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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

PC Code: 057701

DATE: 1/25/2010

SUBJECT: Verification Memorandum for Malathion for SF Bay Species

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THRU: Kevin Costello, Team Leader Kevin Costello 1/25/10
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TO: Rafael Prieto
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This memorandum serves to provide additional information on the use patterns of malathion not captured in the LUIS process. PRD and RD's role in the verification process is to fill information gaps and provide division appropriate expertise as outlined in the LUIS Verification SOP for RD and PRD.

PRD and RD provide information and status regarding changes to the chemical use (such as application parameters, cancellations, or label language) that occurred as a result of the reregistration process. The CRM has crafted this memo to clarify knowledge gaps a risk assessor may encounter while using the data contained in the LUIS report.

The malathion labels currently in the marketplace do not reflect mitigation specified by the malathion RED. Although PRD has recently required all malathion product registrants to submit revised labels to RD incorporating the RED mitigation, the review and approval process will not be complete for several months. An endangered species assessment was performed in 2007 for the California Red-Legged Frog (RLF) lawsuit response. PRD found that the representative labels for malathion used in that effort do not differ substantially from those BEAD has extracted for use in the current assessment.

Given the status of the effort to update the malathion labels, PRD and RD found it appropriate to accomplish the following in this memo:

1) Note where requests for voluntary cancellation have been received for the representative, "data-doer" registrations.
2) Compare the label approval dates of the 2008 Red Legged Frog assessment labels with the most currently approved versions and if they differ, document any changes.
3) Compare the registrations included in the current BEAD extraction with the RLF extraction and note any differences.
4) Provide a list of the RED mitigation that is expected to be applied to future malathion labels and document the status of efforts to receive and approve revised labels.

If further clarification is needed, please contact Eric Miederhoff in PRD or Marianne Lewis in RD.

Date and Scope of the RED:

- The RED for malathion was issued in July 2006. The malathion RED was revised in May 2009 in response to public comments and the submission of confirmatory data.

- Malathion parent, malaoxon, the active ChE inhibiting metabolite of malathion, and isomalathion, an impurity known to be present in malathion, were evaluated in the RED.

Status of RED Implementation and Scope of SF Bay Species Usage Report:

- Mitigation and changes to use patterns specified by the malathion RED have not been implemented on all product labels.

- A "Data Doer Only" report has been conducted for this chemical. With the exceptions noted below, this report is identical to the data doer report prepared in March 2008 in support of the Red-Legged Frog endangered species assessment. The following Section 3 registrations were included in the March 2008 report but are excluded from the current report as they have since been cancelled: 655-794, 10163-61, 34704-119, 34704-3, 34704-18, and 34704-721. The following Section 24(c) registrations were included in the March 2008 report but are excluded from the current report because they are not registered for use in California: FL76001400, FL04000400, ID960006000, LA00000400, MN94000300, NJ95000300, NV96000100, OR00001600, TX06001800, TX950006000, and WA96000400. The approval dates for labels extracted for the current data doer report were found to be identical to those extracted for the 2008 Red-Legged Frog assessment.

Product Reregistration:

- In June 2009, PRD required all malathion registrants to amend their product labels to reflect mitigation specified in the May 2009 revised malathion RED. Registrants have since submitted revised labels or voluntary cancellation requests for the majority of malathion product labels. The revised labels are currently being reviewed by the Registration Division. Revisions to malathion product labeling are expected to be substantially complete by June 2010.

- Of the 37 "Data Doer" labels identified as representative of malathion product registrations in the current, 2009 SF Bay LUIS report, 11 have voluntary cancellation requests pending: 655-79, 655-310, 655-549, 655-551, 655-598, 34704-110, 10163-44, 10163-142, 10163-152, 19713-302, and 19713-359. These requests for cancellation are expected to be granted by June 2010.

Required Through the RED Process:

Numerous malathion uses were unsupported during reregistration. Registrants were directed by the RED to delete from labels all directions for use for the following use-patterns:

- all direct animal and livestock treatments including (goats, hog, horse, poultry, fowl, sheep and cattle: dairy, non-dairy, lactating and non-lactating)
- animal kennels/sleeping quarters (commercial)
- animal premise and barns used for dairy and livestock
- stables and pens
- poultry houses
- animal kennels/sleeping quarters
- cattle feedlots and holding pens
- feed rooms
- cattle feed concentrate blocks (non-medicated)
- dogs and cats
- pet food and pest stuffs
- cereal processing plants
- packaged cereals
- commercial and industrial uses for bagged flour
- commercial shipping containers –feed/food- empty
- commercial storages/ warehouses premises
- commercial transportation facilities –feed/food –empty
- commercial transportation facilities –nonfeed/nonfood
- commercial/institutional/industrial premises/equipment (indoor)
- commercial/institutional/industrial premises/equipment (outdoor)
- dairies/cheese processing plant equipment (food contact)
- edible and inedible commercial establishments
- edible and inedible eating establishments
- edible and inedible food processing plants
- field or garden seeds
- forest trees
- rabbits on wire
- golf course turf
- greenhouse – empty, or in-use
- human clothing (woolens and other fabrics)
- manure piles
- mattresses
- Peanuts

- Plum/prune
- Almonds
- Cranberry
- Filberts
- Safflower
- Sunflower
- residential lawns (broadcast)
- sewage systems
- lentils
- tobacco

- Application rates and uses considered eligible for reregistration are listed in the attached *Malathion RED Appendix A: Mitigated List of Malathion Use Sites and Application Rates.*

- Mitigation required by the malathion RED included the following labeling statements:

  - **Environmental Hazard:** For Manufacturing Use Products and products in containers over 5 gallons or 50 pounds: "This pesticide is toxic to aquatic organisms, including fish and invertebrates. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA."

    For Dust products: "This pesticide is toxic to aquatic organisms, including fish and invertebrates. This product may contaminate water through drift in wind. Use care when applying in or to an area which is adjacent to any body of water and do not apply when weather conditions favor drift from target area. 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 rinsate."

  - **Outdoor Agricultural Products:**

    - "This pesticide is toxic to aquatic organisms, including fish and invertebrates."

    - "This product may contaminate water through drift of spray in wind. This product has a high potential for runoff after application. Use care when applying in or to an area which is adjacent to any body of water, and do not apply when weather conditions favor drift from target area. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product."

    - "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."

- "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."

- "This pesticide is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area."

- **Outdoor Consumer Products**:

  - "To protect the environment, do not allow pesticide to enter or run off into storm drains, drainage ditches, gutters or surface waters. Applying this product in calm weather when rain is not predicted for the next 24 hours will help to ensure that wind or rain does not blow or wash pesticide off the treatment area. Rinsing application equipment over the treated area will help avoid run off to water bodies or drainage systems."

  - "Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean water mark. Do not apply when weather conditions favor drift from treated areas. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment wash waters."

  - "This pesticide is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area."

- **Wide Area Mosquito Adulticide Products**:

  - "When applying as a wide area mosquito adulticide, before making the first application in a season, it is advisable to consult with the state or tribal agency charged with primary responsibility for pesticide regulation to determine if other regulatory requirements exist."

  - **"BEE WARNING:** This product is toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply or allow to drift onto blooming crops or weeds when bees are visiting the treatment area, except when applications are made to prevent or control a threat to public and/or animal health determined by a state, tribal or local public health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if

specifically approved by the state or tribe during a natural disaster recovery effort."

- "**ENVIRONMENTAL HAZARD:** When applying as a wide area mosquito adulticide, do not apply over bodies of water (lakes, rivers, permanent streams, natural ponds, commercial fish ponds, swamps, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body."

- "**PRECAUTIONS AND RESTRICTIONS:** For use by federal, state, tribal or local government officials responsible for public health or vector control, or by persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision."

- "Do not apply more than 0.23 lb ai/A/day. More frequent treatments may be made to prevent or control a threat to public and/or animal health determined by a state, tribal or local health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes or the occurrence of mosquito-borne diseases in animal or human populations, or if specifically approved by the state or tribe during a natural disaster recovery effort."

- "Apply when wind speed is greater than or equal to 1 mph."

- "Do not apply by fixed wing aircraft at height less than 100 feet, or by helicopter at a height less than 75 feet unless specifically approved by the state or tribe based on public health needs."

- Aerial Application: "Spray equipment must be adjusted so that the volume median diameter product is less than 60 microns (Dv 0.5 < 60 um) and that 90% of the spray is contained in droplets smaller than 100 microns (Dv 0.9< 100 um). The effect of flight speed and, for non-rotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, pesticide registrant or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated."

- Ground-based application: "Spray equipment must be adjusted so that the volume median diameter is less than 30 microns (Dv 0.3 < 30 um), and that 90% of the spray is contained in droplets smaller than 50 microns (Dv 0.9 < 50 um). Directions from the equipment manufacturer or vendor, pesticide registrant or test facility using a laser-based measurement instrument must be used to adjust equipment to product acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated."

- **Spray Drift Requirements for Agricultural Products**: "Observe the following requirements when spraying in the vicinity of aquatic areas such as, but not limited to lakes; reservoirs; rivers; permanent streams; marshes or natural ponds; estuaries and commercial fish ponds."

  - Droplet Size: "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 only medium or coarser spray nozzles according to ASAE (S572) definition for standard nozzles, or a volume mean diameter (VMD) of 300 microns or greater for spinning atomizer nozzles. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size."

  - Wind Direction and Speed: "Make aerial or ground applications when the wind velocity favors on target product deposition (approximately 3 to 10 mph). Do not apply when wind velocity exceeds 15 mph. Avoid applications when wind gusts approach 15 mph. For all non-aerial applications, wind speed must be measured adjacent to the application site on the upwind side, immediately prior to application."

  - Temperature Inversion: "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."

    - "In conditions of low humidity and high temperatures, applicators should use a coarser droplet size."

- **Additional Requirements for Ground Applications**:

  - "Spray should be released at the lowest height consistent with pest control and flight safety. Applications more than 10 feet above the crop canopy should be avoided. For groundboom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy."

  - "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."

- **Additional Requirements for Aerial Applications**:
  - "For aerial applications, the spray boom should be mounted on the aircraft as to minimize drift caused by wingtip or rotor vortices. The minimum practical boom length should be used and must not exceed 75% of wing span or 90% rotor diameter."
  - "Aerial applicators must consider flight speed and nozzle orientation in determining droplet size."
  - "When applications are made with a cross-wind, the swath will be displaced downwind. The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind."
- **Buffer Zones for Aerial Agricultural Applications**:
  - "When making a Non-ULV application with aerial application equipment, a minimum buffer zone of 25 feet must be maintained along any water body."
  - "When making a ULV application with aerial application equipment, a minimum buffer zone of 50 feet must be maintained along any water body."

RD analysis of currently labeled use sites:

- RD is in the process of reviewing recently submitted labels which have been revised to incorporate RED mitigation. Often, labels include use sites that are not described explicitly in the RED, but may be considered a subset or an associated use of sites that are eligible for reregistration. The Registration Division reviewed the list of use sites included in the LUIS report for malathion and provided comment on the eventual status of a number of use sites that were not explicitly listed in the malathion RED:

  These uses will continue after RED implementation:

  - celtuce (if it was on the last accepted label),
  - chervil (if it was on the last accepted label),
  - chrysanthemum - garland (if it was on the last accepted label),
  - amaranth - chinese (if it was on the last accepted label),
  - corn salad (if it was on the last accepted label),
  - dock (sorrel) (if it was on the last accepted label),
  - orach (if it was on the last accepted label)
  - purslane (both) (if it was on the last accepted label)
  - slash pine forest

These uses will not continue after RED implementation:

- compost/compost piles
- anise
- fennel
- lake/ponds/reservoirs (with human or wildlife use) – public health use only
- lake/ponds/reservoirs (without human or wildlife use) – public health use only
- millet
- nursery stock – specific types may be allowed
- polluted water – public health use only
- beets (unspecified) - garden beets only
- corn (silage) or corn (unspecified) - field, pop, or sweet only
- household/domestic dwellings outdoor premises – outdoor foundation of household/domestic dwelling only
- squash (all or unspecified) – must be identified as summer squash or winter squash
- cowpeas
- cowpea/blackeyed peas
- nonagricultural outdoor buildings/structure
- paths/patios - home mosquito spray use only
- timothy

Malathion RED Appendix A
Mitigated List of Malathion Use Sites and Application Rates

Crop	Application Type, Application Method (Formulation[1])		Maximum Single Application Rate (lb ai/A)	Maximum Number of Applications Per Year	Minimum Application Interval (days)	Minimum Pre-Harvest Interval (days)	Restricted Entry Interval (days)
Alfalfa	Foliar Ground/aerial	Non-ULV	1.25	2 per cutting	14	0	12 hr
		ULV/RTU	0.61	2 per cutting	14	0	
Apricot	Foliar Ground/aerial		1.5	2	7	6	12 hrs
Asparagus	Foliar Ground/aerial		1.25	2	7	1	12 hrs
Avocado	Foliar Ground/aerial		4.7	2	30	7	2 days
Barley	Foliar Ground/aerial	Non-ULV	1.25	2	7	7	12 hrs
		ULV/RTU	0.61	2	7	7	
Beans, dry, snap, Lima	Foliar Aerial	ULV only	0.61	2	7	1	12 hrs
Beets, garden	Foliar Ground/aerial		1.25	3	7	7	12 hrs
Blueberry (high bush and low bush)	Foliar Ground/aerial	Non ULV	1.25	3	5	1	12 hrs
		ULV/RTU	0.77	3	10	1	12 hrs
Broccoli, Chinese Broccoli, Broccoli rabb	Foliar Ground/aerial		1.25	2	7	2	2 days
Brussels sprouts	Foliar Ground/aerial		1.25	2	7	2	2 days
Cabbage	Foliar Ground/aerial		1.25	6	7	7	2 days
Cantaloupe	Foliar		1.0	2	7	1	12 hrs

Crop	Application Type, Application Method (Formulation[1])		Maximum Single Application Rate (lb ai/A)	Maximum Number of Applications Per Year	Minimum Application Interval (days)	Minimum Pre-Harvest Interval (days)	Restricted Entry Interval (days)
	Ground/aerial						
Caneberries (blackberry, boysenberry, dewberry, gooseberry, loganberry, raspberry)	Foliar Ground/aerial		2.0	3	7	1	12 hrs
Carrots	Foliar Ground/aerial		1.25	2	7	7	24 hrs
Cucumber	Foliar Ground/aerial		1.75	2	7	1	24 hrs
Cauliflower	Foliar Ground/aerial		1.25	2	7	2	2 days
Celery	Foliar Ground/aerial		1.5	2	7	7	24 hrs
Cherries, sweet	Foliar Ground/ Aerial	Non-ULV	1.75	4	3	3	12 hrs
		ULV/RTU	1.22	4	7	1	
Cherries, tart	Foliar Ground/ Aerial	Non-ULV	1.75	4	3	3	12 hrs
		ULV/RTU	1.22	6	7	1	
Citrus Fruits (grapefruit, lemon, lime, organge, tangerine, tangelo)	Foliar Ground/ aerial	Non-ULV	**All states other than CA:** 4.5 or 1.5	1 3	NA 30	7	3 days or 12 hrs
			CA only: 7.5 or	1	NA		

Crop	Application Type, Application Method (Formulation[1])		Maximum Single Application Rate (lb ai/A)	Maximum Number of Applications Per Year	Minimum Application Interval (days)	Minimum Pre-Harvest Interval (days)	Restricted Entry Interval (days)
			1.5	3	30		
		ULV/ RTU	0.175	3	7	7	12 hrs
Clover	Foliar Ground/ aerial	Non-ULV	1.25	2 per cutting	14	0	12 hrs
		ULV/RTU	0.61	2 per cutting	14	0	
Collards	Foliar Ground/aerial		1.0	3	7	7	12 hrs
Corn, field	Foliar Ground/ aerial	Non-ULV	1.0	2	7	7	3 days for detasseling 12 hrs for all other activites
		ULV/RTU	0.61	2	7	7	
Corn, sweet, and pop	Foliar Ground/ aerial	Non-ULV	1.0	2	5	5	3 days for detasseling 12 hrs for all other activities
		ULV/RTU	0.61	2	5	5	
Chayote fruit	Foliar Ground/aerial		1.75	2	7	1	24 hrs
Chayote root	Foliar Ground		1.56	2	7	0	24 hrs
Chestnut	Foliar Ground/aerial		2.5	3	7	2	24 hrs
Chinese greens (Chinese cabbage)	Foliar Ground/aerial		1.25	2	7	7	24 hrs
Clover	Foliar Ground/aerial		1.25	2 per cutting	14	0	12 hrs
Cotton (non boll	Foliar	Non-ULV	2.5	3	7	7	2 days

Crop	Application Type, Application Method (Formulation[1])	Maximum Single Application Rate (lb ai/A)	Maximum Number of Applications Per Year	Minimum Application Interval (days)	Minimum Pre-Harvest Interval (days)	Restricted Entry Interval (days)
weevil treatment use)	Ground/aerial ULV/RTU	1.22	3	7	7	
Currant	Foliar Ground/aerial	1.25	3	7	1	12 hrs
Dandelion	Foliar Ground/aerial	1.25	2	7	7	24 hrs
Dates	Dust	4.25	5	7	21	2 days
Eggplant	Foliar Ground/aerial	1.56	4	5	3	12 hrs
Eggplant, oriental	Foliar Ground/aerial	1.56	5	5	3	12 hrs
Endive (escarole)	Foliar Ground/aerial	1.25	2	7	7	24 hrs
Fig	Foliar Ground/aerial	2.0 or 1.5	2	5	5	24 hrs or 12 hrs
Flax	Foliar Ground	0.5	3	7	52	12 hrs
Garlic	Foliar Ground/aerial	1.56	3	7	3	24 hrs
Grains, stored (barley, corn, oats, rye, wheat)	Empty Storage Bins (57% EC Formulation)	0.6 lb ai/1000 ft^2	1 per storage period	NA	NA	12 hrs
	Surface treatment (6% Dust Formulation)	Loading: 0.624 lb ai/1000 bushels Storage: 0.312 lb ai/1000 ft^2	3 per storage period – The first during loading (0.624 lb ai/1000 bushels) the second to the grain surface immediately after loading (0.312 lb ai/1000 ft^2), the third 60 days later (0.312 lb ai/1000 ft^2)	60	NA	

Crop	Application Type, Application Method (Formulation[1])		Maximum Single Application Rate (lb ai/A)	Maximum Number of Applications Per Year	Minimum Application Interval (days)	Minimum Pre-Harvest Interval (days)	Restricted Entry Interval (days)
Grapes, raisin, table, wine	Foliar Ground/aerial Root dip		1.88	2	14	3	3 days for girdling and tying; 24 hrs for all other activities
Grass, forage, hay	Foliar Ground/aerial		1.25	1 per cutting	NA	0	12 hrs
Grasses, Bermuda,	Foliar Ground/ aerial	Non-ULV	1.25	1 per cutting	NA	0	12 hrs
		ULV/RTU	0.92				
Guava	Foliar Ground		1.25	13	3	2	12 hrs
Hops	Foliar Ground/aerial		0.63	3	7	10	12 hrs
Horseradish	Foliar Ground/aerial		1.25	3	7	7	24 hrs
Kale	Foliar Ground/aerial		1.0	3	5	7	12 hrs
Kohlrabi	Foliar Ground/aerial		1.25	2	7	7	24 hrs
Kumquats	Foliar Ground	Non-ULV	4.5	1	30	7	2 days
		ULV/RTU	0.175	2	7	1	12 hrs
Leeks	Foliar Ground/aerial		1.56	2	7	3	24 hrs
Lespedeza	Foliar Ground/ aerial	Non-ULV	1.25	2 per cutting	14	0	12 hrs
		ULV/RTU	0.61				
Lettuce, head	Foliar Ground/aerial		1.88	2	6	14	24 hrs

Crop	Application Type, Application Method (Formulation[1])		Maximum Single Application Rate (lb ai/A)	Maximum Number of Applications Per Year	Minimum Application Interval (days)	Minimum Pre-Harvest Interval (days)	Restricted Entry Interval (days)
Lettuce, leaf	Foliar Ground/aerial		1.88	2	5	14	24 hrs
Lupine	Foliar Ground/ Aerial	ULV only	0.61	1	NA	1	12 hrs
Macadamia nut	Foliar Ground/aerial		0.94	6	7	1	12 hrs
Mango	Foliar Ground		0.9375	10	7	1	12 hrs
Melons (other than watermelon)	Foliar Ground/aerial		1.0	2	7	1	12 hrs
Mint	Foliar Ground/aerial		0.94	3	7	7	12 hrs
Mushrooms (including mushroom houses)	Foliar		1.7	4	3	1	12 hrs
Mustard greens	Foliar Ground/aerial		1.0	3	5	7	12 hrs
Nectarines	Foliar Ground/aerial		3.0	3	7	7	24 hrs
Oats	Foliar Ground/ aerial	Non-ULV	1.0	2	7	7	12 hrs
		ULV/RTU	0.61	2	7	7	12 hrs
Okra	Foliar Ground/aerial		1.2	5	7	1	12 hrs
Onions, bulb, and green	Foliar Ground/aerial		1.56	2	7	3	12 hrs
Papaya	Foliar Ground/aerial		1.25	8	3	1	12 hrs
Parsley	Foliar Ground/aerial		1.5	2	7	7	24 hrs

Crop	Application Type, Application Method (Formulation[1])		Maximum Single Application Rate (lb ai/A)	Maximum Number of Applications Per Year	Minimum Application Interval (days)	Minimum Pre-Harvest Interval (days)	Restricted Entry Interval (days)
Parsnip	Foliar Ground/aerial		1.25	3	7	7	24 hrs
Passion fruit	Foliar Ground		1.0	8	7	3	12 hrs
Pasture and rangeland	Foliar Ground/ aerial	ULV only	0.92	1 per cutting	7	0	12
Peaches	Foliar Ground/aerial		3.0	3	11	7	24 hrs
Pears	Foliar Ground/aerial		1.25	2	7	1	12 hrs
Peas, dried	Foliar Ground/aerial		1.0	2	7	3	12 hrs
Peas, green	Foliar Ground/aerial		1.0	2	7	3	12 hrs
Pecans	Foliar Ground/aerial		2.5	2	7	7	24 hrs
Peppers	Foliar Ground/aerial		1.56	2	5	3	12 hrs
Pineapple	Foliar Ground/aerial		2.0	3	7	7	24 hrs
Potatoes	Foliar Ground/aerial		1.56	2	7	0	12 hrs
Pumpkins	Foliar Ground/aerial		1.0	2	7	1	12 hrs
Radish	Foliar Ground/aerial		1.0	3	7	7	12 hrs
Rutabagas	Foliar Ground/aerial		1.0	3	7	7	12 hrs
Rice	Foliar	Non-ULV	1.25	2	7	7	12 hrs

Crop	Application Type, Application Method (Formulation[1])		Maximum Single Application Rate (lb ai/A)	Maximum Number of Applications Per Year	Minimum Application Interval (days)	Minimum Pre-Harvest Interval (days)	Restricted Entry Interval (days)
	Ground/ aerial	ULV/RTU	0.61	2	7	14	
Rye	Foliar Ground/ Aerial	Non-ULV	1.0	3	7	7	12 hrs
		ULV/RTU	0.61	1	NA	7	
Salsify	Foliar Ground/aerial		1.25	3	7	7	24 hrs
Shallot	Foliar Ground/aerial		1.56	2	7	3	24 hrs
Sorghum	Foliar Ground/ aerial	Non-ULV	1.0	2	7	7	12 hrs
		ULV/RTU	0.61	2	7	7	
Spinach	Foliar Ground/aerial		1.0	2	7	7	12 hrs
Squash, summer	Foliar Ground/aerial		1.75	3	7	1	24 hrs
Squash, winter	Foliar Ground/aerial		1.0	3	7	1	12 hrs
Strawberry	Foliar Ground/aerial		2.0	4	7	3	12 hrs
Sweet potatoes	Foliar Ground/aerial		1.56	2	7	0	12 hrs
Swiss chard	Foliar Ground/aerial		1.0	2	7	14	12 hrs
Tomatoes, Tomatilloes	Foliar Ground/aerial		1.56	4	5	1	12 hrs
Trefoil, birdsfoot	Foliar Ground/ aerial	Non-ULV	1.25	2 per cutting	14	0	12 hrs
		ULV/RTU	0.61	2 per cutting	14	0	
Turnips	Foliar Ground/aerial	Non-ULV	1.25	3	5 day for turnip greens	24 hrs	12 hrs

Crop	Application Type, Application Method (Formulation[1])		Maximum Single Application Rate (lb ai/A)	Maximum Number of Applications Per Year	Minimum Application Interval (days)	Minimum Pre-Harvest Interval (days)	Restricted Entry Interval (days)
					7 day for turnip root		
Vetch	Foliar Ground/ aerial	Non-ULV	1.25	2 per cutting	14	0	12 hrs
		ULV/RTU	0.61	2 per cutting	14	0	
Walnuts	Foliar Ground/aerial		2.5	3	7	7	24 hrs
Watercress	Foliar Ground/aerial		1.25 or 1.0	5	3	3	24 hrs or 12 hrs
Watermelons	Foliar Ground		1.5	4	7	1	12 hrs
Wheat, spring and winter	Foliar Ground/ aerial	Non-ULV	1.0	2	7	7	12 hrs
		ULV/RTU	0.61	2	7	7	12 hrs
Wild Rice	Foliar Ground/ aerial	Non-ULV	1.25	2	7	7	12 hrs
		ULV/RTU	0.61	2	7	14	12 hrs
Yams	Foliar Ground/aerial		1.56	2	7	0	24 hrs

Non-Agricultural Use Sites				
Site	Form	Maximum Single Application Rate	Unit	Use Pattern Limitations
Agricultural, uncultivated areas	Non-ULV	1.0	Lb ai/A	
	ULV	0.1875		
Christmas tree plantations	Non-ULV	3.2	Lb ai/A	Maximum of 2 applications per year. 12 hr restricted reentry interval
	ULV	0.9375		
Cull piles	Non-ULV	6.857	Lb/1000 ft^2	Drench
Fence rows/hedge rows	Non-ULV	0.2439	Lb/1000 ft^2	
Grain/cereal/flour bins (empty)	Non-ULV	0.4762	Lb/1000 ft^2	Contact or surface treatment
	Non-ULV	5	Lb/25 gal	
Grain/cereal/flour elevators (empty)	Non-ULV	0.4762	Lb/1000 ft^2	Contact or surface treatment
	Non-ULV	5	Lb/25 gal	
Household/domestic dwellings (perimeter outdoor only)	Non-ULV	0.2439	Lb/1000 ft^2	Application is limited to the structure base and a 2 ft wide swath from the structure base.
Intermittently flooded areas	Non-ULV	0.5078	Lb ai/A	
	ULV	0.232	Lb ai/A	
Non-agricultural rights-of-way/fencerows	ULV	0.9281	Lb ai/A	
Non-agricultural uncultivated areas/soil	Non-ULV	0.6	Lb ai/A	
	ULV	0.9281		
Ornamental and/or shade trees	Non-ULV	2.5	Lb/100 gal	Maximum of 2 applications per year. 10 day minimum retreatment interval. 12 hr restricted reentry interval
Ornamental herbaceous plants	Non-ULV	2.5	Lb/100 gal	12 hr restricted reentry interval
Ornamental non-flowering plants	Non-ULV	2.5	Lb/100 gal	
Ornamental woody shrubs and vines	Non-ULV	2.5	Lb/100 gal	Maximum of 2 applications per year/growing cycle. 10 day minimum re-treatment interval. 12 hr restricted reentry interval.
Pine seed orchards	Non-ULV	3.2	Lb ai/A	Maximum of 2 applications per year/growing season. 7 day minimum re-treatment interval. 12 hr restricted reentry interval
	ULV	0.9375		
Refuse/solid waste containers (outdoors)	Non-ULV	0.2439	Lb/1000 ft^2	
Refuse/solid waste sites (outdoors)	Non-ULV	0.2439	Lb/1000 ft^2	
Swamps/marshes/stagnant water	Non-ULV	0.5075	Lb ai/A	
Wide Area – Public Health Use	ULV	0.23	Lb ai/A	Label must comply with PR-Notice 2005-1, and additional requirements outlined in the

Non-Agricultural Use Sites				
Site	Form	Maximum Single Application Rate	Unit	Use Pattern Limitations
				Label Table.