



**WAS-G-POPS-02**

**SEPA guidance: hazardous substances or persistent organic pollutants**

Version 3.0 - August 2025

**(POPs)**

**in WEEE**

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## Purpose

This guidance provides advice on the classification of WEEE.

**Background**

Waste Electrical and Electronic Equipment (WEEE), including fridges, computers, mobile phones, televisions etc., is a growing waste stream and can be a complex mixture of materials and components containing hazardous substances including Persistent Organic Pollutants (POPs). Components/materials of concern include:

* printed circuit boards
* plastic casings, cables and other components
* insulation foam
* cooling agents
* flame retardants
* activated glass and screen phosphors
* cathode ray tubes
* capacitors
* Ni-Cd batteries

If the levels of hazardous substances or POPs are over a threshold limit the item will be hazardous waste or hazardous POPs waste, which if not properly managed, can cause environmental harm.

For further guidance on POPs concentration levels, hazardous substances thresholds and waste classification please see the following:

[**https://www.gov.uk/guidance/dispose-of-waste-containing-persistent-organic-pollutants-pops**](https://www.gov.uk/guidance/dispose-of-waste-containing-persistent-organic-pollutants-pops)

<https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/948735/Waste_classification_technical_guidance_WM3.pdf>

**Persistent Organic Pollutants (POPs)**

The Stockholm Convention1 aims to reduce or eliminate the release of Persistent Organic Pollutants (POPs) and any wastes containing POPs should be disposed of in such a way that the POP content is destroyed or irreversibly transformed.

The presence of POPs in a waste affects the legal requirements that apply to how that waste is managed for example, segregation, treatment, disposal and export.

Please note that this guidance is not applicable to re-use.

**Your legal obligations regarding WEEE and POPs**

If you produce, collect or receive waste electrical and electronic equipment (WEEE), it is your responsibility to know if your waste material contains or could contain POPs. If you are not sure you can:

* ask the suppliers or manufacturers of the material or article for details of the POPs that could be present
* test the material yourself to find out the concentration of any POPs in it
* get the material analysed by a laboratory for POPs content

Guidance on the specific details of the requirements as they apply to WEEE are detailed below.

Further guidance on identifying, classifying and disposing of POPs waste can be found at the following link however please note that it should be read in conjunction with this, and other, SEPA guidance: <https://www.gov.uk/guidance/dispose-of-waste-containing-persistent-organic-pollutants-pops>

This guidance document can help you assess your waste, however, as the waste holder, it is your responsibility to assess and classify your waste properly. Furthermore, if you receive waste, you should check that the previous holder has classified and described the waste correctly, for example, it has been done in accordance with WM3.

If you treat an item of WEEE that has not been assessed to determine if it is POPs waste, you should manage the device and treatment outputs as POPs waste as a precaution, unless and until you have ascertained the item is POPs free.

If you have assessed your waste and are still not sure if a WEEE item is POPs waste, you should manage it as POPs waste.

**When you must destroy POPs in waste**

You must destroy the POPs in the waste if they are above certain concentration limits. This waste is known as POPs waste.

If you treat POPs waste and the treatment does not reliably destroy the POPs, any waste that results from the treatment, and contains these POPs, is also POPs waste. You must destroy the POPs in this treated waste even if the concentration is below the limits in this table. Dilution is not permitted.

**The classification and description of WEEE**

Section 34 of the Environmental Protection Act 1990 (as amended) lays out several duties which aim to ensure that waste is managed correctly, for example:

* Waste should be stored properly
* You should only transfer waste to an appropriate person
* You should ensure that when transferred it is sufficiently well described to enable its safe recovery or disposal without harming the environment.

When transferring your waste, you must classify your waste and use the appropriate paperwork, i.e. Waste Transfer Note (WTN) for non-hazardous waste and Special Waste Consignment Note (SWCN) for hazardous waste.

In the WTN or SWCN you must, amongst other things, use an appropriate 6-digit code, as detailed in the List of Waste (LoW) and provide an accurate written description.

It is the chemical makeup of waste that determines the LoW code and waste status.

**Table 1: WEEE Waste Status**

| **Waste Status** | **Criteria** |
| --- | --- |
| Non-Hazardous | There are no hazardous substances (including POPs) present in the waste. |
| Non-Hazardous/POPs | There are no hazardous substances present however POPs may be present below the relevant threshold concentrations. |
| POPs | POPs are present in levels at or above the relevant threshold concentrations.Other Hazardous Substances may be present albeit below the relevant threshold concentrations. |
| Hazardous/Non-POPs | Hazardous Substances are present in levels at or above the relevant threshold concentrations. POPs may be present albeit below the relevant threshold concentrations. |
| Hazardous/POPs | Both POPs and other Hazardous are present in levels at or above the relevant threshold concentrations.  |

To enable you to assign an appropriate classification to an item of WEEE you must undertake an assessment of the chemicals (substances and mixtures) present. This assessment will determine whether you assign a hazardous or non-hazardous code.

You will find further guidance on the waste classification process in the joint UK Environment Agency Technical Document:

[Guidance on the classification and assessment of waste (1st Edition v1.1.GB ) Technical Guidance WM3](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/948735/Waste_classification_technical_guidance_WM3.pdf)2.

**Please note** that unless proven otherwise, for example, by chemical analysis, SEPA expects that the majority of WEEE should already be classified and consigned as special waste due to the presence of hazardous substances and/or including POPs.

In the absence of such an assessment, a precautionary classification of ‘hazardous waste and POP waste’ status should be adopted.

**Please Note** that, if you produce, carry, deal, broker or receive a waste you must check that it is correctly classified. Where any waste is classified or described in a manner inconsistent with this guidance, you should expect to be asked for the supporting assessment.

**Classification of common types of WEEE**

The guidance below will help waste holders classify their waste in accordance with the current classification/assessment framework and help ensure that it is managed in an appropriate manner reflecting its status, as a hazardous or non-hazardous waste, and any hazardous chemicals/substances present, for example POPs. However, it is the responsibility of the waste holder to assess and classify their waste, including choosing an appropriate 6-digit LoW code, in the first instance.

**Televisions, computer monitors and other display devices:**

Components such as screens, circuit boards, batteries or any plastic parts may contain hazardous chemicals or POPs.

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Waste status | Household | Industrial or commercial |
| Cathode ray tube (CRT), flat-screen (plasma or LCD) containing POPs  | Hazardous/POPs | 20-01-35\* | 16-02-13\* |

(\*) An asterisk at the end of a code means the waste is hazardous.

**Fridges, freezers, chillers and air-conditioning units:**

Components such as circuit boards, motors and any plastic parts may contain hazardous chemicals or POPs. Coolants and foam may also be hazardous. Usually there is not enough POPs for the item to be classified as POPs waste, however this should not be assumed, and checks to verify are required.

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Waste status | Household | Industrial or commercial |
| Containing ozone-depleting substances as foam blowing agents or coolants | Hazardous/non-POPs  | 20-01-23\* | 16-02-11\* |
| Other | Hazardous/non-POPs  | 20-01-35\* | 16-02-13\* |

(\*) An asterisk at the end of a code means the waste is hazardous.

**Large domestic appliances (LDA): white goods (washing machines, tumble driers, dishwashers and cookers)**

Components such as circuit boards, motors or any plastic parts may contain hazardous chemicals or POPs. Usually there is not enough for the item to be classified as hazardous or POPs waste.

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Waste status | Household | Industrial or commercial |
| Large domestic appliances: white goods | Non-hazardous/non-POPs  | 20-01-36 | 16-02-14 |

**Small mixed WEEE**

These are small household-type electrical items collected from homes or businesses.

Components such as screens, circuit boards, batteries or any plastic parts may contain hazardous chemicals or POPs.

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Waste status | Household | Industrial or commercial |
| Small mixed WEEE containing POPs  | Hazardous/POPs  | 20-01-35\*  | n/a |

(\*) An asterisk at the end of a code means the waste is hazardous.

**Other household-type electrical items from homes or businesses**

These are waste electrical items collected from households or businesses that are not already listed and are separated from small mixed WEEE.

Components such as screens, circuit boards, batteries or any plastic parts may contain hazardous chemicals or POPs.

| Item | Waste status | Household | Industrial or commercial |
| --- | --- | --- | --- |
| Cat 1: Large household appliances (other than LDA white goods) containing POPs  | Hazardous/POPs  | 20-01-35\*  | n/a |
| Cat 2: Small household appliances containing POPs  | Hazardous/POPs  | 20-01-35\*  | n/a |
| Cat 3: IT and telecommunication equipment containing POPs  | Hazardous/POPs  | 20-01-35\* | n/a |
| Cat 4: Consumer equipment containing POPs  | Hazardous/POPs  | 20-01-35\*  | n/a |
| Cat 5: Lighting equipment containing POPs  | Hazardous/POPs  | 20-01-35\*  | n/a |
| Cat 6: Electronic and electrical tools containing POPs  | Hazardous/POPs  | 20-01-35\*  | n/a |
| Cat 7: Toys, leisure and sporting equipment containing POPs  | Hazardous/POPs  | 20-01-35\*  | n/a |

(\*) An asterisk at the end of a code means the waste is hazardous.

**Lightbulbs and lamps**

Components such as circuit boards, plastic parts or casings may contain POPs and hazardous chemicals, such as flame retardants.

You must check the levels of hazardous substances and POPs in the bulbs before you can classify the waste.

| Item | Waste status | Household | Industrial or commercial |
| --- | --- | --- | --- |
| Fluorescent tubes and low energy - excluding LED and other gas-discharge lamps | Hazardous | 20-01-21\* | 16-02-13\* |
| LED, halogen and incandescent containing POPs  | Hazardous/POPs  | 20-01-35\* | 16-02-13\* |
| LED, halogen and incandescent not containing hazardous components | Non-hazardous | 20-01-36 | 16-02-14 |

(\*) An asterisk at the end of a code means the waste is hazardous.

**Batteries**

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Waste status | Household | Industrial or commercial |
| Lead acid (vehicle) | Hazardous | 16-06-01\* | 16-06-01\* |
| Lead acid (other) | Hazardous | 20-01-33\* | 16-06-01\* |
| Nickel-Cadmium | Hazardous | 20-01-33\* | 16-06-02\* |
| Mercury containing | Hazardous | 20-01-33\* | 16-06-03\* |
| Alkaline | Non-hazardous | 20-01-34 | 16-06-04 |
| Other - Lithium or Lithium ion | Non-hazardous | 20-01-34 | 16-06-05 |
| Mixed household-type batteries - separately collected | Hazardous | 20-01-33\* | Not allowed |

(\*) An asterisk at the end of a code means the waste is hazardous.

**Wastes from treating WEEE and WEEE components**

If you receive waste from another person, you should check that it is classified and described correctly. You must identify if any item of WEEE is POPs waste before you treat it.

**When POPs affect the outputs from WEEE treatment**

Where an item of WEEE is POPs waste, you must destroy or irreversibly transform the POPs. If you treat an item of WEEE containing POPs, unless the process destroys the POPs, the post-treatment output will still contain POPs, and the outputs are classed as POPs waste. This applies even if the treatment has reduced the level of POPs to below the concentration limit.

If you know the WEEE item is not POPs waste, it may still contain low levels of POPs. Therefore, separating materials during treatment may result in increased concentrations of POPs in segregated outputs that contain plastics, cable or printed circuit boards. These segregated streams are POPs waste if the level of POPs is above the concentration limit. You must assess the concentration of POPs in these wastes or manage it as POPs waste. Therefore, assessment of waste items/articles is not an activity undertaken once only during the waste collection and treatment process but may be required at several stages.

Further guidance on identifying, classifying and disposing of POPs waste can be found at the following link:

<https://www.gov.uk/guidance/dispose-of-waste-containing-persistent-organic-pollutants-pops>

If you treat an item of WEEE that has not been assessed to determine if it is POPs waste, you should manage the device and treatment outputs as POPs waste as a precaution.

If you have assessed your waste and are still not sure if a WEEE item is POPs waste, you should manage it as POPs waste.

Here is some advice on how to classify some:

* components removed from WEEE before or after treatment
* plastic containing wastes produced by the WEEE treatment

We have not provided advice on all waste streams from WEEE treatment.

**Printed circuit boards**

We expect printed circuit boards to contain levels of POPs, hazardous brominated flame retardants and antimony trioxide above concentration limits. Nickel may also be present.

This advice also applies to printed circuit boards removed or separated during waste treatment. Use this code to classify the waste.

| Waste type | Waste status | Household type | Industrial or commercial |
| --- | --- | --- | --- |
| Printed circuit boards | Hazardous/POPs  | Does not apply | 16 02 15\* |

(\*) An asterisk at the end of a code means the waste is hazardous.

**Cables and granulated cable plastics**

We expect internal and external cables and wiring to contain levels of POPs, hazardous brominated flame retardants, antimony trioxide, plasticisers, and other chemicals above concentration limits.

This advice also applies to cables or wiring removed from devices or separated during waste treatment.

Use this code to classify the waste.

|  |  |  |  |
| --- | --- | --- | --- |
| Waste type | Waste status | Household type | Industrial or commercial |
| Cables from WEEE  | Hazardous/POPs  | Does not apply | 16 02 15\* |

Use this code to classify waste granulated cable plastics, from which copper and other non-plastic materials have been removed.

|  |  |  |  |
| --- | --- | --- | --- |
| Waste type | Waste status | Household type | Industrial or commercial |
| Cable plastics from WEEE  | Non-hazardous/POPs  | Does not apply | 19 12 04 |

(\*) An asterisk at the end of a code means the waste is hazardous.

If the cable plastics contain non-plastic materials, like copper, the waste is mixed. You must also check the concentration of hazardous chemicals and use the appropriate 19 12 11\* or 19 12 12 code instead of 19 12 04.

**Plastic cases removed from display devices**

Plastic cases from display devices, including both flat panel displays and cathode ray tubes, will contain hazardous chemicals and POPs above concentration limits. These are hazardous and POPs waste.

This advice also applies to compact, baled or shredded plastics from display devices.

Use this code to classify the waste.

|  |  |  |  |
| --- | --- | --- | --- |
| Waste type | Waste status | Household type | Industrial or commercial |
| Plastics from display devices | Hazardous/POPs  | Does not apply | 16-02-15\* |

(\*) An asterisk at the end of a code means the waste is hazardous.

Mixed wastes, containing plastic from the treatment of WEEE devices that are hazardous and POPs waste.

This waste type, which includes wastes produced from treating devices that are hazardous and POPs waste, remains a hazardous and POPs waste.

An example of a hazardous and POPs waste is mixed waste from treating small mixed WEEE. This is because it contains the contaminated plastics.

|  |  |  |  |
| --- | --- | --- | --- |
| Waste type | Waste status | Household type | Industrial or commercial |
| Mixed waste from treating WEEE containing hazardous components and POPs  | Hazardous/POPs  | Does not apply | 19-02-04\* |

(\*) An asterisk at the end of a code means the waste is hazardous.

**Plastic wastes from treating fridges and freezers**

Fridges and freezers have plastic components containing POPs, hazardous flame retardants and antimony trioxide. These will be present in the treated waste.

You must check the concentration of POPs in the plastic to determine if the waste is POPs waste.

Use these codes to classify pure plastic fractions from treating fridges and freezers.

|  |  |  |  |
| --- | --- | --- | --- |
| Waste type | Waste status | Household type | Industrial or commercial |
| Plastics from treating fridges and freezers containing POPs  | Non-hazardous/POPs  | Does not apply | 19-12-04 |
| Plastics from treating fridges and freezers not containing POPs  | Non-hazardous/non-POPs  | Does not apply | 19-12-04 |

(\*) An asterisk at the end of a code means the waste is hazardous.

If your plastic fraction contains other materials like foam or cable it is a mixed waste. You must also check the concentration of hazardous chemicals and use the appropriate 19 12 11\* or 19 12 12 code instead of 19 12 04.

**Plastic containing residues from treating certain large domestic appliances (LDA)**

White goods like household type washing machines, tumble driers, dishwashers and cookers are not hazardous or POPs waste.

However, they include plastic components and printed circuit boards which may contain POPs, hazardous flame retardants, and antimony trioxide. The concentration of these chemicals may be increased in the treatment outputs that contain these components.

You must check the concentration of hazardous chemicals and POPs in these treatment residues to determine if the waste is hazardous or POPs waste.

The code you select will also depend on the process you use to produce the waste and the output from that. Here are some examples.

|  |  |  |  |
| --- | --- | --- | --- |
| Waste type | Waste status | Household type | Industrial or commercial |
| Metal shredding light fraction containing POPs and hazardous chemicals | Hazardous/POPs  | Does not apply | 19 10 03\* |
| Metal shredding light fraction not containing POPs and hazardous chemicals | Non-hazardous  | Does not apply | 19 10 04 |

(\*) An asterisk at the end of a code means the waste is hazardous.

If other types of devices are present in the LDA waste stream, you should remove those that are hazardous or POPs waste before processing. If you process a WEEE device that is POPs waste, the outputs containing those POPs will remain POPs waste – even if diluted below concentration limits by the treatment process.

**Wastes from treating outputs from other WEEE treatments by density separation**

There are currently no density separation plants operating in Scotland. Density separation treatment is used to separate plastics containing brominated flame retardants (including hazardous chemicals and POPs) from uncontaminated plastics. The brominated (heavy) fraction is POPs waste.

Further advice can be sought from the appropriate regulator for the density separation plant. For England, the regulator is the Environment Agency and advice is available here:

<https://www.gov.uk/guidance/classify-some-waste-electrical-devices-components-and-wastes-from-their-treatment>

**Mixed batteries from treating WEEE**

See the guidance above for the codes you can use for batteries.

You must give the appropriate 16 06 XX code(s) for each type of battery present.

You must not use the 20 01 33\* code for separately collected municipal fractions of mixed batteries for batteries you have separated during waste treatment.

**Hazardous Waste Controls**

Wastes classified as Special Waste (as indicated in the Table above) are subject to specific waste controls within Scotland:

* the movement of Special Waste must be accompanied by a Special Waste Consignment Note;
* records must be kept by all parties;
* a site (permitted or exempt) receiving them must:
	+ report waste data to SEPA on a quarterly or annual basis as specified in their licence, permit or the terms of the exemption;
	+ reject any waste arriving without a consignment note, and report this to SEPA;
	+ be authorised to accept the waste.

Only the initial movement of WEEE from a domestic household to its first destination (for example to a household waste recycling centre - HWRC) is exempt from these controls. Subsequent movements, for example collections from HWRCs, are not exempt.

In Scotland, the Special Waste Regulations 1996 set out procedures to be followed when disposing of, carrying and receiving special waste.

Further information on regulations and other requirements relating to the management of special waste, such as classification and assessment, can be found on SEPA’s website:

<https://www.sepa.org.uk/regulations/waste/special-waste/>

Further guidance on how to consign special waste can be found in the SEPA guidance document ‘Consigning Special Waste’:

<https://www.sepa.org.uk/media/36660/consigning_special_waste_guidance.pdf>

**Management of waste containing Persistent Organic Pollutants (POPs)**

The waste management of WEEE devices containing levels of POPs that are above legal limits is controlled by the Persistent Organic Pollutants Regulations 2007.

The POPs present in the plastics of waste display devices and small mixed WEEE must be destroyed (or irreversibly transformed). Recycling these plastics is prohibited.

In practice, this means the plastics containing the POPs must be destroyed by incineration (or potentially other high temperature processes like a cement kiln). Bromine separation technologies may be used to separate these POP containing plastics from other plastics and wastes. The latter may then be suitable for recycling.

Further information on the requirements for POPs can be found on gov.uk:

<https://www.gov.uk/guidance/dispose-of-waste-containing-persistent-organic-pollutants-pops>

Please note that this website is managed by the Environment Agency and although the content is relevant to the UK, please contact SEPA if you require further assistance.

**Export of Waste**

The export of the waste from Scotland, to outside the UK, is always subject to notification controls under the Transfrontier Shipment of Waste Regulations 2007. Further information can be found on the SEPA website:

<https://www.sepa.org.uk/regulations/waste/transfrontier-shipment-of-waste/>

You must apply to the SEPA to obtain consent to export the waste. You must not move wastes containing POPs under ‘green list’ controls.

The fact that a waste containers POPs severely restricts both destination countries and waste management options.

These wastes can however be notified for export to the OECD (Organisation for Economic Co-operation and Development) for incineration with energy recovery. This may include pre-treatment using bromine separation techniques to separate the contaminated plastics which must be destroyed from the uncontaminated plastics that could then be recycled.

With respect to other destinations and waste management options:

Export to non-OECD countries is prohibited. A list of the 36 OECD countries is available at: <https://www.oecd.org/about/members-and-partners/>

Export for disposal is prohibited to OECD countries that are not EU/EFTA countries and restricted to EU/EFTA countries.

Export for recovery, with the exception of destructive technologies like incineration with energy recovery, is prohibited for waste containing POPs.

Imports of this waste are also subject to Notification controls and disposal is normally prohibited.

**Appendix I**

**POPs Concentration limit table**

| **Persistent organic pollutant (POP)** | **Concentration threshold** |
| --- | --- |
| Aldrin | 50 mg per kg |
| Alkanes C10 – C13, chloro (short-chain chlorinated parafins) (SCCPs) | 10,000 mg per kg |
| Chlordane | 50 mg per kg |
| Dieldrin | 50 mg per kg |
| Endosulfan | 50 mg per kg |
| Endrin | 50 mg per kg |
| Heptachlor | 50 mg per kg |
| Hexabromobiphenyl | 50 mg per kg |
| Hexachlorobutadiene | 100 mg per kg |
| Hexabromocyclododecane | 1,000 mg per kg |
| Hexachlorobenzene | 50 mg per kg |
| Mirex | 50 mg per kg |
| Toxaphene | 50 mg per kg |
| Polychlorinated Biphenyls (PCB) | 50 mg per kg (if you are not sure whether your waste contains PCBs, use the calculation method given in European standards EN 12766-1 and EN 12766-2, which you can buy online) |
| Polychlorinated napthalenes | 10 mg per kg |
| DDT (1,1,1-trichloro-2,2-bis (4-chlorophenyl) ethane) | 50 mg per kg |
| Chlordecone | 50 mg per kg |
| Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) | 15 μg (micrograms) per kg, meaning 0.000015g of PCDD or PCDF per kg of waste (you need to use the [toxic equivalency factor of each PCDD or PCDF](https://www.gov.uk/guidance/dispose-of-waste-containing-persistent-organic-pollutants-pops#eel-decline), to calculate concentration) |
| Hexachlorocyclohexanes (HCH), including lindane | 50 mg per kg |
| Total of tetra-, penta-, hexa-, hepta- and deca- bromodiphenyl ether | Sum of concentrations: 1,000 mg per kg |
| Perfluorooctane sulfonic acid (PFOS) and [PFOS derivatives](https://www.gov.uk/government/publications/perfluorooctane-sulfonates-pfos-and-related-compounds) | 50 mg per kg |
| Pentachlorobenzene | 50 mg per kg |

You can find the chemical formulae, European Community (EC) numbers and Chemical Abstract Service (CAS) numbers for each of the POPs in this table in the [list of POPs](https://www.gov.uk/using-persistent-organic-pollutants-pops#list-of-pops).

Your laboratory analysis for polybromodiphenyl ethers (PBDEs) in plastic may significantly underestimate the concentration present because the extraction efficiency may be poor. You must measure the extraction efficiency and adjust the results accordingly.

**Appendix II**

**Toxic equivalency factors of PCDDs and PCDFs**

To find out the concentration of PCDDs and PCDFs in your waste, you need to multiply the concentration of the specific PCDD or PCDF in your waste by its toxic equivalency factor (TEF).

We have provided the TEFs of each PCDD or PCDF in this section if you want to make calculations yourself.

**Table 1: Toxic equivalency factor (TEF) for each type of PCDD**

|  |  |
| --- | --- |
| **PCDD** | **TEF** |
| 2,3,7,8-TeCDD | 1 |
| 1,2,3,7,8-PeCDD | 1 |
| 1,2,3,4,7,8-HxCDD | 0.1 |
| 1,2,3,6,7,8-HxCDD | 0.1 |
| 1,2,3,7,8,9-HxCDD | 0.1 |
| 1,2,3,4,6,7,8-HpCDD | 0.01 |
| OCDD | 0.0003 |
| 1,2,3,6,7,8-HxCDF | 0.1 |
| 1,2,3,7,8,9-HxCDF | 0.1 |
| 2,3,4,6,7,8-HxCDF | 0.1 |
| 1,2,3,4,6,7,8-HpCDF | 0.01 |
| 1,2,3,4,7,8,9-HpCDF | 0.01 |
| OCDF | 0.0003 |

**Table 2: Toxic equivalency factor (TEF) for each type of PCDF**

|  |  |
| --- | --- |
| **PCDF** | **TEF** |
| 2,3,7,8-TeCDF | 0.1 |
| 1,2,3,7,8-PeCDF | 0.03 |
| 2,3,4,7,8-PeCDF | 0.3 |
| 1,2,3,4,7,8-HxCDF | 0.1 |

**Mixtures of multiple PCDDs or PCDFs**

If your waste contains a mixture of several different PCDDs and PCDFs. You need to multiply each PCDD or PCDF by its TEF, and then add the concentrations together.

Example calculation

If your waste contains 1,2,3,7,8-PeCDD at a concentration of 14 μg per kg and 1,2,3,4,7,8-HxCDD at a concentration of 30 μg per kg, you would calculate the concentration of PCDDs and PCDFs as follows.

14 μg per kg x 1 (TEF of 1,2,3,7,8-PeCDD) + 30 μg per kg x 0.1 (TEF of 1,2,3,4,7,8-HxCDD)
= 14 μg per kg + 3 μg per kg
= 17 μg per kg

In this case the concentration of PCDDs and PCDFs in your waste would be above the threshold in the concentrations table (15 μg per kg). Therefore, you would have to follow this guide when you dispose of it.

**Appendix III**

**Classification Notes – Supplementary to Classification Tables**

|  |  |
| --- | --- |
| Waste Type | Classification Notes |
| Televisions, computer monitors and other display devices | Deca-BDE and Antimony Trioxide are the main substances of concern however it is recommended that you also consider tetra-BDE, penta-BDE, hexa-BDE and hepta-BDE when assessing your waste. |
| Fridges, freezers, chillers and air-conditioning units | Deca-BDE and Antimony Trioxide are the main substances of concern however it is recommended that you also consider nona-BDE and octo-BDE when assessing your waste. The PBDE’s and Antimony Trioxide are present in some components however when assessed as a unit these concentrations are not sufficient enough make an entire item a Hazardous/POPs however if assessed in isolation the components would likely be deemed a ‘Hazardous/POPs Waste’. However other hazardous substances are likely to be present and unless proven otherwise the entire item will be deemed a Hazardous Waste. |
| Large domestic appliances (LDA): white goods (washing machines, tumble driers, dishwashers and cookers) | Deca-BDE and Antimony Trioxide are the main substances of concern however it is recommended that you also consider hexa-BDE, hepta-BDE, nona-BDE and octo-BDE when assessing your waste. The PBDE’s and Antimony Trioxide are present in some components however when assessed as a unit these concentrations are not sufficient enough to the entire item a Hazardous/POPs however if assessed in isolation the components would likely be deemed a ‘Hazardous/POPs Waste’. Microwaves, heaters and fans are not considered to be a LDA and should be classified in accordance with the small mixed WEEE.‘Heat pump’ tumble driers contain refrigerant (R134a or F-gas) must be stored with fridges and sent to a fridge treatment plant. All other tumble driers can continue to go with LDA. |
| Small mixed WEEE | Deca-BDE and Antimony Trioxide are the main substances of concern however it is recommended that you also consider nona-BDE and octo-BDE when assessing your waste. The PBDE’s and Antimony Trioxide are present in some components and when assessed as a unit these concentrations are sufficient enough to make the individual items a Hazardous/POPs waste. Therefore, any SMW collection stream is a Hazardous/POPs waste stream.  |
| Other household-type electrical items from homes or businesses | Deca-BDE and Antimony Trioxide are the main substances of concern however it is recommended that you also consider nona-BDE and octo-BDE when assessing your waste. The PBDE’s and Antimony Trioxide are present in some components and when assessed as a unit these concentrations are sufficient enough to make the individual items a Hazardous/POPs waste. |
| Lightbulbs and lamps | In a recent industry although POPs-PBDEs were not found to be present at concentrations above relevant threshold values their presence was detected however complications with analysis and comparison with the other SMW categories mean that PBDEs are likely to be present. Therefore, a precautionary approach should be adopted until proven otherwise. Antimony Trioxide was also found to be present in levels at or above the relevant threshold values and unless proven otherwise a precautionary approach should be adopted.  |
| Printed circuit boards | In a recent industry although POPs-PBDEs were not found to be present at concentrations above relevant threshold values their presence was detected, however, complications with analysis and comparison with the other categories mean that PBDEs are likely to be present. Furthermore, tetrabromobisphenol A (TBBPA) is known to have been used in the manufacture of printed circuit boards and thermoplastics, therefore, a precautionary approach should be adopted until proven otherwise. Antimony Trioxide was also found to be present in levels at or above the relevant threshold values and unless proven otherwise a precautionary approach should be adopted.  |
| Cables and granulated cable plastics | In a recent industry although POPs-PBDEs (deca, nona and octo) and Antimony Trioxide were not found to be present at concentrations above relevant threshold values their presence was detected however complications with analysis means that these substances are likely to be present. Therefore, a precautionary approach should be adopted until proven otherwise. |
| Plastic cases removed from display devices | Deca-BDE and Antimony Trioxide are the main substances of concern however it is recommended that you also consider tetra-BDE, penta-BDE, hexa-BDE and hepta-BDE when assessing your waste. |
| Mixed wastes, containing plastic from the treatment of WEEE devices that are hazardous and POPs waste | Any assessment and classification should be based on the inputs however in light of the mixed sources it is recommend that a precautionary approach is followed with all PBDEs and Antimony Trioxide being treated as substances of concern in addition to your existing classification and assessment process. |
| Plastic wastes from treating fridges and freezers | Any assessment and classification should be based on the inputs however in light of the mixed sources it is recommend that a precautionary approach is followed with all PBDEs and Antimony Trioxide being treated as substances of concern in addition to your existing classification and assessment process. |
| Plastic containing residues from treating certain large domestic appliances (LDA) | Any assessment and classification should be based on the inputs however in light of the mixed sources it is recommend that a precautionary approach is followed with all PBDEs and Antimony Trioxide being treated as substances of concern in addition to your existing classification and assessment process. |

## Disclaimer

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