



# Management of X-Ray Units at End-of-Life

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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](mailto:weee@epa.ie)  
Website: [www.weee-enforcement.ie](http://www.weee-enforcement.ie)

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## 1. Introduction

X-ray units are included in the scope of legislation<sup>1</sup> relating to electrical and electronic equipment (EEE). This legislation falls under the general principle of producer responsibility, where the producer of a product must take responsibility for that product when it reaches end-of-life<sup>2</sup>. When such equipment reaches end-of-life, it becomes waste electrical and electronic equipment (WEEE) and must be managed in an environmentally sound manner. In addition, the custody and use of X-ray units are subject to licensing<sup>3</sup> by the Environmental Protection Agency's (EPA) Office of Radiological Protection (ORP).

## 2. Purpose of this Guidance

The objective of this guidance note is to provide information on how to dispose of disused X-ray units, which are considered waste electrical and electronic equipment (WEEE), when they reach the end of their useful life, and to ensure full compliance with EPA licence conditions<sup>4</sup> and the WEEE Regulations.

This guidance has been developed by the 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:

- X-ray equipment licensees (including dental and veterinary surgeons, hospitals, industry, embassies, ports and airports, etc.);
- 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 waste management facilities; 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

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<sup>1</sup> 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. Refer to Schedules 3 and 4 of the Regulations.

<sup>2</sup> The essence of producer responsibility lies in the Polluter Pays Principle, making sure that the producer is responsible for the environmentally sound management of the electrical product at end-of-life.

<sup>3</sup> For more information on the ORP please see the [EPA website](#).

<sup>4</sup> It is a condition of each licence issued by the EPA that prior written authorisation must be obtained from the EPA before disposing of a licensed item.

WEEE Regulations referred to above explicitly require the removal of components containing radioactive substances from separately collected WEEE<sup>5</sup>.

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 ORP continues to carry out these functions within the EPA.

#### 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 29<sup>th</sup> March 2014 and replace the 2005<sup>6</sup> and 2011<sup>7</sup> 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 30<sup>th</sup> 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.

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<sup>5</sup> Refer to Schedule 9 of the European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (SI No. 149 of 2014) as amended

<sup>6</sup> Waste Management (Waste Electrical and Electronic Equipment) Regulations 2005 (S.I. No. 340 of 2005)

<sup>7</sup> European Communities (Waste Electrical and Electronic Equipment) Regulations 2011 (S.I. No. 355 of 2011, as amended by S.I. No. 397 of 2011)

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](#).

## 5. Licensing of X-Ray units

### 5.1 Licensing of X-Ray Units

All users of sources of ionising radiation are required to hold a valid licence from the EPA for the custody and use of sources of ionising radiation such as X-ray units and radioactive sources. Although this licensing requirement applies only to those X-ray units that have a kV greater than 30kV, the advice outlined in this guidance document should be followed for all X-ray units, even if not licensable by the EPA. If an X-ray unit is rendered permanently incapable of producing X-rays it is no longer deemed to be source of ionising radiation and not subject to licensing requirements.

### 5.2 Licence Amendment Details

It is a condition of each licence issued by the EPA that:

*“The EPA shall be informed in writing of any proposals to change Schedules 2 or 3 of this licence prior to these changes taking effect. Licensed items may not be relocated or replaced, or new licensable items acquired without the licensee securing from the EPA a prior amendment of this licence and/or the Schedules hereto”.*

Where a licensee proposes to discard an X-ray unit, it is considered WEEE and therefore regard should be had to the WEEE Regulations in arranging for its environmentally sound management at end-of-life. This is further outlined in section 6 below and the particular options available to the final end-user will depend on the date on which the X-ray unit was first placed on the market by the producer. In addition, the following administrative step should be taken, in compliance with the conditions of the EPA licence (where applicable):

A licensee shall request prior written authorisation from the EPA before discarding a licensed item, such as an X-ray unit.

The end-of-life X-ray unit should be managed in accordance with the requirements of the WEEE Regulations. After the end-of-life X-ray unit has been correctly managed as WEEE, a Schedule 2 amendment form should be completed providing the necessary details of its management so that it can be removed from the inventory of X-ray equipment of the licence. This amendment form can be downloaded from the [EPA website](#) and completed forms should be submitted to the EPA.

## 6. Environmentally Sound Management of X-Ray Units at End-of-life

The age profile of X-ray units in current use throughout Ireland will vary and may exist in situations including dentists, veterinary surgeries, hospitals, embassies, as well as airports and ports. The options available for the management of end-of-life X-ray units will depend on the date on which it was placed on the market, as the WEEE Regulations and the associated take-back obligations came into effect on 13 August 2005. It will also depend on whether or not the unit is being replaced. In addition to the environmentally sound management of end-of-life X-ray units as WEEE, regard should be given to the licensing conditions outlined in section 5.2, above and the unit rendered permanently incapable of producing ionising radiation, as outlined in section 6.3 below.

### 6.1 Where an end-of life X-ray unit IS being replaced by a new one

Where an end-user of an X-ray unit is replacing an old unit with a new unit, the producer of the new unit (as defined under the WEEE Regulations, refer to section 4 above) must provide free take back for the end-of-life X-ray unit, and finance its environmentally sound management as WEEE. This requirement stands irrespective of the brand of the old unit or the brand of the new unit being supplied. In the case of such replacements, it also does not matter when the old unit was originally placed on the market.

### 6.2 Where an end-of-life X-ray unit is NOT being replaced

There may be situations where a final end-user of an X-ray unit may wish to discard it and not replace it with a new unit, for example, when a dental practice ceases operation. In such situations, the final end-user is responsible for ensuring the end-of-life X-ray unit is managed properly as WEEE, where the unit was originally placed on the market before 13 August 2005.

If, in the above situation, the X-ray unit to be discarded was originally placed on the market after 31 August 2005, then the producer which placed that unit on the market is responsible for ensuring its environmentally sound management at end-of-life. The final end-user should contact the supplier of the unit to make appropriate arrangements.

### 6.3 Disposal and Recovery

Prior to disposal and in order to comply with EPA's licence conditions (refer to section 5.2 above), the end-of-life X-ray unit must be rendered permanently incapable of producing ionising radiation<sup>8</sup>. This can be done for example by arranging for a suitably qualified and competent person<sup>9</sup> to disable the unit by disconnecting the timer unit and removing cables. The X-ray unit should be otherwise left fully intact. This approach should also be followed in the case of X-ray units that are not licensable by the EPA, i.e. those that are under 30kV.

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<sup>8</sup> X-ray units can ONLY produce ionising radiation when connected to an electrical power source. X-ray units are not inherently radioactive and once the timer unit has been disconnected and the power cables/batteries permanently removed it can no longer generate X-rays. In this case it can be considered solely as WEEE.

<sup>9</sup> Suitably qualified electrician or engineer or similarly approved. Details may be available to the end user from the distributor of the equipment.

### 6.3.1 X-Ray units, Manufactured prior to 1986

Old-X-ray units could contain oils which could potentially contain PCBs<sup>10</sup>. As a general rule of thumb, equipment that was manufactured prior to 1986<sup>11</sup> may contain PCB oils in transformers or capacitors. More information is available in the PCB Management Plan, available to download from the EPA website ([www.pops.ie](http://www.pops.ie)). Where such end-of-life X-ray units are being discarded as WEEE, they should be assumed to contain PCBs, unless certified PCB-free, and transferred to an authorised waste management operator, where all relevant hazardous and non-hazardous components will be managed in an environmentally sound manner in accordance with the WEEE regulations. The final end-user should inform the waste management facility in writing that the end-of-life X-ray unit may contain PCB oils. A certificate of destruction should be issued from the recovery operator.

## 6.4 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 ([www.epa.ie](http://www.epa.ie)). A final end-user of EEE such as an end-of-life X-ray unit must make their own decision as regards which authorised waste management operator to engage, unless the unit is being replaced with a new one and its environmentally sound management arranged by the producer.

## 7. Useful 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](mailto:weee@epa.ie);  
Web: [www.epa.ie](http://www.epa.ie)  
[www.weee-enforcement.ie](http://www.weee-enforcement.ie)  
[www.batteries-enforcement.ie](http://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](mailto:info@epa.ie)  
Web: [www.epa.ie/radiation/](http://www.epa.ie/radiation/)

<sup>10</sup> PCBs (polychlorinated biphenyls) are chemical substances that may occur in older electrical equipment such as transformers, capacitors and fluorescent lighting ballasts. PCBs are persistent organic pollutants and are extremely harmful to the environment and, at higher levels, to human health. More information is available at [www.pops.ie](http://www.pops.ie).

<sup>11</sup> In the EU, the sale of certain items of PCB-containing equipment was banned from 1986. In the absence of contrary information, any transformer which was manufactured in 1986 or earlier (or if from the USSR or former USSR countries, 1993 or earlier) should be considered to potentially contain PCB oils until such time as analytical testing or other evidence may prove otherwise. PCBs are known to have been used in capacitors up until 1989 and in the absence of contrary information, any capacitor manufactured during or prior to 1989 should be assumed to contain PCBs.