

# **New CLP Hazard Classes for PBT/vPvB and PMT/vPvM properties**

**Dr Patrick Morgan**

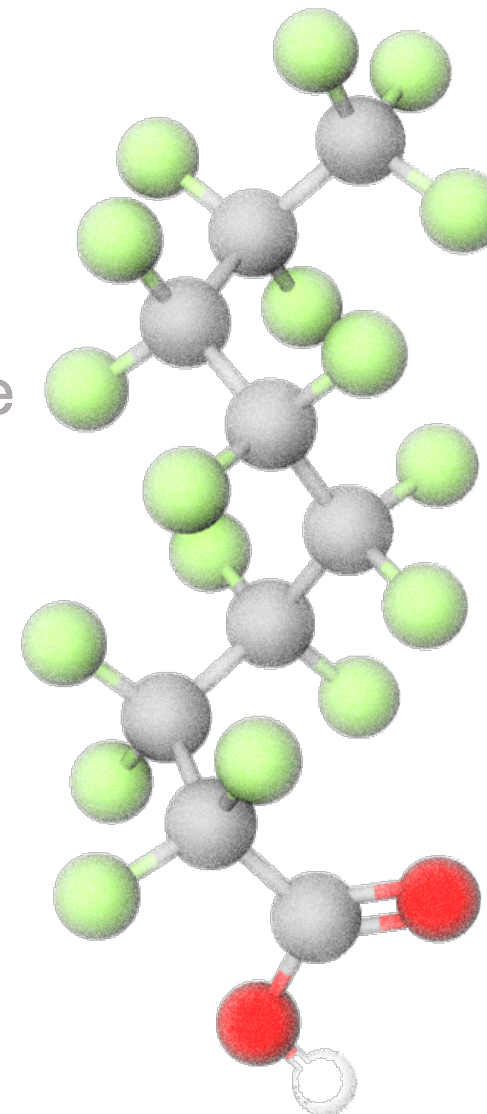
**6<sup>th</sup> March 2025**

# Overview

- Outline the new environmental hazard categories
- CLP classification criteria
- Labelling elements under CLP
- ECHA guidance on application of CLP criteria for classification

# What are the new CLP environmental hazard classes

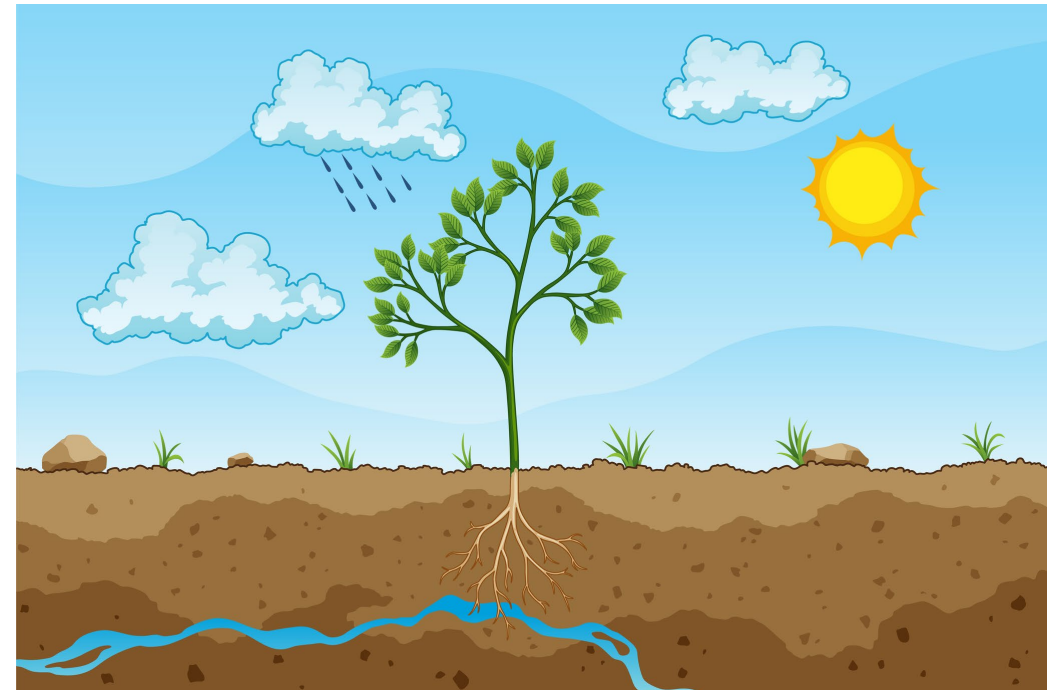
- PBT – persistent, bioaccumulative and toxic
- vPvB – very persistent, very bioaccumulative
- PMT – persistent, mobile and toxic
- vPvM – very persistent, very mobile



# CLP descriptor for PBT/vPvB and PMT/vPvM properties

# What are the new CLP environmental hazard classes

- P – Persistence  
resistance of chemicals to transformation and degradation processes

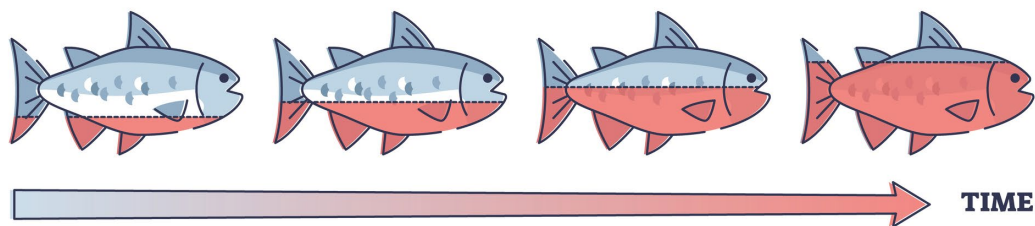


# What are the new CLP environmental hazard classes

- B – Bioaccumulation
  - net uptake, transformation and elimination of a substance in an organism through exposure
  - the accumulation of a substance in living organisms by direct adsorption or through the food chain

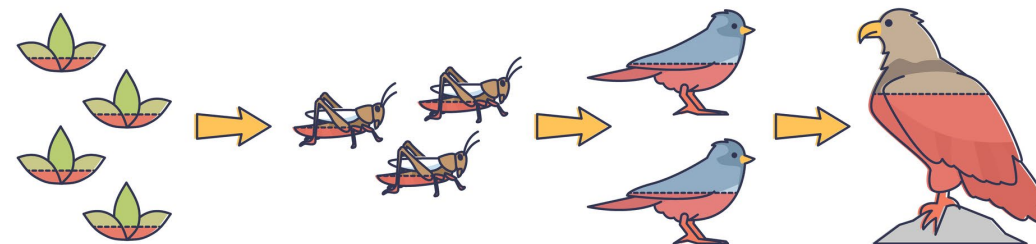
● CONTAMINANT

## BIOACCUMULATION



● CONTAMINANT

## BIOMAGNIFICATION



# What are the new CLP environmental hazard classes

- T – Toxicity

property of a substance to cause adverse effect to organisms, including humans, through exposure to the substance



# What are the new CLP environmental hazard classes

- M – Mobility

potential of a substance once released to the environment to move under natural forces and reach waterbodies, including drinking water and groundwater, or a distance from the site of release





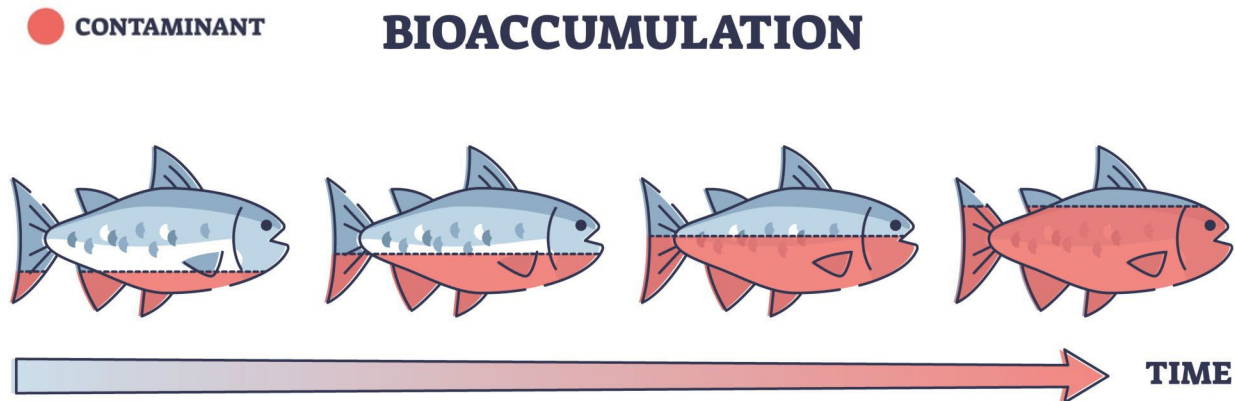
# CLP criteria for PBT/vPvB and PMT/vPvM properties

# CLP criteria for new hazard classes (CLP Annex I) – Persistence

Environmental Compartment	Degradation half-life	
	Persistent	Very Persistent
Marine Water	>60 days	>60 days
Fresh or estuarine water	>40 days	>60 days
Marine sediment	>180 days	>180 days
Fresh or estuarine water sediment	>120 days	>180 days
Soil	>120 days	>180 days

# CLP criteria for new hazard classes (CLP Annex I) – Bioaccumulation

- Bioaccumulative: Bioconcentration factor >2000
- Very Bioaccumulative: Bioconcentration factor >5000



# CLP criteria for new hazard classes (CLP Annex I) – Toxicity

- Ecotoxicity
  - no observed effect concentration or EC10 for marine and freshwater organisms <0.01 mg/L
- Mammalian toxicity

Hazard class	CLP Category
Carcinogenicity	Cat. 1A or 1B
Germ cell mutagenicity	Cat. 1A or 1B
Toxic for reproduction	Cat. 1A, 1B or 2
STOT RE	Cat. 1 or 2
Endocrine disruption HH & ENV	Cat. 1

# CLP criteria for new hazard classes (CLP Annex I) – Mobility

- $K_{OC}$  : Organic carbon to water partition coefficient - reflects the substance ability to be adsorbed on organic fraction of soil, sludge or sediment



# CLP criteria for new hazard classes (CLP Annex I) – Mobility

- Mobile :  $\log K_{oc} < 3$
- Very Mobile :  $\log K_{oc} < 2$

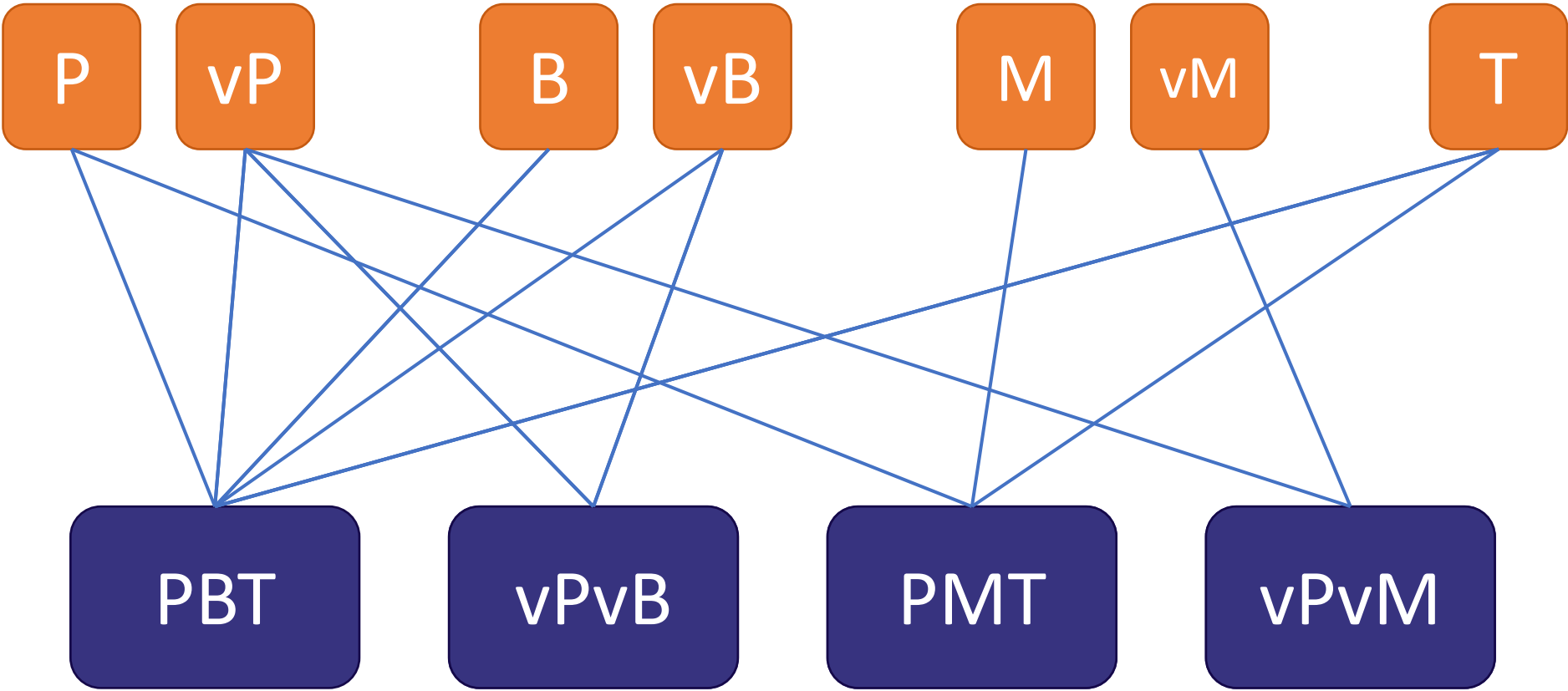
For ionisable substance mobile criteria will be met is lowest  $\log K_{oc}$  value at pH between 4 and 9 is below 3



# Basis of Classification

- Classification will be made on the basis of the **appropriate criteria**, a **weight of evidence** assessment of each criteria and a weight of evidence determination for classification using **expert judgement**
- PBT/vPvB and PMT/vPvM hazard classes may apply to all **organic** and **organo-metallic** substances and mixtures

# What are the new CLP environmental hazard classes





# Classification criteria for mixtures

- A mixture shall be classified respectively as a **PBT/vPvB** or **PMT/vPvM** when at least **one component** contained in the mixture has been **classified** respectively as a PBT/vPvB or PMT/vPvM and is **present at or above 0.1 %** (weight/weight).
- Mixtures are considered to include any relevant constituent, additive, impurity and PBT/vPvB or PMT/vPvM assessment can be applied to individual components or the whole mixture



# Hazard Communication

## Label elements of PBT & vPvB

Classification	PBT	vPvB
Signal Word	Danger	Danger
Hazard Statement	<b>EUH440:</b> Accumulates in the environment and living organisms including in humans	<b>EUH441:</b> Strongly accumulates in the environment and living organisms including in humans
Pictogram	Currently no pictogram, may be introduced in GHS	Currently no pictogram, may be introduced in GHS
Precautionary Statement (Prevention, response, storage and disposal)	Outlined in Table 4.3.1 in CLP Annex I	Outlined in Table 4.3.1 in CLP Annex I

# Hazard Communication

## Label elements of PMT & vPvM

Classification	PMT	vPvM
Signal Word	Danger	Danger
Hazard Statement	<b>EUH450:</b> Can cause long-lasting and diffuse contamination of water resources	<b>EUH451:</b> Can cause very long-lasting and diffuse contamination of water resources
Pictogram	Currently no pictogram, may be introduced in GHS	Currently no pictogram, may be introduced in GHS
Precautionary Statement (Prevention, response, storage and disposal)	Outlined in Table 4.4.1 in CLP Annex I	Outlined in Table 4.4.1 in CLP Annex I

# Guidance on the application of the CLP criteria part 4: Environmental Hazards

# Guidance on application of CLP criteria

Guidance on the application of the CLP criteria part 4:  
Environmental Hazards, version 4.0

- Section 4.3 *Persistent, Bioaccumulative and Toxic or very Persistent, very Bioaccumulative (PBT/vPvB) and Persistent, Mobile and Toxic or very Persistent, very Mobile (PMT/vPvM) properties*
- 4.3.1 **Definitions** and general considerations for PBT/vPvB and PMT/vPvM properties
- 4.3.2 **CLP criteria** for PBT/vPvB and PMT/vPvM substances
- 4.3.3 **Identification and assessment** of hazard information for PBT/vPvB and PMT/vPvM substances
- 4.3.6 **Classification criteria** for PBT/vPvB and PMT/vPvM mixtures



## Guidance on the Application of the CLP Criteria

### Part 4: Environmental hazards

Guidance to Regulation (EC) No 1272/2008 on classification, labelling and packaging (CLP) of substances and mixtures

Version 4.0  
Nov 2024





# HSA

An tÚdarás Sláinte agus Sábháilteachta  
Health and Safety Authority

Go raibh maith agaibh  
Thank you

T: 0818 289 389

E: [contactus@hsa.ie](mailto:contactus@hsa.ie)

W: [www.hsa.ie](http://www.hsa.ie)

