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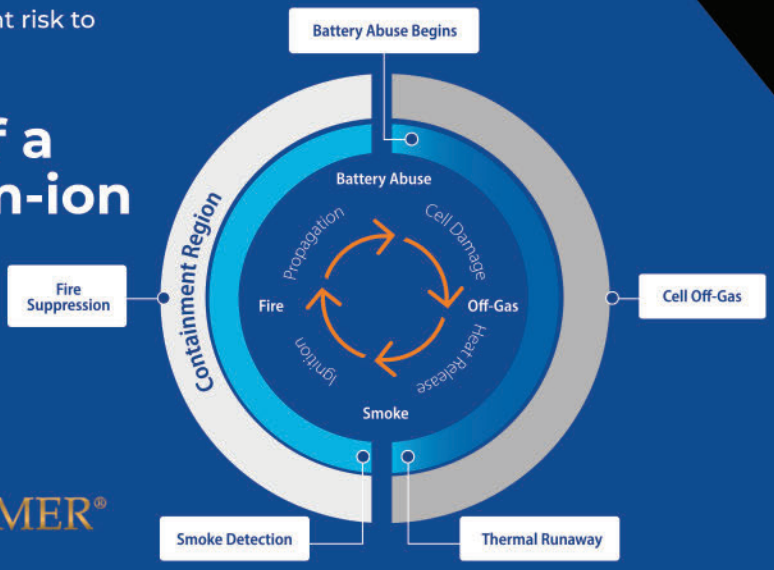
Do you know about the danger of lithium-ion batteries?

Why do lithium-ion batteries fail?

When li-ion batteries fail, it's typically due to overcharging, overheating, mechanical damage or a failed battery management system (BMS).

Though generally stable, when a li-ion battery fails, it poses significant risk to people and infrastructure.

The stages of a failing lithium-ion battery:



Lithium-Ion Risk Prevention offers advanced early failure monitoring of Lithium-Ion batteries by detecting Off-Gases.

1. **Stage 1: Battery Abuse**
   Thermal, electrical or mechanical abuse
2. **Stage 2: Off-Gas Generation**
   Time to take ACTION
3. **Stage 3: Smoke Generation**
   Catastrophic failure is imminent
4. **Stage 4: Fire Generation**
   Propagation occurrence

LI-ION TAMER®

www.levitt-safety.com | TOLL FREE: 800.268.6196
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WHAT ARE THE RISKS?

Intense fire:

When thermal runaway occurs, fires start which are nearly impossible to extinguish.

Toxic fumes:

Failing batteries will off gas, which produces toxic and flammable gasses.

WHAT IS THE SOLUTION?

The best approach is a combination of **battery storage cabinets and a risk prevention system.**

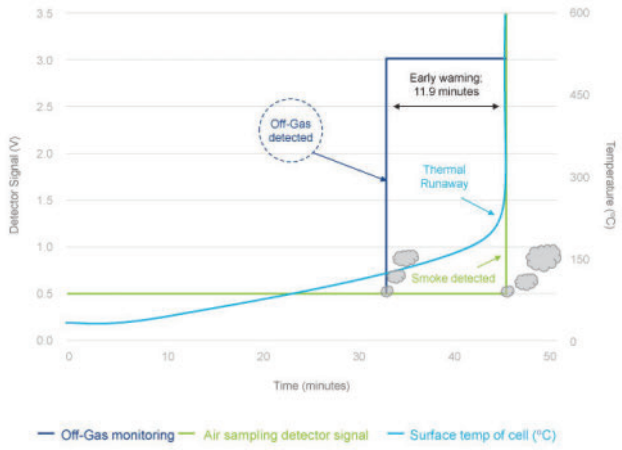
Li-ion Tamer Risk Prevention System

- Provides early detection
- Alerts battery failure during off-gas stage before risk of fire begins
- Compatible with all lithium-ion chemistries
- Easy integration, doesn't require electrical or mechanical contact with cells
- No calibration required

WHAT IS OFF GAS?

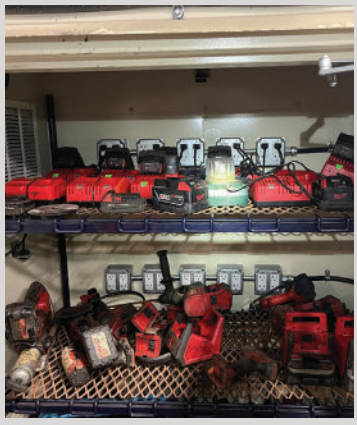
Off gas is the gas emitted as a by-product during a chemical reaction.

By choosing Li-ion Tamer versus a traditional air sampling detector, your team has an **additional 11.9 minutes to take preventative action.** At this point the threat of thermal runaway is still low and it provides risk prevention teams with adequate time to intervene. Once thermal runaway is achieved, the temperature within the battery will spike and controlling a lithium-ion battery fire is nearly impossible.



LITHIUM BATTERY STORAGE CABINETS

- 100% customizable
- Steel construction for structural integrity
- External horn and strobe to warn of any changes from normal operation
- Response time is less than 5 seconds for off-gassing event
- 15-year structural warranty
- Multi-room units available to accommodate storage and charging



Why people choose Li-Ion Tamer:

☑ Closes the gap where technology has exceeded risk assessments.
☑ Contains fire and any chemical fallout should an event occur.
☑ Ensures lithium-ion battery failures are detected and contained even when no one is monitoring them.
☑ Everything is scaleable, so you can apply the technology used to protect small assets like handheld batteries to large assets like BEV in mining.

WHAT ARE THE RISKS?

HF Chemical splashes: Suppose hydrofluoric acid is exposed to human skin and eye tissue. In that case, the individual could experience short and long-term health consequences due to its corrosive action and the toxicity caused by the rapid and painful effect on the body's calcium and magnesium levels that can lead to cardiac arrest.

Chemical decontaminant: HF splashes or vapour created by the reaction of water with damaged lithium-ion battery cells can contaminate surfaces and materials and put emergency responders at risk.

WHAT IS THE SOLUTION?

Exposures involving hydrofluoric acid require immediate attention. Rinsing the affected area as quickly as possible with water or Hexafluorine® solution is necessary.

PREVOR
ANTICIPATE AND SAVE
Toxicology Laboratory & Chemical Risk Management

HEXAFLUORINE solution applied as per protocol will:

- Provide the important mechanical removal effect helping to rinse away excess chemicals from the skin/eye tissue surface.
- Will limit the penetration of HF by creating a reverse osmotic flow helping to pull the corrosive H+ ions and toxic F- ions back to the tissue surface.
- Bind the dangerous corrosive and fluoride ions helping to quickly restore the victim's physiological tissue pH and pF levels.

The use of Hexafluorine® solution immediately following an HF exposure will help limit the penetration and reaction with human skin/eye tissue, thus helping to prevent burn lesions and other health complications from occurring.

The 5-litre portable shower is designed to manage skin exposures, and the 500 mil eye wash bottles (one bottle per eye) are designed to manage eye tissue exposures. Always use the entire contents of the containers and apply within sixty seconds of exposure.

Note: The application of calcium gluconate gel may be used following the application of Hexafluorine® solution, especially in delayed rinse (beyond one minute).

SAFUREX

- Concentrated amphoteric chemical neutralizer that can be used on all chemical agents.
- Stops the aggressiveness of acidic and basic chemicals, neutralizing them and helping to improve worker safety.
- Color indicator helps identify acidic vs basic chemicals.
- Its chelating abilities enable it to bind fluoride ions in hydrofluoric acid (HF), making it non-toxic.
- Non-hazardous to humans and the environment.

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