

INDUSTRY CODE FOR CONSUMER GOODS THAT CONTAIN BUTTON BATTERIES

A Code for Industry to Reduce the Risk of Death and Life-Threatening Injuries to Children

The ARA has been involved with Standards Australia through consultation on this issue.



July 2016

Safe and responsible procurement and manufacturing principles

Purpose

This document is intended to guide suppliers (i.e. manufacturers, distributors, importers, retailers, and on-line suppliers) in making responsible decisions about button battery safety when procuring, designing, developing or retailing button battery-powered devices.

Principles

This Industry Code is:

- **targeted at measures likely to be most effective** for reducing child exposure incidents relating to the consumer use of button batteries in Australia;
- **voluntary**, but supported by leading Australian suppliers and consumer safety stakeholders; **open to all suppliers and re-suppliers** of consumer goods that contain button batteries;
- **consistent (where possible and relevant) with similar initiatives or actions in other leading markets** (such as the EU and USA);
- **flexible and outcomes-based** rather than prescriptive and inflexible, but acting as an industry 'benchmark' for safety purposes;
- **not intended to preclude companies from adopting equivalent or additional safety measures**, should they wish to do so; and
- **not intended to conflict with requirements of applicable product safety standards, or override them.** If goods comply with relevant requirements in Australian or International product safety standards, then the goods are deemed to comply with similar requirements specified in this code.

Introduction

In an age of accelerating development and miniaturisation of electronic devices, unsecured button batteries are becoming increasingly accessible to young children. Button batteries are used to power many consumer goods including TV remote controls, cameras, watches, calculators, greeting cards, scales, torches and many others. They are also being increasingly used in children's toys, novelty items and LED lights.

In spite of government education campaigns and extensive media coverage of the issue, many parents remain unaware of the hazards posed, and **ingestion of button batteries by young children continues to cause chronic injuries and tragic loss of life.**

Even when parents know about the dangers, the abundance of button batteries in most homes can make creating a safe environment for children challenging in today's high technology world.

The death and injuries of children caused by button batteries in Australia and overseas are all the more tragic because they could in many cases have been prevented if the devices they were powering had been designed with a secured battery enclosure, or caregivers had been aware of the need to store new button batteries securely out of reach of children and dispose of used batteries immediately and securely.

This document provides guidance on the construction of devices that contain a button battery, and includes important safety information for use on retail packaging, in 'point of sale' material, and in user instructions.

By selecting and designing consumer goods that comply with this Industry Code, retailers, importers and manufacturers can help to make button battery safety a fundamental design consideration across all

consumer product categories. In doing so, there is no doubt that serious injuries will be prevented and lives will be saved.

Button Battery Types

For the purpose of this document, all flat, disc-shaped cells or batteries are referred to as *button batteries* regardless of their size or chemistry. 'Coin', 'disc' and 'button' cells or batteries are taken to be one and the same article.

Although coin-sized lithium button batteries are known to have caused more serious injuries and deaths to children, all button batteries are potentially dangerous to children who access them.

Coin cell is the term typically used for button batteries having lithium chemistry with a 3-volt electrical output. The roughly coin-sized lithium batteries (16-25mm diameter) have the highest risk associated with them due to their higher voltage and because they are more likely to become stuck in a child's oesophagus if ingested. This leads to the most serious internal burns, which can result in chronic health problems or death unless there is rapid medical intervention.

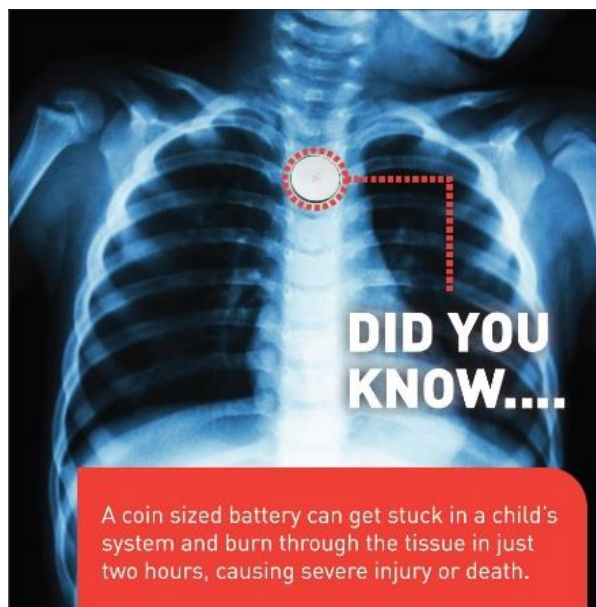
Button cell is the term typically used for batteries with alkaline or other (non-lithium) chemistries with a 1.5 volt or lower electrical output. They are button shaped and generally less than 16mm in diameter. Ingested button cells usually pass through the gastrointestinal tract without causing significant problems. However, if a button cell is ingested and remains undetected in the oesophagus for quite some time, it can produce a comparable risk to that posed by coin cells, particularly if the button cell is relatively new and is ingested by a very young child. Button cells can also be inserted in body orifices such as ears and noses, damaging delicate tissues and causing serious injuries if undetected for some time.

Hazards

The hazards presented by button batteries to young children are summarised as follows:

- **It is estimated that there are on average 20 emergency department presentations of children that have been exposed to button batteries every week in Australia.** Exposure includes possible ingestion or insertion of button batteries in body orifices. Both scenarios can result in serious injury. (Source: Data collected through the Queensland Injury Surveillance Unit, with extrapolation to estimate national rates). To date, all known battery-related deaths have been associated with ingestion and oesophageal lodgement of a battery.
- When ingested, if the button battery becomes lodged in the oesophagus, saliva immediately begins to conduct a current produced by the battery. The resulting hydrolysis creates a hydroxide that burns the adjacent tissue. **Failure to remove coin-sized lithium button batteries within two hours can lead to perforation of the oesophagus wall, formation of fistulas (passages between organs or into blood vessels), or vocal cord paralysis.**
- **The symptoms caused by a button battery becoming lodged in the oesophagus, such as fever, lethargy, and blood in the stools, can be confused with other conditions.** This can complicate and delay accurate diagnosis and removal of the batteries resulting in long-term physical impairment, chronic health problems, or even death may result.
- **A child who has a button battery lodged in the oesophagus may have no immediate symptoms,** making it difficult for parents to recognise. They can also have mild or non-specific symptoms to begin with, making the problem difficult even for medical staff to diagnose.

- **With coin-sized lithium button batteries, tissue perforation can occur within 2 hours and damage can continue for a period of weeks even after the batteries have been removed.** Due to the patient's small size and the potential complications of operating on the gastro-intestinal tract, battery removal is technically challenging and can only be performed in specialist centres in urban areas of the country. This presents obvious challenges for getting young children in country areas to hospital in time to reduce injuries or save lives, and patients may even need to be transferred to specialist centres by medevac.



- **Even batteries that are perceived to be 'flat' because they don't operate a device can generate enough current to cause serious tissue damage if ingested.**

Further information about the hazards of button battery ingestion can be found here:

<https://www.productsafety.gov.au/content/index.phtml/itemId/1020875>

Your Responsibilities

Under the Australian Consumer Law (ACL), suppliers must not, in trade or commerce, in connection with the supply of goods or services, make a false or misleading representation that goods are of a particular standard or quality, or engage in conduct that is liable to mislead the public as to the nature, characteristics or suitability for their purpose. Maximum pecuniary penalties for contravening these sections of the ACL range from \$220 000 for an individual to \$1.1 million for a corporation.

If the design and manufacture of consumer goods permits button batteries to be accessed by young children, suppliers risk misleading consumers in contravention of these provisions.

Suppliers must also ensure that goods they supply comply with the guarantee of acceptable quality, which requires a good to be as safe as a reasonable consumer would expect. Where the design and manufacture of consumer goods permit access to button batteries by young children, the good may fail to comply with this guarantee.

Suppliers should be aware that these ACL requirements apply to the supply of any consumer goods or services and are separate from the ACL provisions relating to mandatory safety standards and bans.

Your Quality Management Practices

As a supplier (or re-supplier) of consumer goods, you are responsible for ensuring that you have adequate Quality Management Systems in place and that you methodically apply those systems before you supply products into the Australian market. Goods that contain button batteries potentially present a higher level of risk and must therefore be subject to the strictest quality assurance and control measures.

Good governance also involves making assessments of the Quality Management Systems of your up-stream suppliers and keeping documented evidence that adequate quality assurance and control processes are in place.

Where your suppliers do not have an established history of good governance, you should confirm that quality controls have been applied by carrying out inspections on the goods, preferably before they are shipped to you, but certainly before they are supplied to Australian consumers. Without such basic quality control measures in place, you run the risk of supplying unsafe goods with potentially deadly consequences for the most vulnerable of consumers. Relying solely on contractual arrangements with up-stream suppliers may result in your business causing serious injuries and incurring penalties.

Suppliers should also monitor and investigate safety related consumer feedback about products they supply and take appropriate corrective action where necessary.

If a supplier becomes aware of an injury, illness or death associated with a product it supplied, it may be necessary to report the incident to the Australian Competition and Consumer Commission (ACCC) within 2 days of receiving the report. Further information about Mandatory Reporting of consumer injuries and deaths can be found on the ACCC's Product Safety Australia website:

<https://www.productsafety.gov.au/content/index.phtml/tag/MandatoryReporting>

Essential requirements for compliance with the Industry Code

In order to comply with this Industry Code:

- **Consumer goods (including a peripheral device and any replacement batteries provided with it) requiring one or more consumer replaceable button batteries that are likely to be accessible to young children under normal use or reasonably foreseeable misuse MUST:**
 - (i) be designed and manufactured such that the batteries are not accessible to young children when the device or the packaging of any replacement batteries provided is subjected to normal use or reasonably foreseeable misuse,**
AND
 - (ii) one of the following:**
 - (a) have a battery compartment (or other enclosure) that is secured (preferably with a captive screw, a bolt or mechanism) such that it requires a tool to gain access to the batteries,**
OR
 - (b) have a battery compartment that requires two or more independent AND simultaneous actions to remove its cover.**

AND

- (iii) Information must be available at point of sale (including on-line) indicating that the product (or any included peripheral device) requires button batteries to operate and that these are hazardous to young children.

The requirements above do not apply to professionally prescribed and fitted medical devices such as hearing aids.

- Button batteries not intended to be replaced by the consumer must not be accessible when the device is subjected to normal use and reasonably foreseeable misuse and must also not be accessible without the use of a tool that would be expected to be used by a technician, e.g. a screwdriver or spanner, but not a coin.

The Essential requirements outlined in this Code are based on current understanding of best practice. Refer to Appendix B for further guidance on how suppliers can assess products to meet the essential requirements.

Additional recommended means of reducing or eliminating the hazards

Suppliers can further reduce the likelihood of young children being harmed by button batteries by considering the following options during product development or selection or sale.

- A primary consideration for your business should be **whether you supply goods containing coin-sized lithium button batteries at all**. As young children can ingest button batteries that have been replaced and discarded, the best way of reducing the likelihood of this happening is to reduce consumer demand for them by avoiding ranging goods that require them.
- Certain goods such as novelty items, and toys could be **powered by other types of batteries**, which are less likely to be swallowed by young children and do not present the same degree of danger if they are.
- Retailers should prioritise 'range reviews' of categories of goods powered by button batteries and eliminate items that do not comply with this Code. Stock audits should also be conducted to confirm that product ranges have been cleared of unsafe button-battery powered devices.
- Retailers can ensure they only procure button batteries and products containing button batteries that as a minimum meet the '**essential requirements**' in this Industry Code by referencing it in their product specification documents, pre-shipment inspection protocols, design briefs, etc.
- Technical means of ensuring safety should be used where possible, for example by designing the product so that **it will not operate** if the battery compartment fastener is not present.
- Manufacturers and down-stream suppliers of button battery-powered devices can reduce the risk of young children accessing batteries by **carrying out suitable use and reasonably foreseeable misuse tests** on the goods. (See **Appendix B** for a list of safety standards that may be appropriate to the goods under assessment.) Such tests may incorporate, but are not limited to:
 - Torque and tension tests
 - Drop tests
 - Battery compartment lid pressure tests
 - Robustness tests on the mechanical fastener or compartment latch

- Retailers should **consider the height** at which button batteries and products containing button batteries are displayed in stores and assess the likelihood of them being accessed by children in the store.
- When offering button batteries for sale, retailers can select brands of batteries that are supplied in **suitable child-resistant packaging** and are marked with warnings alerting consumers to the hazards to young children.
- Packaging or instructions of products should be **marked with a warning** alerting consumers to the dangers of young children ingesting/inserting button batteries. Suggested warnings, poisons centre information, and examples of graphical warning symbols (Fig. 1) are provided in **Appendix A**.
- Retailers should **alert consumers to button battery hazards** by offering clearly visible safety information at the points of display in stores. Shelf-ready unit displays for button batteries are one suggested vehicle for safety messaging.
- For **information about responsible sourcing of high risk consumer goods**, suppliers can refer to the following ACCC guidelines and make improvements to their Quality Management Systems by implementing the measures discussed within:

(a) Responsible sourcing of products

<http://www.productsafety.gov.au/content/index.phtml/itemId/1011968>

(b) Product testing for consumer goods

<http://www.productsafety.gov.au/content/index.phtml/itemId/974066>

The above documents on sourcing safe products and product testing are very useful for small as well as bigger businesses.

Appendix A

Suppliers and re-suppliers developing packaging and instructions for consumer goods incorporating button batteries that are replaceable by consumers should alert consumers to the dangers of young children ingesting them. This can be achieved by including suitable markings on the packaging or in the instructions, and/or by affixing warning labels to the product.

Suggested markings for packaging, instruction or product can include the following:

- **WARNING - KEEP BATTERIES OUT OF REACH OF CHILDREN**
- Swallowing may lead to serious injury in as little as 2 hours or death, due to chemical burns and potential perforation of the oesophagus.
- If you suspect your child has swallowed or inserted a button battery immediately call the 24-hour Poisons Information Centre on 13 11 26 for fast, expert advice.
- Examine devices and make sure the battery compartment is correctly secured, e.g. that the screw or other mechanical fastener is tightened. Do not use if compartment is not secure.
- Dispose of used button batteries immediately and safely. Flat batteries can still be dangerous.
- Tell others about the risk associated with button batteries and how to keep their children safe.

NOTE: The 24-hour Poisons Information Centre is the correct first response in Australia. Verify suitable emergency call numbers for other countries you may want to include in your markings.

Warnings should be placed adjacent to the instruction for replacing batteries. Graphical symbols may be added to either add emphasis or replace text.



Proposed for
ANSI C18.3 Part 1



Proposed combination
for IEC 62115

Fig. 1 – Examples of Graphical Warnings

Appendix B

The following safety standards may be helpful to suppliers conducting safety assessments of products containing button batteries. In particular, certain tests prescribed by the standards may be applicable to the use and foreseeable misuse tests that should be performed on battery enclosures and their fastener mechanisms. Further standards may be available that apply to the specific product.

Refer to the standards listed below or their newer editions. Also refer to standards referenced in legislation by relevant State authorities and refer to the ACCC product safety website for relevant mandatory standards.

- AS 1928 – 2007 - Child-resistant packaging - Requirements and testing procedures for reclosable packages (ISO 8317:2003, MOD)
- AS 5808 – 2009 - Child-resistant packaging - Requirements and testing procedures for non-reclosable packages for non-pharmaceutical products (EN 862:2005, MOD)
- AS/NZS 3820 - Essential safety requirements for electrical equipment
- AS/NZS 3100 - General requirements for electrical equipment
- AS/NZS 60335.1:2011 + A1 + A2 + A3 - Household and similar electrical appliances – Safety - Part 1: General requirements
- AS/NZS 60950.1:2015 Information Technology Equipment – Safety, Part 1: General requirements
- AS/NZS 62115: 2011 - Electric toys—Safety
- AS/NZS 60065:2012 A1:2015 - Audio, video and similar electronic apparatus—Safety requirements
- ASTM F963-11 - Standard Consumer Safety Specification for Toys Safety
- ANSI C18.3 Parts 1, 2 & 3 - American National Standard for Portable Lithium Primary Cells and Batteries
- IEC 60086 Part 4 & 5 – Primary batteries
- IEC 62368-1 Ed. 2 Audio/video, information and communication technology equipment - Part 1: Safety requirements
- UL 4200A:2015 - Standard for Safety for Products Incorporating Button or Coin Cell Batteries of Lithium Technologies

Safety standards can be purchased from SAI Global: <https://www.saiglobal.com/>

NOTE: Toys for children under three years are required to comply with the relevant mandatory standard. See as follows:

<http://www.productsafety.gov.au/content/index.phtml/itemId/974860/fromItemId/974764>