Persistent Chemicals in Waste

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CIWM

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WASTE ELECTRICAL AND ELECTRONIC WASTE

With more acronyms than you can shake a stick at in the resources and waste sector, here are a few more – WUDS, WEEE and POPs. So why are waste upholstered domestic seating (WUDS), WEEE (waste electrical and electronic equipment) items such an issue? Well, add in persistent organic pollutants (POPs) and you get a change in legislation meaning upholstered furniture, cabling and WEEE plastics that used certain POPs as flame retardants now require treatments that destroy them. Thermal treatment is one of the ways to destroy POPs.[1]

It is not just about furniture or WEEE, there are numerous items that have POPs in or on them. And the list is likely to keep on growing.

There is already an extensive list of POPs and they can be found on the Stockholm Convention list. The Stockholm Convention on POPs was adopted on 22 May 2001 and entered into force on 17 May 2004. Being aware that persistent organic pollutants (POPs) pose major and increasing threats to human health and the environment, in May 1995, the Governing Council of UNEP (United Nations Environment Programme) requested in its decision 18/32 that an international assessment process be undertaken of an initial list of 12 POPs. As of 2017 there were an additional 16 POPs added to the list. So, this is a moving feast as the Stockholm Convention List is updated regularly.

Article 6 of the Stockholm Convention indicates the measures to reduce or eliminate releases from stockpiles and waste, along with Part V of Annex C which covers general guidance on best available techniques and best environmental practices.

1. https://www.gov.uk/guidance/manage-waste-containing-persistent-organic-pollutants-pops#get-the-pops-content-of-your-waste-destroyed

WEEE waste has plastics with bromine flame retardant (BFR) POPs and are typically used in appliances that generate heat such as CRT televisions and monitors, printed circuit boards in IT equipment, printers, cables and connectors.[2]

The 2018 IMPEL report concluded there were improvements that would control BFR in WEEE, including a new waste code for plastic containing BFRs along with clear steps on how plastics containing BFRs should be managed. With targets set for recycling WEEE there is a need to identify and separate out POPs contaminated materials and send for destruction – this is usually via incineration.

WEEE that is also POPs waste cannot be reused or recycled and there may be a threshold over which the POPs entail the waste to be classified as hazardous or POPs waste and this brings in extra rules in relation to export of WEEE containing POPs.[3]

It is important to know that by treating an item of WEEE that contains POPs means all mixed outputs are classed as POPs waste and must be destroyed.[4]

2. WEEE Directive Implementation and Enforcement Brominated Flame Retardants in WEEE Plastic Report 2018/06/1 IMPEL
3. https://www.gov.uk/how-to-classify-different-types-of-waste/electronic-and-electrical-equipment
4. https://www.gov.uk/guidance/classify-some-waste-electrical-devices-components-and-wastes-from-their-treatment#:~:text=Where%20an%20item%20of%20WEEE,and%20they%20must%20be%20destroyed

WASTE UPHOLSTERED DOMESTIC SEATING

Waste upholstered domestic seating hit the headlines during 2021 – 2022, when the UK regulator highlighted to the resources and waste sector it should have been aware of and dealing with POPs related waste. Further research indicated the level of POPs in WUDS.[4]

WUDS have the particular POP decabromodiphenyl ether (commercial mixture, c-dceaBDE) which is highly persistent, with a high potential for bioaccumulation and food-web biomagnification. It is used as a flame retardant and its applications include plastics, textiles, adhesives, coatings and inks. DecaDBE consumption peaked in the early 2000s and is contained in plastics used in housing for computers, TVs, wires, textiles and carpets, etc. It was listed at the eighth meeting in 2017, so from then on, its use was banned.

The difficulty is knowing how old the item of domestic upholstered seating is, there are rarely labels stating date of manufacture and householders commonly cut 'unsightly' labels off. The items of concern include the back of covers and the foam. Any lining or wadding which is in contact with covers or foam could also become contaminated.[5]

The resources and waste sector worked alongside the regulator (Environment Agency) to find a pragmatic way to deal with WUDs containing POPs as they could no longer be landfilled as the waste has to be destroyed. This entails a change in collection methods.

Keeping POPs containing items in one piece – so co-collection can occur but the items must not be damaged in such a way that contamination increases the amount of waste that has to be dealt with. So, sofas can be picked up with wardrobes on a bulky collection round, as long as the harder items do not tear/rip the softer coverings/foam.[6]

In preparation for destruction , if the material has to be shredded, there are going to have to be controls on dust emissions.

Upholstered items containing POPs can be separated from other materials (metal and wood to enable them to be recycled), waste electricals from electrical recliner seats (cables, printed circuit boards, etc.) but all foam and textiles must be completely removed. Waste electricals in case are managed as POPs waste (they are outside the scope of WEEE regulations).5

There is extensive reuse of upholstered domestic seating and this can continue as long as the item follows and meets a set of criteria as laid out in guidance. If the item becomes waste because it needs more than a minor repair or it does not meet the reuse criteria then the item has to be managed as POPs containing waste and destroyed.[7]

4.https://larac.org.uk/sites/default/files/10%20oCT%20%20Wk%203%20WRc%20Final%20Report_UC15080.5_An%20assessment%20of%20persistent%20organic%20pollutants%20in%20waste%20domestic%20seating_270521.pdf
5. https://www.gov.uk/guidance/manage-waste-upholstered-domestic-seating-containing-pops
6. https://www.gov.uk/guidance/manage-waste-upholstered-domestic-seating-containing-pops#sort-and-store-waste-upholstered-domestic-seating-containingpops
7. https://www.gov.uk/guidance/reusing-upholstered-domestic-seating-containing-pops

SHORT CHAIN CHLORINATED PARAFFINS

Short chain chlorinated paraffins (SCCPs) are sufficiently persistent in air for long range transport to occur and many can accumulate in biota thus leading to significant adverse environmental and human health effects. They can be used as a plasticizer in rubber, paints, adhesives, flame retardants for plastics as well as an extreme pressure lubricant in metal working fluids. SCCPs have also substituted PCBs (flame retardants in plastic/cable) as allowed under exemption. SCCPs are also used in additives for transmission belts in the natural and synthetic rubber industry.

SCCPs were consulted on during 2023 and the additional information was sought from industry October 2024 Request for more information for Risk Management Evaluation (Annex F of the Stockholm Convention). In April 2021 UK submitted a proposal to list medium chain chlorinated paraffins (MCCPs) of carbon chain lengths of the range C14-17 and chlorination levels at or exceeding 45% chlorine by weight.

CABLES – NON WEEE

May 2023 saw correspondence from the Environment Agency classify non-WEEE cables from construction and demolition waste and end-of-life vehicles as hazardous, as at least 25% and potentially over 50% of these cable types exceeded at least on hazard property, with limited capability to differentiate between them.[8]

Such cables are not classified by the regulator due to POPs but there is an outstanding consultation response development that covers short chain chlorinated paraffins (SCCPs) which are POPs, listed in 2017 with many uses still over the regulatory limit of 1500mg/kg.[9]

8. https://www.360environmental.co.uk/news/2023/06/02/3145-non-weeecablenowclassedashazardous/
9. https://www.360environmental.co.uk/news/2023/06/02/3145-non-weeecablenowclassedashazardous/

PERFLUROOCTANOIC ACID

Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds are used widely in the creation of fluoroelastomers and fluoropolymers, used in the production of non–stick kitchen ware and food processing equipment.

PFOA-related compounds, including side-chain fluorinated polymers, are used as surfactants and surface treatment agents in textiles, paper and paints and firefighting foams. PFOA has been detected in industrial waste, stain resistant carpets, carpet cleaning liquids, house dust, microwave popcorn bags, water, food, and Teflon. PFOA was listed in 2017 as it bioaccumulates by binding to proteins in the blood and liver but there were some exceptions like aviation hydraulic fluids.

CHEMICALS IN WASTE

CIWM is part of a stakeholder group that came about following the work of the resources and waste sector with the Environment Agency for dealing with WUDS. It was determined that due to the ongoing issue of POPs and other chemicals coming through to the resources and waste sector there should be a broad group to be aware of changes, updates or determine if there is a need for further guidance and action for the sector to manage these chemicals.

It is likely the sector will see more restrictions due to tighter limits[10] and new POPs added to the Convention List. The sector must be aware of these chemicals and undertake their duty of care to classify and treat resources and waste appropriately.

If you would like further information, please contact Tina Benfield.

10. https://www.gov.uk/government/consultations/amendments-to-the-persistent-organic-pollutants-pops-regulation/outcome/summary-of-responses-and-government-response

Further Information

REGULATORY

SEPA

POPs and WUDs Guidance

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NRW

POPs and WUDs Guidance

DAERA

POPs and WUDs Guidance

EPA

POPs Guidance

EA

POPs and WUDs Guidance

Further Information

GENERAL

ECHA

POPs Information

FIDRA

Chemicals (POPs) and Wildlife

US EPA

POPs Information

WHO

POPs Information

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