POLLINATOR PROTECTION REQUIREMENTS FOR SECTION 18 EMERGENCY EXEMPTIONS AND SECTION 24(c) SPECIAL LOCAL NEED REGISTRATIONS IN WASHINGTON STATE

REGISTRATION SECTION
PESTICIDE MANAGEMENT DIVISION
WASHINGTON STATE DEPARTMENT OF AGRICULTURE

Rev. 3/2/2004

WSDA Section 18 and SLN Pollinator Protection Requirements

Insecticides are classified by EPA as being highly toxic (acute LD_{50} 2ug/bee or less), toxic (acute LD_{50} >2ug/bee but <11ug/bee) or practically non-toxic (acute LD_{50} 11ug/bee or more) to bees. Insecticides that are toxic to bees are further classified by WSU as having a long (>8 hours), intermediate (2-8 hours) or short (<2 hours) residual hazard to bees. The length of residual hazard depends on several factors, including active ingredient, formulation, species of bee, use rate and repellency. ***Pollinator protection statements are required for insecticides that (1) are highly toxic or toxic to bees with a long or intermediate residual hazard to bees, and (2) are applied to a crop or site that is attractive to bees or has been determined to be associated with bee kills by WSDA.***

Pollinator protection statements are optional for insecticides with a short residual hazard, and are not generally required for other types of pesticides (e.g. fungicides, herbicides). Pollinator protection statements are based on product toxicity, residual hazard and WSDA field experience investigating bee kill incidents. Statements are subject to revision by WSDA. Alternative statements will be reviewed by WSDA to determine if they provide adequate pollinator protection.

1. Active Ingredient Requirements*

a. <u>Do not apply to blooming crops or broadleaf weeds:</u>

Acephate
Azinphosmethyl
Bifenthrin (0.06 to 0.1 lb ai/acre)
Carbaryl WP
Carbofuran
Chlorpyrifos
Diazinon
Dimethoate
Esfenvalerate (0.05 lb ai/acre)
Fenpropathrin
Lambda-cyhalothrin (0.03 lb ai/acre)
Malathion ULV (8 fl oz/acre)
Methamidophos
Methidathion
Methyl parathion
Naled
Permethrin (W WA)
Phosmet
Thiamethoxam

b. <u>When crops or broadleaf weeds are blooming, apply in late evening only:</u>

Abamectin
Bifenthrin (0.032 to 0.04 lb ai/acre)
Carbaryl XLR / Carbaryl 4F
Disulfoton
Endosulfan
Esfenvalerate (0.025 lb ai/acre)
Fipronil
Imidacloprid
Lambda-cyhalothrin (0.02 lb ai/acre)
Malathion EC
Oxamyl
Permethrin (E WA)

c. <u>Pollinator protection statement not required by WSDA (pollinator protection statement on the Section 3 label must be followed, if applicable):</u>

Azadirachtin
Amitraz
Bacillus thuringiensis
Cyhexatin
Dicofol
Oxydemeton-methyl
Pirimicarb
Propargite
Pyrethrum
Pyriproxyfen

Diflubenzuron
Formetanate hydrochloride
Hexythiazox
Lime-sulfur
Oil
Rotenone
Spinosad
Sulfur
Tebufenozide
Thiacloprid
Triazamate

*Products which will not contact bloom (e.g. granular products, soil-applied products) do not require a pollinator protection statement.

2. Crop / Site Requirements

- ***Alfalfa (hay or seed):*** Pollinator protection statement required due to concern with blooming crop. There are exceptions to the active ingredient requirements noted above, due to different sensitivities of alkali bees and alfalfa leafcutting bees (compared with honey bees).
- ***Apple:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Apricot:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Aquatic site:*** Pollinator protection statement not required.
- ***Asparagus:*** Pollinator protection statement required due to concern with blooming crop.
- ***Barley:*** Pollinator protection statement not required.
- ***Bean:*** Pollinator protection statement required due to concern with ***blooming lima beans only.*** Pollinator protection statement not required for other species of beans.
- ***Blueberry:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Buckwheat:*** Pollinator protection statement required due to concern with blooming crop.
- ***Canola:*** Pollinator protection statement required due to concern with blooming crop.
- ***Carrot:*** Pollinator protection statement not required (unless crop is grown for seed).
- ***Cherry:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Chickpea (Garbanzo bean):*** Pollinator protection statement not required.
- ***Christmas trees:*** Pollinator protection statement not required.
- ***Clover (hay or seed):*** Pollinator protection statement required due to concern with blooming crop.
- ***Corn:*** Pollinator protection statement required due to concern with pollen-shedding corn.
- ***Cottonwood / Poplar plantations:*** Pollinator protection statement not required.
- ***Cranberry:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Cucumber:*** Pollinator protection statement required due to concern with blooming crop.
- ***Currant:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Evening primrose:*** Pollinator protection statement required due to concern with blooming crop.
- ***Flower bulb (Daffodil, Iris, Lily, Tulip):*** Pollinator protection statement not required.
- ***Garlic:*** Pollinator protection statement not required.

- ***Grape (wine or juice):*** Pollinator protection statement required due to concern with blooming broadleaf weeds.
- ***Grass (hay or seed):*** Pollinator protection statement not required (unless grass hay is grown with a legume that is attractive to bees).
- ***Holly:*** Pollinator protection statement required due to concern with blooming crop.
- ***Hop:*** Pollinator protection statement not required.
- ***Lentil:*** Pollinator protection statement not required.
- ***Mint:*** Pollinator protection statement required due to concern with blooming crop.
- ***Mushroom:*** Pollinator protection statement not required.
- ***Nectarine:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Onion:*** Pollinator protection statement not required (unless crop is grown for seed).
- ***Pea:*** Pollinator protection statement required due to concern with ***blooming Austrian winter peas only.*** Pollinator protection statement not required for other species of peas.
- ***Peach:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Pear:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Pepper:*** Pollinator protection statement not required.
- ***Plum:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Potato:*** Pollinator protection statement required due to concern with drift onto adjacent blooming seed crops.
- ***Pumpkin:*** Pollinator protection statement required due to concern with blooming crop.
- ***Raspberry:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Rhododendron:*** Pollinator protection statement required due to concern with blooming crop.
- ***Strawberry:*** Pollinator protection statement required due to concern with blooming crop and broadleaf weeds.
- ***Timothy/alfalfa or timothy/clover hay:*** Pollinator protection statement required due to concern with blooming legume crop.
- ***Tomato:*** Pollinator protection statement not required.
- ***Vegetable seed:*** Pollinator protection statement required due to concern with blooming crop.
- ***Watermelon:*** Pollinator protection statement required due to concern with blooming crop.
- ***Wheat:*** Pollinator protection statement not required.

Format of WSDA Pollinator Protection Statements

Pollinator protection statements shall consist of a description of the hazard to bees, followed by a statement consistent with WSDA requirements for the active ingredient and the crop / site. Here are several examples of statements that have been approved by WSDA:

1. Insecticide with intermediate residual hazard to bees (disulfoton) used on ***asparagus***: "*This product is toxic to bees exposed to direct application. Do not apply this product to blooming*

asparagus if bees are visiting the treatment area. Applications to blooming asparagus must be timed to coincide with periods of minimum bee activity, between late evening and midnight."

2. Insecticides with a long residual hazard to bees (acephate, chlorpyrifos) used on ***carrot grown for seed***: *"This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or broadleaf weeds. Do not apply this product to blooming carrot seed during the pollination period: apply as a pre-bloom spray, or apply at the end of the pollination period. Bee colonies used for pollination should be removed from the field being treated prior to the application. Notify beekeepers pollinating crops within ¼ mile of the field to be treated at least 48 hours prior to the application."*
3. Insecticides with long residual hazard to bees (dimethoate, phosmet) used on ***cherry***: "*This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or broadleaf weeds. Do not apply this product or allow it to drift to blooming trees or broadleaf weeds. Broadleaf weed bloom must be controlled prior to the application."*
4. Insecticides with long or intermediate residual hazard to bees (carbofuran, endosulfan, thiamethoxam) used on ***potato***: *"NOTE: Severe bee kills have resulted from insecticides that were applied to potatoes, but drifted onto blooming seed crops. Do not allow this product to drift onto blooming seed crops."*
5. Insecticide with a long or intermediate residual hazard to bees, depending on use rate (esfenvalerate), used on ***small fruit***: *"This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or broadleaf weeds. Do not apply the 9.6 oz/acre (0.05 lb ai/acre) rate of this product or allow it to drift to blooming small fruits or broadleaf weeds: apply as a pre-bloom or post-bloom spray only. Applications of the 4.8 oz/acre (0.025 lb ai/acre) rate of this product to blooming small fruits must be timed to coincide with periods of minimum bee activity, between late evening and midnight. This product can act as a bee repellent."*

Bee Pollination of Crops Grown in Washington State

Bees are commercially managed for the pollination of a variety of crops in the state of Washington, including tree fruits (e.g. apple, cherry, pear), small fruits (e.g. blueberry, cranberry, raspberry, strawberry) and seed crops (e.g. alfalfa, clover, vegetable). The honey bee is the most widely used pollinator, although several other species of bees are also used to pollinate crops. These include the orchard mason bee, alkali bee, alfalfa leafcutting bee and several species of bumble bees. ***In 2002, the value of bee pollinated crops in the state of Washington was in excess of $1.39 billion.*** Bees also pollinate a variety of fruit and vegetable plants in home gardens, as well as native plants.

Bee Kills Reported in Washington State

Insecticides with a long or intermediate residual hazard to bees, either applied to or drifted onto blooming crops or weeds, were responsible for the majority of the bee kills reported in the state of Washington.

From January 1, 1992 to December 31, 2003 there were approx. 174 bee kill incidents investigated by the Washington State Department of Agriculture (WSDA). The ***insecticides*** responsible for the majority of these incidents were acephate, carbaryl, chlorpyrifos, dimethoate, methamidophos, methyl parathion and thiamethoxam. The ***crops*** involved in the majority of these incidents were apple, bean, canola, carrot seed, cherry, mint, pear and potato. In some cases, it appears that drift from the target crop onto an adjacent blooming crop was responsible for the incident. The ***species of bee*** involved was usually the honey bee, but there were a few incidents involving the alfalfa leafcutting bee.

Prior to 1992, WSDA documented honey bee kills from insecticide applications to other crops, including: alfalfa hay, asparagus, clover seed, corn, holly and timothy hay. WSU cooperative extension indicates that bumble bees have been killed by insecticide applications to cranberries. Johansen and Mayer (1990) indicate that alkali bees were killed by insecticide applications to alfalfa hay.

Selected References

How to Reduce Bee Poisoning from Pesticides (PNW 518). Mayer, D.F., C.A. Johansen and C. R. Baird. 1999. Washington State University, Pullman, WA.

Nectar and Pollen Plants of Oregon and the Pacific Northwest. Burgett, D.M., B.A. Stringer and L.D. Johnston. 1989. Honeystone Press, Blodgett, OR.

Pollinator Protection: A Bee and Pesticide Handbook. Johansen, C.A. and D.F. Mayer. 1990. Wicwas Press, Cheshire, CT.

For Additional Information, Please Contact:

Erik W. Johansen
Pesticide Registration Specialist / Pollinator Protection & Spray Adjuvants
Washington State Department of Agriculture
Pesticide Management Division
1111 Washington Street
PO Box 42589
Olympia, WA 98504-2589
Phone: 360-902-2078
FAX: 360-902-2093
E-mail: ejohansen@agr.wa.gov