




Pyrethroids and Pyrethrins

Revised Ecological Risk Mitigation and Response to Comments on the Ecological Risk Mitigation Proposal For 23 Chemicals

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I. SUMMARY

This document is Environmental Protection Agency's (EPA or the Agency) revised ecological risk mitigation and response to comments on the *Ecological Risk Mitigation Proposal for 23 Pyrethroids and Pyrethrins Chemicals*, which published for a 60-day comment period on November 12, 2019, a period which was extended for 30 days until February 12, 2020. Most comments pertaining to this Ecological Risk Mitigation Proposal were submitted to the Special Pyrethroids docket, EPA-HQ-OPP-2008-0331, at www.regulations.gov, however some were submitted to individual chemical dockets. The Agency issued a single risk mitigation proposal to address ecological risks for 23 pesticides, which encompass the pyrethrins, synthetic pyrethroids, and pyrethroid-like insecticides, hereafter referred to as pyrethroids, because they exhibit a common insecticidal mode of action and show similar ecological effects. Additionally, assessing these pesticides as a group would ensure a consistent approach to mitigating potential ecological risk, including providing equity to stakeholders, when implementing regulatory changes for pesticides in this group.

A separate human health risk assessment was conducted for each chemical to account for different exposure pathways and human toxicity. A separate pesticide-specific Interim Registration Review Decision (ID) will be available in each pesticide docket, which combines both human health and ecological risk mitigation. For further information on a specific pesticide, see the pesticide's individual registration review public docket, available on www.regulations.gov. The pesticides and associated dockets affected by this document are listed in Table 1.

Table 1. List of Pesticides and Associated Dockets Covered in this Revised Ecological Risk Mitigation and Response to Comments

Chemical Name	Docket Number	PC Code	Year First Registered	Year Docket Opened
bifenthrin	EPA-HQ-OPP-2010-0384	128825	1989	2010
cyfluthrin	EPA-HQ-OPP-2010-0684	128831	1987	2010
beta-cyfluthrin	EPA-HQ-OPP-2010-0684	118831	1995	2010
gamma-cyhalothrin	EPA-HQ-OPP-2010-0479	128807	2004	2010
lambda-cyhalothrin	EPA-HQ-OPP-2010-0480	128897	1989	2010
cypermethrin	EPA-HQ-OPP-2012-0167	109702	1984	2012
alpha-cypermethrin	EPA-HQ-OPP-2012-0167	209600	2013	2012
zeta-cypermethrin	EPA-HQ-OPP-2012-0167	129064	1992	2012
cyphenothrin	EPA-HQ-OPP-2009-0842	129013	1991	2009
deltamethrin	EPA-HQ-OPP-2009-0637	097805	1994	2010
d-phenothrin (also called phenothrin and sumithrin)	EPA-HQ-OPP-2011-0539	069005	1976	2011
esfenvalerate	EPA-HQ-OPP-2009-0301	109303	1973	2009
etofenprox*	EPA-HQ-OPP-2007-0804	128965	2001	2007
fenpropathrin	EPA-HQ-OPP-2010-0422	127901	1989	2010
flumethrin	EPA-HQ-OPP-2016-0031	036007	2012	2011
imiprothrin	EPA-HQ-OPP-2011-0692	004006	1998	2011
momfluorothrin	EPA-HQ-OPP-2015-0752	016331	2015	2015

Chemical Name	Docket Number	PC Code	Year First Registered	Year Docket Opened
permethrin	EPA-HQ-OPP-2011-0039	109701	1968	2011
prallethrin	EPA-HQ-OPP-2011-1009	128722	1994	2012
pyrethrins	EPA-HQ-OPP-2011-0885	069001	1950s	2011
tau-fluvalinate	EPA-HQ-OPP-2010-0915	109302	1983	2010
tefluthrin	EPA-HQ-OPP-2012-0501	128912	1989	2012
tetramethrin	EPA-HQ-OPP-2011-0907	069003	1976	2011

*Etofenprox was included in the ecological risk assessment for the pyrethroids since it has properties similar to pyrethroids in the environment. However, etofenprox is not a pyrethroid, and EPA has not assumed it affects human health like a pyrethroid.

The pyrethroids/pyrethrins are a class of insecticides which cover 23 pesticide active ingredients (A.I.s). Pyrethrins are botanical insecticides derived from chrysanthemum flowers, and pyrethroids are synthetic derivatives of pyrethrins. These broad-spectrum pesticides target a wide range of pests in both agricultural and non-agricultural settings. Agricultural uses include, but are not limited to, field and row crops like corn, soybean, cotton; tree nuts; tree fruits; berries, and many vegetables. There are also several agricultural post-harvest uses to treat commodities such as corn and wheat. Non-agricultural uses include: public health mosquito abatement programs, and residential, commercial, and industrial areas. In residential settings, pyrethroids and pyrethrins are used indoors, outdoors, on pets, in impregnated clothing, and as medical and veterinary products. Pyrethroids provide cost-effective pest management efficacy for many insect pests that have few or no effective insecticide alternatives.

This document responds to the public comments on the Ecological Risk Mitigation Proposal, describes necessary ecological risk mitigation, and discusses changes to the mitigation that resulted from public comments. The generic label table in Appendix B lists the necessary mitigation to address potential ecological risks from the use of pyrethroids. Each individual pyrethroid pesticide will have an Interim Registration Review Decision (ID) document that will include a complete label table, with the ecological and human health mitigation and all required label language.

The body of this response to comments document is organized into three sections:

- I. This Summary which includes an overview of the public comments received on the *Pyrethroids and Pyrethrins Ecological Risk Mitigation Proposal for 23 Chemicals*;
- II. Summary of Public Comments on the Pyrethroids and Pyrethrins Ecological Risk Mitigation Proposal and Agency Responses to those Comments;
 - A. Indoor Use Comments
 - B. Outdoor Urban Use Comments
 - C. Agricultural Use Comments
 - D. Wide Area Mosquito Adulticide Use Comments
 - E. Policy or Technical Comments that Address All 23 Pesticides Across Use Patterns
- III. Summary of Changes to the Mitigation as a Result of the Comments

Appendices A, B, and C of this document include a summary of necessary actions, required label changes that address the potential ecological risks of concern from the use of the pyrethroids/pyrethrins, and a list of all commenters on the *Ecological Risk Mitigation Proposal for 23 Pyrethroids and Pyrethrins Chemicals*.

II. PUBLIC COMMENTS ON THE PYRETHROIDS AND PYRETHRINS ECOLOGICAL RISK MITIGATION PROPOSAL AND AGENCY RESPONSES TO THOSE COMMENTS

On November 12, 2019, the Agency released the *Ecological Risk Mitigation Proposal for 23 Pyrethroids and Pyrethrins Chemicals* for a 60-day public comment period, which was extended for 30 days and later closed on February 12, 2020. During the public comment period, EPA received substantive comments from about 64 different sources. Submitters included registrants, state and municipal agencies, non-governmental organizations, the U.S. Department of Agriculture, individual growers, pesticide industry groups, Pest Control Operators (PCOs), and the general public. Comments addressed the proposed mitigation, the technical aspects of the ecological risk assessments, and the benefits of maintaining the availability of these chemicals. Comments related to human health are addressed in a separate document, *Pyrethroids: Health Effects Division Response to Public Comments Submitted to the Special Docket for Pyrethroids, Pyrethrins, and Synergists*, which can be found in the public docket (EPA-HQ-OPP-2008-0331). The Agency thanks all commenters for their comments and has considered them in the final mitigation for the pyrethroids and pyrethrins, which are discussed below. Label tables for all uses of the pyrethroids are listed in this document and are also included in each chemical ID. Substantive comments, comments of a broader regulatory nature, and the Agency's responses to those comments are summarized below.

A. Indoor Use Comments

Comments on Indoor Use Label Statements:

Comments on labeling for pyrethroids with indoor uses that could result in down-the-drain exposures were received from the Bay Area Clean Water Agencies (BACWA) (EPA-HQ-OPP-2008-0331-0154), the City of Salinas (EPA-HQ-OPP-2008-0331-0143), the National Association of Clean Water Agencies (NACWA) (EPA-HQ-OPP-2008-0331-0156), the Pyrethrin Joint Venture/Steering Committee (PJV) (EPA-HQ-OPP-2008-0331-0151), the California Department of Pesticide Regulation (CDPR) (EPA-HQ-OPP-2008-0331-0168), the California Stormwater Quality Association (CASQA) (EPA-HQ-OPP-2008-0331-0166), and The Center for Biological Diversity (CBD) (EPA-HQ-OPP-2008-0331-0142). Commenters made recommendations on the following topics: pictograms, label advisory statements, Spanish labeling, label clarifications, pet product instructions, separate risk/benefit comparisons of all pyrethroids, and suggested clarifications for Appendix D of the *Ecological Risk Mitigation Proposal for 23 Pyrethroids and Pyrethrins Chemicals*. Comments are discussed below in the context of these topics.

Down-the-Drain Pictogram: Most of the commenters, with the exception of PJV, expressed their support of the inclusion of a pictogram to illustrate that the products in question should not be disposed down a drain. PJV suggested a statement in place of the pictograms. The remaining commenters expressed concern over the clarity of the pictogram EPA proposed and suggested an alternative pictogram. Some commenters also suggested adding size restrictions for the pictogram. BACWA suggested adding the pictogram to all pyrethroid labels (both agricultural and non-agricultural).

Advisory Statements:

Commenters remarked on the proposed advisory statements with a variety of suggestions. PJV requested additional clarification on the location of the statement “do not allow to enter indoor or outdoor drains.” NACWA and BACWA expressed support for the advisory statements, but suggested alternative language for products labeled for use directly inside pipes or sinks. In addition, BACWA suggested adding the down-the-drain advisory statements to all pyrethroid labels (both agricultural and non-agricultural). Commenters’ suggestions sought to assist users in understanding whether a product could or could not be discharged to the sewer system.

Spanish Labeling:

Most of the commenters, with the exception of PJV, expressed support for the addition of Spanish translations for the stewardship language. PJV asserted that the additional statements in Spanish make labels for residential products too large and that pictograms are already clear and reach a wider audience than just Spanish and English speakers. BACWA also suggested adding Spanish translations for the stewardship language to all pyrethroid labels (both agricultural and non-agricultural).

Labeling for Indoor and/or Outdoor Use:

NACWA, BACWA, CASQA, the City of Salinas, and CDPH support EPA’s proposal that product labels must state whether the products are allowed to be used indoors only, outdoors only, or both indoors and outdoors. CDPH recommends changing “could state” to “must state” resulting in only three label descriptors: “For indoor use only”, “For outdoor use only,” or “For indoor or outdoor use.”

Pet Product Instructions:

BACWA and NACWA requested that additional instructions for application quantity and rate for pet shampoos be added to labels and that spot-on pet products state that pets should not be washed for at least two weeks after treatment. BACWA also suggested that claims of spot-on treatments being “water proof” should be removed. In addition, BACWA suggested that the pictogram, advisory statements, and statements in Spanish should not appear on pet product labels to avoid inadvertently implying that wash water should not be discharged to the sewer.

Pet Shampoos and Publicly Owned Treatment Works (POTWs) and Use Site Errors:

BACWA requests an individual evaluation for one major source of pyrethroid discharges to POTWs, pet shampoos. BACWA also commented that they found multiple errors and omissions in Appendix D. Chemical Use Sites, of the *Ecological Risk Mitigation Proposal for 23 Pyrethroids and Pyrethrins Chemicals*. For example, the Appendix omits bifenthrin pet flea shampoos. Multiple indoor uses are listed under “Urban, outdoor, non-agricultural.” BACWA requests that EPA correct this table so that it accurately reflects the registered uses of pyrethroids. Some of the errors in Appendix D are carried over to Appendix B, which specifies the proposed labeling changes.

Agency Response: The Agency thanks the commenters for their comments on the indoor use statements. Based on the comments, the Agency has updated the label language to include an image of the required pictogram, and additional clarification that certain products (*i.e.*, pet shampoos) may enter an indoor drain if labeled for that purpose.

With regard to other pet product label recommendations, prohibiting washing of pets for two weeks after spot-on applications is often not practical for pet owners because of the varied environments pets may traverse. Waterproof claims are allowed due to the human health and pet health benefits afforded by products that are efficacious against target pests after a pet is bathed or exposed to rain. Registrants are required to support waterproof claims by submitting data showing that the product is effective against target pests after the pet has been washed. With regard to specifying the quantity used and rate for pet shampoos, some product labels currently include specific guidance on the quantity needed, while others allow for more flexibility. This is appropriate because the application quantity and rate will inherently vary based on the size of the pet and its hair length, making precise restrictions impractical.

Regarding the suggestion from BACWA to add the down-the-drain advisory statements to all pyrethroids/pyrethins labels (both agricultural and non-agricultural), outdoor and agricultural product labels already have label statements to prevent these chemicals from reaching drainage systems. In contrast, products with indoor uses do not currently have this language. Therefore, EPA has determined that these down-the-drain advisory statements are only necessary on products with indoor uses. However, registrants have the option to consider including this language (i.e., “unless for use in pipes and sinks”) to agricultural product labels at their discretion.

EPA recognizes that Spanish labeling may increase the size of residential labels, however the Agency determined that providing this advisory information in Spanish would inform more users that products should not be disposed of down the drain, unless they are specifically labelled for that use.

Regarding comments on mistakes in Appendix D of the Ecological Risk Mitigation Proposal, Appendix D was never meant to be a full list of all the use sites for each chemical, but only as summaries for reference. In addition, some new uses for certain chemicals were approved by the Agency after the document was finalized and were therefore not included in the original list. The required statements listed in the label tables will apply to new and future pyrethroid products with those uses.

Changes to the required mitigation are described in Section III and the final label statements are listed in Appendix B of this document. For comments regarding Separate Risk/Benefit Comparisons for all Pyrethroids and pet shampoos as they relate to POTWs, see **Section E. Policy or Technical Comments that Address All 23 Pesticides Across Use Patterns** below.

B. Outdoor Urban Use Comments

Comment on Restricted Use Classification:

Beyond Pesticides (EPA-HQ-OPP-2008-0331-0144) proposed that all outdoor use products be classified as Restricted Use.

Agency Response: The Agency classifies products as Restricted Use Products (RUPs) when specialized training or oversight is needed to ensure that unreasonable adverse effects do not

occur as a result of the product's use. Products are classified as Restricted Use when the following criteria are met: 1) the product's toxicity exceed certain hazard levels, 2) its labeling is not adequate to mitigate these hazards, 3) restricting the product would decrease the risk of adverse effects, and 4) the decrease in risks as a result of restriction would exceed the decrease in benefits. Details on the criteria used to consider a Restricted Use classification can be found in 40 CFR 152.160-152.175. The "Restricted Use" classification restricts a product, or its uses, to use by a certified applicator or someone under the certified applicator's direct supervision. Currently there are a number of pyrethroid products that have been classified as Restricted Use due to toxicity to fish and aquatic organisms. EPA regularly updates a list of products classified as Restricted Use and these can be found on EPA's website (<https://www.epa.gov/pesticide-worker-safety/restricted-use-products-rup-report>). Even if the RUP criteria are triggered, the Agency must determine if the potential risk can be adequately mitigated through additional labeling restrictions. The pyrethroids as a class are generally less toxic than the alternatives (such as organophosphates, carbamates, and some neonicotinoids), with most potential risks of concern limited to aquatic and terrestrial invertebrates and fish. The Agency's mitigation is designed to limit the exposure to these organisms from runoff and spray drift. The Agency has determined that no additional pyrethroids products warrant restricted use classification beyond the products that already have that classification.

Comment on the Draft Ecological Risk Assessment:

The CBD (EPA-HQ-OPP- 2008-0331-0142) expressed concern regarding the risks identified for non-listed, freshwater invertebrates from outdoor residential, commercial, turf, and nursery uses of pyrethroids. CBD also stated that the aquatic incidents reported in the Incident Data System and the Ecological Incident Information System confirm the findings of the ecological draft risk assessment.

Agency Response: The Agency acknowledges that there are risks of concern to aquatic organisms from the use of pyrethroids and pyrethrins. The Agency is requiring risk mitigation measures intended to reduce these risks by limiting runoff and spray drift, while maintaining the benefits of current uses. Information regarding reported incidents from the use of pyrethroids and pyrethrins was also taken into consideration when developing these mitigation measures. It is worth noting that the alternatives for the pyrethroids and pyrethrins include carbamates and organophosphate insecticides, which are potentially more toxic to human health and/or the environment. EPA concludes that severe risk mitigation for the pyrethroids and pyrethrins may result in users switching toward more toxic alternatives.

Comments on Spot Treatment Language:

Several commenters, including Bayer Crop Science (EPA-HQ-OPP-2008-0331-0170), the National Association of Landscape Professionals (NALP) (EPA-HQ-OPP-2008-0331-0163), the Pyrethroid Working Group (PWG) (EPA-HQ-OPP-2008-0331-0162), the National Pest Management Association (NPMA) (EPA-HQ-OPP-2008-0331-0167), Responsible Industry for a Sound Environment (RISE) (EPA-HQ-OPP-2008-0331-0164), and the California Department of Pesticide Regulation (CDPR) (EPA-HQ-OPP-2008-0331-0168) expressed concern that the proposed language regarding spot treatments is confusing and/or does not adequately reflect turf and landscape applications. CDPR commented that the phrase "when a higher chemical concentration is allowed" is problematic and could lead to potential misinterpretation of the

application rate. CDPR also said that the phrase “the entire treatment area” needs to be clearly defined, otherwise it could be misinterpreted and lead to a much higher pyrethroid application than intended for this use.

Agency Response: The Agency thanks the commenters for their input and has revised the language for the spot treatment requirement. The language has been simplified and the reference to the higher concentration has been removed to reduce confusion. The treatment area for spot treatment has been defined as “not to exceed two square feet in size (for example, 2ft. by 1 ft., 4ft by 0.5ft).”

Comments on Language for Crack and Crevice Treatment:

Several commenters, including the PWG (EPA-HQ-OPP-2008-0331-0162), NPMA (EPA-HQ-OPP-2008-0331-0167), RISE (EPA-HQ-OPP-2008-0331-0164) and CDPR (EPA-HQ-OPP-2008-0331-0168), expressed concern that the proposed statements for crack and crevice treatments were confusing and that the phrase “excess runoff” was open to interpretation by the applicator. They also stated that the statements intended to limit runoff contradicted other label statements directing applicators to avoid runoff.

Agency Response: The Agency thanks the commenters and has revised the language for crack and crevice treatments. The term “excess” has been removed to highlight the intent of the language to avoid runoff. In addition, the language has been revised to limit dripping and runoff “onto” structural surfaces, to reinforce the concern for any applications that might come in contact with impermeable surfaces.

Comments on Water Protection Statements:

The Agency proposed the following statement: “Do not spray the product into fish pools, ponds, stream, or lakes. Do not apply directly to sewers or storm drains, or to any area like a gutter where drainage to sewers, storm drains, water bodies, or aquatic habitat can occur.” Clarke Mosquito Control (EPA-HQ-OPP-2008-0331-0171) commented that they agree with the importance of minimizing contact and runoff to water resources. They expressed concern, however, that the phrase “any area like a gutter” does not provide enough detail in the water protection statement. Clarke recommended rephrasing the water protection statement to have specific surfaces or limit the surfaces that this statement applies to.

Agency Response:

The Agency acknowledges that the water protection statement mentioned in Clarke’s comment does not specify a particular surface. The intention of the statement is to encompass all surfaces and settings where drainage to sewers, storm drains, water bodies, or aquatic habitats can occur. Therefore, the Agency has decided to retain the language as proposed.

Comments on Rainfall Restrictions:

Several commenters, including NALP (EPA-HQ-OPP-2008-0331-0163), PWG (EPA-HQ-OPP-2008-0331-0162), Clarke Mosquito Control (EPA-HQ-OPP-2008-0331-0171), Responsible Industry for a Sound Environment (EPA-HQ-OPP-2008-0331-0164), and NPMA (EPA-HQ-OPP-2008-0331-0167), expressed concerns that the 24-hour rain statement would be impractical for applicators to comply with and for state regulators to enforce, due to the difficulty in

predicting weather events within that time period. They also pointed out that, in some areas, it would be impossible to find a window of 24 hours where no rainfall is expected in which to make an application. Commenters expressed concern that proposed label language for rainfall restrictions is written in a manner that is confusing and would render many applications impossible without violation.

Agency Response: The Agency appreciates the comments on the rainfall restrictions. The Agency acknowledges the difficulty in predicting the weather, even with a forecast as a guide. The statement that says to avoid applications when rainfall is expected has been revised and now omits the reference to avoiding applications “when rain is expected within 24 hours.” The statement now includes language to avoid applications when rainfall is expected “before the product has sufficient time to dry (minimum 4 hours).” NALP provided information on the estimated time liquid products take to dry after application, which helped inform the revised label language. Products that are allowed to dry have less potential to runoff if rain occurs. The Agency intends for this information to inform users and applicators of safer ways to apply and reduce the potential for runoff.

Comments on the Buffer from Water Statement:

NALP (EPA-HQ-OPP-2008-0331-0163) and Clarke Mosquito Control (EPA-HQ-OPP-2008-0331-0171) recommended revisions to the proposed buffer from water statement.

EPA originally proposed the following statement: *“For soil or foliar applications, do not apply by ground within 25 feet of lakes, reservoirs, rivers, permanent streams, marshes or natural ponds, estuaries and commercial fish farm ponds.”* NALP argued that a 25 ft buffer is not necessary due to the following reasons: lawncare applications are very precise due the nature of the equipment used (hose-end spray gun, back-pack sprayer, manual pump sprayers, and small psuh/ride machines) and the the use of very coarse droplets. NALP noted that a 25 ft buffer would be problematic for communities on the coast or adjacent to rivers/streams whose waters benefit from healthy lawns. Healthy lawns create denser roots and reduce runoff and prevent erosion and essentially function as vegetative filter strips. NALP proposed to reduce the buffer to only 10 feet. In addition, NALP recommended the following statement for turf: *“For turf applications, do not apply within 10 feet of lakes, reservoirs, rivers, permanent streams, marshes or natural ponds, estuaries and commercial fish farm ponds.”*

Clarke Mosquito Control also commented that prohibiting ground-based foliar applications within 25 feet of waterbodies would impact the effectiveness of applications to mitigate nuisance pests in residential, industrial, and recreational areas where these pests find harbor. Limiting applications to storm water ponds, lakes, and other areas close to the breeding sites for mosquitoes and midges could have a negative impact on the effectiveness of applications. Clarke suggested revising the prohibition to instead include best application practices.

Agency Response: The Agency has reviewed and carefully considered NALP’s and Clarke’s comments to reduce the buffer distance from water. After reviewing all information, the Agency has decided to retain the 25-foot buffer, which is currently on products formulated for agricultural use. While this language is already on agricultural use labels, the Agency listed it as a requirement for outdoor residential products in order to ensure consistency for all pyrethroid

product labels. One major reason to keep the 25-foot distance is to protect waterbodies from runoff, especially in large scale rain events. The Agency notes that it is not requiring a buffer for the wide-area mosquito adulticide uses, which are also used to treat mosquitos for both nuisance and public health purposes in residential, industrial, and recreational areas.

Comment to Include Intermittent Streams to Buffer Statements:

CDPR (EPA-HQ-OPP-2008-0331-0168) recommended the following amendment to the buffer statement to be consistent with California regulations: *“For all applications, do not apply by ground within 25 feet of lakes, reservoirs, rivers, permanent, and intermittent streams, marshes or natural ponds, estuaries and commercial fish farm ponds.”* CDPR recommends changing this sentence in both the “Buffer from Water Statement” and “Spray Drift Management for Commercial Nurseries.”

Agency Response: The Agency has decided not to include intermittent streams among the list of water bodies in the buffer statements for the pyrethroids. The Agency recognizes the importance of intermittent streams in arid areas of the country, and notes that states have the ability to impose more restrictive requirements on the state pesticide labels based on each state’s assessment of local risks and benefits.

Comments on Wind Speed Requirement:

CDPR (EPA-HQ-OPP-2008-0331-0168) recommended that the Agency change the wind speed requirement for ornamental/recreational turf applications from 15 mph to 10 mph, stating that current pyrethroid labels do not allow applications when wind speeds are greater than 10 mph.

Agency Response: The Agency has decided not to change the wind speed requirement because 15 mph provides more flexibility to applicators, while still managing the risk from spray drift. Allowing applications when wind speeds are up to 15 mph, along with the existing drift buffers and other requirements to reduce runoff, are not expected to significantly increase the likely exposure and potential risk to aquatic habitat. See the Agency Response on Spray Drift in the **Agricultural Use Comments** of this document for additional information.

Comments on General Outdoor Application Statement:

NPMA (EPA-HQ-OPP-2008-0331-0167), PJV (EPA-HQ-OPP-2008-0331-0151), Clarke Mosquito Control (EPA-HQ-OPP-2008-0331-0171), and CDPR (EPA-HQ-OPP-2008-0331-0168) expressed concerns about the exceptions listed as permitted uses under the proposed general outdoor application statement.

NPMA requested that the Agency either remove exception #2 (*“Perimeter band treatments of 7 feet wide or less from the base of a man-made structure to pervious surfaces (e.g., soil, mulch, or lawn)”*) under the general outdoor application statement, or extend the perimeter band width to 10 feet. NPMA suggested that limiting this distance could impact the efficacy of treatments in certain areas. NPMA argues that structural pest control applications are typically low volume and treatment sites such as soil, mulch, and lawn are less prone to runoff into surface water.

Clarke Mosquito Control requested that “unless protected from rain” be added to the end of exception #5 (*“Applications around potential exterior pest entry points into man-made*

structures such as doorways and windows, when limited to a band not to exceed one inch") in order to permit applicators flexibility for effective pest management without affecting environmental concentrations.

The PJV expressed concern with how the Agency has proposed to replace general outdoor application statements with 6 permitted uses. PJV believes that the language does not specify which of the restrictions should be included on labels and proposed that the Agency include language in its final published decision which instructs registrants to clearly state those uses from the list of permitted uses that are applicable to the end use product's label claims and directions. PJV asserts that requiring different general outdoor application statements for each end-use product could lead to confusion for users. The general outdoor application statement is intended to encompass all end-use products with outdoor urban uses and the 6 exemptions noted in the statement are not applicable on all residential labels.

In addition, CDPH recommended various label language clarifications to the general outdoor application statement, including using consistent and comprehensive language when referencing pervious surfaces and combining bullets that apply to vertical surfaces.

Agency Response: The Agency thanks the commenters and, based on the comments, the Agency has revised the general outdoor statements to reorder the requirements in a more logical way, reduce some of the redundant language, and add clarity to the labels. The Agency did not alter the text for perimeter treatment in the revised labeling, because the Agency concluded that the reduction from 10 to 7 ft will allow for sufficient coverage, while reducing the amount of pesticide applied based on total surface area. The Agency finds that a slight reduction in the application footprint would still allow flexibility for the user, maintain the benefit of these pesticides, and protect aquatic environments by reducing the potential environmental loading from applications. The Agency also did not add the language suggested by Clarke Mosquito Control to exception #5 of the proposed label language ("*Applications around potential exterior pest entry points into man-made structures such as doorways and windows, when limited to a band not to exceed one inch*") because settings protected by the rain are already covered under exception #4 ("*Applications to underside of eaves, soffits, doors, or windows permanently protected from rainfall by a covering, overhang, awning, or other structure*"). The Agency agrees with PJV that registrants should only add currently permitted uses for each product from the text and has added this clarification in the label table instructions. Specific changes to the mitigation are described in Section III and the final label statements are listed in Appendix B.

C. Agricultural Use Comments

Comments Received on Vegetative Filter Strips:

Florida Fruit and Vegetable Association (FFVA) (EPA-HQ-OPP-2008-0331-0130), the United States Department of Agriculture (USDA) (EPA-HQ-OPP-2008-0331-0138), the National Cotton Council (NCC) (EPA-HQ-OPP-2008-0331-0139), the Center for Biological Diversity (CBD) (EPA-HQ-OPP-2008-0331-0142), the American Farm Bureau Federation (AFBF) (EPA-HQ-OPP-2008-0331-0146, EPA-HQ-OPP-2008-0331-0152), the Florida Department of Agriculture and Consumer Services (FDACS) (EPA-HQ-OPP-2008-0331-0153), the Mississippi Farm Bureau Federation (MFBF) (EPA-HQ-OPP-2008-0331-0158), the Michigan Farm Bureau

(MFB) (EPA-HQ-OPP-2008-0331-0159), the New York Farm Bureau (NYFB) (EPA-HQ-OPP-2008-0331-0160), the Minor Crop Farmer Alliance (MCFA) (EPA-HQ-OPP-2008-0331-0148), the California Department of Pesticide Regulation (CDPR) (EPA-HQ-OPP-2008-0331-0168), the Pyrethroid Working Group (PWG) (EPA-HQ-OPP-2008-0331-0162), Responsible Industry for a Sound Environment (RISE) (EPA-HQ-OPP-2008-0331-0164), and Oregonians for Food and Shelter and the Oregon Farm Bureau Federation (EPA-HQ-OPP-2008-0331-0165) provided comments relating to vegetative filter strips.

Commenters asserted that the proposed Vegetated Filter Strip (VFS) requirements for pyrethroid products are impractical. Some commenters criticized the size of the VFS, which can range from 15 to 25 feet, as being too onerous on farmers. Registrants stated that, for many farmers, it is not feasible to maintain a VFS especially for small farms or farms in dry climates. USDA suggested that for application areas that are 10 acres or less, the VFS requirement be reduced in width or waived altogether. Another commenter suggested that erosion practices serve as a complete substitute for VFS.

PWG and RISE agree that VFS are the most effective approach to reduce transport via soil erosion in storm runoff, but do not believe that use restrictions beyond those currently required are necessary for pyrethroids. PWG also supports the VFS label language for western irrigated agriculture, but suggests allowing locally appropriate sediment control measures as an alternative to a 10 foot VFS.

CBD stated that the VFS requirement for pyrethroid products are not protective enough of ecosystems and non-target organisms. CBD does not believe that the 15 to 25 feet VFS is effective in mitigating risks to the environment. Instead, CBD suggested that a 66-foot VFS, which was a consideration discussed in a meeting in October 2018, between EPA and PWG, would be more effective.

Commenters wanted the phrase “down-gradient aquatic habitats” to be more explicitly defined. Commenters asserted that the term “aquatic habitats” would not allow for consistent enforcement, as aquatic habitats may be defined differently by many organizations. An example provided by commenters is “if ditches that may contain water at times of the year, would be considered an aquatic habitat?” Commenters also stated that there are situations where certain crops are grown in areas that are leveled or contoured to reduce or eliminate slopes to water bodies, but there may be water exchange via groundwater. In both cases, the commenters stated that they would not know if a VFS is necessary.

FFVA noted that fields and groves in Florida are structurally designed so that an upslope of the ground exists between the field and the aquatic habitat, to prevent sediment runoff. In these instances, no down gradient component applies, since by design the slope runs toward the field and not toward the water body. FFVA asked if these kinds of fields could be exempted from the requirements of a VFS.

Commenters expressed concerns with maintaining VFS and wanted clarification from the Agency on how to do so. Some commenters were concerned that EPA’s proposal does not allow

for native vegetation to be used in the VFS. USDA proposed adding maintained vegetated headlands and riparian areas around fields as part of vegetation that would qualify as VFS.

CDPR provided monitoring data showing pyrethroid concentrations in aquatic habitats downstream of farmlands in irrigated arid areas. CDPR suggested that, instead of exempting irrigated farmland in western states from the increase in VFS width, sediment control basins be allowed to meet this exemption.

Agency Response: The Agency appreciates the feedback on the VFS mitigation measure received from all the commenters. In response to these comments EPA has made two significant changes to the VFS mitigation language: 1) including application areas of 10 acres or less to the list of situations that qualify for a reduced 15 foot VFS width instead of 25-foot VFS; and 2) exempting western irrigated agriculture from the VFS requirement if a sediment control basin is present. EPA is allowing application areas of 10 acres or less to have a reduced VFS width of 15 foot to help alleviate the impact of creating and maintaining a VFS on small scale operations, who may be disproportionately impacted by an expanded 25 ft VFS requirement. EPA is also allowing more flexibility for growers in western irrigated agriculture by allowing areas with sediment control basins to be exempt from the VFS requirement. Maintaining VFS can be particularly burdensome in these arid landscapes and sediment control basins are effective in reducing and managing on-site and downstream runoff in western irrigated agriculture. This language allows for the desired effect of removing sediment from runoff, while also allowing growers in these arid areas the option to conserve water if needed. The changes to the necessary mitigation are further described in Section III and the final label statements are listed in Appendix B.

The Agency acknowledges the comments received that question the practicality of the VFS requirement and that there may be an additional burden to expand the VFS to 25 feet. EPA is concerned with sediment from agricultural land, with which pyrethroids bind, eroding into aquatic habitats exposing aquatic organisms susceptible to these chemicals. Pyrethroid monitoring data have been collected in water and sediment across the United States, with pyrethroid detections widespread that are directly related to agricultural uses. Data supported by the PWG and USDA have shown that VFS can be an effective method of reducing sediment and runoff transport into aquatic systems when designed with field specific factors and are well maintained. EPA has determined that the expansion of VFS size, along with the flexibility provided by VFS width reductions when erosion control practices are present, will reduce risk to aquatic organisms while maintaining the agriculture benefits pyrethroids provide.

EPA acknowledges the comments asking for a specific definition of down-gradient aquatic habitats. Since there may be local conditions to consider when considering how to identify an aquatic habitat, instead of providing a comprehensive list of possible aquatic habitats on the label, EPA provides examples of aquatic habitats to help applicators determine if there is a nearby aquatic habitat and if a VFS is required.

In response to the FFVA, the Agency acknowledges that some fields are structurally designed so that an upslope of the ground exists between the field and the aquatic habitat, in such cases, no down gradient component applies. If there is no down gradient component, a VFS would not be

necessary. It is uncertain what proportion of Florida fields are designed this way, and due to regional variability in grower practices and varying geography, a common sense approach should be used when constructing VFS.

The Agency appreciates the concern on how to create and maintain VFS. In an effort to assist with this, EPA has provided an internet link on the label to the document entitled *Conservation Buffers to Reduce Pesticide Losses*¹, which provides details on how to create and maintain VFS for the purpose of preventing pesticides from leaving application areas.

In response to USDA's proposal to add maintained vegetated headlands and riparian areas around fields as part of vegetation that would qualify as VFS, the Agency notes that it is difficult to define terms such as "vegetated headland" and "riparian areas." The labeling allows VFS to be composed "of grass or **other permanent vegetation** between the field edge and nearby down gradient aquatic habitat." Due to differences in geography and variation in the local varieties of vegetation that might be suitable, the Agency does not wish to define the types of grass species and types of vegetation that should be used for VFS. VFS should be adapted to local conditions, and EPA encourages growers to consult local information sources, such as the Natural Resources and Conservation Service and university extension, when choosing the type of vegetation for VFS construction.

In response to CBD's concern that a 25-foot VFS could not be sufficiently effective mitigation to prevent pyrethroids from entering aquatic ecosystems, the Agency must balance the potential risks and benefits from the use of these chemicals. The Agency has determined that the expanded VFS width, as well as the encouragement of erosion reduction practices, will reduce risk to aquatic organisms from agricultural uses.

Comments Received on Spray Drift Buffers:

The Florida Fruit and Vegetable Association (FFVA) (EPA-HQ-OPP-2008-0331-0130), the National Cotton Council (NCC) (EPA-HQ-OPP-2008-0331-0139), the American Farm Bureau Federation (AFBF) (EPA-HQ-OPP-2008-0331-0146, EPA-HQ-OPP-2008-0331-0152), the Florida Department of Agriculture and Consumer Services (FDACS) (EPA-HQ-OPP-2008-0331-0153), the Mississippi Farm Bureau Federation (MFBF), the Michigan Farm Bureau (MFB) (EPA-HQ-OPP-2008-0331-0159), the New York Farm Bureau (NYFB) (EPA-HQ-OPP-2008-0331-0160), the National Agricultural Aviation Association (NAAA) (EPA-HQ-OPP-2008-0331-0169) and Oregonians for Food and Shelter and the Oregon Farm Bureau Federation (EPA-HQ-OPP-2008-0331-0165) provided comments on the spray drift buffers from aquatic habitat.

Similar to comments on VFS, some commenters would like a more explicit definition of aquatic habitats, especially when it comes to ditches on or near agricultural areas. The FFVA is also concerned that the 25 ft buffer from aquatic habitat for ground application is too restrictive if lateral ditches are considered aquatic habitats as it would take a lot of land out of production.

¹ Natural Resources Conservation Service. 2000. Conservation Buffers to Reduce Pesticide Losses. <https://www.regulations.gov/document?D=EPA-HQ-OPP-2008-0331-0175>

Some commenters are concerned that the proposed aquatic habitat buffer zones for aerial application (450 feet for ULV and 150 feet for non-ULV applications) will force large portions of farmlands to either go untreated or be under-treated causing sanctuary areas for pests to establish, or cause for onerous and/or dangerous ground application in these areas.

The NAAA recommend that all buffer zones should be wind directional, as drift only moves downwind. The NAAA also suggests EPA consider non-ULV aerial application buffer zones to be 25 feet instead of 150 feet and only be necessary when the waterbody is downwind from the application area.

Agency Response: The Agency appreciates all the commenters input on agricultural buffer zones for pyrethroid applications. The distances of the agricultural buffer zones are already established on pyrethroid labels and EPA is updating the language to add clarity to the label. The Agency acknowledges that wind-directional buffers have been added to a few new products, and the Agency may consider these types of buffers in the future. The Agency did not expand the size of the buffers already required on labels, as this would impose an additional burden on applicators and growers. EPA has determined that the established aerial buffer zones of 450 (for ULV applications) and 150 (for non-ULV applications) feet reduce exposure and risk to aquatic organism from pyrethroids. Since there may be local conditions to consider when considering how to identify an aquatic habitat, instead of providing a comprehensive list of possible aquatic habitats on the label, EPA provides examples of aquatic habitats to help applicators determine if there is a nearby aquatic habitat and if a buffer zone is necessary.

Summary of Comments on Spray Drift Labeling:

The Florida Fruit and Vegetable Association (FFVA) (EPA-HQ-OPP-2008-0331-0130), the Northwest Horticulture Council (NHC) (EPA-HQ-OPP-2008-0331-0132), Valent USA LLC (EPA-HQ-OPP-2008-0331-0150), the United States Department of Agriculture (USDA) (EPA-HQ-OPP-2008-0331-0138), the National Agricultural Aviation Association (NAAA) (EPA-HQ-OPP-2008-0331-0169), the National Cotton Council (NCC) (EPA-HQ-OPP-2008-0331-0139), the Center for Biological Diversity (CBD) (EPA-HQ-OPP-2008-0331-0142), the California Citrus Quality Council (CCQC) (EPA-HQ-OPP-2008-0331-0149), the American Farm Bureau Federation (AFBF) (EPA-HQ-OPP-2008-0331-0146, EPA-HQ-OPP-2008-0331-0152), the Florida Department of Agriculture and Consumer Services (FDACS) (EPA-HQ-OPP-2008-0331-0153), the Minor Crop Farmer Alliance (MCFA) (EPA-HQ-OPP-2008-0331-0148), the Almond Board of California (EPA-HQ-OPP-2008-0331-0155), the Mississippi Farm Bureau Federation (MFBBF), the Michigan Farm Bureau (MFB) (EPA-HQ-OPP-2008-0331-0159), the New York Farm Bureau (NYFB) (EPA-HQ-OPP-2008-0331-0160), and Oregonians for Food and Shelter and the Oregon Farm Bureau Federation (EPA-HQ-OPP-2008-0331-0165) provided comments on the proposed spray drift labeling.

Droplet Size and Efficacy: Registrants are concerned that the proposed “medium or coarser” droplet size requirement for ground application will not be as effective for providing adequate product coverage and managing pest resistance. They stated that requiring medium or coarser droplets negatively affects the efficacy of pyrethroid treatments. The registrants also believe that this requirement will also increase the amount of water needed per application, requiring more time to spray each acre since spray rigs would need to be filled more often. In addition,

registrants and USDA suggested alternative droplet size language, slightly modifying the wording from “Applicators are required to use a medium or coarser droplet size” to “Applicators are required to use nozzles that are designed to emit medium or coarser droplets,” or something similar.

USDA commented that a requirement of coarse droplets would not compromise control for applications to soil. USDA provided options for a few droplet size alternatives for foliar applications, including allowance of fine droplets in situations where achieving adequate foliar coverage is difficult, requiring fine (or coarser) droplets instead of medium (or coarser) droplets, when wind speeds are below 10 mph. Registrants suggested that EPA allow application of fine droplets when the target field is 50 or 100 feet away from surface water.

Temperature Inversion: NAAA also suggested altering the temperature inversion mitigation language to “do not apply during low-level temperature inversions.”

Wind Speed: CBD does not think that the 15 mph wind speed restriction is an adequate mitigation to protect ecological resources, and that a 10 mph restriction would provide a more appropriate reduction in risk.

Airblast Spray Applications: Registrants commented that EPA reconsider the requirement of medium or coarser droplet size for airblast applications. Registrants noted that the requirement of medium or larger droplet sizes does not recognize the optimized droplet size of air-blast sprayers or air-assisted sprayers. OFS and OFB commented that technologies have been specifically developed to reduce drift and provide for the complete coverage of orchard crops, such as fruit and nut trees, grapes, and berries. Registrants are especially concerned about negative impacts on resistance management, efficacy, and adequate coverage on crops such as nut trees, grapes and berries. CCQC wanted to make sure that the mitigation limiting boom release height to 4 feet does not negatively impact airblast applications for citrus trees.

Agency Response: The Agency thanks the commenters’ input on nozzles and droplet sizes for pyrethroid applications. Many pyrethroid labels currently already require a medium droplet size. This is a primary reason that the Agency is establishing a minimum droplet size of medium instead of fine. Establishing a medium or coarser droplet size across all products will reduce the potential for off-site drift without adding label complexity. The Agency did not consider variable droplet sizes to correspond with an application target, wind speed, or buffer distance because the potential benefit from this requirement would be outweighed by a confusing and complex label. EPA is not providing an exemption for situations where achieving adequate foliar coverage is difficult, because the label language would be unenforceable.

EPA agrees with the suggestion from registrants and USDA to modify the proposed droplet size language from “Applicators are required to use a medium or coarser droplet size” to “Applicators are required to select the nozzle and pressure that deliver medium or coarser droplet size” and include ASABE S641 for aerial and ASABE S572 for ground applications. The Agency concludes that setting droplet sizes to medium or coarser across the pyrethroid class for applications to agricultural crops effectively safeguards the environment, and balances the benefits and potential risks from the use of these chemicals.

In response to comments from NAAA about the temperature inversion text, given the difficulty of defining the altitude where inversion conditions may not impact drift, the EPA has determined that the term “low-level” does not provide adequate clarification; therefore, EPA is not adopting NAAA’s suggested revision to the label language.

For airblast applications, it seems that stakeholders have misunderstood the proposed spray drift labeling, because neither the droplet size nor the boom height requirements are noted in the Ecological Risk Mitigation Proposal, nor are they specified in this document or the chemical-specific Interim Registration Review Decisions.

Some pyrethroid labels currently require that aerial applications be allowed at a maximum windspeed of 10 mph, when boom width does not exceed 75% of the wingspan for fixed-wing craft and 90% of the rotor blade diameter for helicopters. The Agency has determined that an increase in the maximum allowable windspeed to 15 mph, when aerial boom widths are reduced to not exceed 65% of the wingspan for fixed wing aircraft and 75% of the rotor diameter for helicopters, results in approximately the same amount of drift downwind from the edge of the treated area, all other things being equal. Likewise, the Agency is also allowing a maximum windspeed for ground boom applications to 15 mph, since ground boom applications generally result in less drift than aerial applications. Allowing applications when wind speeds are up to 15 mph, along with the existing drift buffers and other requirements to reduce runoff, are not expected to significantly increase the likely exposure and potential risk to aquatic habitat.

The Agency has considered all feedback related to revised label language for the agricultural uses, as described in further detail in Section III, and listed in Appendix B.

Comments on Spray Drift Modeling: The NAAA provided comments regarding the spray drift analysis conducted in the draft risk assessment, particularly concerning the spray drift model, AgDrift, the inputs used in the model (*e.g.*, drift fraction, application rates, droplet sizes), exposure assumptions, and the uses modeled. NAAA believes that the tier-1 component of the AgDrift model is inadequate because some of the assumptions it uses are unrealistic. NAAA recommended the use of a refined assessment with a higher tiered model.

EPA Response: The Agency acknowledges and thanks NAAA for their comments. AgDrift is the currently approved model for evaluating potential spray drift from a pesticide application. The Agency appreciates the additional information provided by NAAA about application practices and continues to work with industry to update and improve modeling methods to better reflect these practices. It is noted, however, that modeling for a national-level assessment is first conducted using maximum application rates, limitations, and instructions listed on the pyrethroid pesticide labels. In the absence of specific use directions and application restrictions implemented across all product labels, default assumptions (based on empirical data) are used.

Comments on Stewardship Labeling:

Comments submitted from CDPR (EPA-HQ-OPP-2008-0331-0168) proposed label changes relating to the inclusion of stewardship language to labels, and suggested revision of non-target advisory language to include aquatic organisms and insects.

Agency Response: The Agency appreciates the comments and suggestions to add stewardship language and change the non-target organism hazard language for pyrethroids labels. Existing labels already have separate hazard statements for aquatic invertebrates and fish. The Agency has not changed the stewardship and best management practices language original proposed in the Ecological Risk Mitigation Proposal. However, the bee incident reporting instructions have been updated to note that bee incidents are recommended to be reported to both the state lead agency, who are responsible for incident investigations, and to the EPA.

Comments on Pyrethroid Benefits to Users:

The California Specialty Crops Council (EPA-HQ-OPP-2008-0331-0161), the Florida Fruit and Vegetable Association (EPA-HQ-OPP-2008-0331-0130), the United States Department of Agriculture (EPA-HQ-OPP-2008-0331-0138), the National Cotton Council (EPA-HQ-OPP-2008-0331-0139), the Hawaii Crop Improvement Association (EPA-HQ-OPP-2008-0331-0140), the American Farm Bureau Federation (EPA-HQ-OPP-2008-0331-0146), the Minor Crop Farmer Alliance (EPA-HQ-OPP-2008-0148), the California Citrus Quality Council (EPA-HQ-OPP-2008-0331-0153), the Almond Board of California (EPA-HQ-OPP-2008-0331-0155), the Mississippi Farm Bureau (EPA-HQ-OPP-2008-0331-0158), the Michigan Farm Bureau (EPA-HQ-OPP-2008-0159), the New York Farm Bureau (EPA-HQ-OPP-2008-0331-0160), the California Specialty Crops Council (EPA-HQ-OPP-2008-0331-0160), and the Oregon Farm Bureau (EPA-HQ-OPP-2008-0331-0165) cited the benefits of pyrethroids in agricultural crop production.

Stakeholders commented on the value of pyrethroids in agricultural crop production in controlling a variety of pests. Stakeholders emphasized the value of pyrethroids for high-value specialty crops and field crops and cited their efficacy, low cost, tank mixing compatibilities, residual effectiveness, and the pyrethroids' role in integrated pest management and resistance management programs. Commenters stated that pyrethroids offer a low-risk option for emerging pests that have few alternative controls and are critical for meeting phytosanitary requirements, quarantine requirements and/or food safety standards. Furthermore, stakeholders commented that the pyrethroids are valuable to the global trade in agriculture, due to the established tolerances/MRLs in both U.S-based and global export markets, which is essential to farmers who wish to successfully sell produce to worldwide markets and supply chains.

Agency Response: The Agency thanks the commenters for submitting information relating to the benefits of pyrethroids in outdoor agricultural crop production. These comments support the benefits conclusions in the Agency's *Usage Characterization and Qualitative Overview of Agricultural Importance for Pyrethroid Insecticides for Selected Crops and Impacts of Potential Mitigation for Ecological Risks*, which published along with the *Ecological Risk Mitigation Proposal for 23 Pyrethroids and Pyrethrins Chemicals*.

D. Wide-Area Mosquito Adulticide Use Comments

Comments Relating to Benefits of Pyrethroids in Controlling Vectors for Disease and Resistance Concerns:

The Lee County Mosquito Control District (LCMCD) (EPA-HQ-OPP-2008-0331-0147), Clarke Mosquito Control Products (Clarke) (EPA-HQ-OPP-2008-0331-0171), the Florida Department of Agriculture and Consumer Services (FDACS) (EPA-HQ-OPP-2008-0331-0151), and Florida Fruit and Vegetable Association (FVVA) (EPA-HQ-OPP-2008-0331-0153) commented on the benefits of certain pyrethroids for public health mosquito control. Commenters note there are only two classes of insecticides labeled for wide area mosquito adulticide control: pyrethroids and organophosphates. LCMCD notes resistance concerns with use of permethrin and naled (an organophosphate).

Agency Response: The Agency concurs with commenters that certain pyrethroids (bifenthrin, deltamethrin, etofenprox, permethrin, phenothrin, prallethrin, pyrethrins) have benefits for controlling vectors for human disease and can be used in rotation with other insecticides as part of an integrated resistance management program. The Agency assessed these benefits and the alternatives in the *Alternatives Assessment for Synthetic Pyrethroid/Pyrethrin Insecticides as Wide-Area Mosquito Control Adulticides in Support of Registration Review* (located in docket EPA-HQ-OPP-2008-0331).

Comments on Buffer Zones:

The LCMCD (EPA-HQ-OPP-2008-0331-0147) and Pyrethrin Joint Venture (PJV) (EPA-HQ-OPP-2008-0331-0151) requested clarification regarding the requirement for buffer zones from aquatic water bodies. EPA proposed a ground buffer of 25 ft and an aerial buffer of 150 ft from aquatic water bodies for agricultural uses. EPA also proposed a 450 ft buffer from aquatic habitats for ultra low volume (ULV) aerial applications. The LCMCD and PJV requested confirmation that the buffers to water bodies are not applicable to mosquito adulticide applications made by mosquito control districts. PJV similarly requested confirmation that for products labeled for both agricultural and mosquito adulticide use, the buffer to water bodies would not apply to public health applications.

Agency Response:

EPA confirms that the required buffers to water bodies are not applicable to mosquito adulticide applications made by mosquito control districts. The 25 ft ground and 150 ft aerial buffers are intended for agricultural uses. The 450 ft buffer for ULV aerial applications are intended for non-public health uses. EPA has added clarification to the label tables to address concerns from commenters.

Comments on Spray Drift Language for Wide-Area Mosquito Control:

Clarke (EPA-HQ-OPP-2008-0331-0171), and AMCA (EPA-HQ-OPP-2008-0331-0157), provided comments recommending changes to spray drift requirements.

Clarke expressed concern that it is not operationally feasible to consistently apply pyrethroid products via truck-mounted sprayers perpendicular to the wind direction, considering that wind and road direction are not always within the operator's control. The comments state that applicators may have to wait hours to spray if it is possible to do so at all to achieve these conditions. Therefore, Clarke proposed removing the following statement: "Ground application: Create an optimum swath when [product name] is applied from a truck that is being driven

perpendicular to the wind direction, when possible. Direct the spray head of equipment to ensure even distribution of the spray cloud throughout the area.”

Clarke commented that current labeling references to “cool temperatures” are potentially confusing, as cool is a relative term, and may contradict proposed labeling directions instructing users to spray at temperatures at or above 50°F. Clarke recommends that references to cool temperatures be removed in statements such as: “FOR BEST RESULTS treat when mosquitoes or insects are most active and weather conditions are conducive to keeping the spray cloud in the air column close to the ground e.g. cool temperatures.”

The AMCA commented that ULV machines do not produce an actual spray, but instead produce an aerosol whose drift is subject to wind conditions, so the labeling requirement to “direct” the spray nozzle to ensure even distribution is unnecessary.

AMCA suggested a revision to the release height instructions for mosquito ULV aerial applications which notes: “Do not apply by fixed wing aircraft at a nozzle height less than 100 feet (30.5 m) above ground or canopy, or by helicopter at a height less than 75 feet (22.9 m) above the ground or canopy, (and if applicable) unless specifically approved by the state or tribe based on public health needs.” AMCA proposed a lower release height to be more compatible with district protocols. In follow up emails, AMCA proposed a 50 ft release height for drones (email from David Brown of AMCA dated September 15, 2020).

Agency Response: The statement “create an optimum swath when [product name] is applied from a truck that is being driven perpendicular to the wind direction...” is meant to be a recommendation, and not an enforceable requirement. It should not impact the applicator’s ability to make an application if needed. The Agency is keeping this text on labels in order to provide instructions for users on how to create an optimum swath.

The Agency agrees that the reference to cool temperatures is potentially confusing and is removing “cool temperatures” from the statement that Clarke references above. The revised labeling reads: “FOR BEST RESULTS treat when mosquitos or insects are most active and weather conditions are conducive to keeping the spray cloud in the air column close to the ground.”

The statement “direct the spray head of equipment to ensure even distribution of the spray cloud throughout the area” should not impact the applicator’s ability to make an application if needed. Even if ULV machines produce an aerosol instead of a spray, both would be subject to wind conditions and it is assumed that applicators would want to ensure even spray distribution when possible.

In response to the suggestion from AMCA to lower the release height requirements for public health mosquito ULV applications, the Agency notes that the current statement already allows for a lower release height for public health needs.

All of the language included in the Ecological Risk Mitigation Proposal is already on existing pyrethroid products registered for wide-area mosquito adulticide uses. The Agency did not

impose any new mitigation for the wide area mosquito adulticide uses. However, the Agency thanks the commenters and has considered the comments in the revised label language, which has been adjusted to improve clarity and reduce confusion. For more information on the label changes as a result of the comments, see Section III, and Appendix B.

Comments on Ecological Risks from Wide-area Mosquito Control:

Clarke (EPA-HQ-OPP-2008-0331-0171) commented that the modeling used by the Agency to determine EECs and RQs for the wide-area mosquito adulticide use is conservative and overestimates the risks from the deposition of these chemicals into water bodies. Clarke states that even with the conservative RQ values, many of the aquatic RQs barely exceed the LOCs for phenothrin, etofenprox, and prallethrin and real-world use is not likely to pose the same risk to aquatic waterbodies as determined by the risk assessment.

Agency Response: The Agency acknowledges that the aquatic EECs from exposure modeling for wide-area mosquito adulticide use are highly uncertain compared to broadcast agricultural applications to a defined watershed. The nature of the deposition of mosquito adulticides to water bodies likely leads to a conservative estimate of RQs for aquatic organisms in the water column and benthos. However, EPA has considered potential conservatism in designing the risk mitigation for this use. Overall, the public health benefits outweigh the potential risks from the wide-area mosquito adulticide use and therefore, no additional mitigation, other than the addition of pesticide resistance management information, is required for this use.

Comments on Bifenthrin Use for Wide-area Mosquito Control:

The AMCA (EPA-HQ-OPP-2008-0331-0157) commented that bifenthrin is the most commonly used pyrethroid in suburban/rural mosquito barrier spray treatments and should be added to the list of pyrethroids used in wide-area mosquito control.

Agency Response: The Agency acknowledges that bifenthrin was omitted from the list of pyrethroids used in wide-area mosquito control in error. The Agency confirms that bifenthrin is used for wide-area mosquito control.

Comments on Resistance Management Labeling for Adult Mosquitocide Products:

Clarke (EPA-OPP-HQ-2011-0539-0052) notes that certain resistance management measures as mentioned in PR Notice 2017-1 are excessively restrictive to the mosquito control community, particularly measures that require that a discreet number of applications in the same season be listed on the label. Clarke stated that alternative mosquito adulticide products are limited to certain pyrethroids and a small number of organophosphates, and until such time as there are ample alternatives, any labeling instructions for rotation in wide-area mosquito control should be advisory, rather than mandatory.

Agency Response: The Agency disagrees with Clarke that the resistance management labeling for pyrethroids products is excessively restrictive to the mosquito control community. Public comments from the mosquito control community (e.g., the American Mosquito Control Association) indicate there is support from mosquito control districts for resistance management labeling. Although PR Notice 2017-1 excludes products meant for general consumer use, such as residential use products, it does not exclude products formulated for mosquito adulticide uses.

Mosquito ULV products were not exempted because mosquito pests have already shown resistance to pyrethroids on a local basis. The Agency is requiring resistance management labeling for mosquito ULV products in order to provide mosquito control officials resistance management guidance via the label. However, registrants have flexibility to define the maximum number of applications of their products per season.

Comments on Pollinator Labeling for Mosquitocide Products:

Clarke (EPA-OPP-HQ-2011-0539-0052) recommended that the Agency clarify which types of applications are pertinent for pollinator labeling statements, and sought clarification whether these statements applied for mosquito ULV applications. Clarke expressed concern about the fluid nature of external referenced best management practices resources on EPA's pollinator website and noted concerns that the statements/guidelines in those resources might be worded in such a way as to become enforceable labeling. Clarke asks if the proposed inclusion of a reporting link for bee incidents bypasses and diminishes similar reporting instructions in the state managed pollinator protection plans (MP3s) and interferes with the ability of local resources to investigate bee incidents in a timely manner. Clarke asks if the Agency will be coordinating a response to reported bee kills with state agencies.

Agency Response: The pollinator statements as proposed in various pyrethroid PIDs are not applicable for mosquito ULV applications and the Agency has modified the label table to reflect this clarification. The label link to EPA's pollinator website, which contains externally referenced best management practices resources, is meant to provide additional information for applicators/users. Best management practices noted on the website and externally referenced resources are not intended to be mandatory enforceable measures. The labeling merely notes that following best management practices can help reduce risk to terrestrial pollinators; it does not state that following best management practices is mandatory. EPA will work with external stakeholders to update any referenced resources as needed.

The labeling information on how to report bee incidents is not intended to bypass any reporting recommendations/requirements as noted in state MP3s, or to interfere with the states' ability to investigate bee incidents. EPA recommends that pollinator incidents be reported to both the states (who are responsible for incident investigations) and the EPA. EPA has added clarification in the bee incident reporting text to note this.

Comments on the Removal of Volumetric Mean Diameter Information:

Clarke (EPA-OPP-HQ-2011-0539-0052) expressed concern with the Agency's proposal to remove volumetric mean diameter (VMD) information from all labels, as they believe that VMD information is necessary for ULV applications. Mosquito adulticides use ultra-low volume nozzles which suspend the product in the air for a longer duration. The Agency's proposal to remove VMD information conflicts with the requirements of PR Notice 2005-1, which recommended that specific VMD specifications be noted on mosquito adulticide labels.

Agency Response: The removal of VMD instructions from spray drift labeling for agricultural products is not meant to apply to mosquito ULV products. EPA agrees that ULV instructions are necessary for adult mosquitocide products. The Agency has added text in the label table to provide clarity for stakeholders. Since public health adult mosquitocide applications have

different spray drift labeling requirements, EPA encourages registrants to generate separate labels for these products to reduce user confusion.

E. Policy or Technical Comments that Address All 23 Pesticides Across Use Patterns

Response to Comments Pertaining to the 2016 Environmental Fate and Ecological Risk Assessment for Pyrethroids:

A number of comments were submitted that focused on the 2016 pyrethroid ecological risk assessment instead of the 2019 ecological risk mitigation proposal. These comments included the assertion that the risk assessment underestimated or overestimated the potential risks of concern from the use of these chemicals, the need for Endangered Species Assessment consultation, and the need for the risk assessment to consider synergism. Among others, these comments on the risk assessment have been previously submitted to EPA and were addressed in the September 2019 memo, *Joint Response from OPP's Environmental Fate and Effects Division and Pesticide Re-evaluation Division to Comments on the Preliminary Risk Assessments for Pyrethroids and Pyrethrins Insecticides*. Responses to comments not previously addressed, as well as those necessitating an update, are captured below.

Comments Requesting Consideration of Synergism:

The Center for Biological Diversity (CBD) (EPA-HQ-OPP-2008-0331-0142) and Beyond Pesticides (EPA-HQ-OPP-2008-0331-0144) commented that EPA's ecological risk assessment did not adequately assess the potential for synergistic toxicities of different combinations of pesticides, and that EPA should consider the impacts from synergy before making a registration review decision. CBD further suggests EPA did not address potential chronic toxicity concerns from known insecticide synergists, piperonyl butoxide and MGK-264, in the 2016 pyrethroid ecological risk assessment, raising concern's with EPA's assessment of the acute toxicity in the risk assessment. These comments focused primarily on the down-the-drain uses.

Agency Response: In the 2016 ecological risk assessment, EPA acknowledged that if synergists persist in Publicly Owned Treatment Work (POTW) effluents, the interactions with pyrethroids that may enter the aquatic environment and be available for simultaneous exposure to aquatic organisms could lead to enhanced toxicity. The likelihood of enhanced toxicity from down the drain exposure of synergists remains an uncertainty.²

EPA has developed an interim process to review and consider claims of synergy being made by registrants in their patents and released this document,³ which opened for public comment on September 9, 2019 and closed on October 24, 2019. After the Agency has considered public comment on the proposed policy, and once that policy has been finalized, EPA will consider its implications on EPA's final decision for each individual pyrethroid chemical. For end-use

² Page 53 of USEPA *Preliminary Comparative Environmental Fate and Ecological Risk Assessment for the Registration Review of Eight Synthetic Pyrethroids and the Pyrethrins*. September 30, 2016.

³ EPA Seeks Comment on Process for Evaluating Pesticide Synergy for Ecological Risk Assessments For Release: September 9, 2019. <https://www.epa.gov/pesticides/epa-seeks-comment-process-evaluating-pesticide-synergy-ecological-risk-assessments>

products containing a pyrethroid along with the insecticide synergists piperonyl butoxide and MGK-264, any additional potential mitigation to address synergistic effects would be included in the proposed registration review decisions for those chemicals. The proposed registration review decisions for both of those chemicals has not yet been completed. Please check EPA's registration review schedule⁴ for the latest registration review schedule updates.

Comment Requesting Consideration of Less Toxic Pyrethroid Alternatives:

CBD comments that EPA did not adequately consider the availability of less toxic alternatives to pyrethroids.

Agency Response: EPA considered the most common alternatives to pyrethroids for use in mosquito control (*Alternatives Assessment for Synthetic Pyrethroid/Pyrethrin Insecticides as Wide Area Mosquito Adulticides in Support of Registration Review*, November 2018), agriculture (*Usage Characterization and Qualitative Overview of Agricultural Importance for Pyrethroid Insecticides for Selected Crops and Impacts of Potential Mitigation for Ecological Risks*, September 2019), outdoor lawn and spot treatments (*Usage Characterization and Alternatives Summary for Synthetic Pyrethroids Used in Residential Lawns and Outdoor Vegetative Spot Treatments*, April 2016), and potential down-the-drain uses (*Qualitative Overview of Alternatives for Selected Use Patterns of Pyrethroids Being Assessed for a Down-the-Drain Risk Assessment*, February 2016), which are available in the special docket (EPA-HQ-OPP-2008-0331); these assessments found that the most common alternatives included organophosphates, neonicotinoids, and carbamates.

Comments Requesting Endangered Species Act Consultations:

The CBD (EPA-HQ-OPP-2008-0331-0142) and Beyond Pesticides (EPA-HQ-OPP-2008-0331-0144) commented that the Agency has failed to comply with the Endangered Species Act (ESA). CBD commented that EPA must initiate consultations at the earliest possible time; that risk assessments should meet the National Academy of Sciences (NAS) recommendations on a probabilistic rather than a concentration-ratio approach; that EPA should use best available spatial data on pesticide use patterns and distribution and range of listed species to make "may effect"/"no effect" determinations; that EPA must make defensible "not likely to adversely affect" and "likely to adversely affect" determinations as a prerequisite for defensible "jeopardy" and "no jeopardy" determinations; and that EPA, with the Services, must assess the adverse impacts on critical habitat; and that EPA must consult with the Services on approval of all end-use product labels. Beyond Pesticides commented that EPA made a "no effects" determination for flumethrin and momfluorothrin, but should not make that determination for any pesticides prior to completing full ESA review and consultations.

Agency Response: As noted in the *Joint Response from OPP's Environmental Fate and Effects Division and Pesticide Re-evaluation Division to Comments on the Preliminary Risk Assessments for Pyrethroids and Pyrethrins Insecticides* (September 2019), EPA plans to address ESA issues on a chemical-by-chemical basis. EPA is addressing many of the concerns regarding listed species as part of its ongoing collaborative work with the Services and USDA to improve the consultation process for listed species for pesticides in accordance with ESA § 7. EPA made the "no effects" determinations for flumethrin and momfluorothrin based on the low likelihood

⁴ <https://www.epa.gov/pesticide-reevaluation/registration-review-schedules>

of outdoor exposure from the registered uses for these pesticides and is not planning any additional ESA review or consultations for these pesticides.

Pollinator Comments that Apply Across all 23 Chemicals and Use Patterns

Comments on Adequacy of 2016 Risk Assessment for Pollinators:

The Center for Biological Diversity (CBD) (EPA-HQ-OPP-2008-0331-0142), Beyond Pesticides (EPA-HQ-OPP-2008-0331-0144), commented that EPA did not adequately account for risk to pollinators. Beyond Pesticides commented that EPA should conduct a full ecological risk assessment of each chemical rather than a combined risk assessment for 23 chemicals. CBD believes the risk assessments fail to account for potential synergistic toxicities to bees. Friends of the Earth (through a coordinated a mass mailer campaign with over 25,000 signers) commented that the pyrethroid ecological risk mitigation proposal weakens restrictions, follows pesticide company requests, and does not adequately protect bees and other pollinators. The letter specifically cites the reduced vegetative filter strip buffer width between fields and water bodies as putting aquatic ecosystems, pollinators, and human health at risk.

Agency Response: EPA acknowledges the potential risk to non-target organisms, including aquatic and terrestrial invertebrates, from the use of the pyrethroids and pyrethrins. The Agency has determined that risk mitigation measures intended to reduce runoff and spray drift are necessary. Risk mitigation measures include an increased width for vegetative filter strips and standardized spray drift management labeling. The Agency has adopted and is using its pollinator risk assessment framework⁵ in evaluating risk to bees from use of pesticides as part of the registration and registration review process for registered pesticides. Because this pollinator risk assessment framework was adopted after registration review began for this group of chemicals, EPA is planning to address these data gaps by issuing Data Call-Ins (DCIs) for the full suite of pollinator data on a chemical-by-chemical basis following the issuance of the chemical specific Interim Registration Review Decisions (IDs).

Comment on Issuing DCIs for Pollinator Data Needs:

FMC Corporation (EPA-HQ-OPP-2011-0039-0132 - permethrin) and the PWG (EPA-HQ-OPP-2008-0331-0162), observed that each pyrethroid PID describes data needs to inform risk assessments to pollinators, describing higher tier data being required depending on the results of lower tiered test and other lines of evidence. The commenters note that pyrethroids as a group share many environmental and fate characteristics, such as soil binding, low water solubility, and non-systemicity, and that existing pyrethroid data ranges from Tier 1 to Tier 3 depending on the chemical. They encourage EPA to consider whether existing datasets may already meet needs before issuing new DCIs, given the nature of pyrethroids and their use patterns, in order to minimize additional data requests and most efficiently utilize limited resources, while still providing an appropriate level of protection to pollinators.

⁵ See the Agency's Pollinator Risk Assessment Guidance online: <https://www.epa.gov/pollinator-protection/pollinator-risk-assessment-guidance>.

Agency Response: EPA acknowledges that different pyrethroid chemicals share several environmental and fate characteristics and that it is important to avoid requiring unnecessary data to most efficiently use available resources. EPA is willing to consider proposals from registrants to bridge pollinator datasets across pyrethroids and avoid duplicative data submissions. A bridging proposal should incorporate several underlying principles, including but not limited to:

- (1) generating sufficient empirical data to demonstrate the predictability of the bridging approach being proposed,
- (2) addressing the presumed greater uncertainty of bridged data relative to empirical data, and
- (3) addressing data gaps should the intended bridging approach be considered unreliable (e.g., using a conservative approach such as lower 95th confidence limit on observed toxicity).

The Agency believes that different bridging approaches may be required depending on the nature of the data being bridged (e.g., Tier I, Tier II effects, Tier II exposure). In addition, the bridging method(s) should address multiple considerations related to exposure and effects of pyrethroids on bees, such as:

- (1) the variation in observed toxicity and physicochemical properties among active ingredients,
- (2) the nature of potential exposure in relation to labeled uses (e.g., at bloom applications, spray drift),
- (3) the need for managed pollination services associated with the pyrethroid use,
- (4) pesticide usage (e.g., acres treated, annual pounds applied), and
- (5) other lines of evidence indicating increased potential for exposure or effects, such as hive residue monitoring data and ecological incidents.

Registrants are strongly encouraged to submit proposals for bridging pyrethroid exposure and effects data to EPA for review and comment prior to their implementation. EPA intends to issue Data Call-Ins for pollinator data for pyrethroids with outdoor uses with the potential for exposure to bees based on the data needs outlined in the pyrethroid DRAs and PIDs. As with all DCIs, registrants will be able to cite existing data and/or request data waivers (for example, as a result of any data bridging) in response to the DCIs. EPA will consider proposals from registrants to bridge pollinator datasets across pyrethroids. When available EPA will share any additional guidance on the underlying principles to consider when designing a bridging proposal in the Special Docket for Pyrethroids, Pyrethrins, and Synergists located at <http://www.regulations.gov> (Docket #: EPA-HQ-OPP-2008-0331).

Comments on Applicability of Pollinator Hazard Statement to Non-Agricultural Uses: The American Mosquito Control Association (AMCA) (EPA-HQ-OPP-2011-0039-0135 - permethrin and EPA-HQ-OPP-2011-1009-0059 - prallethrin), Clarke Mosquito Control Products, Inc. (EPA-HQ-OPP-2011-0539-0052 - phenothrin and EPA-HQ-OPP-2011-1009-0060 - prallethrin), and Scotts Company LLC (EPA-HQ-OPP-2011-0039-0133 - permethrin and EPA-HQ-OPP-2011-1009-0058 - prallethrin) requested clarifications on which portions of the pollinator hazard statement should apply to specific use patterns, specifically on wide-area mosquito control applications. AMCA and Clarke commented that wide area ULV applications occur under conditions to promote drift of very fine droplets, which makes spray drift mitigation

inappropriate for this use pattern; that ULV applications use a fraction of application rates used in agriculture and minimize deposition onto foliage; and occur when pollinators are unlikely to be active (late evening or early morning). Both AMCA and Clarke commented that the pollinator hazard statement that directs the user to minimize drift should not apply to ULV mosquito control applications. Clarke does not object to the placement of the remaining three pollinator hazard statements, which reference best management practices, state/tribal pollinator protection plans, and information on how to report bee kills, on product labels used for ULV wide area mosquito control. Scotts notes that pollinator hazard statements should not apply equally to consumer products, and suggests the clarifying language that excludes residential homeowner use from the pollinator hazard statement requirements, while also suggesting pollinator hazard language for these uses.

Agency Response: EPA thanks the commenters for their suggestions and confirms that the environmental hazard statements to protect pollinators (including language on minimizing drift; link to best management practices, information on state/tribal pollinator protection plans, and how to report bee incidents) only apply to outdoor liquid foliar applications to agricultural row crops. Language has been added to the label tables in this document to clarify that the statements do not apply to products formulated for residential homeowner use or ULV wide-area mosquito control applications. This will also be reflected in the label tables in the chemical-specific Interim Registration Review Decisions. While EPA appreciates Scotts' suggested pollinator protection language for residential product labels, these pollinator protection statements only apply to pyrethroids products with liquid foliar agricultural applications.

Comments Supporting the Proposed Pollinator Risk Mitigation:

Bayer CropScience LP (EPA-HQ-OPP-2009-0637-0107 - deltamethrin) and FMC Corporation (EPA-HQ-OPP-2011-0039-0132 - permethrin) agree with EPA's proposed pollinator labeling for labels approved for agricultural uses, including pollinator environmental hazard label language, pollinator stewardship to promote best management practices, promoting state managed pollinator protection plans (MP3s), and inclusion of the pollinator incident reporting label language.

Agency Response: EPA thanks the commenters for their feedback on the mitigation to address risks to pollinators.

Comment Supporting Beehive Use (Tau-fluvalinate Only):

USDA (EPA-HQ-OPP-2010-0915-0042 - tau-fluvalinate) notes that one product (EPA Reg. No. 2724-406) is registered for use in beehives to control parasitic mites, where it is applied via impregnated plastic strips. USDA claims that tau-fluvalinate is not toxic to bees in its solid state, and asks EPA to confirm whether or not the proposed advisory bee statements are necessary for this product.

Agency Response: The pollinator labeling language is required for liquid formulation products for outdoor agricultural use. This labeling is intended to provide information to applicators to help reduce potential exposure to pollinators from applications related to crop production. The required labeling for those uses do not apply to the tau-fluvalinate impregnated plastic strips that

are used in beehives and should not be added to those products. Clarification that this requirement is only for liquid formulations has been added to the required label language.

Comments Requesting Refinement of the Ecological Risk Assessment:

Several commenters, including the Minor Crop Farmer Alliance (MCFA) (EPA-HQ-OPP-2008-0331-0148), the California Citrus Quality Council (CCQC) (EPA-HQ-OPP-2008-0331-0149), the Florida Department of Agriculture and Consumer Services (FDACS) (EPA-HQ-OPP-2008-0331-0153), the American Mosquito Control Association (AMCA) (EPA-HQ-OPP-2008-0331-0157), the Pyrethroid Working Group (PWG) (EPA-HQ-OPP-2008-0331-0162), and Responsible Industry for a Sound Environment (RISE) (EPA-HQ-OPP-2008-0331-0164), pointed out errors or inconsistencies and expressed concern that EPA's ecological risk assessment used a conservative Tier I approach that yielded risk quotients (RQs) that represent worst-case scenarios and are excessively high, which could lead to pressure for unnecessary mitigation in the future. Commenters recommended that EPA refine the ecological risk assessments to take into account a broader range of toxicity data, calculate more realistic RQs, and more clearly explain the degree to which proposed mitigation will impact actual environmental concentrations. They assert that refinements to the ecological risk assessment made now will improve communication and reduce confusion among the public, regulators, and other stakeholders.

Agency Response: EPA acknowledges the efforts of PWG and other stakeholders to provide additional higher-tier data, and the efforts of PWG to provide an alternate ecological risk assessment intended to refine the standard methods used by OPP for aquatic organisms. EPA has previously addressed specific comments about the methodologies and conservatism of risk estimates in the *Joint Response from OPP's Environmental Fate and Effects Division and Pesticide Re-evaluation Division to Comments on the Preliminary Risk Assessments for Pyrethroids and Pyrethrins Insecticides* (September 30, 2019). EPA disagrees with several proposed refinements, including a new aquatic level of concern, calculation of risk quotients based on species sensitivity distribution, and several proposed estimates of risk factor multipliers. However, the Agency acknowledges the validity of other refinements and higher-tier data considerations, and has considered them in the development of risk mitigation as well as the ecological risk characterization included in the 2019 Pyrethroid Ecological Risk Mitigation Proposal.

Comments on Applicability of Pesticide Resistance Management Language to Different Use Patterns:

The American Mosquito Control Association (AMCA) (EPA-HQ-OPP-2011-0039-0135 - permethrin and EPA-HQ-OPP-2011-1009-0059 - prallethrin), Clarke Mosquito Control, Inc. (EPA-HQ-OPP-2011-0539-0052 - phenothrin and EPA-HQ-OPP-2011-1009-0060 - prallethrin), and Scotts Company LLC (EPA-HQ-OPP-2011-0039-0133 - permethrin and EPA-HQ-OPP-2011-1009-0058 - prallethrin), support the inclusion of pesticide resistance management language on labeling, noting that pyrethroids and organophosphates are the only modes of action currently available for wide-area mosquito control. Clarke and Scotts ask that EPA clarify the use patterns to which the resistance management labeling requirements apply, as well as use patterns that are excluded. Clarke also suggests that pesticide resistance management language should be recommended/advisory rather than mandatory, given the limited modes of action

available for wide-area mosquito control. Scotts suggests that label tables include additional language to clarify that resistance management language does not apply to products formulated for residential use.

Agency Response: EPA thanks the contributors for their comments. As PR Notice 2017-1 states, pesticide resistance management language is “intended mainly for agricultural and certain non-crop land areas under commercial or government-sponsored pest management. In particular, this PR Notice applies to all field use agricultural pesticide products, as well as pesticides which are labeled for greenhouse production, sod farms, ornamental crops, aquatic vegetation, rights-of-way, and pest management along roadways. This guidance is not intended to apply to products labeled for use by the general consumer, such as residential use pesticides.” As part of registration review, the Agency determined that resistance management labeling for most pyrethroid products is necessary to address known resistance concerns, but is not meant for residential uses. The Agency agrees with the commenters that resistance management language would inform users making wide-area mosquito adulticide applications. Therefore, the Agency has added the pesticide resistance management language requirement to products intended for wide-area mosquito adulticide use. A clarifying note has been added to the description column of the label table to exclude products that are residential use products.

Comment Requesting Chemical-Specific Registration Review Label Directions:

Clarke Mosquito Control Products, Inc. (EPA-HQ-OPP-2011-0539-0052 – phenothrin and EPA-HQ-OPP-2011-1009-0060 - prallethrin) request that EPA include all final necessary label mitigations and changes into a single table in the Interim Registration Review Decision for each active ingredient.

Agency Response: EPA confirms that each chemical-specific Interim Registration Review Decision will have a comprehensive label table that includes all required label mitigation measures.

Comments Requesting Additional Time for Label Submission and Implementation:

Pyrethrin Joint Venture (PJV) (EPA-HQ-OPP-2008-0331-0151), Bayer Cropscience LP (EPA-HQ-OPP-2009-0637-0107 - deltamethrin), and Valent (EPA-HQ-OPP-2009-0301-0130 - esfenvalerate), submitted comments requesting additional time for label submission (following the Interim Registration Review Decision) and/or additional time to complete implementation of updated labels on containers. Bayer and Valent request an additional 60 days for a total of 120 days for registrants to submit revised labels following the issuance of the Interim Registration Review Decisions. In addition, the PJV and Valent requested 18-24 months following EPA’s approval of these amended labels for registrants to begin selling and distributing product containers reflecting these new amended labels. PJV believes the 18-month implementation timeline to be in accordance with 40 CFR 152.130(c).

Agency Response: EPA thanks the commenters for their request and has determined that an extension to the 60-day timeframe is acceptable based on the number of pyrethroid labels that will be revised and submitted to the Agency. EPA agrees to extend the label submission deadline to 120 days following the issuance of the IDs. The Office of Pesticide Programs is currently looking into the timing concerns raised related to label implementation (i.e. 40 CFR 152.130(c))

as an overall issue for the program and will consider the comments received before issuing a response.

Comments from Publicly Owned Treatment Works and Water Quality Associations:

Commenters representing Publicly Owned Treatment Works (POTWs) provided suggestions on the proposed mitigation options and labeling language relevant to all 23 chemicals and across major indoor and outdoor non-agricultural uses. The Bay Area Clean Water Agencies (BACWA) (EPA-HQ-OPP-2008-0331-0154), the National Association of Clean Water Agencies (NACWA) (EPA-HQ-OPP-2008-0331-0156), the California Stormwater Quality Association (CASQA) (EPA-HQ-OPP-2008-0331-0166), the City of Salinas' Public Works Department (EPA-HQ-OPP-2008-0331-0143), the California Water Boards (CA Water Boards) (EPA-HQ-OPP-2008-0331-0174), and the San Francisco Bay Regional Water Quality Control Board (SFRWCB) (EPA-HQ-OPP-2011-0039-0134 - permethrin) expressed their concern that proposed mitigation does not sufficiently address the risk of "continuous discharge" from ordinary pyrethroid use, specifically recommending cancelling certain outdoor uses of bifenthrin and permethrin. The commenters recommend that EPA consider the costs of managing urban runoff to public agencies, as well as weigh the costs and benefits of all 23 chemicals individually (rather than as a whole) in comparison to alternatives. These comments are addressed below.

Comments Requesting Prohibition of Bifenthrin and Permethrin in Pet Products:

BACWA, joined by NACWA and the CA Water Boards request that EPA end use of bifenthrin and permethrin in pet shampoos and reduce use of pyrethroids and pyrethrins in pet spot-ons and other pet flea treatments in order to mitigate ecological risks associated with pesticide residues that cannot be removed from municipal wastewater by POTWs. SFRWCB requested additional mitigation for pet flea treatments containing permethrin due to the high ecological risk and available alternatives. SFRWCB asserts that pet shampoos are the primary source of permethrin in municipal wastewater.

Agency Response: The Agency's ecological mitigation for pet products containing pyrethroids includes "do not pour or dispose" statements and labeling requirements specifying that the pet product application is to be made indoors. EPA is not proposing ecological mitigation for bifenthrin or permethrin beyond what is outlined for all pyrethroids in the *Pyrethroids and Pyrethrins: Ecological Risk Mitigation Proposal For 23 Chemicals* due to the benefits of its use and the comparative risk of their alternatives.⁶ Bifenthrin and permethrin pet shampoos have high benefits; while spot-ons and collars are useful for regular protection of pets, there is also a need for permethrin- and bifenthrin-based shampoos, dusts and sprays when an infestation occurs. Furthermore, the Agency would expect greater detection frequencies and concentrations of potential alternative insecticides (including other pyrethroids and fipronil) to occur if bifenthrin or permethrin were removed from the market, because these insecticides would likely take their place.

⁶ Qualitative Overview of Alternatives for Selected Use Patterns of Pyrethroids Being Assessed for a Down-the-Drain Risk Assessment, February 2016.

Comment Pertaining to Proposed Guidelines for Efficacy Testing of Pet Products:

BACWA requested more information on the link between ecological risks and the *Proposed Guidelines for Efficacy Testing of Topically Applied Pesticides Used Against Certain Ectoparasitic Pests on Pets* (“Proposed Guidelines”). BACWA requests a schedule for Proposed Guideline completion, as well as a requirement for testing of all pyrethroid and pyrethrins-containing topically applied pesticides in accordance with the final version of the Proposed Guidelines, conducted with multiple application quantities, to determine the minimum necessary application quantity (by pet size), and that those products be relabeled or reformulated such that applications do not use excess active ingredient.

Agency Response: The *Proposed Guidelines for Efficacy Testing of Topically Applied Pesticides Used Against Certain Ectoparasitic Pests on Pets*, scheduled to be finalized in March 2021, are not intended to serve as mitigation for pyrethroid pet products. Furthermore, the link between the Proposed Guidelines and ecological exposure is an error in EPA’s Ecological Risk Mitigation Proposal, as the Proposed Guidelines will not measure how much pesticide may be washed off of the pet and down the drain. The Proposed Guidelines are only intended to provide acceptable test methods to assure that pet products are effective against target pests of public health importance based on the use directions and marketing claims for the specific product.

Comment on POTWs and Compliance with Pyrethroid Water Quality Standards:

BACWA disagrees with EPA’s characterization in the ecological risk assessment that POTWs in California face any unique water quality compliance challenges. BACWA states that California POTWs are subject to national standards mandated by the Clean Water Act (CWA) and that California has not adopted state-specific aquatic life criteria for pyrethroids.

Agency Response: EPA acknowledges that POTWs in all states, including California, may face challenges in removing certain pesticides from incoming wastewater using conventional techniques, and that these pesticides may occur in treated effluent at detectable levels. EPA further acknowledges that, although California has not adopted state-specific aquatic life criteria for pyrethroids, several jurisdictions within the state have exercised the Clean Water Act option to adopt numeric water quality standards for pyrethroids in treated effluent rather than narrative standards, and thus face a challenge in meeting specific quantitative benchmarks using current wastewater treatment technology.

Comment Requesting POTW Notification Requirements for Municipalities:

BACWA and the CA Water Boards request that EPA require POTW notification requirements for wastewater collection system applications. BACWA notes that there is a communications gap between municipal wastewater collection system managers and separate downstream POTW operators such that collection system managers may not be aware of the cost and compliance implications of their selection of insecticides for POTWs. BACWA requests that EPA mandate that applicators must notify downstream wastewater treatment facilities prior to the first application of this product on manholes or in the wastewater collection system.

Agency Response: EPA is aware that, occasionally, municipalities may use pyrethroid insecticides, such as deltamethrin (EPA Reg # 53883-276), mixed with an immobilizing latex paint product to treat gaps or exit points around manhole cover and drain premises to control

insect infestations emanating from public sewers. While EPA has required notification of downstream wastewater facilities for chemicals like the copper compounds and diquat dibromide, both intended to be applied directly to sewer systems, current pyrethroid label instructions prohibit the application of insecticides directly into sewers. Therefore, EPA does not consider a discharge warning for POTWs practical for this type of use.

Comment Requesting that EPA Include a Cost-Benefit Analysis for Impacts to Municipalities:

CASQA, joined by the City of Salinas Public Works Department, requests that EPA in its cost-benefit analysis for pyrethroids include costs to municipalities holding NPDES stormwater permits. CASQA notes that the cost-benefit analysis does not include costs to municipalities failing to meet water quality standards due to urban runoff containing pesticide residues.

CASQA, the CA Water Boards, and SFRWCB disagree with EPA's grouping of 23 pyrethroid pesticides for a single benefits assessment and prefer that EPA's risk/benefit analysis and ecological analysis should be revised to differentiate among the indoor and outdoor uses of the 23 pyrethroids. CASQA comments that the benefits assessment does not adequately differentiate between outdoor use patterns for the purposes of determining the most effective or beneficial application techniques. SFRWCB requests that EPA conduct a focused evaluation of some individual uses, such as pet flea control. CA Water Boards' comment notes that impervious surface and structural pest control uses contribute most frequently to urban waterway pollution and should be considered separately in the ecological risk mitigation proposal. CASQA requests that EPA include a detailed analysis of uses and benefits using bifenthrin as a representative for the class.

Agency Response: The pyrethroids have many uses across agricultural, residential, commercial, indoor and outdoor sites, and were grouped into broad categories to compare the potential exposure for those active ingredients that were not quantitatively assessed in the 2016 Ecological Risk Assessment. The ecological risk assessment grouped uses into four major categories: indoor uses, outdoor non-agricultural uses, outdoor agricultural uses and wide-area mosquito adulticide uses. For the purposes of risk-benefit analysis, and EPA considers this approach to provide adequate differentiation among uses assessed for the group of 23 chemicals. Among outdoor uses, EPA is aware of the potential for applications to impervious surfaces to contribute to waterway pollution. The Agency's mitigation for outdoor non-agricultural use as a category is reflective of those risk contributions. The Agency disagrees that a separate analysis of each pyrethroid or each specific use is needed to support EPA's risk assessment and risk management conclusions, and disagrees that a representative analysis featuring bifenthrin is necessary, as bifenthrin is not outstanding among pyrethroids in terms of RQ exceedances, aquatic invertebrate toxicity, or environmental persistence.

EPA's risk assessment supports the conclusions that there are risks of concern for aquatic organisms from exposure to pyrethroids, which is supported by water monitoring data that indicate that pyrethroids are present in the environment that result in adverse effects to aquatic invertebrates. The benefits from the use of these chemicals for these uses is also very high. For further discussion on ecological risk assessment, see EPA's *Joint Response from OPP's Environmental Fate and Effects Division and Pesticide Re-evaluation Division to Comments on*

the Preliminary Risk Assessments for Pyrethroids and Pyrethrins Insecticides. For more discussion on usage, alternatives, benefits and impacts conducted for the outdoor and indoor uses of the pyrethroids group, see the *Usage Characterization and Alternatives Summary for Synthetic Pyrethroids Used in Residential Lawns and Outdoor Vegetative Spot Treatments* and the *Qualitative Overview of Alternatives for Selected Use Patterns of Pyrethroids Being Assessed for a Down-the-Drain Risk Assessment*, available in the pyrethroids special docket (EPA-HQ-OPP-2008-0331).

Comment Requesting Outdoor Use Prohibitions for Bifenthrin and Permethrin:

CASQA and the CA Water Boards request that EPA consider alternatives to bifenthrin and permethrin, which data suggest occur at higher concentrations in POTW effluent than other pyrethroids and contribute more to ecological risk and are outsized contributors to pesticide toxicity in urban waterways. CASQA and the CA Water Boards prefer that EPA consider prohibiting outdoor uses of bifenthrin and increasing label restrictions and requirements. The CA Water Boards recommend requiring outreach and education by registrants to ensure that existing label directions are properly followed.

The CA Water Boards note that California monitoring data indicate that bifenthrin is responsible for much of the pyrethroid-related aquatic toxicity and that its persistence in anerobic conditions make it more likely to occur in sediment, storm water and wastewater systems. The CA Water Boards acknowledge that although California is the only state to have derived numeric targets for pyrethroids, overall toxicity to surface waters from pyrethroid discharges is a problem posed nationally to POTW and stormwater systems under the Clean Water Act when considering whole effluent toxicity or narrative standards in addition to or in lieu of numeric limitations.

Agency Response: The Agency acknowledges that bifenthrin and permethrin have been detected in treated effluent more than other pesticides. The Agency has supported previous mitigation efforts specific to bifenthrin and permethrin and other pyrethroids⁷, and bifenthrin and permethrin would be subject to the additional proposed mitigation for all pyrethroids with outdoor residential and commercial uses discussed in the *Pyrethroids and Pyrethrins: Ecological Risk Mitigation Proposal For 23 Chemicals*.

The Agency did not propose bifenthrin- or permethrin-specific mitigation or use cancellation in the Ecological Risk Mitigation Proposal based on the risks and benefits of the chemicals' uses in outdoor urban areas. EPA agrees that POTWs nationally must consider pesticide measurements in effluent with respect to aquatic life criteria, and that California, as the only state to adopt numeric limitations to meet Whole Effluent Toxicity standards at this time, may favor a different approach to meeting numeric limits than other states supporting narrative standards.

EPA is not implementing ecological mitigation for bifenthrin beyond what is outlined for all pyrethroids in the *Pyrethroids and Pyrethrins: Ecological Risk Mitigation Proposal For 23*

⁷ See the *Environmental Hazard and General Labeling for Pyrethroid and Synergized Pyrethrins Non-Agricultural Outdoor Products* at <https://www.epa.gov/ingredients-used-pesticide-products/environmental-hazard-and-general-labeling-pyrethroid-and>

Chemicals due to the benefits of its use,⁸ and the possibility that an increase in detection frequencies and concentrations of alternative insecticides including other pyrethroids and organophosphates with greater overall toxicity could occur if bifenthrin and/or permethrin were removed from the market.

Comment Requesting Label Language Consistent with California Regulations:

CASQA and the CA Water Boards request that EPA provide California-specific labels for outdoor structural pest pyrethroid products that are consistent with California surface water protection regulations. CASQA notes that the California regulations are more restrictive, and is concerned that the differences may be confusing for applicators in California.

Agency Response: EPA acknowledges that state-specific labeling may support local compliance with California's specific surface water protection standards. The Agency encourages stakeholders to work with their state lead agencies for labeling needs that may be state-specific.

Comment on Water Quality Concerns from the Agricultural Uses of Pyrethroids:

The CA Water Boards provided comments outlining California's water quality concerns associated with the agricultural use of pyrethroid pesticides. The CA Water Boards comment that agricultural irrigation runoff is a common source of pyrethroid toxicity in California watersheds and that the use of bifenthrin, especially on steeply sloped strawberry farms using impervious plastic mulches and covers, is a major contributor for which specific mitigation is appropriate. The CA Water Boards note the effectiveness of a 10-foot VFS and 25-foot application buffer from waterbodies.

Agency Response: The Agency agrees with CA Water Boards regarding the effectiveness of a VFS and application buffer for mitigating agricultural runoff. The Agency is implementing a 15 to 25-foot VFS depending on application area and other sediment control measures present, and a 25-foot ground application buffer from waterbodies. For California and other states considered under Western irrigated agriculture, a 10-foot VFS is required to be constructed and maintained or a sediment control basin may be used in place of a VFS. See Section III of this document for a description of changes to mitigation for agriculture.

Comment Requesting Revision of Aquatic Habitat Definition:

The CA Water Boards requested that, to improve the effectiveness of pyrethroid label mitigation, EPA should revise the definition of "aquatic habitat" by adding types of waterbodies such as creeks and wetlands to the list and revising the term "permanent streams" to say "intermittent and perennial streams."

Agency Response: For the purposes of assessment of ecological risk, EPA generally considers "aquatic habitat" to include areas or systems with standing or flowing water, that provides forage and habitat for aquatic organisms at the time of pesticide application. EPA recognizes that some pyrethroid residues will be present in aquatic habitat through drift or runoff after application to terrestrial environments and has taken steps to account for and limit this risk. Pyrethroids may not be applied directly to any aquatic environment, including creeks, or perennial or intermittent

⁸ Usage Characterization and Alternatives Summary for Synthetic Pyrethroids in Residential Lawns and Outdoor Vegetative Spot Treatments, 2016.

streambeds when water is present. For regulatory purposes, a designation of “wetland” is determined by soil hydrology and prevalence of inundation and hydrophytic vegetation, and may include designated farmland, in which case agricultural pesticides may be used. The Agency has decided not to include intermittent streams in the aquatic buffer label language for the pyrethroids. The Agency recognizes the importance of intermittent streams in arid areas of the country, and acknowledges the ability for states to impose more restrictive requirements on at the state level.

Comment Requesting Specific Irrigation System Requirements: The CA Water Boards proposed label text to guide irrigation water management, including implementation of high efficiency drip irrigation, basin retention, and vegetated treatment systems. For stormwater management, the CA Water Boards proposed language that would require water and sediment control basins, cover crops, and vegetated ditches for use in areas with increased stormwater runoff risk, such as with highly erodible soils, impermeable surfaces, or with slopes above 5%.

Agency Response: EPA agrees that for Western irrigated agriculture, an approach allowing vegetated treatment systems and sediment control measures optimally addresses stormwater runoff risk, and is allowing the use of sediment control basins as an alternative to a vegetative filter strip to prevent soil erosion and protect aquatic systems.

Comment on the Industrial Discharge of Pyrethroids into POTWs:

Center for Biological Diversity (CBD), commented that a major potential source of pyrethroids to POTWs is from industrial discharge from pesticide manufacturers. However, the EPA cites the Clean Water Act as a reason that the Agency does not need to analyze this release under FIFRA. The Clean Water Act does not preclude pollutant discharge and that discharge may contain pesticides that are under FIFRA jurisdiction. Any potential point source of pyrethroids must be taken into account when deciding whether a pesticide can be used safely or not.

Agency Response: For certain registered end-use products, technical grade products, and other manufacturing use products, a “point source discharge” is a possibility because effluent from the manufacturing plant may contain pesticides and other chemicals used in the formulation process. The Agency recommends that the following National Pollutant Discharge Elimination System (NPDES) statement should appear on such products:

“Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.”

Regardless of whether or not this statement appears on a given product label, the Agency reaffirms that any potential point source discharge of pesticides resulting from an industrial manufacturing process are properly regulated by state and federal pretreatment programs under authority of the Clean Water Act. Although this does not necessarily preclude regulation by FIFRA, the Agency does not include manufacturing process discharges in pesticide risk

estimations which are based on anticipated quantities of pesticide or pesticide residues entering the environment as a result of lawful, registered uses under FIFRA.

III. CHANGES TO THE MITIGATION AS A RESULT OF THE PUBLIC COMMENTS

The Agency has concluded that the group of 23 chemicals discussed in the *Ecological Risk Mitigation Proposal for 23 Pyrethroids and Pyrethrins Chemicals* pose risks primarily to terrestrial and aquatic invertebrates, fish, and pollinators. On the whole, the chemicals addressed are considered to provide high benefits for controlling pests in indoor residential areas, outdoor urban areas, in agricultural crop and livestock production, and as adult mosquitocides. This section focuses on major changes to the proposed mitigation as a result of the public comments described in Section II of this document.

a. Changes to Mitigation Measures for Indoor Uses

The Agency has determined that mitigation to address potential risks of concern from the indoor applications of products containing pyrethroids are necessary. Comments on the residential indoor uses of these chemicals resulted in minor changes from those proposed in the Ecological Risk Mitigation Proposal to improve label clarity and flexibility. Most commenters supported the Agency's requirement to clarify label language for indoor and outdoor use sites. The Agency has determined that the advisory statements in Spanish will be helpful to inform more users to avoid products being poured or disposed down the drain. Based on the comments, the Agency provided more details and instructions for the pictograms, to provide a visual warning to prevent products from ending up down the drain. The Agency does not expect that this mitigation would have an adverse impact to pesticide users. Directions are intended to promote proper disposal after use of the product. The final label statements are listed in Appendix B.

b. Changes to Mitigation Measures for Outdoor Urban Uses

EPA has determined that mitigation measures for outdoor urban applications in residential and commercial settings (i.e., structural, turf, ornamental, nursery) are necessary. To mitigate potential risks to aquatic organisms, it is the goal of the Agency to reduce runoff into water bodies from treated urban environments. Reducing runoff will lead to reduced environmental loading. The Agency has revised the spot treatment, crack and crevice, rain-related, and general outdoor statements to add clarity to the labels. The substance and intent of the statements, however, have not changed. The Agency does not expect that this mitigation would have an adverse impact to pesticide users. Directions are intended to educate users and prevent runoff to surface waters. The final label statements are listed in Appendix B.

Spot Treatments: Several commenters pointed out that the spot treatment statement previously proposed by the Agency was confusing and could lead to questions from applicators and state lead agencies when attempting to interpret and/or enforce the label language. The Agency acknowledges the commenters' concerns and is revising the spot treatment statement based on the commenters' recommendations. The new, simpler statement will provide increased clarity

and limit the size of spot treatments to two square feet in size. The Agency also provided example calculations that result in this maximum size for spot treatments (2 ft. by 1 ft. or 4 ft. by 0.5 ft.).

Crack and Crevice Treatments: Several commenters stated that the proposed label language for crack and crevice treatments would cause confusion for applicators and that the phrase “excess runoff” was open to interpretation by the applicator. They also stated that the statements intended to limit runoff contradicted other label statements directing applicators to avoid runoff. The Agency acknowledges the commenters’ concerns and is revising the label language for crack and crevice treatments to reflect recommendations from the commenters. These changes will provide increased clarity that runoff from these applications should be avoided, not limited.

Rain-Related Statements: Several commenters stated that the proposed language for rain-related statements was confusing and could cause applicators to be out of compliance with applications in areas of the country that experience increased seasonal rainfall. The Agency acknowledges the commenters’ concerns and has revised the rain-related statements to reflect recommendations made by commenters. Specifically, the 24-hour restriction was removed and replaced with language that applicators are to avoid making applications when rainfall is expected before the product has sufficient time to dry. To further clarify what would be considered sufficient time to dry, the Agency included a minimum time frame of 4 hours. These changes will provide increased clarity and protection from unintended runoff.

General Outdoor Statement: Several commenters expressed concerns with the general outdoor application statement and the six listed permitted uses. The Agency has reviewed the statements and subsequent changes were made to the language of the permitted uses listed in the general outdoor statement. These changes are reflected in Appendix B of this document and include reordering the list in a more logical way, reducing some of the redundant language, and adding clarity to the labels. The Agency has also added instructions in the label table to note that registrants may not add new uses from the general outdoor application statement which are currently not approved for their product. It is the Agency’s position that these new statements will increase clarity for mentioned uses and will prevent runoff or off-site exposure.

c. **Changes to the Mitigation Measures for Agricultural Use Products**

Vegetative Filter Strip (VFS) Language: Based on the comments received on VFS mitigation, the Agency has revised the VFS requirement with three significant changes to the label language.

The Agency will now allow application areas of 10 acres or less to maintain a VFS of 15 feet instead of 25 feet. Allowing for application areas of 10 acres or less to have a 15-foot VFS will reduce the burden of maintaining a VFS for small-scale operations, which may be disproportionately impacted by an increased VFS width. Application areas of 10 acres or less will likely be using a lower amount of pyrethroids overall than larger agricultural areas, and are likely to have a lower impact on aquatic ecosystems.

Additionally, Western irrigated agriculture will not be required to maintain a VFS if a sediment control basin is used. Watering VFSs in these arid landscapes can be particularly burdensome on growers. Having sediment control basins fully substitute for VFS in Western irrigated agriculture will allow greater flexibility for growers in these arid areas. Certain stakeholders note the effectiveness of sediment control basins in removing sediment from runoff in Western irrigated agriculture, which can reduce the amount of pyrethroids entering aquatic systems. As a result, EPA will allow use of sediment control basins in Western irrigated agriculture as a substitute for establishing and maintaining a VFS, as the desired outcome of preventing soil erosion from entering aquatic systems is achieved with either system.

Lastly, the Agency has determined that VFS is not required for rice fields. Since rice berms contain the rice flood water and prevent runoff and off-site sedimentation, there is no need for a VFS. A statement has been added to the label table to clarify that, “rice fields are not required to have a vegetative filter strip.”

Spray Drift Reduction Measures: Based on comments received on spray drift reduction measures, the Agency is adding enforceable spray drift management language, such as wind speed and temperature inversion restrictions, for products that allow airblast applications. The Agency has determined that airblast application spray drift management under the ‘Directions for Use’ section of agricultural end-use product labels is appropriate. In addition, the Agency has changed the droplet size requirement for ground and aerial applications, the revised labeling notes that applicators are required to select the nozzle and pressure that would deliver medium or courser droplets. The revised language will include a reference to the most recent version of American Society of Agricultural & Biological Engineers Standard 572 and 641 (ASABE S572 for ground application, and ASABE S641 for aerial application). The Agency does not anticipate impacts to the users from the airblast requirements to direct spray into the canopy and turn off nozzles that would treat the outer orchard rows as this corresponds to good application practices. However, windspeed and temperature inversion requirements could negatively affect orchard and vineyard establishments by restricting growers’ ability to conduct applications in a timely manner. See Appendix B for required language for pyrethroid products that include airblast applications.

d. Changes to the Pollinator Labeling for Agricultural Use Products

During the public comment period, comments were received requesting clarification on which portions of the pollinator labeling should apply to specific use patterns, specifically for wide-area mosquito control applications, residential consumer products, and chemical-specific formulations (e.g., pest strips for mite control in bee hives). EPA notes that the pollinator environmental hazard, the information on pollinator best management practices, the information on managed pollinator protection plans, and the information on how to report bee incidents is only required for liquid products formulated for outdoor agricultural use; residential products (including mosquito adulticide products) are excluded from pollinator labeling. The Agency is adding a clarifying note to the description column of the label table to assist registrants when preparing their product labels.

The Agency has also modified the information on bee incident reporting due to concerns from certain stakeholders. EPA previously proposed that bee kills be reported to EPA at beekill@epa.gov, however, these instructions may conflict with information in state managed pollinator protection plans where users are instructed to report bee kills to state lead agencies. EPA has revised the bee incident reporting instructions to note that bee kills are recommended to be reported to both EPA and the state lead agency.

e. **Changes to the Spray Drift Labeling for Wide-Area Mosquito Adulticide Uses**

During the comment period, comments were received requesting clarifications on the proposed label language for wide-area mosquito adulticide uses. These requests for clarification were largely to clean up potentially confusing or non-enforceable language. Other comments were submitted with suggestions for rephrasing or replacing existing label language. These comments resulted in minor changes to improve the label clarity and flexibility for wide area mosquito adulticide labels. The final label statements are listed in Appendix B.

f. **Insecticide Resistance Management**

EPA has determined that resistance-management labeling is necessary for agricultural use products to provide pesticide users with easy access to important information to help maintain the effectiveness of pesticides. Please see Appendix B for specific language on resistance management. Additional information on EPA's guidance for resistance management can be found at the following website: <https://www.epa.gov/pesticide-registration/prn-2017-1-guidance-pesticide-registrants-pesticide-resistance-management>.

During the public comment period, comments were received requesting that pesticide resistance management language requirements be clear in which use patterns are applicable and which are excluded. Commenters recommended to require resistance management information on labels formulated for the wide-area mosquito adulticide use. The Agency agrees with commenters and has added this information to the label language for mosquito adulticide products. Insecticide resistance management labeling is therefore required for products formulated for agricultural use and for public health mosquitocide applications. Products formulated for general residential use are excluded from this requirement. Additional label statements beyond PRN 2017-1 are not determined by the Agency to be necessary; and a clarifying note has been added to the description column of the label table to assist registrants when preparing their product labels.

APPENDIX A: SUMMARY OF REQUIRED ACTIONS

Registration Review Cases#: 7402, 7405, 7437,7408, 2130, 7412, 7414, 0426, 7406, 7407, 7601, 7456, 7426, 7457, 2510, 7418, 2580, 2295, 7409, 2660
 PC Codes:128825, 128831, 118831, 128807, 128897, 109702, 209600, 129064, 129013, 097805, 069005, 109303, 128965, 127901, 036007, 004006, 016331, 109701, 128722, 069001, 109302, 128912, 069003
 Chemical Types: insecticides
 Chemical Family: pyrethroids/pyrethrins
 Mode of Action: axonic excitotoxins (alter nerve function)

Affected Population(s)	Source of Exposure	Route of Exposure	Duration of Exposure	Potential Risk(s) of Concern	Actions
<ul style="list-style-type: none"> Aquatic invertebrates 	<ul style="list-style-type: none"> Water (non-dietary) Residues (at/on site of treatment) 	<ul style="list-style-type: none"> Contact Ingestion 	<ul style="list-style-type: none"> Acute Sub-chronic Chronic 	<ul style="list-style-type: none"> Growth survival Mortality 	<ul style="list-style-type: none"> Label clarity and consistency Advisory storage and disposal statements Reduced perimeter treatments Defined spot treatment size Rain statements Buffers to water bodies Spray drift management language Precautionary statements Increased width of vegetative filter strips
<ul style="list-style-type: none"> Fish 	<ul style="list-style-type: none"> Water (non-dietary) Residues (at/on site of treatment) 	<ul style="list-style-type: none"> Contact Ingestion 	<ul style="list-style-type: none"> Acute Sub-chronic Chronic 	<ul style="list-style-type: none"> Growth survival Mortality 	<ul style="list-style-type: none"> Label clarity and consistency Advisory storage and disposal statements Reduced perimeter treatments Defined spot treatment size Rain statements Buffers to water bodies Spray drift management language Precautionary statements Increased width of vegetative filter strips
<ul style="list-style-type: none"> Pollinators 	<ul style="list-style-type: none"> Residues (at/on site of treatment) 	<ul style="list-style-type: none"> Contact Ingestion 	<ul style="list-style-type: none"> Acute 	<ul style="list-style-type: none"> Mortality 	<ul style="list-style-type: none"> Stewardship Incident reporting Pollinator data requirements

APPENDIX B: LABEL TABLES

Label Table 1. Label Language For All End Use Products (unless specified otherwise)						
Description	Required Label language	Placement on Label				
<p>Mode of Action Group Number</p> <p><i>Applies only to products with agricultural and/or wide-area mosquito uses</i></p>	<p>Note to registrant:</p> <ul style="list-style-type: none"> • Include the name of the ACTIVE INGREDIENT in the first column • Include the word “GROUP” in the second column • Include the MODE/MECHANISM/SITE OF ACTION CODE in the third column (for fungicides this is the FRAC Code, and for insecticides this is the Primary Site of Action; for Herbicides this is SITE OF ACTION) • Include the type of pesticide (i.e., INSECTICIDE) in the fourth column. <table border="1" style="width: 100%; text-align: center; margin-top: 10px;"> <tr> <td style="width: 25%;">Pyrethroid Name</td> <td style="width: 15%;">GROUP</td> <td style="width: 15%; background-color: black; color: white;">3A</td> <td style="width: 45%;">INSECTICIDE</td> </tr> </table>	Pyrethroid Name	GROUP	3A	INSECTICIDE	<p>Front Panel, upper right quadrant.</p> <p>All text should be black, bold face and all caps on a white background, except the mode of action code, which should be white, bold face and all caps on a black background; all text and columns should be surrounded by a black rectangle.</p>
Pyrethroid Name	GROUP	3A	INSECTICIDE			
<p>Resistance-management labeling statements for insecticides</p> <p><i>Applies only to products with agricultural and/or wide-area mosquito uses</i></p>	<p>Include resistance management label language for insecticides/acaricides from PRN 2017-1 (https://www.epa.gov/pesticide-registration/pesticide-registration-notices-year)</p>	<p>Directions for Use, prior to directions for specific crops</p>				
<p>Additional Required Labeling Action Applies to all products delivered via liquid spray applications (except those with mosquito adulticide use)</p>	<p>Remove information about volumetric mean diameter from all labels delivered via liquid spray application, except from products with mosquito adulticide use, where such information currently appears.</p>	<p>Directions for Use</p>				

Label Table 2. Label Language For Products with Indoor Uses		
The following label language applies to end-use products that have indoor residential uses		
Description	Required Label Language	Placement on Label
For all products that have indoor uses only	Add the following language: “For indoor use only.”	Front Label Panel and/or Directions for Use
For all products that have both indoor and outdoor uses	Add the following language: “For both indoor and outdoor use.”	Front Label Panel and/or Directions for Use
For all products used on pets	Add the following language: “Application of product on pets must only be done indoors.”	Directions for Use
Required disposal statement for products not labeled for use directly into drains and sewers.	“Do not pour or dispose down the drain or sewer. Call your local solid waste agency for local disposal options.”	Storage and Disposal
Stewardship statement that includes a Spanish translation (Stewardship statement not required for products applied to pets)	Note to registrants: If adding stewardship statements on end-use consumer products, the followings language is required and placed in a prominent location: For products without drain treatment uses: “Do not allow to enter indoor or outdoor drains” “ <i>No permita la entrada a desagües internos o externos.</i> ” For products with drain treatment uses: “Do not allow to enter indoor or outdoor drains unless labeled for drain treatments.” “ <i>No permita la entrada a desagües internos o externos a menos que el etiquetado indique que está permitido el uso del producto para tratamiento de desagües.</i> ” For products with and without drain treatment uses: “Follow proper disposal procedures on this label.”	Directions for Use

“Siga las indicaciones del etiquetado para el desecho apropiado del producto.”

Graphic on the product package showing an image of a diagonal strikethrough over a drain. The pictogram must be legible (i.e. no smaller than 1.5 square centimeters or 0.25 square inches unless this size is greater than 10% of the size of the label).

Use the following pictogram on product labels:



Label Table 3. Label Language for Products with Outdoor, Urban Uses

The following label language applies to end-use products that have outdoor, urban, non-agricultural uses

Description	Required Label Language	Placement on label
<p>For products that have outdoor uses only</p>	<p>Add the following language:</p> <p>“For outdoor use only”</p>	<p>Front Label Panel and/or Directions for Use</p>
<p>For products that both indoor or outdoor uses</p>	<p>Add the following language:</p> <p>“For both indoor or outdoor use only.”</p>	<p>Front Label Panel and/or Directions for Use</p>
<p>General Outdoor Application Statement to replace existing general outdoor statement</p> <p>[Registrants may not add new uses from items 1-6 which are not currently on the existing label. Registrants are required to choose only the uses from</p>	<p>“All outdoor spray applications must be limited to spot or crack-and-crevice treatments only, except for the following permitted uses:</p> <ol style="list-style-type: none"> 1. Application to pervious surfaces such as soil, lawn, turf, and other vegetation; 2. Perimeter band treatments of 7 feet wide or less from the base of a man-made structure to pervious surfaces (e.g., soil, mulch, or lawn); 3. Applications to underside of eaves, soffits, doors, or windows permanently protected from rainfall by a covering, overhang, awning, or other structure; 	<p>Directions for Use</p>

<p>items 1-6 which apply to their product.]</p>	<p>4. Applications around potential exterior pest entry points into man-made structures such as doorways and windows, when limited to a band not to exceed one inch;</p> <p>5. Applications to vertical surfaces (such as the side of a man-made structure) directly above impervious surfaces (e.g., driveways, sidewalks, etc.), up to 2 feet above ground level;</p> <p>6. Applications to vertical surfaces directly above pervious surfaces, such as soil, lawn, turf, mulch or other vegetation only if the pervious surface does not drain into ditches, storm drains, gutters, or surface waters.”</p>	
<p>Spot Treatment Guidance Statement</p>	<p>“Spot treatments must not exceed two square feet in size (for example, 2 ft. by 1 ft. or 4 ft. by 0.5 ft.).”</p>	<p>Directions for Use</p>
<p>Buffer from Water Statement</p>	<p>“For soil or foliar applications, do not apply by ground within 25 feet of lakes, reservoirs, rivers, permanent streams, marshes or natural ponds, estuaries and commercial fish farm ponds.”</p>	<p>Directions for Use</p>
<p>Water Protection Statements</p>	<p>“Do not spray the product into fish pools, ponds, streams, or lakes. Do not apply directly to sewers or storm drains, or to any area like a drain or gutter where drainage to sewers, storm drains, water bodies, or aquatic habitat can occur.”</p> <p>“Do not allow the product to enter any drain during or after application.”</p> <p>“Do not apply directly to impervious horizontal surfaces such as sidewalks, driveways, and patios except as a spot or crack-and-crevice treatment.”</p> <p>“Do not apply or irrigate to the point of runoff.”</p>	<p>Directions for Use</p>
<p>Rain-Related Statements (except for products that require watering-in)</p>	<p>"Do not make applications during rain. Avoid making applications when rainfall is expected before the product has sufficient time to dry (minimum 4 hours)."</p> <p>“Rainfall within 24 hours after application may cause unintended runoff of pesticide application.”</p>	<p>Directions for Use</p>
<p>Wind speed requirement for ornamental/recreational turf applications</p>	<p>“Do not apply when the wind speed is greater than 15 mph.”</p>	<p>Directions for Use</p>

<p>Spray drift management for commercial nurseries</p>	<p>For outdoor applications to commercial nurseries:</p> <ul style="list-style-type: none"> • “Do not apply when the wind speed is greater than 15 mph.” • “Apply product using spray nozzles or spray technology which produce medium or coarser droplet size.” • “For soil or foliar applications, do not apply by ground equipment within 25 feet of lakes, reservoirs, rivers, permanent streams, marshes or natural ponds, estuaries and commercial fish farm ponds.” 	<p>Directions for Use</p>
<p>Crack and crevice treatments</p>	<ul style="list-style-type: none"> • “Treat surfaces to ensure thorough coverage but avoid runoff.” • “To treat insects harbored in voids and cracks-and-crevices, applications must be made in such a manner to limit dripping and avoid runoff onto untreated structural surfaces and plants. 	<p>Directions for Use</p>

Label Table 4. Lable Language for Products with Agricultural Uses

The following label language applies to end-use products that have agricultural uses

Description	Required Label Language	Placement on Label
<p>Enforceable Spray Drift Management Language for products that allow aerial applications</p>	<p>Aerial Applications:</p> <ul style="list-style-type: none"> • Do not release spray at a height greater than 10 feet above the vegetative canopy, unless a greater application height is necessary for pilot safety. • Applicators are required to select nozzle and pressure that deliver medium or coarser droplets (ASABE S641). • Do not apply when wind speeds exceed 15 mph at the application site. If the wind speed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters. • If the windspeed is 10 miles per hour or less, applicators must use ½ swath displacement upwind at the downwind edge of the field. When the windspeed is between 11-15 miles per hour, applicators must use ¾ swath displacement upwind at the downwind edge of the field. • Do not apply during temperature inversions. 	<p>Directions for Use, in a box titled “Mandatory Spray Drift Management” under the heading “Aerial Applications”</p> <p>Placement for these statements should be in general directions for use, before the use-specific directions for use.</p>
<p>Enforceable Spray Drift Management Language</p>	<p>Airblast Applications:</p> <ul style="list-style-type: none"> • Sprays must be directed into the canopy. • Do not apply when wind speeds exceed 15 mph at the application site. 	<p>Directions for Use, in a box titled “Mandatory Spray Drift</p>

	<ul style="list-style-type: none"> • User must turn off outward pointing nozzles at row ends and when spraying outer row. • Do not apply during temperature inversions. 	<p>Management” under the heading “Airblast Applications”</p>
<p>Enforceable Spray Drift Management Language for products that allow ground boom applications</p>	<p>Ground Boom Applications:</p> <ul style="list-style-type: none"> • User must only apply with the nozzle height recommended by the manufacturer, but no more than 4 feet above the ground or crop canopy. • Applicators are required to select nozzle and pressure that deliver medium or coarser droplets (ASABE S572). • Do not apply when wind speeds exceed 15 mph at the application site. • Do not apply during temperature inversions. 	<p>Directions for Use, in a box titled “Mandatory Spray Drift Management” under the heading “Ground Boom Applications”</p>
<p>Advisory Spray Drift Management Language for all products that allow aerial and ground boom uses</p>	<p>THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.</p> <p>IMPORTANCE OF DROPLET SIZE</p> <p>An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.</p> <p>Controlling Droplet Size – Ground Boom</p> <ul style="list-style-type: none"> • Volume - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate. • Pressure - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size. • Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift. <p>Controlling Droplet Size – Aircraft</p> <ul style="list-style-type: none"> • Adjust Nozzles - Follow nozzle manufacturers recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight. <p>BOOM HEIGHT – Ground Boom</p> <ul style="list-style-type: none"> • For ground equipment, the boom should remain level with the crop and have minimal bounce. 	<p>Directions for Use, just below the Spray Drift box, under the heading “Spray Drift Advisories”</p>

	<p>RELEASE HEIGHT - Aircraft</p> <ul style="list-style-type: none"> Higher release heights increase the potential for spray drift. <p>SHIELDED SPRAYERS</p> <ul style="list-style-type: none"> Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area. <p>TEMPERATURE AND HUMIDITY</p> <ul style="list-style-type: none"> When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation. <p>TEMPERATURE INVERSIONS</p> <ul style="list-style-type: none"> Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions. <p>WIND</p> <ul style="list-style-type: none"> Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS. Applicators need to be familiar with local wind patterns and terrain that could affect spray drift. <p>NON-TARGET ORGANISM ADVISORY STATEMENT (Environmental Hazards):</p> <ul style="list-style-type: none"> This product is highly toxic to bees and other pollinating insects exposed to direct treatment or to residues in/on blooming crops or weeds. Protect pollinating insects by following label directions intended to minimize drift and reduce pesticide risk to these organisms. 	
<p>Advisory Spray Drift Management Language for all products that allow</p>	<p>“SPRAY DRIFT ADVISORIES <u>Handheld Technology Applications:</u></p> <ul style="list-style-type: none"> Take precautions to minimize spray drift.” 	<p>Directions for Use, just below the Spray Drift box, under the heading “Spray Drift Advisories”</p>

<p>liquid applications with handheld technologies</p>		
<p>Vegetative Filter Strips This does not apply to pyrethrins. Note: This requirement is separate and in addition to buffer zones to aquatic areas, which are still required if a vegetated filter strip is present.</p>	<p>“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 nearby down gradient aquatic habitat (such as, but not limited to, lakes; reservoirs; rivers; streams; marshes or natural ponds; estuaries; and commercial fish farm ponds).</p> <p>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 or removed under the following conditions:</p> <ul style="list-style-type: none"> • 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, and TX (west of I-35). <ul style="list-style-type: none"> ○ For Western irrigated agriculture, if a sediment control basin is present, a vegetative filter strip is not required. • In all other areas, a vegetative filter strip with a minimum width of 25 feet is required, unless the following conditions are met. The vegetative filter strip requirement may be reduced from 25 feet to 15 feet if at least one of the following applies: <ul style="list-style-type: none"> ○ 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. ○ A functional terrace system is maintained on the area of application. ○ Water and sediment control basins for the area of application are functional and maintained. ○ The area of application is less than or equal to 10 acres. <p>Rice fields are not required to have a vegetative filter strip.</p> <p>For further guidance on vegetated filter strips, refer to the following publication for information on constructing and maintaining effective buffers: USDA, & NRCS. 2000. Conservation Buffers to Reduce Pesticide Losses. March 2000. U.S. Department of Agriculture. National Resources Conservation Service. Office of Pesticide Programs. U.S. Environmental Protection Agency. Available at https://www.regulations.gov/document?D=EPA-HQ-OPP-2008-0331-0175.”</p>	<p>Directions for Use</p>

<p>Buffer Zones to Water Bodies Buffers do not apply to pyrethrins.</p>	<p>Ground Application</p> <ul style="list-style-type: none"> “Do not apply within 25 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds).” <p>Ultra Low Volume (ULV) Aerial Application</p> <ul style="list-style-type: none"> “Do not apply within 450 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds). Applications made by mosquito control districts and other public health officials are exempt from this requirement.” <p>Non-ULV Aerial Application</p> <ul style="list-style-type: none"> “Do not apply within 150 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds).” 	<p>Directions for Use</p>
<p>New text to include under Environmental Hazard statements: (For liquid products formulated for outdoor foliar applications to agricultural row crops.)</p> <p><i>Excludes products formulated for residential use and/or Ultra Low Volume (ULV) wide area mosquito control applications</i></p>	<p>Update the Environmental Hazard with the bolded statement:</p> <p>“This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area. Protect pollinating insects by following label directions intended to minimize drift and to reduce risk to these organisms.”</p>	<p>Environmental Hazard</p>
<p>Link to pollinator best management practices (For liquid products formulated for outdoor foliar applications to agricultural row crops.)</p> <p><i>Excludes products formulated for residential use and/or Ultra Low Volume (ULV) wide area</i></p>	<p>“Following best management practices can help reduce risk to terrestrial pollinators. Examples of best management practices include applying pesticides in the evening and at night when pollinators are not foraging and checking to confirm hive locations before spraying. For additional resources on pollinator best management practices, visit https://www.epa.gov/pollinator-protection/find-best-management-practices-protect-pollinators.”</p>	<p>Directions for Use, prior to crop specific directions</p>

<p><i>mosquito control applications</i></p>		
<p>Information on state managed pollinator protection plans (For liquid products formulated for outdoor foliar applications to agricultural row crops.)</p> <p><i>Excludes products formulated for residential use and/or Ultra Low Volume (ULV) wide area mosquito control applications</i></p>	<p>“Managed pollinator protection plans are developed by states/tribes to promote communication between growers, landowners, farmers, beekeepers, pesticide users, and other pest management professionals to reduce exposure of bees to pesticides. If available, visit state plans for additional information on how to protect pollinators.”</p>	<p>Directions for Use, prior to crop specific directions</p>
<p>Information on how to report bee incidents (For liquid products formulated for outdoor foliar applications to agricultural row crops.)</p> <p><i>Excludes products formulated for residential use and/or Ultra Low Volume (ULV) wide area mosquito control applications</i></p>	<p style="text-align: center;">“How to Report Bee Kills</p> <p style="text-align: center;">It is recommended that users contact both the state lead agency and the U.S. Environmental Protection Agency to report bee kills due to pesticide application. Bee kills can be reported to EPA at beekill@epa.gov. To contact your state lead agency, see the current listing of state pesticide regulatory agencies at the National Pesticide Information Center’s website: http://npic.orst.edu/reg/state_agencies.html.”</p>	<p>Directions for Use, prior to crop specific directions</p>

Label Table 5. Label Language for Products with Wide Area Mosquito (ULV) Uses

This language applies to end-use products used by mosquito control districts for wide-area applications

Description	Required Label Language	Placement on Label
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<p>Enforceable Spray Drift Management Language for products that allow aerial applications</p>	<ul style="list-style-type: none"> • Apply when ground wind speeds are equal to or greater than 1 mph. • All types of applications should be conducted when temperatures at ground level are at or above 50°F. <p>“For Ground Applications:</p> <ul style="list-style-type: none"> • Create an optimum swath when possible. An optimum swath width can be achieved when [product name] is applied from a truck that is being driven perpendicular to the wind direction. Direct the spray head of equipment to ensure even distribution of the spray cloud throughout the area. • FOR BEST RESULTS treat when mosquitoes or insects are most active and weather conditions are conducive to keeping the spray cloud in the air column close to the ground. • An inversion of air temperatures and a light breeze is preferable. Application during the cooler hours of the night or early morning is recommended.” <p>“For Aerial Applications:</p> <ul style="list-style-type: none"> • Do not apply by fixed wing aircraft at a nozzle height less than 100 feet (30.5 m) above ground or canopy, or by helicopter at a height less than 75 feet (22.9 m) above the ground or canopy, unless specifically approved by the state or tribe based on public health needs.” 	<p>Directions for Use, in a box titled “Mandatory Spray Drift Management” under the heading “Ultra Low Volume Applications”</p>
<p>Enforceable Spray Drift Management Language for products that allow aerial applications</p>	<p>“Adult mosquito control applications should be limited to trained personnel.</p> <ul style="list-style-type: none"> • For use only by federal, state, tribal or local government officials responsible for public health or vector control or by persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their supervision, or as allowed by state regulations for persons treating private property”. • This pesticide is [toxic/extremely toxic]⁹ to aquatic organisms. Runoff from treated areas or deposition of spray droplets into a body of water may be hazardous to aquatic organisms. 	<p>Directions for Use, in a box titled “Mandatory Spray Drift Management” under the heading “Ultra Low Volume Applications”</p>

⁹ Registrants should follow EPA’s guidance in [Chapter 8](#) of EPA Label Review Manual to determine which version of this statement is appropriate.

- Do not apply over bodies of water (lakes, rivers, permanent streams, natural ponds, commercial fish ponds, swamps, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material beyond the body of water to minimize incidental deposition into the water body. Do not contaminate bodies of water when disposing of equipment rinsate or wash waters.
- Before making the first application in a season, it is advisable to consult with the state or tribal agency with primary responsibility for pesticide regulation to determine if other regulatory requirements exist.
- Do not treat a site with more than (X amount)* of each a.i. per acre in a single application or in any 24-hour period. Do not exceed (X amount)* of a.i. in any site in one year. More frequent applications may be made to prevent or control a threat to public and/or animal health determined by a state, tribal or local health or vector control agency on the basis of documented evidence of disease-causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or tribe during a natural disaster recovery effort.”

*Note to registrants: X amount must be on the previously approved label

APPENDIX C: List of all commenters

Comments submitted to the Special Pyrethroids docket, EPA-HQ-OPP-2008-0331:

Florida Fruit and Vegetable Association (FFVA)	EPA-HQ-OPP-2008-0331-0130
The City of San Diego	EPA-HQ-OPP-2008-0331-0131
Northwest Horticultural Council (NHC)	EPA-HQ-OPP-2008-0331-0132
Anonymous	EPA-HQ-OPP-2008-0331-0135
Anonymous public comment	EPA-HQ-OPP-2008-0331-0136
Environmental Working Group (EWG)	EPA-HQ-OPP-2008-0331-0137
United States Department of Agriculture (USDA)	EPA-HQ-OPP-2008-0331-0138
National Cotton Council (NCC)	EPA-HQ-OPP-2008-0331-0139
Hawaii Crop Improvement Association (HCIA)	EPA-HQ-OPP-2008-0331-0140
Center for Biological Diversity (CBD)	EPA-HQ-OPP-2008-0331-0142
City of Salinas, Public Works Department	EPA-HQ-OPP-2008-0331-0143
Beyond Pesticides	EPA-HQ-OPP-2008-0331-0144
C. Lish	EPA-HQ-OPP-2008-0331-0145
American Farm Bureau Federation (AFBF)	EPA-HQ-OPP-2008-0331-0146
Lee County Mosquito Control District (LCMCD), FL	EPA-HQ-OPP-2008-0331-0147
Minor Crop Farmer Alliance (MCFA)	EPA-HQ-OPP-2008-0331-0148
California Citrus Quality Council (CCQC)	EPA-HQ-OPP-2008-0331-0149
Valent U.S.A. LLC	EPA-HQ-OPP-2008-0331-0150
Pyrethrin Joint Venture/Steering Committee (PJV)	EPA-HQ-OPP-2008-0331-0151
American Farm Bureau Federation (AFBF)	EPA-HQ-OPP-2008-0331-0152
Florida Department of Agriculture and Consumer Services (FDACS)	EPA-HQ-OPP-2008-0331-0153
Bay Area Clean Water Agencies (BACWA)	EPA-HQ-OPP-2008-0331-0154
Almond Board of California (ABC)	EPA-HQ-OPP-2008-0331-0155
National Association of Clean Water Agencies (NACWA)	EPA-HQ-OPP-2008-0331-0156

American Mosquito Control Association (AMCA)	EPA-HQ-OPP-2008-0331-0157
Mississippi Farm Bureau Federation (MFBF)	EPA-HQ-OPP-2008-0331-0158
Michigan Farm Bureau (MFB)	EPA-HQ-OPP-2008-0331-0159
New York Farm Bureau (NYFB)	EPA-HQ-OPP-2008-0331-0160
California Specialty Crops Council (CSCC)	EPA-HQ-OPP-2008-0331-0161
Pyrethroid Working Group (PWG)	EPA-HQ-OPP-2008-0331-0162
National Association of Landscape Professionals (NALP)	EPA-HQ-OPP-2008-0331-0163
Responsible Industry for a Sound Environment (RISE)	EPA-HQ-OPP-2008-0331-0164
Oregonians for Food and Shelter and Oregon Farm Bureau Federation	EPA-HQ-OPP-2008-0331-0165
California Stormwater Quality Association (CASQA)	EPA-HQ-OPP-2008-0331-0166
National Pest Management Association (NPMA)	EPA-HQ-OPP-2008-0331-0167
California Department of Pesticide Regulation (CDPR)	EPA-HQ-OPP-2008-0331-0168
National Agricultural Aviation Association (NAAA)	EPA-HQ-OPP-2008-0331-0169
Bayer CropScience, LP	EPA-HQ-OPP-2008-0331-0170
Clarke Mosquito Control Products, Inc.	EPA-HQ-OPP-2008-0331-0171
Anonymous public comment	EPA-HQ-OPP-2009-0842-0068
Mass campaign	EPA-HQ-OPP-2015-0752-0032
United States Department of Agriculture (USDA)	EPA-HQ-OPP-2012-0501-0071
California Water Boards (CA Water Boards)	EPA-HQ-OPP-2008-0331-0174

Comments submitted to individual dockets:

American Mosquito Control Association (AMCA) -- EPA-HQ-OPP-2011-0039-0135 (permethrin) and EPA-HQ-OPP-2011-1009-0059 (prallethrin)

Bayer Cropscience LP -- EPA-HQ-OPP-2009-0637-0107 (deltamethrin)

Clarke Mosquito Control Products, Inc. -- EPA-HQ-OPP-2011-0539-0052 (phenothrin) and EPA-HQ-OPP-2011-1009-0060 (prallethrin)

FMC Corporation -- EPA-HQ-OPP-2011-0039-0132 (permethrin)

National Pest Management Association -- EPA-HQ-OPP-2010-0384-0274 (bifenthrin), EPA-HQ-OPP-2010-0684 (cyfluthrin and beta-cyfluthrin), EPA-HQ-OPP-2009-0637 (deltamethrin), EPA-HQ-OPP-2009-0301 (esfenvalerate), EPA-HQ-OPP-2011-0039 (permethrin), EPA-HQ-OPP-2011-0539 (phenothrin)

Scotts Company, LLC -- EPA-HQ-OPP-2011-0039-0133 (permethrin) and EPA-HQ-OPP-2011-1009-0058 (prallethrin)

United States Department of Agriculture -- EPA-HQ-OPP-2010-0384-0287 (bifenthrin), EPA-HQ-2009-0637-0101 (deltamethrin), EPA-HQ-OPP-2010-0915-0042 (tau-fluvalinate)

Valent USA, LLC -- EPA-HQ-OPP-2009-0301-0130 (esfenvalerate)

Washington State Department of Agriculture -- EPA-HQ-OPP-2010-0384-0274 (bifenthrin), EPA-HQ-OPP-2009-0637 (deltamethrin), EPA-HQ-OPP-2011-0539-0052 (phenothrin) and EPA-HQ-OPP-2011-1009-0060 (prallethrin)

Pollinator comments:

National Pest Management Association -- EPA-HQ-OPP-2010-0384-0274 (bifenthrin), EPA-HQ-OPP-2010-0384 (bifenthrin), EPA-HQ-OPP-2010-0684 (cyfluthrin and beta-cyfluthrin), EPA-HQ-OPP-2009-0637 (deltamethrin), EPA-HQ-OPP-2009-0301 (esfenvalerate), EPA-HQ-OPP-2011-0039 (permethrin), EPA-HQ-OPP-2011-0539 (phenothrin)

FMC Corporation -- EPA-HQ-OPP-2010-0384-0289 (bifenthrin)

Northwest Horticultural Council (NHC) -- EPA-HQ-OPP-2010-0422-0106 (fenpropathrin)

Pyrethroid Working Group -- EPA-HQ-OPP-2010-0684-0121 (cyfluthrin)

Private citizen -- EPA-HQ-OPP-2011-0692-0040 (imiprothrin)

Scotts Company LLC -- EPA-HQ-OPP-2010-0384- 0285 (bifenthrin), EPA-HQ-OPP-2010-0684-0120 (cyfluthrin)

Comments on Pesticide Impacts on Water Quality submitted to individual dockets:

San Francisco Bay Regional Water Quality Control Board – EPA-HQ-OPP-2011-0039-0134 (permethrin)

Bay Area Clean Water Agencies – EPA-HQ-OPP-2011-0039-0155 (permethrin)

National Association of Clean Water Agencies – EPA-HQ-OPP-2011-0039-0156 (permethrin)

California Stormwater Quality Association – EPA-HQ-OPP-2011-0039-0157 (permethrin)