## 5.0. Data Interpretation

### 5.1. Environmental fate

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Source</th>
<th>Thresholds</th>
</tr>
</thead>
</table>
| Solubility in water (mg l<sup>-1</sup>)             | Arbitrary system in common use                                                                                                                                                                          | <= 50 = Low  
50 - 500 = Moderate  
> 500 = High                                                                                                                                 |
| Vapour pressure at 25°C (mPa)                       | Based on that used within EFSA Guidance documents e.g/ ‘Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment for plant protection products, EFSA journal 2014;12(10):3874. | < 5.0 = Low volatility  
5.0 – 10.0 = Moderately volatile  
> 10 = Highly volatile                                                                                                                                 |
| Henry’s Law Constant (Pa m<sup>3</sup> mol<sup>-1</sup>) | Rule of thumb in wide, general use.                                                                                                                                                                       | > 100 = Volatile  
0.1 - 100 = Moderately volatile  
< 0.1 = Non-volatile                                                                                                                                 |
| Octanol-water partition coefficient (Log P):         | Used by the US EPA. Widely used rule of thumb.                                                                                                                                                           | < 2.7 = Low bioaccumulation  
2.7 – 3 = Moderate  
> 3.0 = High                                                                                                                                 |
| Soil degradation (days)                              | See note 1.                                                                                                                                                                                             | < 30 = Non-persistent  
30 - 100 = Moderately persistent  
100 - 365 = Persistent  
> 365 = Very persistent                                                                                                                                 |
| Aqueous photolysis DT50 (days at pH 7)               | See note 5.                                                                                                                                                                                             | < 1 = Fast  
1 - 14 = Moderately fast  
14 - 30 = Slow  
> 30 = Stable                                                                                                                                 |
| Aqueous hydrolysis DT50 (days at 20°C and pH 7)      | See note 5.                                                                                                                                                                                             | < 30 = Non-persistent  
30 - 100 = Moderately persistent  
100 - 365 = Persistent  
> 365 = Very persistent                                                                                                                                 |
| Water-sediment degradation (days)                    | Same thresholds as soil degradation utilised. See note 1.                                                                                                                                               | < 30 = Fast  
30 - 100 = Moderately fast  
100 - 365 = Slow  
> 365 = Stable                                                                                                                                 |
| Water phase only degradation (days)                  | See note 5.                                                                                                                                                                                             | < 1 = Fast  
1 - 14 = Moderately fast  
14 - 30 = Slow  
> 30 = Stable                                                                                                                                 |
| K<sub>oc</sub>/ K<sub>foc</sub> (ml g<sup>-1</sup>)    | PSD Pesticide Data Requirement Handbook (2005). SSLRC Mobility                                                                                                                                          | < 15 = Very mobile  
15 - 75 = Mobile  
75 - 500 = Moderately mobile                                                                                                                                 |
Classification System. Also See note 5.

500 - 4000 = Slightly mobile
> 4000 = Non-mobile

Freundlich equation
See note 9.

GUS Index
Gustafson, DI (1989)

> 2.8 = High leachability
2.8 - 1.8 = Transition state
< 1.8 = Low leachability

SCIGROW indicator
See note 8.

Particle bound transport indicator

Bio-concentration factor
General rule of thumb and that used by the US EPA.

< 100 = Low potential
5000 – 100 = Threshold for concern
> 5000 – High potential

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:
Agricultural Substances Databases
Background and Support Information

<table>
<thead>
<tr>
<th>Low</th>
<th>DT50 &lt;= 1 day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DT50 &lt;= 2 days &amp; koc &lt;= 500</td>
</tr>
<tr>
<td></td>
<td>DT50 &lt;= 4 days, Koc &lt;= 900 &amp; solubility &gt;= 0.5 mg/l</td>
</tr>
<tr>
<td></td>
<td>DT50 &lt;= 40 days, Koc &lt;= 500 &amp; solubility &gt;= 0.5 mg/l</td>
</tr>
<tr>
<td></td>
<td>DT50 &lt;= 40 days, Koc &lt;= 900 &amp; solubility &gt;= 2 mg/l</td>
</tr>
</tbody>
</table>

| 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](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: \( Q = KC_1/n \), where \( Q \) is the adsorbed amount of pesticide (µg kg\(^{-1}\)), \( C \) is the equilibrium concentration (µg l\(^{-1}\)), and \( K \) 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.