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Flawed generalizations: sex- and species-specific susceptibility to pesticide exposure in bees

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and false negatives are likely. Given that environmental risk assessments tend to focus exclusively on western honeybee (Apis mellifera) workers, they may not adequately address the environmental challenges other bee species experience. Here, we show both false positives and negatives when chronically exposing males and females of three bee species to a neonicotinoid insecticide. Using modified OECD 245 guidelines, male and female Bombus terrestris, Osmia bicornis, and A. melliferawere chronically exposed to thiamethoxam. Mortality and feeding behavior were measured daily. Irrespective of the species, the data show no significant effects of exposure on feeding. However, species-specific differences in LDD50's values were revealed. Apis mellifera demonstrated the highest susceptibility, followed by O. bicornis and then B. terrestris. Furthermore, solitary bee females and honeybee workers are less susceptible compared to their male counterparts. Our data demonstrate that environmental risk assessments using A. mellifera workers are unsuitable to derive general conclusions for other bee species. These findings underscore the need to include more models in bee ecotoxicology to ensure reliable assessments of the risks posed by chronic and acute pesticide exposure.