**Summary of Water Modeling of Chlorpyrifos and the User-Defined Water Body**

Estimated Environmental Concentrations for Chlorpyrifos are presented in Table 1 for the User-defined water body with the CAalmond\_WirrigSTD field scenario. A graphical presentation of the year-to-year acute values is presented in Figure 1. These values were generated with the Pesticide Water Calculator (PWC), Version 1.59. Critical input values for the model are summarized in Tables 2 and 3.

This model estimates that about 0.63% of Chlorpyrifos applied to the field eventually reaches the water body. The main mechanism of transport from the field to the water body is by runoff (89.9% of the total transport), followed by erosion (10.1%) and spray drift (0.01%).

In the water body, pesticide dissipates with an effective water column half-life of 0.2 days. (This value does not include dissipation by transport to the benthic region; it includes only processes that result in removal of pesticide from the complete system.) The main source of dissipation in the water column is washout (effective average half-life = 0.2 days) followed by metabolism (238.8 days), volatilization (707.9 days), and photolysis (9327 days).

In the benthic region, pesticide dissipates very slowly (530.8 days). The main source of dissipation in the benthic region is metabolism (effective average half-life = 530.8 days). The vast majority of the pesticide in the benthic region (99.85%) is sorbed to sediment rather than in the pore water.

**Table 1. Estimated Environmental Concentrations (ppb) for Chlorpyrifos.**

|  |  |
| --- | --- |
| 1-day Avg (1-in-10 yr) | 17.8 |
| 4-day Avg (1-in-10 yr) | 5.23 |
| 21-day Avg (1-in-10 yr) | 1.37 |
| 60-day Avg (1-in-10 yr) | 0.669 |
| 365-day Avg (1-in-10 yr) | 0.228 |
| Entire Simulation Mean | 0.160 |

**Table 2. Summary of Model Inputs for Chlorpyrifos.**

|  |  |
| --- | --- |
| Scenario | CAalmond\_WirrigSTD |
| Cropped Area Fraction | 1.0 |
| Koc (ml/g) | 6040 |
| Water Half-Life (days) @ 25 °C | 91.2 |
| Benthic Half-Life (days) @ 25 °C | 202.7 |
| Photolysis Half-Life (days) @ 40 °Lat | 29.6 |
| Hydrolysis Half-Life (days) | 0 |
| Soil Half-Life (days) @ 25 °C | 170.6 |
| Foliar Half-Life (days) | 35 |
| Molecular Weight | 350.57 |
| Vapor Pressure (torr) | 1.87E-05 |
| Solubility (mg/l) | 1.4 |
| Henry's Constant | 0.000252 |

**Table 3. Application Schedule for Chlorpyrifos.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date (Days Since Emergence) | Type | Amount (kg/ha) | Eff. | Drift |
| 1 | Linearly decreasing to 4 cm | 1.01 | 0.99 | 0.02 |
| 16 | Linearly decreasing to 4 cm | 1 | 0.99 | 0.02 |
| 26 | Linearly decreasing to 4 cm | 1 | 0.99 | 0.02 |
| 210 | Linearly decreasing to 4 cm | 1 | 0.99 | 0.02 |

**Figure 1. Yearly Highest 1-day Average Concentrations**

