

ABBREVIATIONS

USED IN (ECO)TOXICOLOGY



Below is a glossary of 59 terms commonly used in environmental monitoring and toxicology – from acceptable daily intake (ADI) to vapour pressure (v.p.)

Abbreviation	Meaning of the term	Explanation	Field
ADI	Acceptable Daily Intake	ADI is the acceptable daily intake for a substance, generally expressed as mg substance/kg body weight. Calculated based on available evidence with a wide safety margin, it is the amount that could be consumed by a person daily for life without adverse effects.	Toxicology
AED	Atomic Emission Detection	An analytical method which is highly sensitive to chloride.	Analysis
BCF	Biological Concentration Factor	The equilibrium concentration of a chemical in a living organism, expressed as the ratio C_b/C_w (C_b = concentration in biota, C_w = concentration in water).	Ecotoxicology
BOD	Biological Oxygen Demand	BOD is the amount of oxygen consumed by micro-organisms when metabolising a test compound over a specified period (e.g. BOD ₅ is 5 days, expressed as mg O ₂ /mg test substance).	Degradability
C	Chromatography	An analytical technique to separate substances. The substances are exposed to an interface between a stationary and mobile phase. The substances move with the flow of the mobile phase. Depending on their relative affinities for each phase, they move at different rates.	Analysis
COD	Chemical Oxygen Demand	COD is the amount of oxygen consumed during oxidation of a test compound with hot acidic dichromate over a specified period; it provides a measure of the amount of oxidisable matter present. It is expressed as mg oxygen/mg test compound.	Degradability
COMMPS	Combined Monitoring-based and Modelling-based Priority Setting	Term used for the method of priority setting required under the Water Framework Directive.	Regulatory
DOC	Dissolved Organic Carbon	DOC is the organic carbon present in solution that passes through a 0.45 µm filter, or remains in the supernatant at approx 4000 g for 15 min. It is expressed as mg organic carbon/litre.	Degradability
DT	Disappearance Time	DT ₅₀ (DT ₉₀) is the time needed for 50% (90%) of a substance to disappear, see also t _{1/2} .	Degradability
E ₀ C ₅₀	Median effective concentration for biomass (algae)	The concentration of a substance which reduces by 50% the increase of biomass compared with a control sample, over a specified time period. See also E ₀ C ₅₀ .	Ecotoxicology
ECD	Electron Capture Detector	A detector which can be linked to a gas chromatograph that can be used for the analysis of chloride or other substances.	Analysis
EC _n /EC ₅₀	Effective Concentration	EC _n is the concentration of a substance that affects n% of a population in a given period of time. EC ₅₀ is widely used since it is the most accurate point in the concentration effect curve.	Ecotoxicology
ELV	Emission Limit Value	"Emission limit value" means the mass, expressed as concentration and/or level of an emission, which may not be exceeded during a given period of time (Water Framework Directive).	Regulatory
EQS	Environmental Quality Standard	Environmental Quality Standards are safe levels of substances based on their ecotoxicological characteristics expressed as concentrations (EQSs are defined in the context of the Water Framework Directive and are valid for surface waters all over Europe).	Regulatory

E ₁ C ₅₀	Median effective concentration for growth rate (algae)	The concentration of a substance which reduces by 50% the <u>growth rate</u> of algal cells, compared with a control sample, over a specified time period. E ₁ C ₅₀ and E ₁ C ₅₀ use the same measured values and differ only in the calculated parameter, ie biomass and growth rate respectively.	Ecotoxicity
EUSES	European Union Substances Evaluation System	Computer model which is used in the EU for risk assessment of chemicals.	Regulatory
GC	Gas Chromatography	Analytical technique for separating mixtures on the basis of vapour pressure. Usually the volatile mixture is transported by an inert carrier gas (mobile phase) over a solid adsorption material (GSC – Gas Solid Chromatography) or a liquid adsorption material (see GLC) as stationary phase. The separation is achieved as a result of the different affinities of the gases for the adsorption material.	Analysis
GLC	Gas-Liquid Chromatography	Analytical technique for separating a mixture of gases into its components. The volatile mixture is transported by an inert carrier gas (mobile phase) past a liquid adsorption material as stationary phase. The separation is achieved using different affinities of the gases for the liquid adsorption material.	Analysis
GLP	Good Laboratory Practice	A system to ensure that studies are conducted in accordance with a high-quality standard protocol, with full reproducibility based on documentation and often carried out under a quality assurance programme. The laboratory must be nationally certified to comply with the OECD GLP principles; for each study a full audit trail must be followed; all procedures must be described in SOPs (Standard Operating Procedures).	Regulatory
HPLC	High Performance Liquid Chromatography	A specific type of liquid chromatography, where the separation is enhanced by the use of a stationary phase consisting of very small particles of adsorption material and a high pressure mobile phase.	Analysis
i.p.	Intra-Peritoneal	Route of application of a toxicant in laboratory toxicity tests: injection into the abdominal space.	Toxicology
i.v.	Intra-Venous	Route of application of a toxicant in laboratory toxicity tests: injection into the veins.	Toxicology
IR	Infra-Red spectroscopy	An analytical technique which provides a characteristic spectrum of a pure compound. Infra-Red radiation excites detectable vibrational modes in molecules.	Analysis
K _d	Partition coefficient between soil and water	This partition coefficient expresses the tendency of a substance to sorb to soil particles. A high K _d indicates a high sorption: $K_d = C_s/C_{aq}$: concentration of chemical in the soil phase (mg/g dry weight of soil) / concentration of chemical in the aqueous phase (mg/cm ³). K _d values vary between <1 for carboxylic acid to > 10 ⁵ for some organochlorines, for example DDT.	Phys/Chem
K _{oc}	Partition coefficient between organic carbon and water	Partition coefficient that expresses the tendency of a substance to sorb to organic carbon. $K_{oc} = K' \times 100\%$ organic carbon. And $\log K' = \log C_s - 1 / n \cdot \log C_{aq}$, whereby n is a constant and K' (Freundlich adsorption coefficient) is calculated by linear regression of the above equation, where the term 1/ n log C _{aq} is equal to 0.	Phys/Chem
K _{om}	Partition coefficient between organic matter and water	Same as K _{oc} but related to organic matter (oc = om/1.72). Used less often than K _{oc} .	Phys/Chem
K _{ow}	Partition coefficient between octanol and water	Normally expressed as log K _{ow} . Important factor, used in several calculations to establish the fate of compounds in the environment (sorption, bioaccumulation) or to predict ecotoxicity.	Phys/Chem
LC _n /LC ₅₀	Lethal concentration	In ecotoxicology, the LC _n is the concentration which kills n% of a population of one species, within a specified period of time. LC ₅₀ is widely used since it is the most accurate point in the concentration effect curve. In animal toxicology it is applied for example when testing volatile compounds where a continuous concentration is maintained for a certain time.	(Eco)Toxicology
LD _n /LD ₅₀	Lethal dose	The LD _n is the dose of a substance which kills n% of a population of one species and is expressed as weight (mg, g) or as weight per weight of test animal (mg/kg). LD ₅₀ is widely used since it is the most accurate point in the dose effect curve.	Toxicology

LLC	Lowest Lethal Concentration	The lowest concentration tested which causes a lethal effect.	Toxicology
LOAEL	Lowest Observable Adverse Effect Level	The lowest dose tested which gives a specific adverse effect.	Toxicology
LOD	Limit Of Detection	LOD is the lowest concentration of a substance that can be quantitatively measured in a specified matrix with an acceptable degree of certainty by a specific method of analysis.	Analysis
LOEC	Lowest Observed Effect Concentration	The lowest concentration tested which still gives a specific effect.	(Eco)toxicology
LOQ	Limit Of Quantification	The smallest quantity which can be <u>reliably</u> measured with statistical significance using a specified method.	Analysis
MOS	Margin of Safety	Measure often used in human health risk. It represents the margin between an estimated safe uptake level such as ADI over actual daily intake (MOS=ADI/DI).	
MS	Mass spectrometry	An analytical method to separate a mixture into its components by their different masses and/or for characterisation of an unknown substance by fragmentation of the substance and analysing the fragments by their masses. The components are first ionised to give them a charge and then separated in an electromagnetic field. The technique is often combined with GC (GC-MS).	Analysis
NCI	Negative Chemical Ionisation	A suitable detection method – in combination with GC - to detect chlorine.	Analysis
NMR	Nuclear Magnetic Resonance	An analytical technique which provides a spectrum of a pure compound.	Analysis
NOAEL	No Observed Adverse Effect Level	The highest dose tested in an experiment that does not show adverse effects. Expressed as daily dose weight per weight of animal (mg/kg). Data should specify animal species, whether male or female, test duration and application route.	Toxicology
NOEC	No Observed Effect Concentration	The highest concentration tested in an experiment that does not show any effect on the organism. Expressed as concentration (mg/l) or (mg/m ³).	(Eco)toxicology
NOEL	No Observed Effect Level	The highest <u>dose</u> tested in an experiment that does not show any effect on the animal. Expressed as daily dose per weight of animal (mg/kg). Data should specify animal species, whether male or female, test duration and application route.	Toxicology
o.c.	Organic Carbon	Normally the relation between organic carbon and organic matter is assumed to be: o.c. = o.m./1.72.	Soil
o.m.	Organic Matter	Normally expressed as a % of total dry soil weight. (Usual values: 1.5-4%).	Soil
PBT	Persistent, Bioaccumulative and Toxic	Chemicals defined as being persistent, bioaccumulative and toxic are of specific regulatory concern (see also KSIS on POP/PBTs).	Ecotoxicity
PEC	Predicted Environmental Concentration	Concentration of a substance in environmental media. The PEC can be estimated using exposure models such as EUSES or be derived from monitoring data in case of substances already on the market.	Ecotoxicity
pF	$-\log_{10}$ water pressure (in cm) in soil	Describes the amount of water in soil.	Phys/Chem
pH	$-\log_{10}$ hydrogen ion concentration	Acidity or alkalinity of a compound in water solution.	Phys/Chem
pK _a	$-\log_{10}$ acid dissociation constant	Indicates at what pH a compound becomes ionised.	Phys/Chem
PNEC	Predicted No-Effect Concentration	The PNEC is derived from the results of toxicity tests (short- or long term) on several species by applying a safety factor, where the most sensitive species is often of primary importance.	Ecotoxicity
RCR	Risk Characterisation Ratio	Defined as PEC/PNEC. If the PEC/PNEC ratio or RCR (or also HQ: Hazard Quotient) is less than one for a chemical, it is considered to pose acceptable risks. An $RCR \geq 1$ triggers further testing or risk management measures.	Ecotoxicity
SI	International System of units	Classification system intended to stimulate the uniform use of units globally.	Phys/Chem
T.C.	Total Carbon	Defined as mineral carbon plus organic carbon.	Soil
t _{1/2}	Half-life	Time needed until 50% of a substance has disappeared, under the assumption of first-order kinetics (t _{1/2} = (0.693/k, k is degradation rate).	Degradability

TADI	temporary Acceptable Daily Intake	A temporary ADI is an acceptable daily intake established for a specified, limited period to enable additional biochemical, toxicological or other data to be obtained as may be required for estimating an acceptable daily intake. (Note: A tADI estimated by the Joint FAO/WHO Meeting normally involves the application of a safety factor larger than that used in estimating an ADI).	Toxicology
TDI	Tolerable Daily Intake	A value based on toxicological data. It indicates the intake of a substance by humans that is tolerable, i.e. without adverse effects. Exposures may for example occur as a contaminant in food, drinking water, air or the environment.	Toxicology
TEQ	Toxicity Equivalence Quotient	Relates the toxicity of dioxin-like chemicals to the most toxic dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin or 2,3,7,8-TCDD) which has a TEQ of 1.	Toxicology
TLC	Thin Layer Chromatography	A method to separate a mixture into its components. Often a sheet of paper or glass plate is used, the latter covered by a medium such as silica gel (the solid phase) to which a small amount of the mixture is applied. A liquid phase is added and due to the differences in solubility of the individual components of the mixture in the liquid phase, the components will separate over time.	Analysis
TOC	Total Organic Carbon	TOC of a sample is the sum of organic carbon, typically expressed in mg/l.	Degradability
v.p.	Vapour Pressure	A measure of the volatility of liquid (or solid) substance, typically expressed in Pa (Pascal).	Phys/Chem