

# Persistent, Bioaccumulable, Toxic chemicals & related topics (PBT)

Chemicals are potentially PBT when they do not have the capacity to degrade rapidly in the environment, they may bioaccumulate all along trophic chains and they have hazardous properties to the organisms.

PBT substances are regulated in several areas in the world, but the criteria and threshold values are not harmonised.

| Definition                                                              | Persistence                                                                                                                                       | Bioaccumulation                                                                                                                                                            | Toxicity                                                                                                                                             | Potential for Long-range Transport                                                                                           |
|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>UNECE POP Protocol</b>                                               | Half-life in water > 2 months or in sediment > 6 months or in soils > 6 months                                                                    | BCF or BAF > 5,000 or $\log K_{ow} > 5$                                                                                                                                    | Potential to adversely affect human health or environment remote area                                                                                | Vapor pressure < 1,000 Pa and half-life in air > 2 d or monitoring data in                                                   |
| <b>UNEP POP Convention</b>                                              | Half-life in water > 2 months or in sediment > 6 months or in soils > 6 months                                                                    | BCF or BAF > 5,000 or $\log K_{ow} > 5$ or monitoring data in biota                                                                                                        | Evidence of adverse effect on human health or the environment or toxicity characteristics indicating potential damage to human health or environment | Measured levels far from source or monitoring data in remote area or multimedia modeling evidence and half-life in air > 2 d |
| <b>Oslo-Paris PBT Criteria</b>                                          | Not readily biodegradable or half-life in water > 50 d                                                                                            | $\log K_{ow} \geq 4$ or BCF $\geq 500$<br><br>term NOEC $\leq 0.1$ mg/L or mammalian toxicity: CMR or chronic toxicity                                                     | Acute aquatic toxicity L(E)C50 $\leq 1$ mg/L and long-                                                                                               | Not applicable                                                                                                               |
| <b>European Union (EU) PBT Criteria</b>                                 | Half-life > 60d in marine water or > 40 d in freshwater <sup>b</sup> or > 180 d in marine sediment or > 120 d in freshwater sediment <sup>b</sup> | BCF > 2,000                                                                                                                                                                | Chronic NOEC < 0.01 mg/L or CMR or endocrine disrupting effects                                                                                      | Not applicable                                                                                                               |
| <b>EU vPvB Criteria</b>                                                 | Half-life > 60 d in marine or freshwater or > 180 d in marine or freshwater sediment                                                              | BCF > 5,000                                                                                                                                                                | Not applicable                                                                                                                                       | Not applicable                                                                                                               |
| <b>USEPA Toxic Substances Release Inventory Reporting<sup>a</sup></b>   | Half-life $\geq 2$ months in soil, sediment, or water or half-life $\geq 2$ d in air                                                              | BAF or BCF $\geq 1,000$                                                                                                                                                    |                                                                                                                                                      | Not applicable                                                                                                               |
| <b>US EPA New Chemicals Program:</b><br>Control action, pending testing | Transformation half-life > 2 months                                                                                                               | BCF > 1,000 necessary based upon various factors, including concerns for persistence, bioaccumulation, other physico-chemical factors, and toxicity based on existing data | Develop toxicity data where                                                                                                                          | Not applicable                                                                                                               |
| <b>US EPA New Chemicals Program:</b><br>Ban, pending testing            | Transformation half-life > 6 months                                                                                                               | BCF $\geq 5,000$                                                                                                                                                           |                                                                                                                                                      | Not applicable                                                                                                               |

Policies on PBT / vPvB substances in EU, Asia and North America:

[GO TO PBT RESTRICTED](#)