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Sent: Tuesday, July 9, 2019 7:36 PM
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Subject: Re: Request for Input - Pyrethroid and Triazine Questions from EPA

Elizabeth,

Regarding the potential pyrethroid mitigation measures:

According to Prichard et al. (2016), ten percent (10%) of agriculture-impaired water bodies in California are listed to have pyrethroid contamination and data show that pyrethroids can be present at toxic levels in irrigation runoff.

Pyrethroid use is highest in several crops in California including alfalfa (5% of the overall usage in lbs AI), almonds (23% of the overall usage in lbs AI), lettuce (9% of overall usage in lbs AI), citrus (5% of overall usage in lbs AI), pistachio (18% of overall usage in lbs AI), and walnut (5% of overall usage in lbs AI) (see Table 1). Rice usage of pyrethroids accounts for only 1% of the overall usage. Most of the crops listed above have moved away from flood or furrow irrigation to drip or other precision irrigation equipment with little to no runoff. However, some production systems continue to use flood or furrow irrigation including rice production, melon production in the lower desert (California Melon Board 2016) and alfalfa production throughout California.

Many variables affect the movement of materials from fields such as climate, soils, slope and solubility of the pesticide. The NRCS programs recommend a minimum width for a filter strip of 20 feet. The NRCS uses their pesticide screening tool to determine the level of mitigation needed and determine the hazard rating for leaching and runoff. A wider strip may be needed on steeper slopes and wetter climate than on flat ground with minimal precipitation. Also, proximity to water bodies is a consideration. We design them based on site characteristics (Hudson Minshew personal communication)

For alfalfa, a 10-ft buffer is sufficient because the alfalfa is a vegetated filter strip in itself and traps sediments which are the primary source of pyrethroid movement offsite. Long et al. found that pyrethroid movement off alfalfa fields was negligible, and there would not be any significant benefit to increasing to 25-ft, for either ground or aerial spraying (Rachael Long, personal communication). Furthermore, vegetation strips around fields of melons and rice are unlikely to affect movement of pyrethroids into water bodies because the presence of dikes around fields prevents surface water movement. Instead, accurate water use estimates using systems like CIMIS (California Irrigation Management Information System available at cimis.water.ca.gov) and increasing water

infiltration rates using soil amendments are effective at reducing overall runoff and offsite movement of pyrethroids. In addition, the use of sediment basins used to catch irrigation runoff also reduces the offsite movement of pyrethroids into waterways and water bodies.

Simazine Questions Related to Nursery (Outdoor) Ornamental Production: The California Pesticide Use Reporting database indicates no products containing simazine applied to any nurseries in California from 2011 to 2016.

Atrazine Questions Related to Sweet Corn Applications: The California Department of Pesticide Regulation Label database indicates current labels for Drexel Atrazine 4L and Drexel Atrazine 90DF for sweet corn production in California, but the California Pesticide Use Reporting database indicates no atrazine was applied to sweet corn or corn grown for human consumption in California from 2011 to 2016.

Simazine Questions Related to Sweet Corn Applications: The California Department of Pesticide Regulation Label database indicates current labels for Drexel Simazine 4L and Simazine 90DF, but the California Pesticide Use Reporting database shows no simazine containing products were applied to sweet or corn grown for human consumption in California from 2011 to 2016.

Atrazine Questions Related to Specific Tree Crops Applications: Atrazine 4L has a label for Christmas tree, Douglas fir, fir, guava, ornamental conifers, pines (various), and spruce; 90DF has a label on firs, guava, ornamental conifers, pines, and spruce. Our search of the California Pesticide Use Reporting database for atrazine use in Christmas tree, ornamental conifer, guava, and pine returned zero results from 2011 to 2016.

Simazine Questions Related to Berry Applications: Simazine was applied to only blueberries in California from 2011 to 2016. Almost 7,000 lbs ai were applied to about 3,700 acres (Table 2). But use has declined significantly from 2011 to 2016. According the John Rocoroni, UCCE weed advisor, these applications are going on using tractor mounted boom sprayers. Mechanically pressurized handguns are not commonly used.

Atrazine Questions Related to Fallow and CRP Applications: The California Department of Pesticide Regulation Label database indicates no current label for Drexel Atrazine 4L for use on uncultivated agricultural and uncultivated non-agricultural areas in California. The California Department of Pesticide Regulation Label database indicates a current label for Drexel Atrazine 90DF for use on uncultivated non-agricultural areas in California. The California Pesticide Use Reporting database indicates no use of any atrazine containing materials on fallow or idle land between 2011 to 2016.

Please let me know if you have any questions.

Thanks-

Matt

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Subject: Request for Input - Pyrethroid and Triazine Questions from EPA

Dear IPM Center Directors,

I am reaching out on behalf of USDA to request feedback from the IPM Centers for two requests we received from EPA's Office of Pesticide Programs. These requests are specific to triazines and pyrethroid use and usage and cover several crops. See attached, both requests are in a single document.

Could you provide an idea of the time needed to provide input on these questions so that I can relay this back to EPA? Thanks in advance, and don't hesitate to reach out if you need clarification from EPA on any of the questions.

Thanks,
Elizabeth

Elizabeth Hill

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PYRETHROIDS:

Good morning. Please see below for questions on potential pyrethroid mitigation measures. Do you think these are questions that you can answer? If so, how long do you think it will take to respond? In addition to the questions, we included the label language which I think PRD sent to you already. Thankyou.

US EPA Questions on Potential Pyrethroid Mitigation

EPA is considering mitigation options to reduce the movement of pyrethroids from agricultural fields to water bodies, and would appreciate information from USDA on some options we are considering. Some proposed label language follows the questions.

Questions for USDA

EPA is considering increasing the required vegetative filter strips (VFS) between fields where pyrethroids are used and water bodies from 10 feet to 25 feet. The proposed VFS could be reduced to 15 feet if:

- The area of application is considered prime farmland (as defined in 7 CFR § 657.5).
- Conservation tillage is being implemented on the area of application.
    - Conservation tillage is defined as any system that leaves at least 30% of the soil surface covered by residue after planting. Conservation tillage practices can include mulch-till, no-till, or strip-till.
- Terrace farming (such as defined here: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1263187.pdf) is being used on the area of application.
- Water and sediment control basins are present, as defined here: https://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=nrcs143_026238&ext=pdf.

Q: Are these appropriate and effective practices that reduce the movement of soil into waterbodies? Are these practices well-defined so that growers will know what is being required without further definition? Are there other, similarly effective practices that EPA should consider adding to the list to maintain a 15 foot VFS instead of a 25 foot VFS? Are field borders, as defined here https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1241318.pdf, equivalent to a VFS?

Q: Is prime farmland generally considered to be at little risk from soil erosion?

Q: EPA is also considering maintaining the current 10 foot wide VFS for Western irrigated agriculture (WA, OR, CA, ID, NV, UT, AZ, MT, WY, CO, NM). Is irrigated agriculture in these states at little risk for soil erosion?

Draft Description of Proposed Label Language

The following mitigation applies to all Agricultural pyrethroids (except pyrethrins).
VEGETATIVE FILTER STRIPS
Construct and maintain a vegetative filter strip, according to the width specified below, of grass or other permanent vegetation between the field edge and down gradient aquatic habitat (such as, but not

limited to, lakes; reservoirs; rivers; permanent streams; marshes or natural ponds; estuaries; and commercial fish farm ponds).
Only apply products containing (name of pyrethroid) onto fields where a maintained vegetative filter strip of at **least 25 feet** exists between the field edge and where a down gradient aquatic habitat exists. This minimum required width of 25 feet may be reduced under the following conditions:

- For Western irrigated agriculture a maintained vegetative filter strip of at least 10 feet wide is required. Western irrigated agriculture is defined as irrigated farmland in the following states: WA, OR, CA, ID, NV, UT, AZ, MT, WY, CO, NM.
- In all other areas, a vegetative filter strip with a minimum width of 25 feet is required, unless the following conditions are met. The 25 feet vegetative filter strip requirement may be reduced from 25 feet to 15 feet if at least one of the following applies:
    - The area of application is considered prime farmland (as defined in 7 CFR § 657.5).
    - Conservation tillage is being implemented on the area of application. Conservation tillage is defined as any system that leaves at least 30% of the soil surface covered by residue after planting. Conservation tillage practices can include mulch-till, no-till, or strip-till.
    - Terrace farming is being used on the area of application.
    - Water and sediment control basins are present.

TRIAZINES:

Hello. Please see below for questions on several uses of the triazines. We separated the questions by use site. Please let us know if these are questions you think you can answer and how long you think it will take to respond.

In addition to these questions, we are wondering if you would be able to answer questions related to the use of atrazine impregnated fertilizer in agriculture or if you recommend someone else to speak with this use pattern.

Nursery and Ornamental Production

The triazine human health draft risk assessments published July 2018 [RA website link] and potential risks of concern were identified for occupational handlers for scenarios where simazine is applied in nursery production systems with a backpack sprayer. The Agency has several questions to better understand the use and importance of simazine in these systems.

Simazine Questions Related to Nursery (Outdoor) Ornamental Production:

- For which state/region are you providing information?
- Which weeds are typically targeted by simazine in nursery production?
    - What application rate is typically used to target these pests?
    - What are the alternatives to simazine for these pests?
    - What are the advantages and disadvantages of simazine relative to the alternatives?
- Is simazine applied by mechanically pressurized handguns in nursery ornamental production?
    - If so, how many acres can one individual treat during a single day with a mechanically pressurized handgun?
    - What is the typical application rate?

Sweet Corn

The triazine human health draft risk assessments published July 2018 [RA website link] and potential risks of concern were identified for occupational handlers for scenarios where triazines are applied to sweet corn. The Agency has several questions to better understand the use and importance of simazine in these systems.

Atrazine Questions Related to Sweet Corn Applications:

1. For which state/region are you providing information?
2. Is atrazine applied by mechanically pressurized handgun in sweet corn?
    a. If applied this way, how many acres can one individual treat during a single day with a mechanically pressurized handgun?
    b. If applied this way, what formulations are used with mechanically pressurized handgun application (DF/WDG/WSP/liquids)? Is there a reason that one formulation used/not used relative to another (e.g., not compatible with application equipment, cost, phytotoxicity concerns)?
    c. What is the typical application rate? Does it differ by formulation?

Simazine Questions Related to Sweet Corn Applications:

1. For which state/region are you providing information?
2. Is simazine applied by mechanically pressurized handgun in sweet corn?
    a. If applied this way, how many acres can one individual treat during a single day with a mechanically pressurized handgun?
    b. What is the typical application rate?

Orchard/Vineyard

The triazine human health draft risk assessments published July 2018 [RA website link] and potential risks of concern were identified for occupational handlers for scenarios where simazine was applied using different application methods, specifically mechanically pressurized handguns and backpack sprayers. These scenarios include: grapefruit, oranges, lemons, apples, pears, tart cherries, avocadoes, filberts, grapes, olives, peaches, plums, sweet cherries, pecans, walnuts, almonds, nectarines, and macadamia nuts.

Simazine Questions Related to Orchard/Vineyard Applications:

1. For which crop(s) and region(s)/state are you reporting information?
2. How typical are backpack sprayer applications of simazine to orchard/vineyards?
    a. If applied this way, how many acres can one individual treat during a single day with a backpack?
    b. If applied this way, what is the typical application rate when applying with a backpack?
3. How typical are applications of simazine with mechanically pressurized handguns to orchard/vineyards?
    a. If applied this way, how many acres can one individual treat during a single day?
    b. If applied this way, what is the typical application rate?

Specific Tree Crops (guava and conifers)

The triazine human health draft risk assessments published July 2018 [RA website link] and potential risks of concern were identified for occupational handlers for scenarios where atrazine was applied with different application methods (aerial, mechanically pressurized handguns, and backpack sprayers) to guava and conifers.

Atrazine Questions Related to Specific Tree Crops Applications:

1. For which crop(s) and region(s) are you reporting information?
2. Which weeds are typically targeted by atrazine in tree crops?
    a. What application rate is typically used to target these pests?
    b. What are the alternatives to atrazine for these pests?
    c. What are the advantages and disadvantages of atrazine relative to the alternatives?
3. How typical are backpack sprayer applications to conifers?
    a. If applied this way, how many acres can one individual treat during a single day?
    b. If applied this way, what is the typical application rate?
4. How typical are applications with mechanically pressurized handguns to guava?
    a. If applied this way, how many acres can one individual treat during a single day?
    b. If applied this way, what is the typical application rate?
5. How typical are aerial applications to guava?
    a. If applied aerially, how many acres can one individual treat during a single day?
    b. If applied aerially, are formulations of water soluable packets used for aerial applications?
    c. If applied aerially, what is the typical application rate?

Berries

The triazine human health draft risk assessments published July 2018 [RA website link] and potential risks of concern were identified for occupational handlers for scenarios where simazine was applied with mechanically pressurized handguns to: blueberries, blackberries, loganberries, raspberries, lowbush blueberries, strawberries and cranberries.

Simazine Questions Related to Berry Applications:

1. For which crop(s) and region(s) are you reporting information?
2. How typical are applications of simazine with mechanically pressurized handguns to berries?
    a. If applied with a mechanically pressurized handgun, how many acres are treated in a day?
    b. If applied with a mechanically pressurized handgun, what is the typical application rate?

Fallow and Conservation Reserve Program (CRP)

The triazine human health draft risk assessments published July 2018 [RA website link] and potential risks of concern were identified for occupational handlers for scenarios where atrazine is applied with different application methods (aerial, or groundboom) to: fallow and conservation reserve program (CRP) areas.

Atrazine Questions Related to Fallow and CRP Applications:

1. For which region(s) are you reporting information? And are you reporting for fallow or CRP use sites?
2. How typical are aerial applications to fallow and CRP land?

    a. If applied aerially, how many acres are treated in a day?
    b. If applied aerially, what formulations are used aerially (DF/WDG/WSP/liquid)? Is there a reason that one formulation used/not used relative to another (e.g., not compatible with application equipment, cost, phytotoxicity concerns)?
    c. If applied aerially, what is the typical application rate?
3. How typical are groundboom applications to fallow and CRP land?
    a. If applied with a groundboom, how many acres are treated in a day?
    b. If applied with a groundboom, what formulations are used with groundboom applications (DF/WDG)? Is there a reason that one formulation used/not used relative to another (e.g., not compatible with application equipment, cost, phytotoxicity concerns)?
    c. If applied with a groundboom, what is the typical application rate?

Table 1. Pounds of pyrethroid in active ingredient (lbs ai) used on crops in California in 2016 by air and by ground equipment and as a percentage of the total lbs ai applied in California in 2016.

Crop	Air	Ground	Totals	% of total	%Air	%Ground
Alfalfa (23001)	23,695.40	25,727.06	51,251.36	5	46	50
Almond (3001)	28,082.42	212,363.88	240,880.32	23	12	88
Artichoke, Globe (13018)	4,277.24	5,119.51	9,396.75	1	46	54
Beans	3,405.54	1,652.59	5,101.77	0	67	32
Broccoli (13005)	4,910.45	6,825.54	13,368.21	1	37	51
Cabbage (13007)	1,339.98	2,597.81	4,123.15	0	32	63
Cantaloupe (10002)	2,465.37	5,231.51	7,915.27	1	31	66
Celery (29113)	4,278.06	9,365.45	13,950.37	1	31	67
Cherry (5002)	12.9	11,416.65	11,429.55	1	0	100
Corn (Forage - Fodder) (22005	1,044.99	4,586.11	5,631.10	1	19	81
Corn, Human Consumption (29	11,029.90	7,770.62	20,653.20	2	53	38
Cotton (29121)	28,108.15	6,702.96	34,811.10	3	81	19
Grapefruit (2002)	2,621.73	1,100.52	3,722.26	0	70	30
Lemon (2004)	1,289.75	6,112.21	7,402.56	1	17	83
Lettuce, Head (13045)	9,946.03	28,509.37	40,863.57	4	24	70
Lettuce, Leaf (13031)	13,294.53	34,399.30	50,146.17	5	27	69
Melon (29122)	823.83	3,338.40	4,273.84	0	19	78
Onion, Dry (14011)	2,149.82	3,601.17	7,985.49	1	27	45
Orange (2006)	999.4	35,846.41	36,857.78	4	3	97
Peas (29127)	1,420.22	293.33	1,713.55	0	83	17
Pistachio (3011)	29,975.09	155,152.44	185,273.56	18	16	84
Rice (28072)	12,427.83	895.95	13,323.78	1	93	7
Safflower (29129)	10,407.87	76.1	10,483.97	1	99	1
Spinach (13024)	9,556.53	9,738.54	19,545.33	2	49	50
Strawberry (1016)	8	26,322.66	26,412.80	3	0	100
Sugarbeet (29135)	3,706.24	2,122.74	6,111.70	1	61	35
Tangerine (2008)	835.53	7,220.29	8,058.85	1	10	90
Tomato (11005)	3,353.62	3,982.56	7,346.48	1	46	54
Tomato, Processing (29136)	12,828.48	20,043.79	33,072.45	3	39	61
Walnut (3009)	17,840.00	33,909.45	52,051.08	5	34	65
Totals	257,993.35	757,901.62	1,033,705.85		25	73

Table 2. Simazine applications to berry production in California from 2011 to 2016.

	2011	2012	2013	2014	2015	2016	Totals
Blueberry Acres	1582	349	303	325	608	565	3734
Lbs AI	2679	523	617	678	1236	1090	6823

References

Prichard T, Long R, Canevari M, Schwanki LJ. 2016. Controlling offsite movement of agricultural chemical residues: Alfalfa. ANR Publication 8459. Available at anrcatalog.ucanr.edu.

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