

What is going on about regulations of hazardous substances?

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Pietro P. Lopes et al. wrote an article entitled “Past, present, and future of lead–acid batteries” (1). According to WHO (world health organization), lead is a toxic metal whose widespread use has caused extensive environmental contamination and health problems in many parts of the world (2). “No lead” or “lead–free” products do not mean containing no lead (3). From EPA regulations (4), based on Safe Drinking Water Act, “lead free” means not more than a weighted average of 0.25% lead when used with respect to the wetted surfaces of a pipe, pipe fitting, plumbing fitting, and fixture. The rule also requires not more than 0.2% lead when used with respect to solder and flux (4).

Restriction of Hazardous Substances (RoHS) impacts the entire electronics industry and many electrical products as well (5). The original RoHS, also known as Directive 2002/95/EC, originated in the European Union in 2002 and restricts the use of six hazardous materials found in electrical and electronic products. All applicable products in the EU market since July 1, 2006 must pass RoHS compliance. EU RoHS specifies maximum levels for the following 10 restricted substances: Cadmium (Cd): < 100 ppm, Lead (Pb): < 1000 ppm, Mercury (Hg): < 1000 ppm, Hexavalent Chromium: (Cr VI) < 1000 ppm, Polybrominated Biphenyls (PBB): < 1000 ppm, Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm, Bis(2–Ethylhexyl) phthalate (DEHP): < 1000 ppm, Benzyl butyl phthalate (BBP): < 1000 ppm, Dibutyl phthalate (DBP): < 1000 ppm, and Diisobutyl phthalate (DIBP): < 1000 ppm.

The major problem of hazardous substances lies in that a cleaner/greener technology does not mean healthy to humans and nature (6). Mercury regulations should be updated worldwide (7,8). According to the data by United Nations Environment Programme (8), a large part of produced mercury has been used in artisanal gold mining which has been seriously causing mercury air pollution worldwide.

## References

1. Pietro P. Lopes et al., Past, present, and future of lead–acid batteries, Science 21 Aug 2020: Vol. 369, Issue 6506, pp. 923–924

2. <https://www.who.int/ipcs/features/lead.pdf>

3.

<https://www.caleffi.com/usa/en-us/blog/no-lead-low-lead-lead-free-whats>

[...](#)

4.

<https://www.epa.gov/sdwa/questions-and-answers-about-final-lead-free-rule>

5. <https://www.rohsguide.com/>

6. Y. Takefuji, A cleaner/greener technology does not mean healthy to humans and nature, Science (eLetter, 23 January 2020)

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