

HEAL comments regarding proposal for identification of Bisphenol B as SVHC under REACH article 57(f)

22nd April 2021

The Health and Environment Alliance (HEAL) thanks for French Competent Authority for its proposal to identify Bisphenol B (BPB) as a substance of very high concern (SVHC) under article 57(f) due to its endocrine disrupting properties relevant for human health and the environment. We fully support this proposal.

In our view, the supporting identification dossier is well structured; it transparently details the evidence relied upon and how it has been weighed in order to propose the SVHC identification.

Introductory remarks

By way of introductory remarks, we wish to stress two important elements.

- First of all, BPB is the closest known analogue to Bisphenol A (BPA) and the present dossier highlights important elements showing that the two substances not only share close structures, but also some adverse effects and modes of action (see below). On the one hand, this validly raises important concerns about BPB's intrinsic properties. On the other hand, this also suggests that the risk of substitution of BPA by BPB is real.
- Second, because BPB is currently not registered in Europe, its proper hazard identification provides a unique opportunity to prevent a case of regrettable substitution. The SVHC identification can prevent the development of a market for the use and manufacture of harmful substance before its onset Europe and instead incentivize the development of safer alternatives. This is also relevant because BPB is already used in other parts of the world (e.g. in the United States) and can enter the European market via imports. Last but not least, it is striking that BPB is already found in the European environment at low but increasing concentrations (including in remote areas) as well as in biological samples.

Endocrine disruption

Based on the supporting dossier, it is clear that Bisphenol B fulfills all the criteria for identification as an endocrine disrupting substance, relevant for human health and the environment:

- Available in vivo data shows that **Bisphenol B induces adverse effects on the male reproductive systems of fish and rodents**. This includes but is not limited to associations between 1) BPB exposure at fetal stage with alterations in quality and number of sperms at adulthood as well as reproductive disorders such as testicular disorders in adult rodents; 2) exposure of adult rodents to BPB with effects on the spermatogenesis, reduction in testicular testosterone production, and oxidative stress in testis or sperm; 3) in fish, BPB exposure with e.g. altered hepato-somatic index and gonado-somatic index in male and female zebrafish, reproductive disturbances, malformations, decreased sperm count in the testis and alteration of spermatogenesis.
- The **substance exhibits a clear estrogenic mode of action in fish and rats** (based on in vitro and in vivo data), while anti-androgenic effects are also suggested;
- The **link between the adverse effects observed and the identified endocrine mode of action is plausible**.

The adverse effects observed in rodent data are relevant for the investigation of the substance effects on human health and partly on the environment, while the adverse effects observed in fish are relevant to investigate the substance effects on the environment (due to the effects on the reproductive system).

Moreover, Bisphenol B's close structural similarity to BPA provides important supporting elements to the proposed identification. It is striking to note that BPB shares some of the same adverse effects and modes of action as BPA. For instance, when compared to BPA, in vitro evidence suggests a higher affinity to ER α and ER β for BPB, similar to higher estrogenic activity, a slightly higher capacity to induce PLR promoter occupancy, the activation of ER nongenomic and genomic signaling pathways with similar to higher sensitivity, and a similar and possibly higher AR antagonistic activity. Some of the shared adverse effects that are observed for both substances also appear to occur at lower concentrations in the case of exposure to BPB (e.g. on adult male reproductive system based on rodent data, or on lipid accumulation for metabolism-related effects).

Equivalent level of concern

Finally, it is important to stress that the adverse effects documented in the supporting dossier touch upon the male reproductive system. For humans, this is significantly affecting an individual's quality of life and resulting in important societal costs by hindering the ability to reproduce. For wildlife, this is affecting species' stabilities.

In our view, such effects should be considered irreversible and contribute to Bisphenol B meeting the criteria of equivalent level of concern.

Based on the above, HEAL supports the identification of Bisphenol B as a substance of very high concern under article 57(f) of REACH.