



Management of Waste Ionisation Chamber Smoke Detectors (ICSDs)

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Contact us:

ENVIRONMENTAL PROTECTION AGENCY

PO Box 3000, Johnstown Castle Estate, Co. Wexford, Ireland

Lo Call: 1800 33 55 99 Email: weee@epa.ie

Website: www.weee-enforcement.ie

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1. Introduction

Many everyday consumer items are in fact electrical and electronic equipment (EEE). There are ten categories of EEE specified in the legislation¹, which includes equipment such as household appliances, mobile phones, electric lawnmowers drills, power tools, consumer electronics (e.g. TVs, DVD players), as well as industrial items such as medical devices, and laboratory equipment. When these items reach end-of-life they become waste electrical and electronic equipment (WEEE). Some WEEE contains hazardous substances that may be harmful to the environment, such as batteries, cathode ray tubes in televisions, heavy metals etc. Therefore, WEEE must not be disposed of in general refuse or mixed general waste streams. In addition, some electrical and electronic equipment may contain radioactive sources such as ionisation chamber smoke detectors (ICSDs), and must therefore be managed appropriately, when they reach end-of-life. The management of WEEE is controlled by legislation which falls under the general principle of producer responsibility². Products containing radioactive sources, including ICSDs, are also controlled by legislation on ionising radiation³.

Waste batteries and accumulators⁴ are similarly controlled by producer responsibility legislation⁵. As batteries contain hazardous substances they must also be managed properly when they reach end-of-life. The purpose of these waste stream specific regulations is to provide for systems where such hazardous wastes are taken out of the municipal and commercial waste disposal streams and managed in an environmentally sound manner whilst maximising their recovery/recycling potential.

¹ European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (SI No. 149 of 2014). European Parliament and Council Directive 2012/19/EU on waste electrical and electronic equipment. The 10 categories will be reduced to 6 main categories from 15 August 2018. See Schedules 3 and 4 of the Regulations.

² The objective of producer responsibility lies in the Polluter Pays Principle, making sure that the producer is responsible for the environmentally sound management of these items at end-of-life.

³ Radiological Protection Act, 1991 (Ionising Radiation) Order, 2000 (S.I. No. 125 of 2000); Council Directive 96/29/Euratom laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation; Council Directive 90/641/Euratom on the operational protection of outside workers exposed to the risk of ionising radiation during their activities in controlled areas.

⁴ "Battery" or "accumulator" means any source of electrical energy generated by direct conversion of chemical energy and consisting of one or more primary battery cells (non-rechargeable) or consisting of one or more secondary battery cells (rechargeable).

⁵ European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended.

2. Purpose of this Guidance

The objective of this guidance is to provide clarity to relevant persons involved in the recycling and environmentally sound management of Ionisation Chamber Smoke Detectors (ICSDs), which are classified as waste electrical and electronic equipment (WEEE) and in particular the radioactive sources and batteries used in these devices.

This guidance has been developed by the Environmental Protection Agency (EPA). It aims to provide clarity and promote best practice in an area of common interest without prejudice to the respective statutory responsibilities and obligations of each organisation. The guidance is aimed at the following groups:

- Producers, importers, distributors and retailers of ICSDs. These are defined as appropriate in Section 4;
- End-users of ICSDs, i.e. private households and non-household end users;
- WEEE collective compliance schemes and their approved waste management contractors;
- Waste collection permit holders and waste licence/facility permit holders handling WEEE;
- Operators and managers of civic amenity sites; and,
- EPA and local authority enforcement inspectors.

3. Role of the EPA

The Environmental Protection Agency (EPA) is an independent public body established in 1993 under the Environmental Protection Agency Act, 1992. The EPA has responsibilities for a wide range of licensing, enforcement, monitoring, assessment, guidance, reporting and research activities associated with environmental quality and protection. In the context of these responsibilities it should be noted that the Waste Management Act, as amended, does not apply to a radioactive substance within the meaning of the Radiological Protection Act, 1991. However, the WEEE Regulations referred to above explicitly require the removal of components containing radioactive substances from separately collected WEEE⁶.

The Radiological Protection Institute of Ireland (RPII) was established in April 1992, under the Radiological Protection Act, 1991. The RPII were responsible for the regulatory, monitoring and advisory responsibilities in matters pertaining to ionising radiation. In particular the RPII was the competent authority for the protection of workers and members of the public from the harmful effects of exposure to ionising radiation. The RPII operated a licensing system for all holders and users of sources of ionising radiation such as sealed radioactive source and X-ray equipment. In 2014, the RPII was merged with EPA under the commencement of the Radiological Protection (Miscellaneous) Provisions Act 2014. The Office of Radiological Protection continues to carry out these functions within the EPA. A licensing system is in operation for all users of sources of ionising radiation such as sealed radioactive source and X-ray equipment. Historically, it has exempted householders from the requirement to hold a licence for ICSDs as they pose no hazard through normal operation.

⁶ Refer to Schedule 9 of the European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (SI No. 149 of 2014) as amended

4. WEEE and Batteries Regulations

The European Union (Waste Electrical and Electronic Equipment) Regulations 2014 - [S.I. No. 149 of 2014](#) (hereinafter referred to as the WEEE Regulations) are in place since 29th March 2014 and replace the 2005⁷ and 2011⁸ WEEE Regulations and amendments.

The European Union (Batteries and Accumulators) Regulations 2014 - [S.I. No. 283 of 2014](#), as amended, (hereinafter referred to as the Battery Regulations) are in place since 30th July 2014. The EPA is the lead enforcement authority for the WEEE and Batteries Regulations and enforcement responsibility is shared with the local authorities. Many items of electrical and electronic equipment contain batteries, for the operation of a unit for example, mobile X-ray units or as a backup power supply for the memory of the unit.

The WEEE and Batteries Regulations set up a framework whereby WEEE and waste batteries and accumulators can be managed in an environmentally sound manner. The regulations place significant obligations on Producers placing electrical and electronic equipment (EEE) or batteries (including portable, automotive and industrial batteries and batteries incorporated into appliances) on the market in the Republic of Ireland or Distributors of those products once they are in the country.

A '**Producer**' is any person or body carrying out any of the following:

- Importing EEE or Batteries into Ireland; and/or
- Manufacturing and selling EEE and/or Batteries under their own brand or if EEE and/or Batteries are designed or manufactured on their behalf and placed on the market under their name; and/or
- Reselling other supplier's products under your own brand; and/or
- Selling EEE via distance communication to consumers and businesses in Ireland where the company is based outside Ireland.

A '**Distributor**' is any person or body providing EEE on a professional basis to an end user.

The EPA have published a number of guidance documents which cover both distributor and producer responsibilities under the WEEE and Battery Regulations. For further information please see the [EPA website](#).

⁷ Waste Management (Waste Electrical and Electronic Equipment) Regulations 2005 (S.I. No. 340 of 2005)

⁸ European Communities (Waste Electrical and Electronic Equipment) Regulations 2011 (S.I. No. 355 of 2011, as amended by S.I. No. 397 of 2011)

5. Ionisation Chamber Smoke Detectors

Ionisation Chamber Smoke Detectors (ICSDs) use an ionisation chamber and a source of ionising radiation to detect smoke particles. ICSDs contain a low activity americium-241 source (typically less than 37 kBq) and can be battery-operated or mains operated with a battery backup. These products are included in the scope of the WEEE and Batteries Regulations and free take-back must be made available to householders at the end of their useful life. They must not be disposed of in general refuse or mixed waste streams.

The options available for householders and commercial end-users for the management of waste ICSDs are outlined in [Section 5.2](#) below.

5.1 Licensing by EPA

At present, companies in Ireland who supply ICSDs and / or hold more than 500 in stock are required to be licensed by the EPA. Distribution of ICSD units is restricted to those activities not exceeding 37 kBq of americium-241 per unit. Such companies may be considered producers (e.g. importers) or distributors (e.g. retailers), or both, under the WEEE Regulations and must therefore fulfil the relevant obligations outlined above in relation to producers and distributors. The licensing requirement also applies where any stockpile of more than 500 waste ICSDs are held. This can include an authorised waste treatment facility, civic amenity site, waste recovery operator or producers and distributors accepting back waste ICSDs in accordance with the WEEE Regulations. Included in the conditions of the licence, is the requirement to provide take-back for the ICSDs at the end of their useful life, to facilitate their environmentally sound management.

The practical approach to managing waste ICSDs, in compliance with EPA licensing and the requirements of the WEEE Regulations is outlined below.

Companies licensed by the EPA returning ICSDs directly to suppliers in other EU Member States must ensure that the relevant 1493/93⁹ shipment documents are completed and stamped as appropriate by the Competent Authority for radiation protection within that country. The same applies for any ICSDs imported into Ireland. Companies acquiring/returning ICSDs from/to countries outside the European Union must seek authorisation from the EPA by means of an import/export licence. The EPA regulates, restricts or prohibits, the custody, handling, holding, storage, use, manufacture, importation, distribution, transportation, exportation or other disposal of ionisation chamber smoke detectors.

5.2 Management of Waste ICSDs

Due to the radioactive source contained in ICSDs, they should remain intact at all times and no attempt should be made to dismantle waste ICSDs or remove any components from them.

Householders can bring back waste ICSDs free of charge to the retailer (i.e. distributor as defined above) from which they are purchasing a new one, on a one-for-one basis, or alternatively to the local

⁹ Council Regulation (Euratom) No 1493/93 of 8 June 1993 on shipments of radioactive substances between Member States or European Communities (Supervision and Control of Certain Shipments of Radioactive Waste and Spent Fuel) Order, 2009 (S.I. No. 86 of 2009) as appropriate.

civic amenity site. Retailers can deposit waste ICSDs, accepted back from customers as WEEE, at the local civic amenity site, or can arrange collection through the WEEE compliance schemes. A compliance scheme¹⁰ is a non-profit organisation that manages the collection, treatment and recycling of WEEE and batteries from authorised collection points on behalf of its members.

A retailer must maintain records for 2 years containing information on the quantities of WEEE taken back, stored and removed from the premises.

For *non-household (commercial end-users)*, when having ICSDs replaced, the waste ICSDs should be returned to the original supplier, according to the branding indicated on the units. This can be done either by the commercial end-user or the contractor carrying out the refit. The producer of the new replacement units, in the case of a refit, is responsible for financing the environmentally sound management of the waste ICSDs. The contractor will usually be the producer in accordance with the WEEE Regulations, and as such must fulfil the take back obligations, irrespective of brands. Where old ICSDs are branded with a supplier that is no longer in operation or present in the country, the contractor carrying out the refit is advised to take custody of the units, and arrange for a transfer to a suitable facility. Such transfer should be documented and relevant records retained. In the case of removal of waste ICSDs where there is no replacement, the commercial end-user remains responsible for financing their environmentally sound management at end-of-life.

5.2.1 Civic Amenity Sites (Recycling Centres)

All civic amenity sites accept WEEE and waste batteries and the facilities are available to householders. Segregated storage¹¹ for waste ICSDs should be provided at civic amenity sites and other relevant authorised waste management facilities. Appropriate segregated storage for ICSDs is considered to be a covered drum (preferably steel), or other appropriate covered receptacle, accurately labelled, and stored under suitable, secure roofing/cover.

Suitable arrangements should also be in place to prevent the loss or theft of, or unauthorised access to, or unauthorised removal of the ICSDs from their assigned location. Clear signage should also be displayed at the area in which the ICSD storage receptacle is located indicating “*Ionisation Chamber Smoke Detectors (ICSDs)*”.

Adherence to the above demonstrates compliance with the Eight and Ninth Schedule of the WEEE Regulations and is also considered good practice from a radiological protection perspective. Waste ICSDs collected at civic amenity sites should be returned to the original supplier, according to the branding indicated on the units or transferred to a suitable facility. Such transfer should be documented and relevant records retained.

5.2.2 Final Recovery or Disposal of ICSDs

Due to the radioactive source contained in ICSDs, waste ICSDs should be managed differently to other WEEE. At present there is no national central storage facility for radioactive waste. Waste ICSDs, which are branded with an existing manufacturer, may be transported in the EPA licensee’s own vehicles or by an EPA licensed carrier or transport service provider. Transport must be undertaken in compliance with the current editions of the ADR12 for road transport and the IMO IMDG Code¹³ for transport by

¹⁰ There are two compliance schemes in Ireland ERP Ireland (www.erp-recycling.org) and WEEE Ireland (www.weeeireland.ie)

¹¹ Refer to Schedule 9 of the European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (SI No. 149 of 2014) as amended. Segregated storage of waste ICSDs is considered best practice.

¹² European Agreement Concerning the International Carriage of Dangerous Goods by Road, UNECE – refer to the Health and Safety Authority for more information www.hsa.ie.

sea. For ICSDs being shipped out of Ireland by sea, pre-authorisation for the carriage of these units is also required by the sea carrier and the relevant port's Harbour Master's office.

¹³ International Maritime Dangerous Goods (IMDG) Code – refer to the International Maritime Organisation for more information www.imo.org.

6. WEEE Waste Management Facilities

Any waste facility must be appropriately authorised either by holding a waste licence issued by the EPA or a waste facility permit or certificate of registration issued by the relevant local authority. EPA-licensed waste management facilities are listed on the [EPA website](#). Waste facilities accepting ICSDs may also require licence for ionising radiation containing equipment from the EPA ORP, depending on the numbers of ICSDs managed.

7. Contact Information

Environmental Protection Agency
Producer Responsibility Team
Office of Climate, Licensing and Resource Use
PO Box 3000, Johnstown Castle Estate,
Wexford
Tel: 053 9160600
Fax: 053 9160699
Email: weee@epa.ie;
Web: www.epa.ie
www.weee-enforcement.ie
www.batteries-enforcement.ie

Environmental Protection Agency
Office of Radiological Protection
3 Clonskeagh Square
Clonskeagh Road
Dublin 14
Tel: 01 268 0100
Fax: 01 268 0199
Email: info@epa.ie
Web: www.epa.ie/radiation/