

General Information

Fire detection equipment can contain chemicals that are potentially damaging to your health under certain circumstances. You should be aware of the substances and their potential hazards you will encounter during your employment duties.

The COSHH regulations require the provision of information in respect of the chemical content of such products. The following pages give this information for the common products. The action that should be taken is detailed should an incident arise and must be followed.

Possible effects are detailed and you should be aware of these enabling you to identify any problems you may have. Relevant information to be passed to a doctor, if required, is provided. If ever in any doubt about a situation involving your contact with chemical substances always seek professional advice.

HAZARDS ASSOCIATED WITH BATTERIES:

VALVE REGULATED LEAD ACID (VRLA)

Electrical: Sparks can be created by all sizes of batteries, causing a hazardous condition in an explosive atmosphere. Battery terminal voltages exceeding a safe value with respect to other battery terminals or conducting supporting structures should be suitably protected.

Excessive current can lead, during charge or discharge, to overheating of current conductors, thereby creating a hazard. Batteries must always be charged in accordance with the manufacturers instructions.

Mechanical: Batteries must be installed and maintained in accordance with the manufacturers instructions. Maintenance free batteries are provided with re-sealable, one-way valves to permit the release of gases generated within the cells. The gases are potentially explosive and adequate ventilation must be provided.

Thermal: Batteries must always be stored and operated within the manufacturers specified temperature limits.

Chemical: Chemicals contained within the batteries are potentially harmful. For this reason great care should be taken to prevent a breach of the sealed battery container. If the battery contents are released the material must be prevented from coming into contact with the body. Protective clothing should be worn when handling these chemicals. The disposal of batteries containing toxic chemicals should be delegated to a competent organisation. The specific compounds which present a potential health hazard are:

A Sulphuric Acid: is a constituent of the liquid electrolyte of the cell at concentrations of up to approximately 40% by weight. This substance is an irritant which can cause chemical burn damage to exposed skin. Where skin and clothing are contaminated with acid the affected area should be drenched as quickly as possible with copious quantities of clean water. In the case of

acid in the eye, speed of action is vital. The person should be firmly held and the eyelid forced open. The eye should be irrigated for at least 15 minutes with clean water or boric saline solution. The patient should be required to roll his eye during this operation. A sterile pad should then be applied and bandaged. All cases of acid in the eye injuries should be referred to a doctor. Spillages of acid should be washed away with copious excess of water.

B Lead: is the main active material of the battery, occurring in a variety of chemical compositions. It is toxic if absorbed into the body. Skin contact, with the internal contents of the battery, should be avoided to prevent subsequent ingestion or inhalation of lead. If contamination does occur the affected area should be scrubbed thoroughly with soap, warm water and a brush.

C Hydrogen: gas may be released by sealed lead acid batteries if they are charged at voltages exceeding the manufacturers recommended limits. This represents a potential hazard if the concentration of hydrogen in the air exceeds the explosive mixture threshold of 3.8% by volume. If, as a result of incorrect charging control, an explosive gas mixture is suspected, the area should be immediately evacuated. The charging supply should be shut down safely, and ventilation to the charging area increased. Sources of ignition such as naked flames or electrical sparks must be prevented, until the hydrogen gas has been dispersed.

NICKEL-CADMIUM (Ni-Cd), NICKEL METAL HYDRIDE (Ni-MH) AND LITHIUM

Ni-Cd: Most hermetically sealed nickel-cadmium alkaline batteries consist of nickel hydroxide as the active material for the positive, cadmium as the active material for the negative and potassium hydroxide as the electrolyte.

Ni-MH: Most Ni-MH cells are constructed with a positive plate formed from nickel hydroxide, and the negative plate from metal hydride, with corrosive potassium hydroxide as the electrolyte. Some manufacturers add cadmium to these cells.

Lithium: CR type of Lithium cells contain manganese dioxide which is a chemically stable solid, lithium which is inflammable and an organic electrolyte of very low corrosivity. Lith-ion type cells contain Lithium, Iron disulphide, Dimethoxyethane and Dioxolane.

Lithium cells should be stored in a cool, well ventilated area. Elevated temperatures can result in shortened battery life. In the case of fire where lithium batteries are present, flood the area with water. If any batteries are burning, water may not extinguish them, but will cool the adjacent batteries and control the spread of fire. Burning batteries will burn themselves out. Sand or other smothering material may be used. Fire fighters should wear self-contained breathing apparatus as burning lithium-iron disulphide batteries produce hydrogen sulphide gas, sulphur dioxide gas and lithium hydroxide fumes. Hydrogen gas can be explosive in a confined space.

First Aid Information Applicable To All Of The Above Types:

In the event of Button cells being accidentally swallowed, it is ESSENTIAL to take rapid action regardless of the circumstances of the accident. The swallowed cell MUST BE EXTRICATED IMMEDIATELY, as the stomach acid will have a corrosive effect on the cell, causing it to rupture

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and release its contents into the oesophagus, stomach and intestine. A Doctor must decide on the most effective method of removal.

The cell casing and sealing device are composed of materials such as stainless steel, mild steel, or nickel-plated steel, polypropylene or polyamide. The action of decomposition, by the acid-containing juices is not too rapid. It cannot be safely stated how long the cell can remain within the body without causing damage. A number of electro-chemical factors may affect this periodicity i.e. cell voltage, degree of discharge and the components of the cell casing etc. The amount of toxicity of the cell contents (nickel, cadmium etc.) will depend on the amount of this material and length of time it is left in the body.

On continuous charge, the electrical energy, once the battery is fully charged, is converted to heat. To ensure this occurs under controlled conditions, it is essential that charging is from a constant current source of the correct magnitude and adequate battery ventilation for cooling is provided.

Common Hazards To All The Above Types:

Electrical: Battery terminal voltages in excess of a safe level should be suitably protected. Overloaded current conductors can reach excessive temperatures producing a hazard.

Sparks can be created by all types and sizes of batteries, creating a hazard in an explosive atmosphere, unless batteries are specifically designed for use in these conditions.

Mechanical: Batteries must be constructed and maintained in accordance with the manufacturers instructions.

Thermal: Batteries must always be stored and operated within the manufacturers specified temperature limits.

Chemical: Residual deposits on external surfaces of batteries must be prevented from coming into contact with sensitive areas of the body. Protective clothing should be worn when handling chemicals, which must also be prevented from coming into contact with eyes or skin. Batteries contain toxic compounds, the disposal of which should be delegated to a competent organisation.

General Safety Criteria All Batteries

Do not dispose of cell/batteries in fire.

Always observe the polarity of the cells – insert correctly.

Do not short circuit.

Do not attempt to recharge primary cell/batteries.

Do not crush, puncture, open, dismantle or otherwise mechanically interfere with, or abuse, these cell/batteries.

Do not store at temperatures in excess of +60 C. The optimum storage temperature for maximum life is +10 C to +35 C.

Unless cell/batteries are suitably insulated they should not be carried in pockets with keys, change or other metal objects or put in drawers, boxes, trays etc., with metal objects like paper clips, steel rulers, scissors, screwdrivers etc.

HAZARDS ASSOCIATED WITH AEROSOL SMOKE DETECTOR TESTER:

Components:	Mixture of alcohols 1-20%. HFC 134a (1,1,1,2- Tetrafluoroethane) 80-99%. flammable components ≤ 20%.
Inhalation:	Inhalation of vapour mists or sprays can cause mild to moderate irritation of the tissue of the nose, throat and upper respiratory system. Over-exposure by using several cans in a short period in a poorly ventilated area can lead to headache, nausea, general anaesthetic effects and could result in an oxygen deficient atmosphere as the vapours are a lot heavier than air.
Skin and eyes:	Eye contact may cause mild irritation. Sustained spraying onto skin may cause localised rapid cooling of the tissue resulting in frostbite type symptoms.
First Aid Measures:	Eyes – lifting eyelids flush with plenty of water. Skin – wash with soap and water. Ingestion – if product enters mouth rinse with water and avoid swallowing. Inhalation – get to fresh air, if irregular breathing occurs seek medical assistance.
Fire:	This product is classed as a non-flammable aerosol. Container may burst if heated to over 50 C. For large fires use alcohol resistant foam, CO2 or dry powder.
Safe Handling:	Keep away from heat, sparks and other ignition sources. Do not puncture or force open cans.
Safe Storage:	Store containers in cool, dry locations away from direct sunlight and do not store in temperatures exceeding 50 C. Do not store with strong acids or oxidising agents.
Safe Use:	Do not eat or drink whilst handling product. Ensure good ventilation otherwise take regular breaks from use. Under normal usage, this product should pose little risks to the health of the user.