



Fidra is an environmental charity working to reduce plastic waste and eliminate the burden of chemical pollution on the environment. Fidra works with the public, industry and governments to deliver solutions which support sustainable societies and healthy ecosystems. We use the best available science to identify and understand environmental issues, developing pragmatic solutions through inclusive dialogue. www.fidra.org.uk.

Fidra is a SCIO and Scottish Registered Charity SC043895

Chemicals and waste in a circular economy

[The following text is reproduced from Fidra's submission of Case Studies on the Misalignment at the Chemicals/Waste Interface, requested by the OECD, September 2019]

There currently exists a significant and detrimental misalignment between both UK and EU chemicals legislation and the goals of developing circular economy policies. Current chemical legislation has been designed around a linear model of use and disposal. Regulations do not adequately implement the precautionary principle, nor employ a group-based approach to restrictions. As a result, chemicals are brought to market with non-existent or incomplete safety information.

Procedural complexity leads to significant time delays between recognition of risk and toxicity and eventual removal of that chemical from market. Without product recall, the chemical remains in the user's environment for the lifespan of the product and then traditionally enters the waste stream. However, the intention to promote extended use, reuse and recycling under a circular economy, inevitably increases this time period between recognition of risk and the cessation of public exposure. **The lack of effective regulation on harmful chemicals risks locking contaminants into a circular economy.**

Additionally, the current lack of transparency and traceability in product chemical content, alongside inadequate enforcement of chemical waste restrictions in recycling, has led to **significant uncertainty in the chemical safety of secondary materials**. One important example of this is the presence of harmful flame retardants in food contact articles, and in plastic food packaging found in marine litter, linked to inappropriately recycled electronics¹⁻³. See below for further information on flame retardants in recycling.

Harmful chemicals in products can originate from both intentional and unintentional sources. For example, virgin plastics contain additives for function as well as non-intentionally added substances, including heavy metals from the fossil fuel starting material⁴. Another example is the per or poly-fluorinated alkyl substances (PFAS) found in cosmetic products, these originate as desired ingredients, unintentional degradation products or impurities linked to industrial lubricants in production processes⁵. To ensure full chemical content is considered in a circular economy, **transparency and traceability needs to account for both intentionally added content as well as unintentional byproducts from manufacturing processes.**

Fidra believes that sound chemical management, essential to meeting the goals of a functioning circular economy, needs to be based on the principles outlined below:

- **Ending unnecessary use of chemicals:** All producers, manufacturers, retailers and consumers need to identify and undertake measures to reduce non-essential chemical usage. Voluntary efforts must, in turn, be supported by underlying regulatory principles that **prevent the use of chemicals of environmental concern for all non-essential functions.**

- **Proceed with precaution:** The **precautionary principle** must be applied when considering the use and restriction of chemicals. To implement the precautionary principle, we advocate a chemical **class-based approach**. Restrictions limiting the use of known chemical hazards or chemicals of emerging concern should extend to include similar compounds within the relevant chemical class, unless the safety of these chemical analogues can be demonstrated.
- **Supply chain transparency: Full materials disclosures** are essential to enable the identification of known hazards at all levels within the value chain and will allow supply chains to react efficiently to newly identified hazards, substances of concern and legislative changes.
- **Access to information: Transparency and accessibility of data for all users** will ensure safe use, reuse and recycling within a circular economy and enable informed decision-making at all levels from primary sale to end-of-life disposal.
- **Assess and reassess regularly:** Thorough and regular assessment of the emerging evidence base is needed to ensure consumer and environmental safety is maintained.
- **Enforcement:** Strict enforcement with regular checks and prohibitive penalties for non-compliance, should be applied across all stages of the supply chain.
- **Chemical justice:** Those impacted by chemical pollution must be considered and represented in chemicals governance and decision making. **Routes to influence** must be established for those impacted by chemicals pollution, informing legislation and industry practices.
- **Who pays:** In line with the polluter pays principle, the economic model should be such that the full financial burden of disposal, management and clean-up is borne by the producers and suppliers of chemicals and products containing chemicals, not the public.
- **Strong evidence base:** Research and long-term monitoring are essential in providing policy, industry and society with the knowledge, predictive understanding and tools necessary to ensure safe use of existing chemicals and the early identification of emerging contaminants.

References

1. Puype F, Samsonok J, Knoop J, Egelkraut-Holtus M, Ortlieb M. Evidence of waste electrical and electronic equipment (WEEE) relevant substances in polymeric food-contact articles sold on the European market. *Food Addit Contam Part A Chem Anal Control Expo Risk Assess* 2015;32(3):410-26.
2. Samsonok J, Puype F. Occurrence of brominated flame retardants in black thermo cups and selected kitchen utensils purchased on the European market. *Food Addit Contam Part A Chem Anal Control Expo Risk Assess* 2013;30(11):1976-86.
3. Turner A. Black plastics: Linear and circular economies, hazardous additives and marine pollution. *Environ Int* 2018;117:308-318.
4. Groh KJ, Backhaus T, Carney-Almroth B, Geueke B, Inostroza PA, Lennquist A, Leslie HA, Maffini M, Slunge D, Trasande L and others. Overview of known plastic packaging-associated chemicals and their hazards. *Sci Total Environ* 2019;651(Pt 2):3253-3268.
5. The Danish Environmental Protection Agency. Risk assessment of fluorinated substances in cosmetic products. 2018.