Presence of substances of concern in products made from recycled materials

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Circular Economy Stakeholder Conference:
One year after adoption, working together for the future.
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About CHEM Trust

• A charity working mainly at EU level to protect humans & wildlife from harmful chemicals
• Working with scientists, technical processes and decision makers, in partnership with other civil society groups
• Focus on identification of, and action on, endocrine disrupting chemicals
• See our blog & twitter for more: www.chemtrust.org.uk

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A clean circular economy?

• A circular economy should lead to more reuse, recycling, remanufacture – and longer product lifetimes
• But hazardous chemicals can disrupt this:
  – Long lasting products: may contain chemicals that have been banned (& aren’t labelled), disrupting recycling & remanufacturing
  – Contamination of feedstock: it’s harder to control feedstock quality for a recycled material vs a virgin one
• EU regulations are not delivering effective controls on use of hazardous chemicals
  – Action on chemicals is too slow, narrow and cautious
  – Some areas are missing important regulation
• A dirty circular economy will not be sustainable
  – And it will not maintain public confidence
The chemical regulation problem

• *EU chemicals regulation looks impressive... but*

• Chemical assessment & action currently too slow & cautious
  – Lack of data is still rewarded – ‘no data, no problem’

• Regulation lags behind the reality of the market
  – Banning one substance at a time is slow, and drives the market through different chemicals in a group
    • Similar properties make substitution easier & increase likelihood of similar hazards
  – EU’s REACH regulation was supposed to ensure adequate safety data on all chemicals, preventing unwise substitution, but this isn’t working yet

• Assessment of chemicals doesn’t reflect reality
  – Too much confidence in current available data, while this is just a ‘currently estimated toxicity (CET)’, not ‘real’ toxicity, & CET is likely to get worse with time, as understanding of exposure and hazard improves.
  – Exposure to mixtures – the real world – is still ignored
Example chemical groups of concern

- **Bisphenols**
  - Regulations currently focusing on BPA, but BPS, BPF and others are also of concern – but their use is continuing (and probably increasing).

- **Brominated flame retardants**
  - Debates on regulation of PDBEs for >10 years, still not finished
    - e.g. Deca BDE to be banned from 2nd March 2019 (some exemptions)
  - Whole range of ‘new’ BFRs now in homes (e.g. UK house dust [1]) and people (e.g. serum in Sweden [2]). Many in use for years, and have been identified by scientists, not by industry highlighting them as an issue.

- **Per- and poly-fluorochemicals**
  - There is an EU plan to restrict PFOA-related substances, but this has many exemptions [3] & is only a fraction of the chemicals on the market.
    - The main restriction will come into force 3 years after it enters into law
  - It has been estimated that there are 3,000 PFCs on the market, and companies are moving through this list [4]
Developmental neurotoxic (DNT) chemicals

- Worrying & neglected area, more research & action needed
  - CHEM Trust report “No Brainer: The impact of chemicals on children’s brain development: a cause for concern and a need for action"
    - http://www.chemtrust.org.uk/brain
- Four groups of DNT chemicals:
  - Well-established DNT
  - Suspected DNT
  - Initial evidence of DNT
  - A large number of chemicals where we just don’t know (so CET = zero)
Examples of contamination

• NB: these examples don’t come from a detailed review of the issue
  – Has anyone (a regulator?) done one?
  – A gap in our understanding?

• We have come across these examples in the last couple of years
  – One of them last week
1) Bisphenol A (BPA) in thermal paper

- BPA (known EDC) used in thermal paper (e.g. till receipts)
  - Then enters the recycled paper stream

- **Problem for circular economy:**
  - Recycled paper & card (e.g. pizza boxes) contaminated with BPA (and other chemicals) [5]

- **Solutions:**
  - Stop recycling thermal paper with other paper?
  - Regulate recycled paper use in food contact materials? There is a gap in EU law on this [6]
  - Ban BPA in thermal paper? Agreed by EU [7], but:
    - (1) Enters into force in January 2020!
    - (2) “bisphenol S (BPS), the most likely substitute according to France, may have a toxicological profile similar to BPA” – **but no controls yet…**
2) BFRs in furniture & building products

- Furniture & buildings are long lived products
  - Increases the chance that will contain banned chemicals by the time they enter the waste stream.
  - They form a reservoir of hazardous chemicals (some UNEP POPs) [8]

- Recycling can spread contamination
  - E.g. BFR-contaminated polyurethane is being recycled into carpet backing in USA [9]
  - What is happening in the EU?
3) BFRs in kitchen plastics

- BFR problem is not just about carpet underlay!
- BFRs in found in black kitchen plastics on sale on EU market [10]
- Where from??
  - Recycling of electronics waste outside EU?

BFRs in food contact articles??
Surely not!! (according to the legislation)
Or is the reality different?
4) Recycled PVC roofing

- **Made in Czech republic**
  - Out of PVC cables from Germany
- **User concerned about smell**
  - Particularly in attic where children slept
- **Lab analysis:**
  - Calculation: 500m² roof would emit 12.5kg VOC if heated to 100°C (e.g. sunlight) for 1 hr
  - Including: 2-ethylhexanol (DEHP breakdown product), benzene, styrene, toluene, ethylbenzene, DIBP, DnBP
- **Is this want we want in a recycled product?**
- Source: Arnika (www.arnika.org)
Just this afternoon...

Warnings over children's health as recycled e-waste comes back as plastic toys

A trend towards using plastic parts in electrical and electronic goods is causing a headache for the recycling industry

Solutions

• Faster, more precautionary, safety assessment and regulation of chemicals
  – Better safety data, more rapid and precautionary restrictions, more chemicals in authorisation – including action on groups of related chemicals

• Other measures:
  – Ensure recycled materials & remanufactured goods are properly regulated (with enforcement), e.g. paper/card food contact materials, furniture and building materials?
  – Information on hazardous substances in products
  – Some materials should not be recycled

• Action is needed, or the circular economy is at risk of failure due to contamination scandals

Briefing: [http://www.chemtrust.org.uk/circulareconomy](http://www.chemtrust.org.uk/circulareconomy)
References


