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Bisphenol-A and drinking water

EurEau Position Paper

While humans mostly absorb Bisphenol-A through food, its presence in drinking water is possible and should be addressed. The recent EU-wide ban on BPA in food contact materials is welcome, but should be supplemented by a full REACH restriction. In doing so, lawmakers should prevent regrettable substitution by targeting BPA analogues too, and by promoting non-toxic alternatives. As BPA transfers to water occur at higher temperatures, BPA should be banned from hot-water installations. Finally, the planned revision of BPA limits in the Drinking Water Directive should come with a realistic timeline for drinking water suppliers to comply with the new new value.

1. What is Bisphenol-A and what are its uses?

Bisphenols are a family of organic compounds formed by two phenol moieties on a linker. Bisphenol-A is composed by two molecules of phenol and an acetone molecule as the linker (hence A for acetone); other compounds in the same family include Bisphenol-S (for sulfonyl) and Bisphenol-F (for formaldehyde).

Bisphenol-A, or BPA for short, is widely used as a monomer for polymer materials like polycarbonates and epoxy resins used in an enormously wide range of applications, including (historically) food and drink containers, soap and other cleaning agent dispensers, sports and safety equipment, medical and electronic devices, textiles and coatings. This is due to properties such as high thermal stability and excellent solubility in organic solvents, which make BPA very well suited for industrial production processes.

As a free molecule, it can also be used as an antioxidant (e.g. in brake fluids), heat stabiliser, flame retardant, and developing agent (e.g. in thermal paper).

2. Why is the water sector concerned about BPA?

BPA is associated with adverse health effects in humans and wildlife, including coronary heart disease, miscarriage and disruptions to the immune system. There is wide evidence that exposure even at low levels of BPA (even below the environmentally safe reference doses) can either increase cancer risk or aggravate cancer.

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While most people receive their biggest exposure to BPA through their diet, low concentrations of the substance can sometimes be found in piped drinking water. This can be due to the presence of BPA in water resources used to produce drinking water. Despite BPA's low solubility in water and the slow kinetics of hydrolysis and degradation of BPA-containing polymers at ambient temperature, the release of BPA from pipe linings can be a significant concern in **hot-water installations**, both in industry and in households. It is much less relevant in (cold) drinking water.

The mounting body of evidence of BPA's endocrine disrupting properties and other health effects has prompted regulatory action at the European level. In 2020, the revised Drinking Water Directive (2020/2184, DWD) introduced BPA as a parameter because of its endocrine disrupting effects, based on recommendations from the World Health Organisation (WHO) and the European Food Safety Authority (EFSA). From 12 January 2026, water suppliers will be required to comply with a parametric value of **2.5 µg/L for BPA in drinking water**.

The DWD adds that this value should be updated in line with the evolving scientific knowledge, "essentially based on the ongoing review carried out by EFSA." In 2023, EFSA reduced its recommended Tolerable Daily Intake (TDI) for BPA by a factor of 20,000 – from 4µg per kg of body weight per day to 0.2ng/kg/day. In surface waters, the co-legislators are currently debating whether to introduce an environmental quality standard for BPA at 0.17ng/L or 0.034ng/L.

As a result, we expect the BPA parametric value for drinking water to face a drastic cut in the coming years.

3. Necessary actions at the EU level

Prioritise control at source

Human exposure to BPA may occur through drinking water (tap water) at very low levels, but this is **only one of multiple pathways** for BPA to enter the body. An effective policy to protect citizens from the health effects of BPA must address the problem at the source and take all relevant pathways into account when assessing the risks to human health.

On 19 December 2024, the European Commission banned the use of BPA in all **food contact materials** starting in July 2026. We welcome this as an essential step to tackle the largest pathway for BPA exposure in humans.

Now we urge policymakers to go one step further and **support the REACH restriction** proposed by the European Chemicals Agency (ECHA) for BPA and other bisphenols with endocrine disrupting properties. The restriction process started in 2022 but was suspended after a public consultation was conducted. It should be urgently restarted.

In order to gain a fuller understanding of the multiple BPA exposure pathways, the Commission should **consolidate data on possible sources of BPA** emissions into the

environment, including effluents from the polymer, concrete and steel industries, where epoxy resin coating is common. Based on the resulting data, the Commission should take appropriate steps to address those sources, including through new legislation and/or a suitable update of relevant BREF[1] documents.

Prevent regrettable substitution

Measures to limit the health risks from exposure to BPA should apply equally to **commonly known analogues** such as BPS, BPAF and BPF. Such BPA analogues are proven to have similar or even stronger estrogenic, and possibly carcinogenic effects than the parent BPA compound. Systematic monitoring of these analogues' levels is therefore needed to properly assess their risks. Of particular concern is the fact that the epigenetic marks on genes caused by long-term low dose exposure to BPA or its analogues are irreversible.

Measures such as the ban in food contact materials and the proposed REACH restriction should also apply to these analogues, otherwise they will simply replace BPA with little difference in health outcomes. Potential **non-toxic alternatives to BPA** should be identified and should, where possible, replace BPA and similarly toxic analogues in industrial production processes.

Ban BPA in hot water installations

At cold or ambient temperatures, BPA contained in epoxy resins is typically not released into water, either through dissolution, hydrolysis or degradation. The same is not true at higher temperatures, however. Both in industry and in households, hot-water installations can become an important source of BPA into the water cycle.

BPA should be banned from pipes, valves, fittings etc. within residential and non-residential buildings, particularly in hot-water systems. A phase-out of BPA-containing materials should also be investigated more broadly for all materials in contact with drinking water.

Update DWD values with a realistic timeline

The Drinking Water Directive requests the Commission to update the maximum allowed concentration (parametric value) of BPA in drinking water in line with new evaluations of BPA's toxicity levels. When the Commission proposes, in due time, such an adjustment, this should follow a **risk-based approach with realistic timelines for compliance** by drinking water services.

[1] BREFs are Best Available Technique (BAT) Reference documents. Under the Industrial Emissions Directive, they form the basis for authorities to issue emission permits to industrial installations.

First and foremost, because the point of compliance for drinking water is at the tap, the implementation of BPA parametric values should take into account the **responsibility of building owners and managers** to ensure the absence of BPA leaching from pipes inside their properties. According to our knowledge, the small diameter of domestic pipes often prevents the full solidification of epoxy coating, thereby increasing the risk of BPA leaching into drinking water. As a result, domestic installations are more likely to be a source of increased BPA concentrations at the tap. While BPA-containing pipes remain in service, **information campaigns** should raise public awareness that hot tap water should not be used when preparing food, tea or coffee.

If a local risk assessment further considers that parts of the public drinking water distribution network could also be a source of BPA leaching, we expect that the main way for water suppliers to address this risk would be to replace epoxy-containing pipes with new, BPA-free pipes. Completing such a replacement would take time due to constraints not just on funding, but also on the availability of contractors to do the work as well as practical limitations to digging up many city streets at once. The Commission should therefore take into account **feasible pipe replacement rates** when establishing deadlines.

Finally, if stricter quality standards force drinking water suppliers to put further treatment in place, these **costs should be borne by the polluter** in keeping with Article 191 TFEU.

About EurEau

EurEau represents Europe's drinking and wastewater sector. We encompass 38 national water services associations including public and private operators from 33 countries.

Together we promote the access to safe and reliable water services for Europe's citizens and businesses, the management of water quality and resource efficiency through effective environmental protection.

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