EXTRACTION TO E-WASTE AND
WHAT IS IN THE BATTERY

Cobalt is a chemical element often added to alloys, two or more metallic elements, to improve their strength at high temperatures.

Cobalt is used as part of an active material ($LiCoO_2$) that is applied to the cathode and acts as a lithium receptor in the electrochemical charge-discharge process.
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Refined copper is a very ductile metal: it can be easily shaped into a thin foil, wire, or thread. Copper is also highly conductive, thermally and electrically.
Because of these qualities, copper foil is used as the current collector at the anode of a lithium-ion battery. In the lithium-ion battery of a mobile phone, current collectors take the form of a foil and must be conductive enough to receive the electrical current.

Lithium is the lightest solid element in the Periodic Table.

- Lithium in the form of lithium-ion (Li+) moves between electrodes. The movement of Li+ is responsible for creating an electrical current.
- Lithium in the form of an oxide ($LiCoO_2$, or lithium cobalt oxide) is used as the active component of the cathodeLi+ ions move between the battery's cathode and anode internally, and electrons move in the opposite direction in the external circuit. This migration is the reason the battery powers the device, because it creates the electrical current.

Extra notes

What is LiCoO2 used for?

Lithium cobalt oxide is a dark blue or bluish-gray crystalline solid, and is commonly used in the positive electrodes of lithium-ion batteries.

Aluminum is naturally occurring as the mineral *bauxite* (aluminum oxides and aluminosilicates).
Aluminum metal is very ductile: it can be easily shaped into a thin foil, wire, or thread. Aluminum is also highly conductive, thermally and electrically moving heat energy.

Because of these qualities, aluminum foil is used as the current collector at the cathode of a lithium-ion battery. In the lithium-ion battery of a mobile phone, current collectors take the form of foil and must be conductive enough to receive the electrical current.

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WHAT ARE THE RISKS?

Lithium-ion technology is generally safe when quality battery manufacturers take exhaustive steps to minimize design flaws, vet material suppliers and control quality of production.
To prevent damage and ensuing fires or explosions, manufacturers take special precautions and follow exact procedures

WHAT ARE THE RISKS OF TOO MUCH EXPOSURE TO THE BATTERY

Most of the key components are not that dangerous but they are one lithium is one of the most dangerous components in the battery and this is what it sides can give
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Li+ ions move between the battery's cathode and anode internally, and electrons move in the opposite direction in the external circuit. This migration is the reason the battery powers the device, because it creates the electrical current.Lithium toxicity mostly affects your kidneys and central nervous system. In acute lithium toxicity, your GI tract will be affected too. In more severe cases, you may experience neurological or cardiovascular problems. In early lithium toxicity, you may have mild confusion

Can we get rid of the battery

no it's in our everyday life and we use it for everything and it would be different to get all of them

Why are lithium ion batteries banned

It's a matter of safety. If on a plane a lithium-ion battery fire or explosion can turn your flight into a death trap within minutes. That's why air travel authorities have established some strict guidelines about traveling with lithium-ion batteries

What do they mine to make lithium?

Although there are over 145 minerals that contain lithium, only five are used for commercial lithium extraction: spodumene, lepidolite, petalite, amblygonite, and eucryptite. Of these, spodumene is the most abundant, yielding the vast majority of mineral-derived lithium.

How does lithium affect children and how kids die from the exposure to lithium

The most cited adverse effects, most of which were studied in adult populations, are presented in Table 1 (5). The aforementioned clinical pediatric trials have reported the most common adverse effects associated with lithium to be gastrointestinal discomfort, weight gain, headache, and tremor (4, 10, 12, 14, 15).

Lithium batteries contain potentially toxic materials including metals, such as copper, nickel, and lead, and organic chemicals, such as toxic and flammable electrolytes containing $LiClO_4$, $LiBF_4$, and $LiPF_6$.

What is the biggest cause of lithium-ion batteries exploding?

However, the most egregious cause of the Li-ion battery explosions is manufacturer defects. Cheap materials and poor quality assurance can introduce impurities or foreign particles inside the battery, which can create short circuits and increase the likelihood of thermal runaway.

In just one year there was a lot of problems in 2023 Though lithium battery fires are still occurring at the same pace as last year, the rate of injuries and deaths from them has slowed. There have been three deaths and 84 injuries this year as of Sept. 30, down from 14 deaths and 114 injuries during the same period in 2023

How many people have died in EV fires?

Electric Car Fire Injuries

There were 3,500 fire-related deaths and 15,200 fire-related injuries from these fires. Vehicle fires accounted for 15% of those fires, 18% of civilian deaths, and 11% of civilian injuries. That's 210,000 fires, 630 deaths, and 1,672 injuries. However, recent data suggest mortality rates of much less than 1% (Baird-Gunning et al. 2016). As an example, in 2012 in the United States, only 11 deaths occurred from 6815 toxic exposures to lithium (Mowry et al. 2013) yielding a mortality rate of 0.16%

Every year, about 2,500 kids in the U.S. swallow a button battery, or place it in their ear or nose. When a battery gets stuck in the throat or stomach, it can be fatal. Within 15 minutes, a chemical reaction begins that can cause burns and tissue damage So far in 2024, there have been 171 fires, 59 injuries and three fatalities caused by lithium-ion batteries.