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PlasticsEurope views on the recast of the RoHS Directive¹

PlasticsEurope generally welcomes the Commission proposal² for a recast of RoHS, and in particular its aim to adapt to technical and scientific progress and increase coherence with other pieces of Community legislation. Nevertheless, the proposal itself is not aligned with REACH³ and we are concerned that this fact will lead to unnecessary duplication of procedures and conflicting requirements on electrical and electronic equipment (EEE).

Besides the need to clarify the relationship between REACH and RoHS, the European Parliament draft Report of 22 October 2009 raises a number of additional concerns:

- The draft report introduces 7 new substances and families of substances for restriction via Annex IV, citing as justification a report by the Öko Institut, which itself concedes that “there can be no robust recommendation as to the need to restrict the use of substances according to the present state of knowledge...”:
- Based on the Horizontal Initiative of the Commission, and the related outcome document from PE Europe⁴, any restriction on PVC is scientifically unfounded.
- The potential restrictions on the use of certain substances, notably Phthalates (DEHP, BBP and DBP), Bisphenol A (BPA), and Brominated flame retardants (BFR), should be based on scientific evidence and adequate risk assessment, as part of REACH.
- The scope of the RoHS Directive should remain closed.
- The impact of any potential restriction of certain substances on the viability of some SMEs, critically affected by the economic crisis, should be seriously assessed before any decision is taken. They will not be able to invest in order to develop and use alternatives as this will require considerable changes across the whole manufacturing process and supply chain.

¹ Recast of the Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

² Published on 3rd December 2009.

³ REACH Regulation 1907/2006/EC.

⁴ http://ec.europa.eu/enterprise/sectors/chemicals/files/sustdev/pvc-extended_summary_lca_en.pdf

1. RoHS versus REACH approach to risk:

	RoHS	REACH
Basis for substance restrictions	No preparatory process before establishing a restriction. Restrictions are based on hazards without prior risk assessment.	Harmonised methodology with criteria and procedures for preparing substance restrictions. Restrictions are introduced only if a risk to human health or the environment can be proven.
Risk assessment	Restrictions can be imposed without a full assessment of the impact of the substances or of the possible alternatives. A potential risk without evidence of the risk exposure is sufficient.	Restrictions are based on thorough risk assessments that consider research into the impact of the substance in its entire life cycle and also the possible alternatives. This also considers the control measures used by industry to minimise risk and social and economic issues.
Scope of the restrictions	Substances present in electrical and electronic equipment that is within the scope of this Directive.	All chemicals , including those used to make the electrical and electronic equipment. Although waste does not fall under the definition of 'substance' under REACH, the REACH restriction procedure can be used to restrict the use of a substance, addressing its risks to human health or the environment arising at all stages of its life cycle, including during its waste phase.

Therefore, we consider that the ROHS recast should not create further overlap and inconsistencies with REACH and that **the revised RoHS Directive should be aligned with the REACH methodology for restrictions, which is based on a life cycle risk assessment and can be used to address potential substance restrictions in EEE.**

2. Proposed restrictions on the use of Polyvinylchloride (PVC):

- **Examples of PVC applications in EEE**
 - Cable insulation and sheathing, adaptor, as part of the current Commission proposal scope.
 - NB : an extended scope would also cover e.g. cable conducts, plugs, sockets, etc.

- **PVC and PVC waste are not classified as hazardous**

According to the EU Regulation on the Classification and Labelling of substances and mixtures⁵, **the polymer PVC is not classified as hazardous.**

It is **not a Persistent Bio-accumulative and Toxic (PBT) substance** and does **not possess any of the characteristics of a Substance of Very High Concern.**

PVC waste is not classified as hazardous either. Indeed, although Commission Decision 2001/118/EC⁶ on the list of wastes mentions plastics waste under several entries which could be relevant for EEE waste (160119, 191204, 200139), none of these has been qualified as hazardous, and there is no specific reference to PVC.

- **PVC is fully compatible with recycling and recovery**

The Rapporteur's justification for including PVC in the list of prohibited substances is that this substance "creates problems for waste treatment". With regards to the release of dioxins, not only does the EU Waste Incineration Directive⁷ set a stringent emission limit of 0.1 ng I-TEQ/m³, which is met by properly designed and operated incinerators, irrespective of the type of waste they treat, but the European Commission also states in its Green Paper on the Environmental Issues of PVC⁸ that "*it has been suggested that the reduction of the chlorine content in the waste can contribute to the reduction of dioxin formation, even though the actual mechanism is not fully understood. The influence on the reduction is also expected to be a second or third order relationship. It is most likely that the main incineration parameters, such as the temperature and the oxygen concentration, have a major influence on the dioxin formation*". The Green Paper states further that "**at the current levels of chlorine in municipal waste, there does not seem to be a direct quantitative relationship between chlorine content and dioxin formation**".

The Green Paper is based on the results of over ten in-depth studies, carried out in various parts of the world, and dealing with mechanical recycling, chemical recycling, landfill, incineration, and the economic implications of a diversion of PVC waste from incineration.

⁵ Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (Text with EEA relevance).

⁶ Commission Decision 2001/118/EC of 16 January 2001 amending Decision 2000/532/EC as regards the list of wastes.

⁷ Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste.

⁸ Green Paper on the Environmental issues of PVC COM (2000)469, 26 July 2000.

Furthermore, it is important to note that **the use of PVC in EEE is currently mainly in cable insulation and sheathing, and that cables are easily separated from EEE appliances and are generally treated separately due to their valuable metal content** (typically copper). Sub-standard waste management, i.e. open burning of waste, would result in a substantial deterioration of the quality (and hence economic value) of the recovered metal. This is clearly recognised by those handling waste, in the EU and developing countries.

With regards to complication to recycling, EEE waste is indeed complex. The presence of one element (chlorine) does not, however, alter this situation. As mentioned above, PVC is mainly used in cables which are treated in order to recover the metal content. This has generated a stream of **relatively pure PVC which can easily be recycled into useful products by using conventional technologies**.

In addition, the document from PE Europe⁹, which put an end to the PVC Horizontal Initiative of the European Commission, clearly demonstrates that any restriction on PVC would be scientifically unfounded.

Any concern about the potential presence of hazardous substances in PVC should be addressed at the level of the specific additive, and not through a blanket application of a ban on or phasing out of PVC in EEE.

3. Proposed restrictions on the use of certain Phthalates (DEHP, BBP and DBP):

- **Examples of certain Phthalates applications in EEE**
 - The use of DEHP in EEE is limited to insulation and sheathing for wire and cable.
- **BBP and DBP are not used in EEE**
DEHP in EEE presents no risk to consumers or the environment

The three phthalate plasticisers (BBP, DBP, DEHP) that the Rapporteur proposed to prohibit (Amendment 71) have all been subject to **individual and comprehensive European Union risk assessments** of their environmental and health effects under Existing Substances Regulation 793/93 conducted under the supervision of DG Environment. BBP and DBP are not used in EEE due to their technical properties and were therefore not assessed as part of EEE.

The impact of **DEHP in EEE was fully assessed and there was found to present no risk to either the environment or human health**. It is important to stress that this assessment **also included an examination of the presence of DEHP in the waste phase of EEE**. Prior to the publication of the RoHS Commission proposal, a summary of the EU risk assessment for DEHP was published in the EU Official Journal¹⁰.

⁹ http://ec.europa.eu/enterprise/sectors/chemicals/files/sustdev/pvc-extended_summary_lca_en.pdf

¹⁰ OJCE – February 7, 2008.

4. Proposed restrictions on the use of Bisphenol A (BPA):

- **Examples of BPA-based applications in EEE**
 - Housings for switch modules, distributor boxes, fuses, battery power stations, sockets, electrical meters, illuminated rotary switches, plug connectors, switches, sockets, plugs,
 - Housings for cell phones, SLR cameras, electrical razors, hair dryers, steam irons, mixers, computers, monitors, TVs, copiers, printers, telephones, microwaves, coffee makers,
 - Front panels for electric cookers, electrical kettles, transparent front panels for vending machines, interior lighting panels for trains and airplanes, back light units for TVs.
- **BPA presents no risk to consumers or the environment**

BPA is **not classified as a CMR** category 1 or 2 according to the EU's Classification and Labelling Directive (2001/59/EC), and is **not an endocrine disruptor** according to the criteria in the EU REACH guidance or as defined by internationally-accepted definitions for endocrine disruption.

Furthermore, in the updated 2008 Risk Assessment Report on BPA published in June 2008, the European Commission concluded that Bisphenol A is **neither a Persistent Bio-accumulative and Toxic (PBT) or Very Persistent and Very Bioaccumulative (vPvB)** substance, and that products made from BPA, such as polycarbonate plastic and epoxy resins, are safe for consumers and the environment when used as intended.

Based on available scientific data, the existing regulatory assessments and the provisions of the REACH regulation itself, BPA does **not fulfil the criteria of Substances of Very High Concern and is neither eligible for Authorisation nor the Candidate List.**

Bisphenol A (BPA) has been the subject of **extensive scientific testing and governmental reviews worldwide.** The European Commission, the European Food Safety Authority (EFSA), the US Food and Drug Administration (FDA) as well as the Japanese Ministry of Health, Labour and Welfare, for example, have all assessed the comprehensive database on BPA.

Based on the overwhelming weight of evidence, these assessments have consistently concluded that **human exposure levels to BPA are low and within the safe limits set by government authorities.**

The various risk assessments of BPA have concluded that BPA presents no risk to consumers or the environment when used in its intended applications. The responsible international authorities for consumer safety worldwide support this conclusion. There is therefore no justification for a ban of BPA in EEE.

5. Proposed restrictions on the use of Brominated Flame Retardants (BFRs):

- **Examples of BFR applications in EEE**

- Outer housing of TV sets and computer monitors, mobile phones, wire and cable compounds, printed circuit boards

- **Not all BFRs are the same**

The term “brominated flame retardants” covers a wide range of substances, each with its own distinctive performance and environmental profile. Following EU Risk Assessment, some BFRs have been restricted, while others have not.

- **BFRs can be used without measurable risk to human health**

The **environmental impact of BFRs is low** because in most applications these are either chemically reacted into the material they are used to treat, or physically contained within it and are thus **unable to have significant external impacts**.

Furthermore, scientific assessments have concluded that the flame retardants in use today are not more **toxic** than other commonly used chemicals.

- **BRFs in plastics can be compatible with recycling**

A number of studies¹¹ have shown that flame retardants in plastics are compatible with recycling. Although mechanical recycling in an open loop situation where all mixed plastics return from the market is difficult, in closed loop cases, where the origin and composition of the plastics is known, mechanical recycling of flame retarded plastics into flame retarded types has been proven successful and economically worthwhile. Studies show that recyclates from **mechanically recycled** plastics containing BFRs are in compliance with strict PBDD/PBDF limit values when handled properly and that recyclates keep their properties and meet the fire safety standards (for example V-0) after multiple recycling processes.

For plastic fractions containing precious metals (e.g. printed wiring boards, mobile phones or laptops, remote controls, music players, digital cameras) the recovery of precious metals from EEE wastes is by far the driving force behind the recycling strategy. However, in this case, integrated smelters can optimise this recycling solution, **enabling not only the recovery of precious metals, but also the recovery of energy content of plastics in the EEE waste**.

These studies also confirmed that there is **no measurable risk of workplace exposure or production of dioxins** during the heating involved in recycling plastics containing flame retardants.

The **flame retardants can be extracted and also reused**. A few companies, such as Sony Ericsson, have also developed processes to recycle plastics containing flame retardants, not mechanically, but chemically, by extracting the flame retardants and other additives from the plastic, producing a re-useable polymer.

¹¹ Rieß et al. (1998): Analysis of flame retarded polymers and recycling materials. Organohalogen Compounds, Vol. 35, 443-446.

- **BRFs in plastics are compatible with energy recovery**

Where EEE waste plastics cannot be recycled due to sorting, technical or economic obstacles, flame retardants are compatible with energy recovery through incineration.

A number of studies¹² have shown that **flame retardants in plastics are compatible with incineration in modern installations** with gas cleaning installations conform to EU regulations, in particular **not generating measurable toxins or corrosion**.

Karlsruhe Research Centre (Germany) published a report¹³ of pilot test trials for recovering bromine and energy from EEE waste plastics containing BFRs. Chlorine and bromine levels in the wastes from EEE were under the emission limit set in the EU Waste Incineration Directive¹⁴. Furthermore, the Karlsruhe study considers that the structure and capacity of large domestic waste incineration facilities in Europe are appropriate and adequate for separate treatment of sorted streams of electrical goods wastes, and that bromine recovery for recycling is therefore logistically feasible.

This work also showed that **incineration of mixed wastes containing high proportions of flame retarded plastics had no impact on the production of dioxins or similar compounds in the incinerator, and was compatible with energy recovery**.

One objective of RoHS restrictions is to facilitate safe recycling, recovery and disposal of EEE. The EP Report proposes to add restrictions on BFRs without having produced a risk assessment on the individual substances concerned. However, **various scientific studies have concluded that their current usages as flame retardants in EEE present no risk to human health, an acceptably low risk to the environment and they are compatible with environmental end-of-life management of EEE**.

They are essential to ensure fire safety in EEE, and it should be remembered that substitutes do not currently exist for all applications and that when they exist, they should be assessed similarly to the existing substances.

6. The scope of RoHS should remain closed

In Article 2, the Rapporteur is calling for RoHS to apply to all EEE, and for the scope of the Directive thus to be an 'open' one.

Here again, the Rapporteur **has not provided a detailed impact assessment in order to back her proposal, even though it is clear that such a change in the scope would have an enormous impact on industry**.

Indeed, having an open scope would include all EEE, and although there would be a possibility for a specific product to be excluded from the scope, this would only be achieved after having

¹² - "Processing wastes and waste-derived fuels containing brominated flame retardants". Helsinki University of Technology Department of Mechanical Engineering, A. Tohka, R. Zevenhoven. Refs. TKK-ENY-7. http://eny.hut.fi/library/publications/tkk-eny/TKK-ENY-7_print.pdf.

- TNO Netherlands, 1 October 2002 "Review on corrosion in waste incinerators, and possible effect of bromine".

¹³ "Recycling of bromine from plastics containing brominated flame retardants in state-of-the-art combustion facilities", Forschungszentrum Karlsruhe, 2002. <http://www.cefic-efra.com/pdf/TEC%20Report%208040%20GB.pdf>.

¹⁴ Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste.

gone through a lengthy procedure, which could take years, due to the lack of staff available for such issues at Commission level.

7. Avoid disproportionate burden on SMEs

The European electronics industry is very diverse in size and sectors. Some are large multinational manufacturing companies but there are thousands of SMEs. Unfortunately, the plastics industry as well as the electronic industry, especially SMEs, are **still seriously affected by the consequence of the economic crisis, and most will be ill-prepared for the potential changeover** to phase-out certain substances. This would result in immense challenges to these industries, as nearly all research in this area has been conducted by and for a few large volume manufacturing companies. For sure, it would be technically problematic for them to make the transition needed to implement RoHS.

EEE multinational companies, such as Apple, Dell or Sony Ericsson, have played a leading role in developing substitute-based components, mainly as part of eco-marketing, and in order to ensure a larger share of the market. These firms have the resources and research capability to test new materials and process settings, and are able to transfer their internal findings to production. Solutions for SMEs will be significantly different as they will not have budgets for large research programmes or new equipment. **With limited resources, less capability for equipment adaptation, as well as smaller production volumes and specific requirements from customers, the hurdle which SMEs will be facing in order to comply is significantly higher.**

Eco-marketing is an element which has to be taken into account. SMEs will not be able to meet the same obligations, without the resources and the economy of scale available to larger companies. **The economic reality should be considered**, including whether the new technology is widely available, what lead time is needed for product redesign, changes in manufacturing processes and supply chain development.

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PlasticsEurope is one of the leading European trade associations with centres in Brussels, Frankfurt, London, Madrid, Milan and Paris. We are networking with European and national plastics associations and have more than 100 member companies, producing over 90% of all polymers across the EU27 member states plus Norway, Switzerland, Croatia and Turkey. The European plastics industry¹⁵ makes a significant contribution to the welfare in Europe by enabling innovation, creating quality of life for citizens and facilitating resource efficiency and climate protection.

¹⁵ The plastics industry includes polymer producers - represented by PlasticsEurope, converters - represented by EuPC and machine manufacturers - represented by EUROMAP. More than 1.6 million people are working in about 50.000 companies (mainly small and medium sized companies in the converting sector) to create a turnover in excess of 300 billion € per year. For further info see the web links: www.plasticseurope.org www.plasticsconverters.eu www.euromap.org