

For the future of our environment

Guidance on the management of Waste Upholstered Domestic Seating (WUDS) containing Persistent Organic Pollutants (POPs)

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1.0 Background

A recent study¹ commissioned by the Environment Agency in England has highlighted the presence of Persistent Organic Pollutants (POPs) in upholstered domestic seating.

The study highlighted that the average concentration of Brominated Flame Retardants, and other POPs, found in items of upholstered domestic seating can be four times higher than the legal concentration limit – or threshold limit - of 1000 mg/kg.

This means that on becoming waste, these items of upholstered domestic seating (UDS), are covered by existing legislative requirements specific to wastes containing POPs.

This guidance will support waste holders in classifying and assessing their Waste Upholstered Domestic Seating (WUDS) and help ensure that it is managed in an appropriate manner.

2.0 Persistent Organic Pollutants – Legislative Framework

POPs are organic chemical substances which pose a risk to human health and the environment due to their persistence in the environment, bioaccumulation through the food chain and long-range environmental transport across a wide geographical range.

¹ (WRc) www.wrcplc.co.uk

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Any wastes containing levels of POPs above threshold limits specified within the [Stockholm Convention](#) must be managed in such a way as to destroy or irreversibly destroy the POPs content.

The Stockholm convention and the EU POPs Regulation (EU 2019/1021) are implemented in the UK via the [UK Persistent Organic Pollutants Regulations 2007](#) and its [subsequent amendments](#) for which SEPA is the competent and enforcing authority in Scotland.

Producers and waste holders must comply with the following duties, any failure to do so would be deemed an offence under the regulations:

- Producers and holders of waste shall undertake all reasonable efforts to avoid, where feasible, contamination of other wastes with POPs waste (Reg. 7(1)).
- POPs waste shall be disposed of or recovered, without undue delay, in such a way as to ensure that the POP content is destroyed or irreversibly transformed so that the remaining waste and releases do not exhibit the characteristics of POPs (Reg. 7(2)).
- Disposal or recovery operations that may lead to recovery, recycling, reclamation or re-use on their own of POPs shall be prohibited. (Reg. 7(3)).

Following this guidance will enable to comply with these duties.

In addition to the POPs specific legislation, existing requirements, under other legislation, are still applicable, including those duties required under Section 34 of the Environmental Protection Act 1990 commonly referred to as the Duty of Care.

Under section 34, anyone who produces, keeps, imports or manages controlled waste must store waste properly so that it does not escape from their control, transfer waste only to an appropriate person, provide an accurate and full description of waste, and take reasonable measures to ensure that your waste does not cause pollution or harm to human health.

3.0 POPs in WUDS

Many items of upholstered domestic seating (UDS) can contain elevated levels of POPs such as:

- Decabromodiphenyl Ether (DecaBDE);
- Pentabromodiphenyl Ether (PentaBDE);
- Tetrabromodiphenyl Ether (TetraBDE);
- Hexabromocyclododecane (HBCD).

In addition, the following hazardous chemicals are likely to be present:

- Antimony Trioxide, a carcinogenic synergist often used with DecaBDE;
- Medium Chain Chlorinated Paraffins (MCCP), often used in synthetic leather to make it flexible;
- Other flame retardants, and hazardous components of PVC may also be present in some items.

Evidence² suggests that the average concentration for some of these POPs in items of UDS, can be four times the legal concentration limit of 1000mg/kg, therefore the items require destruction on becoming waste (WUDS).

4.0 What WUDS this guidance covers

For the purposes of this guidance WUDS is taken to mean waste:

- Sofas
- Sofa beds
- Armchairs

² [Assessing pollutants in soft furnishing waste for the Environment Agency | WRC \(wrcgroup.com\)](https://www.wrcgroup.com)

- Kitchen and dining room chairs
- Stools and foot stools
- Home office chairs
- Futons, bean bags and, floor and sofa cushions
- Electrical recliner chairs³

This list includes any part made of or containing leather, synthetic leather, other fabric, or foam.

WUDS includes any item of seating of a household type from households or businesses.

Upholstered domestic seating from, for example, pubs, hotels, cafes and hospitals that is of a household type should be assumed to contain POPs.

This guidance does not cover the following items as these are unlikely to contain POPs:

- non-upholstered items, such as wooden chairs without a cushioned or textile back, seat, or arms;
- deckchairs;
- wastes from manufacturing new domestic seating that the manufacturer can demonstrate do not contain POPs.

5.0 You must not

You must not landfill items of WUDS, or wastes arising from their treatment, that may contain POPs.

This includes:

- segregated items of WUDS;

³ Electrical recliner chairs are considered outside of scope of the Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 (as amended). Due to their potential to contain POPs they are required to be treated so that the POPs are destroyed. All foam and textiles must be classified as POPs waste and sent for destruction.

- mixed waste containing items of WUDS;
- shredded or broken up waste arising from the treatment of waste containing items of WUDS (including refuse-derived fuel (RDF) and solid recovered fuel (SRF));
- trommel fines from processes treating waste containing items of WUDS, including the dust from air filtration systems.

If you operate a landfill site, your waste acceptance procedures should include appropriate checks to identify and exclude WUDS containing POPs. Any WUDS containing POPs which are accepted should be quarantined prior to being sent to an appropriate facility for destruction.

Incinerator operators need to put contingency plans in place to manage WUDS containing POPs for destruction. They cannot send this waste to landfill in the event of a planned or unplanned shutdown.

6.0 What you must do

If you collect, store or treat WUDS you need to have confidence that you are compliant with the law. You should:

- check if the WUDS, including stockpiles, contains POPs;
- classify your waste correctly;
- comply with the guidance on collection;
- comply with the guidance on storage;
- treat and dispose of WUDS appropriately.

These points are expanded in the following five sections of guidance.

6.1 Checking if WUDS contain POPs

For items of WUDS, there will be no Material Safety Data Sheet (MSDS) and the date of manufacture will be largely unknown. Therefore, you will need to rely on analytical methods such

as X-Ray Fluorescence (XRF) Scanners or laboratory analysis to assess the POPs content of your WUDS.

If you are unsure or unable to confirm the presence of POPs in the WUDS a precautionary approach must be adopted, and you should assume that the waste contains POPs and the relevant associated hazardous chemicals and manage the waste accordingly.

6.2 Classification of WUDS containing or assumed to contain POPs

Under Section 34 of the Environmental Protection Act 1990 waste holders have a duty to describe their waste fully, to ensure that it is handled appropriately, therefore where the presence of POPs has been confirmed or should be assumed, the WUDS must be described as “20 03 07 – waste domestic seating containing POPs”, on the waste transfer note

This description should be accompanied with a list of all the POPs and other chemicals present (or likely to be present) in the waste. If compositional analysis is not available, you can refer to the POPs and other substances of concern detailed in the introduction section of this guidance when describing your waste.

Those receiving WUDS should have robust waste acceptance procedures in place to ensure that the items containing POPs are not accepted. When receiving WUDS classified as not containing POPs it is recommended, with a precautionary approach in mind, that you verify that classification, for example, laboratory reports, XRF readouts or a waste classification report. The lack of any evidence could suggest that the WUDS has been wrongly classified.

If a load of mixed waste that includes WUDS containing or assumed to contain POPs is taken to a site then provided the operator has a permit that allows them to accept mixed residual and bulky waste (20 03 01), or bulky waste (20 03 07) and there are no other issues, they can accept it.

Everyone dealing with the waste have a legal duty to comply with the POPS Regulations. We encourage operators to advise their suppliers of the requirement not to mix waste and direct them to the guidance.

If a carrier or producer is sending WUDS containing or assumed to contain POPs mixed with other waste but not classifying it as POPs waste, then their details should be passed to SEPA allowing us to follow up any potential non-compliance.

6.3 Collection of WUDS containing POPs (POPs WUDS)

Producers and holders of waste are required to undertake all reasonable efforts to avoid, where feasible, contamination of non-POPs waste with POPs waste. Failure to do so is an offence.

By avoiding contamination of non-POPs waste, you will minimise the impact of handling, storing and disposing of any POPs waste and the associated costs.

Where mixing occurs, the whole load of 'mixed waste' should be considered as being POPs contaminated waste. If the POPs WUDS cannot be removed, the 'mixed waste' should be deemed a POPs waste and sent for destruction even if the mixing has diluted the POPs content to below the concentration limit.

Where separate collection is not feasible, POPs WUDS can be collected in the same vehicle as other waste items as long as they:

- Are not damaged,
- Are not mixed with other waste, and;
- Are segregated from other waste during transfer and when unloaded;

Please note that 'on board' segregation can be fixed or changeable however any measures implemented during transport should be done so with the aim of ensuring that the above criteria are met and must be appropriate for the waste type and the vehicle.

To prevent escape during transport, vehicles or containers used during the transportation of whole WUDS or shredded WUDs and/or fines should be appropriate for the waste type, be suitable for holding the waste, not overloaded and where appropriate covered.

As they rely on compaction, it is recommended that Refuse Collection Vehicles (RCVs) are not used for the collection of POPs WUDs and collection in vans, lorries and caged vehicles is preferable to RCVs because the WUDS are not compacted and damaged in these types of vehicles.

The use of vehicles other than RCVs also minimises the potential release of particulates which may contain POPs because WUDS are much easier to load and unload from vans, lorries and caged vehicles.

However, where WUDS are collected using an RCV it must:

- Not mix WUDS with any other wastes during the collection round;
- be able to contain any particulates and debris generated during the compaction within the body of the vehicle.

If you choose to compact POPs WUDS you must take reasonable steps to prevent, contain and collect any releases of POPs contaminated material or dust that the compaction produces.

If you choose to compact POPs WUDS it is recommended that the waste is compacted slowly to confine all materials within the container where compaction occurs and the surrounding area.

You must regularly check for particulates to make sure they are not released during compaction.

You can control particulate release by:

- misting and using sprays over the container;

- using suitably placed mobile dust suppression cannons;
- spraying the surface of the waste before compaction using a backpack sprayer.

Waste should be lightly misted not deluged to prevent the generation of POPs contaminated water that will be problematic and costly to dispose of.

When compacted WUDS are being deposited from an RCV operators should ensure:

- a dedicated bay within a building is allocated for the WUDS, and
- a dust suppression system is in place to contain and control any particulates created when the WUDS are ejected from the RCV and subsequently handled.

Where possible the RCV should be dedicated to the collection of WUDS only. However, if the RCV is used to collect other wastes as well as collecting WUDS then it should be cleaned before it is used to collect loads of non-POPs waste. This can be done for example by using a dedicated vacuum cleaner to remove foam, textiles and particulates from within the vehicle body.

Where compaction of WUDS is carried out using mobile plant within a building misting sprays and other particulate control measures should be in place to minimise particulate generation and prevent contamination of other wastes.

Any compacted WUDS, contaminated material or fines must be sent for destruction (see section on Treatment below).

6.4 Storage of WUDS containing POPs (POPs WUDS)

If authorised to accept household mixed residual and bulky waste (20 03 01) or bulky waste (20 03 07) then you can accept POPs WUDS however you must meet the following storage criteria.

Where possible POPs WUDS should be segregated and kept separate from other wastes.

You must sort and store POPs WUDS in a way that does not damage the WUDS so as to cause release of POPs or contaminate other waste.

Storage should be on an impermeable surface or in such a way to prevent any release to the environment.

Where the foam, cover, lining or wadding materials are exposed or released, cross contamination with non-POPs WUDS or any other items of waste is possible. Where such 'cross contamination' occurs, the 'mixed waste' should be considered as being a POPs contaminated waste and sent for destruction. For example, cross contamination could occur as a result of the storage of damaged POPs WUDS with Non-POPs WUDs.

6.5 Treatment of WUDS containing POPs (POPS WUDS)

6.5.1 Overall Treatment Objective

You must ensure that you manage POPs WUDS, and any other associated wastes, such as POPs contaminated wastes produced because of mis-segregation etc, in such a way that the POPs are destroyed or irreversibly transformed. You must destroy the POPs contaminated waste even if the mixing has diluted the POPs concentration below the relevant limits.

At the time of publication of this guidance, based on best available research and international guidance⁶, treatment for POPs WUDS is limited to destruction via municipal waste incinerator, hazardous waste incinerator or cement kiln.

Before transferring your waste to an operator for treatment or destruction you must ensure that the chosen method of treatment and/or disposal is appropriate for the POPs chemical(s) contained in the waste.

Please note that if the treatment does not destroy the POPs, any waste that results from the treatment, and which contains these POPs, is also POPs waste. You must destroy the POPs in this treated waste even if dilution has lowered the POPs concentration below the relevant limits.

6.5.2 Separating POPs from other materials

Separating materials containing POPs from other materials is regarded as a treatment operation. Foam and textiles containing POPs can be removed from other materials in items of WUDS where the separation activity is covered by a suitable waste management authorisation.

For manual processes, you should ensure that:

- all foam and textiles are completely removed, and you manage any part of the item of WUDS with foam and textile attached to it as a POPs waste;
- you prevent or contain any dust, or fragments of foam and textile released from the WUDS and you must manage the dust and fragments as POPs waste;
- you store separated material containing POPs inside a building, under cover, or in a sealed container;
- no POPs are released to the sewer or surface water.

For mechanical treatment processes, you should also follow the guidance in the treatment section, below.

6.5.3 Shredding of POPs WUDS

Operators have expressed an interest in shredding POPs WUDS before destruction by incineration. This requires an authorisation.

Shredded material that has been prepared so that it meets the specification required for destination incinerator or cement kiln may be coded 19 12 10 but must be clearly described as containing POPs from WUDS.

If shredding POPs WUDS you should meet the following criteria to mitigate fugitive emissions to air and to prevent particulates collecting in site drainage systems and being released into surface water, groundwater or the wider environment either directly or indirectly:

- shredding plant should be located on an impermeable surface inside a building or under cover;

- Misting and spray systems must be used to control particulates, however these should be operated so that they do not create large amounts of contaminated water;
- there should be no unabated point source or fugitive emissions of particulate from the plant or the building. Fugitive emissions of particulates should be controlled with one of the following:
 - local extraction to abatement;
 - full building extraction under negative pressure to abatement;
- Shredding should be located away from drains. Drain mats and blockers could be used to prevent runoff entering drains should leaks etc occur;
- Bag filters on abatement plant should be designed to release particulates below 5mg/m³. They should be fitted with continuous and alarmed pressure monitoring to make sure the filters are working correctly.

If storing shredded POPS WUDS it should be on an impermeable surface and either inside a building or under cover, or in sealed containers, or baled and securely wrapped.

If shredded WUDS are stored loose in open fronted bays under cover, particulate generation could be minimised by using a binder such as calcium magnesium acetate, minimising handling and if necessary, using windbreaks.

When open fronted bays are used for storage and there is a risk of particulates being generated during loading and depositing the shredded WUDS the impacts can be mitigated by using suitably placed mobile dust suppression cannons or lightly misting the surface of the waste.

The only time you can blend segregated POPS WUDS with other waste is prior to destruction at the point of treatment, for example, to make loading easier, control calorific value or optimise combustion. You should blend in such a way that uses the least amount of non-POPs waste necessary to avoid release of particulates containing POPS and contaminating more waste than necessary.

Where blending occurs operators should have contingency plans in place to ensure that any mixed waste containing POPS waste which is unable to be destroyed can be managed in

appropriate manner for example diverted elsewhere for destruction or stored on site until it can be destroyed.

Where the shredding of WUDS removes metal and produces a visually clean metal waste that is not contaminated with WUDS i.e., does not contain fragments of foam or textiles and other non-metal waste. it can be treated as metal waste and coded 19 12 02.

Where the metal fraction still contains fragments of foam or textiles from the WUDS and other non-metal waste it can be described 19 12 12 and stored in the manner set out below.

Note that the 19 12 12 code has been agreed for the metal from shredded WUDs only. It is based on the analysis information within the 2021 WRC report on POPs in waste domestic seating and may be subject to review, should further analysis or information emerge indicating the hazardous thresholds for MCCP or Antimony Trioxide or other hazardous substances are breached.

POPs may leach or wash out in particulates from this waste so it should be stored either:

- under weatherproof covering; or
- in covered skips or containers or,
- In skips/containers under weatherproof covering.

This waste must be characterised in accordance with WM3, coded either 19 12 11* or 19 12 12 and described as containing POPs if it contains other non-metallic wastes including items of foam and fabric that may contain POPs. This waste stream can be sent for smelting at a suitably permitted site, or for further processing to remove the POPs fraction from the metal fraction.

Where metal is sent to an intermediate site to further process and segregate the metal from POPS waste the operator of that site should be made aware that:

- The load contains POPs;
- The load should be stored and handled it in a manner that prevents any releases to air, land, sewer or groundwater;

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- The non-metal waste must be described as containing POPs and sent for RDF or incineration.

All fines and particulates produced when shredding or handling POPS WUDS must be sent for incineration.

Fines must be characterised in accordance with WM3, coded either 19 12 11* or 19 12 12 and described as containing POPs from domestic seating.

Fines should be packaged to prevent particulate release and either stored in a building or under cover.

This guidance applies only in Scotland. The terms of this guidance may be subject to periodical review and be changed or withdrawn in light of technological, regulatory or legislative changes, future government guidance or experience of its use. SEPA reserves its discretion to depart from the guidance outlined here and to take appropriate action to avoid any risk of pollution or harm to human health or the environment

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