

Oral Presentation

A chronic oral test protocol for orchard bees, *Osmia* spp. (Hymenoptera: Megachilidae)

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Abstract

The Pollinator Risk Assessment framework in North America and other regions is based on a tiered approach with the honey bee, *Apis mellifera*, as the representative organism. The protectiveness of the honey bee risk assessment for non-*Apis* bees has not been extensively validated due to limited availability of standardized methods. We developed a chronic oral test for orchard bees with *Osmia lignaria*, *O. cornifrons*, and *O. cornuta*. Our protocol includes elements from other chronic oral toxicity bee tests including the OECD 245 honey bee guideline and a validated protocol for bumble bees; these elements include the 10-d test duration, replication, and validity criterion for control survival. We measured the daily consumption of the feeding solutions and observed survival and other adverse effects. Evaporation controls were included to correct consumption estimates. On average, *O. lignaria*, *O. cornifrons* and *O. cornuta* body weight was 105 ± 12 , 71 ± 8 , and 129 ± 16 mg, respectively. Consumption in the control group was 49 ± 14 , 85 ± 21 , 157 ± 35 mg sucrose solution/bee/d for *O. lignaria*, *O. cornifrons*, and *O. cornuta*, respectively. Control survival was $\geq 85\%$ for the three species evaluated. A fourth test was conducted with *O. bicornis* but outside the typical active season, which may affect the representativity of the results for this species. Dose-response tests with dimethoate, a positive control in bee toxicity tests, were conducted with each *Osmia* species and comparison of the resulting toxicity endpoints between honey bee and *Osmia* species will be presented.

Keywords: risk assessment, toxicity test, solitary bees, non-*Apis* bees