powerhouse is color coded as follows: CO₂, red; water, blue; oil, yellow; and all containers are labeled appropriately.

DC System

The DC System, located in an enclosed room in the southwest corner of the Turbine Floor of the Powerhouse, provides 48-volt power for controlled voltage and 125-volt power for controlled voltage and back-up for the 48-volt system. The enclosed room is provided with an emergency eyewash station and vent.

The 2 backup systems contain 81 battery cells which utilize a total of 334 gallons of sulfuric acid.

The DC System is contained. In the case of a spill, acid would remain within the enclosed room.

Emergency Diesel System

The Emergency Diesel System is located on the west side of the Transformer Yard. The system provides backup power to the Powerhouse. The Emergency Diesel System includes a diesel fuel storage tank, a lubricating oil reservoir, a coolant reservoir and 2 batteries. The diesel fuel tank is a 500-gallon above ground tank. The oil reservoir contains 3 gallons of lubricating oil, the coolant reservoir contains 8 gallons of coolant and the batteries contain 2 gallons of sulfuric acid.

When needed, lubricating oil, coolant and battery acid are replenished from small containers brought from the Murphys warehouse. No supplies are stored on site. The diesel fuel storage tank is serviced by an independent service truck which supplies fuel on an as-needed basis.

The Emergency Diesel System is contained in a 20-foot long, 16-foot wide and 0.5-foot deep concrete area. Containment includes a drain which allows rain water trapped in the containment areas to drain into the Transformer bermed area which drains to the Powerhouse Sump.

Generator Upper Bearing Oil Systems

Two Generator Upper Bearing Oil Systems, located on the south side of Units 1 and 2 on the Generator level of the Powerhouse, provide lubrication to the upper bearings in the generators. These lubricating systems each contain 250 gallons of bearing oil (*a total of 500 gallons*).

Bearing oil is added as needed from small containers brought from the Murphys warehouse. Small quantities may be stored on-site for operational needs.

These lubricating systems are not contained. In the case of a spill, bearing oil would drain onto the concrete floor and eventually enter the Powerhouse Sump.

Generator Lower Bearing Oil Systems

The Generator Lower Bearing Oil Systems, located on the south side of Units 1 and 2 on the Turbine Level of the Powerhouse, provide lubrication to the lower bearings in the generators. These lubricating systems each contain 120 gallons of bearing oil (*a total of 240 gallons*).

Bearing oil is added as needed from small containers brought from the Murphys warehouse. Small quantities may be stored on-site for operational needs.

These lubricating systems are not contained. In the case of a spill, bearing oil would drain into the Powerhouse Sump.

Cooling Water System

The Cooling Water System supplies water to cool the generators and turbines. Located on the south side of the Turbine Level, three electric pumps with a combined capacity of 4,050 gallons per minute pump water from a sump (fed by gravity from the Powerhouse Turbine Pit) to the following systems: (1) 12 radiators, 6 located within each generator housing on the Generator Level; (2) 2 Upper Guide/Thrust Bearing Oil Heat Exchangers, located on the south outer wall of the generator housings; and (3) 2 Turbine Guide Bearing Oil Heat Exchangers located to the east of each unit on the turbine Level of the Powerhouse. Heated water is collected from each of the 3 systems and is discharged into the Tailrace at the Wheel Pits.

In addition, each of the 3 cooling water pumps includes a system to filter water from the sump. Periodically, these filters are backflushed and the backflush is discharged directly into the Tailrace through 3 small pipes located between the units.

Generator/Rotor Jack Portable Hydraulic System

The Generator/Rotor Jack Portable Hydraulic System provides for lifting the generator for maintenance. The portable unit is normally stored on the Generator Floor near one of the units. The system ties into the Jack System on the south side of the units on the Generator Level. The portable unit contains 10 gallons of hydraulic fluid.

Hydraulic fluid is added as needed from supplies brought from the Murphys warehouse. Small quantities may be stored on-site for operational needs.

This system is not contained. In the case of a spill, hydraulic fluid would drain into the Powerhouse Sump.

Turbine/Valve Hydraulic Systems

The Turbine/Valve Hydraulic Systems, one for each of the 2 units, provide hydraulic fluid from 2 master reservoirs located on the Turbine Level south of each unit to operate the needle point valves, deflector shields and spherical valves. Each system contains 900 gallons of hydraulic fluid (a total volume of 1,800 gallons).

Hydraulic fluids are replenished as needed from supplies brought from the Murphys warehouse. No supplies are stored on site.

These hydraulic systems are not contained. In the case of a spill, hydraulic fluid would drain onto the powerhouse floor and into the Powerhouse Sump.

Turbine Guide Bearing Oil Systems

The Turbine Guide Bearing Oil Systems, one for each unit, provide lubrication to the turbine guide bearings. These systems are located on the southwest side of each unit on the Turbine Level of the Powerhouse. Each system contains 238 gallons of lubricating oil (*a total of 476 gallons*).

Lubricating oil is replenished as needed from supplies brought from the Murphys warehouse. Small quantities may be stored on-site for operational needs.

The lubricating systems are not contained. In the case of a spill, lubricating oil would drain into the Powerhouse Sump.

Station Service Water System

The Station Service Water System, located on the Generator Level in the lower southwest corner of the Powerhouse, provides potable water for the Powerhouse. A 15-gallon chlorine (1% solution) storage tank is utilized in this system.

Chlorine solution is replenished as needed from supplies stored at the Murphys warehouse. No supplies are stored on site.

Gantry Crane

The Powerhouse Crane, located on the Deck Level of the Powerhouse, is used to remove large equipment. The electric-powered Gantry Crane contains a gear box and bull gears which contain 2 gallons of gear lube.

Fluids are replenished as needed from supplies brought from the Murphys warehouse.

The crane is not contained. If a spill should occur, fluid would drain onto the concrete deck and might eventually enter the Powerhouse Tailrace depending on the location of the spill.

Tailwater Depression System

The Tailwater Depression System, located on the east side of the Deck Level of the Powerhouse, includes 4 electric-powered compressors each located in an enclosure. The four compressors utilize a total of 12 gallons of lubricating oil.

Lubricating oil is added as needed from supplies brought from the Murphys warehouse. Small quantities may be stored on-site for operational needs.

The system is not contained. If a spill should occur, lubricating oil would run onto the concrete deck and into the Tailrace.

Air Conditioning System

The Control Unit for the Powerhouse Air Conditioning system is located in the east side of the Generator Level. The air conditioning system contains a small amount of Freon and is inspected at least once per month during the summer.

The system is not contained. However, in the case of a spill, Freon would evaporate.

Powerhouse Transformers

Three transformers (two active and one back-up) are located to the north of the Powerhouse in a Transformer Yard. These transformers convert Powerhouse generated power to 230 kV for transmission. Each of the transformers contains 6,200 gallons of transformer oil (a total of 18,600 gallons).

The transformers are inspected at least once per month.

Each transformer is located in a contained area. The contained area is a 19.7-foot wide, 24-foot long, 3-foot deep concrete pit with a pipe which, when manually opened, drains to the Powerhouse Sump. The total containment capacity at each transformer is about 10,640 gallons. The transformers sit on a grate over 6 inches of aggregate rock which leave about 6-inches of freeboard on the concrete containment wall.

In addition, a high pressure water system acts as fire protection should the transformers overheat. Water from a nearby tank will spray automatically onto the 2 main transformers should sensors indicate that the units are overheating. Most of the cooling water will drain into the containment area.

Storage/Work Area

The Storage/Work Area is located on the east side of the Turbine Floor. The storage area is within a fenced area with a locked gate. The work area contains various tools and machines and is normally locked.

The area is not contained. In the case of a spill, spilled material would enter the Powerhouse Sump.

Substation Transformer

The Substation Transformer is located on the west side of the Transformer yard within a fenced area. The transformer, which provides power to the substation, contains 310 gallons of transformer fluid.

Fluids are added as needed from supplies brought from the Murphys warehouse. No supplies are stored on site.

The transformer is contained within an 8-foot long, 10 foot wide concrete-lined, 8-inch deep bermed area. Containment includes a drain (normally closed) which, when opened, allows rain water trapped in the containment area to drain into the adjacent subgrade. Prior to draining, all waste oil that may be present in the containment area is removed, properly manifested and trucked off-site by a properly licensed hauler.

Fire Control System

The Collierville Powerhouse Fire Control System is composed of the following components:

| Components | Canby Dam | Generator Level | Turbine Level |
|---|-----------|-----------------|---------------|
| Chemical Fire Extinguisher (Ammonium Phosphate Base) Class 4-A: 60B:C | 2 | 9 | 7 |
| Fire Water Hose or Portable Water Pump Sprayer | 3 | 1 | 2 |
| Fire Alarm (Manual) | --- | 3 | 2 |
| Fire Watch (Automatic) | --- | 1 | 1 |
| Carbon Dioxide System | --- | 32 Cylinders | --- |

The water hose draws water from the Cooling Water Sump.

When needed, the dry chemical fire extinguishers are recharged by a company specializing in that work. Carbon dioxide cylinders are replaced from supplies brought from the Murphys warehouse as needed.

Collierville Switchyard

The Collierville Switchyard includes 4 high voltage breakers each of which contain sulfur hexafluoride gas, and 3 ounces of anderol. The sulfur hexafluoride extinguishes arcs during breaker operations and the oil is a lubricant.

The high voltage breakers are inspected at least once per month.

The system is not contained. However, should a spill occur, the sulfur hexafluoride gas would go into the atmosphere and the oil would remain in the breakers.

SECTION 3 SCHEDULED DISCHARGES

Types of Discharges that Occur

As previously stated in Section 2, the Collierville Powerhouse contains a sump which collects drainage from within the powerhouse and ancillary facilities. The two chambered powerhouse sump is an 11-foot wide, 13-foot long, and 36-foot deep concrete pit. It has an 11.5-foot high central baffle which begins 6 inches from the bottom of the sump and extends to elevation 1081, 24 feet from the top of the chamber.

Also as previously stated in Section 2, all powerhouse drainage enters the eastern most portion of the sump. Fluids from the western most portion of the sump are pumped by two electrical pumps with a combined capacity of about 520 gallons per minute (gpm) into the powerhouse tailrace (tributary to the Stanislaus River). The first pump is automatically activated when the water elevation in the sump reaches 1,079 feet and the second sump is activated when the water elevation in the sump reaches 1,080 feet (1 foot from the top of the baffle and 25 feet from the top of the sump). The pumps stop automatically when the water level decreases to elevation 1,073 feet (2 feet from the bottom of the sump).

There are no other scheduled discharges at this facility.

Pollutant Constituents Expected in the Discharge

During the preparation of the May 1999 Pollution Prevention Plan, a grab sample was collected at the sampling port on March 3, 1999. The results of that sampling are provided in Table 3-1.

**Table 3-1
 Sampling Results at Collierville Powerhouse Sump**

| Parameter | Result | Reporting Limit | Dilution Factor |
|--|--------|-----------------|-----------------|
| Total Kjeldahl Nitrogen, mg/l | 0.45 | 0.20 | 1.0 |
| Methylene Blue Active Substances, mg/l | ND | 0.10 | 1.0 |
| Color, color units | 5.0 | | 1.0 |
| Odor, threshold odor number | 0 | | 1.0 |
| Turbidity, NTU | 5.2 | | 1.0 |
| Total Organic Carbon, mg/l | 3.5 | 2.0 | 1.0 |
| Total Suspended Solids, mg/l | 6.0 | 5.0 | 1.0 |
| Fluoride, mg/l | ND | 0.050 | 1.0 |
| Nitrate + Nitrite as N, mg/l | 0.13 | 0.10 | 1.0 |
| Sulfide, mg/l | ND | 1.0 | 1.0 |
| Biochemical Oxygen Demand, mg/l | ND | 3.0 | 1.0 |

*Pollution Prevention Plan
Collierville Powerhouse Sump
North Fork Stanislaus River Hydroelectric Development Project
Northern California Power Agency*

| | | | |
|-------------------------------------|-------|-------|-----|
| Residual Chlorine, mg/l | 0.050 | | 1.0 |
| Ammonia as N, mg/l | ND | 0.20 | 2.0 |
| Chemical Oxygen Demand, mg/l | 13 | 10 | 1.0 |
| N-Hexane Extractable Material, mg/l | ND | 5.0 | 1.0 |
| Total Phosphorus, mg/l | ND | 0.050 | 1.0 |
| Bromide, mg/l | ND | 0.50 | 1.0 |
| Sulfate, mg/l | 0.97 | 0.50 | 1.0 |
| Aluminum, mg/l | ND | 0.200 | 1.0 |
| Barium, mg/l | ND | 0.020 | 1.0 |
| Cobalt, mg/l | ND | 0.020 | 1.0 |
| Iron, mg/l | 0.180 | 0.10 | 1.0 |
| Magnesium, mg/l | ND | 1.00 | 1.0 |
| Manganese, mg/l | ND | 0.020 | 1.0 |
| Molybdenum, mg/l | ND | 0.020 | 1.0 |
| Tin, mg/l | ND | 0.50 | 1.0 |
| Boron, mg/l | ND | 0.050 | 1.0 |
| Titanium, mg/l | ND | 0.050 | 1.0 |
| pH, standard units | 7.48 | | |
| Ecoli | 2.0 | 0 | 1.0 |
| Fecal Coliform | 2.0 | 0 | 1.0 |
| Coliform | 12 | 0 | 1.0 |

In addition, grab samples were collected on five separate occasions and analyzed for N-hexane extractable material, total suspended solids, and pH. The results of that sampling are provided in Table 3-2.

**Table 3-2
Sampling Results at Collierville Powerhouse Sump**

| Constituent | Units | Concentration | | | | |
|-------------------------------|-------|---------------|---------|--------|---------|--------|
| | | 12/03/99 | 1/14/99 | 2/3/99 | 2/17/99 | 3/7/99 |
| N-Hexane Extractable Material | mg/l | ND | ND | ND | ND | ND |
| Total Suspended Solids | mg/l | 12 | ND | ND | ND | 6.0 |
| pH | units | 7.7 | 7.65 | 7.62 | 7.35 | 7.48 |

Notes: ND = non-detectable levels.

N-Hexane Extractable Material by EPA Method 1664, reportable limit 5.0 mg/l.

Total Suspended Solids by EPA Method 160.2, reportable limit 5.0 mg/l.

pH by EPA Method 9040.

As stated above, the Northern California Power Agency has also taken grab samples of the effluent on an annual basis and analyzed them for total petroleum hydrocarbons and total oil and grease. The results of that sampling are provided in Table 3-3.

**Table 3-3
Sampling Results at Collierville Powerhouse Sump**

| Sampling Date | Total Petroleum Hydrocarbons as Diesel | Total Petroleum Hydrocarbons as Motor Oil | Total Petroleum Hydrocarbons | Total Oil and Grease |
|-----------------|--|---|------------------------------|----------------------|
| June 5, 2001 | ND | ND | --- | ND |
| May 9, 2002 | --- | --- | ND | ND |
| May 22, 2003 | --- | --- | ND | ND |
| May 26, 2004 | --- | --- | ND | ND |
| July 22, 2005 | ND | --- | 700 µg/l | 100 µg/l |
| August 26, 2005 | ND | --- | ND | ND |
| June 14, 2006 | ND | ND | --- | ND |
| June 5, 2007 | ND | --- | --- | ND |

Notes: ND = Non-detectable levels.

--- = Not analyzed.

August 26, 2005 sampling conducted after completion of remedial measures.

During the preparation of the Case Study for this discharge, NCPA again sampled the effluent from the Collierville Sump. The results of that sampling are provided in Table 3-4.

Table 3-4
Sampling Results at the Collierville Sump Discharge
January 29, 2008

| Parameter | Results | Reporting Limit | Method |
|---------------------------|---------|-----------------|-----------|
| TPHg | ND | 50 µg/l | 8015M DHS |
| Benzene | ND | 1 µg/l | 8260B DHS |
| Toluene | ND | 1 µg/l | 8260B DHS |
| Ethylbenzene | ND | 1 µg/l | 8260B DHS |
| Xylene | ND | 1 µg/l | 8260B DHS |
| TPHd | ND | 50 µg/l | 8015M DHS |
| TPHd w/silica gel | ND | 50 µg/l | 8015M DHS |
| pH | 6.9 | | EPA 150.1 |
| Total Suspended Solids | ND | 2.0 mg/l | EPA 160.2 |
| Oil and Grease | ND | 1000 µg/l | EPA 1664 |
| Oil & Grease w/silica gel | ND | 1000 µg/l | EPA 1664 |

Analysis by Sparger Technologies, Inc., Environmental Laboratories, DHS Certification No. 1614.

As can be seen by the above sampling results, the discharge from the Collierville Sump is in compliance with the terms of Order No. 2006-0008-DWQ, NPDES No. CAG990002), *General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges from Utility Vaults and Underground Structures to Surface Waters*.

Also as can be seen by the data provided in Tables 3-1, 3-2, 3-3 and 3-4, the discharge from the Collierville Powerhouse sump does not contain concentrations of any constituent that would violate applicable water quality objectives for the receiving waters, including prohibition of discharge nor cause acute or chronic toxicity in the receiving waters.

Approximate Duration of Discharge

As previously stated, fluids from the western most portion of the sump are pumped by two electrical pumps which discharge about 520 gallons per minute (combined discharge) into the powerhouse tailrace. The first pump is activated when the water elevation in the sump reaches 1,079 feet. The second pump is activated

when the water elevation in the sump reaches 1,080 feet. The pumps stop automatically when the water level decreases to a depth of about 24 inches (elevation 1,073 feet).

Also as previously stated, the sump is a concrete pit that is 11.0 feet wide and 13.0 feet long. Therefore, the volume of water that would be pumped by the first pump is equal to 6,418 gallons.

$$[11.0 \text{ feet} \times 13.0 \text{ feet} \times 6.0 \text{ feet} \times 7.48 \text{ gallons per cubic foot} = 6,418 \text{ gallons}]$$

Each pump has a capacity of about 260 gallons per minute; therefore, the first pump would run for about 25 minutes before it was automatically shut off. It is doubtful if the second pump would ever start under these conditions.

It is estimated that approximately 78,000 gallons of water are pumped from the sump on an annual basis. Therefore, it is estimated that the discharge would occur about once each month.

$$[78,000 \text{ gallons per year} \div 365 \text{ days per year} = 213 \text{ gallons per day}]$$

Existing Structural and Non-Structural Control Measures

As previously stated in Section 2, all drainage from the powerhouse facilities enters the easternmost portion of the powerhouse sump. A baffle divides the powerhouse sump into two chambers. Absorbent booms are provided in both portions of the sump to further control any floating materials that might possibly enter the sump.

Also as previously stated in Section 2, the sump is inspected at least once per month. Waste oil is removed from the sump when hand measurements indicate that there is approximately a 1-foot build-up of oily substances in the easternmost portion of the sump. Waste oils are pumped directly from the sump into a properly licensed service truck which recycles and/or disposes of the waste at approved locations.

Effluent from the sump will be monitored every twelve months for total petroleum hydrocarbons as gasoline (report benzene, toluene, ethylene and xylene), total petroleum hydrocarbons as diesel, total oil and grease, pH and total suspended solids. If detectable levels of total petroleum hydrocarbons or total oil and grease are found, the California Regional Water Quality Control Board, Central Valley Region (CRWQCB, CVR) will be notified and no further releases from the sump will be made until approved by the CRWQCB, CVR.

**SECTION 4
UNSCHEDULED DISCHARGES**

There are no unscheduled discharges associated with the Collierville Powerhouse Sump.

SECTION 5 RESERVOIR DISCHARGES

There are no direct reservoir discharges associated with the Collierville Powerhouse Sump. However, the Stanislaus River enters New Melones Reservoir immediately downstream of its confluence with the powerhouse tailrace.

**SECTION 6
EMERGENCY OPERATION DISCHARGES**

There is no emergency operation discharges associated with the Collierville Powerhouse Sump.

SECTION 7 POLLUTION PREVENTION TEAM

The Northern California Power Agency has developed a Spill Prevention, Control and Countermeasure Plan for the North Fork Stanislaus River Hydroelectric Development Project (January 2008) which includes the Collierville Powerhouse.

As shown in the SPCC Plan, those responsible for pollution prevention include:

Ed Warner, Manager, Hydroelectric Operations
(209) 728-1387 ext. 22
Residence: (209) 736-9976
Cell: (209) 768-5887

Barry Sullivan, Operations Supervisor
(209) 728-1387 ext. 24
Residence: (209) 728-1448
Cell: (209) 768-5888

Sandy Rainey, Technical Supervisor
(209) 728-1387 ext. 34
Residence: (209) 296-4890
Cell: (209) 768-5889

Randy Bowersox, Hydroelectric Operations Engineer
(209) 728-1387 ext. 35
Residence: (530) 677-8452
Cell: (209) 762-2779

SECTION 8 MONITORING AND EVALUATION

As shown previously in Section 3, a grab sample of the discharge was taken on March 3, 1999 and analyzed for a variety of constituents. The results of that sampling were provided in Table 3-1. In addition, five grab samples were taken and analyzed for N-hexane extractable materials, total suspended solids, and pH. The results of that sampling were provided in Table 3-2. Annual grab samples were also taken and analyzed for total petroleum hydrocarbons and total oil and grease. The results of that sampling were provided in Table 3-3.

As can be seen by the data provided in Tables 3-1, 3-2 and 3-3, the discharge from the Collierville Powerhouse sump does not contain concentrations of any constituent that would violate applicable water quality objectives for the receiving waters, including prohibition of discharge, nor cause acute or chronic toxicity in the receiving waters.

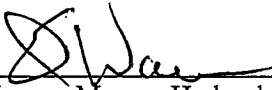
In the future, in accordance with the terms of the general permit's monitoring and reporting program, effluent from the sump will be monitored every twelve months for total petroleum hydrocarbons as gasoline (report BTEX), total petroleum hydrocarbons as diesel, total oil and grease, pH and total suspended solids. If detectable levels of total petroleum hydrocarbons and total oil and grease are found, the California Regional Water Quality Control Board, Central Valley Region (CRWQCB, CVR) will be notified and no further releases from the sump will be made until approved by the CRWQCB, CVR.

**SECTION 9
ALTERNATIVES TO DISCHARGING TO SURFACE WATERS**

The Collierville Powerhouse is located at Clark Flat which is surrounded by steep terrain on lands administered by the U.S. Bureau of Reclamation and the U.S. Forest Service. Due to the steep terrain, there are no alternatives to discharging to surface waters.

**SECTION 10
CERTIFICATION**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Ed Warner, Manger Hydroelectric Operations
Northern California Power Agency

3/10/08

Date

*Pollution Prevention Plan
Collierville Powerhouse Sump
North Fork Stanislaus River Hydroelectric Development Project
Northern California Power Agency*

**APPENDIX A
MATERIAL SAFETY DATA SHEET**

APPENDIX A MATERIAL SAFETY DATA SHEETS

Appendix A contains the Material Safety Data Sheets (MSDS) for those chemicals utilized at the Collierville Powerhouse. A summary of the MSDS's is provided below:

| MSDS No. | Trade Name | Common Name |
|----------|--|--------------------------|
| 1001 | Carbon Dioxide | Carbon Dioxide |
| 1002 | Regular Chlorine Bleach | Sodium Hypochlorite |
| 1003 | 02055 Startex Anti-freeze Coolant | Coolant |
| 1004 | 00449 Texaco Diesel 2 | Diesel Fuel |
| 1005 | Pyro Chem Dry Chemical Fire Extinguisher | Ammonium Phosphate |
| 1007 | 01657 Rando Oil HD 32 | Hydraulic Fluid |
| 1010 | Mobil DTE Oil B | Hydraulic Oil |
| 1012 | 023220 Meropa 150 | Gear Lubricant |
| 1016 | Sulfuric Acid | Sulfuric Acid |
| 1016A | 001 FCLC Lead Acid Cell | Electric Storage Battery |
| 1016B | Valve Regulated Lead Acid Battery | Electric Storage Battery |
| 1017 | Shell Diala7 Oil AX | Transformer Oil |
| 1018 | Exxon Teresstic 46 | Bearing Oil |
| 1020 | Anderol 500 Synthetic Compressor Oil | Compressor Oil |
| 1021 | Waste Oil | Variable |

I. PRODUCT IDENTIFICATION

| | | |
|--|---|--|
| <p>MANUFACTURER GNB Industrial Power A Division of Exide Industries 3950 Sussex Avenue Aurora, IL 60504-7932</p> | <p>CHEMICAL/TRADE NAME (as used on label)</p> | <p>001FCLC Lead Acid Cell (Calcium)</p> |
| <p>FOR INFORMATION Primary: MACTEC Engineering and Consulting, Inc. Attention: DeLyn Thompson (770) 421-3364 Secondary: Environmental, Safety & Health Attention: Fred Ganster (610) 921-4052</p> | <p>CHEMICAL FAMILY/ CLASSIFICATION</p> | <p>Electrical Storage Battery</p> |
| <p>FOR EMERGENCY CHEMTREC (800) 424-9300 24-hour Emergency Response Contact Ask for Environmental Coordinator</p> | <p>DATE ISSUED:</p> | <p>May 4, 2005</p> |
| | | <p>CHEMTREC INTERNATIONAL (703) 527-3887 - Collect</p> |

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

| Components | CAS Number | % by Wt. | Approximate Air Exposure Limits (µg/m ³) | | |
|-----------------------------|------------|----------|--|-------|-------|
| | | | OSHA | ACGIH | NIOSH |
| Inorganic components of: | | | | | |
| Lead | 7439-92-1 | 52.4 | 50 | 50 | 50 |
| Lead Dioxide | 1309-60-0 | 20.8 | 50 | 50 | 50 |
| Non-Hazardous Ingredients | N/A | 8.2 | N/A | N/A | N/A |
| Electrolyte (sulfuric acid) | 7664-93-9 | 19-44 | 1000 | 200 | 1000 |

NOTE: Components are for a fully charged lead acid design. Inorganic lead and electrolyte (water and sulfuric acid solution) are the primary components of every battery manufactured by Exide Technologies or its subsidiaries. Other ingredients may be present dependent upon battery type. Polypropylene is the principal case material of automotive and commercial batteries.

III. PHYSICAL DATA

| | | | |
|--|--|---------------------------------------|----------------|
| Materials (at normal temperatures) Electrolyte Volume of Sulfuric Acid - 42-71% | | Specific Gravity (H ₂ O=1) | 1.230 to 1.350 |
| Boiling Point (Electrolyte) | 203° F (at 760 mm Hg) | Vapor Pressure (mm Hg at 20 °C) | 10 |
| Melting Point | Not Applicable | Vapor Density (AIR=1) | Greater than 1 |
| Solubility in Water | 100% | % Volatiles by Weight | Not Applicable |
| Appearance and Odor | A clear liquid with a sharp, penetrating, pungent odor. A battery is a manufactured article; no apparent odor. | Evaporation Rate (Butyl acetate=1) | Less Than 1 |

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable

Flammable Limits: LEL = 4.1% (Hydrogen Gas in air) ; UEL = 74.2%

Extinguishing media: CO₂; foam; dry chemical

Special Fire Fighting Procedures:
 Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during water application and wear acid-resistant clothing, gloves, face and eye protection. If batteries are on charge, shut off power to the charging equipment, but, note that strings of series connected batteries may still pose risk of electric shock even when charging equipment is shut down.

Unusual Fire and Explosion Hazards:

In operation or when on charge, batteries generate hydrogen and oxygen gases (hydrogen is highly flammable and oxygen supports combustion). They must always be assumed to contain these gases which, if ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition, ensure that adequate ventilation is provided, and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery.

V. REACTIVITY DATA

Stability: Stable Unstable

Conditions to Avoid: Prolonged overcharging and overheating current; sparks and other sources of ignition.

Incompatibility: (materials to avoid)

Electrolyte: Contact of sulfuric acid with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, most metals, carbides, chlorates, nitrates, picrate, sulfur trioxide gas, strong oxidizers, and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas.

Lead compounds: Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, potassium, carbides, sulfides, phosphorus, sulfur and reducing agents.

Hazardous Decomposition Products:

Electrolyte: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen sulfide, hydrogen.

Lead compounds: Temperatures above the melting point are likely to produce toxic metal fume, vapor, or dust; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.

Hazardous Polymerization: May Occur Will Not Occur

VI. HEALTH HAZARD DATA**Routes of Entry:**

Electrolyte: Harmful by all routes of entry. Under normal conditions of use, sulfuric acid vapors and mist are not generated. Sulfuric acid vapors and mist may be generated when product is overheated, oxidized, or otherwise processed or damaged.

Lead compounds: Under normal conditions of use, lead dust, vapors, and fumes are not generated. Hazardous exposure can occur only when product is heated above the melting point, oxidized or otherwise processed or damaged to create dust, vapor, or fume.

Inhalation:

Electrolyte: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation.

Lead compounds: Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

Ingestion:

Electrolyte: May cause severe irritation of mouth, throat, esophagus, and stomach.

Lead compounds: Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea, and severe cramping. This may lead rapidly to systemic toxicity. Acute ingestion should be treated by physician.

Skin Contact/Skin Absorption:

Electrolyte: Severe irritation, burns, and ulceration. Sulfuric acid is not readily absorbed through the skin.

Lead compounds: Not readily absorbed through the skin.

Eye Contact:

Electrolyte: Severe irritation, burns, cornea damage, blindness.

Lead compounds: May cause eye irritation.

Effects of Overexposure - Acute:

Electrolyte: Severe skin irritation, burns, damage to cornea may cause blindness, upper respiratory irritation.

Lead compounds: Headache, fatigue, abdominal pain, loss of appetite, nausea, vomiting, diarrhea, muscular aches and weakness, sleep disturbances, and irritability.

Effects of Overexposure - Chronic:

Electrolyte: Possible erosion of tooth enamel; inflammation of nose, throat, and bronchial tubes, and scarring of the cornea.

Lead compounds: Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in both males and females.

Carcinogenicity:

Electrolyte: The National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) have classified "strong inorganic acid mist containing sulfuric acid" as a substance that is carcinogenic to humans. This classification does not apply to sulfuric acid solutions in static liquid state or to electrolyte in batteries. Batteries subjected to abusive charging at excessively high currents for prolonged periods of time without vent caps in place may create a surrounding atmosphere of the offensive strong inorganic acid mist containing sulfuric acid.

Lead compounds: Listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present.

Medical Conditions Generally Aggravated by Exposure:

Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of electrolyte (water and sulfuric acid solution) with skin may aggravate skin diseases such as eczema and contact dermatitis. Contact of electrolyte (water and sulfuric acid solution) with eyes may damage cornea and/or cause blindness. Lead and its compounds can aggravate some forms of kidney, liver, and neurologic diseases.

Emergency and First Aid Procedures:**Inhalation:**

Electrolyte: Remove to fresh air immediately. If breathing is difficult, give oxygen.

Lead compounds: Remove from exposure, gargle, wash nose, eyes, and lips; consult physician.

Ingestion:

Electrolyte: Give large quantities of water; do not induce vomiting; consult physician.

Lead compounds: Consult physician immediately.

Skin:

Electrolyte: Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes and do not wear clothes again until cleaned. If acid is splashed on shoes, remove and discard if they contain leather.

Lead compounds: Wash immediately with soap and water. Lead compounds are not readily absorbed through the skin.

Eyes: Electrolyte and Lead compounds: Flush immediately with large amounts of water for at least 15 minutes; consult physician immediately.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE**Handling and Storage:**

Store batteries under roof in cool, dry, well-ventilated areas that are separated from incompatible materials and from activities which may create flames, sparks, or heat. Keep away from metallic objects that could bridge the terminals on a battery and create a dangerous short-circuit. Single batteries pose no risk of electric shock but there may be increasing risk of electric shock from strings of connected batteries exceeding three 12-volt units.

Charging:

There is a possible risk of electric shock from charging equipment and from strings of series connected batteries, whether or not being charged. Shut-off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged will generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged.

Spill or Leak Procedures:

Remove combustible materials and all sources of ignition. Stop flow of material and contain spill by diking with soda ash, etc. Carefully neutralize spill with soda ash, etc. Make certain mixture is neutral then collect residue and place in a drum or other suitable container with a label specifying "contains hazardous waste" (or if uncertain call distributor regarding proper labeling procedures). Dispose of as hazardous waste. If battery is leaking, place battery in a heavy duty plastic bag. Wear acid resistant boots, face shield, chemical splash goggles and acid resistant gloves. DO NOT RELEASE UNNEUTRALIZED ACID.

Waste Disposal Methods:

Sulfuric Acid: Neutralize as described above for a spill, collect residue and place in a container labeled as containing hazardous waste. Dispose of as a hazardous waste. If uncertain about labeling procedures, call your local battery distributor or listed contact. DO NOT FLUSH LEAD CONTAMINATED ACID TO SEWER

Spent batteries: Send to secondary lead smelter for recycling following applicable federal, state, and local regulations.

Precautionary Labeling:

POISON - CAUSES SEVERE BURNS
DANGER - EXPLOSIVE GASES
CORROSIVE - CONTAINS SULFURIC ACID
KEEP AWAY FROM CHILDREN

VIII. CONTROL MEASURES**Engineering Controls and Work Practices:**

Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant. Handle batteries cautiously. Make certain vent caps are on securely. If battery case is damaged, avoid bodily contact with internal components. Wear protective clothing, eye and face protection, when charging or handling batteries. Follow all manufacturers' recommendations when stacking or palletizing. Do not allow metallic materials to simultaneously contact both the positive and negative terminals of the batteries. Use a battery carrier to lift a battery or place hands at opposite corners to avoid spilling acid through the vents. Avoid contact with internal components of the batteries.

Hygiene Practices:

Wash hands thoroughly before eating, drinking or smoking after handling batteries.

Respiratory Protection:

None required under normal conditions. If an overcharging or overheating condition exists and concentrations of sulfuric acid mist are known or suspected to exceed PEL, use NIOSH or MSHA-approved respiratory protection.

Protective Clothing:

None required under normal conditions. If battery case is damaged, use rubber or plastic acid-resistant gloves with elbow-length gauntlet, acid-resistant apron, clothing, and boots.

Eye Protection:

None required under normal conditions. If battery case is damaged, chemical goggles or face shield.

Emergency Flushing:

In areas where water and sulfuric acid solutions are handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply.

IX. OTHER REGULATORY INFORMATION**NFPA Hazard Rating for sulfuric acid:**

Flammability (Red) = 0 Health (Blue) = 3 Reactivity (Yellow) = 2
Sulfuric acid is water-reactive if concentrated.

TRANSPORTATION:

US DOT identification and description for this battery is:

Batteries, wet, filled with acid, Class 8, UN 2794 PG III

Label: Corrosive

(Exceptions 173.159, paragraph (d), C.F.R. 49)

For air shipments, see International Air Transportation Association (IATA) Dangerous Goods Regulations Manual, special provisions Packing Instruction 800. For ocean shipments, reference International Maritime Dangerous Goods Code, P8120.

RCRA: Spent lead-acid batteries are not regulated as hazardous waste when recycled. Spilled sulfuric acid is a characteristic hazardous waste; EPA hazardous waste number D002 (corrosivity).

CERCLA (Superfund) and EPCRA:

- (a) Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (Superfund) and EPCRA (Emergency Planning and Community Right to Know Act) is 1,000 lbs. State and local reportable quantities for spilled sulfuric acid may vary.
- (b) Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA, with a Threshold Planning Quantity (TPQ) of 1,000 lbs.
- (c) EPCRA Section 302 notification is required if 1,000 lbs or more of sulfuric acid is present at one site. An average automotive/commercial battery contains approximately 5 lbs of sulfuric acid. Contact your Exide representative for additional information.
- (d) EPCRA Section 312 Tier Two reporting is required for non-automotive batteries if sulfuric acid is present in quantities of 500 lbs or more and/or if lead is present in quantities of 10,000 lbs or more.

(e) **Supplier Notification:**

This product contains a toxic chemical or chemicals subject to the reporting requirements of section 313 of (Title) III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

| <u>Chemical</u> | <u>CAS</u> | <u>Percent by Weight</u> |
|----------------------------------|------------|--------------------------|
| Lead (Pb) | 7439-92-1 | 52.4 |
| Electrolyte: Sulfuric Acid | 7664-93-9 | 19.44 |
| Lead Dioxide (PbO ₂) | 1309-60-0 | 20.8 |

If you distribute this product to other manufacturers in SIC Codes 20 through 39, this information must be provided with the first shipment of each calendar year.

Note: The Section 313 supplier notification requirement does not apply to batteries that are "consumer products".

CAA: Exide Technologies supports preventative actions concerning ozone depletion in the atmosphere due to emissions of CFC's and other ozone depleting chemicals (ODC's), defined by the USEPA as Class I substances. Pursuant to Section 611 of the Clean Air Act Amendments (CAAA) of 1990, finalized on January 19, 1993, Exide established a policy to eliminate the use of Class I ODC's prior to the May 15, 1993 deadline.

TSCA: Each ingredient chemical listed in Section II of this MSDS is also listed on the TSCA Registry.

CANADIAN REGULATIONS: All chemical substances in this product are listed on the CEPA DSL/NDSL or are exempt from list requirements.

CALIFORNIA PROPOSITION 65:

"WARNING: This product contains lead, a chemical known to the State of California to cause cancer, or birth defects or other reproductive harm."

PREPARED BY: GNB INDUSTRIAL POWER
 A DIVISION OF EXIDE TECHNOLOGIES
 3950 SUSSEX AVENUE
 AURORA, IL 60504-7932
 (800) 872-0471

VENDEE AND THIRD PERSONS ASSUME THE RISK OF INJURY PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT FOLLOWED AS PROVIDED FOR IN THE DATA SHEET, AND VENDOR SHALL NOT BE LIABLE FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE PROCEDURES ARE FOLLOWED.

ALL PERSONS USING THIS PRODUCT, ALL PERSONS WORKING IN AN AREA WHERE THIS PRODUCT IS USED, AND ALL PERSONS HANDLING THIS PRODUCT SHOULD BE FAMILIAR WITH THE CONTENTS OF THIS DATA SHEET. THIS INFORMATION SHOULD BE EFFECTIVELY COMMUNICATED TO EMPLOYEES AND OTHERS WHO MIGHT COME IN CONTACT WITH THE PRODUCT.

WHILE THE INFORMATION ACCUMULATED AND SET FORTH HEREIN IS BELIEVED TO BE ACCURATE AS OF THE DATE HEREOF, EXIDE TECHNOLOGIES MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE FOR THEIR PARTICULAR CIRCUMSTANCES.

Standard Options

Options Menu Product Name: 00449 Texaco Diesel 2
 Search Page Manufacturer: Chevron
 Help Revision Date: 4/10/1989
 Sign Out

Record Options

Common Names:

Report Options

Notes:

Additional Options

View MSDS Document

Synonyms:

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|---------------|-------|---------|---------|
| Hydrocarbons | | 100.00% | 100 |

Navigation Options

HMIS

Health:
 Flammability:
 Reactivity:
 Protective:

NFPA

Toxicity:
 Fire:
 Reactivity:
 Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|-------------------------------------|--------|
| Hydro | | <input checked="" type="checkbox"/> | |

Attributes

Regulations

First Aid

Eye: As with most foreign materials, should eye contact occur, flush eyes with plenty of water.
Skin: Wash exposed areas with soap and water.
Inhalation: Should symptoms noted under physiological effects occur, remove to fresh air. If not breathing, apply artificial respiration.
Ingestion: Do NOT induce vomiting. Aspiration may cause chemical pneumonia.
Other: Other Instructions: None.

Personal Protection

Eye: Chemical type goggles or face shield optional.
 Exposed employees should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly. Gloves resistant to chemicals and petroleum distillates recommended.
Inhalation: Supplied air respiratory protection for cleaning large spills or upon entry into tanks, vessels, or other confined spaces.
Ventilation: Normal.

Other:

Spill Measures

(Transportation Spills Call CHEMTREC (800) 424-9300) Avoid all personal contact. Ventilate area. Avoid breathing vapor. Use self-contained breathing apparatus or supplied-air mask for large spills in confined area. Contain spill if possible. Wipe up or absorb on suitable material and shovel up.

SARA Properties:

| | | | |
|---------------------------|---|---|-------------------------------------|
| Hazard Properties: | <input checked="" type="checkbox"/> Fire | <input type="checkbox"/> Sudden Release | <input type="checkbox"/> Reactivity |
| Tier II Report Exemption: | <input checked="" type="checkbox"/> Immediate | <input checked="" type="checkbox"/> Delayed | |
| Chemical State: | <input type="checkbox"/> Solid | <input checked="" type="checkbox"/> Liquid | <input type="checkbox"/> Gas |
| Chemical Type: | <input type="checkbox"/> Pure | <input checked="" type="checkbox"/> Mixture | <input type="checkbox"/> Undefined |
| Specific Gravity: | 0.852 | | |

[Home](#) | [Help](#) | [Sign Out](#)

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1012

Standard Options

- Options Menu
- Search Page
- Help
- Sign Out

Product Name: 01842 Havoline Superior Grade 10W-30
 Manufacturer: Chevron
 Revision Date: 9/17/1991

Record Options

Common Names:

Report Options

Notes:

Additional Options

- View MSDS Document

Navigation Options

Synonyms:

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|--|------------|---------|-------------|
| Solvent-Dewaxed Heavy Paraffinic Petroleum Distillates | 64742-65-0 | 94.99% | 80.00-94.99 |
| 1,2,4-TRIMETHYLBENZENE | | 100.00% | |
| ISOPROPYL ALCOHOL | | 100.00% | |
| C-9 Aromatic Hydrocarbons | | 100.00% | |
| CUMENE | | 100.00% | |
| Oleylamine | | 100.00% | |
| Zinc Dithiophosphate | 84605-29-8 | 0.99% | 0.10-0.99 |
| 1,3,5-Trimethylbenzene | | 100.00% | |
| Zinc Dithiophosphate | 25103-54-2 | 0.99% | 0.10-0.99 |
| Zinc | | 0.12% | 0.12 |

HMIS

Health: 0
 Flammability: 1
 Reactivity: 0
 Protective: 1
 NFPA
 Toxicity: 0
 Fire: 1
 Reactivity: 0
 Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|----------|--------|
| Hydro | | | |

Attributes

Regulations

- CEPA 1.2 UVCLBs
- CEPA Master List
- Michigan PIPP
- NYC Hazardous Substance List

First Aid

Eye: Flush eyes with plenty of water for several minutes. Get medical attention if eye Irritation persists.

Skin: Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Inhalation: If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or symptoms persist.

Ingestion: If more than several mouthfuls have been swallowed, give two glasses of water (16 oz.). Get medical attention.

Other: Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

Personal Protection

Eye: Chemical-type goggles or face shield recommended to prevent eye contact.

Skin: Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned at least once a week.

Inhalation: Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated, use respirator approved by MSHA or NIOSH as appropriate. Supplied air respiratory protection should be used for cleaning large spills or upon entry into tanks, vessels, or other confined spaces. See below for applicable permissible concentrations.

Ventilation: Adequate to meet component occupational exposure limits (see Section 2).

Other:

Spill Measures

Ventilate area. Avoid breathing vapor. Use self-contained breathing apparatus or supplied air for large spills or confined areas. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and waterways. Avoid contact with Skin, eyes or clothing.

SARA Properties:

| | | | |
|---------------------------|--|---|-------------------------------------|
| Hazard Properties: | <input type="checkbox"/> Fire | <input type="checkbox"/> Sudden Release | <input type="checkbox"/> Reactivity |
| | <input checked="" type="checkbox"/> Immediate | <input checked="" type="checkbox"/> Delayed | |
| Tier II Report Exemption: | <input type="checkbox"/> Exempt On New Inventory | | |
| Chemical State: | <input type="checkbox"/> Solid | <input checked="" type="checkbox"/> Liquid | <input type="checkbox"/> Gas |
| Chemical Type: | <input type="checkbox"/> Pure | <input checked="" type="checkbox"/> Mixture | <input type="checkbox"/> Undefined |
| Specific Gravity: | 0.8876 | | |

[Home](#) | [Help](#) | [Sign Out](#)

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Standard Options

- Options Menu
- Search Page
- Help
- Sign Out

Product Name: 02055 Startex Anti-Freeze Coolant
 Manufacturer: Chevron
 Revision Date: 6/9/1986

Record Options

Common Names:

Report Options

Notes:

Additional Options

- View MSDS Document

Synonyms:

Navigation Options

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|---------------|-----------|--------|-------------|
| 1,2-Ethanedio | 107-21-1 | 99.99% | 95.00-99.99 |
| Borax | 1303-96-4 | 3.99% | 1.00-3.99 |

HMIS

Health:

Flammability:

Reactivity:

Protective:

NFPA

Toxicity:

Fire:

Reactivity:

Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|-------------------------------------|--------|
| Hydro | | <input checked="" type="checkbox"/> | |

Attributes

- Image As Received By Customer
- Missing HMIS and/or NFPA
- Missing 1 or More Pages
- No Ingredients on MSDS

Regulations

- CERCLA
- HAPs - CAA 112(b)
- HAPs - Non-Carcinogen
- HAPs - Organic
- Michigan PIPP
- NESHAPS
- New Jersey RTK Hazardous Substance List
- North Carolina HAPs
- NPRI
- NYC Hazardous Substance List
- Pennsylvania Hazardous Substances List
- SARA 313

First Aid

Eye: Flush with water for fifteen minutes.

Skin: Wash exposed areas with soap and water.

Inhalation: Remove to fresh air; if not breathing apply artificial respiration. Get medical attention. Keep affected person warm and at rest.

Ingestion: Give large quantities of water, then induce vomiting immediately. Get immediate medical attention. Do not make an unconscious person vomit. Never give anything by mouth to an unconscious person.

Other: None.

Personal Protection

Eye: Chemical type goggles or face shield optional.

Skin:

Exposed employees should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly.

Inhalation: Supplied air positive pressure full-facepiece respirators in emergencies, cleaning spills, entry into tanks, confined spaces.

Ventilation: Normal.

Other:

Spill Measures

(Transportation Spill Call CHEMTREC (800) 424-9300) Avoid contact with eyes. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Remarks: Waste Classification: Product has been evaluated for RCRA characteristics and does not meet criteria of a hazardous waste if discarded in its purchased form.

SARA Properties:

| | | | |
|---------------------------|--|---|-------------------------------------|
| Hazard Properties: | <input type="checkbox"/> Fire | <input type="checkbox"/> Sudden Release | <input type="checkbox"/> Reactivity |
| | <input checked="" type="checkbox"/> Immediate | <input checked="" type="checkbox"/> Delayed | |
| Tier II Report Exemption: | <input type="checkbox"/> Exempt On New Inventory | | |
| Chemical State: | <input type="checkbox"/> Solid | <input checked="" type="checkbox"/> Liquid | <input type="checkbox"/> Gas |
| Chemical Type: | <input type="checkbox"/> Pure | <input checked="" type="checkbox"/> Mixture | <input type="checkbox"/> Undefined |
| Specific Gravity: | 1.13 | | |

[Home](#) | [Help](#) | [Sign Out](#)

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Standard Options

Options Menu Product Name: 001FCLC - Lead Acid Cell (Calcium)
 Search Page Manufacturer: Exide Technologies (GNB)
 Help Revision Date: 9/17/2003
 Sign Out

Record Options

Common Names:

Report Options

Notes:

Additional Options

View MSDS
Document

Synonyms:

Navigation Options

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|----------------------------|-----------|---------|---------|
| Lead | 7439-92-1 | 52.40% | 52.4 |
| Non-Hazardous Ingredients | | 8.20% | 8.2 |
| Lead Dioxide (PbO2) | 1309-60-0 | 20.80% | 20.8 |
| Lead Compounds | | 100.00% | |
| Electrolyte: Sulfuric Acid | 7664-93-9 | 44.00% | 19-44 |

HMIS

Health:
 Flammability:
 Reactivity:
 Protective:
 NFPA
 Toxicity:
 Fire:
 Reactivity:
 Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|-------------------------------------|--------|
| Hydro | | <input checked="" type="checkbox"/> | |

Attributes

Regulations

- California Regulated Substances List
- CERCLA
- Clean Water Act
- EPCRA Section 302 EHS
- Global Automotive Declarable Substance List
- HAPs - CA 112(b)
- HAPs - Carcinogen
- HAPs - Inorganic
- IARC-2A
- IARC-2B
- Michigan PIPP
- New Jersey RTK Hazardous Substance List
- North Carolina HAPs
- North Carolina TAPs
- NPRI
- NYC Hazardous Substance List
- OSHA Carcinogen
- Pennsylvania Hazardous Substances List
- SARA 313
- Section 304 EHS

First Aid

Eye: Sulfuric Acid - flush immediately with cool water for at least 15 minutes, then consult physician. Lead Compounds - flush immediately with cool water for at least 15 minutes, then consult physician.

Skin: Sulfuric Acid - flush with large amounts of water for at least 15 minutes, remove any contaminated clothing and do not wear again until cleaned. If acid is splashed on shoes, remove and discard if they contain leather. Lead Compounds are not readily absorbed through the skin.

Inhalation:

Sulfuric Acid - Remove to fresh air immediately If breathing is difficult, give oxygen. Lead Compounds - Remove from exposure; gargle, wash nose and eyes and consult physician.

Ingestion: Sulfuric Acid - give large quantities of water; DO NOT induce vomiting, then consult physician. Lead Compounds - consult a physician.

Other:

Personal Protection

Eye: Chemical splash goggles or face shield.

Skin: Rubber or plastic acid resistant gloves with elbow length gauntlet.

Inhalation: None are required under normal conditions. If an overcharge or overheating condition exists and concentrations of sulfuric acid mist are known or suspected to exceed PEL, use NIOSH or MSHA approved respiratory protection.

Ventilation: Store and handle lead acid batteries in well ventilated areas. Work Practices: Make certain vent caps are on tightly. Follow all manufacturers' recommendations when stacking or palletizing. Do not allow metallic materials to simultaneously contact both the positive and negative terminals of the batteries. Use a battery carrier to lift a battery or place hands at opposite corners to avoid spilling acid through the vents. Avoid contact with internal components of the batteries.

Other: Other Special Clothing and Equipment: Acid resistant apron. Under severe exposure or emergency conditions, wear acid resistant clothing and boots.

Spill Measures

Remove combustible materials and all sources of ignition. Stop flow of material and contain spill by diking with soda ash (sodium carbonate) or quick lime (calcium oxide). Carefully neutralize spill with soda ash, etc. Make certain mixture is neutral then collect residue and place in a drum or other suitable container with a label specifying "contains hazardous waste" or (if uncertain call distributor regarding proper labeling procedures) Dispose of as hazardous waste. If battery is leaking, place battery in a heavy duty plastic bag Wear acid resistant boots, faceshield, chemical splash goggles and acid resistant gloves. DO NOT RELEASE UNNEUTRALIZED ACID.

SARA Properties:

| | | | |
|---------------------------|---|---|--|
| Hazard Properties: | <input type="checkbox"/> Fire | <input type="checkbox"/> Sudden Release | <input checked="" type="checkbox"/> Reactivity |
| | <input checked="" type="checkbox"/> Immediate | <input checked="" type="checkbox"/> Delayed | |
| Tier II Report Exemption: | <input checked="" type="checkbox"/> Exempt On New Inventory | | |
| Chemical State: | <input type="checkbox"/> Solid | <input checked="" type="checkbox"/> Liquid | <input type="checkbox"/> Gas |
| Chemical Type: | <input type="checkbox"/> Pure | <input checked="" type="checkbox"/> Mixture | <input type="checkbox"/> Undefined |
| Specific Gravity: | 1.35 | | |

[Home](#) | [Help](#) | [Sign Out](#)

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Standard Options

- Options Menu
- Search Page
- Help
- Sign Out

Product Name: **Teresstic 546**
 Manufacturer: **Exxon (ExxonMobil)**
 Revision Date: **6/1/1989**

Record Options

Common Names:

Report Options

Notes:

Additional Options

- View MSDS Document

Synonyms:

Navigation Options

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|-----------------------------|------------|---------|-----------------|
| Lubricating Oil Base Stocks | 72623-87-1 | 100.00% | Greater Than 99 |
| Lubricating Oil Base Stocks | 64742-65-0 | 100.00% | Greater Than 99 |
| Proprietary Additives | | 1.00% | Less Than 1 |
| Lubricating Oil Base Stocks | 64742-54-7 | 100.00% | Greater Than 99 |

HMIS

Health:
 Flammability:
 Reactivity:
 Protective:

NFPA

Toxicity:
 Fire:
 Reactivity:
 Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|-------------------------------------|--------|
| Hydro | | <input checked="" type="checkbox"/> | |

Attributes

Regulations

- CEPA 1.2 UVCBs
- CEPA Master List

First Aid

Eye: If splashed into the eyes, flush with clear water for 15 minutes or until irritation subsides. If irritation persists. Call a physician.

Skin: In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water.

Inhalation: Vapor pressure is very low. Vapor inhalation under ambient conditions is normally not a problem. If overcome by vapor from hot product. Immediately remove from exposure and call a physician. If breathing is irregular or has stopped, start resuscitation; administer oxygen, if available. If overexposed to oil mist, remove from further exposure until excessive oil mist condition subsides.

Ingestion: If ingested, DO NOT induce vomiting; call a physician immediately.

Other:

Personal Protection

Eye: Use splash goggles or face shield when eye contact may occur.

Skin: Use chemical-resistant gloves. If needed, to avoid prolonged or repeated skin contact.

Inhalation: Use supplied-air respiratory protection in confined or enclosed spaces, if needed.

Ventilation:

Use local exhaust to capture vapor, mists or fumes, if necessary. Provide ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of vapor in air. No smoking, flame or other ignition sources.

OTHER PROTECTIVE EQUIPMENT: Use chemical-resistant apron or other impervious clothing. If needed, to avoid contaminating regular clothing, which could result in prolonged or repeated skin contact. **WORK PRACTICES / ENGINEERING CONTROLS:** Keep containers closed when not in use. Do not store near heat, sparks, flame or strong oxidants. In order to prevent fire or explosion hazards, use appropriate equipment. Information on electrical equipment appropriate for use with this product may be found in the latest edition of the National Electrical Code (NFPA-70). This document is available from the National Fire Protection Association, Batterymarch Park, Quincy, Massachusetts 02269.

Other:

PERSONAL HYGIENE: Minimize breathing vapor, mist or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before re-use. Remove contaminated shoes and thoroughly clean before re-use; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.

Spill Measures

Recover free product. Add sand, earth or other suitable absorbent to spill area. Minimize breathing vapors. Minimize skin contact. Open all windows and doors. Keep product out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses, or extensive land areas. Assure conformity with applicable governmental regulations.

SARA Properties:

| | | | |
|---------------------------|--|--|-------------------------------------|
| Hazard Properties: | <input type="checkbox"/> Fire | <input checked="" type="checkbox"/> Sudden Release | <input type="checkbox"/> Reactivity |
| | <input checked="" type="checkbox"/> Immediate | <input checked="" type="checkbox"/> Delayed | |
| Tier II Report Exemption: | <input type="checkbox"/> Exempt On New Inventory | | |
| Chemical State: | <input type="checkbox"/> Solid | <input checked="" type="checkbox"/> Liquid | <input type="checkbox"/> Gas |
| Chemical Type: | <input type="checkbox"/> Pure | <input checked="" type="checkbox"/> Mixture | <input type="checkbox"/> Undefined |
| Specific Gravity: | <input type="checkbox"/> 0.88 | | |

[Home](#) | [Help](#) | [Sign Out](#)

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Standard Options

- Options Menu
- Search Page
- Help
- Sign Out

Product Name: Regular Clorox Bleach
 Manufacturer: Clorox Co.
 Revision Date: 8/1/1987

Record Options

Common Names:

Report Options

Notes:

Additional Options

- View MSDS Document

Synonyms:

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|---------------------|-----------|-------|---------|
| Sodium Hypochlorite | 7681-52-9 | 5.20% | 5.2 |

Navigation Options

HMIS

Health: 2*
 Flammability: 0
 Reactivity: 1
 Protective: B

NFPA

Toxicity:
 Fire:
 Reactivity:
 Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|-------------------------------------|--------|
| Hydro | | <input checked="" type="checkbox"/> | |

Attributes

No Regulation Section

Regulations

- CERCLA
- Clean Water Act
- Michigan PIPP
- NYC Hazardous Substance List
- Pennsylvania Hazardous Substances List

First Aid

Eye: Immediately flush eyes with plenty of water. If irritation persists, see a doctor.
Skin: Remove contaminated clothing. Wash area with water.
Inhalation: If breathing problems develop remove to fresh air.
Ingestion: Drink a glassful of water and call a physician.
Other:

Personal Protection

Eye:

Skin:

Inhalation:

Ventilation: Use general ventilation to minimize exposure to vapor or mist.

Other: Hygienic Practices: Wear safety glasses. With repeated or prolonged use, wear gloves. Work Practices: Avoid eye and skin contact and inhalation of vapor or mist.

Spill Measures

Small quantities of less than 5 gallons may be flushed down drain. For larger quantities wipe up with an absorbent material and dispose of in accordance with water to minimize oxidizing effect on spilled surface.

SARA Properties:

Hazard Properties: Fire Sudden Release Reactivity

Tier II Report Exemption: Immediate Delayed
Exempt On New Inventory
Chemical State: Solid Liquid Gas
Chemical Type: Pure Mixture Undefined
Specific Gravity: 1.085

[Home](#) | [Help](#) | [Sign Out](#)

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CHEMICAL COMPLIANCE CENTER

Standard Options

- Options Menu
- Search Page
- Help
- Sign Out

Product Name: 02320 Meropa 150
 Manufacturer: Chevron
 Revision Date: 1/6/1983

Record Options

Common Names:

Report Options

Notes:

Additional Options

- View MSDS Document

Synonyms:

Navigation Options

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|----------------------|-------|---------|-----------------|
| Methacrylate polymer | | 1.00% | Less Than 1 |
| Sulfur Phosphorus | | 5.00% | 1-5 |
| Petroleum Oil | | 100.00% | Greater Than 95 |

HMIS

Health:

Flammability:

Reactivity:

Protective:

NFPA

Toxicity:

Fire:

Reactivity:

Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|--------------------------|--------|
| Hydro | | <input type="checkbox"/> | |

Attributes

- No Regulation Section
- No HMIS and/or NFPA

Regulations

First Aid

Eye: As with most foreign materials, should eye contact occur, flush eyes with plenty of water.

Skin: None considered necessary.

Inhalation: None considered necessary.

Ingestion: None considered necessary.

Other: Other Instruction: None.

Personal Protection

Eye: Chemical type goggles or face shield optional.

Skin: Exposed employees should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly.

Inhalation: None required if exposures are within permissible concentrations; see below.

Ventilation: Normal.

Other:

Spill Measures

Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Remarks: Waste Classification: Product has been evaluated for RCRA characteristics and does not meet criteria of a hazardous waste if discarded in its purchased form.

SARA Properties:

Hazard Properties: Fire Sudden Release Reactivity
 Immediate Delayed

Tier II Report Exemption:

Exempt Or New Inventory

Chemical State:

Solid

Liquid

Gas

Chemical Type:

Pure

Mixture

Undefined

Specific Gravity:

0.8913

[Home](#) | [Help](#) | [Sign Out](#)

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Standard Options

- Options Menu
- Search Page
- Help
- Sign Out

Product Name: Mobil DTE Oil 88
 Manufacturer: Exxon (ExxonMobil)
 Revision Date: 12/6/1984

Record Options

Common Names:

Report Options

Notes:

Additional Options

- View MSDS Document

Synonyms:

Navigation Options

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|------------------------------------|-------|---------|---------|
| Refined Mineral Oils | | 100.00% | >95 |
| ADDITIVES AND/OR OTHER INGREDIENTS | | 5.00% | <5 |

HMIS

Health:

Flammability:

Reactivity:

Protective:

NFPA

Toxicity:

Fire:

Reactivity:

Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|--------------------------|--------|
| Hydro | | <input type="checkbox"/> | |

Attributes

No HMIS and/or NFPA

Regulations

First Aid

Eye: Flush with water.

Skin: Wash contact areas with soap and water.

Inhalation: Not expected to be a problem.

Ingestion: Not expected to be a problem. However, if greater than 1/2 liter (pint) ingested, immediately give 1 to 2 glasses of water and call a physician, hospital emergency room or poison control center for assistance. Do not induce vomiting or give anything by mouth to an unconscious person.

Other:

Personal Protection

Eye: No special equipment required. Generally eye contact is unlikely with this type material. If eye contact is likely, safety glasses with side shields or chemical type goggles should be worn.

Skin: No special equipment required. However, good personal hygiene practices should always be followed.

Inhalation: No special requirements under ordinary conditions of use and with adequate ventilation.

Ventilation: No special requirements under ordinary conditions of use and with adequate ventilation.

Other:

Spill Measures

Procedures if Material is Released or Spilled: Adsorb on fire retardant treated sawdust, diatomaceous earth, etc. Shovel up and dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal. Environmental Impact: Report spills as required to appropriate authorities. U.S. coast guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. Report spill to coast guard toll free number 800-424-8802.

SARA Properties:

| | | | |
|---------------------------|--|---|-------------------------------------|
| Hazard Properties: | <input type="checkbox"/> Fire | <input type="checkbox"/> Sudden Release | <input type="checkbox"/> Reactivity |
| | <input type="checkbox"/> Immediate | <input type="checkbox"/> Delayed | |
| Tier II Report Exemption: | <input type="checkbox"/> Exempt On New Inventory | | |
| Chemical State: | <input type="checkbox"/> Solid | <input checked="" type="checkbox"/> Liquid | <input type="checkbox"/> Gas |
| Chemical Type: | <input type="checkbox"/> Pure | <input checked="" type="checkbox"/> Mixture | <input type="checkbox"/> Undefined |
| Specific Gravity: | | | |

[Home](#) | [Help](#) | [Sign Out](#)

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Standard Options

- Options Menu
- Search Page
- Help
- Sign Out

Product Name: Shell Diala Oil AX
 Manufacturer: Shell
 Revision Date: 7/24/1985

Record Options

Common Names:

Report Options

Notes:

Additional Options

- View MSDS Document

Synonyms:

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|--|------------|---------|---------|
| Solvent Refined, Hydrotreated Middle Distillate | 64742-46-7 | 100.00% | 60-100 |
| Butylated Hydroxy Toluene | 128-37-0 | 0.20% | <0.2 |
| Severely Hydro-Treated Light Naphthenic Distillate | 64742-53-6 | 40.00% | 0-40 |

Navigation Options

HMIS

Health: 1
 Flammability: 1
 Reactivity: 0

Protective:

NFPA

Toxicity:
 Fire:
 Reactivity:
 Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|--------------------------|--------|
| Hydro | | <input type="checkbox"/> | |

Attributes

Poor Quality Image

Regulations

- NPRI
- NYC Hazardous Substance List
- Pennsylvania Hazardous Substances List

First Aid

Eye: Flush eyes with water. If irritation occurs, get medical attention.

Skin: Remove contaminated clothing/shoes and wipe excess from skin. Flush skin with water. Follow by washing with soap and water. If irritation occurs, get medical attention.

Inhalation: Remove victim to fresh air and provide oxygen if breathing is difficult. Get medical attention.

Ingestion: Do not induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Get medical attention.

Other:

Personal Protection

Eye:

Skin: Wear chemical-resistant gloves and other protective clothing as required to minimize skin contact. No special eye protection is routinely necessary. Test data from published literature and/or glove and clothing manufacturers indicate the best protection is provided by nitrile gloves.

Inhalation: If exposure may or does exceed occupational exposure limits (section IV) use a NIOSH-approved respirator to prevent overexposure. In accord with 29 CFR 1910.13 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors and particulates.

This product is classified as an oil under section 311 of the clean water act. Spills entering (a) surface water or (e) any water courses or sewers entering/leading to surface waters that cause a sheen must be reported to the national response center. 800-424-8002

Ventilation:

Other:

Spill Measures

May burn although not readily ignitable. Use cautions judgment when cleaning up large spills. Large Spills: Wear respirator and protective clothing as appropriate. Shut off source of leak if safe to do so. Dike and contain. Remove with vacuum trucks or pump to storage salvage vessels. Soak up residue with an absorbent such as clay, sand, or other suitable materials; dispose of properly. Flush area with water to remove trace residue. Small Spills: Take up with an absorbent material and dispose of properly.

SARA Properties:

| | | | |
|---------------------------|--|---|-------------------------------------|
| Hazard Properties: | <input type="checkbox"/> Fire | <input type="checkbox"/> Sudden Release | <input type="checkbox"/> Reactivity |
| | <input checked="" type="checkbox"/> Immediate | <input checked="" type="checkbox"/> Delayed | |
| Tier II Report Exemption: | <input type="checkbox"/> Exempt On New Inventory | | |
| Chemical State: | <input type="checkbox"/> Solid | <input checked="" type="checkbox"/> Liquid | <input type="checkbox"/> Gas |
| Chemical Type: | <input type="checkbox"/> Pure | <input checked="" type="checkbox"/> Mixture | <input type="checkbox"/> Undefined |
| Specific Gravity: | 0.883 | | |

[Home](#) | [Help](#) | [Sign Out](#)

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1005



- Standard Options
- Options Menu
- Search Page
- Help
- Sign Out

Product Name: ABC Multipurpose
 Manufacturer: Tyco International (Mallinckrodt)
 Revision Date:

- Record Options
- Report Options

Common Names:
 Notes:

- Additional Options
- View MSDS Document

Synonyms:

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|---------------|-------|-------|---------|
|---------------|-------|-------|---------|

- Navigation Options

HMIS

Health:
 Flammability:
 Reactivity:
 Protective:

NFPA

Toxicity:
 Fire:
 Reactivity:
 Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|--------------------------|--------|
| Hydro | | <input type="checkbox"/> | |

Attributes

- Poor Quality Image
- No Ingredients on MSDS
- No HMIS and/or NFPA
- No Regulation Section
- Missing Revision Date

Regulations

First Aid

Eye:
 Skin:
 Inhalation:
 Ingestion:
 Other: Cleanse thoroughly.

Personal Protection

Eye:
 Skin:
 Inhalation:
 Ventilation:
 Other: OTHER PROTECTIVE EQUIPMENT: To avoid discomfort-respiratory, eye, and surface protection may be worn.

Spill Measures

Avoid breathing powder dust. Powder is slightly hygroscopic and corrosive; clean immediately after use. May be handled dry by sweeper, vacuum, air etc. and washed down with water.

SARA Properties:

Hazard Properties: Fire Sudden Release Reactivity
 Immediate Delayed
 Tier II Report Exemption: Exempt On New Inventory
 Chemical State: Solid Liquid Gas
 Chemical Type: Pure Mixture Undefined
 Specific Gravity: 1



Standard Options

- Options Menu
- Search Page
- Help
- Sign Out

Product Name: CO2
 Manufacturer: Unknown Manufacturer
 Revision Date:

Record Options

Common Names:

Report Options

Notes:

Additional Options

- View MSDS Document

Synonyms: Dry Ice; Carbonic Acid

Navigation Options

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|---------------|-------|---------|---------|
| CO2 | | 100.00% | |

HMIS

Health:

Flammability:

Reactivity:

Protective:

NFPA

Toxicity:

Fire:

Reactivity:

Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|-------------------------------------|--------|
| Hydro | | <input checked="" type="checkbox"/> | |

Attributes

- No Regulation Section
- Unknown Manufacturer
- No HMIS and/or NFPA
- Missing Revision Date

Regulations

First Aid

Eye:

Skin:

Inhalation:

Remove exposed person at once to uncontaminated area, keep warm and quiet, administer oxygen if loss of consciousness has occurred, begin artificial respiration if breathing has stopped, call physician at once. Treat for frostbite if necessary.

Ingestion:

Other:

Personal Protection

Eye:

Skin:

Inhalation:

Respiratory protection-self-contained breathing apparatus, positive pressure hose mask, or air-line mask. Protective clothing- leather gloves cylinder & solid handling.

Ventilation:

Local exhaust or general ventilation sufficient to maintain concentration below 1/2%, and to assure adequate oxygen.

Other:

None.

Spill Measures

Use adequate ventilation. Check cylinder weights for loss. Replace if more than 10% weight reduction.

SARA Properties:

| | | | |
|---------------------------|--|---|---|
| Hazard Properties: | Fire | Sudden Release | Reactivity |
| Tier II Report Exemption: | <input checked="" type="checkbox"/> Immediate | <input checked="" type="checkbox"/> Delayed | |
| Chemical State: | <input type="checkbox"/> Exempt On New Inventory | | |
| Chemical Type: | <input type="checkbox"/> Solid | <input type="checkbox"/> Liquid | <input checked="" type="checkbox"/> Gas |
| Specific Gravity: | <input type="checkbox"/> Pure | <input type="checkbox"/> Mixture | <input type="checkbox"/> Undefined |
| | 1.52 | | |

[Home](#) | [Help](#) | [Sign Out](#)

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SAFETEC

CHEMICAL COMPLIANCE CENTER

Standard Options

- Options Menu
- Search Page
- Help
- Sign Out

Product Name: Accudri SF6
 Manufacturer: Honeywell (AlliedSignal)
 Revision Date: 5/1/1989

Record Options

Common Names:

Report Options

Notes:

Additional Options

- View MSDS Document

Synonyms:

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|---------------------|-----------|---------|---------|
| Sulfur Hexafluoride | 2551-62-4 | 100.00% | |

Navigation Options

HMIS

Health:

Flammability:

Reactivity:

Protective:

NFPA

Toxicity:

Fire:

Reactivity:

Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|--------------------------|--------|
| Hydro | | <input type="checkbox"/> | |

Attributes

- No HMIS and/or NFPA
- Poor Quality Image

Regulations

- Global Automotive Declarable Substance List
- NPRI
- NYC Hazardous Substance List
- Pennsylvania Hazardous Substances List

First Aid

- Eye:
- Skin:

Inhalation: Immediately remove to fresh air. If breathing has stopped, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen provided a qualified operator is available. Call a physician.

Ingestion:

Other:

Personal Protection

- Eye:** Safety glasses.
- Skin:** Not generally required.
- Inhalation:** Use self-contained breathing apparatus or air-supplied respirator.
- Ventilation:** Mechanical (General).
- Other:** Not generally required.

Spill Measures

Evacuate unprotected personnel. Protected personnel (Section E) may shut off leak. Product will disperse itself.

SARA Properties:

- Hazard Properties:
- Fire
 - Immediate
 - Sudden Release
 - Delayed
 - Reactivity

Tier II Report Exemption:

Chemical State:

Chemical Type:

Specific Gravity:

Exempt On New Inventory

Solid

Liquid

Gas

Pure

Mixture

Undefined

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Standard Options

- Options Menu
- Search Page
- Help
- Sign Out

Product Name: Anderol 500 Synthetic Compressor Oil
 Manufacturer: Huls America (Vestimid)
 Revision Date: 11/9/1990

Record Options

Common Names:

Report Options

Notes:

Additional Options

- View MSDS Document

Synonyms:

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|---------------|-------|-------|---------|
|---------------|-------|-------|---------|

Navigation Options

HMIS

Health:
 Flammability:
 Reactivity:
 Protective:

NFPA

Toxicity:
 Fire:
 Reactivity:
 Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|--------------------------|--------|
| Hydro | | <input type="checkbox"/> | |

Attributes

- No Regulation Section
- No Ingredients on MSDS

Regulations

First Aid

Eye: Flush eyes with water for 15 minutes. Call a physician if irritation develops.
Skin: Wash skin with soap and water.
Inhalation: Remove to fresh air. Give artificial respiration or oxygen if necessary.
Ingestion: Induce vomiting if victim is conscious. Call a physician. Never give anything by mouth to an unconscious person.

Other:

Personal Protection

Eye: Chemical splash goggles or face shield.
Skin: Impermeable gloves to minimize skin contact.
Inhalation: If overheated, use appropriate NIOSH-approved respiration protective equipment.
Ventilation: Local Exhaust: Recommended. Mechanical: Recommended. Special: N/A. Other: N/A.
Other: OTHER PROTECTIVE EQUIPMENT: Eye wash fountain. Safety shower. Wash contaminated clothing before reuse.

Spill Measures

Cover with an inert, absorbent material and remove to disposal container. Flush residual material with water. Obey all relevant federal, state and local laws.

SARA Properties:

Hazard Properties: Fire Sudden Release Reactivity
 Immediate Delayed
 Tier II Report Exemption: Exempt On New Inventory

Chemical State: Solid Liquid Gas
Chemical Type: Pure Mixture Undefined
Specific Gravity: 0.95

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SAFETEC

CHEMICAL COMPLIANCE SOLUTIONS

Standard Options

- Options Menu
- Search Page
- Help
- Sign Out

Product Name: Waste Oil
 Manufacturer: Northern California Power Agency
 Revision Date: 6/8/1992

Record Options

Common Names:

Report Options

Notes:

Additional Options

- View MSDS Document

Navigation Options

Synonyms:

Ingredients

| Chemical Name | CAS # | Max % | % Range |
|---------------|-------|-------|---------|
|---------------|-------|-------|---------|

HMIS

Health:
 Flammability:
 Reactivity:
 Protective:

NFPA

Toxicity:
 Fire:
 Reactivity:
 Special:

Facility

| Facility | Department | Archived | Status |
|----------|------------|-------------------------------------|--------|
| Hydro | | <input checked="" type="checkbox"/> | |

Attributes

- No HMIS and/or NFPA
- No Regulation Section
- No Ingredients on MSDS

Regulations

First Aid

Eye: As with most foreign materials, should eye contact occur, flush eyes with plenty of water.
Skin: Wash exposed areas with soap and water.
Inhalation: If irritation or drowsiness occurs, remove to fresh air.
Ingestion: None considered necessary.
Other: Other Instructions: Refer to Material Safety Data Sheet for the particular product in the waste oil.

Personal Protection

Eye: Chemical type goggles or face shield optional.
Skin: Exposed employees should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times with soap and water, and laundering or dry cleaning soiled work clothing.
Inhalation: If vapor, mist or dust is generated in excess of permissible concentrations, use respirator approved by MSHA or NIOSH.
Ventilation: Adequate to meet component permissible concentrations.
Other:

Spill Measures

(Transportation Spills: Call CHEMTREC (800) 424-9300). Contain spill if possible. Wipe up or absorb on suitable material and temporarily store in a sealed drum for proper subsequent disposal. Remarks: See Material Safety Data Sheet for particular product in the waste oil.

SARA Properties:

Hazard Properties: Fire Sudden Release Reactivity
 Immediate Delayed

Tier II Report Exemption:

Exempt On New Inventory

Chemical State:

Solid

Liquid

Gas

Chemical Type:

Pure

Mixture

Undefined

Specific Gravity:

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MATERIAL SAFETY DATA SHEET

1016B

SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Chemical/Trade Name (Identity used on label): **Valve Regulated Lead-Acid Battery** Chemical Family/Classification: **Electric Storage Battery**

Synonyms/Common Name: **Lead Acid Battery** HMIS Rating for Sulfuric Acid: **302X** Shipping Regulations: **See Section IX**

COMPANY NAME: GASTON BATTERY INDUSTRIAL LTD.

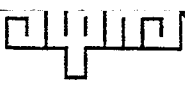
**ADDRESS: ROOM 1713A WELL FUNG INDUSTRIAL CENTRE,
68 TA CHUEN PING STREET, KWAICHUNG, HONGKONG**

CONTACT: Alpha Industrial Power, Inc. Tel: 800-996-6104. Fax# 678-584-9259

24HR Emergency Tel#: Chemtrec: 1-800-424-9300

SECTION II: HAZARDOUS INGREDIENTS

| MATERIAL: | % by Wt. | CAS Number | EIGHT HOUR EXPOSURE LIMITS | | |
|---|----------|------------|----------------------------|---|-----------------------|
| | | | OSHA PEL | ACGIH TLV | Other NIOSH REL |
| Specific Chemical Identity: LEAD | 50 | 7439-92-1 | 50 µg/m ³ | 150 µg/m ³ | 100 µg/m ³ |
| Common Name: GRID | | | | | |
| Specific Chemical Identity: LEAD DIOXIDE | 21 | 1309-60-0 | 50 µg/m ³ | 150 µg/m ³ | 100 µg/m ³ |
| Common Name: LEAD OXIDE | | | | | |
| Specific Chemical Identity: LEAD SULFATE | <1 | 7446-14-2 | 50 µg/m ³ | 150 µg/m ³ | 100 µg/m ³ |
| Common Name: ANGLESITE | | | | | |
| Specific Chemical Identity: SULFURIC ACID (40%) | 22 | 7664-93-9 | 1mg/m ³ | 1 mg/m ³ STEL | 1mg/m ³ |
| Common Name: BATTERY ELECTROLYTE (ACID) | | | | 3mg/m ³ (15 Min. Max./8 hr.shift) | |


SECTION III: Physical Data

| | |
|---|---|
| Material is (at normal temperatures): <u>X</u> SOLID <u>X</u> LIQUID <u>_</u> Gas | Appearance and Odor: Battery electrolyte (acid) is a clear to cloudy liquid with a sharp penetrating, pungent odor. Acid saturated lead oxide is a dark reddish-brown to gray solid with slight acidic odor. |
| Boiling Point (at 760 mm Hg) Lead 1755°C Battery Electrolyte (Acid) 110-112°C | Melting Point: Lead 327.4°C |
| Specific Gravity: (H ₂ O = 1) Battery Electrolyte (Acid) 1.300 | Vapor Pressure: <u>X</u> (mm Hg at 20°C) (PSIG) Battery Electrolyte (Acid) 11.7 |
| Vapor Density (Air = 1) Battery Electrolyte (Acid) 3.4 | Solubility in H ₂ O Lead and Lead Dioxide are not soluble. Battery electrolyte (acid) is 100% soluble in water |
| % Volatile By Weight Not Determined | Evaporation rate (Butyl Acetate =1) Not Determined |

SECTION IV: Health Hazard Information

NOTE: Under normal conditions of battery use, internal components will not present a health hazard. The following is provided for battery electrolyte (acid) and lead for exposure that may occur during battery production or container breakage or under extreme heat conditions such as fire.

ROUTES AND METHODS OF ENTRY**Skin Contact**

Battery electrolyte (acid) may cause irritative contact dermatitis.

Skin Absorption

Skin absorption is not a significant route of entry.

Eye Contact

Battery electrolyte (acid) will irritate the eyes upon contact.

Ingestion

Hands contaminated by contact with internal components of a battery can cause ingestion of lead/lead compounds. Hands should be washed prior to eating or drinking.

SIGNS AND SYMPTOMS OF OVEREXPOSURE**Acute Effects**

Acute effects of overexposure to lead compounds are GI (gastrointestinal) upset, loss of appetite, diarrhea, constipation with cramping, difficulty in sleeping and fatigue. Exposure and/or contact with battery electrolyte (acid) may lead to acute irritation of the skin, corneal damage of the eyes if not washed immediately, and irritation to the mucous membranes of the eyes and upper respiratory system, including the lungs.

Chronic Effects

Lead and its compounds may cause chronic anemia, damage to the kidneys and nervous system. Lead may also cause reproductive system damage and can affect developing fetuses in pregnant women. Battery electrolyte (acid) may lead to scarring of the cornea and



chronic bronchitis, as well as erosion of tooth enamel in mouth breathers in repeated exposures.

POTENTIAL TO CAUSE CANCER

The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mist containing sulfuric acid" as a Category 1 carcinogen, a substance that is carcinogenic to humans. The ACGIH has classified "strong inorganic acid mist containing sulfuric acid" as an A2 carcinogen (suspected human carcinogen). These classifications do not apply to liquid forms of sulfuric acid or sulfuric acid solutions contained within a battery. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product, such as overcharging, may however result in the generation of sulfuric acid mist.

The IARC study classified lead as an A3 carcinogen (animal carcinogen). While the agent is carcinogenic in experimental animals at relatively high doses, the agent is unlikely to cause cancer in humans except under uncommonly high levels of exposure. For further information, see the ACGIH's pamphlet, *1996 Threshold Limit Values and Biological Exposure Indices*.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation

Consult a physician if any of the acute effects listed above develop.

Skin

Wash thoroughly with soap and water. If acid is splashed on clothing, remove and discard. If acid is splashed in shoes, remove them immediately and discard.

Eyes

IMMEDIATELY rinse with cool running water for at least 15 minutes. Seek medical attention after rinsing.

Ingestion

Lead/Lead compounds: Consult a physician.

Battery Electrolyte (Acid): Do not induce vomiting. Refer to a physician immediately.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Inorganic lead and its compounds can aggravate chronic forms of kidney, liver, and neurological diseases. Contact of battery electrolyte (acid) with the skin may aggravate skin diseases such as eczema and contact dermatitis.



SECTION V: FIRE AND EXPLOSION DATA

| | | |
|---|---|---|
| Flash Point (test method) Hydrogen - 259°C | Auto Ignition Temperature Hydrogen 580°C | Flammable Limits in Air, % by 3/4 Vol. (Hydrogen) Lower - 4.1 Upper - 74.2 |
|---|---|---|

Extinguishing Media

Dry chemical, foam, or CO₂

Special Fire Fighting Procedures

Use positive pressure, self-contained breathing apparatus.

Unusual Fire and Explosion Hazard

Hydrogen and oxygen gases are produced in the cells during normal battery operation (hydrogen is flammable and oxygen supports combustion). These gases enter the air through the vent caps. To avoid the chance of a fire or explosion, keep sparks and other sources of ignition away from the battery.

SECTION VI: REACTIVITY DATA

| | |
|--|--|
| Stability | Conditions to Avoid |
| <input type="checkbox"/> Unstable <input checked="" type="checkbox"/> Stable | Sparks and other sources of ignition. Prolonged overcharging and/or overheating. |

Incompatibility (materials to avoid)

Lead/lead compounds: Potassium, carbides, sulfides, peroxides, phosphorus, sulfur.

Battery electrolyte (acid): combustible materials, strong reducing agents, most metals, carbides, organic materials, chlorates, nitrates, picrates, and fulminates.

Hazardous Decomposition Products

Lead/Lead compounds: Oxides of lead and sulfur

Battery electrolyte (acid): Hydrogen, sulfur dioxide, sulfur trioxide

Hazardous Polymerization Conditions to Avoid

| | |
|---|---|
| <input type="checkbox"/> May Occur <input checked="" type="checkbox"/> Will Not Occur | High temperatures. Battery electrolyte (acid) will react with water to produce heat. Can react with oxidizing or reducing agents. |
|---|---|



SECTION VII: CONTROL MEASURES

Engineering Controls

Store lead acid batteries with adequate ventilation. Room ventilation is required for batteries utilized for standby power generation. Never recharge batteries in an unventilated, enclosed space.

Work Practices

Do not remove vent caps. Follow shipping and handling instructions, which are applicable to the battery type. To avoid damage to terminals and seals, do not double-stack industrial batteries.

Personal Protective Equipment

Respiratory Protection

None required under normal handling conditions. If an overcharge or overheating condition exists and concentrations of sulfuric acid mist are known or suspected this may cause respiratory irritation. If irritation occurs, wear a respirator suitable for protection against acid mist.

Eyes and Face

Chemical splash goggles are preferred. Also acceptable is a chemical face shield worn over safety glasses with solid side shields.

Hands, Arms, and Body

Rubber or plastic acid resistant gloves with elbow length gauntlet.

Other Special Clothing and Equipment

Under severe exposure or emergency conditions, wear acid resistant clothing and boots.



SECTION VIII: SAFE HANDLING PRECAUTIONS

Hygiene Practices

Following contact with internal battery components, wash hands thoroughly before eating, drinking, or smoking.

Projective Measures to be Taken During Non-Routine Tasks, Including Equipment Maintenance
Wear recommended eye protection. If clothing becomes saturated with acid, remove and wash affected area with water for 15 minutes. Discard saturated clothing. Do not permit flames or sparks in the vicinity of battery(s).

SPILL OR LEAK PROCEDURES

Protective Measures to be Taken if Material is Released or Spilled
Remove combustible materials and all sources of ignition. Contain spill with soda ash (sodium carbonate) or quicklime (calcium oxide). Mix well. Make certain mixture is neutral, then collect residue and place in a drum or other suitable container. Dispose of as a hazardous waste.

Wear acid-resistant boots, chemical face shield, chemical splash goggles, and acid-resistant gloves.

DO NOT RELEASE UNNEUTRALIZED ACID!

| Waste | Disposal | Method |
|-----------------------------|---|--------|
| Battery Electrolyte (Acid): | Neutralize as above for a spill, collect residue, and place in a drum or suitable container. Dispose of as a hazardous waste. | |

DO NO FLUSH LEAD-CONTAMINATED ACID INTO SEWER.

Batteries: Send to lead smelter for reclamation following applicable Federal, state, and local regulations.

Product can be recycled along with automotive (SLI) lead acid batteries.

OTHER HANDLING AND STORAGE PRECAUTIONS.

None Required.

SECTION IX: DEPARTMENT OF TRANSPORTATION AND INTERNATIONAL SHIPPING REGULATIONS

| | |
|------|--|
| DOT | Battery, wet non-spillable, not subject to regulations |
| IATA | Not restricted for air transport - compliance with IATA/ICAO Special Provision A67 |
| IMO | Battery, wet non-spillable, not subject to regulations |