**Summary of Water Modeling of Permethrin BTM and the USEPA Standard Pond**

Estimated Environmental Concentrations for Permethrin BTM are presented in Table 1 for the USEPA standard pond with the PAappleSTD\_V2 field scenario. A graphical presentation of the year-to-year peaks is presented in Figure 1. These values were generated with the Pesticide Water Calculator (PWC), Version 1.52. Critical input values for the model are summarized in Tables 2 and 3.

This model estimates that about 1.2% of Permethrin BTM applied to the field eventually reaches the water body. The main mechanism of transport from the field to the water body is by erosion (83.1% of the total transport), followed by runoff (8.69%) and spray drift (8.19%).

In the water body, pesticide dissipates with an effective water column half-life of 26.4 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 hydrolysis (effective average half-life = 34.8 days) followed by metabolism (111.4 days), volatilization (11542.9 days), and photolysis (15290.3 days).

In the benthic region, pesticide dissipates very slowly (378.2 days). The main source of dissipation in the benthic region is metabolism (effective average half-life = 379 days) followed by hydrolysis (170450.5 days). The vast majority of the pesticide in the benthic region (99.98%) is sorbed to sediment rather than in the pore water.

**Table 1. Estimated Environmental Concentrations (ppb) for Permethrin BTM.**

|  |  |
| --- | --- |
| Peak (1-in-10 yr) | 5.00 |
| 4-day Avg (1-in-10 yr) | 1.63 |
| 21-day Avg (1-in-10 yr) | 0.629 |
| 60-day Avg (1-in-10 yr) | 0.464 |
| 365-day Avg (1-in-10 yr) | 0.316 |
| Entire Simulation Mean | 0.232 |

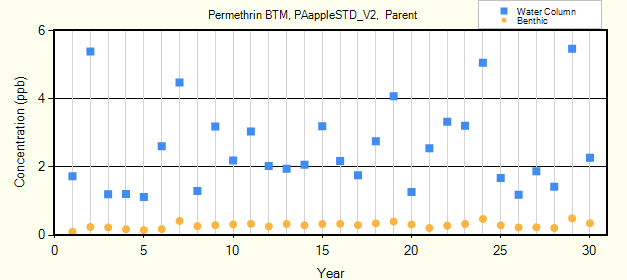
**Table 2. Summary of Model Inputs for Permethrin BTM.**

|  |  |
| --- | --- |
| Scenario | PAappleSTD\_V2 |
| Cropped Area Fraction | 1 |
| Koc (ml/g) | 50900 |
| Water Half-Life (days) @ 20 °C | 56.7 |
| Benthic Half-Life (days) @ 20 °C | 193 |
| Photolysis Half-Life (days) @ 40 °Lat | 94 |
| Hydrolysis Half-Life (days) | 31 |
| Soil Half-Life (days) @ 20 °C | 211 |
| Foliar Half-Life (days) | 35 |
| Molecular Weight | 391.3 |
| Vapor Pressure (torr) | 1.48e-8 |
| Solubility (mg/l) | 0.0055 |
| Henry's Constant | 1.4e-6 |

**Table 3. Application Schedule for Permethrin BTM.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date (Mon/Day) | Type | Amount (kg/ha) | Eff. | Drift |
| 4/15 | Above Crop (Foliar) | 2.241 | 0.99 | 0.01 |

**Figure 1. Yearly Peak Concentrations**



**Summary of Water Modeling of Permethrin BTM and the USEPA Standard Reservoir**

Estimated Environmental Concentrations for Permethrin BTM are presented in Table 1 for the USEPA standard reservoir with the PAappleSTD\_V2 field scenario. A graphical presentation of the year-to-year peaks is presented in Figure 1. These values were generated with the Pesticide Water Calculator (PWC), Version 1.52. Critical input values for the model are summarized in Tables 2 and 3.

This model estimates that about 1.1% of Permethrin BTM applied to the field eventually reaches the water body. The main mechanism of transport from the field to the water body is by erosion (87.9% of the total transport), followed by runoff (9.41%) and spray drift (2.7%).

In the water body, pesticide dissipates with an effective water column half-life of 22.2 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 hydrolysis (effective average half-life = 34.8 days) followed by metabolism (111.4 days), washout (138.5 days), volatilization (15813.8 days), and photolysis (20947.7 days).

In the benthic region, pesticide dissipates very slowly (378.2 days). The main source of dissipation in the benthic region is metabolism (effective average half-life = 379 days) followed by hydrolysis (170450.5 days). The vast majority of the pesticide in the benthic region (99.98%) is sorbed to sediment rather than in the pore water.

**Table 1. Estimated Environmental Concentrations (ppb) for Permethrin BTM.**

|  |  |
| --- | --- |
| Peak (1-in-10 yr) | 12.4 |
| 4-day Avg (1-in-10 yr) | 4.88 |
| 21-day Avg (1-in-10 yr) | 1.87 |
| 60-day Avg (1-in-10 yr) | 1.35 |
| 365-day Avg (1-in-10 yr) | 0.870 |
| Entire Simulation Mean | 0.625 |

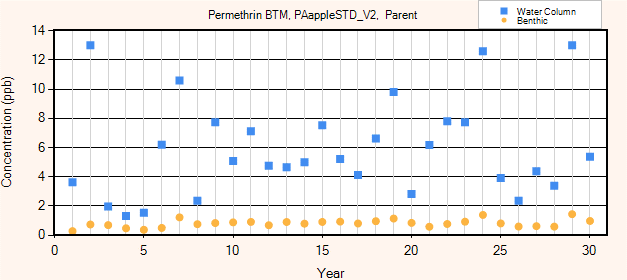
**Table 2. Summary of Model Inputs for Permethrin BTM.**

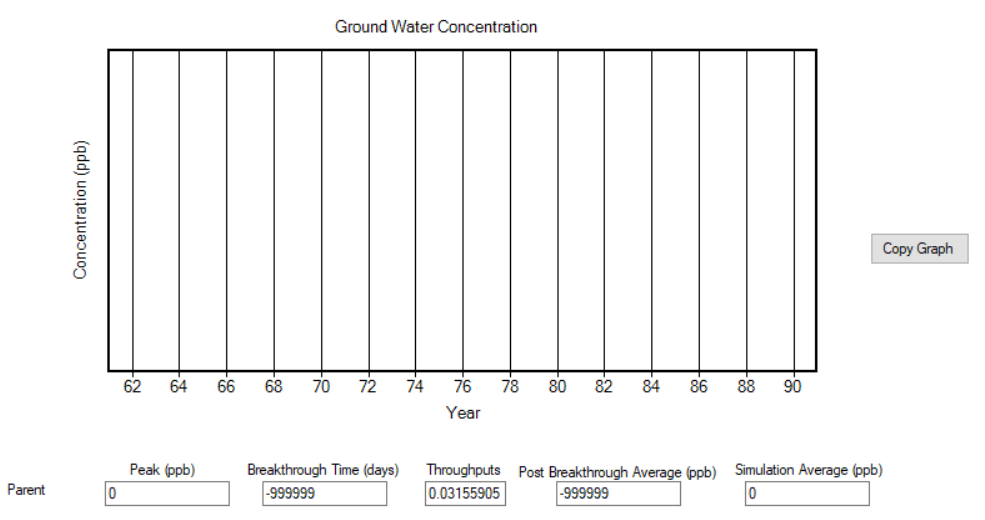
|  |  |
| --- | --- |
| Scenario | PAappleSTD\_V2 |
| Cropped Area Fraction | 1.0 |
| Koc (ml/g) | 50900 |
| Water Half-Life (days) @ 20 °C | 56.7 |
| Benthic Half-Life (days) @ 20 °C | 193 |
| Photolysis Half-Life (days) @ 40 °Lat | 94 |
| Hydrolysis Half-Life (days) | 31 |
| Soil Half-Life (days) @ 20 °C | 211 |
| Foliar Half-Life (days) | 35 |
| Molecular Weight | 391.3 |
| Vapor Pressure (torr) | 1.48e-8 |
| Solubility (mg/l) | 0.0055 |
| Henry's Constant | 1.4e-6 |

**Table 3. Application Schedule for Permethrin BTM.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date (Mon/Day) | Type | Amount (kg/ha) | Eff. | Drift |
| 4/15 | Above Crop (Foliar) | 2.241 | 0.99 | 0.01 |

**Figure 1. Yearly Peak Concentrations**



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