PBT-Assessment In The EU – An Overview

Till Müller and Christine Werth
knoell Germany GmbH | Konrad-Zuse-Ring 25 | 68163 Mannheim | Germany | www.knoell.com | tmueller@knoell.com

worldwide registration

Introduction

- PBT/vPvB-substances are defined as substances which are Persistent (P), Bioaccumulative (B) and Toxic (T) or very Persistent (vP) and very Bioaccumulative (vB). Based on these properties these substances are unwanted in the environment as they are supposed to have long-term adverse impacts based on their properties.
- At present, the goal preventing exposure of humans and the environment to PBT/vPvB substances is shared among all EU regulatory frameworks. However, the technical criteria, assessment procedures and the subsequent regulatory follow-up partly depend on the regulatory framework under which the substance is evaluated, leading to differences in results and regulatory action.

EU regulations assessing PBT-properties

- REACH (Regulation (EC) No 1907/2006)
- Biocidal Products Regulation (BPR; Regulation (EU) No 528/2012)
- Plant Protection Products Regulation (PPP; Regulation (EC) No 1107/2009)
- Veterinary Medicinal Products Regulation (Directive 2001/82/EC)
- Human Medicinal Products Regulation (Directive 2001/83/EC)

→ ECHA – European Chemicals Agency

→ efsa – European Food Safety Authority

→ European Medicines Agency (EMA)

Differences and similarities in the assessment within the different regulatory frameworks in the EU

What is assessed?

	REACH	BPR	PPP	Veterinary-Pharmaceuticals	Human-Pharmaceuticals
Parent substance	✓	✓	✓	✓**	✓
Metabolite(s)	✓ (≥ 10%)	✓ (≥ 10%)*	✗*	✓ (≥ 10%)	✓ (≥ 10%)

PBT/vPvB-criteria are the same among all EU legislations

*: Metabolites are taken into account at the risk assessment step.
**: Required only in Phase II of tiered approach.

What are the differences in assessment?

Persistence (P/vP)

REACH, BPR, Pharmaceuticals

- $DegT_{50}$: 12 °C (freshwater) and 9 °C (marine)
- Formation of Non-Extractable Residues (NER) are considered persistent except irreversible binding was shown.

PPP

- $DegT_{50}$: 20 °C
- NER are not considered being bioavailable and excluded from the assessment

Bioaccumulation (B/vB)

REACH, BPR, Pharmaceuticals

- Use of all available evidence for the assessment of bioaccumulation in a Weight-of Evidence approach (e.g. biomagnification factor (BMF), bioaccumulation factor (BAF), toxicokinetic data...).

PPP

- It is not foreseen using additional data except a Bioconcentration Factor (BCF) from an experimental study.

Toxicity (T)

There are no differences in the assessment to evaluate the T-criterion within the PBT/vPvB-assessment.

What are the regulatory consequences for PBT/vPvB-substances?

	REACH	BPR	PPP	Vet.-Pharma	Human-Pharma
PBT/vPvB	**SVHC** (Authorisation-/Restriction process possible)	**Exclusion criterion**: Non-approval of active substance (a.s.); Ban of biocidal products (b.p.) **Unless**: Negligible risk demonstrated, socio-economic reasons (Approval of a.s. 5 instead of 10 years; b.p. authorised)	Non-approval of active substance	Consequences of PBT/vPvB-properties assessed in a weight-of-evidence	No consequences
PB/BT/PT	Not relevant	**Approved as candidate for substitution** (Approval of a.s. up to 7 instead of 10 years; Comparative assessment of b.p.)	**Approved as candidate for substitution** (Approval up to 7 instead of 10 years; Comparative assessment of product)	Not relevant	Not relevant

Summary

- Temperature normalisation of $DegT_{50}$ and consideration of metabolites are one of the key differences among EU legislations.
- PBT/vPvB-assessment may result in different restrictions and hence different release of and exposure to the same chemical depending on the regulatory framework they are handled (cf. Industrial chemicals vs. plant protection products).
- Harmonisation among the EU legislations should be achieved in order to reach the main goal preventing the release of harmful substances to the environment.