



Position Paper on RoHS revision

February 2010

The RoHS Directive must, in accordance with its stated objectives, consider the impact of chemical substances and their transformation products in the production, use and waste phase. It should therefore promote the substitution of hazardous substances in Electrical and Electronic Equipment (EEE) to protect the environment and human health and enhance the possibilities for recycling, based on swift uptake of new scientific evidence, and the precautionary principle.

The European Environmental Bureau (EEB), the Health and Environment Alliance (HEAL), and Women in Europe for a Common Future (WECF), accordingly urge the Council and the European Parliament to strengthen the European Commission proposal for a revised RoHS Directive, and in particular:

- **Provide a coherent framework to include all EEE;**
- **Restrict by 2014 hazardous substances and materials in EEE that cause serious concern throughout their lifecycle (production, use, disposal) and hamper recyclability, such as halogenated organic substances, to a maximum of 0,1% (weight by weight);**
- **Restrict by 2014 the use of nano silver to the detection limit in homogenous EEE parts;**
- **Ensure a specific methodology for future substance restrictions focusing on waste considerations which are in line with the specific aims of the RoHS Directive.**

Background

The objective of the RoHS Directive is to protect human health and the environment and, more specifically, to contribute to environmentally sound recovery and disposal of electrical and electronic equipment¹. Industry needs a clear restriction methodology that is predictable. Many substances with undesirable properties such as being Persistent, Bioaccumulative and Toxic (PBTs) or Carcinogenic, Mutagenic or Toxic for Reproduction (CMRs), endocrine disrupting or otherwise hazardous because of their nanoscale, are used in many Electrical and Electronic Equipment (EEE). In addition, highly toxic transformation products like dioxins and furans can be generated in the disposal/recycling phase when EEE containing organic halogenated² substances are incinerated or otherwise subjected to thermal stress like extrusion, moulding or shredding

¹ Article 1, 2002/95/EC, RoHS Directive

² Halogenated compounds are chemicals that contain a halogen element, such as bromine, chlorine, fluorine, or iodine. Industry standards developed typically refer to defining components as "halogen-free", "low-halogen", "bromine-free", or "chlorine-free", i.e. compounds and products free from or low on bromine or chlorine.

processes. Even sunlight exposure of EEE containing organic halogenated substances is demonstrated to produce dioxins and furans³.

In order to eliminate the adverse effects of hazardous substances in EEE, a number of prominent actors, equipment manufacturers and component suppliers is investing in substitution of hazardous substances in EEE including a general phase-out of halogenated organic⁴ substances. Their efforts have led to the transformation of the electronics supply-chain globally. This is not only due to the global nature of the supply chains in the electrical and electronic equipment industry but also due to the fact that the EU RoHS legislation has been taken over by many other political entities outside the EU. In the case of RoHS, and contrary to what is commonly assumed, globalisation has not led to a race to the bottom in environment and health protection policy. RoHS has triggered the introduction of similar regulations in California, China, Japan and South Korea. Australia, New Zealand, Malaysia, Taiwan and Thailand are currently considering the introduction of a similar policy. Setting a new high environment and health protection standard through the current RoHS revision in the EU will improve the environment and health both inside and beyond the EU.

EU regulators now have a unique possibility to confirm this progress and support and uphold the momentum gained in parts of the industry by strengthening the RoHS Directive. We therefore urge you to strengthen the European Commission proposal for a revised RoHS Directive in the ways described below.

1. Provide for a coherent framework to include all EEE

We believe the scope of the Directive should not be limited to a predefined list of product groups. The scope should be broad and include all EEE subject to duly justified, very specific and clear exemptions. This is the only way to provide legal clarity and remove grey areas that would hamper implementation and possibly distort the internal market. We therefore also support the clear definitions of “accessory” and “consumable” in the Evans report⁵.

2. Restrict by 2014 hazardous substances and materials in EEE that cause serious concern throughout their lifecycle (production, use, disposal) and hamper recyclability, such as halogenated organic substances, to a maximum of 0,1% (w/w)

The restriction of halogenated organic substances will increase the reusability and recyclability of EEE and, at the same time, protect humans and especially vulnerable groups like babies and children and highly exposed populations such as workers in the electronics recycling industry from cumulative exposure to chemicals that are demonstrated to pose severe health hazards, like chemicals toxic to reproduction and endocrine disruptors. Some phthalates which are used as plasticisers in PVC are classified in the EU as toxic to reproduction, recognised as Substances of Very High Concern under REACH⁶, and are also Endocrine Disrupting Chemicals (EDCs)⁷. The endocrine disrupting effects of halogenated flame retardants like TBBP-A are also demonstrated in

³ Dioxins can be formed by exposure to sunlight and processes of thermal stress. Ref: Kajiwara, N.; Noma, Y.; Takigami, H. Photolysis Studies of Technical Decabromodiphenyl Ether (DecaBDE) and Ethane (DeBDethane) in Plastics under Natural Sunlight. *Environ. Sci. Technol.*, 2008, 42 (12), pp 4404–4409

⁴ An organic compound contains carbon. An inorganic compound does not contain carbon, like sodium chloride, NaCl, table salt.

⁵ Jill Evans Draft Report on RoHS of 14.12.2009, PE430.424v03-00

⁶ REACH Regulation No 1907/2006, OJEU 29.05.2007. Substances of Very High Concern list:

http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp

⁷ See the ‘Priority List’ and studies commissioned for European Commission’s DG Environment, where ‘Category 1’ EDCs are listed:

http://ec.europa.eu/environment/endocrine/strategy/substances_en.htm#priority_list

the scientific literature^{8,9}. TBBP-A is widely used in EEE - about 40.000 tonnes per year in the EU alone - and has been found in human blood-samples and human breast milk as well as in remote regions including the Arctic and in all kinds of animals (in wide variety of marine organisms, predatory birds, etc). Although there remain scientific gaps in order to determine the official classification of TBBP-A, existing evidence indicates that TBBP-A is very toxic to aquatic organisms; is persistent and potentially very persistent, and there are potential endocrine disruption effects.

This chemical is an example why we therefore urge you to use the opportunity of the RoHS revision and the precautionary principle that lies at the basis of this regulation to restrict halogenated organic substances in EEE.

Another reason for banning halogenated organic substances and materials in EEE relates to the fact that they have the potential to form dioxins and furans when incinerated under suboptimal conditions or otherwise subjected to thermal stress like extrusion, moulding, shredding or sunlight exposure. Dioxins are classified as very toxic and very persistent substances, and are recognised as priority contaminants in the Stockholm Convention for the elimination of Persistent Organic Pollutants (POPs). Therefore their formation is both a local and global problem and damages health and environment at a global scale, irrespective of where they are formed.

Within this context, it is important to note that:

- Significant quantities (around 25-30%¹⁰) of EEE waste is PVC. Because pricing distortions make it uneconomical and because of the presence of hazardous plasticisers such as phthalates, less than 10% of PVC in EEE waste is actually materially recycled, the rest are incinerated.
- Suitable alternatives for halogenated flame retardants and PVC already exist on the European market, and technical performance and fire safety standards can now be met with readily available alternative materials and components¹¹.

3. Restrict by 2014 the use of nano silver to the detection limit in homogenous EEE parts.

Nano-silver is mainly used for its antibacterial properties in several EEE products (e.g. in mobile phones, washing machines, or computer keyboards/mouse). Due to the nano-scale, the extremely tiny particles of silver behave differently than larger particles of the same chemical and are especially potent.

Studies suggest that the widespread use of nano-silver poses serious health and environmental risks and that it could promote anti-bacterial resistance, undermining its efficacy. A 2009 international study (EMERGNANO), reviewing the evidence generated by current global research on the toxicity of nanoparticles, found that: *“there is sufficient evidence to suggest that silver*

⁸ Lilienthal, H., Verwer, C.M., Van der Ven, L.T.M., Piersma, A.H., Vos, J.G., 2008. Neurobehavioral effects of tetrabromobisphenol A (TBBPA) in rats after pre- and postnatal exposure. Toxicology

⁹ Van der Ven LT, Van de Kuil T, Verhoef A, Verwer CM, Lilienthal H, Leonards PE, Schauer UM, Cantón RF, Litens S, De Jong FH, Visser TJ, Dekant W, Stern N, Håkansson H, Slob W, Van den Berg M, Vos JG, Piersma AH., 2008. Endocrine effects of tetrabromobisphenol-A (TBBPA) in Wistar rats as tested in a one-generation reproduction study and a subacute toxicity study. Toxicology

¹⁰ “Greening Consumer Electronics: Moving Away from Bromine and Chlorine”, International Chemical Secretariat (ChemSec) and Clean Production Action, September 2009, page 18.

http://www.chemsec.org/images/stories/publications/ChemSec_publications/Greening_Consumer_Electronics.pdf

¹¹ See case studies in the Greening Consumer Electronics Report

http://www.chemsec.org/images/stories/publications/ChemSec_publications/Greening_Consumer_Electronics.pdf

*nanoparticles may be harmful to the environment and therefore the use of the precautionary principle should be considered in this case.*¹².

In particular, nanosilver used in EEE tends to end up in the environment in its ionic form, which has environmentally damaging properties and is acutely toxic to aquatic organisms at very low concentrations. This is particularly true for releases from the inside coatings in fridges or washing machines. The silver ions are released in the waste water, ending up in the urban waste treatment plants which in turn hamper the growth of bacteria necessary for water treatment in the plants. This presence of harmful substances is in direct contradiction with the objectives of the Water Framework Directive which is to achieve the good ecological status for water in the EU.

It is also worth noting that

- The presence of high amounts of metals such as nanosilver also prevents the use of sewage sludge.
- Nanosilver in EEE products is not part of the integral functionality of the product.

4. Ensure a specific methodology for future substance restrictions focusing on end of life considerations which are in line with the specific aims of the RoHS Directive.

The methodology should avoid solely identifying individual substances for future restrictions. This approach sets an incentive to only slightly chemically modify a previously used substance, resulting in new substances with similar adverse properties which are then used and permitted despite their equally hazardous profile, as it has been the case with halogenated flame retardants.

Many halogenated materials have the potential to form dioxins and furans when incinerated and many halogenated flame retardants have demonstrated to have similar severe health effects. An effective methodology should move beyond a short-sighted substance by substance approach while retaining the possibility for operators to use exemptions to the restrictions on technically justified and socio-economic grounds.

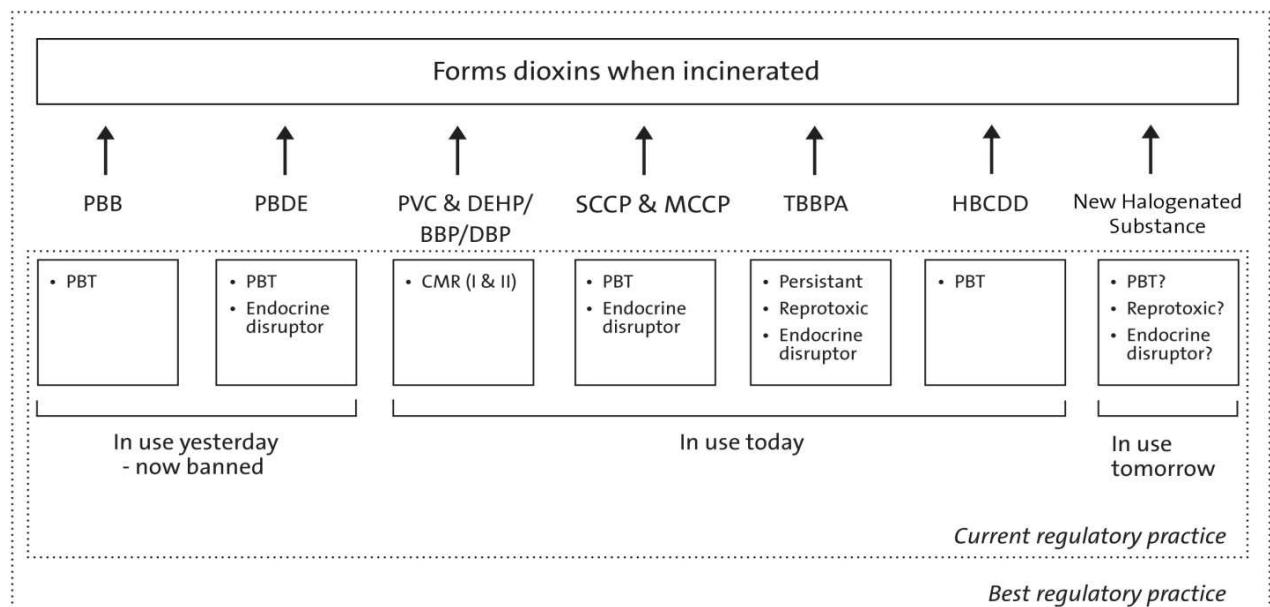


Figure 1 from the report “Greening Consumer Electronics” 2009 (reference in footnote 8)
 This figure summarises the main problems with a substance by substance approach and the benefits from a general phase-out of brominated and chlorinated organic substances in EEE products.

¹² Aitken, R.J., et al., 2009. EMERGNANO: A review of completed and near completed environment, health and safety research on nanomaterials and nanotechnology. p. 48 http://randd.defra.gov.uk/Document.aspx?Document=CB0409_7910_FRP.pdf

Moreover, the methodology should reflect the specific aims of the ROHS Directive to contribute to the “sound disposal” of waste electrical and electronic equipment *based on the precautionary principle*.

It is therefore appropriate to develop RoHS restrictions as a mechanism, complementary to other EU laws such as REACH, to prevent hazardous substances entering the waste stream with the potential to harm humans and the environment even if these substances are not yet proven to additionally pose unacceptable risks to human health and or the environment in the production or use phase. Taking into account the entire life cycle of EEE, the upstream elimination and restriction of hazardous substances would be justified due to the risks and problems that occur during the end of life phase. Environmental, health and women’s NGOs strongly support the methodology criteria put forward by the Evans report (Amendment 48).

Conclusion

RoHS has paved the way as a global standard for phasing out several hazardous chemicals in the electronics supply chain. Many companies have moved beyond RoHS and there are numerous EEE products on the market today that do not contain halogenated organic substances. Technical performances and fire safety standards can now be met with readily available alternative materials and components.

We, environment, health and womens’ organisations within Europe ask EU regulators to seize this unique opportunity to strengthen RoHS by restricting halogenated organic compounds and nano silver in all EEE products. We also ask for a methodology to establish future restrictions in line with the specific aims in RoHS while retaining the possibility for operators to make use of certain exemptions on technically justified and socio-economic grounds. We ask you to use the opportunity of the ROHS revision to protect human health and the environment in the EU and abroad.

About us

- *EEB, the European Environmental Bureau, represents more than 140 member organisations in 31 countries with a membership base of more than 15 million individuals/households. These NGOs deal with environmental issues and nature protection. We stand for environmental justice, sustainable development and participatory democracy. Our aim is to ensure the EU secures a healthy environment and rich biodiversity for all. www.eeb.org*
- *HEAL, the Health and Environment Alliance, aims to raise awareness of how environmental protection improves health. It achieves this by creating opportunities for better representation of citizens’ and health experts’ perspectives in European policy-making on environment and health. Our membership includes a diverse network of more than 60 citizens’, patients’, women’s, health professionals’ and environmental organisations across Europe and HEAL has a strong track record in increasing public and expert engagement in EU debates and the decision-making process. www.env-health.org*
- *WECF, Women in Europe for a Common Future, is an international network of over 100 women’s, environmental and health organisations implementing projects in 40 countries and advocating globally for a healthy environment for all. WECF was created in 1994 following the 1992 Rio Earth Summit, to give women a stronger voice in sustainable development and environmental policy, with the aim of balancing environmental, health and economic perspectives. Our project work brings safe ecological solutions to local problems in the areas of chemicals, sanitation, energy and food production. Our policy work at national, European, UN and international level brings women’s perspectives to policymakers. www.wecf.org*