

**Dimethoate Dimethoate Interim Reregistration Eligibility Decision Request for Comments
(Replies Sought by September 12, 2006)**

Date: August 4, 2006

To: Western IPM Center

From: [Rick Melnicoe](#)

Subject: Dimethoate IRED - Public Comments by September 12

Dear All,

The public comment period for Dimethoate has begun. See the note below from Teung Chin. If you care to further comment on Dimethoate, now is your chance. Those in the PNW should coordinate with Jane Thomas.

Rick

-----Original Message-----

To: [Rick Melnicoe](#), et al.

From: [Teung Chin](#)

Sent: Thursday, August 03, 2006

Subject: Dimethoate IRED - Public Comments by September 12

Dear Colleagues:

On July 12, 2006, the EPA opened the public comment period for its risk mitigation decisions in the "Interim Reregistration Eligibility Decision for Dimethoate." Public comments are due to EPA by September 12.

USDA and EPA , in coordination with the registrant, accommodated as many as possible of the received grower and IPM Regional Center feedback received by USDA since early 2006. EPA has conveyed that any outstanding issues, errors or omissions may be addressed during this comment period.

Please review the [attached relevant excerpts from the IRED](#) and review for appropriate maximum application rate, numbers of applications, days interval between applications, REI and PPE. Please also note any changes in tolerances for your crop/use site.

Attached are:

- (1) Table 6. "Summary of Handler Scenarios with MOEs Less Than 100 When Assessed with Maximum Feasible Mitigation
- (2) Table 7. Summary of Postapplication Risk Assessment for Dimethoate
- (3) Table 19. Interim Tolerance Summary for Dimethoate
- (4) Regulatory Rationale
- (5) Table 20. Revised Use Site Parameters and Requirements for Dimethoate
- (6) Labelling Changes Summary Table

(See attached file: [Dimethoate-IREG-Reregistration-Decisions.pdf](#))

Please send comments directly to the EPA docket and a copy to myself. To review all the EPA documents and risk assessments and to file comments, go to www.regulations.gov. Click on "Advanced Search," Click on "Docket Search" then enter " " into the "Docket ID" field, "EPA-HQ-OPP-2005-0084" Go to "EPA-HQ-OPP-2005-0084-0034" Click on the golden icon in the "Add Comments" column to enter your comments electronically or to access information on how to mail in your written comments.

To read access the entire RED, you may go to "EPA-HQ-OPP-2005-0084-0035"

Please note that the registrant did not support for reregistration: kohlrabi, lupine, sainfoin, triticale, cottonwoods grown for pulp, outdoor household domestic dwelling (ornamentals and shrubs), recreational areas, outdoor commercial/institutional/industrial premises, outdoor refuse/solid waste, phragmites reed beds, and sewage treatment systems.

Please do not hesitate to contact me if you have any questions or comments.

Best regards,

Teung

[Teung F. Chin, Ph.D.](#)

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short-term pattern (up to 30 days), but some intermediate-term (one to six month) exposures are anticipated in some handler exposure scenarios, particularly those involving applications by commercial applicators to large-acreage crops (e.g., field corn, wheat, alfalfa, cotton). Long-term exposures are those that would result from use of a pesticide for more than several months in a single year, and are not expected for dimethoate.

No chemical-specific data for assessing worker exposures during pesticide handling activities were submitted, so short- and intermediate-term dermal and inhalation exposures for handlers were developed using the Pesticide Handlers Exposure Database (PHED) Version 1.1.

The Agency has determined that there are potential exposures to individuals who mix, load, apply, and otherwise handle dimethoate during the usual use patterns associated with the pesticide. Several major occupational exposure scenarios were identified based on the type of equipment that potentially can be used to make dimethoate applications.

The calculations of short- and intermediate-term total risks to handlers indicate that most occupational handler risks are below the Agency's level of concern (i.e., MOEs are greater than 100) at some level of risk mitigation. Table 6 below shows only those handler scenarios for which MOEs are less than 100.

Table 6. Summary of Handler Scenarios with MOEs Less Than 100 When Assessed with Maximum Feasible Mitigation

Exposure Scenario	Crop	Maximum Application Rate (lbs a.i./A)	Daily Treated Area (Acres)	MOE w/ Maximum Feasible Mitigation Controls
Mixing/loading liquids for aerial and chemigation applications	Citrus	2.0	350	77 ^b
	Woody ornamentals, Christmas tree plantations, and conifer seed orchards (other than Douglas firs in OR and WA)	2.0	350	77 ^b
	Cottonwood grown for pulp	4.0	350	39 ^b
Mixing/loading liquids for aerial applications	Wheat	0.67	1,200	67 ^b
	Alfalfa, alfalfa grown for seed, cotton, field corn, pop corn, grass grown for seed, safflower, sorghum, and soybeans	0.5	1,200	90 ^b
Mixing/loading wettable	Pears	1.0	350	68 ^b

Exposure Scenario	Crop	Maximum Application Rate (lbs a.i./A)	Daily Treated Area (Acres)	MOE w/ Maximum Feasible Mitigation Controls
powders for aerial and chemigation applications		0.75	350	91 ^b
Mixing/loading/applying liquids with high pressure handwand sprayers	Woody ornamentals, Christmas tree plantations, and conifer seed orchards (other than Douglas firs in OR and WA)	0.01 ^c	1,000 gallons	34 ^a
Aerial spray applications of liquids	Wheat	0.67	1,200	92 ^b
	Cottonwood grown for pulp	4.0	350	53 ^b
Applying liquids with airblast/mistblower sprayers	Douglas fir seed orchards in OR and WA	8.3	20	76 ^b

^aMaximum feasible mitigation measure denotes additional PPE (double layer clothing plus gloves and a half-face or full-face respirator).

^bMaximum feasible mitigation measure denotes engineering controls (i.e., closed systems for mixers and loaders or closed cabs for applicators).

^cExpressed in lbs a.i./gal

Post-Application Occupational Risk

For workers entering a treated site, restricted entry intervals (REIs) are calculated to determine the minimum length of time required before workers can safely reenter (i.e., MOEs ≥ 100). The postapplication occupational risk assessment considered exposure to dimethoate from entering treated fields and orchards. Given the nature of activities in these locations, and the fact that dimethoate is applied at various times during plant growth, contact with treated surfaces is likely. Potential exposure scenarios include key tasks, such as harvesting, thinning, and pruning, as well as secondary tasks, such as scouting, irrigating, and hand weeding. Other tasks of concern were also identified for corn (detassling) and herbaceous ornamentals (tasks related to cutting carnations and roses).

Postapplication exposures are influenced by geographic location and environmental conditions near the time of application and the type of plant to which the application is directed. For most crops, data show that following applications in arid areas (i.e., outdoor areas where average annual rainfall is less than 25 inches), residues persist longer than in non-arid areas. As a result, estimated REIs tend to be longer in arid areas.

Table 7. Summary of Postapplication Risk Assessment for Dimethoate

Crop Group	Max Single App. Rate (lbs a.i./A)	Key Tasks			Secondary Tasks		
		Transfer Coefficient	REI (days)		Secondary Transfer Coefficient	REI (days)	
			Non-Arid	Arid		Non-Arid	Arid
Endive, escarole, kale, leaf lettuce, mustard greens, Swiss chard, turnips	0.25	2,500 harvest, thin	12 hrs	1	1,500 scout & irrigate	12 hrs	12 hrs
Peas	0.16	2,500 harvest	12 hrs	12 hrs	1,500 scout & irrigate	12 hrs	12 hrs
Brussels sprouts	1	5,000 harvest, irrigate, prune, thin & tie	3	9	NA		
Wheat	0.67	1,000 scout, irrigate	1	12 hrs	NA		
Beans, lentils, celery	0.5	2,500 harvest	1	2	1,500 scout & irrigate	1	12 hrs
Melons, watermelons	0.5	2,500 harvest, prune & thin	1	2	1,500 scout, irrigate & hand weed	1	12 hrs
Tomatoes	0.5	1,000 harvest, prune, stake, thin, tie & train	12 hrs	12 hrs	700 scout & irrigate	12 hrs	12 hrs
Asparagus	0.5	500 scout & irrigate	12 hrs	12 hrs	NA		
Broccoli, cauliflower	0.5	5,000 harvest, irrigate, prune, thin & tie	2	5	NA		
Alfalfa, alfalfa grown for seed, soybeans, safflower, cotton, potatoes	0.5	1,500 scout & irrigate	1	12 hrs	NA		
Field corn, popcorn	0.5	1,000 scout, irrigate & hand weed	12 hrs	12 hrs	NA		
Grain sorghum	0.5	1,000 scout,	12 hrs	12 hrs	NA		

Crop Group	Max Single App. Rate (lbs a.i./A)	Key Tasks			Secondary Tasks		
		Transfer Coefficient	REI (days)		Secondary Transfer Coefficient	REI (days)	
			Non-Arid	Arid		Non-Arid	Arid
		irrigate					
Herbaceous ornamentals	0.5	500 tasks related to cut flowers & foliage, except roses & carnations	12 hrs	12 hrs	400 tasks related to nursery crops, except cut flowers or foliage	12 hrs	12 hrs
Peppers	0.33	1,000 harvest, stake & tie	12 hrs	12 hrs	700 scout & irrigate	12 hrs	12 hrs
Douglas Fir Seed Orchards in OR and WA	8.3	1,000 scout, irrigate & weed	22	39	NA		
Cottonwoods grown for pulp	4	1,000 scout, irrigate & weed	14	24	NA		
Conifer seed orchards (except Douglas fir seed orchards in OR and WA)	2	1,000 scout, irrigate & weed	7	11	NA		
Woody ornamentals and Christmas tree plantations	2	3,000 prune & thin	19	36	1,500 harvest	13	14
Pecans	0.33	500 prune & scout	12 hrs	12 hrs	NA		
Pears	1	3,000 harvest, prune, train & tie	10	14	1,000 scout, irrigate & hand weed	2	4
	0.75		8	12		2	2
	0.5		5	7		12 hrs	12 hrs
Citrus	2	3,000 prune	24	36	1,000 scout, irrigate & hand weed	7	9
	1		13	14		2	4
	0.5		6	7		12 hrs	12 hrs
Cherries	1	3,000 harvest & prune	10	14	1,000 scout, irrigate & hand weed	2	4
	0.33		2	4		12 hrs	12 hrs

The risk assessment indicates that REIs of 12 hours are long enough for MOEs to reach 100 for many crops; however, acute toxicity of omethoate was not taken into consideration. If an active ingredient is categorized as a toxicity category I due to dermal

toxicity, skin irritation, or eye irritation, the Agency requires a minimum of a 48-hour REI. Data were not available on the acute toxicity of omethoate, but omethoate is known to form on plants after application; therefore, EPA believes a minimum REI of 48-hours is appropriate for dimethoate. This is consistent with current labels.

EPA will not be setting separate REIs for detassling corn, for which proposed REIs are 4 and 15 days for non-arid and arid conditions, respectively, due to the fact that this task is relevant only for seed corn, and dimethoate is not registered for use on seed corn.

6. Human Incident Data

For a review of the pesticide poisoning incident data for dimethoate, EPA consulted the following data bases: (1) OPP Incident Data System; (2) Poison Control Centers; (3) California Department of Pesticide Regulation; and (4) National Pesticide Telecommunications Network.

A review of the published incident data indicates that for outdoor agricultural uses, the primary sources of occupational exposures associated with poisoning are postapplication field residues and spray drift. Risks from agricultural uses appear to be somewhat lower than with other insecticides. Dimethoate has the highest reported incidence of poisonings (none life-threatening) among OPs used in residential settings, but all residential uses for dimethoate were cancelled in 2002 (Federal Register Notice/Vol. 67, No. 84/Wednesday, May 1, 2002/Notices/21669).

B. Environmental Risk Assessment

A summary of the Agency's environmental risk assessment for dimethoate is presented below. The complete risk assessment is available in the public docket at <http://www.regulations.gov> (docket # EPA-HQ-OPP-2005-0084).

1. Environmental Exposure

a. Environmental Fate and Transport

Dimethoate is a highly mobile, relatively non-persistent organophosphate insecticide. The primary route of dissipation is microbially-mediated hydrolytic and oxidative degradation in aerobic soil, particularly under moist conditions, with a half-life of 2.2 days. Dimethoate does not photodegrade. It hydrolyzes very slowly in sterile buffered solutions at pHs 5 and 7 (156 and 68 days, respectively), but hydrolyzes rapidly to desmethyl dimethoate and dimethylthiophosphoric acid with a half-life of 4.4 days at pH 9. The anaerobic half-life was found to be approximately 22 days, with the major non-volatile degradate being desmethyl dimethoate.

In a soil column leaching study, 72-100% of the applied radioactivity was eluted from the columns (loam, silt loam, sandy loam, and sand). A study measuring the

Formothion and omethoate are presently not registered for use in the U.S. The Codex and U.S. tolerances are not harmonized with respect to MRL/tolerance expression since the U.S. tolerance expression is in terms of the combined residues of dimethoate and omethoate, as a metabolite.

An interim summary of dimethoate tolerance reassessment and recommended modifications in commodity definitions is presented in Table 19, below.

Table 19. Interim Tolerance Summary for Dimethoate

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/ [Correct Commodity Definition]
Tolerances Listed Under 40 CFR §180.204(a):			
Alfalfa	2	2	Separate tolerances should be established for <i>Alfalfa, forage</i> and <i>Alfalfa, hay</i> , each at 2 ppm
Apples	2	Revoke	Use cancelled 7/20/05. Existing stocks may be sold until 7/20/06, and use may continue until stocks are depleted.
Pears	2	2	Change to <i>Pear</i> .
Beans, dry	2	2	[<i>Bean, dried and Bean, succulent</i>]
Beans, lima	2	2	
Beans, snap	2	2	
Blueberries	1	1	Change to <i>Blueberry</i> .
Broccoli	2	2	
Cabbage	2	Revoke	Use cancelled 7/20/05. Existing stocks may be sold until 7/20/06, and use may continue until stocks are depleted.
Cauliflower	2	2	
Collards	2	Revoke	Use cancelled 7/20/05. Existing stocks may be sold until 7/20/06, and use may continue until stocks are depleted.
Kale	2	2	
Mustard greens	2	2	
Cattle, fat	0.02(N)	0.02	Negligible residue designation is inappropriate. Change <i>cattle, mbyp</i> to <i>Cattle, meat byproducts</i>
Cattle, mbyp	0.02(N)	0.02	
Cattle, meat	0.02(N)	0.02	
Celery	2	2	
Endive (escarole)	2	2	Change to <i>Endive</i> .
Lettuce	2	Revoke	Change to <i>Leaf lettuce</i> . Use on head lettuce cancelled 7/20/05. Existing stocks may be sold until 7/20/06, and use may continue until stocks are depleted.

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/ [Correct Commodity Definition]
Spinach	2	Revoke	Use cancelled 7/20/05. Existing stocks may be sold until 7/20/06, and use may continue until stocks are depleted.
Swiss chard	2	2	
Corn, fodder	1	1	Separate tolerances should be established for <i>Corn, field, stover (fodder)</i> and <i>Corn, pop, stover (fodder)</i> , each at 1 ppm. Change to <i>Corn, field, stover</i> and <i>Corn, pop, stover</i>
Corn, forage	1	1	[<i>Corn, field, forage</i>] and <i>Corn, sweet, forage</i>
Corn, grain	0.1(N)	0.1	Separate tolerances should be established for <i>Corn, field, grain</i> and <i>Corn, pop, grain</i> , each at 0.1 ppm. Negligible residue designation is inappropriate.
Cottonseed	0.1	0.1	[<i>Cotton, undelinted seed</i>]
Eggs	0.02(N)	0.02	Negligible residue designation is inappropriate.
Goats, fat	0.02(N)	0.02	Negligible residue designation is inappropriate. Change to <i>Goat, fat</i> <i>Goat, meat byproducts</i> , <i>Goat, meat</i>
Goats, mbyp	0.02(N)	0.02	
Goats, meat	0.02(N)	0.02	
Grapefruit	2	2	
Lemons	2	2	Change to <i>Lemon</i> .
Oranges	2	2	Change to <i>Orange</i> .
Tangerines	2	2	Change to <i>Tangerine</i> .
Grapes	1	Revoke	Use cancelled 7/20/05. Existing stocks may be sold until 7/20/06, and use may continue until stocks are depleted.
Hogs, fat	0.02(N)	0.02	Negligible residue designation is inappropriate. Change to <i>Hog, fat</i> ; <i>Hog, meat byproducts</i> ; <i>Hog, meat</i>
Hogs, mbyp	0.02(N)	0.02	
Hogs, meat	0.02(N)	0.02	
Horses, fat	0.02(N)	0.02	Negligible residue designation is inappropriate. Change to <i>Horse, fat</i> ; <i>Horse, meat byproducts</i> ; <i>Horse, meat</i> .
Horses, mbyp	0.02(N)	0.02	
Horses, meat	0.02(N)	0.02	
Lentils	2.0	Revoke	The established tolerance for peas applies to lentils.
Melons	1	1	Change to <i>Melon</i> .

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/ [Correct Commodity Definition]
Milk	0.002(N)	TBD	Once outstanding metabolism data are submitted, the available magnitude of the residue data for milk will be reevaluated and tolerance revisions may be required. Negligible residue designation is inappropriate.
Peas	2	2	[Peas, dried and succulent] Change to Pea, dried and Pea, succulent.
Pecans	0.1	0.1	Change to Pecan.
Peppers	2	2	Change to Pepper.
Tomatoes	2	2	Change to Tomato.
Potatoes	0.2	0.2	Change to Potato.
Poultry, fat	0.02(N)	0.02	Negligible residue designation is inappropriate.
Poultry, mbyp	0.02(N)	0.02	Poultry, mbyp should be Poultry, meat byproducts.
Poultry, meat	0.02(N)	0.02	
Safflower seed	0.1	0.1	[Safflower, seed]
Sheep, fat	0.02(N)	0.02	Negligible residue designation is inappropriate.
Sheep, mbyp	0.02(N)	0.02	Sheep, mbyp should be Sheep, meat byproducts.
Sheep, meat	0.02(N)	0.02	
Sorghum, forage	0.2	0.1	Based on available field trial data, HED recommends a lower tolerance.
Sorghum, grain	0.1	0.1	Change to Sorghum, grain, grain.
Soybeans	0.05(N)	0.05	Negligible residue designation is inappropriate. Change to Soybean, seed.
Soybeans, forage	2	2	Change to Soybean, forage.
Soybeans, hay	2	2	Change to Soybean, hay.
Turnips, roots	2	0.2	Based on available field trial data, HED recommends a lower tolerance for dimethoate residues of concern in/on turnip roots. Should be Turnip, roots.
Turnips, tops	2	2	Should be Turnip, tops.
Wheat, grain	0.04(N)	0.04	Negligible residue designation is inappropriate.
Wheat, green fodder	2	2	[Wheat, forage]
Wheat, straw	2	2	
Tolerances That Need To Be Proposed/Established Under 40 CFR §180.204(a):			
Cowpeas, forage	None	TBD	Tolerances for these commodities will be required if the registrant wishes to support use of dimethoate on cowpeas grown for livestock feeding.

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/ [Correct Commodity Definition]
Cowpeas, hay	None	TBD	
Cotton, gin byproducts	None	TBD	Residue data are required.
Peas, field, vines	None	TBD	Tolerances for these commodities will be required if the registrant wishes to support use of dimethoate on field peas. Change to Pea, field, vines and Pea, field, hay
Peas, field, hay	None	TBD	
Sorghum, stover (fodder)	None	0.1	Change to Sorghum, grain, stover.
Wheat hay	None	2 ppm	CBRS does not expect residues in/on wheat hay to be higher than the tolerance level established for wheat straw. Therefore, a level of 2 ppm may be proposed for wheat hay.
Tolerances Listed Under 40 CFR §180.204(b)			
Asparagus	0.15	0.15	
Brussels sprouts	5	5	CBRS recommends that this tolerance be listed under 40 CFR §180.204(a).
Cherries	2	2	Change to Cherry.
Tolerances Listed Under 40 CFR §186.2100			
Dried citrus pulp	5	Revoke	Revoked concomitant with the establishment of tolerance for [Citrus, pulp, dried] - to be listed under 40 CFR §180.204(a).

D. Regulatory Rationale

The following is a summary of the rationale for managing risks associated with the use of dimethoate. Where labeling revisions are warranted, specific language is set forth in the summary tables of Section V of this document. In general, the application rates and maximum numbers of applications have been reduced, and retreatment intervals have been increased, to reduce dietary, worker, and ecological risks. These actions will result in reduced exposure to dimethoate. Table 20 lists all the use sites for which application rates and label requirements have been revised.

In order to reduce drinking water risks of concern, application rates and the number of applications are being lowered for a number of crops. Aerial applications are prohibited for citrus and use is not allowed on citrus grown in Florida which contributed to drinking water concerns in previous risk assessments. In addition, best management practices (BMPs) will be added to labels, with the purpose of reducing the amount of dimethoate that enters surface water bodies through spray drift. These BMPs include requiring medium or coarser sprays for aerial applications and prohibiting aerial sprays in winds greater than 10 miles per hour. To further reduce the amount of dimethoate entering surface water bodies as runoff, the Agency recommends use of Vegetative Filter Strips, if practical.

In order to reduce occupational risks of concern, in addition to reduced application rates and a reduction in numbers of applications permitted, handlers will be required to use additional protective equipment, such as additional PPE or engineering controls, depending on the handler scenario. All human flaggers supporting aerial applications will be required to be in closed cabs. Also, high pressure handwand applications will be prohibited for applications to woody ornamentals. Use on cottonwoods grown for pulp will be cancelled. See Table 20 below for detailed mitigation which is required in order for dimethoate to be eligible for reregistration. EPA expects that these mitigation measures will result in MOEs of 100 or greater for most handler scenarios.

Postapplication risks will be reduced by extending REIs for some crops, in particular, orchard fruits and woody ornamentals. The occupational risk assessment for dimethoate indicates that REIs of 12 hours are adequate to reach MOEs of 100 for a number of scenarios. However, when the acute toxicity of omethoate is taken into consideration, the Agency believes a 48 hour REI is more appropriate. Therefore, no crop scenario has an REI shorter than 48 hours. This is consistent with current labels. Regarding cole crops (broccoli, cauliflower, Brussels sprouts, and celery), the human health risk assessment indicates that a five day REI is needed to reach an MOE of 100 for applications in arid areas. Growers of these crops indicated an REI of greater than 3 days is not feasible for them; EPA assessed the impacts of this longer REI, and concurred. Therefore, EPA is allowing an REI of 3 days for applications made to cole crops in arid areas which results in an MOE of 89.

Risks to endangered species identified in the Environmental Fate and Ecological Risk Assessment for dimethoate are based solely on EPA's screening level assessment and do not constitute "may effect" findings under the Endangered Species Act. Rather, this assessment serves as a screen to determine the need for any species specific assessments that will evaluate whether exposure may be at levels that could cause harm to specific listed species and their critical habitat. That assessment refines the screening-level assessment to take into account the geographic area of pesticide use in relation to the listed species, the habits and habitat requirements of the listed species, etc. If the Agency's specific assessments result in the need to modify use of the pesticide in specific geographic areas, those changes to the pesticide's registration will take through the process described in the Agency's Federal Register Notice (54 FR 27984) regarding implementation of the Endangered Species Protection Program.

The primary ecological risks of concern are to birds and mammals on a chronic basis. The Agency is attempting to reduce those risks by reducing application rates and numbers of applications, and increasing application intervals.

Table 20. Revised Use Site Parameters and Requirements for Dimethoate

Crop	App method	Max rate per app (lbs a.i./A)	# apps/ interval	REI (days)		Other
				Non-arid	Arid	
Cherries	Aerial	1 (SLN)	1	10	14	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Airblast: M/L must wear gloves and apron, Applicators must wear gloves and a respirator.
	Aerial, chemigation, and airblast	0.33		2	4	
Asparagus	Aerial, chemigation, groundboom	0.5	2/14	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators
Citrus	Chemigation, and airblast	1	1	10	14	Prohibit aerial applications. Prohibit all applications in Florida. Chemigation: M/L must wear gloves, apron, and respirator. Airblast: M/L must wear gloves and apron, Applicators must wear gloves and a respirator.
Pears	Aerial, chemigation, airblast (liquid and WP)	1	1	10	14	<i>For WPs:</i> water-soluble packaging plus gloves and apron for M/L <i>For liquids:</i> Aerial/Chemigation: gloves, apron, respirator for M/L; Airblast: M/L must wear gloves and apron, <i>For both:</i> Pilots in enclosed cockpits, gloves and respirator for airblast applicators
Alfalfa (seed and hay)	Aerial, chemigation, groundboom	0.5	1 (per cutting)	2	2	Aerial and Chemigation: closed systems plus gloves and apron for M/L; Pilots in enclosed cockpits. Groundboom: : M/L must wear gloves and apron, gloves for applicators
Succulent peas	Aerial, chemigation, groundboom	0.16	1	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators
Beans – fresh, snap, lima, dry	Aerial, chemigation, groundboom	0.5	2/14	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators
Broccoli	Aerial, chemigation,	0.5	3/7	2	3	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed

Crop	App method	Max rate per app (lbs a.i./A)	# apps/ interval	REI (days)		Other
				Non-arid	Arid	
	groundboom					cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators Also: BMPs, vegetative filter strips
Cauliflower	Aerial, chemigation, groundboom	0.5	3/7	2	3	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for appl. Also: BMPs, vegetative filter strips
Celery	Aerial, chemigation, groundboom	0.5	3/7	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators Also: BMPs, vegetative filter strips
Cotton	Aerial	0.5	2/14	2	2	Aerial/ Chemigation: closed systems plus gloves and apron for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators
Lentils	Aerial, chemigation, groundboom	0.5	2/7	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators Also: BMPs for aerial
Melon	Aerial, chemigation, groundboom	0.5	2/7	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators Also: BMPs
Potatoes	Aerial, chemigation, groundboom (liquid and WP)	0.5	2/7	2	2	<i>For WPs:</i> water-soluble packaging plus gloves and apron for M/L; Pilots in enclosed cockpits; gloves for groundboom apps <i>For liquids:</i> Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators Also: BMPs

Crop	App method	Max rate per app (lbs a.i./A)	# apps/ interval	REI (days)		Other
				Non-arid	Arid	
Soybeans	Aerial, chemigation, groundboom	0.5	2/7	2	2	Aerial/Chemigation: closed systems plus gloves and apron for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators
Tomatoes	Aerial, chemigation, groundboom	0.5	2/6	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators.
Field corn; popcorn	Aerial, chemigation, groundboom	0.5	1	2	2	Aerial/Chemigation: closed systems plus gloves and apron for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators
Safflower	Aerial, chemigation, groundboom	0.5	1	2	2	Aerial/Chemigation: closed systems plus gloves and apron for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators.
Sorghum	Aerial, chemigation, groundboom	0.5	2/7	2	2	Aerial/Chemigation: closed systems plus gloves and apron for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators.
Wheat	Aerial, chemigation, groundboom	0.5	1	2	2	Aerial/Chemigation: closed systems plus gloves and apron for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators.
Pecans	Aerial, chemigation, airblast	0.33	1	2	2	Aerial/Chemigation: gloves, apron, and respirator for M/L; Pilots in enclosed cockpits. Airblast: gloves and apron for M/L; gloves and respirator for apps.
Peppers	Aerial, chemigation, groundboom	0.33	3/7	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, gloves for applicators.
Grass for seed	Aerial, chemigation,	0.5	2/90	2	2	Aerial/Chemigation: M/L must wear gloves, apron, and respirators.

Crop	App method	Max rate per app (lbs a.i./A)	# apps/ interval	REI (days)		Other
				Non-arid	Arid	
	groundboom					Pilots in enclosed cockpits. Groundboom: gloves and apron for M/L; gloves for applicators.
Leaf lettuce	Aerial, chemigation, groundboom	0.25	3/7	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: : M/L must wear gloves and apron, gloves for applicators
Swiss chard	Aerial, chemigation, groundboom	0.25	3/7	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: : M/L must wear gloves and apron, gloves for applicators.
Endive (escarole)	Aerial, chemigation, groundboom	0.25	3/7	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: : M/L must wear gloves and apron, gloves for applicators.
Kale	Aerial, chemigation, groundboom	0.25	2/15	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: : M/L must wear gloves and apron, gloves for applicators.
Turnips	Aerial, chemigation, groundboom	0.25	3/7	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: : M/L must wear gloves and apron, gloves for applicators.
Mustard greens	Aerial, chemigation, groundboom	0.25	2/9	2	2	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: : M/L must wear gloves and apron, gloves for applicators.
Brussels sprouts	Aerial, chemigation, groundboom	0.5	3/7	2	3	Aerial/Chemigation: gloves, apron, respirator for M/L; Pilots in enclosed cockpits. Groundboom: : M/L must wear gloves and apron, gloves for applicators. Also: BMPs, vegetative filter strips
Herbaceous ornamentals	Groundboom, low pressure handwand	0.25	1	2	2	Groundboom and Low Pressure handwand: M/L must wear gloves and apron, Gloves for applicators. High Pressure Handwand: M/L

Crop	App method	Max rate per app (lbs a.i./A)	# apps/ interval	REI (days)		Other
				Non-arid	Arid	
						must wear gloves and apron, Gloves and respirator for applicators.
Douglas fir seed orchards in WA and OR	Airblast-	4.15	1	16	25	Airblast: M/L must wear gloves and apron, Applicators must wear gloves and a respirator.
Conifer seed orchards	Aerial, Groundboom	1	1	2	4	Aerial: M/L must wear gloves, apron, and respirator. Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, Gloves for applicators.
Woody ornamentals and Christmas tree nurseries	Aerial, Groundboom	1	3/14	10	14	Aerial: M/L must wear gloves, apron, and respirator. Pilots in enclosed cockpits. Groundboom: M/L must wear gloves and apron, Gloves for applicators.
Cottonwood grown for pulp	Canceling use					

* Enclosed cockpits are required for all aerial applications.

1. Significance of Use

Dimethoate is a systemic insecticide which is widely used to control pests on vegetable and row crops. It has a relatively short pre-harvest interval (PHI) and some residual efficacy which often makes it a compound of choice for fresh market vegetable production.

During the three public comment periods on the dimethoate risk assessments, the Agency received many grower comments in support of retaining dimethoate use for various crops.

EPA divided uses into two groups based on percent crop treated. If a low percentage of a crop is treated, the Agency makes the preliminary assumption that the significance of use on that crop is also low. For these crops, the Agency consulted with the USDA Office of Pest Management Policy (OPMP) to determine whether there were niche uses which should be considered in any mitigation plan. The twelve use sites in this category are: alfalfa, cherries, citrus, cotton, corn (field and pop), grass grown for seed, pears, pecans, peppers, safflower, and succulent peas. OPMP received comments from their Regional offices on dimethoate use. While growers in some regions do not apply any dimethoate on these crops, all twelve sites had some limited usage, primarily for control of flare-ups of spider mites, thrips, aphids, or fleahoppers. There was also some occasional use for grasshopper control which is not necessary every year, but for

which dimethoate was cited as a very important tool. The alternatives to these uses were generally other organophosphates, carbamates or pyrethroids. Several regional experts stated that many of the alternatives are restricted-use products, and so dimethoate products are more attractive because dimethoate is an efficacious general use compound.

For the use sites with greater than 5% crop treated with dimethoate, the Agency assumed that the higher use frequency implied significance of use. For these sites, the Agency examined dimethoate use patterns and available alternatives and generally evaluated the feasibility of extending restricted entry intervals (but not the impacts of cancellation). Please refer to the Biological and Economic Analysis Divisions memorandum entitled "*Dimethoate application information for specific crops (DP # 291616)*" and dated March 8, 2006. Through this assessment, the Agency concluded that the required worker mitigation will effectively reduce risk without major impacts on the importance of dimethoate to users.

2. Spray Drift

The Agency has been working with the Spray Drift Task Force, EPA Regional Offices and State Lead Agencies for pesticide regulation, and other parties to develop the best spray drift management practices. The Agency has completed its evaluation of the new data base submitted by the Spray Drift Task Force, a membership of U.S. pesticide registrants, and is developing a policy on how to appropriately apply the data and the AgDRIFT computer model to its risk assessments for pesticides applied by air, orchard airblast and ground hydraulic methods. After the policy is in place, the Agency may impose further refinements in spray drift management practices to reduce off-target drift and risks associated with aerial, as well as other application types, where appropriate.

From its assessment of dimethoate as summarized in this document, the Agency concluded that the major source of dimethoate entering surface water bodies is through runoff. Therefore, the Agency will require that use of vegetative buffers be encouraged on product labels. The Agency is requiring mitigation that will also reduce the amount entering through spray drift. Namely, aerial applications are being cancelled for a few crops and labels will be revised to include best management practices including lowered boom height and largest effective droplet size.

3. Endangered Species Considerations

From the screening level assessment, RQs exceed the endangered species LOC for some of the representative exposure scenarios considered. At the rates assessed, acute and chronic RQs exceed the LOC for endangered birds and mammal across all use sites. After a single application of 0.16 lbs a.i./A, the endangered species acute and chronic risk LOCs are exceeded for birds and mammals for some use sites. Further, potential indirect effects to any species dependent upon a species that experiences effects from use of dimethoate, can not be precluded based on the screening level ecological risk assessment.

The Agency has developed the Endangered Species Protection Program to identify pesticides whose use may cause adverse impacts on endangered and threatened species, and to implement mitigation measures that address these impacts. The Endangered Species Act (ESA) requires federal agencies to ensure that their actions are not likely to jeopardize listed species or adversely modify designated critical habitat. To analyze the potential of registered pesticide uses that may affect any particular species, EPA uses basic toxicity and exposure data developed for the REDs/IREDS and considers it in relation to individual species and their locations by evaluating important ecological parameters, pesticide use information, geographic relationship between specific pesticide uses and species locations, and biological requirements and behavioral aspects of the particular species, as part of a refined species-specific analysis. When conducted, this species-specific analysis will take into consideration any regulatory changes recommended in this IRED that are being implemented at that time.

Following this future species-specific analysis, a determination that there is a likelihood of potential impact to a listed species or its critical habitat may result in: limitations on the use of dimethoate, other measures to mitigate any potential impact, or consultations with the Fish and Wildlife Service or the National Marine Fisheries Service as necessary. If the Agency determines use of dimethoate "may affect" listed species or their designated critical habitat, EPA will employ the provisions in the Services regulations (50 CFR Part 402). Until that species-specific analysis is completed, the risk mitigation measures being implemented through this IRED will reduce the likelihood that endangered and threatened species may be exposed to dimethoate at levels of concern. EPA is not requiring specific dimethoate label language at the present time relative to threatened and endangered species. If, in the future, specific measures are necessary for the protection of listed species, the Agency will implement them through the Endangered Species Protection Program.

V. What Registrants Need to Do

The Agency has determined that dimethoate will be eligible for reregistration provided that: (i) the risk mitigation measures outlined in this document are adopted and (ii) label amendments are made to reflect these measures. To implement the risk mitigation measures, the registrants must amend their product labeling to incorporate the label statements set forth in the Label Summary Table in Section D below. The additional data requirements that the Agency intends to obtain will include, among other things, submission of the following:

A. For dimethoate technical grade active ingredient products, the registrant needs to submit the following items:

Within 90 days from receipt of the generic data call in (DCI):

1. completed response forms to the generic DCI (i.e., DCI response form and requirements status and registrant's response form); and

2. any time extension and/or waiver requests with a full written justification.

Within the time limit specified in the generic DCI:

1. citation of any existing generic data which address data requirements or submit new generic data responding to the DCI.

Please contact Stephanie Plummer at (703) 305-0076 with questions regarding generic reregistration.

By US mail:

Document Processing Desk (DCI/SRRD)
Stephanie Plummer
US EPA (7508C)
1200 Pennsylvania Ave., NW
Washington, DC 20460

By express or courier service:

Document Processing Desk (DCI/SRRD)
Stephanie Plummer
Office of Pesticide Programs (7508C)
Room 266A, Crystal Mall 2
1801 S. Bell Street
Arlington, VA 22202

B. For end-use products containing the active ingredient dimethoate, the registrant needs to submit the following items for each product:

Within 90 days from the receipt of the product-specific data call-in (PDCI):

1. completed response forms to the PDCI (i.e., PDCI response form and requirements status and registrant's response form); and
2. submit any time extension or waiver requests with a full written justification.

Within eight months from the receipt of the PDCI:

1. two copies of the confidential statement of formula (EPA Form 8570-4);
2. a completed original application for reregistration (EPA Form 8570-1). Indicate on the form that it is an "application for reregistration";
3. five copies of the draft label incorporating all label amendments outlined in Table 31 of this document;
4. a completed form certifying compliance with data compensation requirements (EPA Form 8570-34); and
5. if applicable, a completed form certifying compliance with cost share offer requirements (EPA Form 8570-32); and
6. the product-specific data responding to the PDCI.

Please contact Venus Eagle at (703) 308-8045 with questions regarding product reregistration and/or the PDCI. All materials submitted in response to the PDCI should be addressed as follows:

By US mail:
Document Processing Desk (PDCI/PRB)
Venus Eagle
US EPA (7508C)
1200 Pennsylvania Ave., NW
Washington, DC 20460

By express or courier service:
Document Processing Desk (PDCI/PRB)
Venus Eagle
Office of Pesticide Programs (7508C)
Room 266A, Crystal Mall 2
1801 South Bell Street
Arlington, VA 22202

A. Manufacturing Use Products

1. Additional Generic Data Requirements

The generic database supporting the interim of dimethoate for the uses specified in this document has been reviewed and determined to be substantially complete. However, the data listed below are necessary to confirm the Interim Reregistration Eligibility Decision outlined in this document.

Studies required for dimethoate

850.1350	Mysid life cycle
850.1400	Estuarine/marine fish early life-stage
850.4225	Seedling emergence (Tier II)
850.4250	Vegetative vigor (Tier II)
850.4400	Aquatic Plant (Tier II)
860.1380	Storage stability data for meat, milk, poultry, and eggs
860.1500	Magnitude of residue on alfalfa grown for seed
860.1500	Magnitude of residue data for cotton gin byproducts
163-1	Batch equilibrium study
Non-guideline study	Forestry field dissipation study (in support of poplar, spruce seed orchard, and larch uses)
Non-guideline study	Water treatment assay to determine percent conversion with chlorination in a variety of water chemistries

The reregistration requirements for the magnitude of residue in plants have been fulfilled for pea vines and pea hay. The registrant must either petition the Agency for the establishment of tolerances for the total residues of dimethoate and omethoate in/on pea vines and pea hay or amend product labels to restrict the use of dimethoate to peas (not including field peas).

Studies required for metabolites

850.2100	Acute oral (bobwhite quail and mallard duck) – omethoate
850.2200	Subacute dietary (bobwhite quail and mallard duck) - omethoate
850.2300	Reproduction (bobwhite quail and mallard duck) – omethoate

860.1500	Magnitude of residue data for metabolites of concern (O-desmethyl omethoate, O-desmethyl omethoate carboxylic acid, and O-desmethyl isodimethoate)
Non-guideline study	Comparative cholinesterase study on rats for metabolites of concern (O-desmethyl omethoate, O-desmethyl omethoate carboxylic acid, and O-desmethyl isodimethoate)

B. End-Use Products

1. Additional Product-Specific Data Requirements

Section 4(g) (2) (B) of FIFRA calls for the Agency to obtain any needed product-specific data regarding the pesticide after a determination of eligibility has been made. The registrant must review previous data submissions to ensure they meet current EPA acceptance criteria and if not, commit to conduct new studies. If a registrant believes that previously submitted data meet current testing standards, then the study MRID numbers should be cited according to the instructions in the Requirement Status and Registrations Response Form provided for each product. The Agency intends to issue a separate product-specific Data Call-In outlining specific data requirements

2. Labeling for End-Use Products

Labeling changes are necessary to implement measures outlined in Section IV above. Specific language to incorporate these changes is specified in Table 22.

Existing stocks time frames will be established on a case-by-case basis, depending on the number of products involved, the number of label changes, and other factors. Please refer to "Existing Stocks of Pesticide Products; Statement of Policy," Federal Register, Volume 56, No. 123, June 26, 1991.

Labeling Changes Summary Table

In order to be eligible for reregistration, amend all product labels to incorporate the risk mitigation measures outlined in Section IV. The following table describes how language on the labels should be amended.

Table 22. Label Changes Summary Table for Dimethoate

Description	Amended Labeling Language	Placement on Label
For all Manufacturing Use Products	<p>“Only for formulation into an insecticide for the following use(s) [alfalfa, alfalfa for seed, asparagus, beans (excluding cowpeas), broccoli, Brussels sprouts, cauliflower, celery, cherries, Chinese cabbage, Christmas tree farms, conifer seed farms, cotton, endive, field corn, grass grown for seed, herbaceous ornamentals in commercial nurseries or greenhouses, grapefruit, leaf lettuce, lemons, lentils, kale melons, mustard greens, oranges, pears, peas, pecans, peppers, popcorn, potatoes, safflower, sorghum, soybeans, Swiss chard, tangerines, tangelos, tomatoes, turnips, watermelons, wheat, and woody ornamentals in commercial nurseries or greenhouses].”</p> <p>“Not for formulation into wettable powder end use products (EUP), unless the EUP is packaged in water soluble bags.”</p> <p>Not for formulation into end-use products intended for use by homeowners or that permit use at residential sites.</p>	Directions for Use
One of these statements may be added to a label to allow reformulation of the product for a specific use or all additional uses supported by a	<p>“This product may be used to formulate products for specific use(s) not listed on the MP label if the formulator, user group, or grower has complied with U.S. EPA submission requirements regarding support of such use(s).”</p> <p>“This product may be used to formulate products for any additional use(s) not listed on the Manufacturing Use Product (MUP) label if the</p>	Directions for Use

formulator or user group	formulator, user group, or grower has complied with U.S. EPA submission requirements regarding support of such use(s)."	
Environmental Hazards Statements Required by the RED and Agency Label Policies	"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 Pollution 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."	Precautionary Statements
End Use Products Intended for Occupational Use		
PPE Requirements Established by the RED ¹ For Wettable Powder Formulations (wetable powder products must be packaged in water soluble bags to be eligible for reregistration)	<p>"Personal Protective Equipment (PPE)"</p> <p>"Some materials that are chemical-resistant to this product are" <i>(registrant inserts correct chemical-resistant material)</i>. "If you want more options, follow the instructions for category" <i>(registrant inserts A,B,C,D,E,F,G, or H)</i> "on an EPA chemical-resistance category selection chart."</p> <p>"Mixers, loaders, applicators, and other handlers must wear:</p> <ul style="list-style-type: none"> > Long-sleeved shirt and long pants, > Shoes plus socks, > Chemical-resistant apron for mixers and loaders, > Chemical-resistant gloves. <p>In addition, applicators using airblast or high pressure handwand equipment, must wear:</p> <ul style="list-style-type: none"> > NIOSH-approved respirator with <ul style="list-style-type: none"> -- an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or -- a canister approved for pesticides (MSHA/NIOSH approval number 	Immediately following/below Precautionary Statements: Hazards to Humans and Domestic Animals

	<p>prefix TC-14G), or -- an organic-vapor-removing cartridge or canister with any N, R, P or HE prefilter.”</p> <p>“See Engineering Controls for additional requirements.”</p> <p>Instruction to Registrant: Drop the “N” type prefilter from the respirator statement, if the pesticide product contains, or is used with, oil.</p>	
PPE Requirements Established by the RED ¹ For Liquid Formulations	<p>“Personal Protective Equipment (PPE)”</p> <p>“Some materials that are chemical-resistant to this product are” <i>(registrant inserts correct chemical-resistant material)</i>. “If you want more options, follow the instructions for category” <i>[registrant inserts A,B,C,D,E,F,G,or H]</i> “on an EPA chemical-resistance category selection chart.”</p> <p>“Mixers, loaders, applicators, and other handlers; must wear: Long-sleeved shirt and long pants, and > Shoes plus socks, > Chemical-resistant apron for mixers and loaders, > In addition, all mixers and loaders, plus applicators using airblast or high pressure handwand equipment must wear chemical-resistant gloves. > In addition, mixers and loaders supporting aerial and chemigation applications, and applicators using airblast or high pressure handwand equipment must wear:</p> <p>> NIOSH-approved respirator with -- an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or -- a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G), or -- an organic-vapor-removing cartridge or canister with any N, R, P or HE prefilter.”</p>	Immediately following/below Precautionary Statements: Hazards to Humans and Domestic Animals

	<p>"See Engineering Controls for additional requirements."</p> <p><i>Instruction to Registrant:</i> Drop the "N" type prefilter from the respirator statement, if the pesticide product contains, or is used with, oil.</p>	
User Safety Requirements	<p>"Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry."</p> <p>"Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them."</p>	Precautionary Statements: Hazards to Humans and Domestic Animals immediately following the PPE requirements
Engineering Controls: (Water-Soluble Packaging for Wettable Powder Formulations)	<p>"Engineering controls"</p> <p>"Water-soluble packets, when used correctly, qualify as a closed mixing/loading system under the Worker Protection Standard for Agricultural Pesticides [40 CFR 170.240(d)(4)]. Mixers and loaders using water-soluble packets must :</p> <ul style="list-style-type: none"> -- wear the personal protective equipment required in the PPE section of this labeling for mixers and loaders, and -- be provided and have immediately available for use in an emergency, such as a broken package, spill, or equipment breakdown: chemical-resistant footwear, and the type of respirator specified in the PPE section of this label." <p>"Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)]."</p>	Precautionary Statements: Hazards to Humans and Domestic Animals (Immediately following PPE and User Safety Requirements.)

	<p>Flaggers supporting aerial applications must use an enclosed cab that meets the definition in the Worker Protection Standard for Agricultural Pesticides [40 CFR 170.240(d)(5)] for dermal protection. In addition, flaggers must:</p> <ul style="list-style-type: none"> -- wear long-sleeve shirt, long pants, shoes, socks and, -- <i>either</i> wear the type of respirator specified in the PPE section of this labeling or use an enclosed cab that is declared in writing by the manufacturer or by a government agency to provide at least as much respiratory protection as the respirator specified in this labeling, -- be provided and have immediately available for use in an emergency when they must exit the cab in the treated area: coveralls, chemical-resistant gloves, chemical-resistant footwear, and chemical-resistant headgear, if overhead exposure and, if using an enclosed cab that provides respiratory protection, a respirator of the type specified in the PPE section of this labeling, -- take off any PPE that was worn in the treated area before reentering the cab, and -- store all such PPE in a chemical-resistant container, such as a plastic bag, to prevent contamination of the inside of the cab." <p>"When applicators use enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.240(d)(5), the handler PPE requirements may be reduced or modified as specified in the WPS."</p>	
Engineering Controls: For Liquid Formulations	<p>"Engineering controls"</p> <p>"Mixers and loaders supporting aerial or chemigation applications to alfalfa, cotton, soybeans, corn, safflower, sorghum, and wheat, must use a closed system that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4)]. The system must be capable of removing the pesticide from the shipping container and transferring it into mixing tanks and/or application</p>	<p>Precautionary Statements: Hazards to Humans and Domestic Animals (Immediately following PPE and User Safety Requirements.)</p>

	<p>equipment. At any disconnect point, the system must be equipped with a dry disconnect or dry couple shut-off device that is warranted by the manufacturer to minimize drippage to no more than 2 ml per disconnect. In addition, mixers and loaders must:</p> <ul style="list-style-type: none"> -- wear the personal protective equipment required on this labeling for mixers/loaders, except that no respirator is required; -- wear protective eyewear, if the system operates under pressure; and -- be provided and have immediately available for use in an emergency, such as a broken package, spill, or equipment breakdown, chemical-resistant footwear and a respirator of the type specified in the PPE section of this labeling." <p>"Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)]."</p> <p>Flaggers supporting aerial applications must use an enclosed cab that meets the definition in the Worker Protection Standard for Agricultural Pesticides [40 CFR 170.240(d)(5)] for dermal protection. In addition, flaggers must:</p> <ul style="list-style-type: none"> -- wear long-sleeve shirt, long pants, shoes, socks and, -- <i>either</i> wear the type of respirator specified in the PPE section of this labeling or use an enclosed cab that is declared in writing by the manufacturer or by a government agency to provide at least as much respiratory protection as the respirator specified in this labeling, -- be provided and have immediately available for use in an emergency when they must exit the cab in the treated area: coveralls, chemical-resistant gloves, chemical-resistant footwear, and chemical-resistant headgear, if overhead exposure, and, if using an enclosed cab that provides respiratory protection, a respirator of the type specified in the PPE section of this labeling, -- take off any PPE that was worn in the treated area before reentering the cab, and -- store all such PPE in a chemical-resistant container, such as a plastic 	
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	<p>bag, to prevent contamination of the inside of the cab.”</p> <p>“When handlers use closed systems, or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.240(d)(4-5), the handler PPE requirements may be reduced or modified as specified in the WPS.”</p>	
User Safety Recommendations	<p>“USER SAFETY RECOMMENDATIONS’</p> <p>‘Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.”</p> <p>“Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.”</p> <p>“Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.”</p>	<p>Precautionary Statements under: Hazards to Humans and Domestic Animals immediately following Engineering Controls</p> <p>(Must be placed in a box.)</p>
Environmental Hazards	<p>“Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.”</p> <p>“Dimethoate is known to leach through soil into ground water under certain conditions as a result of label use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water contamination.”</p> <p>“This product may contaminate water through drift of spray in wind. This product has a high potential for runoff for several days after application after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product.”</p>	<p>Precautionary Statements immediately following the User Safety Recommendations</p>

	<p>"A level, well maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from rainfall-runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours."</p> <p>"A vegetative filter strip constructed and maintained in accordance with the 2000 Natural Resources Conservation Service publication "Conservation Buffers to Reduce Pesticide Losses" (http://www.nrcs.usda.gov/feature/buffers/) will significantly reduce the potential for contamination of water from rainfall-runoff."</p>	
Restricted-Entry Intervals for products with directions for use within the scope of the Worker Protection Standard (WPS) for Agricultural Pesticides (WPS)	"Do not enter or allow worker entry into treated areas during the restricted entry interval (REI)."	In the Agricultural Use Requirements box
Early Entry Personal Protective Equipment for products with directions for use within the scope of the Worker Protection Standard (WPS) for Agricultural Pesticides	<p>"PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:</p> <ul style="list-style-type: none"> > coveralls worn over long-sleeve shirt and long pants, > chemical-resistant gloves made of any waterproof material, > chemical-resistant footwear plus socks, and > chemical-resistant headgear (if overhead exposure)" 	Direction for Use Agricultural Use Requirements box
Double Notification Statement	"Notify workers of the application by warning them orally and by posting warning signs at entrances to treated area."	Direction for Use Agricultural Use Requirements box

General Application Restrictions	"Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application."	Place in the Direction for Use directly above the Agricultural Use Box.
Application Restriction	"This product is for use in commercial setting only. Use in residential settings is prohibited."	Near the beginning of the Directions for Use
Crop-Specific Application Restrictions and REIs The maximum application rate also must be stated in terms of the pounds or gallons of formulation	<p>Labels must be amended to reflect the following equipment restrictions, maximum application rates, retreatment interval, and the maximum number of treatments per year:</p> <p>High Pressure Handwand Equipment: "When applications are made by high pressure handwand equipment, the maximum application rate for all crops and use-patterns is 0.0025 pounds active ingredient per gallon."</p> <p>Alfalfa (grown for seed and for hay) Maximum application rate: 0.5 lb ai/acre and no more than one application per crop cycle or cutting. Maximum 3 applications per year. "The REI is 48 hours."</p> <p>Asparagus, Beans (including fresh, snap, lima, and dry beans) and Cotton Maximum application rate: 0.5 lb ai/acre , 14 day retreatment interval and no more than 2 applications per year. "The REI is 48 hours."</p> <p>Field Corn and Popcorn Maximum application rate: 0.5 lb ai/acre and no more than one</p>	Directions for Use associated with the use directions for the specific crop to which the restriction pertains

	<p>application per year. "The REI is 48 hours. PROHIBITION: Workers are prohibited from entering the treated area to perform detasseling tasks for 4 days in nonarid areas and for 15 days in outdoor areas where the average annual rainfall is less than 25 inches per year."</p> <p>Broccoli, Brussels Sprouts, and Cauliflower Maximum application rate: 0.5 lb ai/acre, 7 day retreatment interval and no more than 3 applications per year. "The REI is 48 hours; however, the REI is increased to 72 hours in outdoor areas where the average annual rainfall is less than 25 inches per year."</p> <p>Celery Maximum application rate: 0.5 lb ai/acre, 7 day retreatment interval, and no more than 3 applications per year. "The REI is 48 hours."</p> <p>Cherries Maximum application rate: 0.33 lb ai/acre and no more than one application per year. "The REI is 48 hours; however, the REI is increased to 4 days in outdoor areas where the average annual rainfall is less than 25 inches per year."</p> <p>Note: There is an SLN for Cherries where the rate is 1 lb. per acre and no more than one application per year. "The REI is 10 days; however, the REI is increased to 14 days in outdoor areas where the average annual rainfall is less than 25 inches per year." This information must be placed on the SLN label</p> <p>Citrus Maximum application rate: 1 lb ai/acre and no more than one application per year. "Do not apply to citrus in Florida" "Aerial application to citrus is prohibited" "The REI is 10 days; however, the REI is increased to 14</p>	
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	<p>days in outdoor areas where the average annual rainfall is less than 25 inches per year.”</p> <p>Conifer Seed Orchards Maximum application rate: 1 lb ai/acre and no more than one application per year. “The REI is 48 hours; however, the REI is increased to 4 days in outdoor areas where the average annual rainfall is less than 25 inches per year.”</p> <p>Special Exception for airblast applications to Douglas Fir Seed Orchards in WA and OR only Maximum application rate: 4.15 lb ai/acre. The limit of one application per year applies. “If airblast applications are applied at a rate greater than 1 lb a.i/ acre, the REI is 16 days; however, the REI is increased to 25 days in outdoor areas where the average annual rainfall is less than 25 inches per year.”</p> <p>Grass Grown for Seed Maximum application rate: 0.5 lb ai/acre 90 day retreatment interval and no more than 2 applications per year. “The REI is 48 hours.”</p> <p>Herbaceous Ornamentals Maximum application rate: 0.25 lb ai/acre and no more than 1 application per year. “The REI is 48 hours.”</p> <p>Kale Maximum application rate: 0.25 lb ai/acre, 15 day reapplication interval, and no more than 2 applications per year. “The REI is 48 hours.”</p>	
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	<p>Leaf lettuce, Swiss Chard, Endive and Escarole Maximum application rate: 0.25 lb ai/acre, 7 day reapplication interval, and no more than 3 applications per year. "The REI is 48 hours."</p> <p>Lentils, Melon, Honeydew, and Potatoes Maximum application rate: 0.5 lb ai/acre, 7 day reapplication interval, and no more than 2 applications per year. "The REI is 48 hours."</p> <p>Safflower and Wheat Maximum application rate: 0.5 lb ai/acre and no more than 1 application per year. "The REI is 48 hours."</p> <p>Sorghum, and Soybeans Maximum application rate: 0.5 lb ai/acre, 7 day reapplication interval, and no more than 2 applications per year. "The REI is 48 hours."</p> <p>Mustard Greens Maximum application rate: 0.25 lb ai/acre, 9 day reapplication interval, and no more than 2 applications per year. "The REI is 48 hours."</p> <p>Pears Maximum application rate: 1 lb ai/acre and no more than one application per year. "The REI 10 days; however, the REI is increased to 14 days in outdoor areas where the average annual rainfall is less than 25 inches per year."</p> <p>Pecans Maximum application rate 0.33 lb ai/acre and no more than one application per year. "The REI is 48 hours."</p>	
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	<p>Peppers Maximum application rate 0.33 lb ai/acre, 7 day reapplication interval, and no more than three applications per year. "The REI is 48 hours."</p> <p>Succulent peas Maximum application rate 0.16 lb ai/acre and no more than one application per year. "The REI is 48 hours."</p> <p>Note: There are SLN registrations for succulent peas for which the total seasonal rate is not to exceed 0.5 lbs. a.i./acre.</p> <p>Tomatoes Maximum application rate 0.5 lb ai/acre, 6 day reapplication interval, and no more than 2 applications per year. "The REI is 48 hours."</p> <p>Turnips Maximum application rate 0.25 lb ai/acre, 3 day reapplication interval, and no more than 7 applications per year. "The REI is 48 hours."</p> <p>Woody Ornamentals and Christmas Tree Nurseries Maximum application rate 1.0 lb ai/acre, 14 day reapplication interval, and no more than 3 applications per year. "Do not apply by high pressure handwand to conifer and other ornamental tree crops" "The REI 10 is days; however, the REI is increased to 14 days in outdoor areas where the average annual rainfall is less than 25 inches per year."</p>	
Spray Drift	<p>"Requirements for Reducing Spray Drift"</p> <p>Do not apply under circumstances where possible drift to unprotected persons or to food, forage, or other plantings that might be damaged or crops thereof rendered unfit for sale, use, or consumption can occur.</p>	Directions for Use

	<ol style="list-style-type: none"> 1. Use the largest droplet size consistent with acceptable efficacy. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the air stream as much as possible, and by avoiding excessive spray boom pressure. For groundboom and aerial applications, use medium or coarser spray nozzles according to ASAE 572 definition for standard nozzles or a volume mean diameter (VMD) of 300 microns or greater for spinning atomizer nozzles. 2. Make aerial or ground applications when the wind velocity favors on-target product deposition. Apply only when the wind speed is less than or equal to 10 mph. For all non-aerial applications, wind speed must be measured adjacent to the application site on the upwind side, immediately prior to application. 3. Do not make aerial or ground applications into areas of temperature inversions. Inversions are characterized by stable air and increasing temperatures with increasing distance above the ground. Mist or fog may indicate the presence of an inversion in humid areas. Where permissible by local regulations, the applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface. 4. Low humidity and high temperatures increase the evaporation rate of spray droplets and therefore the likelihood of increased spray drift. Avoid spraying during conditions of low humidity and/or high temperatures. 5. All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers. 6. For groundboom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy. 7. For airblast applications, turn off outward pointing nozzles at row ends and when spraying the outer two rows. To minimize spray loss over the top in orchard applications, spray must be directed into the canopy. 	
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	<p>8. For ground-boom, chemigation, orchard, or other airblast applications, do not apply within 25 feet of permanent water bodies (rivers, natural ponds, lakes, streams, reservoirs, marshes, estuaries, or commercial fish ponds).</p> <p>9. For aerial application to potatoes, do not apply within 150 feet of permanent water bodies (aquatic buffer zone).</p> <p>10. For aerial application to crops other than potatoes, do not apply within 50 feet of permanent water bodies (aquatic buffer zone).</p> <p>11. For aerial applications, release spray at the lowest height consistent with efficacy and flight safety. If the application includes an aquatic buffer zone, do not release spray at a height greater than 10 feet above the ground or crop canopy.</p> <p>12. For aerial applications, the spray boom should be mounted on the aircraft so as to minimize drift caused by wing tip vortices. The minimum practical boom length should be used and must not exceed 75% of the wingspan or 90% of rotor blade diameter. Use upwind swath displacement.</p>	
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¹ PPE that is established on the basis of Acute Toxicity of the end-use product must be compared to the active ingredient PPE in this document. The more protective PPE must be placed in the product labeling. For guidance on which PPE is considered more protective, see PR Notice 93-7.