



## **EBA Comments on 10 Boron CLH Reports**

Proposal for Harmonised Classification and Labelling as Repr 1B

- 5 May 2023 -

The European Borates Association (EBA), on behalf of its members and on behalf of the REACH Borates Consortium, welcomes the opportunity to submit comments on the Swedish Chemicals Agency's CLH reports of 10 Boron compounds (Annex I).

### **Executive Summary:**

The European Borates Association (EBA) accepts that there is a reproductive effect of certain boron compounds in laboratory animals under test conditions and that read across between boric acid and the boron compounds is applicable. However, the EBA questions the relevancy of these data to consider the boron compounds as meeting the classification and labeling criteria of Category 1B as is proposed in this CLH Report. The EBA is of the view that a Repr. Category 2 H361d classification is more justified than a Category 1B H 360 FD. Secondly, the CLP Regulation provides that weight of evidence should be used to determine the category of classification, and this evaluation is missing from the CLH Report. Finally, we agree with the proposal from the Dossier submitter to assign the note 11 (additivity note) to the boron compounds.

### **Proposed Classification Repr 1B**

EBA strongly opposes the classification of any boron compound as Repr 1B.

Boric acid or other borate substances with a CLH show adverse effects on fertility as well as developmental toxicity in laboratory animals. Therefore, a classification as reproductive toxicant was warranted. However, the weight-of-evidence evaluation of numerous independent epidemiology, worker exposure and mechanistic studies raise doubt about the relevance of the effect for humans, classification in Category 2 under the CLP Regulation may be more appropriate than the proposed Category 1B.

Several epidemiological studies investigating the effects of environmental and occupational boron exposure are available and mentioned in the on-going CLH reports. Notably, it is underlined that the exposure to boron in these studies were well below the LOAELs for fertility reported from studies in animals. It is not feasible to have same level of LOAELs for workers exposed to borates.

It is disappointing to see that robust studies, such as Duydu et al. (2018a) which show no effects on fertility and sexual function are still not sufficient to downgrade the classification from Repr 1B to Repr 2. Human fertility studies and data on the biological importance of boron should be key in determining the intrinsic properties of boron in a weight of evidence.

### **Grouping of boron compounds**

The proposed grouping of these 10 boron compounds based on read-across from boric acid and borate salts (e.g. disodium tetraborate) is justified because after ingestion the substances dissociate



and result in the formation of boric acid as the main species in physiological conditions. Thus, EBA does support the grouping of these boron compounds.

#### Note 11

*"Note 11: The classification of mixtures as reproductive toxicant is necessary if the sum of the concentrations of individual boron compounds that are classified as reproductive toxicant in the mixture as placed on the market is  $\geq 0.3\%$ ".*

As the grouping is justified; so be the application of the note 11. The hazard being related to the same species (boric acid), it is responsible to apply the additivity principle.

#### Conclusion

While boron has been shown to adversely affect male reproduction in laboratory animals, there is no evidence of male reproductive effects attributable to boron in studies of highly exposed workers (Whorton et al. 1994; Sayli 1998, 2001; Robbins et al. 2010; Scialli et al. 2010, Duydu et al. 2011, Duydu et al. (2018a), Basaran et al. 2019; Bolt et al. 2020).

For classification in category 1 the available data must allow "a strong presumption that the substance has the capacity to interfere with reproduction in humans." The discrepancy between the results obtained in animals and humans raise doubts that the database is robust enough at the moment to clearly place boric acid in category 1.

The numerous studies showing the physiological importance for boron, evidence for the homeostatic control of boron in humans and mammals, and that boron meets the criteria of essentiality; demonstrate a low intrinsic hazard of boron in humans. Based on the contradicting results from animal and human data the definition for category 2 is the most appropriate: "Substances are classified in Category 2 for reproductive toxicity when there is some evidence from humans or experimental animals, possibly supplemented with other information, of an adverse effect on sexual function and fertility, or on development, and where the evidence is not sufficiently convincing to place the substance in Category 1."





## Annex I: Registry of 10 Boron compounds CLH intentions until outcome

<u>Name</u>	<u>EC Number</u>	<u>CAS Number</u>
Calcium metaborate (Ca(BO <sub>2</sub> ) <sub>2</sub> ) and calcium tetraborate (CaB <sub>4</sub> O <sub>7</sub> ), amorphous reaction products of boric acid with lime	701-311-0	12040-58-3
Calcium tetraborate	234-511-7	12007-56-6
Diammonium decaborate	234-521-1	12007-89-5
Dipotassium octaborate	-	12008-39-8
Dipotassium tetraborate	215-575-5	1332-77-0
Magnesium metaborate	237-235-5	13703-82-7
Pentaboron sodium octaoxide	234-522-7	12007-92-0
Potassium metaborate	237-262-2	13709-94-9
Potassium pentaborate	234-371-7	11128-29-3
Sodium metaborate, anhydrous [1]; boric acid (HBO <sub>2</sub> ), sodium salt, tetrahydrate [2]; and any other hydrated form	231-891-6 [1]; - [2]	7775-19-1 [1]; 10555-76-7 [2]