

## Battery Recycling Safety Talk



It's no secret that our modern consumer culture can cause great harm to the environment, and that's why battery recycling plays such an important role in protecting the environment while recovering valuable materials. Unfortunately, the battery recycling process is riddled with hazard and must never be carried out without proper knowledge and training.

### Common Hazards in Battery Recycling

#### 1. Heavy Metal Exposure

Many batteries contain lead, cadmium, nickel, and other toxic metals. During handling, crushing, or shredding, dust or fumes containing these metals may be released. Chronic exposure to lead or cadmium poses health risks such as kidney, neurological, or bone damage.

#### 2. Hazardous Chemicals / Corrosives / Electrolytes

Electrolyte solutions within batteries often include strong acids (e.g., sulfuric acid) or alkalis. Leakage or rupture can release corrosive liquids, which may cause chemical burns or damage to equipment and surfaces.

#### 3. Fire and Explosion Risks

Batteries, especially lithium types, may contain stored energy capable of short-circuiting, thermal runaway, or ignition if internal separators fail, or if external damage leads to short circuits. Collection, crushing, or shredding operations may inadvertently cause sparks, leading to fires or explosions.

#### 4. Mechanical / Physical Hazards

Crushers, shredders, conveyors, and sorting equipment pose pinch-point, entanglement, or crushing hazards. Unexpected equipment motion during maintenance is particularly dangerous.

### Hazard Mitigating Strategies & Controls

#### 1. Substitution / Process Design

- Separate batteries by chemistry (lead-acid, lithium, nickel, etc.) as early as possible. This step lowers the chance of cross-contamination and reduces hazards during processing.
- Handle and use only the provided battery designs or packaging that are meant to minimize leakage, internal contact, or puncture risk.

#### 2. Engineering Controls

- Keep shredders, crushers, or material feed stations enclosed. Make sure local exhaust ventilation or dust collection systems are operating so metal-laden dust is captured at the source.
- Stay alert to spark detection and suppression systems in the area. Some stations may also use inert gas to reduce ignition risk—be aware of when and where these systems are in place.
- When working at battery handling stations, rely on the built-in spill containment trays or secondary containment to manage leaked fluids safely.



### **3. Administrative Controls & Safe Work Practices**

- Inspect incoming batteries before processing. Look for leakage, swelling, or physical damage, and report any concerns immediately.
- Follow established work zone routes. Keep handling, crushing, and storage areas separate to reduce risks.
- Never use tools or equipment that could bridge terminals or create sparks.
- Always follow lockout/tagout (LOTO) procedures when equipment is being serviced. Confirm that stored energy is fully isolated before any work begins.
- Take part in training sessions on battery chemistry hazards, spill response, electrical safety, and emergency procedures. Use this knowledge every day on the job.

### **4. Personal Protective Equipment (PPE)**

- Wear acid-resistant gloves, face shields or goggles, and protective clothing when handling electrolyte leaks or corrosive materials.
- Use respirators or masks that are rated for metal dust or chemical vapors. Make sure fit testing is completed and follow proper respirator use requirements.
- Choose cut-resistant gloves when working with sharp casings or fragments.

### **5. Monitoring, Inspection & Maintenance**

- Be aware of periodic air monitoring in the workplace. Results confirm whether airborne metals or vapors are being controlled effectively.
- Know where detection systems (smoke, fire, gas monitors) are located. Understand how they work and trust that emergency suppression systems are tested routinely.

### **6. Emergency Preparedness & Response**

- Locate spill kits, neutralizing agents (such as sodium bicarbonate for acids or special neutralizers for alkalis), eyewash stations, and safety showers in your work area. Be ready to use them when needed.
- Keep portable fire extinguishers nearby and know which ones are rated for electrical and chemical fires (Class D or multi-purpose). Review their operation and stay confident in how to use them during an emergency.

## **Conclusion**

By recognizing the hazards and applying strong controls, from separation and ventilation to PPE and emergency preparedness, battery recycling can be carried out while avoiding workplace emergencies. With the right precautions in place, the process supports both environmental stewardship and workplace safety.

## **Discussion Points**

1. *What PPE is essential to wear when working in a battery recycling facility?*