

## Identification of New Substances of Very High Concern Emphasizing Persistence and Bioaccumulation

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Under the European REACH regulation chemicals proposed as Substances of Very High Concern (SVHC) are put onto the SVHC Candidate List published by the European Chemicals Agency (ECHA). After the SVHC evaluation process the chemical can be included in the authorisation list (Annex XIV of REACH) or the list of restrictions (Annex XVII). Additionally, in context of REACH the substances of potential concern are listed in the Community Rolling Action Plan (CoRAP) for further evaluation by the EU member states. The evaluation of persistent, bioaccumulative and toxic (PBT) substances is the responsibility of the European PBT expert group in accordance with REACH.

Besides the EU chemical regulation there are currently 26 chemicals classified as persistent organic pollutants (POPs) under the Stockholm Convention for final worldwide elimination and restriction of production and use, respectively. The SIN (Substitute it now) list created by the non-profit organisation International Chemical Secretariat, currently contains more than 800 SVHC for their fast replacement. Over 900 substances with emerging occurrence in the (aquatic) environment are being considered by the European NORMAN network.

Three scientific screening studies identified a great number of potential PBT-Substances ( $610^1$  resp.  $2930^2$ ) and POPs ( $514^3$ ) among nearly 95,000 chemicals using different screening criteria and estimation programs.

The first goal of this study was to choose potential PB-substances among the already existing databases in relation with their registration status under REACH, production volume and potential release into the environment.

For this purpose nine existing lists mentioned above and a list of 142 biocides from EU regulation No. 528/2012 were combined into a dataset as an Excel-file. Removing the duplicates by means of CAS registry number resulted in a dataset of 3024 potential PB-substances. 2023 chemicals remained after exclusion of inorganic compounds, pharmaceuticals and pesticides. Application of main selection criteria underlined above, further criteria (e. g. exclusion if substance is already part of environmental monitoring programs or if compound is exclusively used as an intermediate) and expert judgement preliminarily yielded 66 potential PB-substances with significant probability of release and occurrence in the environment. Among these compounds were eleven brominated flame retardants, twelve siloxanes, seven UV-filters, 13 fluorinated compounds, seven hydrocarbons, eight plasticizers resp. antioxidants, and eight other chemicals.

Analytical methods for selected groups of these substances will be established in future to collect experimental data for their occurrence in the environment of Bavaria.

<sup>1</sup> Howard and Muir, 2010. Environ. Sci. Technol. 44, pp 2277–2285

<sup>2</sup> Stempel *et al.*, 2012. Environ. Sci. Technol. 46, pp 5680–5687

<sup>3</sup> Scheringer *et al.*, 2012. Atmos. Poll. Res. 3, pp 383–391