

Appendix A Endosulfan Label Analysis and SRRD Memorandum

This appendix contains data used to identify labeled use patterns for endosulfan. **Table 3.1** in the Exposure Assessment Section (section 3 of the main document) is based on:

(1) Use analysis of the three main labels (2) Combining the three labels information into one Table, and (3) Verifying that uses are in agreement with SRRD Memo. These three aspects are summarized hereunder.

(1) Use analysis of the three main labels for endosulfan:

- Vegetative buffer: 30 ft; and
- Drift buffer for all types of applications: 300 ft

1st Label with Registration Number 00622-0062. MANA 50WP (a.i= 50.0%)

- With the exception of strawberry, No intervals are specified for any crop. Restricted Use due to high acute toxicity to humans and acute toxicity to avian and aquatic organisms
- No aerial application to any type of trees.

Abbreviations:

REI: Restricted Entry Interval

PHI: Pre-harvest Interval

NS: Not Specified

California labeled uses for endosulfan in accordance to 066222-00062 Label.

<i>Crop(REI; PHI in Days)</i>	<i>Application: Rate, Number & Total</i>			<i>Equipment and Timing ²</i>
	<i>Single(Varies with pest type)</i>	<i>Number</i>	<i>Total ¹</i>	
Filbert, Hazelnut (2; 1)	0.5, 1.5 & 2.00	1	2.00	Ground, or airblast spray (Stage: foliar specified only for almonds from popcorn to petal fall)
Walnut (2; NS)	1.5 & 2.00	1	2.00	
Citrus (4; NS)	0.50 & 2.50	2	2.50	Ground foliar spray; 12 month before fruiting
Broccoli, Kohlrabi & Cabbage (9; 7) ³ & Cauliflower (9; 14)	0.75 & 1.00	2	2.00	Aerial and ground foliar spray
Collards (4; 21)	0.75	1	0.75	
Kale (4; 21)	0.75	1	0.75	
Mustard Green (4; 21)	0.75	1	0.75	
Apple (4; 30)	0.50, 0.750 & 2.50	3	2.50	Ground, or airblast spray (Stage: prior to petal fall)
Apricot, Nectarine & Peach (4; 30)	0.50, 2.00 & 2.50	2	2.50	Ground, or airblast spray (Stage: foliar not specified)
Cherry (4; 21)	1.0, 2.0 & 2.5	2	2.50	Ground, or airblast spray (Stage: Pre-pink, delay dormant, Popcorn and post-harvest bark treatment)

<i>Crop(REI; PHI in Days)</i>	<i>Application: Rate, Number & Total</i>			<i>Equipment and Timing ²</i>
	<i>Single(Varies with pest type)</i>	<i>Number</i>	<i>Total ¹</i>	
Pear (4; 7)	0.5, 2.0 & 2.5	2	2.50	Ground, or airblast spray (Stage: from dormant to post harvest)
Plum & Prune (4; 7)	0.50, 0.750, 2.0 & 2.50	2	2.50	Ground, or airblast spray (Stage: from dormant to post harvest)
Lettuce, Head & Leaf (4; 14) ⁵	0.75 & 1.00	2	2.00	Aerial or ground foliar spray
Brussels Sprouts (9; 14)	1.00	2	2.00	
Cucumber, Melons, Pumpkin & Squash (3; 2) ⁶	0.50 & 1.00	3	2.00	Aerial or ground foliar spray
Potato (2; 1)	0.50, 0.75 & 1.00	4	2.00	Aerial or ground foliar spray
Celery (one application 4; 4)	1.00	1	1.00	
Or (two applications 4;7)	0.5	2	1.00	
Pepper (2; 4)	0.5 & 1.00	2	2.00	
Strawberry (5; 4)	1.00	2	2.00	Aerial or ground foliar spray; 15-day interval
Eggplant (2; 1)	0.5	1	0.50	Aerial or ground foliar spray

¹ Based on the label and on the fact that crop cycle for tree crops is one year, Total Rates specified in Table are: (a) Lbs a.i./Acre/Year for: all tree crops (almond, apple, apricot, cherry, citrus, filbert, nectarine, peach, pear, plum, and prune) and broccoli, carrot, , eggplant, , kale, mustard green, , potato, , celery, and sweet potato; and (b) Lbs a.i./Acre/Crop Cycle for all other crops

² Labels specified notes for certain crops as follows: Citrus: Non-bearing trees and nursery stock; Strawberry: Don't apply within 35-day when fruits are present; Sweet Potatoes: May apply to nursery stock and shortly after transplant; and Walnut: Do not apply after husk split

³ Including Chinese cabbage

⁴ For fresh vegetables use only

⁵ Lettuce including: head, leaf (black seeded Simpson, and salad. Do not exceed 2 applications after thinning

⁶ Squash: including summer, winter, and Hubbard

2nd Label with Registration Number 066222-00063. MANA EC (a.i= 33.7%)

- With the exception of ornamentals and strawberries, no intervals are specified for any crop. Restricted Use due to high acute toxicity to humans and acute toxicity to avian and aquatic organisms.

Abbreviations:

REI: Restricted Entry Interval

PHI: Pre-harvest Interval

NS: Not Specified

California labeled uses for endosulfan in accordance to 066222-00063 Label.

<i>Crop(REI; PHI in Days)</i>	<i>Application: Rate, Number & Total</i>			<i>Equipment and Timing ²</i>
	<i>Single(Varies with pest type)</i>	<i>Number</i>	<i>Total ¹</i>	
Citrus (4; NS)	0.5 & 2.50	2	2.50	Aerial or ground foliar spray; 12 month before fruiting
Broccoli, Cabbage (4; 17) ³ & Cauliflower (4; 14)	0.75 & 1.00	2	2.00	Aerial or ground foliar spray
Collards, Kale & Mustard Green (2; 21)	0.75	1	0.75	
Sweet corn (17; 1) ⁴	1.00 & 1.50	1	1.50	Aerial or ground foliar spray; No band treatment
Cotton, Aerial (2; NS)	0.75	2	1.5	
Cotton, Ground (2; NS)	0.40, 0.50, 0.75, 1.00 & 1.50	2	2.00	
Apple (2; 30)	0.5 & 2.50	3	2.50	Aerial, ground, or airblast spray (Stage: prior to petal fall)
Apricot, Nectarine & Peach (2; 30)	0.5 & 2.50	2	2.50	Aerial, ground, or airblast spray (Stage: foliar not specified)
Cherry (2; 21)	0.50, 0.75, 2.0 & 2.5	2	2.50	Aerial, ground, or airblast spray (Stage: Pre-pink, delay dormant, Popcorn and post-harvest bark treatment)
Pear (2; 7)	0.25, 0.50, 2.00 & 2.5	2	2.50	Aerial, ground, or airblast spray (Stage: from dormant to post harvest)
Plum & Prune (2; 7)	0.5, 0.75, 2.00 & 2.5	2	2.50	Aerial, ground, or airblast spray (Stage: from dormant to post harvest)
Lettuce, Head & Leaf (2; 14) ⁵	0.75 & 1.00	2	2.00	Aerial or ground foliar spray
Brussels Sprouts (2; 14)	0.75 & 1.00	2	2.00	
Cucumber, Melons, Pumpkin & Squash (2; 2) ⁶	0.5 & 1.0	3	2.00	Aerial or ground foliar spray
Ornamentals or shade Trees ⁷	0.45 & 0.50	6	3.00	Ground foliar spray; 10-day interval
Potato (2; 1)	0.5 & 1.0	4	2.00	Aerial or ground foliar spray No band treatment for sweet potato
Sweet Potato (2; 1)	0.5	3	1.50	
Dry Beans, Except Lima & Dry Peas (2; 3)	0.50 & 1.00	2	2.00	Aerial or ground foliar spray
Carrot (2; 7)	0.50 & 1.00	1	1.00	
Celery (one application 2; 4)	1.00	1	1.00	
Or (two applications 2;7)	0.50	2	1.00	
Pepper (2; 4)	0.50 & 1.00	2	2.00	Aerial or ground foliar spray
Pineapple; CA Fresh market only (2; 7)	1.5; 2.0	2	3.00	7-day during the 40-day blooming period
Strawberry (2; 4)	1.00	2	2.00	Aerial or ground foliar spray; 15-day interval
Eggplant (2; 1)	0.25 & 0.50	2	0.50	Aerial or ground foliar spray
Tomato (2; 2)	0.50, 0.75 & 1.00	4	2.00	
Beef Range Feeder Cattle (Meat)	0.198/Animal, When Needed			

Crop(REI; PHI in Days)	Application: Rate, Number & Total			Equipment and Timing ²
	Single(Varies with pest type)	Number	Total ¹	
Dairy Cattle (Lactating or Unspecified)				

¹ Based on the label and on the fact that crop cycle for tree crops is one year, Total Rates specified in Table are:

(a) Lbs a.i./Acre/Year for: all tree crops (almond, apple, apricot, cherry, citrus, filbert, nectarine, peach, pear, plum, and prune) and broccoli, carrot, , eggplant, , kale, mustard green, , potato, , celery, and sweet potato; and (b) Lbs a.i./Acre/Crop Cycle for all other crops

² Labels specified notes for certain crops as follows: Citrus: Non-bearing trees and nursery stock; Strawberry: Don't apply within 35-day when fruits are present; Sweet Potatoes: May apply to nursery stock and shortly after transplant; and Walnut: Do not apply after husk split

³ Including Chinese cabbage

⁴ For fresh vegetables use only

⁵ Lettuce including: head, leaf (black seeded Simpson, and salad. Do not exceed 2 applications after thinning

⁶ Squash: including summer, winter, and Hubbard

⁷ Outdoor Nursery for Shade trees & Shrubs only

3rd Label with Registration Number 019713-00399. Drexel EC (a.i= 34%)

- With the exception of ornamentals and strawberries, no intervals are specified for any crop. Restricted Use due to high acute toxicity to humans and acute toxicity to avian and aquatic organisms

Abbreviations:

REI: Restricted Entry Interval

PHI: Pre-harvest Interval

NS: Not Specified

California labeled uses for endosulfan in accordance to 019713-00399 Label.

Crop(REI; PHI in Days)	Application: Rate, Number & Total			Equipment and Timing ²
	Single(Varies with pest type)	Number	Total ¹	
Almond (2; 58)	2.00	1	2.00	Aerial, ground, or airblast spray (Stage: from popcorn to petal)
Citrus (2; NS)	0.5 & 2.50	2	2.50	Aerial or ground foliar spray; 12 month before fruiting
Broccoli & Cabbage (2; 7) ³ & Cauliflower (2; 14)	0.75 & 1.00	2	2.00	Aerial or ground foliar spray
Collards, Kale & Mustard Green (2; 21)	0.75	1	0.75	
Sweet corn (17; 1) ⁴	1.00 & 1.50	1	1.50	Aerial or ground foliar spray; No band treatment
Cotton (2; NS); Aerial	0.75	2	1.5	
Cotton (2; NS); Ground	0.40, 0.50, 0.75, 1.00 & 1.50	2	2.00	
Apple (2; 30)	0.5 & 2.50	3	2.50	Aerial, ground, or airblast spray (Stage: prior to petal fall)
Apricot, Nectarine & Peach (2; 30)	0.5 & 2.50	2	2.50	Aerial, ground, or airblast spray (Stage: foliar not specified)
Cherry (2; 21)	0.50, 0.75, 1.0, 2.0 & 2.5	2	2.50	Aerial, ground, or airblast spray (Stage: Pre-pink, delay dormant,

Crop(REI; PHI in Days)	Application: Rate, Number & Total			Equipment and Timing ²
	Single(Varies with pest type)	Number	Total ¹	
				Popcorn and post-harvest bark treatment)
Pear (2; 7)	0.25, 0.50, 2.00 & 2.5	2	2.50	Aerial, ground, or airblast spray (Stage: from dormant to post harvest)
Plum & Prune (2; 7)	0.5, 0.75, 2.00 & 2.5	2	2.50	Aerial, ground, or airblast spray (Stage: from dormant to post harvest)
Lettuce; Head & Leaf (2; 14) ⁵	0.75 & 1.00	2	2.00	Aerial or ground foliar spray
Brussels Sprouts (2; 14)	0.75 & 1.00	2	2.00	
Cucumber, Melons, Pumpkin & Squash (2; 2) ⁶	0.5 & 1.0	3	2.00	Aerial or ground foliar spray
Ornamentals or shade Trees ⁷	0.45 & 0.50	6	3.00	Ground foliar spray; 10-day interval
Potato (2; 1)	0.5 & 1.0	4	2.00	Aerial or ground foliar spray No band treatment for sweet potato
Sweet Potato (3; 1)	0.5	3	1.50	
Dry Beans; Except Lima & Dry Peas (2; 3)	0.50 & 1.00	2	2.00	Aerial or ground foliar spray
Carrot (2; 7)	0.50 & 1.00	1	1.00	
Celery (one application 2; 4)	1.00	1	1.00	
Or (two applications 2;7)	0.50	2	1.00	
Pepper (2; 4)	0.50 & 1.00	2	2.00	Aerial or ground foliar spray
Pineapple; CA Fresh market only (2; 7)	1.5; 2.0	2	3.00	7-day during the 40-day blooming period
Strawberry (2; 4)	1.00	2	2.00	Aerial or ground foliar spray; 15-day interval
Eggplant (2; 1)	0.25 & 0.50	2	0.50	Aerial or ground foliar spray
Tomato (2; 2)	0.50, 0.75 & 1.00	4	2.00	
Beef Range Feeder Cattle (Meat)	0.198/Animal, When Needed			
Dairy Cattle (Lactating or Unspecified)				

¹ Based on the label and on the fact that crop cycle for tree crops is one year, Total Rates specified in Table are:

(a) Lbs a.i./Acre/Year” for: all tree crops (almond, apple, apricot, cherry, citrus, filbert, nectarine, peach, pear, plum, and prune) and broccoli, carrot, , eggplant, , kale, mustard green, , potato, , celery, and sweet potato; and (b) Lbs a.i./Acre/Crop Cycle for all other crops

² Labels specified notes for certain crops as follows: Citrus: Non-bearing trees and nursery stock; Strawberry: Don’t apply within 35-day when fruits are present; Sweet Potatoes: May apply to nursery stock and shortly after transplant; and Walnut: Do not apply after husk split

³ Including Chinese cabbage

⁴ For fresh vegetables use only

⁵ Lettuce including: head, leaf (black seeded Simpson, and salad; Do not exceed 2 applications after thinning)

⁶ Squash: including summer, winter, and Hubbard

⁷ Outdoor Nursery Only for Shade trees, and Shrubs only

(2) Combining the three labels in one Table

- Vegetative buffer: 30 ft (Can not use)
- Drift buffer for all types of applications: 300 ft
- Nozzle height maximum 4 ft above ground or crop canopy
- Maximum wind speed 10 mph, and
- Use Medium, or coarse spray ASAE 573

California labeled crop uses for endosulfan (Data combined from the three labels).

<i>Crop</i> (Maximum PHI & REI in days) ¹	<i>Application: Rate, Number, and Total</i> ²			<i>Application Type, Equipment and Timing</i> ²
	<i>Single</i>	<i>Number</i>	<i>Total</i>	
Almond (58; 2), Hazelnut (1; 2) & Walnut (None; 2)	2.00	1	2.00	Almonds from popcorn to petal fall; Walnuts up to husk split; and Hazelnuts Leaf insects control
Citrus, non-bearing trees and nursery stock (None; 4)	0.50+2.00	2	2.50	Aphids & Mites Treatment. Foliar spray; 12 month before fruiting
Broccoli & Cabbage & Chinese cabbage (7; 9), & Cauliflower (14; 9),	1.00	2	2.00	Aphids, Worms & Whitefly treatment. Aerial or ground
Collards, Kale & Mustard Green (21; 4)	0.75	1	0.75	
Sweet corn, Fresh market only (1; 17)	1.50	1	1.50	Silk appearance to dryness. Aerial or ground
Cotton (None; 2) (Ground)	0.50+1.50	2	2.0	Aphids, Worms & Thrips treatment. Ground and Aerial
Cotton (None; 2) (Aerial)	0.75	2	1.5	
Apple (30; 4)	0.5+0.75+1.25	3	2.50	All Aerial, ground, or airblast spray. Apply prior to the petal fall stage
Apricot, Nectarine & Peach (30; 4); Cherry (21; 4); Pear, Plum & Prune (7; 4)	0.50+2.00	2	2.50	Aerial, ground, or airblast. Apply at the following stages: Apricot, Nectarine & Peach: Not specified; Cherry: Pre-pink, delay dormant, Popcorn and post-harvest bark treatment; and Pear, Plum & Prune: dormant to post harvest)
Lettuce (head & Leaf) ³ (14; 4) & Brussels Sprouts (14; 9)	1.00	2	2.00	Aerial or ground
Cucumber, Melons, Pumpkin & Squash ⁴ (2; 3),	0.50+0.50+1.0	3	2.00	Aerial or ground
Eggplant (1; 2)	0.25	2	0.50	Aerial or ground foliar spray
Ornamentals or shade Trees ⁵	0.50	6	3.00	Ground ; 10-day interval
Potato (1; 3)	0.50	4	2.00	Aerial or ground. For sweet potato: May apply to nursery stock and shortly after transplant.
Sweet Potato* (1; 3)	0.50	3	1.50	
Beans "Except Lima" & Peas (dry) (3; 2) & Pepper (4; 2)	1.00	2	2.00	Aerial or ground
Carrot * (7; 2)	1.00	1	1.00	
Celery (7; 2 for one application or 4; 2 for two)	1.00	1	1.00	
	0.5	2	1.00	
Strawberry (4; 5)	1.00	2	2.00	Aerial or ground; 15-day interval. Don't apply within 35-day when fruits are present
Tomato* (2; 2)	0.5	4	2.00	Aerial or ground foliar spray

<i>Crop</i> (Maximum PHI & REI in days) ¹	<i>Application: Rate, Number, and Total</i> ²			<i>Application Type, Equipment and Timing</i> ²
	<i>Single</i>	<i>Number</i>	<i>Total</i>	

¹ Crops PHI= Pre-harvest interval in days and REI= Restricted Entry Interval in days. ² Maximum number and total per season or year are strictly as per the label. Possible single rates are chosen, in most cases, from rates specified in the label so that the number of applications and total are as per those stated in the label. Based on the fact that crop cycle for tree crops is one year, total rates specified in Table are: (a) Lbs a.i./Acre/Year” for all tree crops (almond, apple, apricot, cherry, citrus, filbert, nectarine, peach, pear, plum, and prune) and broccoli, carrot, eggplant, kale, mustard green, , potato, , celery, and sweet potato; and (b) Lbs a.i./Acre/Crop Cycle for all other crops. ³ Lettuce including: head, leaf (black seeded Simpson, and salad. Do not exceed 2 applications after thinning). ⁴ Squash: including summer, winter, and Hubbard. ⁵ Outdoor Nursery for Shade trees and Shrubs only.

(3) Verify that uses are in agreement with SRRD Memo:

Hereunder, SRRD memo used for verification

As per SRRD and RD CA use verification Memo of 09/10/2008

<i>Mitigation</i>	<i>Is it included in the labels?</i>
(1) No alfalfa use	Yes
(2) Sweet corn for vegetable use only	Yes
(3) All ornamental trees are outdoor nursery only	Yes
(4) No Kohlrabi use	Yes
(5) Peas limited to dried-type only	Yes
(6) No forestry use (pine, fir, spruce, polar, forest trees, forest, and forest/shelterbelt	Yes
(7) Citrus for non-bearing trees and nursery stock	Yes

SRRD Memo



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

PC Code: 079401

DATE: September 10, 2008

SUBJECT: Confirmation of Endosulfan (079401) Active Section 3 Registrations and Section 24c Registrations (California Only) and Use Sites for Use in California Red-Legged Frog Effects Determination

FROM: Tracy Perry, Chemical Review Manager *Tracy Perry*
Special Review Branch
Special Review and Reregistration Division (7508P)

AND
Dana Pilitt *Dana Pilitt*
Insecticide Branch, Registration Division (7505P)

THRU: Anne Overstreet, Team Leader *Anne Overstreet*
Special Review Branch
Special Review and Reregistration Division (7508P)

TO: Rafael Prieto
Usage and Label Use Team
Biological Economic and Analysis Division (7503P)

In response to your request for concurrence on the information contained in the General Chemical Report dated August 27, 2008 for endosulfan, provided by BEAD, this memo serves as confirmation from SRRD and RD of the active registrations and approved uses of endosulfan for the effects determination assessment for the California red-legged frog.

It has been determined that label dates on the General Chemical Report are correct. Currently, there are 8 active section 3 registrations and no Special Local Need (SLN) registrations for

California. Therefore, based on this information, SRRD/RD confirm that the following active registrations (Table 1) are the only approved uses of endosulfan in California.

Table 1. Active Registrations for Endosulfan (except SLNs in States other than CA)

Registration Number	Name	Registrant	Form	Percent Active Ingredient (%)	Restricted Use (Yes/No)
066222-0062	Makhteshim-Agan of North America, Inc	Thionex 50W Insecticide	WP	50.0	Yes
066222-00063	Makhteshim-Agan of North America, Inc	Thiodan 3 EC Insecticide	EC	33.7	Yes
066222-00064	Makhteshim-Agan of North America, Inc	Thionex Technical Insecticide	TGAI	95.00	No
061483-00065	KMG-Bernuth, Inc.	Endafly Insecticide Cattle Ear Tag	Impregnated Material	30.0	No
019713-00099	Drexel Chemical Company	Drexel 2 EC Insecticide	EC	24.6	Yes
019713-00319	Drexel Chemical Company	Drexel Endo TechD	TGAI	95.0	No
019713-00399	Drexel Chemical Company	Drexel Endosulfan 3EC	EC	34.0	Yes
011678-00005	Makhteshim Chemical Works LTD	Thionex Endosulfan Technical	TGAI	95.0	No

The endosulfan site and use groups contained in the General Chemical Report are correct with the exception of the following information from RD.

The only use on alfalfa is for 24Cs (not in California) for alfalfa grown for seed, which is a non-food & non-feed use. The only use for corn is "sweet corn, fresh vegetable use only", not "corn, unspecified." Also there is a livestock feeding prohibition so "feed crop" is incorrect for sweet corn. Kohlrabi is only a 24C use (not in California) for seed crop (non-food, non-feed). Use on peas is limited to "peas, dried-type only", not "peas, unspecified". All fruit tree uses have a livestock feeding and grazing prohibition, so "feed crop" is incorrect. All ornamental trees are

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outdoor nursery only, so "forestry" for all conifers (pine, fir & spruce) and poplars is incorrect. Likewise "Forest Trees" entry and "forest", "forest/shelterbelt" categories are incorrect.

If you have any questions and/or concerns regarding the information provided, herein, please feel free to contact me at 703-308-0128.

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