Battery Handling Safety Meeting Kit

Batteries are used to power our automobiles, trucks, tractors, and construction or power equipment. There are different types of batteries such as lead-acid batteries, gel cells, and lead-calcium batteries. Most batteries contain sulfuric acid and lead. Because batteries contain chemicals, chemical reaction by-products, and an electrical current they can pose a hazard to workers if not handled properly. Workers that operate, maintain, and recharge batteries must use caution and common sense.

CHEMICAL HAZARDS POSED BY BATTERIES

The sulfuric acid (electrolyte) in batteries is highly corrosive. Acid exposure can lead to skin irritation, eye damage, respiratory irritation, and tooth enamel erosion. In marine environments, do not allow the battery solution to mix with salt water; it can produce hazardous chlorine gas.

If you handle the lead plates in a battery and don’t wash your hands properly, you could be exposed to lead. Signs of lead exposure include loss of appetite, diarrhea, constipation with cramping, difficulty sleeping, and fatigue.

OXYGEN AND HYDROGEN GAS HAZARDS

Be careful with flammable fluids when working on a battery-powered engine. The electrical voltage created by batteries can ignite flammable materials and cause severe burns. Workers have been injured and killed when loose or sparking battery connections ignited gasoline and solvent fumes during vehicle maintenance.

MORE DANGERS

Batteries can be very dense and heavy. Use proper lifting techniques to avoid back injuries. Battery casings can be brittle

and break easily; they should be handled carefully to avoid an acid spill. Make sure that a battery is properly secured and upright in the vehicle or equipment. If a battery shows signs of damage to the terminals, case, or cover, replace it with a new one.

SAFETY PRECAUTIONS TO PREVENT ACCIDENTS OR INJURIES WHEN HANDLING BATTERIES

1. **Always wear protective eyewear and gloves.** The electrolyte in flooded lead-acid batteries contains sulfuric acid. The electrolyte can not only damage clothes, but it will burn skin if left untreated. If you come into contact with the battery's electrolyte, wash and flush the area with water immediately. If it comes into contact with your eyes, flush immediately with water for 15 minutes and promptly seek medical attention.
2. **Eliminate sources of sparks or flames.** Charging lead-acid batteries produce hydrogen and oxygen gases from the electrolyte. When performing maintenance on lead-acid batteries, a spark or flame can ignite these gases and could cause the battery to explode.
3. **Keep metal tools and jewelry away from batteries.** Non-insulated tools or jewelry can run the risk of arcing if accidental contact is made between a battery terminal and grounded frame or another terminal. Also, gold or silver jewelry can become extremely hot if contact is made.
4. **Use caution when removing a lead-acid battery.** Lead acid batteries are heavy and many accidental injuries occur when lifting or moving batteries by hand. Use a battery carrier or make sure you have a good grip on the battery and have the strength to hold it safely.
5. **Keep a neutralizing solution close by.** A baking soda and water solution neutralizes the sulfuric acid in the battery's electrolyte. Create a small solution in a jar or container and keep it close by.

6. **Use the correct type of charger.** Not all battery chargers are the same or work properly on a flooded lead-acid battery. Refer to the manufacturer's recommendations on how to properly charge the battery and make sure your charger provides the best algorithm that maximizes battery life and power output. Battery charging should always be done in a well-ventilated area.
7. **Maintain electrolyte at proper levels.** Never use a garden hose to fill batteries. Use only distilled or deionized water in a watering pitcher, water caddy or an automated watering system to properly fill batteries. Never fill battery cells above the level indicator. If the electrolyte level is below the tops of the battery plates prior to charging, add just enough water to cover them. Once the battery has been fully recharged, bring the water level up to approximately ¼ inch from the bottom of the fill well indicator. Never fill a low cell all the way to the fill well indicator before charging.
8. **Store batteries in a cool, dry and ventilated area.** If you store large quantities of batteries, be sure the area is clear of any heat sources, flames, and sparks. Clearly post "No Smoking" and "Flammable" signs in the area.
9. **Make sure battery vent caps are fully seated in place.** Loose or improperly seated vent caps can spill electrolyte and expose the gases inside the battery to conditions that could cause an explosion.
10. **Dedicate an area for battery maintenance.** Prevent accidents by dedicating an area for battery maintenance that has properly insulated tools, protective wear, a wash station, ventilation and plenty of workspace.

FINAL WORD

Lithium-ion batteries offer many benefits for companies that want to increase efficiency and improve workflow. For companies that prioritize safety in their operations, lithium-ion batteries are especially valuable thanks to their design, which promotes features such as temperature control, simple charging and a lack

of watering requirements.