Integrated Plant Protection Center
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Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington DC 20460-0001

Re: EPA-HQ-OPP-2008-0850-0856, Draft Biological Evaluations of chlorpyrifos, diazinon, and malathion

The following comments are being submitted in regard to EPA's open comment period on the draft biological evaluations of chlorpyrifos, diazinon, and malathion. These comments are being submitted on behalf of the Western IPM Center, and provide input on the use of these chemicals across a wide range of Pacific Northwest commodities.

Diazinon

Diazinon is the least used product of these three in the Pacific Northwest region (PNW). It is used sparingly in some tree fruits (apple, pear, cherry), generally during dormancy, but also as late season control for spotted wing drosophila (SWD) in cherries. In apples, diazinon offers effective control for wooly apple aphid, and control for this pest is said to be challenging without it. With the alternative, spirotetramat, efficacy is based more on tree phenology rather than insect phenology, which makes it more difficult for growers to use effectively. Spirotetramat also has lower efficacy on established pest populations.

Diazinon is not widely used in small fruit production, but is valued by small fruit growers in controlling pests that are only marginally controlled by other registered pesticides, or for which no other pesticide is registered. Raspberry crown borer is a sporadic but serious pest found in raspberry and blackberry fields that can cause weakened plant growth or even plant death with serious infestations. On infested caneberry acres, diazinon is commonly used as a crown drench in early spring. In blueberries, diazinon is often mixed with a dormant oil to help control winter moth; the oil and diazinon work together to penetrate the overwintering winter moth eggs, and provide efficacious control. In strawberries, diazinon is the only registered product for control of cyclamen mites, a very small eriophyid mite that is difficult to control deep inside the folds of the plant crown; endosulfan and dicofol were the preferred products for cyclamen mite control, but their use will no longer be allowed after the 2016 field season. Diazinon is applied as a crown drench after strawberry harvest, when strawberry plants have been renovated (Oregon practices perennial strawberry production, and mows the plants about two weeks after last harvest).

Diazinon is also used in carrots, applied to soil before planting to control seed corn maggots, which can cause significant damage to stand quality and yield if not properly controlled.

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Malathion

Malathion continues to be used by a number of PNW industries, mainly berry crops, cherries, and wine grapes. While not widely used as part of regular insect management programs, it is considered a critical component in managing fruit fly pests, and especially SWD. The relatively short post-harvest and re-entry intervals with malathion, as compared with alternatives, makes it an ideal product for SWD control. Alternatives are available that would be efficacious, but these products have longer post-harvest intervals, which prevent their use in controlling SWD.

Malathion is also used sporadically (not regularly, or even annually), to control grasshopper outbreaks in potato, corn, carrot, bean, and peppermint crops. Again, the short post-harvest interval with this product allows for its use to control late season outbreaks. The alternative product for this pest is acephate.

Lacking practical substitutes, and considering the need for rotation of chemical classes, malathion remains important to PNW industries. Alternatives to its current uses represent a limited number of different chemical classes, and having the ability to rotate with these other classes is important to growers in resistance management efforts.

Chlorpyrifos:

Many industries in the Pacific Northwest are currently relying on chlorpyrifos, including several minor crop groups with limited pesticide options. These industries include processed vegetables, strawberry, mint, onion, cranberry, apple, and various types of seed production (e.g., alfalfa, grass). For many of these industries, chlorpyrifos has unique properties that growers value as important to their pest control programs.

For the processed vegetable industry, there are a number uses of chlorpyrifos considered critical, including brassica/cole crops, snap beans, and sweet corn seed production. Chlorpyrifos is critical in controlling cabbage maggot in brassica/cole crops. In this case, chlorpyrifos is uniquely effective as a soil-active insecticide that prevents the entry of larvae into root tissue, where they are very difficult to manage once present. This industry currently knows of no alternatives that provide this level of efficacy in broccoli and cauliflower. Cabbage maggot has the potential to cause complete crop loss if not effectively controlled.

In snap bean and sweet corn seed varieties, chlorpyrifos is used as a seed treatment to control seed maggots and other seed predators. Stand losses can be upwards of 50% if treatments are not applied. In sweet corn production, chlorpyrifos is also used at seed planting to control cutworm and cucumber beetle larvae. The broad-spectrum and soil-active effectiveness of chlorpyrifos for controlling beetle, fly, and moth pests is currently not shared by other products labeled for use in these crops.

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For strawberry production, chlorpyrifos is considered critical for controlling garden symphylans and strawberry corn moth larvae. The industry is aware of no efficacious alternatives for controlling these pests, which reside in the soil. Yields would be diminished and plant death could occur without effective management of these pests.

For the grass seed industry, chlorpyrifos is considered critical in controlling key pests such as aphid, crane fly, cutworm, armyworm, sod webworm, and orchardgrass billbug. In addition to controlling primary feeding insect damage, chlorpyrifos also controls aphids vectoring diseases, such as the Barley Yellow Dwarf Virus complex, that results in significant economic loss.

Alfalfa seed growers across the Western region (Washington, Oregon, Idaho, Montana, Wyoming, Nevada) rely on chlorpyrifos mainly for controlling lygus bug. While efficacious alternatives might exist for forage alfalfa, these alternatives do not apply to alfalfa grown for seed, and thus, if food crop registrations were to be impacted, the alfalfa seed industry asks that their non-food, non-feed use be considered separately, with uses permitted or a 24c issued for alfalfa seed.

The mint industry, which encompasses seven states across the West and Midwest, relies on chlorpyrifos for controlling mint root borer, which is considered a critical use. The alternative product for this use, chlorantraniliprole, is not considered as effective.

Chlorpyrifos is used in onions to control onion maggots and seed corn maggots. It is generally used once per season at planting, and applied in a narrow band over the seed row. These maggot pests feed underground, and can be very damaging to onions by causing up to 100% loss if preventative insecticide treatments are not made. The available alternatives to chlorpyrifos for onion growers are more costly neonicotinoid-based seed treatments, which, if used as a replacement and not a rotational alternative, highlights resistance concerns. As the seed companies control many of these seed treatment alternatives, the use of chlorpyrifos allows growers the option of avoiding the use of treated seed, and also opens up variety choice, both of which are important to them.

While cranberry growers generally focus on using alternative chemistries for controlling insect problems, some growers are beginning to see resistance issues. The cranberry industry values chlorpyrifos as an emergency treatment for problem pests, such as the recent scale outbreak, for which chlorpyrifos offered effective control.

Finally, in apple production, chlorpyrifos has been used, in combination with oil, to control scale pests, red mites, and wooly apple aphids, for which it is said to offer very effective control during the delayed dormant stage of crop growth. While alternatives do exist for these pests, they are not considered to be as broadly efficacious.

Thus, there are a number of uses of chlorpyrifos in the PNW considered critical by a large number of industries, and many cases in which few alternatives are known to exist at

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present, or where alternatives (neonicitinoids, pyrethroids) are thought to be less efficacious, more expensive, and have greater impacts on non-target species, including pollinators. In the interest of minimizing additional uses of neonicotinoids, and avoiding increased insecticide resistance issues, a resistance management strategy that employs rotation of different chemical classes is ideal. Chlorpyrifos continues to be considered an important tool in managing key pests while rotating among chemical classes from year to year. Since many of these industries are considered minor use crops, it is highly unlikely that pesticide companies will pursue registrations for alternatives.

Regarding the compatibility of chlorpyrifos with IPM programs, it is summarized that despite being highly efficacious, chlorpyrifos is also one of the most toxic and persistent pesticides detected in Oregon surface waters by the Oregon Department of Environmental Quality. In watersheds where detections lie above the chronic water quality standard for aquatic life, voluntary risk mitigation, and risk elimination programs have been undertaken by farmers, in cooperation with OSU Extension. These have resulted in reductions in concentrations to sub-chronic levels in the Walla Walla, Hood and Clackamas watersheds, where the predominant applications have been to tree fruits, Christmas Trees and nurseries. Although pesticide application management has played a role, in all cases chlorpyrifos use itself has been reduced, by up to 80%. Use reductions have occurred through increased consultation of decision support tools, but farmers have also increased biological pest control tactics, and selected pesticides that are less toxic to natural enemies. This increases pest mortality from both pesticides and natural enemies, which act in concert. It was noted that the lack of compatibility of chlorpyrifos with biological control would lead to a treadmill of increased pesticide use in many of the commodities where it is applied, because of its capacity to elicit pest resurgence and secondary pest outbreaks. Although there are several critical uses in the PNW region for chlorpyrifos where efficacious alternatives do not exist, its interference with biological control factors paradoxically into the overall sense that it is a critical use pesticide. In Christmas tree production, farmers have reported gradual diminution in pest attack, particularly aphids, following the voluntary cessation of chlorpyrifos applications in the spring. The most likely explanation for this is thought to be that natural enemy populations have gradually recovered, and that pest mortality from predation has now replaced mortality from pesticides.

For more information on any of the comments included here, please fee free to contact me, and I can connect you with those consulted.

Respectfully,

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Katie Murray is a research assistant in the Integrated Plant Protection Center (IPPC) and is the Western IPM Center's EPA Comment Coordinator for the Pacific Northwest. Katie has expertise in agricultural stakeholder engagement and assessment methods related to understanding pesticide usage and pesticide compatibility with IPM.

The IPPC is the hub for Oregon's statewide IPM program, and the main IPM resource in Oregon for farmers, researchers, and extension agents. The expertise represented in the IPPC is highly interdisciplinary and includes toxicology, entomology, horticulture, adult education, public health, and anthropology, all with an IPM focus. Within the IPPC, we have a collective expertise in understanding the use of pesticides within IPM programs with a goal of protecting the economic, environmental and human health interests of our stakeholders.

To compile comments, input is actively solicited from stakeholders throughout the Pacific Northwest in an effort to convey use patterns, benefits, potential impacts, and the availability and efficacy of alternatives. These comments largely reflect agricultural stakeholder feedback and do not imply endorsement by Oregon State University or the Western IPM Center.