From BPA to BPZ: a toxic soup?

How companies switch from a known hazardous chemical to one with similar properties, and how regulators could stop them.
We – and the wider environment – are exposed to many hundreds of man-made chemicals, from everyday products and from pollution. An increasing number of these chemicals have been found to disrupt the sensitive endocrine (hormone) system that plays a crucial role in the development and functioning of our bodies and those of wildlife. These endocrine disrupting chemicals (EDCs) have been shown to cause feminisation of fish and have been associated with neurodevelopmental problems, impaired fertility, certain cancers such as breast cancer, diabetes and obesity and coronary heart disease.

This report focusses on one group of chemicals, the bisphenols; they are all closely related and includes the well-established EDC, bisphenol A (BPA), a chemical that was first found to be an EDC in the late 1930s.

BPA is a component of plastics, food can linings and thermal paper till receipts. It has recently been formally identified as an EDC by the European Chemicals Agency (ECHA), and it is in the process of being banned in till receipts in the EU; its use has already been banned in baby bottles.

Regrettable substitution – from one bisphenol to another
As BPA has come under pressure from regulators, companies have moved to using other similar bisphenols, such as bisphenol S (BPS), bisphenol F (BPF) and bisphenol HPF (BHPF).

When looking for a new chemical to use in an application, companies will look for one of a similar structure, as it is likely to have similar properties. However, this similarity often extends to toxicity, which is what the scientists are finding with bisphenols.

Back in the 1930s, researchers identified two other bisphenols with endocrine disrupting properties, bisphenol B (BPB) and BPF. Since that time many more bisphenols have been tested, and scientists have found that chemicals similar to BPA will generally have similar endocrine disrupting properties.

BPA is found in the blood and urine of almost everyone who has been tested, and now scientists are finding the replacements, such as BPS and BHPF, in people too.

The role of the regulators
In the EU, the main management of chemicals is delivered through the REACH Regulation, which is administered by ECHA. However, certain chemical uses are regulated by different systems. For example, chemicals in food contact materials (FCM), like cans or baby bottles, are regulated by the European Food Safety Authority (EFSA).
EFSA and ECHA differ in the way they have addressed bisphenols, and the extent to which they use grouping in their assessment and regulation. Neither has dealt with bisphenols adequately, though ECHA has made more progress than EFSA.

ECHA is doing some work on understanding the use and properties of BPS, but has not put in place any controls on its use. Meanwhile, as far as we are aware, EFSA continues to devote all its attention to BPA.

Despite the EU’s sophisticated chemicals regulatory systems, industry has been permitted to replace one worrying bisphenol with another. This is not an acceptable situation, as the health of future generations is at stake.

Restricting groups of chemicals has to become the rule rather than the exception. When different substances of the same chemical group are likely to be similarly acting and used in the same situation and one is known to be harmful and has been regulated, then regulation should be extended to cover all other similar compounds.

Regulators should not delay action pending further research as ECHA has recently done even with the well-studied BPS.

ECHA has already recognised that it is acceptable for industry to use safety data from similar chemicals (‘read across’) when registering chemicals; the same approach should also be used to restrict groups of chemicals. In the absence of good data to the contrary, chemicals with similar structure should be assumed to have the toxicological properties as harmful as those of the most toxic known substance in the group.

The role of industry
The chemical industry and downstream users have the main responsibility for the continuing use of this group of chemicals, and the movement of the market from one bisphenol to another.

We have uncovered worrying signs of how the chemical industry is selling these other bisphenols to its customers. For example, the majority of companies are claiming, when selling to downstream users, that BPS has no hazards at all. This is a surprising claim when the Risk Assessment Committee (RAC) of ECHA has stated that BPS “is suspected to have many of the same adverse health effects as BPA”. This strongly suggests that industry self-classification of chemicals is not working.

The regulators need to take a grouping approach to chemicals to send a strong signal to the industry that it is not acceptable to replace one hazardous chemical with another with similar properties.

“Despite the EU’s sophisticated chemicals regulatory systems, industry has been permitted to replace one worrying bisphenol with another. This is not an acceptable situation, as the health of future generations is at stake.”
Recommendations

In CHEM Trust's view, bisphenols should be regulated as a group, not individually. Manufacturers should not be permitted to replace BPA in consumer products with other bisphenols, eg BPS, as is currently the case.

These are our key recommendations:

1. **Regulators should regulate groups of related chemicals**, rather than taking a substance by substance approach. In the absence of good data to the contrary, chemicals with similar structure should be assumed to have the toxicological properties as harmful as those of the most toxic known substance in the group. This approach needs to be used in the main EU chemicals law REACH, and also in other chemical regulations, such as laws on chemicals in food contact materials. ECHA should also investigate the effectiveness of the industry’s self-classification of chemicals, and whether this is being done in accordance with the legal requirements.

2. **Chemical companies must improve their own assessment of the safety of chemicals.** It is not acceptable to claim that a chemical like BPS has no hazards, when a very similar chemical is known to have substantial hazards, including endocrine disruption. Particularly after the regulators have indicated BPS is suspected to have health impacts.

3. **Downstream users of chemicals should not replace one problem chemical with another** similar chemical from the same group.

4. **Workers should ask whether they are being exposed to BPA or other bisphenols**, and ask employers to move to safer non-bisphenol alternatives.

5. Consumers should ask retailers whether products such as plastic bottles, till receipts and food cans are bisphenol-free, and should **ensure that children do not play with till receipts.**
Once upon a time... Then it was discovered... People started to...

Linked to: Breast cancer Infertility Early puberty Childhood neurological disorders

PROTEST

NORAY! RESCUED AT LAST!

WRONG!

BPS, BPZ, BPF, AND

BPB, BPAF, BHPF, AND EVEN

BP?

Just because a product says it is BPA-free, does not mean there are no health impacts. Companies are replacing BPA with chemicals that are just as worrying. From BPA to BPZ. It's a TOXIC ALPHABET SOUP

For more details: www.chemtrust.org/toxicsoup
This briefing was produced by CHEM Trust, a UK-based charity working at UK, EU and International level to protect humans and wildlife from harmful chemicals. CHEM Trust’s particular concerns are related to hormone disruptors, the cocktail effect of chemicals and the role of chemical exposures in the early life of wildlife and humans. CHEM Trust engages with scientific, environmental, medical and policy communities to improve the dialogue concerning the role of adverse effects of chemicals in wildlife and humans and to harness a wide coalition to drive improved chemicals policy and regulation.

For more about our work, including our regularly-updated blog, see www.chemtrust.org

About the Authors
The main review of the state of science was drafted by Greg Howard.

Greg Howard is an environmental public health scientist with a broad background in epidemiology, toxicology, and research translation. He holds Doctoral and Master of Public Health degrees in Environmental Health from the Boston University School of Public Health, where his research examined the combination effects of chemical mixtures.

The policy recommendations and advice for individuals are written by Dr Michael Warhurst and Dr Ninja Reineke of CHEM Trust, informed by the state of the science, the views of the scientists and CHEM Trust’s experience of following chemicals policy development for more than two decades.

Scientific Review
The scientific content of this report has been peer reviewed by two scientists in the field:

- Dr Olwenn V Martin is a Research Fellow in Environmental Health at Brunel University, London.
- Dr Paloma Alonso Magdalena, Associate Professor of Nutrition at Miguel Hernández University of Elche (UMH), Spain.

CHEM Trust thanks them for their useful comments on the scientific chapters of the draft report, which were made on a voluntary basis.

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Further copies of this briefing and the full report can be downloaded from www.chemtrust.org/toxicsoup

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