We need a clean circular economy – not a dirty one

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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
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
- Two examples:
  - Bisphenol A (BPA): High volume chemical, used in food can linings, thermal paper, polycarbonate plastics
  - Brominated flame retardants (BFRs): Large group of chemicals, used in furniture, electronics, building products.
- A dirty circular economy will not be sustainable
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 [1]
- 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 [2]
  - Ban BPA in thermal paper? Agreed by EU [3], but:
    - (1) Enters into force 3y after publication in OJ &
    - (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

- These are widely used, 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 (including UNEP POPs) [4]
- Recycling can spread contamination
  - E.g. BFR-contaminated polyurethane is being recycled into carpet backing in USA [5]
- Solutions
  - Rapid action to remove problem chemicals from products, at design stage (including before regulation)
  - Contaminated materials will probably need to be disposed of; but information flow needed
  - But: Not all BFRs are well understood, how should unregulated ones be addressed?
Why grouping is needed

• Chemical assessment & action currently too slow & cautious
  – Lack of data is still rewarded – ‘no data, no problem’
  – In reality always dealing with ‘currently estimated toxicity (CET)’, not ‘real’ toxicity, & CET is likely to get worse with time (e.g. see [6])
  – Exposure to mixtures – the real world - still ignored

• Need to stop movement from a problem chemical to a similar one:
  – Similar properties make substitution easier
  – Similar properties increase likelihood of similar hazards

• Regulation constantly lags behind the reality of the market
  – Banning one substance at a time is slow, and just drives the market through different chemicals in a group
  – This means continued problems in recycling, as banned substances continue to appear in the waste stream
  – REACH was supposed to solve these problems, ensuring adequate safety data on all chemicals, preventing unwise substitution, but it isn’t
Some groups of concern

• Bisphenols
  – Regulations currently focusing on BPA, but BPS, BPF of similar concern – but use is continuing (and probably increasing).
  – Regulators are pointing out the problem - e.g. the REACH Risk Assessment Committee, but restrictions are some way away.

• Brominated flame retardants
  – Debates on regulation of PDBEs for >10 years, still not finished
  – Whole range of ‘new’ BFRs now in homes (e.g. UK house dust [7]) and people (e.g. serum in Sweden [8]). 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 [9] & is only a fraction of the chemicals on the market.
  – It has been estimated that there are 3,000 PFCs on the market, and companies are moving through this list [10]
A clean circle?

- Aim towards non-toxic products, with faster, more precautionary, safety assessment and regulation of chemicals
  - Grouping to accelerate regulatory (& business) action is a key tool in this process
- Other measures:
  - Ensure recycled materials & remanufactured goods are properly regulated (with enforcement), e.g. paper/card food contact materials, carpet backing
  - Improve (global) information flow on hazardous substances in finished products (also groups?)
  - Some materials should not be recycled
- Without such measures, 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

http://kemi.taenk.dk/bliv-groennere/test-unwanted-chemicals-found-pizza-boxes


[3] EU Chemical Agency committee agrees that Bisphenol A in receipts poses risk to workers, Jun 2015:
Draft amendment to annex available here:


[5] Optimizing Recycling: Post-Consumer Flexible Polyurethane Foam Scrap Used In Building Products, Health Building Network, July 2016:


[8] Analysis of new brominated flame retardants in human serum and background air, Swedish EPA, October 2016,
