



New and Emerging Risks – Lithium Ion Batteries

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Introduction

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New and Emerging Risks

- Lithium-ion battery use and types of use are increasing.
- Understanding safe operation, storage and maintenance of batteries is crucial.
- Industry guidance recognises risks of lithium-ion batteries.



A Growing Problem, but Why?



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- Lithium-ion batteries are highly reactive with the environment, i.e. shock impact, general wear, poor maintenance.
- Fires are becoming more frequent within the construction and waste industries.
- Lithium-ion batteries become a self-oxidising chain-reacting fire and often cannot be extinguished.
- Likely to be hundreds of batteries on site at any one time, posing a significant fire risk.
- Battery powered transport including e-scooters and e-bikes have increased in popularity.
- Current charging arrangements on site are not sufficient and need to be improved



What is Thermal Runaway?

Chemical process rapidly producing heat and gas.

Occurs before flames are visible.

Gases vent from battery as vapour cloud - exposure is very harmful!

Carbon Monoxide

Carbon Dioxide

Hydrogen Fluoride

Hydrogen Chloride

Hydrogen Cyanide

Sulphur Dioxide

Hydrocarbon Droplets

What is Thermal Runaway?

Crushing

Penetration

Overcharging

Overheating

Short Circuit

Thermal Runaway Smoke

Fire

Explosion

What is Thermal Runaway?



Battery Fire Incidents

On 13th April 2022, Skanska UK experienced it's first Lithium-Ion battery fire.

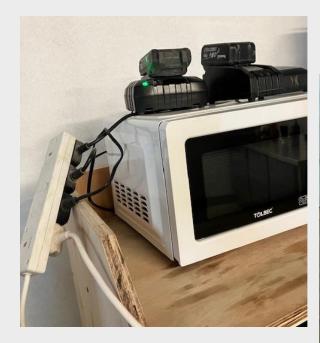






A statement from the fire services at the time advised that fires of this nature are becoming an almost daily occurrence.

Examples of Poor Practice









Final Thoughts?

Construction projects must robustly risk assess the hazards associated with lithium-ion batteries.

The following needs to be considered;

- Raise awareness with projects and supply chain.
- Review of battery charging arrangements and standard of battery banks.
- Provide suitable disposal arrangements for lithium-ion batteries.
- Provision of suitable class extinguishing media (Lith-Ex / AVD).
- Reviewing arrangements surrounding e-bikes, electric plant & electric vehicles.





