Product Stewardship - PBT / PMT / POP - (to be updated)

Persistent, Bioaccumulative and Toxic substances (PBT)

Within several regulations, substances can be categorized as ***Persistent, Bioaccumulative and Toxic (PBT) and/or Very Persistent and Very Bioaccumulative (vPvB)*** . PBT chemicals are characterized by:

- their propensity to remain in the environment in an unchanged form (persistent),
- their propensity to accumulate within living organisms and potentially through the food chain from organism to organism (bioaccumulative) ,
- And by their adverse effects to organisms (toxicity).

PBT/vPvB chemicals are under the scrutiny of regulators as it is ***very difficult to predict the adverse effects*** they would have in future years on humans and ecosystems. Due to their potential for widespread distribution and long term contamination, no "safe" concentration can be derived for PBT /vPvB chemicals and conservative management measures have thus to be implemented at national and international levels. Moreover, it is considered that even if release would cease, the contamination and effects would not be reversible.

Within the different regions of the world, ***the aim*** of identifying PBT/vPvB chemicals is generally to ensure appropriate management of those chemicals and ***limit (or even stop) their release into the environment.*** In Europe, these substances are labeled as Substances of Very High Concern (SVHC) and added to the Candidate List with a possible subsequent addition to the restriction or authorization list. In the US, some of those substances are subject to Significant new use rules (SNURs) in order to control the uses with significant release to the environment

S-SVHCs

These substances are regarded as Red S-SVHCs when assessed as PBT and/or vPvB according to EU criteria.

!! Warning | Variable criteria according to regions!

Pay attention! **The criteria used in the different regions to determine the P, B and/or T characteristics are not always the same!** Therefore, one substance could not be a PBT in Europe, but it would be in the US or in Korea for instance!

You can find the criteria used in the different regions in the following *table*

Tip | Useful information

Yo u can find more information on how PBT/vPvB substances are discussed in Europe in the following **Guidance. (broken link)**

Persistent, Mobile and Toxic substances (PMT)

In Europe, a new concept is emerging which proposes to characterize substances as ***Persistent, Mobile and Toxic (PMT) and/or Very Persistent and Very Mobile (vPvM).*** PMT chemicals are characterized by:

- their propensity to remain in the environment in an unchanged form (persistent),
- their propensity to move from their point of emission to groundwater by moving through river banks (mobile),
- And by their adverse effects to organisms (toxicity).

This concept was brought into light the German Environmental Agency (Umweltbundesamt – UBA) . The aim here is to ***protect sources of drinking water from potential water contaminants*** due to the transport of these from the surface water through soil to groundwater. Also, the intrinsic properties of the chemicals allowing this passage through river banks will also allow them to move through some water treatment technologies (e.g. sand filtration). They proposed for these substances a ***similar treatment than for PBT substances*** , i.e. identification as SVHCs, and the subsequent regulatory actions possible. Today, two groups of substances have been identified as SVHCs based on mobility concerns although they do not follow exactly the criteria proposed by Germany.

!! Warning | Groups of substances currently SVHCs based on mobility concerns

- Perfluorobutane sulfonic acid (PFBS), its salts and related substances
- 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides, also refered to as GenX or HPFO-DA
- 1,4-dioxane is currently under evaluation

Tip | Useful information

You can find more information on this new concept in this **presentation . (broken link)**

The ***Industry largely disagrees with the concept*** proposed by UBA first and foremost because the proposed criteria and strategy do not meet the objective of their approach, i.e. an adequate protection of the resources of drinking water. Therefore, Cefic (and Solvay as part of Cefic) are proactively working on developing a new approach which would benefit everyone by better identifying the substances which could really be a concern for drinking water and by proposing a model in which the real risk posed is taken into account.

S-SVHCs

These substances are regarded as Yellow S-SVHCs when assessed as PMT and/or vPvM according to the UBA criteria.

Persistent Organic Pollutants (POP)

The last category of persistent chemicals being targeted are ***Persistent Organic Pollutants (POP)*** . This global treaty is a worldwide agreement applicable to all countries having ratified the Stockholm Convention. POP chemicals are ***PBT and/or vPvB chemicals which also are able to migrate over very long distances;*** they are therefore characterized by:

- their propensity to remain in the environment in an unchanged form (persistent),
- their propensity to accumulate within living organisms and potentially through the food chain from organism to organism (bioaccumulative),
- their adverse effects to organisms (toxicity),
- And their *potential for long range transport* (LRT).

Tip | Useful information

You can find in the following links more information on the Stockholm Convention and the list of POP substances .

Long-range transport of chemicals usually refers to the fact that some chemicals can move over very long distances from their point of emissions, eventually reaching and contaminating what are commonly called pristine areas, i.e. areas where there is no industry which could have caused a local contamination. These areas are for example the polar environments or high-altitude mountain lakes. This transport can be for instance atmospheric with contaminants being transported with air masses over distances greater than 100 kilometers.

Those chemicals are listed and are targeted by a ***complete elimination or by a reduction of emissions*** . Some uses may be authorized for a limited time. The target of this convention is to apply these restrictions worldwide as these chemicals are widespread across the globe due to their ability to be transported over very long distances. Today this list comprises only a limited number of substances, most of them being organohalogenated compounds, but recently PFOAs were added to this list.

S-SVHCs

These substances are regarded as Red S-SVHCs.

More questions? Ask them in our Discussion board or contact Marie Collard.