5.3. Human health

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Source</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADI (mg kg⁻¹ bw)</td>
<td>The acceptable daily intake is the amount of a substance that can be ingested every day of an individual's entire lifetime, in the practical certainty, on the basis of all known facts, that no harm will result. SF – refers to the safety factor applied.</td>
<td></td>
</tr>
<tr>
<td>AOEL (mg kg⁻¹)</td>
<td>The acceptable operator exposure level is the maximum amount of active substance to which the operator may be exposed without any adverse health effects. SF – refers to the safety factor applied.</td>
<td></td>
</tr>
<tr>
<td>Dangerous substances directive</td>
<td>This Directive requires Member States to introduce measures to eliminate (List I) or to reduce (List II) pollution of the aquatic environment from certain listed substances identified in its Annexes.</td>
<td></td>
</tr>
<tr>
<td>MRL’s - maximum residue limits</td>
<td>These limits can change and the data given here is usually that proposed by EFSA. Data may not be complete. See EU database for further information.</td>
<td></td>
</tr>
<tr>
<td>Drinking water MAC</td>
<td>Maximum Admissible Concentration of the chemical in drinking water. The MAC for a chemical is derived from its ADI. The EU Drinking Water Directive imposes a maximum admissible concentration (EU MAC) for any individual pesticide compound of 0.1 mg l⁻¹.</td>
<td></td>
</tr>
</tbody>
</table>

Notes

1. Consistent with EU Guidance. (9188/VI/97 rev. 8.) and
   III. See also Note 3 below.

2. Several relevant references which include:

3. Table below has been extracted from:

<table>
<thead>
<tr>
<th>Potential for Particle-bound transport</th>
<th>Criteria</th>
</tr>
</thead>
</table>
| High                                  | DT50 >= 40 days & Koc >= 1000  
DT50 >= 40 days, Koc >= 500 & solubility <= 0.5 mg/l |
| Low                                   | DT50 <= 1 day  
DT50 <= 2 days & koc <= 500  
DT50 <= 4 days, Koc <= 900 & solubility >= 0.5 mg/l  
DT50 <= 40 days, Koc <= 500 & solubility >= 0.5 mg/l  
DT50 <= 40 days, Koc <= 900 & solubility >= 2 mg/l |
| Medium                                | All other |


- Class Ia: extremely hazardous
- Class Ib: highly hazardous
- Class II: moderately hazardous
- Class III: slightly hazardous
- O: Obsolete
- NL: Not listed

5. Thresholds used have been selected to be consistent with industry guidelines, were developed, and are consistent with regulatory thresholds used in both the UK and EU.

6. The EU (Uniform Principles) (Annex VI of Directive 91/414/EEC) guidelines have been adopted have set toxicity:exposure (TER) ratios for algae and aquatic plants at 1/10th of those for fish and daphnids. The same ratio has been applied here.

7. In EU pesticide regulatory risk assessments ‘hazard quotients’ are used to determine the need for additional studies to assess risk to beneficial arthropods. Hazard quotients (HQ) are determined by dividing the Predicted Environmental Concentration (PEC) of the active substance by the median lethal rate (LR50). HQ values less than 2.0 are considered to be low risk to beneficial arthropods and additional (higher tier) data are not required. Values greater than 2.0 trigger additional data requirements. As the PEC is not known we are unable to provide an interpretation.

8. SCI-GROW is a screening model used by the US EPA to estimate pesticide concentrations in vulnerable groundwater. The model provides an exposure value that can be used to determine the potential risk to the environment and to human health from drinking water contaminated with the pesticide. The SCI-GROW estimate is based on environmental fate properties of the pesticide (aerobic soil degradation half-life and linear adsorption coefficient normalised for soil organic carbon content), the maximum application rate, and existing data from small-scale prospective ground-water monitoring studies at sites with sandy soils and shallow ground water.

SCI-GROW estimates represent worse case estimates. For this reason, it is not appropriate to use SCI-GROW concentrations for national or regional exposure estimates. Nor is this indicator an alternative to
a scientific risk assessment. Values given are based on a standard 1 kg ha⁻¹ or 1 L ha⁻¹ application rate and should be adjusted to the actual application rate used.

For more information see: http://www.epa.gov/oppefed1/models/water/scigrow_description.htm.

9. The distribution of a pesticide between the solution and absorbed phases can often be described by the "Freundlich equation", an equation that is used to describe a wide variety of adsorption data from every area of science. The equilibrium concentration and adsorbed pesticide amounts are determined experimentally. The Log10 of the quantity of adsorbed pesticide is plotted against the equilibrium concentrations. Often the relationship obtained is approximately linear and can be described by the Freundlich equation: Q=KC¹/n, where Q is the adsorbed amount of pesticide (µg kg⁻¹), C is the equilibrium concentration (µg l⁻¹), and k⁰ and n are the experimental parameters unique to the isotherm. The parameter n is greater than 1, the larger it is the more non-linear the equation becomes.

10. The availability of the pesticide in the soil can depend on the amount of soil organic carbon (SOC). The toxicity endpoint value may therefore be corrected for the difference in SOC of the test soil and the reference soil. This means that the toxicity endpoint value is divided by the percentage organic matter in the standard test soil and multiplied by the percentage organic matter in the reference soil. Uncorrected values are quoted herein unless otherwise stated e.g. ‘(corr)’.

11. Data is very limited and is presented in the literature in a variety of formats. Therefore, neither a standard format nor interpretation can be provided.