

**APPENDIX 3**

**Table A – International classification schemes for environmental effects**

Environmental endpoint	EU	GHS	NZ	US EPA
<b>AQUATIC ENVIRONMENT</b> <b>Potency grading</b>	<p>Yes</p> <p><u>Very toxic to aquatic organisms &amp; May cause long-term adverse effects in the aquatic environment:</u> Acute toxicity: 96 hr LC<sub>50</sub> (for fish) ≤ 1 mg/L, or 48 hr EC<sub>50</sub> (for daphnia) ≤ 1 mg/L, or 72 hr IC<sub>50</sub> (for algae) ≤ 1 mg/L, and is not readily degradable or the log P<sub>ow</sub> ≥ 3.0 (unless the experimentally determined BCF ≤ 100)</p> <p><u>Very toxic to aquatic organisms:</u> Acute toxicity: 96 hr LC<sub>50</sub> (for fish) ≤ 1 mg/L, or 48 hr EC<sub>50</sub> (for daphnia) ≤ 1 mg/L, or 72 hr IC<sub>50</sub> (for algae) ≤ 1 mg/L</p> <p><u>Toxic to aquatic organisms &amp; May cause long-term adverse effects in the aquatic environment:</u> Acute toxicity: 96 hr LC<sub>50</sub> (for fish) 1 mg/L &lt; LC<sub>50</sub> ≤ 10 mg/L, or 48 hr EC<sub>50</sub> (for daphnia) 1 mg/L &lt; EC<sub>50</sub> ≤ 10 mg/L, or 72 hr IC<sub>50</sub> (for algae) &lt; 1 mg/L &lt; IC<sub>50</sub> ≤ 10 mg/L, and is not readily degradable or the log P<sub>ow</sub> ≥ 3.0 (unless the experimentally determined BCF &lt; 100)</p> <p><u>Harmful to aquatic organisms &amp; May cause long-term adverse effects in the aquatic environment:</u> Acute toxicity: 96 hr LC<sub>50</sub> (for fish) 10 mg/L &lt; LC<sub>50</sub> ≤ 100 mg/L, or 48 hr EC<sub>50</sub> (for daphnia) 10 mg/L &lt; EC<sub>50</sub> ≤ 100 mg/L, or 72 hr IC<sub>50</sub> (for algae) &lt; 10 mg/L &lt; IC<sub>50</sub> ≤ 100 mg/L, and is not readily degradable. This applies</p>	<p>Yes</p> <p><u>Cat. Acute 1:</u> 96 hr LC<sub>50</sub> (for fish) ≤ 1 mg/L, or 48 hr EC<sub>50</sub> (for crustacea) ≤ 1 mg/L, or 72 or 96 hr ErC<sub>50</sub> (for algae or other aquatic plants) ≤ 1 mg/L</p> <p><u>Cat. Acute 2:</u> 96 hr LC<sub>50</sub> (for fish) &gt; 1 - ≤ 10 mg/L, or 48 hr EC<sub>50</sub> (for crustacea) &gt; 1 - ≤ 10 mg/L g/L, or 72 or 96 hr ErC<sub>50</sub> (for algae or other aquatic plants) &gt; 1 - ≤ 10 mg/L</p> <p><u>Cat. Acute 3:</u> 96 hr LC<sub>50</sub> (for fish) &gt; 10 - ≤ 100 mg/L, or 48 hr EC<sub>50</sub> (for crustacea) &gt; 10 - ≤ 100 mg/L g/L, or 72 or 96 hr ErC<sub>50</sub> (for algae or other aquatic plants) &gt; 10 - ≤ 100 mg/L</p> <p><u>Cat. Chronic 1:</u> 96 hr LC<sub>50</sub> (for fish) ≤ 1 mg/L, or 48 hr EC<sub>50</sub> (for crustacea) ≤ 1 mg/L, or 72 or 96 hr ErC<sub>50</sub> (for algae or other aquatic plants) ≤ 1 mg/L, and the substance is not readily degradable and/or the log K<sub>ow</sub> ≥ 4 (unless the experimentally determined BCF &lt; 500)</p> <p><u>Cat. Chronic 2:</u> 96 hr LC<sub>50</sub> (for fish) &gt; 1 - ≤ 10 mg/L, or 48 hr EC<sub>50</sub> (for crustacea) &gt; 1 - ≤ 10 mg/L g/L, or 72 or 96 hr ErC<sub>50</sub> (for algae or other aquatic plants) &gt; 1 - ≤ 10 mg/L, and the substance is not readily degradable and/or the log K<sub>ow</sub> &gt; 4 (unless the experimentally determined BCF &lt; 500), unless the chronic toxicity NOECs are &gt; 1 mg/L</p> <p><u>Cat. Chronic 3:</u> 96 hr LC<sub>50</sub> (for fish)</p>	<p>Yes</p> <p><u>Category A:</u> 96 hr LC<sub>50</sub> (for fish) ≤ 1 mg/L, or 48 hr EC<sub>50</sub> (for crustacea) ≤ 1 mg/L, or 72 or 96 hr EC<sub>50</sub> (for algae) ≤ 1 mg/L</p> <p><u>Category B:</u> 96 hr LC<sub>50</sub> (for fish) &gt; 1 - ≤ 10 mg/L, or 48 hr EC<sub>50</sub> (for crustacea) &gt; 1 - ≤ 10 mg/L g/L, or 72 or 96 hr EC<sub>50</sub> (for algae) &gt; 1 - ≤ 10 mg/L, and lack of rapid degradability and/or bioaccumulative (unless NOEC &gt; 1 mg/L)</p> <p><u>Category C:</u> 96 hr LC<sub>50</sub> (for fish) &gt; 10 - ≤ 100 mg/L, or 48 hr EC<sub>50</sub> (for crustacea) &gt; 10 - ≤ 100 mg/L g/L, or 72 or 96 hr ErC<sub>50</sub> (for algae) &gt; 10 - ≤ 100 mg/L, and lack of rapid degradability and/or bioaccumulative (unless NOEC &gt; 1 mg/L)</p> <p><u>Category D:</u> 96 hr LC<sub>50</sub> (for fish) &gt; 1 - ≤ 100 mg/L, or 48 hr EC<sub>50</sub> (for crustacea) &gt; 1 - ≤ 100 mg/L g/L, or 72 or 96 hr ErC<sub>50</sub> (for algae) &gt; 1 - ≤ 100 mg/L and not classified in Category A, B or C, or no acute toxicity and lack of rapid degradability and bioaccumulative and not classified in Category A, B or C</p>	<p>Yes</p> <p><u>Very Highly Toxic:</u> value<sup>1</sup> &lt; 0.1 ppm</p> <p><u>Highly Toxic:</u> value ≥ 0.1 and ≤ 1 ppm</p> <p><u>Moderately Toxic:</u> value &gt; 1 and ≤ 10 ppm</p> <p><u>Slightly Toxic:</u> value &gt; 10 and ≤ 100 ppm</p> <p><u>Practically Non-toxic:</u> value &gt; 100 ppm</p>

Environmental endpoint	EU	GHS	NZ	US EPA
<p><b>Delineation/low hazard definition</b></p> <p><b>Qualitative or quantitative</b></p>	<p>unless there is sufficient additional scientific evidence concerning degradation and/or toxicity to provide adequate assurance that neither the substance nor its degradation products will constitute a potential long-term and/or delayed danger to the aquatic environment. Such additional scientific information could include: a proven potential to degrade rapidly in the aquatic environment, or an absence of chronic toxicity effects at a concentration of 1.0 mg/L.</p> <p><u>Harmful to aquatic organisms</u>: Acute toxicity: not falling under the above criteria (for acute harmful) but on the basis of evidence may nevertheless present a danger to the structure and/or functioning of aquatic ecosystems.</p> <p><u>May cause long-term adverse effects in the aquatic environment</u>: not falling under the above criteria (for long-term adverse effects) but on the basis of evidence may nevertheless present a long-term or delayed danger to the structure and/or functioning of aquatic ecosystems, for example a water solubility &lt; 1 mg/L if not readily degradable and the log P<sub>ow</sub> ≥ 3.0 (unless the experimentally determined BCF ≤ 100)</p> <p>No</p> <p>Quantitative</p>	<p>&gt; 10 - ≤ 100 mg/L, or 48 hr EC<sub>50</sub> (for crustacea) &gt; 10 - ≤ 100 mg/L g/L, or 72 or 96 hr ErC<sub>50</sub> (for algae or other aquatic plants) &gt; 10 - ≤ 100 mg/L, and the substance is not readily degradable and/or the log K<sub>ow</sub> &gt; 4 (unless the experimentally determined BCF &lt; 500), unless the chronic toxicity NOECs are &gt; 1mg/L</p> <p><u>Cat. Chronic 4</u>: Poorly soluble substances with no acute toxicity up to the water solubility, and is not readily degradable and have a log K<sub>ow</sub> ≥ 4, indicating a potential to bioaccumulate unless evidence to show unnecessary: would include an experimentally determined BCF &lt; 500, or a chronic toxicity NOECs &gt; 1 mg/L, or evidence of rapid degeneration in the environment</p> <p>No</p> <p>Quantitative</p>	<p>Yes – Category D is considered a low hazard</p> <p>Quantitative</p>	<p>No – though the classification of ‘Practically non-toxic’ could be considered to represent a low hazard.</p> <p>Quantitative</p>

Environmental endpoint	EU	GHS	NZ	US EPA
<b>NON-AQUATIC ENVIRONMENT</b> <b>Potency grading</b>	No <ul style="list-style-type: none"> <li>• <a href="#">Toxic to flora</a></li> <li>• <a href="#">Toxic to fauna</a></li> <li>• <a href="#">Toxic to soil organisms</a></li> <li>• <a href="#">Toxic to bees</a></li> <li>• <a href="#">May cause long-term adverse effects in the environment</a></li> <li>• <a href="#">Dangerous for the ozone layer</a></li> </ul>	Not addressed	Yes <b>ECOTOXIC TO THE SOIL ENVIRONMENT</b> <u>Category A:</u> Soil ecotoxicity value <sup>2</sup> ≤ 1mg/kg <u>Category B:</u> 1 < soil ecotoxicity value ≤ 10 mg/kg <u>Category C:</u> 10 < soil ecotoxicity value ≤ 100 mg/kg and <sup>3</sup> Soil DT <sub>50</sub> > 30 days <u>Category D:</u> 10 < soil ecotoxicity value ≤ 100 mg/kg and Soil DT <sub>50</sub> ≤ 30 days  <b>ECOTOXIC TO TERRESTRIAL VERTEBRATES</b> <u>Category A:</u> LD <sub>50</sub> ≤ 50 mg/kg bw, or LC <sub>50</sub> (diet) ≤ 500mg/kg food <u>Category B:</u> 50 < LD <sub>50</sub> ≤ 500 mg/kg bw, or 500 < LC <sub>50</sub> (diet) ≤ 1000 mg/kg food <u>Category C:</u> 500 < LD <sub>50</sub> ≤ 2000 mg/kg bw, or 1000 < LC <sub>50</sub> (diet) ≤ 5000 mg/kg food, or a chronic MATC <sup>4</sup> < 100 ppm in the diet but which does not meet the criteria for Category A or B  <b>ECOTOXIC TO BENEFICIAL TERRESTRIAL INVERTEBRATES</b> <u>Category A:</u> Invertebrate ecotoxicity value <sup>1</sup> < 2 µg/bee <u>Category B:</u> Invertebrate ecotoxicity value ≥ 2 and <11 µg/bee <u>Category C:</u> Invertebrate ecotoxicity value ≥11 and < 25 µg/bee	Yes <b>ACUTE ORAL TOXICITY AVIAN</b> <u>Very Highly Toxic:</u> LD <sub>50</sub> < 10 mg/kg bw <u>Highly Toxic:</u> 10 ≤ LD <sub>50</sub> ≤ 50 mg/kg bw <u>Moderately Toxic:</u> 50 < LD <sub>50</sub> ≤ 500 mg/kg bw <u>Slightly Toxic:</u> 500 < LD <sub>50</sub> ≤ 2000 mg/kg bw <u>Practically Non-toxic:</u> LD <sub>50</sub> > 2000 mg/kg bw  <b>ACUTE ORAL TOXICITY WILD MAMMALS</b> <u>Very Highly Toxic:</u> LD <sub>50</sub> < 10 mg/kg bw <u>Highly Toxic:</u> 10 ≤ LD <sub>50</sub> ≤ 50 mg/kg bw <u>Moderately Toxic:</u> 50 < LD <sub>50</sub> ≤ 500 mg/kg bw <u>Slightly Toxic:</u> 500 < LD <sub>50</sub> ≤ 2000 mg/kg bw <u>Practically Non-toxic:</u> LD <sub>50</sub> > 2000 mg/kg bw  <b>ACUTE TOXICITY NON-TARGET INSECTS</b> <u>Highly Toxic:</u> value < 2 µg/bee <u>Moderately Toxic:</u> value ≥ 2 and ≤11 µg/bee <u>Practically Non-toxic:</u> value > 11 µg/bee

Environmental endpoint	EU	GHS	NZ	US EPA
<b>Delineation/low hazard definition</b>	No – for any of these properties		<b>Yes</b> – Category D for the soil environment, Category C for terrestrial vertebrates and Category C for terrestrial invertebrates are all considered a low hazard	<b>No</b> – though for avian, wild animals and non-target insects the classification of ‘Practically non-toxic’ could be considered to represent a low hazard.
<b>Qualitative or quantitative</b>	Qualitative (all)		Quantitative (all)	Quantitative (all)

<sup>1</sup> Lowest tested EC<sub>50</sub> or LC<sub>50</sub> for freshwater fish and invertebrates and estuarine / marine fish and invertebrates acute toxicity tests

<sup>2</sup> Soil ecotoxicity value = the lowest value (in mg substance/kg dry weight of soil) from: (i) plant or soil invertebrate 14 day exposure EC<sub>50</sub> data; or (ii) data demonstrating a 25 % reduction in soil micro-organism respiration or nitrification at the completion of 28 day exposure to the substance

<sup>3</sup> Soil DT<sub>50</sub> = time to reduce original substance soil concentration by 50 %

<sup>4</sup> MATC = the maximum acceptable toxicant concentration, being the geometric mean of the NOEC and LOEC where the NOEC and LOEC are derived from the same study

<sup>5</sup> Invertebrate ecotoxicity value = lowest value (in µg substance/terrestrial invertebrate) from contact or oral LD<sub>50</sub> data 48 hours after exposure