



May 30, 2003

Anthony Britten
Carbaryl Chemical Review Manager
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1200 Pennsylvania Avenue, N. W.
Washington, DC 20460

In response to your request, the USDA Western Region Integrated Pest Management Center provides the following information for your use in the carbaryl reregistration process. The following information pertains to carbaryl use in Alaska, Idaho, Montana, Oregon, Utah, and Washington.

Specific comments in this letter regarding proposed REIs and proposed application rate reductions are in response to three items (copies attached):

- A table titled *Carbaryl: PROPOSED REENTRY INTERVALS (AND APPLICATION RATES)*, distributed via an e-mail from Dhol Herzi, USDA, on Friday April 18, 2003.
- A table titled *Carbaryl Kick-Off Meeting Between EPA, Bayer CropScience, and Burlington, May 1, 2003: Risk Mitigation Measures Proposed by the EPA, Residential and Professional Uses*, distributed by Greg Storey, Bayer CropScience, via e-mail dated Monday May 5, 2003.
- A table titled *Carbaryl Kick-Off Meeting Between EPA, Bayer CropScience, and Burlington, May 1, 2003: Risk Mitigation Measures Proposed by the EPA, Agricultural Uses*, distributed by Greg Storey, Bayer CropScience, via e-mail dated Monday May 5, 2003.

In most cases our comments are in response to the May 5 information distributed by Bayer CropScience, as it was the most recent and we assumed reflected EPA's most recent views on use rates, REIs, and continued carbaryl uses. In the case of crops such as sugarbeet that were not specifically listed in the Bayer information, we are providing comments based on the information received from USDA.

Our comments on the carbaryl reregistration process are contained in three sections. The first is one general comment on the overall process. This is followed by information and comments on the use of carbaryl for grasshopper control, then information about carbaryl use on specific crops. We are unclear which carbaryl uses might be dropped in the reregistration process, thus

for each crop discussed, we are stating our desire to retain all uses important to agriculture in our region.

We are including a contact list, should you have additional questions about carbaryl use on a specific crop in our region.

General Comments

We have one general comment regarding EPA's proposal to decrease use rates for carbaryl on various crops as a part of the risk mitigation efforts. We are concerned that the agency is proposing lower use rates without having obtained experimental data indicating that carbaryl will still provide effective pest control at these lower rates.

Grasshopper Control

Carbaryl is an important tool for grasshopper control in our region. This chemical is used in APHIS programs for grasshopper control in rangeland as well as by farmers for controlling grasshoppers in individual crops like alfalfa. For grasshopper control in rangeland carbaryl is being applied two ways. In some areas carbaryl, as Sevin XLR, is aerially applied at a rate of 0.25 # ai/A under the RAATs program. In other areas a 2% bait formulation is used and the applications are made using ground equipment. Here the bait is applied at 10 # formulated product per acre or at 0.2 # ai/A. It is our understanding that EPA is proposing to reduce the maximum allowable rate to either 0.125 or 0.375 # ai/A. We have no concerns with EPA reducing the use rate for rangeland to 0.375 # ai/A; however, regional APHIS personnel have indicated that reducing the use rate to 0.125 # ai/A will have a serious impact on APHIS' ability to adequately control grasshoppers in rangeland.

When carbaryl is used to control grasshoppers in alfalfa, the use rates are different. Here carbaryl is used at 1.5 # ai/A. APHIS personnel have indicated that if the use rate for carbaryl in alfalfa is lowered from 1.5 # ai/A to 1.0# ai/A the effectiveness of carbaryl in grasshopper control will be reduced.

We are asking that EPA retain the use of carbaryl for grasshopper control in both rangeland and alfalfa and that these use rates not be lowered below 0.2 # ai/A and 1.5 # ai/A respectively.

Crop Information

Alfalfa & Alfalfa Seed: In our region, the critical carbaryl use in alfalfa is for the control of grasshoppers. (For details, see the information on carbaryl use for grasshopper control in the grasshopper section above.) However, carbaryl is also used to control alfalfa weevil and blister beetle in alfalfa and alfalfa grown for seed. For this use carbaryl is applied at 1.5 # ai/A.

It is our understanding that EPA is proposing both to reduce the use rate of carbaryl on alfalfa to 1.0 # ai/A and to increase the REI to 4 days. We further understand that the 4-day REI is based on hand harvesting alfalfa. We do not feel that a 4-day REI is warranted for two reasons. First, to our knowledge, no one is hand harvesting alfalfa. Second, carbaryl carries a 7-day PHI. Because of the PHI there will be a minimum of 7 days between the last application and any contact with treated foliage during harvest. Alfalfa is harvested mechanically, then allowed to dry in the field. Contact with treated foliage does not occur until baled hay is picked up many days after harvest. By setting the REI at a number based on harvesting, the agency is preventing field access for necessary actions like scouting and irrigation based on an activity that isn't practiced. There is no need to set the REI to 4 days. Harvest contact with treated foliage will be prevented by the practice of mechanical harvesting and will be delayed for a minimum of 7 days by the PHI.

We are asking that EPA retain the use of carbaryl on alfalfa at 1.5 # ai/A and that the REI be set to a value based on actual harvest practices.

Apple: Carbaryl use is important to apple production in our region, where it is used primarily as a fruit-thinning agent. When used as a thinning agent, carbaryl is applied with ground equipment, not by air. For thinning, the maximum use rate for carbaryl is 3.0 # ai/A. In some areas of our region, carbaryl is also used for the control of white apple leafhopper and shothole borer. In this case the use rate is 0.5 to 1.5 # ai/A. It is our understanding that EPA is considering reducing the maximum carbaryl use rate on apples to 2.0 # ai/A. Apple experts in our region have expressed concern about lowering this use rate. Apple varieties vary in their susceptibility to carbaryl as a thinning agent. Lowering the use rate to 2.0 # ai/A would have a negative impact for some apple varieties that are hard to thin. In fact using carbaryl as a thinning agent at 2.0 # ai/A would be too low to get good thinning effect on most apple varieties grown in our region.

We are asking that EPA retain the use of carbaryl on apples, that the use as a thinning agent be retained, and that the 3.0 # ai/A thinning rate be retained.

Apricot: Carbaryl use is not critical in this crop in our region.

Asparagus: Comments are being submitted by Dr. Alan Schreiber, Washington Asparagus Commission.

Barley: Carbaryl is specifically prohibited from use in malting barley production in our region. In barley grown for feed, carbaryl does not play a critical role in insect control.

Bean:

Dry Bean: Carbaryl is used to control flea beetles and armyworms in some dry bean production in our region. It is used at a rate between 1.0 # ai/A and 1.5 # ai/A. It is one of several chemicals that growers use. Growers would like to retain the use of carbaryl on dry beans in order to allow them to rotate among products and control chemistries.

We are asking that EPA retain the use of carbaryl on dry beans, that the use rate of 1.5 # ai/A be retained. Growers would support a 4-day REI.

Succulent Bean: In our region, carbaryl is being used to control diabrotica beetles on green beans. The rates used range from 0.60 to 1.0# ai/A, depending upon the formulation. An alternative for growers is esfenvalerate (Asana). Although growers do have an alternative in esfenvalerate, they would like to retain the use of carbaryl as an additional control tool. In beans, carbaryl is usually applied by air for beetle control, but many of our growers apply it by ground as a tank mix with fungicides for mold control. In most years, one carbaryl application per season (by either method) will provide adequate beetle control.

We are asking that EPA retain the use of carbaryl on succulent beans, and that aerial application for this use also be retained. We support a rate decrease from 1.5 # ai/A to 1.0 # ai/A and also support an increase in the REI to 4 days.

Bean Seed: In some areas of our region, carbaryl is used to control thrips and lygus in garden bean seed crops. Where it is used, carbaryl is applied once a year to approximately 20% of the acreage. Typically applications are made using ground equipment; however, there are some circumstances where carbaryl applications to bean seed must be made by air. Most often carbaryl is applied at 1.0 # ai/A but at times of heavy pest pressure, growers increase the application rate to 1.5 # ai/A.

We are asking that EPA retain the use of carbaryl on bean seed, aerial application, and the 1.5 # ai/A rate for bean seed. Growers support a 4-day REI.

Blueberry (highbush): Carbaryl use is not critical in this crop in our region.

Brassica Crops (Bok Choy, Bok Choy Seed, Broccoli, Broccoli Seed, Brussels Sprouts, Brussels Sprouts Seed, Cabbage, Cabbage Seed, Cauliflower, Cauliflower Seed, Napa Cabbage, Napa Cabbage Seed): Carbaryl is used in brassicas grown in our region, in both the main crop and the seed crop, for flea beetle control. While an 8-day REI won't make carbaryl completely unusable in brassica crops, it will certainly make it a less desirable control choice. The 5-day REI being proposed for leafy vegetables better fits with production practices in our region. In brassica crops carbaryl is applied at the labeled rates anytime between emergence and 30 days post-emergence. Flea beetle control is critical at this time because when the plants are this small beetles can destroy an entire crop. Little hand

weeding is done in the brassica crops (except Napa cabbage and bok choy), but field access may be required for irrigation purposes during this window and is always required in the case of Napa cabbage and bok choy, because they are planted later. In our region, approximately 60% of the brassica acreage is treated with carbaryl. Researchers have indicated that at a lower use rate carbaryl will not be effective for flea beetle control. Reducing the use rate from 2.0 # ai/A to 1.0 # ai/A will essentially make carbaryl unusable to the brassica growers in our region. Because of the specific use pattern for carbaryl in our region, we support restricting the use of carbaryl on brassica crops to early season use.

We are asking that EPA retain carbaryl use on the brassica crops listed above, and that an REI of no longer than 5 days be set. Further we support a label restriction that would limit carbaryl use to a period 30 days post-emergence on these crops.

Brassica Root Crops (Rutabaga, Rutabaga Seed, Turnip, Turnip Seed): As with the other brassica crops, carbaryl is used in the production of rutabaga and turnip and their seed crops for flea beetle control. Here carbaryl is applied at the labeled rates from emergence to 30 days post-emergence. Flea beetle control is critical when plants are small. Flea beetles, if uncontrolled, have the potential to destroy an entire crop. Little hand weeding is done in the brassica root crops, but, field access may be required for irrigation purposes during this window. Approximately 60% of all the brassica acreage is treated with carbaryl. Researchers have indicated that they believe carbaryl will not be effective for flea beetle control at a lower use rate. Reducing the use rate from 2.0 # ai/A to 1.0 # ai/A will essentially make carbaryl unusable to the brassica growers in our region. Growers in our region would support restricting the use of carbaryl on brassica crops to early season use.

We are asking that EPA retain carbaryl use on rutabaga, rutabaga seed, turnip, and turnip seed crops, and that the 2.0 # ai/A use rate be retained. Growers support both the proposed 3-day REI and a label restriction that would limit carbaryl use to a period 30 days post-emergence.

Caneberry (Blackberry, Boysenberry, Loganberry, Marionberry): For caneberries (excluding raspberries; see raspberry information below), carbaryl is used post-bloom as a cleanup spray shortly before the first harvest. It is used in berries that are to be machine harvested and is also used as a cleanup spray in some hand-harvested berries. Carbaryl is used at 2.0 # ai/A, applied 7 days prior to harvest. Carbaryl controls leafrollers, weevils, stinkbugs, earwigs, etc. that contaminate berries when they are harvested. Because of the occurrence of insect contamination in machine-harvested fruit, the use of an effective cleanup spray is critical. Carbaryl is also used in some of the softer caneberries (fresh market Marionberries and boysenberries) that are hand harvested. Carbaryl's effectiveness as a cleanup spray will be lost in hand-harvested berries if the REI is increased above 7 days. Because the amount of fruit that is hand harvested is small and thus the exposure is small, local berry growers are asking that the revised REI be kept to 7 days or less. It is our understanding that EPA is contemplating decreasing the maximum application rate for caneberries from 2.0 # ai/A to 1.5 # ai/A. Berry specialists believe that while the proposed 1.5 # ai/A rate will, indeed, control most of the insects that are present prior to harvest, it will have reduced efficacy for others. A 2.0 # ai/A rate is needed to control certain hard-to-control insects such as the orange tortrix leafroller

(very common in caneberries at harvest) and the raspberry fruitworm. We are concerned that if the maximum rate is reduced to 1.5 # ai/A, the impact will be that another spray application (with a different chemistry and shorter PHI) will be needed prior to harvest and/or in between harvests.

We are asking that EPA retain the use of carbaryl on caneberries, that a 2.0 # ai/A use rate be retained, and that an REI of no longer than 7 days be established.

Canola: Carbaryl use is not critical in this crop in our region.

Carrot: Carbaryl is used as a bait for the control of cutworms in carrots; however, this is a minor pest with a high economic threshold. Each year only 3 or 4% of the carrot acreage is treated with carbaryl.

Cherry: There continues to be a need for the use of carbaryl on both sweet and tart cherries. In our area this is a critical use in cherries because of the zero-tolerance and quarantine issues associated with cherry fruit fly. Cherry fruit flies emerge as the fruit ripens and cherry fruit fly activity peaks just before and during harvest. Growers need a control product with a short PHI that can be used just prior to harvest. Tart cherries are mechanically harvested; however, in sweet cherries, because they are hand harvested, a practical cherry fruit fly control must also have a short REI. Currently carbaryl is one of few products (malathion being the most often used alternative) that are available to growers to control cherry fruit fly. Carbaryl is also used to control leafhopper in some areas of our region but this is an intermittent pest.

In our region no carbaryl cherry applications are made by air. Carbaryl applications in sweet cherries are 1.5 to 2.0 # ai/A. In tart cherries heavily infested with cherry fruit fly, growers may make application at the 3.0 # ai/A rate. There is concern that if the use rate for tart cherries is dropped to 2.0 # ai/A this will decrease the effectiveness of carbaryl as a control in orchards with high cherry fruit fly populations.

We are asking that EPA retain the use of carbaryl on cherries for cherry fruit fly control, that a 12-hour REI be retained, and that the 3.0 # ai/A rate be retained for tart cherries. We support a rate decrease for carbaryl in sweet cherries to 2.0 # ai/A.

Chickpea, Dry Pea, & Lentil: Comments are being submitted by Tim McGreevey, USA Dry Pea & Lentil Council.

Corn:

Sweet Corn: There are two uses for carbaryl on sweet corn in our region. In some areas carbaryl (as a bait) is used early in the season for control of cutworm, in which case it is

applied 7 to 14 days after planting. Because cutworm is a minor pest in sweet corn, it isn't necessary to use carbaryl every year. When it is used for cutworm control, less than 20% of the acreage is treated. In other areas carbaryl is used on sweet corn to control earworm. Here it is one of several chemicals that growers use. Growers would like to retain the use of carbaryl on sweet corn in order to allow them to rotate among products and control chemistries. Note that carbaryl use for cutworm and earworm control does not occur in the same geographic area.

Sweet Corn Seed: Carbaryl is also used in some areas of our region to control both corn seed maggot and adult corn earworm. Where it is used, carbaryl is applied once a year by air to 50% of the corn seed acreage.

We are asking that carbaryl use on corn and corn seed crops be retained and that aerial application also be retained.

Cranberry: In our region, carbaryl is used in some cranberries for the control of blackheaded fireworm and fall fruitworm. Cranberry growers need field access for hand weeding and fertilizing and will be able to continue to use carbaryl if the REI is not set above 4 days.

We are asking that carbaryl use on cranberries be retained, that the current use rate of 2.0 # ai/A be retained, and that the REI be set no higher than 4 days.

Cucurbit Crops (Cucumber, Pumpkin, Squash): Carbaryl is used in cucurbits grown in our region for the control of both striped and spotted cucumber beetles (diabrotica). Carbaryl is applied at the labeled rates from emergence to 30 days post-emergence. Diabrotica control is critical at this time. In the first 30 days post-emergence, when the plants are small, cucumber beetles have the ability to destroy an entire crop.

All cucurbit crops are hand weeded about 30 days post-emergence. If there is a need to control diabrotica late in this 30-day window and if EPA insists on a relatively long REI, efforts to control weeds with hand weeding will be hampered. In the case of cucurbits (planted later in the year than the brassica crops) field access is also required within this 30-day window for irrigation. In our region, approximately 50% of the cucurbit acreage is treated with carbaryl each year.

We are asking that EPA retain the use of carbaryl on cucurbit crops. Growers in our region will support an increase in the REI to 2 days and would also support a label restriction limiting carbaryl to early-season use.

Filbert: Carbaryl is not used extensively in filberts. Most growers use esfenvalerate (Asana) for filbertworm control. However, because esfenvalerate is an RUP, some of the growers who do not have pesticide applicator licenses are using carbaryl for filbertworm control. It is estimated that carbaryl is used on only 5% of the filbert acreage in our region. Some carbaryl is

aerially applied. Growers who are using carbaryl make, on average, 1.5 applications per year of between 2 and 4 # ai/A.

We are asking that carbaryl use on filberts be retained and that aerial application also be retained. Growers in our region would support both a rate decrease from 5 to 4 # ai/A and an increase in the REI to 8 days.

Forestry: There is a critical need to retain carbaryl use as a bark drench for the control of Ips bark beetle. This use is important in Utah as there has been a recent outbreak of this pest and it has the potential to kill trees.

We are asking that EPA retain the use of carbaryl as a bark drench for the control of Ips bark beetle.

Grape: Carbaryl use is not critical in this crop in our region. It is occasionally used for the control of cutworms but its use is declining, as other effective controls have become available.

Hops: Carbaryl is not used in Pacific Northwest hop production.

Nectarine: Carbaryl use is not critical in this crop in our region.

Onion:

Bunching Onion & Dry Bulb Onion: Carbaryl is not commonly used in either bunching or dry bulb storage onion production in our region.

Onion Seed: In some areas of our region, carbaryl is used for thrips control in onion seed crops. In the area where carbaryl is used, it is applied to 100% of the onion seed acreage at least once a year and sometimes twice. Applications are made using ground equipment.

We are asking that carbaryl use on onion seed be retained and we support a 3-day REI.

Oyster Beds: Carbaryl is currently used under an SLN (WA-900013) for the control of ghost shrimp and mud shrimp in PNW oyster beds. While oyster growers are under agreement to phase out carbaryl use for the control of these burrowing shrimp, at this time there are no environmentally friendly, cost-effective alternatives and this use remains critical in oyster production in our region.

We are asking that carbaryl use on oyster beds for the control of burrowing shrimp under SLN WA-900013 be retained.

Peach: Carbaryl use is not critical in this crop in our region.

Pear: Carbaryl use is not critical in this crop in our region.

Pea:

Dry Pea: See note under Chickpea, Dry Pea, and Lentil above.

Succulent Pea: Carbaryl is not widely used in succulent peas in our region.

Pea Seed: In some parts of our region carbaryl is used to control pea leaf weevils in pea seed crops. In the area where carbaryl is used, it is applied to 40 to 50% of the pea seed acreage once a year. Typically applications are made using ground equipment; however, there are some circumstances where carbaryl applications to pea seed must be made by air. Most often carbaryl is applied at 1.0 # ai/A but at times of heavy pest pressure, growers increase the application rate to 1.5 # ai/A.

We are asking that EPA retain the use of carbaryl on pea seed, along with aerial application and the 1.5 # ai/A rate. Growers support a 4-day REI.

Plum/Prune: Carbaryl use is not critical in this crop in our region.

Potato: Currently carbaryl is not widely used in potatoes in our region; however, growers (particularly in Idaho) would like to retain this use. Carbaryl is used for the control of Colorado potato beetle. Growers are primarily using carbofuran (Furadan), phorate (Thimet), and aldicarb (Temik). In a majority of the potato-growing areas of Idaho, the use of aldicarb is not an option because of the combination of the area's short growing season and the product's long (150-day) PHI. This leaves growers in this area with few effective choices for Colorado potato beetle control. Although currently Idaho potato growers use carbaryl on only 7% of the potato acreage, retaining this use is seen as very important should the Colorado potato beetle develop resistance to either of the commonly used controls or should these uses be lost through the reregistration process.

We are asking that EPA retain the use of carbaryl on potatoes for the control of Colorado potato beetle.

Rangeland: See grasshopper control discussion above.

Raspberry: Carbaryl isn't widely used on raspberries in our region because of the growth pattern of the plant. Unlike other caneberries, raspberry blooms tend to linger and there are often blooms on the plants at the same time that fruit is ready to be picked. Thus due to pollinator protection concerns, carbaryl isn't an alternative for use as pre-harvest cleanup spray.

Sod: In our region carbaryl is used in sod farms to control both common and European crane flies. It is applied by ground equipment at 8.0 # ai/A. Local sod farmers use chlorpyrifos (Dursban) as their first choice for crane fly control. Their second choice is either carbaryl or bifenthrin (Talstar). Growers make one application of chlorpyrifos, carbaryl, or bifenthrin for crane fly control each year between November and March. Access to treated fields is required for mowing, applying fertilizer, and irrigation. Turfgrass specialists in our region have tested carbaryl at 4.0 # ai/A for crane fly control and have found that it is not as efficacious as when used at 8.0 # ai/A. An REI of no longer than 3 days is needed so that farmers can access fields to move irrigation equipment.

We are asking that use of carbaryl on sod farms be retained, that the REI be set no longer than 3 days, and that the use rate of 8.0 # ai/A be retained. We support label language that would limit carbaryl applications on sod farms to not more than one application per harvested crop.

Strawberry: Carbaryl is not widely used in strawberries but when it is, it is used prior to bloom (late April/early May) for control of the omnivorous leafhopper and spittlebugs, at 2.0 # ai/A per application. Field activities at this time may include scouting. (Hand hoeing is an option for some growers but would typically be done closer to harvest.) An REI between 2 and 4 days would support current production practices.

We are asking that EPA retain the use of carbaryl on strawberries at 2.0 # ai/A, and that if the REI must be increased, it not exceed 4 days.

Sugarbeet: Carbaryl is used in sugarbeets to control a variety of pests including cutworm, armyworm, webworm, flea beetle, looper, and leafhopper. Control of these pests is usually obtained with a single application of carbaryl at 1.5 # ai/A. We understand that EPA is proposing a 5-day REI for sugarbeets. Production practices in our region will support a 3-day REI, which is in keeping with similar crops. In all, only a very small percentage of the sugarbeet acreage (<2%) is treated with carbaryl.

We are asking that the carbaryl use on sugarbeets be retained, that the REI increase to no more than 3 days, and that aerial application for carbaryl use on sugarbeets be retained.

Sunflower: There is very little carbaryl used on sunflowers in our region. When it is used it is used to control grasshoppers and cutworms.

Walnuts: Carbaryl is not used in Pacific Northwest walnut production.

Wheat: Carbaryl use is not critical in this crop in our region.

Thank you for the opportunity to comment on the proposed carbaryl registration changes.

Sincerely,

A handwritten signature in black ink that reads "Jane M. Thomas". The signature is written in a cursive, flowing style.

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e-mail: jmthomas@tricity.wsu.edu

Carbaryl Contact List

Crop/Usage Site	Last Name	First Name	Organization	State	Phone
alfalfa	Abbott	Greg	APHIS	Utah	(435) 896-4772
alfalfa	Blodgett	Sue	Montana State University	Montana	(406) 994-2402
alfalfa	Karren	Jay	Utah State University	Utah	(435) 797-2514
alfalfa	Kugler	John	Washington State University	Washington	(509) 754-2011
alfalfa	Latchininsky	Alex	University of Wyoming	Wyoming	(307) 766-2298
alfalfa seed	Blodgett	Sue	Montana State University	Montana	(406) 994-2402
alfalfa seed	Kugler	John	Washington State University	Washington	(509) 754-2011
apple	Alston	Diane	Utah State University	Utah	(435) 797-2516
apple	Brunner	Jay	Washington State University	Washington	(509) 663-8181
apple	Castagnoli	Steve	Oregon State University	Oregon	(541) 386-3343
apple	Long	Lynn	Oregon State University	Oregon	(541) 296-5494
apricot	Brunner	Jay	Washington State University	Washington	(509) 663-8181
asparagus	Schreiber	Alan	Washington Asparagus Commission	Washington	(509) 266-4348
barley	Karren	Jay	Utah State University	Utah	(435) 797-2514
barley	Olson	Kelly	Idaho Barley Commission	Idaho	(208) 334-2090
barley	Pike	Keith	Washington State University	Washington	(509) 786-9269
bean seed	Huter	Larry	Seminis Vegetable Seed	Idaho	(208) 468-4521
bean, dry	Drost	Dan	Utah State University	Utah	(435) 797-2258
bean, dry	Larsen	Lou	Columbia Bean	Washington	(509) 750-1944
bean, succulent	Drost	Dan	Utah State University	Utah	(435) 797-2258
bean, succulent	Gill	Jim	Norpac Foods	Oregon	(503) 769-2101
bean, succulent	Nelson	Stan	Twin City Foods	Washington	(360) 629-2111
beet, sugar	Gallian	John	University of Idaho	Idaho	(208) 736-3633
blackberry	DeFrancesco	Joe	Oregon State University	Oregon	(541) 737-0718
bok choy	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
bok choy seed	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
boysenberry	DeFrancesco	Joe	Oregon State University	Oregon	(541) 737-0718
broccoli	Gill	Jim	Norpac Foods	Oregon	(503) 769-2101
broccoli	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
broccoli seed	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
Brussels sprouts	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
Brussels sprouts seed	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
cabbage	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
cabbage seed	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
carrot	Crosby	Todd	Mercer Ranches	Washington	(509) 894-4773
cauliflower	Gill	Jim	Norpac Foods	Oregon	(503) 769-2101
cauliflower	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
cauliflower seed	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
celery	Long	Lynn	Oregon State University	Oregon	(541) 296-5494
cherry	Alston	Diane	Utah State University	Utah	(435) 797-2516
cherry	Brunner	Jay	Washington State University	Washington	(509) 663-8181
cherry	Smith	Tim	Washington State University	Washington	(509) 667-6540
Chinese cabbage	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
Chinese cabbage seed	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
corn seed, sweet	Huter	Larry	Seminis Vegetable Seed	Idaho	(208) 468-4521
corn, field	Karren	Jay	Utah State University	Utah	(435) 797-2514
corn, sweet	Blodgett	Sue	Montana State University	Montana	(406) 994-2402
corn, sweet	Crosby	Todd	Mercer Ranches	Washington	(509) 894-4773
corn, sweet	Drost	Dan	Utah State University	Utah	(435) 797-2258
corn, sweet	Grimes	Troy	100 Circles (Watts Brothers)	Washington	(509) 875-2022
corn, sweet	Hiller	Larry	Washington State University	Washington	(509) 335-3446

Carbaryl Contact List

Crop/Usage Site	Last Name	First Name	Organization	State	Phone
corn, sweet	Karren	Jay	Utah State University	Utah	(435) 797-2514
corn, sweet	Robinson	Dan	JR Simplot	Washington	(509) 787-4521
cranberry	Erickson	Merri	Cranberry Alliance	Washington	(360) 267-3523
cranberry	Patten	Kim	Washington State University	Washington	(360) 642-2031
cucumber	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
filbert	Owen	Holly	Oregon Hazelnut Commission	Oregon	(503) 678-6823
filbert	Olsen	Jeff	Oregon State University	Oregon	(503) 434-8915
grape	James	David	Washington State University	Washington	(509) 786-9280
grasshopper	Abbott	Greg	APHIS	Utah	(435) 896-4772
grasshopper	Fielding	Dennis	USDA/ARS	Alaska	(907) 474-2439
grasshopper	Latchininsky	Alex	University of Wyoming	Wyoming	(307) 766-2298
hops	George	Ann	Washington Hop Growers Association	Washington	(509) 453-4749
hops	James	David	Washington State University	Washington	(509) 786-9280
mint	Lundy	Rocky	Mint Industry Research Council	multiple	(509) 427-3601
nectarine	Brunner	Jay	Washington State University	Washington	(509) 663-8181
oat	Karren	Jay	Utah State University	Utah	(435) 797-2514
onion seed	Huter	Larry	Seminis Vegetable Seed	Idaho	(208) 468-4521
onion, bunching	Mc Grath	Dan	Oregon State University	Oregon	(541) 967-3871
onion, dry bulb	Mc Grath	Dan	Oregon State University	Oregon	(541) 967-3871
onion, dry bulb	Pelter	Gary	Washington State University	Washington	(509) 754-2011
oyster beds	Cooper	Diane	Taylor Shellfish	Washington	(360) 426-6178
pea seed	Huter	Larry	Seminis Vegetable Seed	Idaho	(208) 468-4521
pea, dry	Burns	John	Washington State University	Washington	(509) 335-5831
pea, succulent	Corp	Mary	Oregon State University	Oregon	(541) 278-5403
pea, succulent	Dudley	Rick	Twin City Foods	Idaho	(208) 743-5568
pea, succulent	Gill	Jim	Norpac Foods	Oregon	(503) 769-2101
pea, succulent	Nelson	Stan	Twin City Foods	Washington	(360) 629-2111
peach	Brunner	Jay	Washington State University	Washington	(509) 663-8181
pear	Brunner	Jay	Washington State University	Washington	(509) 663-8181
pear	Castagnoli	Steve	Oregon State University	Oregon	(541) 386-3343
pear	Long	Lynn	Oregon State University	Oregon	(541) 296-5494
plum (and prune)	Brunner	Jay	Washington State University	Washington	(509) 663-8181
potato	Jensen	Andy	Washington Potato Commission	Washington	(509) 765-8845
potato	Esplin	Keith	Potato Growers of Idaho	Idaho	(208) 785-1110
pumpkin	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
rangeland	Blodgett	Sue	Montana State University	Montana	(406) 994-2402
raspberry	DeFrancesco	Joe	Oregon State University	Oregon	(541) 737-0718
rutabaga	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
rutabaga seed	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
squash	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
strawberry	DeFrancesco	Joe	Oregon State University	Oregon	(541) 737-0718
sunflower	Blodgett	Sue	Montana State University	Montana	(406) 994-2402
triticale	Olson	Kelly	Idaho Barley Commission	Idaho	(208) 334-2090
turf	Stahnke	Gwen	Washington State University	Washington	(253) 445-4500
turnip	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
turnip seed	McReynolds	Bob	Oregon State University	Oregon	(503) 678-1264
vegetable seed	Lyons	Milo	Alf Christiansen	Washington	(360) 419-3021
vegetable seed	Pelter	Gary	Washington State University	Washington	(509) 754-2011
walnut	Olsen	Jeff	Oregon State University	Oregon	(503) 434-8915
wheat	Burns	John	Washington State University	Washington	(509) 335-5831
wheat	Karren	Jay	Utah State University	Utah	(435) 797-2514

Carbaryl Contact List

Crop/Usage Site	Last Name	First Name	Organization	State	Phone
wheat	Pike	Keith	Washington State University	Washington	(509) 786-9269
wheat	Simko	Ben	Oregon State University	Oregon	(541) 881-1417
n/a - Western Region IPM Center State Liaisons/Representatives	Blodgett	Sue	Montana State University	Montana	(406) 994-2402
	Daniels	Catherine	Washington State University	Washington	(509) 372-7495
	Deer	Howard	Utah State University	Utah	(435) 797-1602
	Hirnyck	Ronda	University of Idaho	Idaho	(208) 364-4046
	Jahns	Tom	University of Alaska Fairbanks	Alaska	(907) 262-5824
	Jenkins	Jeff	Oregon State University	Oregon	(541) 737-5993

CARBARYL : PROPOSED REENTRY INTERVALS (AND APPLICATION RATES)

CROP	APPLICATION RATE LBS AI/ACRE	REENTRY INTERVAL (DAYS)	ACTIVITY (EXPOSURE) DRIVING THE REI
Blueberries (lowbush)	2	4	Harvesting, hand pruning, pinching, training
Blueberries (highbush)	2	2, 11	Hand harvest, leaf pulling, thinning, pruning REI = 11. REI for grape girdling, cane turning = 14
Cranberry	2	4	Grouped with blueberries, strawberries
Strawberry	2	4	Harvesting, hand pruning, pinching, training
Hops	2	8	Hand harvesting, stripping training, thinning, topping, mechanical harvest- Irrigation and scouting REI = 6
Tobacco	2	8	Hand harvesting, stripping training, thinning, topping. Irrigation and scouting REI = 6
Alfalfa	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Barley	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Stringbeans	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Dry beans	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Peas	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Canola	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Chick Peas	1.5	5	Hand harvesting. REI = 3 for

CROP	APPLICATION RATE LBS AI/ACRE	REENTRY INTERVAL (DAYS)	ACTIVITY (EXPOSURE) DRIVING THE REI
			Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Cotton	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Flax	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Forage	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Mint	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Peanuts	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Green Peas	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Rice	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Sugar beets	1.5	5	Hand harvesting. REI = 3 for Scouting, irrigation and weeding of mature plants. Immature plants REI = 0)
Corn	2	12	Scouting, irrigation, weeding mature/full foliage (for less mature plants REI = 4)
Sunflowers	2	12	Scouting, irrigation, weeding mature/full foliage (for less mature plants REI = 4)
Sorghum	2	12	Scouting, irrigation, weeding mature/full foliage (for less

CROP	APPLICATION RATE LBS AI/ACRE	REENTRY INTERVAL (DAYS)	ACTIVITY (EXPOSURE) DRIVING THE REI
			mature plants REI = 4)
Sweet Corn	2	12	Scouting, irrigation. Hand harvest (detasseling) is unacceptable.
Cut flowers	2	12	Hand harvesting, pruning, thinning, pinching. REI for irrigation, scouting mature plants = 9. For less mature REI= 7)
Sugar Cane	1.5	7	Scouting mature plants (immature REI = 3)
Apples	3	1	Harvesting, pruning, training, tying (thinning REI = 8)
Apricots	3	1	Harvesting, pruning, training, tying (thinning REI = 8)
Cherries	3	1	Harvesting, pruning, training, tying (thinning REI = 8)
Figs	3	1	Harvesting, pruning, training, tying (thinning REI = 8)
Nectarines	3	1	Harvesting, pruning, training, tying (thinning REI = 8)
Peaches	3	1	Harvesting, pruning, training, tying (thinning REI = 8)
Pears	3	1	Harvesting, pruning, training, tying (thinning REI = 8)
Plums/Prunes	3	1	Harvesting, pruning, training, tying (thinning REI = 8)
Pomegranites	3	1	Harvesting, pruning, training, tying (thinning REI = 8)
Avocados	7.5	10	Harvesting, pollination, bagging, tying, training, pruning (thinning REI = 17, Irrigation, scouting and weeding REI = 6)
Dates	7.5	10	Harvesting, pollination, bagging, tying, training, pruning (thinning REI = 17, Irrigation, scouting and weeding REI = 6)
Citrus	7.5	10	Harvesting, pollination, bagging, tying, training, pruning (thinning REI = 17, Irrigation, scouting and

CROP	APPLICATION RATE LBS AI/ACRE	REENTRY INTERVAL (DAYS)	ACTIVITY (EXPOSURE) DRIVING THE REI
			weeding REI = 6)
Mangoes	7.5	10	Harvesting, pollination, bagging, tying, training, pruning (thinning REI = 17, Irrigation, scouting and weeding REI = 6)
Papaya	7.5	10	Harvesting, pollination, bagging, tying, training, pruning (thinning REI = 17, Irrigation, scouting and weeding REI = 6)
Nuts	5	11	Harvesting, pruning, thinning (irrigation, scouting, weeding REI = 0 days)
Olives	5	11	Harvesting, pruning, thinning (irrigation, scouting, weeding REI = 0 days)
Turf	8.17	14	Transplanting, hand weeding.
Onions	2	4	Irrigation, scouting. Hand harvesting REI = 7.
Carrots	2	4	Irrigation, scouting. Hand harvesting REI = 7.
Sweet Potatoes	2	4	Irrigation, scouting. Hand harvesting REI = 7.
Potatoes	2	4	Irrigation, scouting. Hand harvesting REI = 7.
Table Beets	2	4	Irrigation, scouting. Hand harvesting REI = 7.
Melons	2	7	Hand harvesting, thinning. Irrigation, scouting, weeding mature plants REI = 4 (immature plants = 0 days)
Cucumber	2	7	Hand harvesting, thinning. Irrigation, scouting, weeding mature plants REI = 4 (immature plants = 0 days)
Squash	2	7	Hand harvesting, thinning. Irrigation, scouting, weeding mature plants REI = 4 (immature plants = 0 days)
Eggplant	2	2	Hand harvesting pruning, thinning (other activities = 0 days)

CROP	APPLICATION RATE LBS AI/ACRE	REENTRY INTERVAL (DAYS)	ACTIVITY (EXPOSURE) DRIVING THE REI
Pepper	2	2	Hand harvesting pruning, thinning (other activities = 0 days)
Tomatoes	2	2	Hand harvesting pruning, thinning (other activities = 0 days)
Broccoli	2	11	Hand harvesting, irrigation, pruning, topping, tying mature plants. Irrigation, scouting, thinning, weeding immature plants REI = 6. Scouting mature plants REI= 9
Cauliflower	2	11	Hand harvesting, irrigation, pruning, topping, tying mature plants. Irrigation, scouting, thinning, weeding immature plants REI = 6. Scouting mature plants REI= 9
Cabbage	2	11	Hand harvesting, irrigation, pruning, topping, tying mature plants. Irrigation, scouting, thinning, weeding immature plants REI = 6. Scouting mature plants REI= 9
Brussel Sprouts	2	11	Hand harvesting, irrigation, pruning, topping, tying mature plants. Irrigation, scouting, thinning, weeding immature plants REI = 6. Scouting mature plants REI= 9
Leafy Vegetables	2	7	Hand harvesting, pruning and thinning mature plants. Irrigation, scouting REI = 4
Asparagus	2	1	Irrigation, scouting mature plants.
Artichoke	2	5	Hand harvesting, pruning
Pineapples	2	1	Irrigation, scouting mature plants.
BlackBerries	2	2, 11	Hand harvest, leaf pulling, thinning, pruning REI = 11. REI for grape girdling, cane turning = 14
Grapes	2	2, 11	Hand harvest, leaf pulling,

CROP	APPLICATION RATE LBS AI/ACRE	REENTRY INTERVAL (DAYS)	ACTIVITY (EXPOSURE) DRIVING THE REI
			thinning, pruning REI = 11. REI for grape girdling, cane turning = 14
Raspberries	2	2, 11	Hand harvest, leaf pulling, thinning, pruning REI = 11. REI for grape girdling, cane turning = 14
Ornamentals	2	0	Hand pruning, hand harvest, hand pinching.
Nursery	2	0	Hand pruning, hand harvest, hand pinching.

**Carbaryl Kick-off Meeting
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May 1, 2003

Risk Mitigation Measures Proposed by the EPA

Residential and Professional Uses

Based on the revised Phase 5 risk assessments for carbaryl, EPA identified scenarios of concern requiring mitigation to bring exposure estimates to an acceptable level. The scenarios of concern and the risk mitigation measures proposed by the Agency are as follows:

Residential Handlers

Scenario	Use Site	Unit (amount of product used or area treated)	Handler combined dermal and inhalation MOEs	Post-application Risk of Concern	EPA - Proposed Risk Mitigation Measures
Garden / Ornamentals Dust	Vegetable gardens / Ornamentals	A full 4 lb. container of 10% Dust	MOE=21	Cancer risk for <u>10% Dust</u>	<ol style="list-style-type: none"> 1. Replace the 10% dust with a 5% dust 2. Package as a Ready-to-Use product (i.e. dust applicator) 3. Reduce the container size to less than 4 lbs. 4. Maximum of 5 applications per year Note from Bayer: For the 10% dust product, EPA has identified a cancer risk for post-application exposure. However, there is no cancer risk for the 5% dust product – a max. of 5 applications/year should not be necessary.
		A quarter of a container of 10% Dust	MOE=85		
		1000 sq ft	MOE=107		

Scenario	Use Site	Unit (amount of product used or area treated)	Handler combined dermal and inhalation MOEs	Post-application Risk of Concern	EPA - Proposed Risk Mitigation Measures
Garden Hose-End Sprayer	General use (2% solution)	100 gallons of spray applied (2 lbs a.i.; 1 hour of spraying)	MOE=21	Cancer risk if more than 5 applications/year	1. Cancel the use of hose-end sprayers for gardens (Vegetables and garden)
	Fire ants	100 gallons of spray applied (0.75 lbs a.i.; 1 hour of spraying)	MOE=55		
	Other uses: Perimeter nuisance pests, Vegetables, Veg / Ornamentals	1000 sq ft	MOE= 158 to 3,427		
Trees / Ornamentals Hose-End Sprayer	Average study use rate	100 gallons of spray	MOE=72	No	2. Cancel the use of hose-end sprayers for gardens (Vegetables and garden)
	Ornamentals, Pome fruit, Nuts, Stone fruit, Citrus	1000 sq ft	MOE= 204 to 1,559	No	
Lawn Care Hose-End Sprayer	Lawn (broadcast)	20,000 sq ft	MOE=25	Post-application. MOE=11	Remove the hose-end sprayer lawn broadcast application – for liquid and other types of formulations – for homeowner and professional applications ♦
	Lawn (spot treatment)	1000 sq ft	MOE=495	Post-application. MOE=11	Limit the size of the area to be treated: “Not to exceed XXX sq ft.
Granular & Baits Lawn Care: Push-Type Spreader	Lawn (broadcast)	4.2 to 2 lb. a.i./A	MOE= 477 to 1003	Post-application. <u>MOE=11</u>	Remove use of push-type <u>spreader based on post-application concerns.</u>

Scenario	Use Site	Unit (amount of product used or area treated)	Handler combined dermal and inhalation MOEs	Post-application Risk of Concern	EPA - Proposed Risk Mitigation Measures
Dogs: Dusting & Liquid application & Dog collars**	Dog	Average study rate 1 lb 10% dust 1 lb 5% dust ½ of a 6 oz bottle of 0.5% solution 1 collar with 16% ai	MOEs> 100 except for dusting using 1 lb of 10% dust (½ container) or 1 lb of 5% dust (½ container)	Cancer risk	Cancel pet use – Dust and liquid formulations ** Additional exposure data must be provided to maintain dog collars
Granular & Baits Lawn Care: Belly Grinder	Lawn (spot)	1000 sq ft	MOE= 60, 126		Cancel use
Granular & Baits By hand	Ornamentals and Gardens	1000 sq ft	MOE=15	Cancer risk if more than 4 applications	Cancel use
Granular & Baits Aerosol	Various	A 1 pint (16 oz) can	MOE=65	Not assessed	Cancel use (Bayer is not aware of any aerosol product being sold)

Residential Post-application exposures.

Population Subgroup	Scenario	Descriptor	Short Term Exposure	Proposed Risk Mitigation Measure
Adult	Residential turf (lawncare)	Max rate at 8 lbs a.i./A	MOE=43	Cancel use
		Max rate at 4 lbs a.i./A	MOE=88	
Toddlers	Residential turf (high activity)	Max rate at 4 lbs a.i./A	MOE=11	Cancel use
		Pet treatments		Cancel use.
		Liquids	73.2	** for collars, study data submitted is of marginal quality - additional data required to retain use of collars.
dust	0.73			
collars**	346			

Occupational Handler Exposures (Professional Uses)

Crop/Use	Formulation	Application Method (lb ai/acre)	Application Rate	MOE		Post-application concern	Proposed Risk Mitigation Measure
				M/L	Appl.		
Animal groomer – dog	Liquid	liquid	0.01	9.7		Yes	Cancel the use
Mosquito adulticide	Liquid	Aerial	1 lb a.i./A 0.15 lb a.i./A	M/L 18 121	Appl. 27 181	—	Reduce rate to 0.15 lb a.i./A
		Ground	1 lb a.i./A 0.15 lb a.i./A	M/L 45 112	Appl. 22 150		
Ornamentals and Gardens	Granulars and Baits	By hand	9 lb ai./A	3.8 (applicator)		No	LCO's: Remove application by Hand
		By spoons	9 lb ai./A	75 (applicator)		No	Cancel use Potential counter proposal: Propose different delivery system
Turf	Liquid	Low pressure, high vol. Turfgun (5 acres/day)	8 lb ai/A 4 lb ai/A	M/L/A 94 104	Yes <i>High exposure only</i>	No risk mitigation needed – This is for professional, non-residential use. (double layer clothing (i.e., coveralls over short sleeves) with gloves and protection factor 10 respirator <u>for 8 lb rate</u>) (single layer clothing with gloves and protection factor 5 respirator <u>for 4 lb rate</u>) Note 1) high post-application exposure (next table) requiring 14 day REI or rate reduction and 2) <u>residential</u> high post-application exposure concerns for residential use on turf.	
	Granular	bellygrinder	9 lb ai/A	M/L/A 27			Cancel bellygrinder application

Occupational Post-application Exposures (REIs)

Crop/Use	Application Rate	Exposure potential (MOE)	Proposed Risk Mitigation Measure
Cut Flowers	2 lb ai/A	(day) - - MOE (Low exp) 0 30 5 76 6 92	REI=12 Days WILL BE REVISITED -- EPA has not yet reviewed comments recently submitted by Bayer based on DPR cut flower re-entry study
Nursery/ornamentals	2 lb ai/A	> 100	No risk mitigation needed
Turf/Sod -golf course sodfarm	8.17 lb ai/A	(day) - - MOE 0 10 0 11 1 131 2 16 12 71 13 84 14 >100	REI = 14 Days <u>Or</u> Reduce the rate

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Risk Mitigation Measures Proposed by the EPA

Agricultural Uses

MOE's of concern were obtained for the following uses:

Occupational - Handler and Post application

Crop/Use	Formulation	Application Method	Application Rate used in risk assessment Lb ai/Acre	Proposed Risk Mitigation Measure
Field Corn	Liquid	Aerial	2	Reduce rate to 1 lb a.i./A
	Granular		2	Cancel use of granular products on corn
	WP		2, and 1 lb a.i./A	Reduce rate to 1 lb a.i./A
APHIS /Rangeland/ Grasshopper/RAATS	Liquid	Aerial (6000 acres)	0.375 – 0.5	Reduce rate to 0.125 or 0.375 lb ai./A
			0.125	
Rangeland / Forestry	DF and WP	Aerial (7500 acres)	2	Reduce rate to 1 lb a.i./A for Forestry Note: Label rate is 1 lb a.i. and only liquid formulations are used by the US Forestry Services.
Stone fruit	Liquid WP	Aerial	5	Reduce rate to 3 lbs ai/A
Wheat	Liquid	Aerial Chemigation (1200 acres)	1 1/2	Reduce application rate to 1 lb

Post-Application Risk Assessment Summary - REIs

Crop/Use	Application Rate used in risk assessment Lb ai/A	Proposed Risk Mitigation Measure
Brassica Broccoli Brussel sprouts Cabbage Cauliflower	2	Rate: 1 lb REI: 8 Days
Bunch/bundle Hops tobacco	2	REI: 8 Days
Cucurbit Vegetables Cantaloupe Cucumber Gourds Pumpkins Squash Watermelon Zucchini		Rate: 1 lb REI: 2 Days
Deciduous fruit trees Apples Apricots Cherries (sweet/tart) Figs Nectarines Peaches Pears Plums/prunes pomegranates	3	<u>Option 1</u> Rate: 3 lb REI: 12 hours – except for hand thinning with REI= 8 Days <u>Option 2</u> Rate: 2 lb REI: 12 hours – except for hand thinning with REI= 3 Days For California: could keep 16 Lbs rate with long REI and reduced rate for subsequent applications
Evergreen Tree Crop Group Conifers Dates	7.5	Rate: 4 lb REI: 3 Days

Grapefruit Lemons Mangoes Oranges papaya		
Fruiting Vegetables Eggplant Okra Bell/chili peppers tomatoes	2	REI: 2 Days
Leafy Vegetables Bok choy Celery Collards Greens Kale herbs Lettuce/romaine Napa Parsley Swiss chard watercress	2	Rate: 1 ½ lb REI: 5 Days
Low Berry Lowbush blueberries Cranberries strawberries	2	REI: 4 Days
Low/Med Field/Row Crops Alfalfa Stringbeans Dry beans/peas Chick peas Forage Green peas	1 ½	Rate: 1 lb REI: 4 Days
Low/Med Fiel/Row Crops Canola Flax Mint Peanuts Rice Safflower Sugarbeets wheat	1 ½	REI: 2 Days

Nut trees Almonds Hazelnuts Macadamia Pistachios Pecans Walnuts Olives	5	Rate: 4 lb REI: 8 Days <u>Olives</u> Rate: 7 1/2 lb REI: 14 Days
Root Vegetables Table beets Carrots Dry/green onions Potatoes Sweet potatoes turnips	2	<u>Potatoes and sweet potatoes</u> REI: 4 Days <u>Other crops</u> Rate: 1 lb REI: 3 Days
Stem/Stalk Vegetables Artichoke Asparagus pineapple	2	Rate: 1 lb REI: 1 Day
Sugarcane	1 ½	REI: 3 Days
Tall Field/Row Crops Corn Sunflowers Sorghum Sweet corn	2	REI: 4 Days (EPA was informed that a 4-day REI is unacceptable for sweet corn for any insecticide & EPA will reassess. EPA does need input to properly address this)
Vine/Trellis Pole beans Blackberries Highbush blueberries Grapes Kiwi raspberries	2	Rate: 1 ½ lb REI: 7 Days