

2.6. Human health

Parameter	Explanation
Toxicity endpoints for mammals	Oral, dermal and inhalation values provided.
Threshold of Toxicological concern (Cramer class) NOTE: THIS IS AN INDICATOR & NOT A RISK ASSESSMENT	Applies to non-cancer health issues and uses a decision tree approach classifying and ranking chemicals according to their expected level of oral systemic toxicity. The decision tree categorises chemicals, mainly on the basis of chemical structure and reactivity, into three classes indicating a high (Class III), medium (Class II) or low (Class I) level of concern. It is a simple toxicity indicator and should not be used if experimental data is available. See Lapenna & Worth, 2011 for more information. (Reference: Lapenna & Worth, 2011 - https://eurl-ecvam.jrc.ec.europa.eu/laboratories-research/predictive_toxicology/doc/EUR_24898_EN.pdf).
WHO classification	Toxicity hazard class given by the World Health Organisation (WHO). Class Ia: extremely hazardous Class Ib: highly hazardous Class II: moderately hazardous Class III: slightly hazardous O: Obsolete substance NL: Not listed The system is based on the LD50 endpoint for rats. An ingested solid with a LD50 5mg or less/kg bodyweight is Class Ia, at 5-50 mg/kg Class Ib, at 50-500 mg/kg Class II, and at more than 500 mg/kg Class III. Values may differ for liquid oral agents and dermal agents.
US EPA acute toxicity class (formulation, pesticides) (PPDB/BPDB only)	Toxicity hazard class of the formulation as given by the EPA. Class 1: Highly toxic Class II: Moderately toxic Class III: Slightly toxic Class IV: Not acutely toxic
US EPA classification for products (PPDB/BPDB only)	This is the hazard class assigned to chemical (usually pesticides) products containing the active substance. Generally, Class I substances will kill an adult person at a dose of less than 5g, Class II at 5-30g, and Class III >30g.
CLP classification	The 'CLP' Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures, or simply 'CLP', introduces the United Nations globally harmonised system (UN GHS) for classification and labelling of chemicals into Europe. For further information on this please see other documents available on the PPDB website under Support Information/Other Information.
EC risk classification / safety classification	EC Directive 67/548/EEC provides a harmonised basis for the classification (risk) and handling (safety) of dangerous substances. These listed here are those for the active substance. More details of what the specific codes means can be found on the PPDB website, in the 'downloads' section.

Parameter	Explanation
Acceptable Daily Intake (ADI) (mg kg ⁻¹ bw day ⁻¹)	The amount of chemical that can be consumed each day without causing harm - as far as evidence suggests.
IARC Carcinogen assessment	International Agency for Research on Cancer classifications. Group 1: proven carcinogens; Group 2A: probable carcinogens; Group 2B: possible carcinogens; Group 3: not carcinogenic to humans; Group 4: Not carcinogenic.
Acute Reference Dose (ARfd) (mg kg ⁻¹ bw day ⁻¹)	The amount of chemical that can be ingested over a short period of time, usually during one meal or one day, without appreciable health risk to the consumer - as far as evidence suggests.
Acute Acceptable Operator Exposure Level (AAOEL) (mg kg ⁻¹ bw day ⁻¹)	This is similar to the AOEL and is the health-based limit for exposure that could occur in a single day. It is comparable with the ARfD for consumption.
Acceptable Operator Exposure Level (AOEL) (mg kg ⁻¹ bw day ⁻¹)	This is a health-based limit that is established on the basis of the full toxicological assessment required for regulatory purposes. The risk for operators can be quantified by comparing this value with exposure level during application.
Dermal penetration studies (%)	Mean value of known studies reported. Default value in the absence of further evidence is normally taken as 10%.
Dangerous Substances Directive	This Directive concerns pollution caused by certain dangerous substances discharged into the aquatic environment and aims to regulate potential aquatic pollution. The Directive covered discharges to inland surface waters, territorial waters, inland coastal waters and groundwater. The protection of groundwater is now regulated under a separate Council Directive. Directive 76/464 introduced the concept of list I and list II chemicals. Where the chemical concerned appears on these lists it is given here.
Exposure limits	Exposure of employees, operators and other workers to hazardous substances should be prevented and in some cases national or EC regulations impose limits. Where identified these are quoted and may include Maximum Exposure Limits (MEL), Occupational Exposure Standards (OES) and Short Term Exposure Limits (STEL). List is not exhaustive but given for guidance only.
Exposure routes public and occupational	Where identified risks to the public (e.g. bystanders and consumers) and operators/workers are identified. This list is not exhaustive but given for guidance only.
EU MRLs (mg kg ⁻¹)	MRLs are defined as the maximum concentration of chemical residue likely to occur in or on food, drink and feeding stuffs after the use of chemicals according to Good Practice (GP). GP is defined as the substance being applied in accordance with current regulations, product label recommendations and in keeping with local environmental and other conditions. The values listed here are for guidance only and are often those proposed within regulatory documents. More precise information on pesticides and biopesticides can be found in the EU Database .
Drinking water quality standards	This field gives an indication of the quality standards in place for the protection of drinking water quality and human health.

Parameter	Explanation
Drinking water MAC	The Maximum Acceptable Concentration of the chemical in drinking water.
General health issues	Summary of main issues relating to human health. This list is not exhaustive and for guidance only.
Specific health issues	Summary of the main human health concerns across a number of issues. Note this is somewhat subjective as literature is not universally uniform in the way issues are addressed. We have used a 'weight-of-the-evidence' approach erring on the side of caution.
Handling issues	General description of any hazards that should be addressed when handling the substances.