



**CONSUMERS'
FEDERATION
OF AUSTRALIA**

Developing and promoting
the consumer interest

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By email: lithiumbatteries@acc.gov.au

Director
Lithium-ion Batteries Project
Consumer Product Safety Division
Australian Competition & Consumer Commission
GPO Box 3131
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Dear ACCC

Lithium-ion Batteries Issues Paper

The Consumers' Federation of Australia (CFA) welcomes the opportunity to provide a submission on the Australian Competition & Consumer Commission's Lithium-ion Batteries Issues Paper (the **Issues Paper**).

CFA is the peak body for consumer organisations in Australia, advocating in the interests of Australian consumers. It promotes and supports its members' campaigns and events, nominates and supports consumer representatives to industry and government processes, develops policy on important consumer issues.

CFA also plays an important role in ensuring consumer interests are represented in the development of standards. In recognition of the importance of promoting consumer involvement in standardisation, CFA recruits, facilitates, and supports the participation of expert consumer representatives on technical committees that are responsible for the development of Australian Standards. This work is supported through an annual grant from Standards Australia.

CFA supports various consumer representatives involved with the Standards Committee focused on the safety of electric systems. This submission has been developed with the support of these expert consumer representatives, and responds only to the questions which the CFA feels equipped to respond.

Types of Li-ion batteries in consumer products

1. *Do you consider certain types of Li-ion batteries are more hazardous than others?*

CFA does not have deep expertise in the various types of Li-ion batteries, but we understand that some batteries are more hazardous than others. Given the severity of injuries and fatalities involving children over the past 40 years related to lithium coin batteries, and reports of fires linked to lithium-ion batteries in e-scooters and e-bikes, we consider this issue warrants urgent action.¹ Urgency is necessary not only for product safety but so consumers don't lose trust in these products which may support the important transition to net zero emissions.

What we do know is commonly used Li-ion batteries tend to use graphite, cobalt or manganese in their cathodes and a semi-liquid electrolyte. These types of batteries appear to be the most hazardous due to the electrolyte used. It appears that problems of leakage combined with mechanical stress (undermining the structural integrity of the battery), over-charging or even excessive heat results in fires and explosion. A particular risk with li-ion batteries is that the fires are self-sustaining and difficult to put out.

Other types of batteries, like Lithium-polymer (Li-Po), Li-SSB (solid state batteries such as Li-metal) do not have the liquid electrolyte. After the infamous Samsung Galaxy Note 7 battery fires in 2016 (which were Li-ion), many mobile phone manufacturers switched to Lithium-polymer (Li-Po) batteries which are much safer. Li-Po batteries do not have a liquid electrolyte and use a gel instead which is much safer. Li-Po batteries are more expensive, have shorter lifetimes and have less energy density (typically between one third to one quarter of a comparable Li-ion battery).

Given the market preferences the sale of cheaper products with longer battery life, manufacturers continue to offer Li-ion batteries in many products, as outlined by the Issues Paper. However, Li-Po batteries tend to be used by manufacturers in high-end devices, suggesting a market premium is being placed on the safer battery option.

Consumer awareness and behaviour

5. *Do you consider that consumers are sufficiently educated on Li-ion battery safety hazards? If so, what are the key sources of information for consumers? Do you consider that further consumer education is required, what should the message be and in what form?*
6. *What actions can consumers take to mitigate the risks presented by Li-ion batteries?*
7. *As a consumer or retailer:*
 - a. *Do you assume the manufacturer has conducted safety testing on Li-ion battery products you purchase?*
 - b. *What safety-related factors influence your purchasing decisions?*

No, consumers are not aware of Li-ion battery safety hazards. Li-ion batteries are becoming ubiquitous in homes, including in various power tools, eBikes, electric scooters, appliances in caravans and other personal devices including notebook computers. Many consumers are also being encouraged to store products like power tools and eBikes in unsupervised locations (garages, sheds)

¹ See ABC, Concern over growing number of fires linked to lithium-ion batteries, see <https://www.abc.net.au/news/2023-01-18/e-scooter-lithium-battery-fire-risk-fears-/101863902>

which can be higher-temperature and not be fitted with smoke detectors. As such, consumers expect these products to be safe. Consumers expect that manufacturers have not only conducted safety testing but that all products sold are safe and meet minimum safety standards.

While the community should be supported with safety information, consumers should not be required to educate themselves on which batteries are safe and which are not safe. Batteries supplied for common household use should meet high safety standards. We do not think it is sufficient to merely instruct consumers to read the instructions of products, given these are likely to be in fine-print, dense and unintelligible to many in the community, including those whose first language is not English.

Rather, we would support product design that ensures safety. For example, it should be considered as part of the product design how consumers will use the product, including storage, charging, and disposal.

In addition to stronger safety and product design standards, advertising, as well as consumer information included with products, and available online, needs to be improved. There needs to be clear and simple messaging about actions that must be taken to avoid risk.

For example, we understand that Li-ion batteries work optimally in the 15-to-35-degree Celsius range. They are by their nature more susceptible to spontaneous combustion due to the thermal impact at temperatures above 60 degrees Celsius. As such clear and prominent messaging should focus on avoiding excessive heat.

The other key risks involve physical damage and over-charging. Again, clear, prominent, and consistent messages could be developed to support consumer. However, we don't think that pushing the risk onto the consumer via information is sufficient. For example, a message to "stop charging around the 95% mark" might be sensible as the scientific evidence suggests that over-charging regularly leads to degradation of the battery. However, many people will instinctively fully charge products, and the product design should only allow the 95% charge if this is what is safe.

We also would not support consumer messaging that emphasised that consumers should spend more on higher-price products to avoid products with higher risk Li-ion batteries. An approach that points consumers to seek products that are powered by Li-Po or SSB batteries instead is doomed to mean that those with less means will be at higher risk of harm. The consequences of battery fires are horrendous, and costs are usually out of pocket.

Critically, better design should be the focus of risk reduction. Products and their use of batteries should be designed to ensure that the risk of harm is addressed.

The market

13. Are there alternatives to Li-ion batteries that are in the market or in development that are potentially safer than Li-ion batteries? What are they?

As stated above, we understand that there are alternatives like Li-po batteries that are safer than Li-ion batteries. Other products include SSB – solid state batteries, that have a solid electrolyte.

We also understand that Stanford University has developed a polymer-based electrolyte that has been demonstrated to be flame retardant.² This may be an important replacement, particularly in electronic scooters and vehicles where the risk of collision causing battery ruptures is very high.

Regulatory landscape

14. *Do you consider government intervention is required to manage Li-ion battery safety risks? If yes, what form of intervention do you recommend? Please explain your response.*
15. *Do you recommend any existing voluntary, industry or international safety standard, or overseas regulatory frameworks or certification methods, as having potential to mitigate the risks discussed in this Issues Paper? To what extent do these already address the risks discussed in this Issues Paper?*

CFA considers that any amendments to Australia’s Consumer Product Safety Framework should prioritise a general safety provision. We note that consumer affairs officials consulted on options to introduce such a provision in 2019, following a recommendation of the 2017 review of the Australian Consumer Law. CFA understands that the ACCC, as well as state and territory product safety regulators, uniformly support the introduction of a general safety provision.

A general safety provision would place a positive onus on all suppliers (and those in the supply chain, such as importers) to ensure the safety of a product before placing it on the market. This provision would support flexibility for suppliers by being principles-based so that compliance would not be prescriptive.

Ultimately, a general safety provision would require suppliers to adopt a culture of safety by taking positive steps to ensure their products are safe prior to sale rather than the consumer protection system relying on recalls and ‘after the fact’ compliance initiatives. Many suppliers already have good systems in place to ensure products are safe and may welcome the opportunity to work within a flexible framework that a principle-based general safety provision would bring.

A general safety provision could be supported by mandatory standards for home use, storage and disposal etc of Li-ion batteries. For example, this could be similar to the Standards Australia international standard, *AS IEC 62619:2017 Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications*, amended for residential use.

Mandatory standards can deal with a range of specific requirements. For example, a mandatory safety standard should require that chargers cannot overcharge batteries and that batteries (except when there is a risk that they might be swallowed by children) be easy to remove. The latter would make it easier for consumers to remove and appropriately dispose of the battery when it has reached the end of its life, or the appliance no longer works rather than being thrown out into general garbage with the appliance, and this increasing the risk of fires during the garbage removal and disposal process. A mandatory standard would also reduce risks associated with consumers continuing to charge batteries that should be replaced and encourage the production of replacement batteries.

² See: <https://engineering.stanford.edu/magazine/flameproofing-lithium-ion-batteries-salt>.

Should you have any questions about this submission, please contact info@consumersfederation.org.au.

Yours sincerely

CONSUMERS' FEDERATION OF AUSTRALIA

A handwritten signature in black ink that reads "Gerard Brody". The signature is written in a cursive style with a large, stylized 'G' and 'B'.

Gerard Brody
Chair