

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
UNECE POP Protocol	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
UNEP POP Convention	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
Oslo-Paris PBT Criteria	Not readily biodegradable or half-life in water > 50 d	$\log K_{ow} \geq 4$ or BCF ≥ 500 term NOEC ≤ 0.1 mg/L or mammalian toxicity: CMR or chronic toxicity	Acute aquatic toxicity L(E)C50 ≤ 1 mg/L and long-	Not applicable
European Union (EU) PBT Criteria	Half-life > 60d in marine water or > 40 d in freshwater ^b or > 180 d in marine sediment or > 120 d in freshwater sediment ^b	BCF > 2,000	Chronic NOEC < 0.01 mg/L or CMR or endocrine disrupting effects	Not applicable
EU vPvB Criteria	Half-life > 60 d in marine or freshwater or > 180 d in marine or freshwater sediment	BCF > 5,000	Not applicable	Not applicable
USEPA Toxic Toxics Release Inventory Reporting^a	Half-life ≥ 2 months in soil, sediment, or water or half-life ≥ 2 d in air	BAF or BCF $\geq 1,000$		Not applicable
US EPA New Chemicals Program: 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
US EPA New Chemicals Program: 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](#)