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Environmental Protection Agency  
 Pollinator Protection  
 Office of Pesticide Programs, Mail Code 7506C  
 1200 Pennsylvania Ave., NW Washington DC 20460  
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**Re: RT25 Data Table**

Dear EPA,

We appreciate EPA recently updating its [Residual Time to 25% Bee Mortality \(RT<sub>25</sub>\) Data table](#) with “information the agency has collected since the table was first published in 2014.” “RT25 data help farmers and beekeepers know about how long a specific pesticide may remain toxic to bees and other insect pollinators following foliar application to crops. The new data reflect the results of studies the agency has analyzed as part of our routine pesticide regulatory activities. Putting this data online gives beekeepers and farmers more real-world opportunities to cooperate and protect bees. For example, farmers can choose pesticides that quickly lose their toxicity to bees.”

Beekeepers have asked for updated residual testing, which would encourage farmers to apply some chemicals in the evening helping to “ensure that by morning the pests have been dealt with and blooming crops are safe for bees.” Upon reading this latest update from the EPA, a beekeeper/farmer was pleased “EPA listened to something beekeepers suggested. However, RT25 data is very limited for practical field use. A dermal exposure may kill an organism where the same dosage oral could be shared within the colony and has disastrous effects.”

Your document states “The residual time to 25% mortality (referred to as the RT25) values provided in the table (<https://www.epa.gov/pollinator-protection/residual-time-25-bee-mortality-rt25-data>) were compiled from registrant-submitted data submitted in order to fulfill the data requirement for *Honey Bee (Apis mellifera) Toxicity of Residues on Foliage* study ([OCSP Guideline 850.3030](#)). This study may be conditionally required if the honey bee acute contact (or oral) median lethal dose (LD50) value (obtained from a honey bee acute toxicity test such as [OCSP Guideline 850.3020](#)) is less than 11 µg/bee<sup>1</sup>.”

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As beekeepers, we have concerns with analysis based on data from the chemical manufacturer. As EPA has less and less labs to independently verify data provided by a manufacturer, there are plenty of land-grant academic research institutions which could provide independent analysis. Additional concern from this RT25 guideline is the conditional requirement of the study depending on the lethal dose level. If we are to truly protect pollinators and other beneficial insects “conditional requirements” put beneficial insects at continued risk.

The EPA’s “honey bee toxicity of residues on foliage study is a laboratory test designed to determine the length of time over which field weathered foliar residues remain toxic to honey bees, or other species of terrestrial insects. The test substance (*e.g.*, a representative end-use product) is applied to crop foliage, the foliage is harvested at predetermined post-application intervals (*i.e.*, aged residues), and test adult bees are confined on foliage with aged residues for 24 hours. Three treatment intervals (different durations of time that residues are aged between application and harvest) are typically used (*e.g.*, 3, 8 and 24 hours post-application). At a minimum, the test substance should be evaluated at the maximum application rate specified on the product label. If mortality of bees exposed to the foliage harvested 24 hours after the application is greater than 25%, bees should continue to be exposed to aged residues on foliage samples collected every 24 hours (*i.e.*, 48, 72, 96, 120 hours, *etc.* after the application) until mortality is 25% or less.” The residues examined exclude residues on the pollen and in the nectar of bee attractive plants. EPA states, the data comprising the RT25 Table is for the “technical grade active ingredient or a specific formulation.” The real-world applications of chemicals on crops is never just the active ingredient, and never the formulated product alone. The research, **Spray Toxicity and Risk Potential of 42 Commonly Used Formulations of Row Crop Pesticides to Adult Honey Bees**, showed

- *Three pesticides killed less than 1% of the worker bees, including the herbicide, a miticide, and a neonicotinoid.*
- *Twenty-six insecticides killed more than 99% of the bees, including commonly used organophosphates and neonicotinoids.*
- *The remainder of the 13 chemicals killed from 1–99% of the bees at field application rates.*

The RT25 data is for single use applications, single chemicals, and does not reflect the real-world of pollinators exposed to tank mixes, or “commonly used formulations.” Should farmers and pesticide applicators utilize the RT25 data table and add the residues numbers when mixing chemicals? EPA acknowledges this risk stating, “RT25 values are a function of a number of factors including application rate, physical-chemical properties, dissipation, crop, and pesticide formulation. Thus, there is considerable variability in RT25 values within a single formulation, between formulations, between crops, and across application rates.” The RT25 data table displays residues that kill 25% of bees ranging from zero (Amitraz on apple trees and Flutolanil on rape seed) to 512 hours of toxic residue from Clothianidin on alfalfa. The average number of hours of toxic residues for all chemicals on the data table is 42.65 hours. While that is the average of the combined numbers, if an applicator is mixing chemicals, shouldn’t the residue toxicity of each chemical be combined for the total hours of residue toxicity? If Abamectin and Chlorpyrifos are applied to alfalfa their toxic residue is 7.96 hours and 16 hours respectively. Is the combined residue then toxic for 23.86 hours? The data table does not provide enough

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qualifying precautionary language to make that determination, except to state, “there is considerable variability in RT25 values within a single formulation, between formulations, between crops, and across application rates.”

More work needs to be done to protect pollinators and other beneficial insects and organisms that protect plants, crops, and the soil from the impact of insecticides, fungicides, and herbicides. We encourage EPA to continue the analysis of pesticide residues and provide farmers and beekeepers with complete information on single formulations, between formulations, between crops, and across application rates to fully inform farmers, protect crops, and protect pollinators and other beneficial organisms.

Formally,



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References:

[Yu Cheng Zhu](#), [John Adamczyk](#), [Thomas Rinderer](#), [Jianxiu Yao](#), [Robert Danka](#), [Randall Luttrell](#), and [Jeff Gore](#) "Spray Toxicity and Risk Potential of 42 Commonly Used Formulations of Row Crop Pesticides to Adult Honey Bees (Hymenoptera: Apidae)," *Journal of Economic Entomology* 108(6), (1 December 2015). <https://doi.org/10.1093/jee/tov269>, <https://bioone.org/journals/Journal-of-Economic-Entomology/volume-108/issue-6/tov269/Spray-Toxicity-and-Risk-Potential-of-42-Commonly-Used-Formulations/10.1093/jee/tov269.short>

Pollinator Protection, Residual Time to 25% Bee Mortality (RT25) Data, <https://www.epa.gov/pollinator-protection/residual-time-25-bee-mortality-rt25-data>