



DecaBDE ban threatens **Circular Economy** for durable plastics

In the UK, around 1.9million tonnes of end-of-life vehicles (ELV) and 1.2million tonnes of waste electrical and electronic equipment (WEEE) enter the waste stream annually. Between them, they comprise around 665,000 tonnes of plastic, much of which is suitable for recycling.

Plastics recycling is highly resource-efficient. It reduces society's demand on oil-based virgin polymer materials, and it also offers significant CO₂ and energy savings.

However, some plastics present in ELV and WEEE contain brominated flame retardants (BFRs). Certain types of BFR are restricted and regulated under chemicals legislations, such as Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Introduced in 2007, it means that there are still products on the market that may contain BFRs as legacy additives. As these products reach their end-of-life, the industry wants to ensure they can continue to be recycled responsibly.

In 2017, the European Commission introduced a REACH articles limit for one particular BFR, decabromodiphenyl ether (decaBDE), at 1,000 parts per million. The European Chemicals Agency concluded that this limit was suitable "to enhance the enforceability of the restriction [and] analytical methods to verify concentration are well-established"

The Commission is now considering a proposal to set a limit for the allowable 'unintentional trace contamination' of decaBDE in new plastic 'substances, articles and mixtures' (i.e. polymer pellets, compounds and component parts). The proposed limit in draft regulations is 10ppm, one hundred times lower than the existing REACH limit. At this level, it is not technically feasible for recyclers to process this material.

Meanwhile, the United Nations Stockholm Convention voted to implement measures to eradicate decaBDE. These remove the derogation clause that allowed the recycling of plastics containing decaBDE, and any trace limit for recycled plastics.

Over the past 10-15 years, there has been considerable investment in pioneering technologies to separate and recover the valuable plastics found in ELV and WEEE. Significant volumes of high-quality polymer resins are now being supplied back to manufacturers of component parts used in new durable goods. This represents an excellent example of the Circular Economy in practice.

DecaBDE is a stable, solid-state compound at ambient temperatures that is not readily-available when it is embedded in the matrix of ELV and WEEE plastics. It can only be released by irradiation or burning. Indeed, its release into the environment is more likely to come from the open-burning of WEEE in developing countries.

However, the current proposal threatens to: close the UK's ELV and WEEE plastics recycling plants; halt any further investment; and, prevent recycling targets for ELV and WEEE being met. The only disposal options for these materials will be controlled landfilling or incineration. This is neither sustainable nor resource-efficient. It may also lead to illegal waste shipments to countries without adequate regulatory controls. It is therefore essential that state-of-the-art plastics recycling takes place in the UK and mainland Europe, subject to strict environmental requirements and standards.

We believe a phase approach to dealing with the withdrawal of this legacy BFR should be taken, with the REACH limit of 1,000ppm applied to 'articles and mixtures' during the phase out period.

This will ensure the environment and human health is safeguarded, whilst ensuring the ELV and WEEE plastics recycling industry can continue to operate and help contribute to the realisation of a truly Circular Economy.

The European Parliament Plenary session will vote on the recast of the Persistent Organic Pollutants (POPs) Regulation on 11-13 November 2018, including permissible limits of POP-BDEs, including decaBDE.

We urge you to support us on this important matter.



Situation Overview

THE WIDER **WEEE/ELV** INDUSTRY:

[Waste Electrical and Electronic Equipment / End-of-Life Vehicles]

Processes over
3.1 million tonnes
of waste



665k
Recovers
665,000 tonnes
of mixed plastics
for processing



THE WIDER **METAL**



is worth **£7 billion**



processes
12 million tonnes
of mixed
metals



29.5k
employs
29,500 people
[**17k** on permitted sites]



Affected businesses in the supply chain:

Type of business	No. of businesses	Employing
Metal recycling collectors:	6,000	av 1.25 = 7,500
Permitted metal processing sites (including)	2,500	av 5 = 12,500
• Authorised Treatment Facilities [ELV]	1,700	
• Approved Authorised Treatment Facilities [WEEE]	266	
Exempt metal processing sites:	1,500	Av 3 = 4,500
Plastic reprocessors	3	204

Legacy additive in plastics and potential impact of proposals...

Economic Impacts

Three leading recyclers of plastics will cease production of PP, ABS and PS polymer compounds. Within three years, this sector is predicted to grow threefold. If the 10ppm limit is set, this would not happen. Collecting and processing ELV and WEEE may prove to be uneconomical for metal recyclers and could impact, or put at risk, over **10,000 business** employing some **29,500 people**. There is limited capacity across approved disposal

routes for hazardous waste and high associated costs. For example, the cost of using hazardous landfill is **£200 per tonne**.

The cost of disposal could see illegal operators fly-tipping either WEEE- and ELV-derived plastics or the whole items leading to costly clean up bills for local councils and, at the same time, pose additional risk to the environment.

The cost of disposal could see illegal waste shipments to countries without regulatory enforcement framework



[Waste Electrical and



1.2 million tonnes collected annually, with **541,000** tonnes processed by approved authorised facilities



➔ **300,000** tonnes **plastics**



1.7 million cars reach end-of-life

➔ comprising **1.92 million** tonnes of materials, including



365,000 tonnes **plastics**

Total plastics tonnes

of which 329,000 tonnes

producing £250 million*

* Annual figure based on £765 per tonne of recycled polymer

Company A processes **WEEE**.

It sends **glass** and **metals** to the appropriate recycling facilities and separates its plastics accordingly into **brominated** and



non-brominated sections.

It currently sells **non-brominated** plastic at **£100 per tonne**.

If it could no longer sell this, due to a **10ppm decaBDE limit**, the company would have to pay **£300 per tonne** to dispose of it.

[ppm = parts per million]



Recycling targets

A level set at **10ppm** would see the industry fail



Oil/Energy

10ppm would lead to the use of more oil and energy: recycling **329,000** tonnes of plastic saves **1.9gWh** and **5.4 million** barrels of oil.

CO₂

10ppm would see a loss in CO₂ savings of some **900,000 tonnes**, a figure which

CO₂

900k



Disposal

10ppm would see recovered plastics deemed hazardous. They could not be exported. They would have to be either sent to a high temperature **incineration** facility or a hazardous waste **landfill** site. However, there is insufficient capacity for



Circular Economy

a **10ppm** limit for decaBDE would inhibit a circular economy for ELV/WEEE plastics

