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White Paper

An Update on RoHS2

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Evolution of RoHS2: How did we get here and where are we going?

What a wild ride it has been. The Öko-Institut, tasked by the EU for recommending changes to the existing RoHS, initially recommended adding 46 new substances (add link to March-April newsletter). Through a mysterious process, these 46 have been reduced and modified to 9 (see table below). But, this still might change as the final, final report is not expected to be released until late June 2008 (no word yet).

ID	Substance name	CAS-No.
1	Tetrabromo bisphenol A (TBBP-A)	79-94-7
2	Hexabromocyclododecane (HBCDD)	25637-99-4
3	Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7
4	Butylbenzylphthalate (BBP)	85-68-7
5	Dibutylphthalate (DBP)	84-74-2
6	Medium-chained chlorinated paraffins (MCCP) (Alkanes, C14-17, chloro)	85535-85-9
7	Short-chained chlorinated paraffins (SCCP) (Alkanes, C10-13, chloro)	85535-84-8
8	Nonylphenol/ Nonylphenol ethoxylates	25154-52-3 / 9016-45-9
9	Organochlorine and organobromine compounds	e.g. 615-58-7 9002-86-2 55481-60-2

Öko may have been listening to the original criticism, because it decided to drop the sillier suggestions (nickel? Gallium arsenide?) and focus on chemicals with long, funny-sounding names. The report's primary focus seems to be on Phthalates (3 types), Paraffins (2 types), and halogenated organic compounds (there is actually some debate whether an entire class of chemicals can be banned under the existing RoHS legislation). One particular compound of concern to the electronics industry is the inclusion of Tetrabromobisphenol A (TBBPA), which was not on the original list of proposed 44 substances.

The listing of TBBPA, both additive and reactive, is surprising for several reasons. The first is that the European Union and European Commission have completed three major assessments of this chemical. The outcome of all three investigations was that TBBPA carried no health or environmental risks (except for TBBPA added to ABS)

- EU Human Health Risk Assessment, Feb. 2005
- EU Environmental Risk Assessment, June 2007
- European Commission's Scientific Committee (SCHER), June 2008

What is even more surprising, or amusing, is these results agree with another risk assessment of TBBPA that was carried out in 2000[1] by….hold your hat……the Oko Institut!

It is believed that one of the reasons for this change in outlook is the realization that Europe's grand plan for recycling is not so grand after all. Waste in electrical and electronics equipment (WEEE) is not being recycled in Europe (surprise, surprise). Instead, the 'recyclable' material is shipped to Africa and Asia where cheap labor does not recycle as much as hunt through piles of waste to find something of value. And within this less than idyllic world, the easiest way to get to the most valuable materials (gold, silver, copper) is to burn the plastics (include PCB) around it. And thus, Europe's new concern with uncontrolled burning of flame retardant plastics[2].

All this angst and hair-pulling may end up being irrelevant as there is general agreement that RoHS is slowly becoming obsolete due to the increasing importance of REACH. The two pieces of legislation need to be in sync, through either informal channels or by eventually folding RoHS into the REACH process and requirements.

There are several advantages to moving to the REACH umbrella. It is by far more comprehensive, as it covers all markets, not just electronics. In addition, while REACH has portrayed as a legislative monster, because grandfathering is no longer allowed and lots of tracking and labeling will be required, it is also more balanced than RoHS because REACH is tasked to consider and evaluate the **risks** and benefits of any environmental regulation.

The process of consideration and evaluation is driven by the criteria for selection of high priority substances (I), substances of very high concern (SVHC)

- Carcinogenic category 1 or 2
- Mutagenic category 1 or 2
- Toxic for Reproduction category 1 or 2 (CMR)
- Persistent, Bioaccumulative & Toxic (PBT)
- very Persistent & very Bioaccumulative (vPvB)
- Endocrine Disrupters (ED)
- Substances found as contaminants in humans and biota raising concern regarding potential long-term harmful effects
- Substances forming hazardous substances during the collection and treatment of EEE (e.g. during incineration)

This means, unfortunately, unless the industry or EU figures out a way of preventing the burning of plastics in some far away country, the banning of halogenated organic compounds is a real possibility.

[1] Erarbeitung von Bewertungsgrundlagen zur Substitution umweltrelevanter Flammschutz-mittel", December 2000, Environmental Ministry of Germany (carried out by **Öko-Institut**)

[2] Why Europe does not stop simply ban exports of recyclable material is for another white paper

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