



Pesticides: Organophosphates

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Diazinon IRED Facts

EPA has assessed the risks of diazinon and reached an Interim Reregistration Eligibility Decision (IRED) for this organophosphate (OP) pesticide. Without mitigation, diazinon poses unacceptable risks to agricultural workers and to birds and other wildlife species. To increase protection for workers, birds, and the environment, the Agency's decision includes provisions to phase out and cancel certain agricultural crop uses, the granular formulation, and aerial applications; reduce the amount and frequency of use; and employ engineering controls and other protective measures. These changes in diazinon use were developed through discussions with the technical registrants and were based on extensive stakeholder input.

Diazinon has been one of the most widely used insecticides in the U.S. for household as well as agricultural pest control. A December 2000 agreement with the technical registrants is phasing out and canceling all indoor and outdoor residential uses in order to reduce risks to children and others.

Diazinon residues in food and drinking water resulting from agricultural uses do not pose human dietary risks of concern. While residues attributed to agricultural and residential uses have been detected frequently in surface waters, previous mitigation measures for residential products should result in less frequent detections in water. Without further mitigation limiting children's and others' exposure through food and drinking water, diazinon fits into its own "risk cup." Even with the recommended mitigation measures, diazinon's worker and ecological risks still will be above levels of concern, but these risks are offset by strong benefits of diazinon use in fruit and vegetable production.

EPA's next step is to consider the cumulative effects of the OP pesticides, which share a common mechanism of toxicity. The interim decision on diazinon will not be final until the Agency completes a cumulative evaluation of the OPs. Further risk mitigation may be warranted at that time.

EPA is reviewing the OP pesticides to determine whether they meet current health and safety standards. Older OPs require decisions about their eligibility for reregistration under FIFRA. OPs with food, drinking water, residential, and any other non-occupational exposures must be reassessed to make sure they meet the new FFDCA safety standard, brought about by the Food Quality Protection Act of 1996 (FQPA).

The IRED concludes EPA's review of diazinon through the OP pilot public participation process, which increases transparency and maximizes stakeholder involvement in the Agency's development of risk assessments and risk management decisions. EPA worked extensively with affected parties to reach the decisions presented in the Diazinon IRED. During the past several years, the Agency has exchanged information on diazinon's uses, risks, and benefits with USDA, other federal and state agencies, registrants, users, the environmental community, concerned citizens, and others. This significant input from stakeholders and interested parties helped EPA reach a decision that diazinon is eligible for reregistration and meets the FQPA safety standard.

Uses

- Diazinon is registered to control foliage and soil insects and pests of many fruit, nut, vegetable, forage, and field crops. Diazinon also is used in cattle ear tags. Prior to residential mitigation, diazinon also was used outdoors on household lawns and

gardens to control insects, grubs, and nematodes in turf; indoors for fly control through crack and crevice treatments; and for veterinary use to control fleas and ticks through pet collars.

- Approximately 13 million pounds of the active ingredient diazinon are used annually on agricultural sites. Use is highest on almonds and stone fruits.

Health Effects

- Diazinon can cause cholinesterase inhibition in humans; that is, it can overstimulate the nervous system causing nausea, dizziness, confusion, and at very high exposures (e.g. accidents or major spills) respiratory paralysis and death.

Risks

- Dietary risks from exposure to diazinon residues in food and drinking water do not exceed the Agency's level of concern.
- EPA's human health risk assessment indicates concern from residential uses of diazinon, including both indoor and outdoor use products.
- Occupational exposure to diazinon is of concern to EPA for handlers and applicators of diazinon as well as to workers entering fields after applications.
- EPA has identified ecological risks of concern from diazinon use, particularly to birds, mammals, bees, fish, and aquatic invertebrates.

Residential Risk Mitigation

Known as Spectracide and other trade names, diazinon has been one of the most widely used insecticides in the U.S. for household lawn and garden pest control (up to 70% of the 11 million pounds used each year), indoor residential crack and crevice treatments and pet collars (up to 5% of all use), and agricultural pest control (about 30% of all use). To reduce risks to children and others, the December 2000 agreement is phasing out and canceling all residential uses. All indoor residential use product registrations were canceled and retail sale of these products ended as of December 31, 2002. All outdoor residential use product registrations must be canceled and retail sale must end by December 31, 2004. After that time, a buy-back program will help remove remaining outdoor diazinon residential use products from the market and prevent further sale.

Agricultural and Ecological Risk Mitigation

To mitigate risks to agricultural workers, birds and other wildlife, the following mitigation measures are required by the Diazinon IRED. All deletions and cancellations will be phased in during the next 2 to 5 years.

- **Cancellation of all granular registrations, except two current Section 24(c) registrations held by Washington and Oregon for control of the cranberry girdler.**
- **Deletion of aerial application for all uses.**
- **Deletion of foliar application on all vegetable crops, except for treatment of leafhopper on honeydew melons in California.**
- **Application rate reduction for ornamentals and lettuce.**
- **Establishment of crop specific REIs.** REIs of 2 days to 18 days will be established for all crops.
- **Cancellation of all seed treatment uses.**
- **Require engineering controls for all uses.** All application equipment must use lock and load engineering controls. All wettable powder formulations must be packaged in water soluble bags. Closed cabs are required for all ground equipment.
- **Reduce the number of applications of diazinon per growing season.** For most uses, only one application per growing season will be allowed. Crops with dormant

season and in season uses (e.g., stone fruits) will have one application per season, for a total of two applications per year. Other exceptions are noted in the Labeling Summary Table in Chapter 5 of the IRED.

Cancellation of the following uses:

Section 3 registrations: Chinese broccoli, Chinese cabbage, Chinese mustard, Chinese radish, corn, grapes, hops, mushrooms, sugarbeets, walnuts, and watercress.

Section 24(c) registrations: Control of cranberry girdler for grass grown for seed (Oregon); dipping of pineapple seed pieces (Hawaii); drenching around residential fruit trees for control of Mediterranean fruit fly (California).

Benefits Analysis

Benefits information was required for diazinon based on its risks to workers and wildlife. Complete benefits assessments, evaluating the economic and agricultural effects of cancellation of diazinon, were prepared for crops with over 5% of the crop treated with diazinon. In issuing the Diazinon IRED, EPA is requesting public comment on these uses, including almonds, apricots, blueberries, broccoli, Brussels sprouts, cabbage, caneberry crop group, carrots, cauliflower, cherries (sweet), cranberries, hops, lettuce, melons, nectarines, onions, peaches, pears, plums, prunes, radishes, strawberries, and tomatoes. The benefits assessments can be found on EPA's website in the diazinon electronic docket (#OPP-2002-0251 at http://cascade.epa.gov/RightSite/dk_public_home.htm) and through the diazinon web page, <http://www.epa.gov/oppsrrd1/op/diazinon.htm> .

Next Steps

The Diazinon IRED was issued for 60 days of public comment through a September 25, 2002, Federal Register notice. This comment period was extended in December 2002 for an additional 30 days, closing January 8, 2003. EPA is reviewing the public comments received and will amend the Diazinon IRED, if warranted.

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