SURESERVE COMPLIANCE – FIRE
Toolbox Talk
Safe Battery Storage, Handling and Maintenance

Purpose of this Toolbox Talk:

To provide guidance on the safe storage, handling, and maintenance of batteries. Batteries, particularly large industrial or high-capacity batteries used in Fire Alarms, backup power systems, electrical systems, or solar installations, can present significant hazards, including electric shock, burns, explosions, and exposure to hazardous chemicals.

Hazards / Risks:

Batteries, whether lead-acid, lithium-ion, or other types, are widely used in various electrical applications, such as uninterruptible power supplies (UPS), solar energy systems, electric vehicles, and backup generators. The hazards associated with batteries include:

- **Electric Shock:** High-capacity batteries can deliver dangerous levels of current if terminals are accidentally short-circuited.
- **Chemical Burns:** Batteries contain corrosive substances such as sulphuric acid (in lead-acid batteries) or hazardous electrolytes (in lithium-ion batteries).
- **Fire or Explosion Risks:** Damaged, overheated, or improperly charged batteries can ignite or explode, releasing toxic gases or flames.
- **Heavy Lifting Hazards:** Large batteries are heavy and may cause musculoskeletal injuries if not handled properly.

Why:

Proper storage, handling, and maintenance of batteries are critical to:

1. **Prevent Injuries and Fatalities:** Reducing the risks of electric shock, chemical burns, or exposure to toxic gases.
2. **Preserve Equipment and Assets:** Preventing fires, explosions, or damage to electrical systems caused by improper battery maintenance.
3. **Comply with Regulations:** Adhering to the Health and Safety at Work Act 1974 and the Electricity at Work Regulations 1989 ensures that employees and the workplace remain safe.
4. **Ensure Reliability:** Proper maintenance of batteries extends their lifespan and ensures they operate effectively during critical times, such as power outages.

DO:

1. **Conduct a Dynamic Risk Assessment:** Perform a dynamic risk assessment before handling, storing, or maintaining batteries. Identify potential hazards such as exposure to hazardous chemicals, electric shock risks, and fire hazards.
2. **Wear the Correct PPE:** Always wear appropriate personal protective equipment (PPE) when working with batteries. This can include chemical-resistant gloves, safety goggles, acid-resistant aprons, and insulated gloves when working on electrical connections.
3. **Ensure Proper Ventilation:** Store and use batteries in a well-ventilated area to prevent the build-up of hydrogen gas.
4. **Inspect Batteries Regularly:** Check batteries for signs of damage, such as cracks, leaks, bulging, corrosion on terminals, or overheating. Address any defects immediately. This includes whilst in use or Storage
5. **Label Batteries Clearly:** Ensure all batteries are properly labelled with their type, voltage, and age/installation
6. **Follow Manufacturer Guidelines:** Always adhere to the manufacturer's instructions for charging, handling, and maintaining batteries.
7. **Store Batteries Properly:** Keep batteries in a cool, dry, and well-ventilated location. Ensure they are stored upright and away from direct sunlight, heat sources, flammable materials, and moisture. Ensure that Terminals are not adjacent to each other to prevent arcing and whilst in storage ensure that the Terminals are insulated.
8. **Secure Batteries During Transport:** When transporting batteries, use proper containment or secure them in place to prevent tipping, spillage, or physical damage, Ensure all terminals are insulated wither with the manufacturers nonconductive caps or insolation tape.
9. **Use Insulated Tools:** Always use tools with insulated handles when working on battery terminals to prevent accidental short circuits.
10. **Disconnect Power Before Maintenance:** Ensure the power is turned off and any connected electrical systems are isolated before performing maintenance or removing a battery.
11. **Test Batteries Safely:** Use a multimeter or battery tester that is rated for the battery's voltage and follow proper testing procedures.
12. **Dispose of Batteries Responsibly:** Follow local regulations and Sureserve Compliance Fire's procedures for waste disposal. Use licensed waste carriers to ensure environmentally safe disposal of hazardous materials. **Collect and Issue to Office waste Transfer Note**

DON'T:

1. **Don't Short-Circuit Battery Terminals:** Never place tools, metallic objects, or conductive materials near battery terminals, as this can cause a dangerous short circuit.
2. **Don't Overcharge Batteries:** Overcharging can cause overheating, release of toxic gases, or in some cases, lead to battery failure or explosion. Always use chargers with automatic shutoff features or those recommended by the manufacturer.
3. **Don't Handle Damaged Batteries Without Precautions:** If a battery is leaking, bulging, or damaged, do not touch it without the proper PPE. Isolate it immediately and arrange disposal.

4. **Don't Mix Battery Types:** Avoid mixing different types of batteries (e.g., lead-acid with lithium-ion) in storage or during use, as they have different charging and chemical requirements.
5. **Don't Store Batteries Near Flammable Materials:** Keep batteries away from flammable liquids, gases, or other materials that could ignite in the event of a fire or explosion.
6. **Don't Smoke Near Batteries:** Smoking near batteries, especially lead-acid types that produce hydrogen gas, increases the risk of explosion.
7. **Don't Ignore Warning Signs:** Unusual smells, heat, sparks, or swelling are warning signs of potential battery failure. Stop use immediately if any of these signs are noticed.
8. **Don't Use Incorrect Replacement Batteries:** Always replace batteries with ones that match the system's specifications for voltage, capacity, and type. Using incompatible batteries can cause damage or create safety hazards.
9. **Don't Leave Spills or Leaks Unaddressed:** Acid spills or leaks should be cleaned up immediately using the proper neutralising agent
10. **Don't Overload Battery Storage Areas:** Avoid stacking batteries too high or storing excessive quantities in one location. This can increase risks during handling or emergencies.
11. **Don't Touch Terminals Without PPE:** Avoid direct contact with battery terminals, especially with bare hands, as this can cause electric shock or chemical burns.
12. **Don't Ignore Expiry Dates:** Batteries have a limited lifespan and become less reliable as they age. Replace old batteries as recommended by the manufacturer.

Remember – Batteries Must be stored safely:
All terminals must be Insulated,
They must be Stored in a secure container or location to ensure that they can not tip, or rub against each other.
They should be Periodically checked for condition or defects
They must be Disposed of at the earliest opportunity and not stored for prolonged periods
Waste Disposal notes MUST be collected and issued to the office for disposal