Provisional Translation

News Release

消費者庁 Consumer Affairs Agency, Government of Japan　総務省消防庁 Fire and Disaster Management Agency　経済産業省 Ministry of Economy, Trade and Industry　環境省 Ministry of the Environment

October 2, 2025

Be aware of fire accidents caused by products using lithium-ion batteries
- They are also used in products you wear and carry -

Many of you may be aware of accidents involving power banks (portable chargers) catching fire on trains or smartphones catching fire. One cause of such fires is the use of lithium-ion batteries in these products.

Lithium-ion batteries are used in various products worn or carried in daily life, such as power banks, smartphones, wireless earbuds, smartwatches, and portable fans. The Consumer Affairs Agency has received reports of accidents involving overheating, fire, and other issues related to these lithium-ion battery-powered products[1].

Additionally, mixing lithium-ion battery products with other waste for disposal has been causing fires in garbage trucks and waste treatment facilities, posing a significant problem.

This time, we focus on lithium-ion battery-powered products worn or carried in daily life, presenting top tips for use and disposal alongside information on accidents such as overheating and fire.

[Top tips for use]

(1) Do not apply strong impacts or pressure to lithium-ion battery-powered products.
(2) Do not use or store products in high-temperature locations.
(3) Charge products in a safe place, preferably while awake.
(4) Stop using products immediately if you notice any abnormalities.
(5) If it catches fire, first ensure your safety and extinguish it with a large amount of water if possible.
(6) Check product information and recall notices.
(7) When using public transportation, follow the rules for carrying the products.

[Top tips for disposal]

(1) Check whether a lithium-ion battery is being used.
(2) Recycle items that are recyclable.
(3) Check the disposal method before discarding.
(4) Use up the batteries as much as possible before disposal.

[1] In this document, this refers to products that use lithium-ion batteries.

1. Accidents of overheating and fires in products using lithium-ion batteries

Currently, many products we use in daily life -such as smartphones, notebook computers, electric-assist bicycles and cordless vacuum cleaners- utilize lithium-ion batteries. These batteries provide sufficient power despite their small size and can be charged and reused after each use (Figure 1).

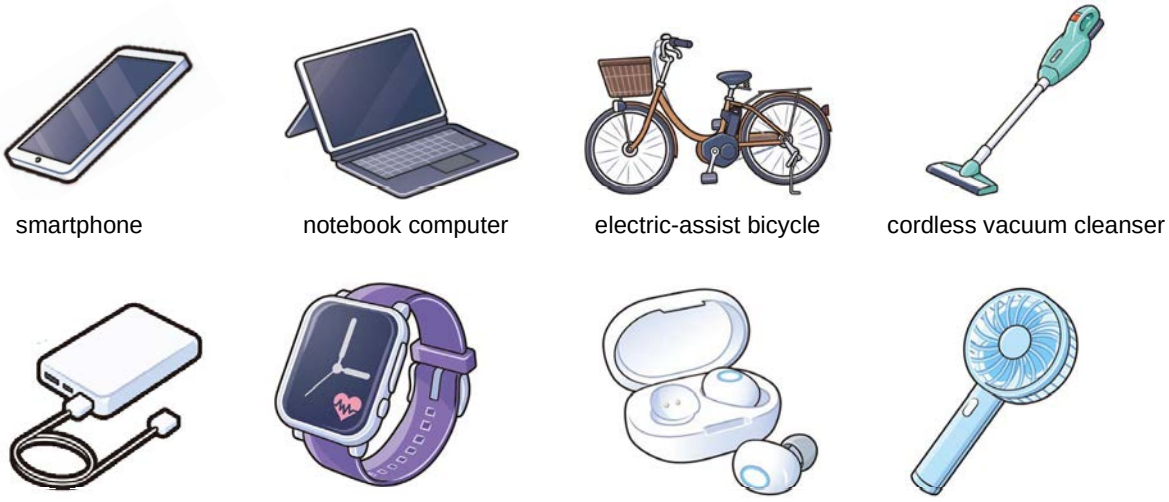


Figure 1: Examples of products using lithium-ion batteries

The Consumer Affairs Agency (CAA) has received various accident reports concerning products using lithium-ion batteries (hereinafter referred to as “products”). A characteristic feature of these accidents is the high incidence of overheating and fire originating from the lithium-ion batteries themselves. For example, many people are likely to be aware of fire accidents involving power banks and smartphones through news reports and other sources

This time, from among the many products where overheating and fire accidents have been observed, we will examine accident situations specifically for products worn or carried during daily life, focusing on wireless earbuds, smartwatches, and portable fans, which have become particularly common in recent years.

(1) Number of accidents involving overheating, fire, etc.

The Accident Information Databank[2] contains a total of 162 accident reports[3] involving smoke, overheating, fire, rapture and explosions in wireless earbuds, smartwatches and portable fans over the five-year period from fiscal year 2020 to fiscal year 2024.

[2] This refers to a data collection and provision system (launched in April 2010) operated by the CAA in cooperation with the National Consumer Affairs Center of Japan. Its purpose is to broadly collect “accident information” and “hazard information” from relevant organizations to aid in accident prevention. Note that the collected information includes cases where the facts and causal relationships have not been confirmed.

[3] Includes cases that led to fire accidents. The number of cases and classifications were specially examined by the CAA for this matter. They include both “accident information” and “hazard information,” and include information where the facts and causal relationships have not been confirmed.

[1] Number of accidents involving overheating, fire, etc. registered by year

Of the 162 reported accidents involving overheating or fire, lithium-ion batteries were considered the cause in 136 cases over five years, accounting for 84.0% of accidents. This figure has been increasing in recent years (Figure 2).

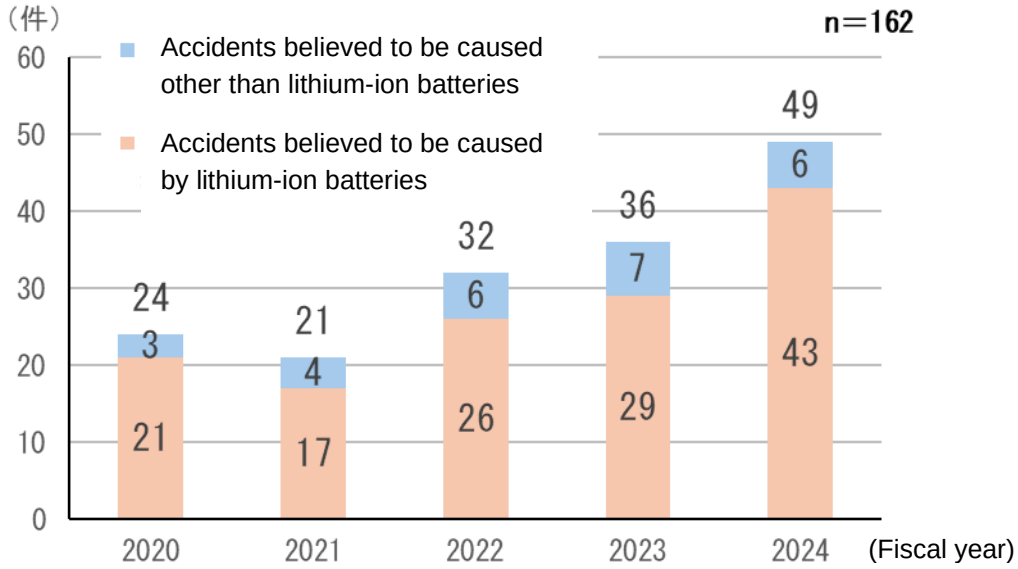


Figure 2: Number of accidents registered by year

(Wireless earbuds, smartwatch, and portable fan combined)

[2] Breakdown of accidents information involving overheating, fire, etc. by product

The breakdown of 136 accidents involving overheating, fire, and other accidents potentially caused by lithium-ion batteries by product shows that over a five-year period, wireless earbuds accounted for 64 cases, smartwatches for 46 cases, and portable fans for 26 cases, with all showing an increasing trend (Figure 3).

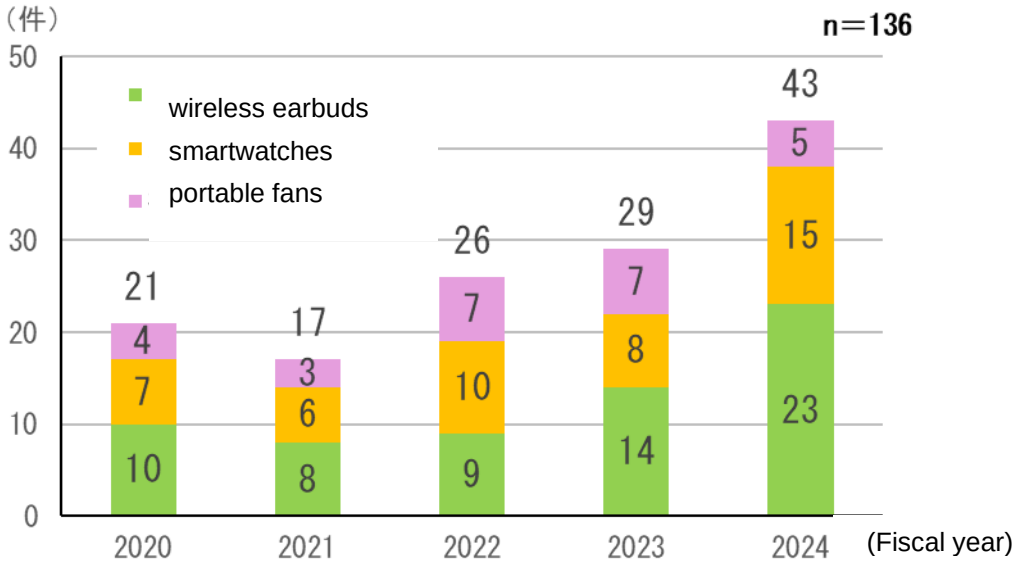
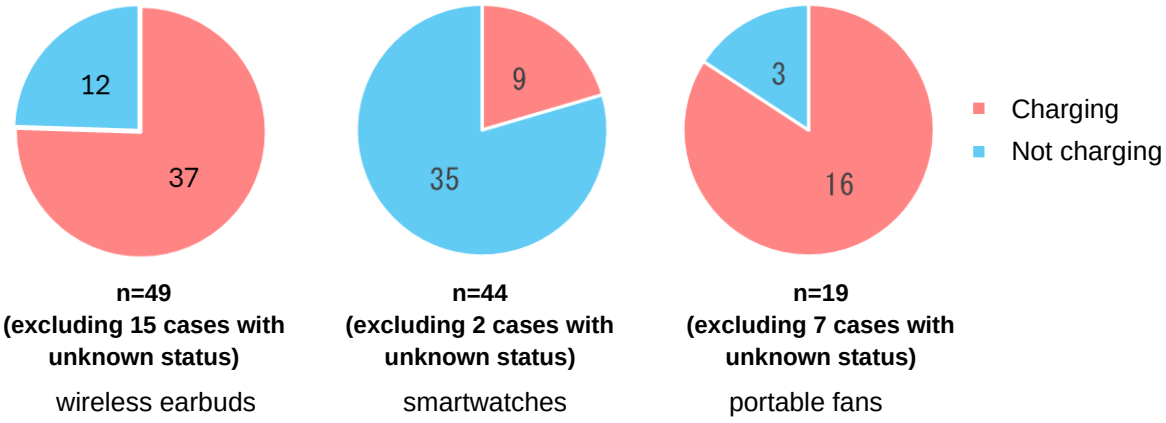


Figure 3: Breakdown of accidents information involving overheating, fire, etc. by product

[3] Charging status at the time of the accident

The number of accidents occurring while charging over the five-year period was 37 cases (75.5%) for wireless earbuds, 9 cases (20.5%) for smartwatches, and 16 cases (84.2%) for portable fans (Figure 4).



n=49 (excluding 15 cases with unknown status)
wireless earbuds

n=44 (excluding 2 cases with unknown status)
smartwatches

n=19 (excluding 7 cases with unknown status)
portable fans

Figure 4: Charging status at the time of accident

(2) Accident cases involving wireless earbuds, smartwatches and portable fans

Wireless earbuds

[Case 1]

The wireless earbuds I bought four years ago caught fire after charging and scorched items like a water bottle that were in my bag with them.

[Case 2]

While using wireless earbuds, they exploded, burning my neck and slightly scorching my clothes.

[Case 3]

I left the wireless earbuds charging when I went out, but when I got home, the charger looked like it had exploded, the floor was scorched, and powder was scattered all over the room.

Smartwatch

[Case 4]

The smartwatch I bought online melted from the heat while charging.

[Case 5]

I fell asleep wearing my smartwatch, and it suddenly caught fire in the middle of the night, burning my arm and scorching the sheets.

Portable fan

[Case 6]

The portable fan I had been using by connecting it to my computer's USB port suddenly shot flames and caught fire.

[Case 7]

While charging the portable fan, heat caused the body and part of the USB port to melt, emitting a terrible smell.

[Case 8]

I had placed a fully charged portable fan in my bag when smoke began to emerge from it, accompanied by a strange odor. When I hurriedly removed it, it caught fire.

2. Structure of lithium-ion battery and mechanisms of overheating and fire

(1) Structure of lithium-ion battery

The basic structure of a lithium-ion battery is shown in Figure 5. It consists of a positive electrode plate and a negative electrode plate separated by a separator, with the interior filled with a flammable organic solvent. Electrical energy is generated by the exchange of lithium ions and electrons between the positive and negative electrode plates.

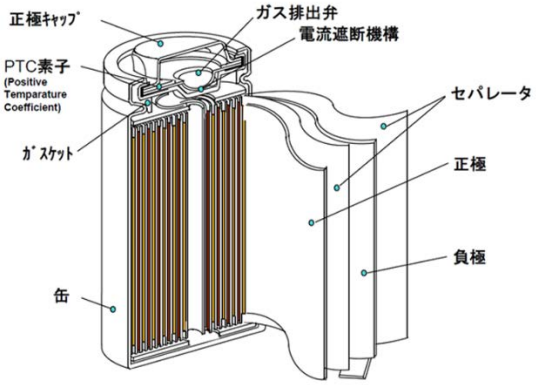
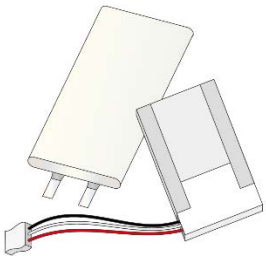


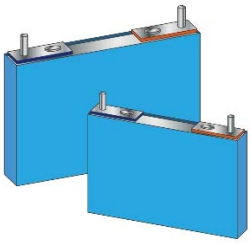
Figure 5: Basic structure of a lithium-ion battery (cylindrical type as an example)
(Illustrations provided by: Battery Association of Japan "Cross Section of Lithium Ion Battery (Cylindrical Type)"

Lithium-ion batteries come in three shapes: cylindrical, laminate, and prismatic, as shown in Figure 6, and are selected based on their application. For example, laminate batteries are commonly used in wireless earbuds and smartwatches, while cylindrical batteries are often used in portable fans.

Cylindrical type
(notebook computer, portable fan, etc.)



Laminated type
(power bank, wireless earbuds, smartwatch, etc.)



Prismatic type
(digital camera, portable video game consoles, etc.)

Figure 6: Shapes of lithium-ion batteries

(Source: National Institute of Technology and Evaluation (NITE) “Beware of ‘Summer Fatigue (Summer Batteries)’- 3 points to Prevent Fire Accidents in ‘Products equipped with Lithium-ion Batteries’ - “

(2) Mechanisms of lithium-ion battery overheating and fire

Several factors can cause lithium-ion batteries to overheat or fire. One cause is when strong external impact or pressure damages the separator, causing the positive and negative electrodes to become electrically connected (short circuit). This leads to abnormal heating and can result in fire (Figure 7).

Additionally, high temperatures can cause internal chemical reactions to proceed abnormally, making it impossible to control overheating of the lithium-ion battery.

For these reasons, lithium-ion batteries generally have the characteristic of being vulnerable to strong impact, pressure, and heat.

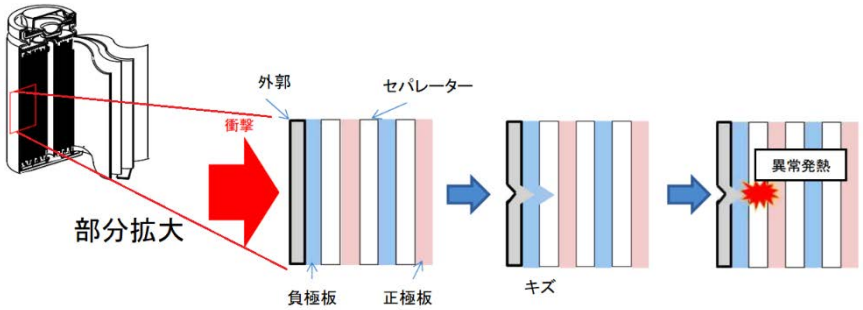


Figure 7: Short circuit in a lithium-ion battery

(Source: National Institute of Technology and Evaluation (NITE) “Beware of ‘Summer Fatigue (Summer Batteries)’- 3 points to Prevent Fire Accidents in ‘Products equipped with Lithium-ion Batteries’ - “

3. Top tips when using the lithium-ion battery-powered product

Improper handling of the product may lead to accidents such as overheating or fire due to damage to the lithium-ion battery.

When using the product, always be aware of the risk of accidents such as overheating or fire and observe the following precautions.

(1) Do not apply strong impacts or pressure to products.

Lithium-ion batteries may be damaged by strong impact or pressure, potentially causing smoke, overheating, fire, rupture, or explosion. Avoid dropping the product or sitting on it while it is in your pocket.

Additionally, be aware that deformation may cause the product to overheat or fire even after a significant period following a strong impact or pressure.

Attempting to restore a deformed product by applying force is also dangerous.

(2) Do not use or store products in high-temperature locations.

Lithium-ion batteries may experience abnormal internal reactions when exposed to high temperatures, potentially leading to overheating or fire. Avoid using or storing the product or charger in locations prone to heat buildup, such as inside a vehicle under direct sunlight, near heating appliances, or inside bags or clothing.

(3) Charge products in a safe place, preferably while awake.

Accidents have occurred where users fell asleep while charging, only to discover the product had overheated or caught fire. Always charge in a safe location away from flammable materials, preferably while awake and able to monitor the device.

Additionally, accidents have been reported where users suffered burns from overheating while sleeping with a smartwatch on. Exercise caution regarding use and storage during sleep.

(4) Stop using products immediately if you notice any abnormalities.

If you notice any abnormalities such as overheating, swelling, liquid leakage, strange odors, or unusual noises, continued use may lead to smoke, overheat, fire, rupture, or explosion. Also be aware of other changes like slower or failed charging, increased heat during charging compared to before, or sudden power-offs.

If you notice anything unusual, immediately stop using or charging the product and consult the manufacturer's repair service.

(5) If it catches fire, first ensure your safety and extinguish it with a large amount of water if possible.

If a product catches fire, first ensure your own safety and that of others by moving away. Once the flames subside, if possible, prevent further damage to small products by using a fire extinguisher, dousing them with a large amount of water, or submerging them in a bucket of water. Note that applying only a small amount of water may intensify the flames and is dangerous, so exercise caution.

If you are determined that the fire is too large to handle, immediately call 119.

(6) Check product information and recall notices.

Product defects have also caused overheating and fires. Purchase products from reliable manufacturers, importers, or retailers, ensuring you know the model, specifications, and the company's contact information. Also, check if the power bank has the “PSE Mark[4]” (Figure 8). Note that depending on the performance of the power bank, some may not require the PSE Mark[5].

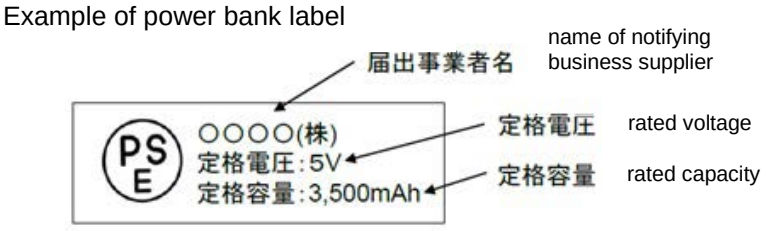


Figure 8: Example of PSE mark on power bank

Source: Ministry of Economy, Trade and Industry website, “Electrical Appliances and Materials Safety Act (FAQs on power banks)”

After purchase, use the product according to the instruction manual and use only genuine or recommended chargers.

In addition to checking before purchase, be sure to regularly check the CAA Recall Information Site (Figure 9), the recall information search site “SAFE-Lite”[6] operated by the National Institute of Technology and Evaluation (NITE), and the websites of manufacturers after purchase.

Figure 9: CAA Recall Information Site （https://www.recall.caa.go.jp/）

(7) When using public transportation, follow the rules for carrying the products.

[4] The PSE mark is a self-certification by the manufacturer or importer of electrical products that they have fulfilled the obligations stipulated by the Electrical Appliance and Material Safety Act. It is not something “obtained from the government” or “acquired through PSE certification.”

[5] Applies to products with a volumetric energy density per internal cell of 400 Wh/L (watt-hours per liter) or higher (refer to the Ministry of Economy, Trade and Industry website “Electrical Appliances and Materials Safety Act: FAQs on Power Banks” (https://www.meti.go.jp/policy/consumer/seian/denan/mlb_faq.html)).

[6] NITE SAFE-Lite (https://www.nite.go.jp/jiko/jikojohou/safe-lite.html)

Accidents involving public transportation used by many people can cause significant damage. In particular, since aircraft pose a risk of fire in unseen areas, products are prohibited from being checked as baggage. Please check with each airline regarding carry-on baggage.

4. Top tips when disposing of the lithium-ion battery-powered product

In recent years, fires and other accidents caused by crushed lithium-ion batteries contained in products have frequently occurred at waste treatment facilities and garbage trucks. According to the Ministry of the Environment, the number of fire accidents requiring firefighting activities reached approximately 8,500 cases (fiscal year 2023) across all municipalities nationwide[7] (Figure 10).

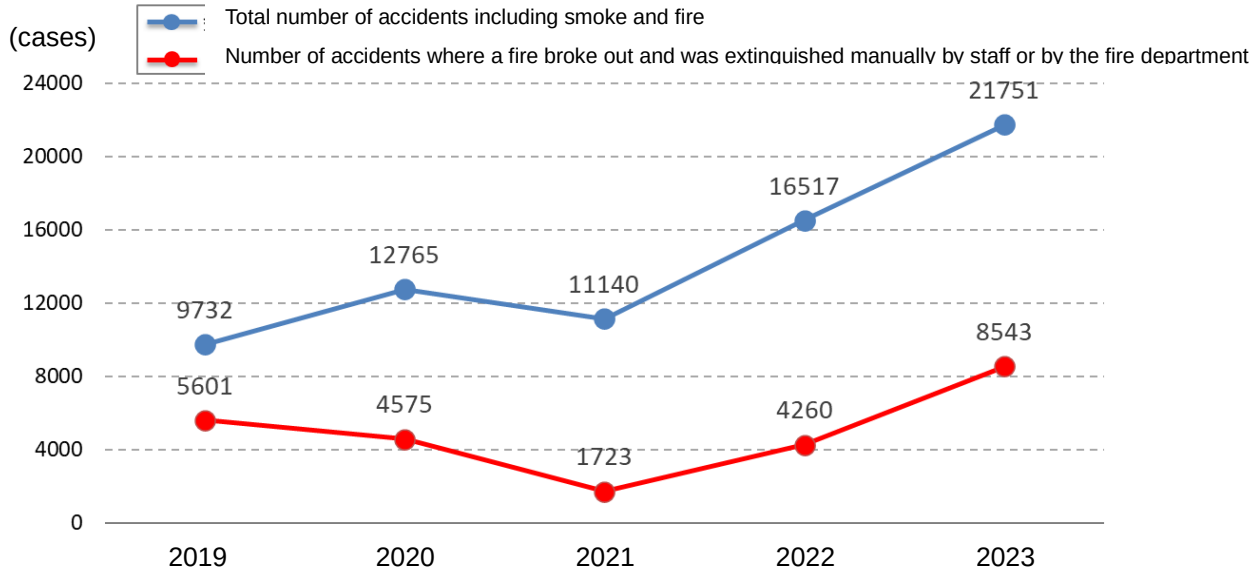


Figure 10: Number of accidents such as fires involving garbage trucks and waste treatment facilities

(Source: Survey on actual conditions of general waste disposal (Ministry of the Environment)

This can lead to significant repair costs for waste treatment facilities and delays in waste acceptance, causing major disruptions to citizens' daily lives.

Even small products used in daily life, such as wireless earbuds or portable fans, can cause large fires.

When disposing of lithium-ion battery-powered products, do not casually mix them with other trash. Please take the following precautions.

[7] Ministry of the Environment “Policy and Measures for the Proper Disposal of Lithium Storage Batteries, etc., in Municipalities” (March 31, 2025)

(1) Check whether a lithium-ion battery is being used

Check the main unit, packaging, and instruction manual to confirm whether a lithium-ion battery is used. Even if not specified, be aware that rechargeable items or those that operate or illuminate without being connected to a power source may contain lithium-ion batteries. The presence of a recycling mark can also serve as a guide. (Figure 11).

Figure 11: Recycling mark

(2) Recycle items that are recyclable

The General Incorporated Association JBRC collects power banks and lithium-ion batteries[8] from its member companies[9]. Please bring them to participating retailers (electronics retailers, home centers, etc.) or cooperating municipalities[10], Additionally, utilize product collection services offered by manufacturers or retailers.

(3) Check the disposal method before discarding

Disposing of products as plastic waste or similar items without sorting them may cause fires in garbage trucks or waste treatment facilities. Disposal rules for household waste, including lithium-ion batteries, vary by region. Please follow your local municipality's instructions for disposal, including sorting methods.

Try searching for “City Name, Lithium-ion Battery, Disposal Method”[11].

(4) Use up the battery as much as possible before disposal

To reduce the risk of ignition and fire damage, please use up the battery as much as possible before disposal by leaving the product unused for a while or using it until the end.

For safety reasons, do not forcefully remove the lithium-ion battery from the product.

[8] Excludes batteries with abnormalities such as damage, water exposure, or swelling, and laminated batteries without outer casings. Product bodies other than batteries are also not collected.

[9] JBRC “List of ‘JBRC Member’ Companies” （https://www.jbrc.com/member/member_list/）

[10] JBRC “Search for Parter Stores and Municipalities”
（https://www.jbrc.com/general/recycle_kensaku/）

[11] You can also check municipal websites, garbage collection calendars, and in some municipalities, “garbage sorting apps.”

5. Reference

(1) Consumer Affairs Agency

- December 5, 2024, User's Guide for Products using Lithium-ion Batteries - Lithium-ion batteries are also used in warming products! - (https://www.caa.go.jp/policies/policy/consumer_safety/caution/caution_080/assets/caution_080_241205_01.pdf)
- June 27, 2024, beware of "Low-Cost, High-Risk" Non-Genuine Batteries - Fire Destroys Building (https://www.caa.go.jp/policies/policy/consumer_safety/caution/caution_077)
- March 15, 2024, Column Vol. 6: Beware of Fires Caused by Batteries in Laptop PCs and Other Familiar Products! -Children's learning terminals are also a source of fire hazards (https://www.caa.go.jp/policies/policy/consumer_safety/child/project_001/mail/20240315/)

(2) Fire and Disaster Management Agency of the Ministry of Internal Affairs and Communications

- September 9, 2024, Alert Regarding Fire Hazards from Lithium-Ion Batteries (https://www.fdma.go.jp/laws/tutatsu/items/20240909jimurenraku.pdf)
- Caution Regarding Electrical Fires in Homes (https://www.fdma.go.jp/publication/movie/juutaku_bouka/items/r06_denkikasai_jyuden_3m.mp4)

(3) Ministry of Economy, Trade and Industry

- Regulations for Power Banks under the Electrical Appliances and Materials Safety Act (https://www.meti.go.jp/policy/consumer/seian/denan/topics.html#t9)
- Global Awareness Campaign on Lithium-ion Battery Safety (https://www.meti.go.jp/product_safety/consumer/system/06-oecd-kyouryoku.html)
- September 30, 2025, Product Safety Subcommittee "Lithium-ion Battery Product Accident Countermeasures" (https://www.meti.go.jp/shingikai/shokeishin/seihin_anzen/024.html)
- Recycling of Lithium-Ion Batteries and Other Small Secondary Batteries under the Act on the Promotion of Effective Utilization of Resources (https://www.meti.go.jp/policy/recycle/main/admin_info/law/02/index05.html)
- August 12, 2025, The 12th Meeting of the Subcommittee on Innovation and Environment, Resource Circulation Economy Subcommittee, Industrial Structure Council (Selection of Designated Recycled Products) (https://www.meti.go.jp/shingikai/sankoshin/sangyo_gijutsu/resource_circulation/012.html)

(4) Ministry of the Environment

- Lithium Storage Batteries | Environmental Restoration and Resource Circulation | Ministry of the Environment (Lithium-ion Battery Special Site) (https://lithium.env.go.jp/recycle/waste/lithium_1/index.html)
- Lithium Storage Batteries | Environmental Restoration and Resource Circulation | Ministry of the Environment (https://www.env.go.jp/recycle/waste/lithium_1/index_00001.html)
- March 13, 2024, "ecojin's EYE, Lithium Storage Batteries" (https://www.env.go.jp/guide/info/ecojin/eye/20240313.html)

- March 1, 2023, “ecojin’s EYE, Preventing Lithium-Ion Battery Fires”
  (https://www.env.go.jp/guide/info/ecojin/eye/20230301.html)

(5) Tokyo Fire Department

- August 7, 2025, “Caution in Homes Too! Lithium-Ion Battery-Related Fires”
  (https://www.tfd.metro.tokyo.lg.jp/lfe/kasai/lithium_house.html)
- "Fire Hazard of Products with Lithium-Ion Batteries.
  (https://www.tfd.metro.tokyo.lg.jp/lfe/kasai/lithium_bt.html)
- Fire caused by incorrect garbage sorting!
  (https://www.tfd.metro.tokyo.lg.jp/lfe/bou_topic/gomi.html)

(6) National Consumer Affairs Center

- June 19, 2025, “Beware of lithium-ion battery swelling, smoke emission, and fire”
  (https://www.kokusen.go.jp/mimamori/mj_mailmag/mj-shinsen514.html)
- March 18, 2021, Precautions for the use of lithium-ion batteries and chargers
  (https://www.kokusen.go.jp/news/data/n-20210318_1.html)

(7) National Institute of Technology and Evaluation (NITE)

- July 22, 2025, “Vol. 481 July 22 Issue: Accidents Involving Products with Lithium-Ion Batteries”
  (https://www.nite.go.jp/jiko/chuikanki/mailmagazin/2025fy/vol481_250722.html)
- June 26, 2025, “Beware of ‘Summer Fatigue (Summer Batteries)’- 3 points to Prevent Fire Accidents in ‘Products equipped with Lithium-ion Batteries’ - “
  (https://www.nite.go.jp/jiko/chuikanki/press/2025fy/prs250626.html)

(8) Related organizations

- Battery Association of Japan, Safe and Proper Use of Lithium-ion Rechargeable Batteries.
  (http://www.baj.or.jp/safety/safety16.html)
- JBRC “Search for Parter Stores and Municipalities”
  (https://www.jbrc.com/general/recycle_kensaku/)

<For information, please contact>
Consumer Safety Division,
Consumer Affairs Agency
TEL: 03 (3507) 8800 (operator)
URL: https://www.caa.go.jp/

(Attachment)

<Expert Commentary>

Please ensure the safe use and disposal of products using lithium-ion batteries.

National Institute for Environmental Studies
TERAZONO Atsushi

Lithium-ion batteries are rechargeable batteries developed by Nobel Prize laureate Professor Akira Yoshino and his team. They are lightweight yet deliver high voltage and high power, and boast an excellent low self-discharge rate. They are used in numerous electronic devices such as laptops and smartphones, as well as in electric vehicles. Recently, their applications have expanded to include wireless earbuds, Wi-Fi routers, portable fans, and workwear with built-in fans. It can be said that most rechargeable products now utilize lithium-ion batteries.

Lithium-ion batteries are known to be vulnerable to heat and impact due to their structure. This is because the organic solvents commonly used in the electrolyte between the positive and negative electrodes possess flammable properties similar to petroleum products, and because the separator can rupture from impact, causing an internal short circuit within the battery. Fire incidents involving lithium-ion batteries left in hot car interiors or warehouses have occurred again in 2025. Therefore, take care not to leave lithium-ion batteries in hot places or drop them, causing impact.

Additionally, overcharging or over-discharging can cause fires or performance degradation, so it is best to stop charging once the battery is fully charged. While standard lithium-ion batteries have safety protection circuits that minimize concerns about over-discharging or overcharging, non-genuine and very cheap products may be of poor quality. In an incident of 2025, where a power bank caught fire while charging on a train, it was later discovered to be a recalled product. While the exact cause remains unknown, overcharging is a possible factor. I strongly recommend purchasing reliable, genuine batteries and products.

Lithium-ion battery incidents frequently occur even after disposal. This happens because they are compressed in garbage trucks or crushed at processing facilities for non-combustible waste. Since conventional waste processing almost always involves impacts like crushing, products containing lithium-ion batteries must not be mixed in.

Unfortunately, fires and fire incidents are occurring at waste treatment facilities across the country. The annual number of incidents exceeds 21,000 (fiscal year 2023, Ministry of the Environment survey), with

damages estimated at over 10 billion yen. Some municipalities have been forced to outsource processing to other facilities or suspend collection for several months or more due to facility damage, beginning to significantly impact citizens' lives. The sheer number of incidents and the scale of damage might be hard to grasp, but small fires occur somewhere almost every single day. Please imagine the dedicated workers at waste treatment facilities striving day and night to prevent these from escalating and consider that a sudden major fire incident could lead to a suspension of collection in your own municipality.

The collection of lithium-ion batteries was originally mandated by the Act on the Promotion of Effective Utilization of Resources. A voluntary collection and recycling framework, operated by manufacturers through collection boxes provided by the Japan Portable Rechargeable Battery Recycling Center (JBRC), a general incorporated association, began in 2001. However, challenges arose, such as difficulty locating collection boxes, certain batteries not being accepted, and an increasing number of products where lithium-ion batteries could not be removed. Consequently, consumers found disposal methods unclear, leading to lithium-ion batteries being mixed into municipal non-combustible waste. Municipal separate collection of lithium-ion batteries is a new initiative currently being implemented. It is essential for municipalities and manufacturers to collaborate on separate collection, ensuring safety and resource recovery.

The consumption and disposal of lithium-ion batteries are expected to continue increasing. Many high-capacity products, such as power banks, are now available that offer longer-lasting charges. Our research has also shown that lithium-ion batteries with large capacity (expressed in mAh) and high energy capacity (the product of voltage and capacity, expressed in Wh) are dangerous. Leaving a battery charged leaves residual electricity inside, making it particularly dangerous. Therefore, when disposing of a battery, do not charge it beforehand. Instead, follow your local municipality's instructions to insulate it before disposal. While lithium-ion batteries are extremely convenient, please strive to purchase and use safe products whenever possible, and cooperate with proper sorting and recycling when disposing of them.