

Battery Safety

Batteries are used everywhere - farm equipment, vehicles, forklifts, and a multitude of other applications which make our lives easier. However, they come with hazards that can cause serious property damage, injuries and death. Your safety program should include training and procedures on battery maintenance, jump-starting, installation or removal, and charging.

Ignoring the potential hazards of batteries can have severe consequences like exploding or catching fire. This may cause acid to be released which can burn and scar the skin. Toxic fumes can also be produced and cause lung damage if inhaled and blindness upon contact with the eyes. The use of Personal Protective Equipment (PPE) is mandatory when working with batteries and should be part of your safety program.

Charging batteries produces explosive – and highly flammable – gasses. As a result batteries should be charged away from ignition sources such as hot work activities, open flames, or other electrical equipment.

Batteries must be kept clean and dust-free to protect against shorting. Spilled electrolyte mixed with dust on a battery can create a low resistance electrical path, which may cause a short in the battery.

Maintenance and inspection programs should be tailored to the particular battery. Flooded non-maintenance free lead-acid storage batteries require the most maintenance. However, even so-called "maintenance free batteries" may still require some upkeep such as cleaning. Consult the manufacturer's recommendations for specific maintenance details.

The following guidelines for battery safety are intended as general information. The manufacturer's recommendations or other battery industry resources should always be followed.

Maintenance Procedures

- Batteries vent hydrogen gas which can accumulate around the battery compartment
- Always ventilate the battery compartment prior to performing any maintenance, repairs or tightening of terminal connections.

Jump Starting Batteries

- For negative ground vehicles, connect one end of the jumper lead (red) to the positive terminal of the dead battery and connect the other end to the positive terminal of the booster battery.
- Connect one end of the jumper lead to the negative terminal (black) of the booster battery, then connect the other end to the bare, metal frame at a location away from the battery of the equipment being jump-started.
- Once started, disconnect the jumper leads in reverse order.

Installing or Removing Batteries

- Shut down all related electrical loads prior to performing battery maintenance.
- Always disconnect the negative (black) terminal connector before connecting or removing the positive (red) terminal connector. This will prevent an electrical arc from occurring should a wrench touch a grounded surface.

Charging batteries

- Before connecting the charger connectors to the battery, make sure the charging circuit isn't energized.
- Follow the charger's operating instructions and make sure the connections are to the correct polarity – positive/red to positive/red and negative/black to negative/black.
- Once the connections are made, turn the charger on.

Short circuits, overcharging or other battery and charger malfunctions can produce heat buildup and even fire.

Chargers should be monitored and used only during business hours. Always make sure to follow the manufacturer's operating instructions. The charger should be unplugged from the power supply and more importantly from the battery at the end of the day. Not disconnecting the battery from the charger may cause a reverse flow of current which has been known to cause the charger to overheat resulting in explosions, fires and significant property loss.

Disconnecting Power Supply

Disconnecting the battery in equipment being stored inside the shop is a good risk management practice. This becomes even more important if the vehicle or equipment is brought in for servicing because of electrical issues or problems which may cause fires.

Devices called battery cut-off switches can be installed to make disconnecting a battery's power supply quick and easy. After installing a battery cut-off switch on the negative post, the battery cable is then attached to the cut-off switch. A mechanism on the cut-off switch tightens and loosens it, which engages or disconnects the power supply from the battery.

Cut-off switches are also an effective loss prevention tool for deterring theft. The mechanism on many of these cut-off switches can be totally removed, making it impossible to start the vehicle. This prevents thefts while the vehicle or equipment is parked overnight or being stored. In addition to preventing battery drainage.

Portable Power Supply/battery pack

These portable units are used for boosting batteries and jump-starting engines. An example of this is farm-equipment dealers using portable power units to boost equipment on their lot. They're also used when electrical power sources aren't available to operate a battery charger. They can be homemade by mounting a battery and booster cables on a portable cart.

Alternatively, manufactured units are available in various sizes depending on the boosting amps required. These units are equipped with built-in safety features to prevent incorrect installation of booster cables and short circuiting. Some units buzz if the cables are

installed in reverse and they won't deliver any cranking amps if the cables aren't attached to a battery.

These safety features are very important as homemade units have been known to cause fires, resulting in significant property damage. So if you're using a battery booster pack, seriously consider replacing it with a manufactured portable power supply/battery pack.

Preventing injuries

Serious injuries and fires caused by battery charging are often preventable. So be sure to review your battery charging equipment, replace it if necessary and adopt safe battery charging and handling procedures in writing which you can share with your employees.

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