CENTER FOR FOOD SAFETY

May 23, 2014

Office of Pesticide Programs
Regulatory Public Docket (28221T)
Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460-0001
Filed online at: www.regulations.gov

RE: Proposed Applications for New Uses of Sulfoxaflor; Docket No. EPA-HQ-OPP-2014-0156

Dear Sir/Madam,

This letter of comment is submitted on behalf of the Center for Food Safety (CFS) with respect to the above-referenced docket for EPA's proposal to register new uses of the active ingredient sulfoxaflor under the Federal Insecticide, Fungicide, and Rodenticide Act. CFS is a Washington, DC-based public interest non-profit membership organization that also has offices in San Francisco, CA, Portland, OR, and Honolulu, HI. Since its founding in 1997, CFS has sought to ameliorate the adverse impacts of industrial farming and food production systems on human health, animal welfare and the environment. CFS has over 500,000 members nationwide. CFS works with a broad range of stakeholders who are concerned about the potential impacts of sulfoxaflor's proposed expanded uses to beekeepers, pollinators generally, other non-target species and the broader environment.

Introduction

CFS is commenting here only on the first of the Registration Applications in the Notice, which is Dow AgroSciences' proposal to register several uses of sulfoxaflor for the following: alfalfa, clover and other non-grass animal feeds (crop group 18); buckwheat; cacao; corn (field, pop, seed, sweet); millet; oats; pineapple; rye; sorghum; teff; and teosinte. The Environmental Protection Agency (EPA) has already granted unconditional registrations of sulfoxaflor for uses on barley, bulb vegetables, canola, citrus, cotton, cucurbit vegetables, fruiting vegetables, leafy vegetables, low-growing berries, okra, ornamentals (herbaceous and woody), pistachio, pome fruits, root and tuber vegetables, small vine climbing fruit (except fuzzy kiwifruit), soybean, stone fruit, succulent, edible podded and dry beans, tree nuts, triticale, turfgrass, watercress and wheat.[1]

Please note that the concerns expressed in these comments reflect many of the concerns CFS also raised in their comments submitted on February 13, 2013 for EPA's proposed conditional registration of sulfoxaflor (Docket No. EPA-HQ-OPP-2010-0889). Sulfoxaflor is similar to the neonicotinoid insecticides that are already in use, as it also acts on the nicotinic acetylcholine receptor (nAChR) in insects. The similarities in mode of action and toxicity present comparable risks to those exhibited by the neonicotinoids, especially for pollinator health and the consequent effects on beekeepers.

[1] EPA Final Decision Document for Sulfoxaflor Registration: Docket ID: EPA-HQ-OPP-2010-0889

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Summary of Comment

Because of the numerous data gaps and oversights in the EPA risk assessment (RA) for sulfoxaflor, approving additional uses of sulfoxaflor at this time would be negligent. Furthermore, EPA's decision to initially register sulfoxaflor only considered its alleged benefits, and entirely ignored the significant costs that its use will have on the agricultural economy, food security, and the environment. As CFS has consistently pointed out, there are also potential impacts to other species that require more research, with slight acute toxicity identified in birds and mammals. Given numerous data gaps and uncertainties, and the potential for unreasonable adverse effects, uses of sulfoxaflor should not be expanded.

Background of Issue

When EPA first approved uses of neonicotinoids, beekeepers began to document several disturbing bee behaviors – "bees not returning to the hive, disoriented bees, bees gathered close together in small groups on the ground, abnormal foraging behavior, the occurrence of massive bee loses in spring, queen losses, increased sensitivity to diseases and colony disappearance" - which are now recognized symptoms of Colony Collapse Disorder (CCD).[2] Over the course of the past decade, governments and scientific experts have examined neonicotinoids with increased scrutiny because of their proven adverse impact on honey bees and other pollinators. Dozens of independent peer-reviewed studies support the observations of beekeepers: the arrival of widespread use of neonicotinoids in the early-to-mid-2000s has had a profound effect on bee populations. As the wealth of scientific literature demonstrates, neonicotinoids have numerous adverse impacts to bees, including "disorientation, reduced communication, impaired learning and memory, reduced longevity, and reduced feeding, which *strongly* support that [neonicotinoids] may be one of the *major* factors involved with the onset of CCD."[3]

Approving more uses of sulfoxaflor would only worsen an already catastrophic situation for bees, other pollinators and the agricultural industry and create new synergistic effects that introduce new risks to a variety of species.

Overview of Sulfoxaflor

Sulfoxaflor is a systemic insecticide that provides 7 to 21 days of residual control and targets insect nAChRs and affects the liver in mammals. It is fairly stable to abiotic degradation, leading to its ability to persist in the absence of microbes.[4] Sulfoxaflor biodegrades quickly in aerobic soil conditions (half-life <1d), but is more persistent in anaerobic conditions (half-life 113-120d).[5] In aquatic conditions, the aerobic biodegradation half-life is 37-88 days and the anaerobic half-life is 103-382 days.[6] This data shows that sulfoxaflor can persist and affect ecosystems long after its application in certain conditions.

While sulfoxaflor may biodegrade rapidly in aerobic conditions, its soil degradates are mobile and

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[2] Jeroen P van der Sluijs et al., *Neonicotinoids, bee disorders and the sustainability of pollinator services*, 5 Current Op. Envtl. Sustainability 293, 294-95 (2013), *available at* http://dx.doi.org/10.1016/j.cosust.2013.05.007.
[3] Tahira Farooqui, *A potential link among biogenic amines-based pesticide, learning and memory, and colony collapse disorder: A unique hypothesis,* 62 Neurochemistry Int'l 122, 132 (2012) (emphases added).
[4] EPA. Environmental Fate and Ecological Risk Assessment for Sulfoxaflor Registration. Docket ID: EPA-HQ- OPP-2010-0889-0022. Page 32.
[5] EPA. Environmental Fate and Ecological Risk Assessment for Sulfoxaflor Registration. Page 33.
[6] EPA. Environmental Fate and Ecological Risk Assessment for Sulfoxaflor Registration. Page 33.

"expected to be highly persistent in aerobic soil/aquatic systems."[7][8] The combination of water solubility, persistence, and toxicity (especially to bees and other insect pollinators) is particularly concerning because compounds with these same characteristics have shown adverse effects to non-target species. Sulfoxaflor and its degradates' persistence in the environment is concerning because of the numerous detrimental impacts to non-target organisms that have not been fully assessed.

Furthermore, sulfoxaflor behaves in a method similar to imidacloprid *in situ* in aphids at both the receptor and neuronal levels, these characteristics could pose problems for cross-resistance with neonicotinoids, and should be fully evaluated before expanding uses.[9]

Impacts on Honey Bees

A major issue with expanding uses of sulfoxaflor is that the pollinator studies submitted for the initial product registrations were incomplete. Additionally, the current commercial neonicotinoids have been shown to have severe adverse impacts on honey bees and other non-target insects, which increases concerns about the use of sulfoxaflor. Pesticides have routinely been identified as a primary contributing factor in alarming honey bee colony losses. Introducing more uses of yet another systemic, highly toxic insecticide to bee populations will only exacerbate these problems, contribute to the loss of beekeeper livelihoods, damage the agricultural economy, and threaten our nation's food supply. Synergistic effects of sulfoxaflor and other stressors (additional pesticides, parasites, etc.) have also not been addressed to date. Given these uncertainties and EPA's risk assessment that notes significant acute hazards, expanding uses of sulfoxaflor would pose more threats than benefits.

Studies on individual bees (Tier I) showed that sulfoxaflor is highly acutely toxic to honey bees, and Tier II studies were incomplete or methodologically flawed. This lack of information about honey bee toxicity is an unacceptable data gap that should prevent expanded uses of sulfoxaflor. EPA notes several concerns with the reliability of the Tier 1 data, including:

- use of maximum residue reported in pollen and nectar to represent exposure to all bee castes and all crops
- lack of chronic toxicity data for adult and larval bees (and longer-term exposure to pupae)
- selection of the toxicity endpoint from the larval toxicity test
- accuracy of consumption rate estimates used for various bee castes
- variation in pesticide residues in pollen and nectar
- conservation of pesticide dose from plant tissue to the hive[10]

EPA does not have an approved field study protocol; thus the agency has no valid field studies on which to evaluate sulfoxaflor toxicity to honey bee colonies. Without trials conducted at field-realistic exposure levels, EPA has no data to determine how bees, both individuals and colonies, will be affected by sulfoxaflor use. Futhermore, for the initial registration, brood and long-term colony health studies were not included or were unacceptable methodologically, compounding the unknown potential long-term chronic effects of sulfoxaflor. The long term stability and persistence of the compound indicates that chronic effects on hive populations will occur, especially as uses of sulfoxaflor become more widespread. Without information on realistic exposures, the risks associated with field usage cannot be dismissed or deemed acceptable. The evidence from the

[7] EPA. Environmental Fate and Ecological Risk Assessment for Sulfoxaflor Registration. Page 10
[8] EPA. Environmental Fate and Ecological Risk Assessment for Sulfoxaflor Registration. Page 37.
[9] Cutler P, et al. 2012.
[10] EPA. Environmental Fate and Ecological Risk Assessment for Sulfoxaflor Registration. Page 91.

pollinator studies points to "unreasonable adverse effects" to honey bees, which should deter EPA from approving additional new uses of sulfoxaflor.

Impacts on Beekeeper Livelihoods

The risk assessment also fails to take into account the impacts on the livelihoods of beekeepers, the national agricultural economy, and localized rural economies. Honey bees are the most economically valuable pollinator worldwide, and many high-value crops such as almonds and broccoli are entirely reliant upon pollination services by commercial beekeepers. Of the 100 crops that provide 90 percent of the world's food, over 70 are pollinated by bees. The value of crops pollinated by bees in the U.S. alone was estimated at $19.2 billion in 2010 – that figure has since grown.[11] This clearly multiplies the economic impacts of past EPA decisions on conditional registrations that have taken a major toll on beekeeper livelihoods, and counsels strongly against any more registrations for additional uses of neonicotinoids such as sulfoxaflor.

Impacts on Native Bees and Other Beneficial Invertebrates, including Endangered Species Act-protected Species

Furthermore, the risk assessment's cursory treatment of the risks of sulfoxaflor to the ~4,000 species of native North American bees is unconvincing, and a major failure given the severe declines many of these critical species are facing.[12] These bees lack the carefully-bred adaptability and resilient social structures of *Apis mellifera* and many have entirely different life cycles and vulnerabilities. Native species are at a far greater risk from pesticide toxicity than managed colonies of *A. mellifera*. EPA's risk assessment for sulfoxaflor only mentions *Bombus* species in passing, and does not address other native pollinators. The oral toxicity of the formulated product is much higher for bumblebees than for honey bees, and toxicity for important native bee species is entirely unknown at this point. These unidentified additional effects on beneficial insect species should further dissuade EPA from approving additional uses of sulfoxaflor prior to conducting comprehensive pollinator risk assessments.

There are numerous other beneficial insects and other invertebrates that are severely impacted by prophylactic applications of various commercial insecticides. EPA's knowledge of the impacts on these species is far more limited than its knowledge of the impacts on honey bees. Massive data gaps exist for beneficial non-bee insects such as butterflies, ladybugs and lacewings, dragonflies, hoverflies and others, which are not addressed by the risk assessment.

This section of the sulfoxaflor RA needs dramatic bolstering. If EPA proceeds to expand uses of sulfoxaflor with the current risk assessment framework it appears likely that beneficial native insects, including rare and endangered species, will face continuing jeopardy. Given that many of these native species have small, localized native ranges, the assessment process should consider the need to restrict or limit the use of sufloxaflor in those locations, a consideration lacking in the current document. Otherwise, exposure routes such as foliar spraying could effectively eliminate large portions of remaining populations of native bees and other beneficial insects. Overall, the applicant data submitted to EPA on *Apis* and non-*Apis* bees and other beneficial invertebrates is inadequate and fails to constitute an adequate effects analysis for Federally-listed threatened and endangered species as required by Section 7(a)(2) of the Endangered Species Act.

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[11] Calderone NW. 2012. Insect Pollinated Crops, Insect Pollinators and US Agriculture: Trend Analysis of Aggregate Data for the Period 1992–2009. PLoS ONE 7(5): e37235.

[12] See, for example, Evans E, et al. 2009. Status Review of Three Formerly Common Species of Bumble Bee in the Subgenus *Bombus*, Xerces Society. Available at: www.xerces.org/wp-content/uploads/2009/03/xerces_2008_bombus_status_review.pdf .

Conclusion

To summarize, EPA must objectively and fully assess the risks of these proposed new uses of sulfoxaflor. It remains the steadfast position of CFS that EPA has abused the conditional registration process with the registration of systemic insecticides like sulfoxaflor, and has failed to provide the necessary data requirements, like a pollinator field test, to indicate no adverse impacts to pollinators and other beneficial species.

EPA has failed to rigorously examine the uses and impacts of sulfoxaflor, particularly in light of the cumulative effects of environmental stressors already faced by pollinator populations, and failed to weigh the costs and benefits of these products. There are still many unanswered questions, especially with respect to pollinator health, that should preclude registering any new uses of sulfoxaflor by EPA at this point. The available information points to potentially significant unreasonable adverse effects as well as major areas of critical impact uncertainty.

If you have questions about this comment, please contact:Larissa Walker, Center for Food Safety, 660 Pennsylvania Ave, SE, #302, Washington DC 20003. tel: 202.547.9359; email: lwalker@centerforfoodsafety.org.

Sincerely,

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