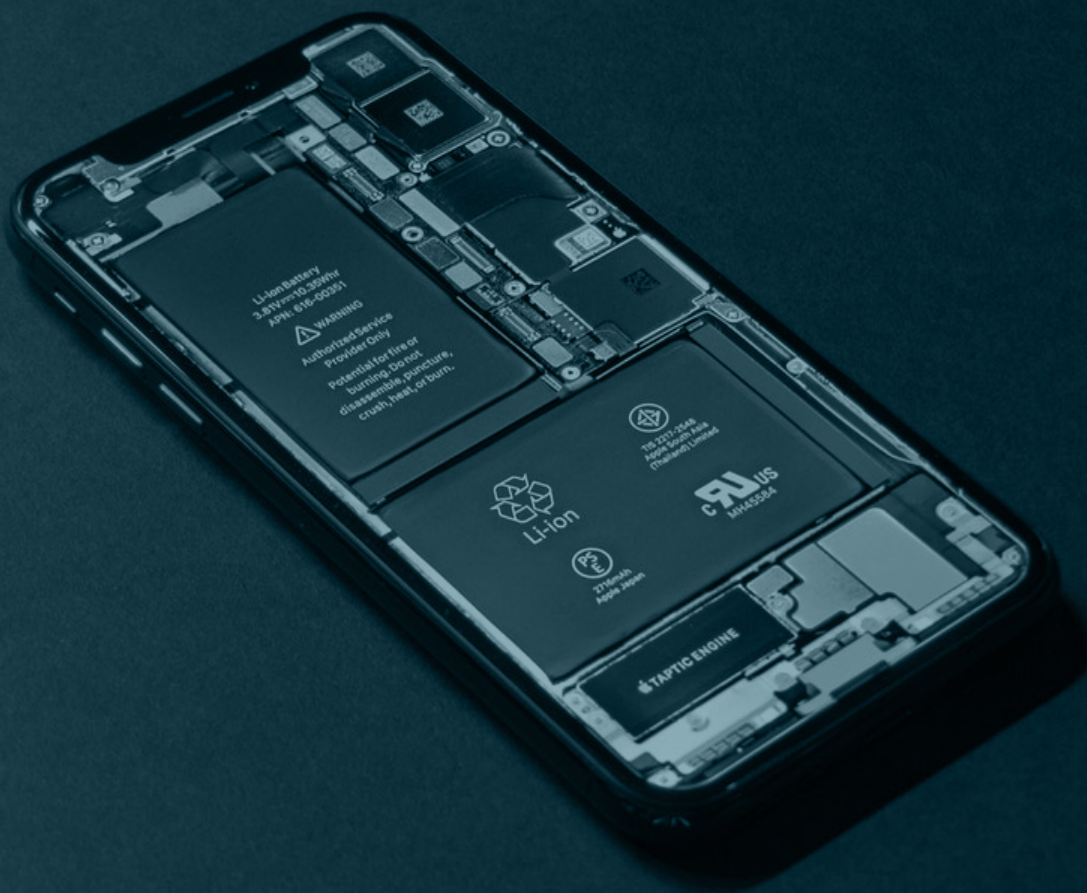


EBOOK

COMMON BATTERY EXPLOSIONS AND HOW TO PROTECT YOURSELF

In this ebook, Phelan Petty explores common types of battery fires and explosions and explains how you can protect your loved ones from defective and dangerous battery systems.



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Batteries are so commonplace that you probably do not think twice about their safety or reliability.

We use them daily to power essential devices like our phones, laptops, and tablets. Most of us could not imagine a life without our wireless, battery-powered devices.

Unfortunately, not every battery is as safe as we imagine. As lithium-ion batteries have become smaller and more powerful, we are seeing an increase in product recalls relating to defectively designed and manufactured batteries and devices. Even worse, these unsafe devices are short-circuiting, experiencing thermal runaway, catching fire, exploding, and causing catastrophic injuries, deaths, and immense property damage.

In this ebook, Phelan Petty explores common types of battery fires and explosions and explains how you can protect your loved ones from defective and dangerous battery systems. We will also outline your options after a dangerous product explodes, the basics of product liability law, and how you can seek justice.

BATTERY FIRES AND EXPLOSIONS

ON THE RISE

BATTERIES EXPLODE FOR A VARIETY OF REASONS. IT IS EASY TO THINK THAT A DRAMATIC EXPLOSION WILL NOT HAPPEN TO YOU. BUT WHEN YOUR PANTS POCKET, E-CIGARETTE, OR LAPTOP IS SUDDENLY ABLAZE, IT IS IMPORTANT TO UNDERSTAND YOUR LEGAL OPTIONS.

Unfortunately, battery fires and explosions are becoming more prevalent. According to the Consumer Products Safety Commission, companies issued at least 49 lithium-ion battery recalls between 2012 and 2017. The recalls affected over four million products and devices, including: cell phones, tools, hoverboards, scooters, and laptops.



CELL PHONES



TOOLS



HOVERBOARDS



SCOOTERS



LAPTOPS

LITHIUM-ION BATTERY EXPLOSIONS

THE BASICS

LITHIUM-ION (LI-ION) BATTERIES HAVE BEEN
COMMERCIALY AVAILABLE SINCE THE 1990s, BUT THEY
HAVE BECOME INCREASINGLY POWERFUL IN RECENT YEARS

Lithium-ion (Li-ion) batteries have been commercially available since the 1990s, but they have become increasingly powerful in recent years. Because we rely on lithium-ion batteries every day, they may seem harmless and mundane. However, they are powerful and potentially harmful – especially when they are improperly designed or manufactured.

As technology develops, there is more demand for products that are light, slim, powerful, and cheap. Unfortunately, these four elements can struggle to co-exist. This is especially true with cheaply-made lithium-ion batteries.

Today's Li-ion batteries store massive amounts of energy in a small space. To understand the risks associated with lithium-ion batteries, you need to know how they work. Cylindrical lithium-ion batteries contain what is referred to as a "jellyroll" wrap, consisting of three, flat layers that are rolled up like a carpet to fit inside the metal canister.

The two outer layers are the positive and negative electrodes. Between them lies a thin (12-25 microns), porous membrane called the separator. Chemical electrolytes are added to the mix before

the canister is sealed. The separator is permeable to ionic flow but prevents contact between the electrodes.

A breached separator can cause an internal short circuit. A separator can be breached if it was defectively made or if the manufacturer's assembly process created debris or welding burrs that wear through the separator as the cells expand and contract. A short circuit causes internal chemical reactions that generate more thermal heat and gas pressure than the battery cell can dissipate. This is called "thermal runaway," which, if not properly vented, will lead to fire and even explosion.

Many of the lithium-ion 18650 batteries used in e-cigarettes or vaporizers were made in China in plants where quality control is problematic. What's worse are the Chinese companies that buy from other manufacturers batteries that have been rejected by the manufacturer for quality reasons. These companies rewrap the defective battery in their own labels and sell the rewrapped or fake battery to unsuspecting consumers.

Lithium-Ion Battery Explosions in the News

You have probably heard stories about smartphones, hoverboards, and wireless headphones bursting into flames. While many design and manufacturing defects can contribute to a fire or explosion, experts have linked many of these episodes to battery defects. Below, learn more about recent, high-profile Li-ion battery issues.

01

Samsung Galaxy Note 7

The Samsung Galaxy Note 7 made headlines after they began catching fire; one of the most famous instances was on a plane. The company recalled roughly one million phones with faulty batteries.

02

Wireless Headphones

There have been isolated reports of wireless headphones exploding. In 2017, a woman on a long-haul flight from Beijing to Melbourne was wearing wireless headphones that spontaneously caught fire, burning her face and hands. In 2018, a Florida man noticed one of his Apple AirPods was smoking. He removed it from his ear, and it exploded.

03

Hoverboard Batteries

In 2016, the U.S. government announced that every single hoverboard in the market was unsafe. Shockingly, some of these products had counterfeit UL (Underwriters Laboratories) certifications, even though the products had not met the testing lab's rigorous safety standards.

Consumers reported dramatic hoverboard fires and explosions while the devices were charging, being ridden, or even simply sitting, unused. Overheated lithium-ion batteries contributed to most, if not all, of these explosions.



THE NEWEST LITHIUM-ION BATTERY THREAT

E-CIGARETTE EXPLOSIONS

E-cigarettes, also known as “vaporizers,” “vapes,” or “vape pens,” are an increasingly popular way to consume nicotine. Many people think that because vape pens do not contain tobacco, they are a safer alternative to traditional cigarettes. However, there is a risk that many are not aware of or ignore: the batteries used to power vape pens are prone to exploding.

Vaping devices come in various designs and forms, but generally consist of a cartridge or e-liquid tank containing the flavored liquid solution or “juice,” and atomizer (heating element), and one or more batteries. The atomizer vaporizes the juice into a mist that the user inhales.

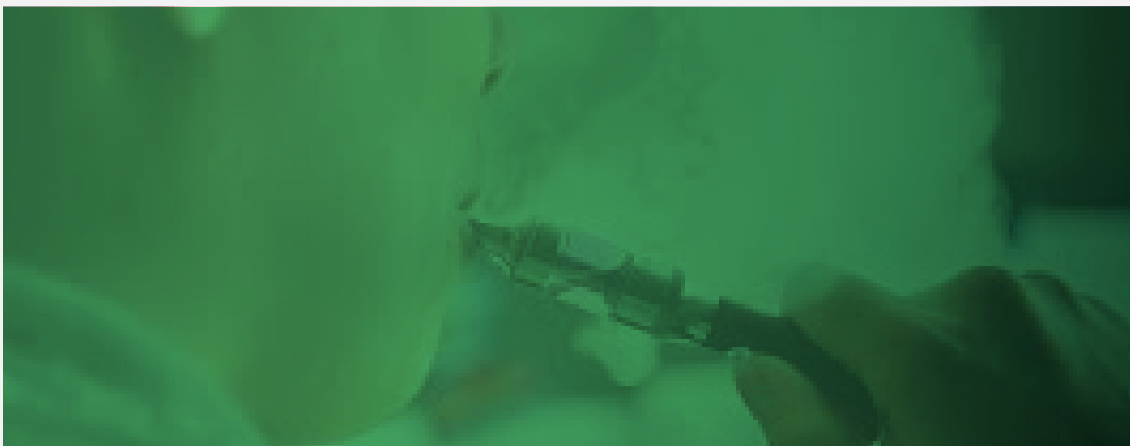
Most e-cigarettes are powered by at least one cylindrical lithium-ion battery. Some vapes have an internal battery management system, which manages problematic scenarios such as low battery voltage, over voltage battery and unbalanced battery. Other safety features will automatically shut the device down when it becomes dangerously hot. However,

many e-cigarettes do not have these safety devices, and they are more prone to overheating and exploding.

Not all battery explosions occur when the battery is in a vape. Some vapers carry a spare battery in their pocket or another receptacle. If a back-up battery experiences a short circuit and thermal runaway, the resulting fire and explosion may happen in the consumer’s pocket.

Between 2015 and 2017, there were roughly 2,000 reported vape pen battery burns or explosions, according to U.S. Tobacco Control. Many of these injuries were severe. In 2018 and 2019, two men died when their vapes exploded.

At Phelan Petty, we have handled multiple vape pen and e-cigarette battery explosion injury cases. Some of our clients were simply carrying a spare vape pen battery in their pocket when it exploded. They all suffered horrific second and third-degree burns, often to their legs, genitals, and hands.



WHICH VAPE PENS EXPLODE?

While “mods,” or modified vape pens, are particularly dangerous, any vaporizer or e-cigarette with a defective battery can explode. In 2018, the tobacco industry giant, R.J. Reynolds, recalled 2.6 million Vuse Vibe e-cigarettes due to a faulty power unit. The culprit is usually the battery.

At Phelan Petty, we have also discovered that unscrupulous battery manufacturers and distributors will sometimes rewrap rejected or defective batteries and sell them online. This puts consumers at risk, and we are committed to holding these companies accountable.

WARNING SIGNS THAT YOUR PRODUCT'S BATTERY MAY EXPLODE

While it is impossible to predict whether a lithium-ion battery will explode, there are a few safety measures you can implement to minimize your risk. First, stay away from extremely inexpensive batteries; a low cost is a clue that the manufacturer cut corners in its production. If your battery comes with an anti-fake bar code or code number, go to the website indicated on the battery and check to see if the battery is a fake.

Second, if your device is hot, bulging, or failing to hold an adequate charge, your battery may be defective and could explode. You should immediately remove the battery and replace it with a new, high-quality one.

Third, never use batteries with torn or damaged wrappers. When the wrapper is intact, the positive end of the battery is the end with the nipple and the negative end is the flat end. If the wrapper is removed or damaged, the negative electrode becomes the entire area of the exposed canister. This increases the risk of an external short circuit, which could occur if a damaged spare battery is carried in one's pocket or purse along with other metal.

If you think your battery is about to explode, power the device down, and put it in a fire-proof container. A metal bucket with some sand in the bottom is a safe option. You should also call 911, since lithium-ion battery fires are difficult to extinguish. If you have a standard (ABC) fire extinguisher on hand, you can use it. Alternatively, you can use water, but there is a modest risk of a chemical reaction between the water and lithium.

If a defective battery harms you, it is also critical to seek medical attention right away. Immerse the burns in a bathtub or cold water, call 911, and get to the closest emergency room. Your burns and other injuries will need immediate medical care, and time is of the essence. Make sure you tell your doctors how the burns occurred, since this information will help guide their treatment recommendations.

Once you are stable, it is in your best interest to call a product liability lawyer. Dangerous and defective products should not be available to consumers. A product liability lawyer can help you assess your case, help you make the best decisions for you and your family, and make sure that dangerous products do not harm anyone else.

WHAT DAMAGES ARE AVAILABLE TO VICTIMS OF LITHIUM-ION BATTERY EXPLOSIONS?

Every battery fire and explosion is unique, and the value of your claim will depend on a variety of factors. However, you may be entitled to compensation for the following damages or losses:

- Hospital and doctor bills
- Emergency services (ambulance) bills
- Medications and assistive devices, such as wheelchairs or prosthetics
- Physical and occupational therapy
- Mental health treatment and counseling
- Pain and suffering
- Lost income and wage-earning capacity
- Repair or replacement of items damaged in the explosion
- Funeral bills
- Punitive damages, if the company recklessly disregarded consumer safety

If you would like to learn more about the value of your vape pen or lithium-ion battery explosion claim, you should immediately consult with an experienced battery fire lawyer.

WHO IS RESPONSIBLE FOR A BATTERY EXPLOSION?

Battery fire and vape pen explosion claims involve product liability. Manufacturers, distributors, and retailers all have an obligation to protect consumers from dangerous or defective products. When they fail to meet this duty, they may be liable for the victims' damages.

Depending on the circumstances surrounding your vape explosion or battery fire, you may have multiple personal injury claims. However, you will probably need to consult with a product liability attorney who can carefully study the product's supply chain and identify all of the at-fault parties.



AFTER A FIRE, DO NOT DISPOSE OF THE DEFECTIVE DEVICE OR BATTERY

No matter how tempting it is to dispose of the remnants of your e-cigarette device, laptop, hoverboard, or other destroyed item, it is imperative that you preserve them and the exploded battery. You should also take pictures of any additional property damage and physical injuries you suffer.

Your team of product liability lawyers and experts will use this evidence, along with medical bills and doctor's reports, to demonstrate that your product's battery was dangerous and defective.



VIRGINIA LAWYERS SPECIALIZING IN BATTERY EXPLOSIONS AND FIRES

At Phelan Petty, we have represented numerous clients who were harmed by dangerous and defective lithium-ion batteries, and we understand the complexities of these types of cases. We frequently work with technical experts who help us uncover the reasons for a fire and explosion, helping us get to the heart of the issue and ensure those to blame are held accountable.

We are a team of highly experienced, technical lawyers who can investigate and litigate complex battery explosion cases. If you need help after being hurt by a lithium-ion battery explosion, please contact us today.

You can reach our office by calling [\(804\) 980-7100](tel:8049807100), or filling out our [simple online contact form](#). All initial consultations are free.

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REFERENCES

- A Samsung Note 7 Phone Actually Exploded on an Airplane (2016, October 5). Vice. Retrieved from https://www.vice.com/en_us/article/bn3jjz/a-samsung-note-7-exploded-on-an-airplane-vgtrn
- Becker, R. (2019, February 5). Deadly vape explosion highlights safety gaps. The Verge. Retrieved from <https://www.theverge.com/2019/2/5/18212603/deadly-vape-explosion-highlights-safety-gaps>
- Electronic cigarette fires and explosions in the United States 2009-2016 (2017, July). U.S. Fire Administration. Retrieved from https://www.usfa.fema.gov/downloads/pdf/publications/electronic_cigarettes.pdf
- Eltagouri, M. (2018, February). His wireless Apple headphone started smoking during a workout. Then it exploded, he said. Washington Post. Retrieved from https://www.washingtonpost.com/news/the-switch/wp/2018/02/09/his-wireless-apple-headphone-started-smoking-during-a-workout-then-it-exploded-he-said/?utm_term=.0b9d5e09a0d2
- Hollister, S. (2016, July 9). Here are the reasons why so many hoverboards are catching fire. CNET. Retrieved from <https://www.cnet.com/news/why-are-hoverboards-exploding-and-catching-fire/>
- Horton, A. (2019, February 5). Vape pen kills man after exploding in his mouth. The Washington Post. Retrieved from https://www.washingtonpost.com/health/2019/02/05/vape-pen-kills-man-after-exploding-his-mouth/?utm_term=.60958cf8d376
- Ives, L. (2018, May 18). How likely is your e-cigarette to explode? BBC News. Retrieved from <https://www.bbc.com/news/health-44161348>
- Moon, B. (2017, March 18). How to keep Your wireless headphones from exploding. Forbes. Retrieved from <https://www.forbes.com/sites/bradmoon/2017/03/18/how-to-keep-your-wireless-headphones-from-exploding/#3ede0d142197>
- Moynihan, T. (2017, March 19). Don't Blame the Batteries for Every Lithium Ion Explosion. Wired. Retrieved from <https://www.wired.com/2017/03/dont-blame-batteries-every-lithium-ion-explosion/>
- Raymond, C. (2016, February 2). Beware misleading safety claims from hoverboard brands. Consumer Reports. Retrieved from <https://www.consumerreports.org/electronics-computers/beware-misleading-safety-claims-from-hoverboard-brands/>
- Samuels, A. (2019, April 30). When your Amazon purchase explodes. The Atlantic. Retrieved from <https://www.theatlantic.com/technology/archive/2019/04/lithium-ion-batteries-amazon-are-exploding/587005/>
- St. John, A. (2016, September 21). Why Lithium-Ion Batteries Still Explode, and What's Being Done to Fix the Problem. Consumer Reports. Retrieved from <https://www.consumerreports.org/safety-recalls/why-lithium-ion-batteries-still-explode-and-whats-being-done-to-fix-the-problem/>
- Status report on high energy density batteries project (2018, February 12). Consumer Products Safety Commission. Retrieved from https://www.cpsc.gov/s3fs-public/High_Energy_Density_Batteries_Status_Report_2_12_18.pdf?UksG80UJqGY0q4pfVBkbCuUQ5sNHqtW0
- Wescott, B. (2017, March 15). Airline passenger's headphones catch fire midflight. CNN. Retrieved from <https://www.cnn.com/2017/03/14/asia/australia-headphone-explosion-flight/index.html>

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