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Lithium-ion batteries - The facts and dangers.

Overview

Lithium-ion batteries power our modern world. They're found in power tools, smartphones, laptops, electric vehicles (including e-scooters and e-bikes) and more. Their efficiency and reliability have revolutionized technology (the inventors won a Nobel Prize!) but behind their omnipresence, lies lesser-known facts and dangers.

The Facts

Energy Density: Lithium-ion batteries offer a high energy density, packing more energy into a lighter, smaller package compared to traditional batteries. This makes them well-suited to portable tools, devices and e-mobility; like e-scooters and e-bikes.

Rechargeability: These batteries can be recharged numerous times without suffering from the 'memory effect', which is where traditional batteries lose their maximum capacity over time.

Versatility: The batteries' versatility allows for various shapes and sizes, making them adaptable to different devices and requirements.

Widespread use: Their popularity stems from being the primary choice for portable electronics, power tools, and the increasing use of electric mobility.

The Dangers

Thermal Runaway: Lithium-ion batteries are prone to a phenomenon known as thermal runaway. This is where one faulty cell, or an internal reaction, can rapidly spread across other cells, leading to increased temperatures and potentially causing the battery to explode.

Damage & mishandling: Physical damage, manufacturing defects, or improper charging can trigger internal shorts, accelerating the risk of thermal runaway.

Environmental impact: Improper disposal or recycling of Lithium-ion batteries can harm the environment due to the toxic chemicals and metals they contain.

Risk mitigation & safety

The impacts of Lithium-ion battery fires are affecting New Zealand businesses and individuals on an increasingly regular basis.
However, there are steps you can take today reduce and potentially manage those risks:

Isolation & containment: When storing multiple batteries, store them in a separate area. This will ensure they are isolated from external risks e.g. heat sources. This also works in reverse, containing the impact of a burning battery for as long as possible.

Temperature control: Storing Lithium-ion batteries at moderate temperatures (around 15-25ºC) helps maintain their stability. Extreme heat can affect the battery's performance and longevity, to the point where it can catch fire and explode.

Avoiding physical damage: Store batteries in a way that prevents physical damage and compression, as this can compromise battery integrity and potentially lead to short circuits.

Partial discharge: If storing batteries for an extended period of time, it's a good idea to partially discharge them to around 50% capacity first. Storing a battery at full charge for an extended period of time can degrade it's capacity.

Summary

Lithium-ion batteries will undoubtably play a significant role in our modern workplaces and lifestyles for some time into the future. But understanding their potential risks is vital.

Through increasing risk awareness and implementing safe storage practices, individuals and companies can quickly and effectively mitigate risks, and create safer working environments where Lithium-ion batteries are in use.

Creating safer working environments

At Hazero our mission is zero hazards. Our extensive range of quality products will help you store, contain and control and clean-up dangerous goods and hazardous substances.

View our full range of Hazero Lithium-ion Battery Safety Cabinets **here**.

Need help creating a safer working environment? Contact our team today on 0800 688 844 or email us at **help@hazero.co.nz**. Our team are also available for on-site assessments across New Zealand, click **here** to request a site visit.

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