

Boric acid in the electroplating industry

ex ante statement by ZVO¹ and VECCO²

ZVO and VECCO are preparing a detailed literature review on Boric acid, primarily with respect to risk assessment. On first sight, the proposal to include Boric acid in Annex XIV seems questionable. When it comes to its use in electroplating industry an authorization lacks any justification

In the following, we briefly summarize the initial facts and statements supporting the statement above. The final review will provide for more in-depth analysis, including a catalogue of references from mainly public authorities.

1 Premises

The survey will only consider uses in the electroplating industry where Boric acid is used in many application, but always for similar reasons and in similar exposure scenarios.

Boric acid is always used in low concentration in solutions for surface treatment. It is non-volatile and will therefore not evaporate in any case.

Boric acid is not included into the article or component which has been treated. The Boric acid does not escape the electroplating process line, no final consumer is exposed to Boric acid in any way. The use is completely restricted to the workplace.

2 Brief risk description

To our knowledge, German authorities consider Boric acid³ as harmless in solutions with less than 5.5%. The main intake mechanisms discussed are dermal and oral. Inhalative intake is only of limited relevance because of the non-volatility. Measurements of Boric acid in air at workplaces will prove this fact (see below).

Other data available (e.g. MEGA-database of DGUV in Germany) are of very restricted representativeness and have to be construed carefully.

Several studies show different intake mechanisms of extraordinary high exposure levels which are not comparable to common situations at workplaces of electroplating industry. For example: Most studies deal with oral exposure in the range of milligrams per kilograms bodyweight. Oral exposure - in particular of such amount - is rather impossible in industrial environment. Furthermore, one finds air concentrations in the range of some micrograms per cubic meter at the workplace. It is obvious that those studies are meaningless when assessing the uses in electroplating industry.

Other articles reported that Boric acid is not only used in wide dispersed manner, but also in high amounts. Beside glass manufacturing, such a scenario is highly questionable. The everyday life intake of Boric acid exceeds possible exposure at the workplace by far, in particular in cases of some well-known healthy lifestyles.

¹ <http://zvo.org/zvo-navigation.html>

² <http://www.vecco.info/>

³ This might be applicable to Borates too, but the review will focus on Boric acid only.

3 Socio-economic aspects

Discussing the socio-economic dimension, one has to take into account several aspect. In this context, we want to focus on two facts:

- a. Boric acid is indispensable as an alternatives for some chromium trioxide uses, regulated by Annex XIV. Following this path, a cascade might been started which is leading to the substitution of the substitution of the substitution ... Without ex ante certainty on the outcome of the different processes, this constitutes a tremendous burden for the industry affected.
- b. Against the background of only low exposure in electroplating industry it is obvious that the socio-economic benefit will by far surpass the welfare costs of the use-scenario.

The aspects a. and b. mentioned above already indicate that authorisation requirements for Boric acid in the in electroplating industry are disproportionate. The extreme burdens of preparing an authorisation dossier are by no means justified if the expected effect is not-existing or negligible.

4 Preliminary conclusions

The first assessment of the situation concerning the use of Boric acid in electroplating industry suggests the following:

1. People outside the electroplating process are not affected in any way by the Boric acid used in the process.
2. The exposure levels in electroplating processes are not causing any risks to the workers.
3. The main intake mechanisms - dermal and oral - are not of importance in electroplating industry.
4. The intake at workplace is surpassed in everyday life exposure by far.
5. The amounts used in electroplating industry are rather low.

To sum up: reduction or even prohibition of use of Boric acid will most likely not result in some measurable effect: since a non-existing risk cannot be reduced any further, authorisation and substitution pressure will cause economic losses only.

ZVO and VECCO support all efforts of reducing risks if technical and economical feasible. In the case of Boric acid in electroplating industry it does not seem to be expedient. Therefore we ask for the possibility to provide the regulator with a robust justification for an exemption in the Annex XIV dossier.