



## Draft Position Paper on RoHS revision

### *Phase out of brominated and chlorinated organic substances in EEE products*

#### Background

The objective of the RoHS directive is to protect human health and the environment and to contribute to environmentally sound recovery and disposal of electrical and electronic equipment. Many substances with undesirable properties such as PBT (persistent, bioaccumulative and toxic) or CMR (Carcinogenic, Mutagenic or toxic to Reproduction) are still used in EEE products (electric and electronic equipment). Other harmful substances such as dioxins and furans (transformation products), may be generated when products containing halogenated<sup>1</sup> substances are incinerated at end of life within the EU or in developing countries.

RoHS is well understood and respected in the electronic sector. Being RoHS-compliant has become a de facto standard for companies operating on a global market. A number of prominent actors in the electronics supply-chain, OEMs (Original Equipment Manufacturer) as well as suppliers, have furthered this process by investing in and adapting to a general phase-out of other hazardous chemicals such as halogenated organic<sup>2</sup> substances. EU regulators now have a unique possibility to confirm this progress and support and uphold the momentum gained in industry by strengthening the RoHS directive.

#### **Our proposal to the Council and the European Parliament**

Amend the European Commission proposal for a revised RoHS Directive to:

- Consider both the direct impact of substances and the impacts of transformation products at end of life.
- Thereby supporting a general phase-out of brominated and chlorinated organic substances in Electrical and Electronic Equipment (EEE).

#### **Motivation for our proposal**

*Substance by substance approach is insufficient*

- When addressing harmful substances in Electrical and Electronic Equipment a substance by substance approach is often insufficient. By slightly modifying a harmful substance, a new substance with similar structure and similar harmful effects is created. Accordingly, regulators will always be one step behind, as individual actors can simply shift to new, modified substances, not yet covered by regulation, but with the equivalent hazardous properties as previously regulated chemicals.

<sup>1</sup> Halogenated substances contain bromine (Br), chlorine (Cl), fluorine (F) or iodine (I). In this document the term halogenated is understood as containing bromine and/or chlorine, which is the definition used widely in electronics industry.

<sup>2</sup> An organic compound contains carbon. An inorganic compound does not contain carbon, like sodium chloride, NaCl, table salt.

- The substance by substance approach is also insufficient since all brominated and chlorinated material has the potential to form dioxins and furans when incinerated.

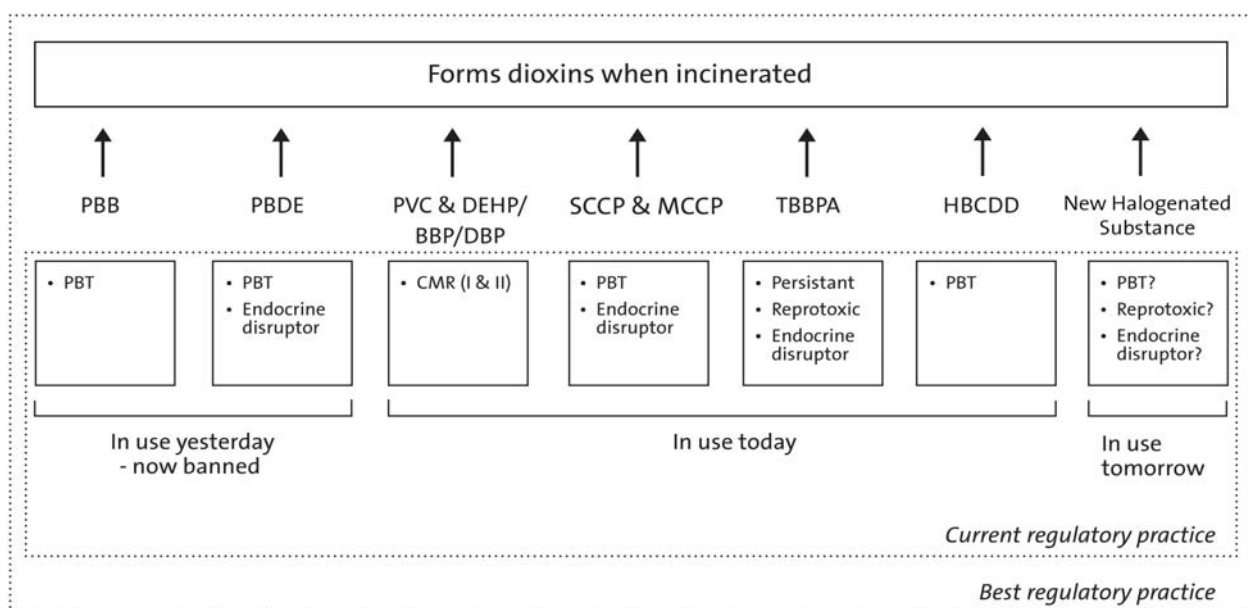


Figure 1

Figure below summarises the main problems with a substance to substance approach and the benefits for a general phase-out of brominated and chlorinated organic substances in EEE- products.

#### *Dioxins and furans can be formed at the end of life treatment of EEE*

- Dioxins and furans are extremely toxic. All types of brominated and chlorinated organic substances have the potential to form dioxins and furans when incinerated.
- Electronic products are often handled inappropriately at end of life. Incineration of e-waste within the EU can form dioxins and furans.
- E-waste produced in the EU is to a great extent transported to developing countries with sub-standard waste-management capacity. Incineration of e-waste under these conditions forms dioxins which is both a local and global problem as dioxins are persistent.
- Dioxins produced in countries outside of the EU can contaminate food chains that reach the EU as well as directly impacting local populations.
- Dioxins have been recognized as priority contaminants in the Stockholm Convention which seeks to eliminate POPs (persistent organic pollutants) from the global environment.
- When incinerating brominated and chlorinated organic compounds mixed chloro-bromo dioxins and furans are often formed. Mixed chloro-bromo dioxins and furans are a group of compounds that are closely related to their far more well known chlorinated analogues, both in terms of their mode of formation and their potential toxicity<sup>3</sup>. Recently, studies have provided further evidence that the mixed dioxins and furans is a far larger group compared to its chlorinated or brominated analogues.

#### *Halogenated organic substances are harmful and complicate recycling*

- Halogenated organic substances are harmful with e.g. PBT (persistent, bioaccumulative, toxic) properties.

<sup>3</sup> Some studies suggest that mixed dioxins and furans have equivalent, or in some cases higher, toxicity compared to their chlorinated analogues.

- Phthalates are used as softeners in halogenated plastic material (such as PVC). Phthalates may amount to up to 50% of the plastic material in EEE products and leach out of the products throughout their lifetime. Many phthalates are classified as CMR substances.
- After use, part of the EEE products goes into the recycling industry. The plastic material from this type of products is difficult to reuse in other products since it is often contaminated with halogenated organic compounds.

#### *Smart verification of organic halogen levels is needed*

- Testing for specific halogenated compounds such as PBDEs has proven to be difficult and expensive for regulators and manufacturers. Better market surveillance has been identified as a key issue to address in the next iteration of the RoHS Directive.
- Establishing verification procedures for elemental bromine and chlorine eases verification for regulatory authorities and is cost effective and consistent. This inexpensive and non destructive method of XRF analysis is used to monitor conformance with heavy metal restrictions in the current RoHS Directive. This method is also accepted within the EEE industry.

### **Conclusion**

RoHS has paved the way as a global standard for phasing out hazardous chemicals in the electronics supply-chain. A number of leading companies in the electronics sector have taken the process one step further by investing in a voluntary phase-out of brominated and chlorinated organic substances. As a result there are numerous cell phones, computers and other widely used products on the market today that do not contain these substances. Technical performances and fire safety standards can now be met with readily available alternative materials and components.

In order to protect the environment and health of consumers, we advocate for the introduction of a systematic approach for restriction of harmful brominated and chlorinated organic substances in RoHS. This approach should take into account the direct impact of substances as well as the impact of transformation products at end of life. This approach is necessary in order to address the impacts of the most hazardous substances used in Electrical and Electronic Equipment today. It will also enable industry to predict and assess potential new materials and substances and avoid investing in materials that are later identified as hazardous and then banned.

We ask EU regulators to leverage this unique opportunity to strengthen RoHS, and thereby drive innovation and reward those companies who have made early investments in safer materials —many of which are based in Europe, but all of which have a large market presence in Europe!

### **About us**

- *ChemSec, International Chemical Secretariat, strives to bridge the gap between decision-makers and industry, working with stakeholders from industry, NGOs and policy circles. The Secretariat is a non-profit organization created by environmental organizations and the Secretariat is funded by grants from authorities and foundations.*
- *EEB, European Environmental bureau, has 143 member organizations in 31 countries; Non-governmental organisations, dealing with environmental issues and nature protection. The specific mission for EEB is to promote environmental policies and sustainable policies on the European Union level.*
- *CPA, Clean Production Action, is a US based environmental NGO committed to designing and delivering strategic solutions for green chemicals, sustainable materials and environmentally preferable products. CPA coordinates the US-based Business NGO Working Group for Safer Chemicals and Sustainable Materials.*