United States Environmental Protection Agency | Prevention, Pesticides and Toxic Substances (7508C) | EPA 738-F-02-004 June 2002

Ethoprop Facts

EPA has assessed the risks posed by the use of the active ingredient ethoprop, and reached an Interim Reregistration Eligibility Decision (IRED) for this organophosphate (OP) pesticide. Provided that risk mitigation measures are adopted, EPA has made the determination that ethoprop fits into its own "risk cup"-- that is, its individual and aggregate risks are within acceptable levels, provided the stipulated risk mitigation measures are implemented. Thus, ethoprop products, except for the liquid formulation, are eligible for reregistration, pending consideration of the cumulative risk for all OPs. The Agency will make a reregistration eligibility decision for the liquid formulation at a later time, provided certain conditions are fulfilled.

Ethoprop residues in food do not pose risk concerns. Although there is concern for drinking water risks based on estimates from screening-level water modeling, the Agency believes actual drinking water exposures are much lower and are not of concern. With the implementation of a variety of risk reduction measures, ethoprop's worker and ecological risks will be substantially reduced. Also, ethoprop has no residential uses, and its use on golf course turf has been voluntarily canceled.

EPA is reviewing the OP pesticides to determine whether they meet current health and safety standards. Older OPs need decisions about their eligibility for reregistration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). OPs with residues in food, drinking water, and other non-occupational exposures also must be reassessed to make sure they meet the new Food Quality Protection Act (FQPA) safety standard.

The OP Pilot Public Participation Process

The organophosphates are a group of related pesticides that affect the functioning of the nervous system. They are among EPA's highest priority for review under the Food Quality Protection Act.

EPA is encouraging the public to participate in the review of the OP pesticides. Through a six-phased pilot public participation process, the Agency is releasing for review and comment its preliminary and revised scientific risk assessments for individual OPs. (Please contact the OP Docket, telephone 703-305-5805, or see EPA's web site, www.epa.gov/pesticides/op.)

EPA is exchanging information with stakeholders and the public about the OPs, their uses, and risks through Technical Briefings, stakeholder meetings, and other fora. USDA is coordinating input from growers and other OP pesticide users.

Based on current information from interested stakeholders and the public, EPA is making interim risk management decisions for individual OP pesticides, and will make final decisions once the cumulative risks for all the OPs are considered.

EPA's next step under FQPA is to consider the cumulative risks and risk management decision encompassing all the OP pesticides, which share a common mechanism of toxicity. The interim decision on ethoprop cannot be finalized until the cumulative risks for all the OPs are considered. Further risk mitigation may be warranted at that time.

The ethoprop interim decision was made through the OP pilot public participation process, which increases transparency and maximizes stakeholder involvement in EPA's development of risk assessments and risk management decisions. EPA worked extensively with affected parties to reach the decisions in this interim decision document, which concludes the OP pilot process for ethoprop.

Uses

- An insecticide and nematicide, ethoprop is used to control wireworms and nematodes in potatoes, sugar cane, sweet potatoes, and tobacco, with lesser usage on corn (field and sweet) , beans (lima and snap), cucumbers, and cabbage. In addition, it is used to treat pineapples, bananas, and plantains, as well as field-grown ornamentals and non-bearing citrus trees.

- According to Agency estimates, annual domestic use was approximately 700,000 pounds of active ingredient per year from 1987 through 1996. Based on usage data from the technical registrant for 1998 through 2000, about 1 million pounds of active ingredient per year is used nationally. The more recent data indicate that roughly 60% of the ethoprop applied is used on potatoes, with sugar cane and sweet potatoes accounting for the next higher usages.

Health Effects

- Ethoprop 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 exposures from eating food crops treated with ethoprop is not of concern to the Agency for the entire U.S. population or for any population subgroup, including infants

and children. Dietary exposure from drinking water is of concern to the Agency, based on estimates from screening-level modeling for both surface and ground water sources.

- EPA has risk concerns for workers who load and apply ethoprop, both the granular and liquid formulations. For the granular formulations, the worker risk concerns are driven by the amount of dust and the potential for inhalation exposure. For the liquid formulation, the risk driver is the potential for dermal exposure. To address this concern, the registrant is conducting a worker biomonitoring study to provide highly-refined, product-specific data. A reregistration eligibility decision will not be made on the liquid formulation until these studies are completed.

- Ethoprop presents risks to non-target terrestrial wildlife species, including birds, mammals, and bees. In addition, it presents high risks to aquatic organisms, both fish and invertebrates.

Benefits

The benefits of ethoprop use on potatoes are estimated to be important, especially for the liquid formulation in areas with low rainfall, due to its availability to be tank-mixed and co-applied with liquid soil fumigants, and its efficacy to control nematodes and wireworms. There are benefits for the use of the liquid, as well as granular formulations, for other crops as well, such as sugar cane, sweet potatoes, bananas, plantains, and pineapples.

Risk Mitigation

Dietary Risk

No mitigation is necessary at this time for any dietary (food) exposure to ethoprop. The acute and chronic dietary (food) risks from ethoprop do not pose concerns to the Agency.

Drinking water risk assessments are based on screening-level modeling estimates. The Agency believes actual drinking water exposures are much lower and are not of concern. To provide actual exposure data to demonstrate that drinking water risks are not of concern, the registrant will conduct drinking water monitoring of both surface and ground water sources.

Occupational Risk

In order to mitigate occupational risks, the following risk mitigation measures are necessary:

- treatment of golf courses is being voluntarily cancelled;
- restrict the maximum number of applications for all uses to one application per year, except for use on bananas, plantains, and pineapples; and
- reduce the maximum application rates (for tobacco from 12 pounds of active ingredient per acre (lb ai/A) to 6 lb ai/A, for potatoes to treat nematodes east of the Mississippi River from 12 lb ai/A to 9 lb ai/A, for ornamentals from 6 lb ai/A to 3 lb ai/A, and for pineapples from 12 lb ai/A to 6 lb ai/A).

Specifically for the granular formulations, the following worker risk mitigation measures are necessary:

- the 10G formulation is voluntarily cancelled;
- the 15G formulation will be manufactured with an inert ingredient having lower dust content, to mitigate risks associated with inhalation exposures;
- the 20G formulation will now specify use only on sugar cane, and will be packaged solely in closed transfer containers;
- both of the remaining granular formulations are to be applied to agricultural crops only with enclosed cab equipment;
- the following applications will be prohibited:
    - all aerial applications;
    - slit treatment;
    - push-type spreaders;
    - applications to peanuts;
    - broadcast applications to sweet potatoes; and
    - all hand applications, including direct hand-held equipment, such as spoons.

Although the Agency is not making a reregistration eligibility decision concerning the liquid formulation at this time, in the interim, the following risk mitigation measures are necessary for workers handling the liquid formulation:

- prohibit applications with: liquid low-pressure handwand sprayers; liquid backpack sprayers; liquids with a sprinkler can; mixing/loading/applying liquid concentrate by a handheld measuring container; and hand-dipping of citrus seedlings in liquids;
- prohibit use on: snap beans; lima beans; field corn; sweet corn; peanuts; sugar cane; and citrus seedlings; and
- prohibit broadcast applications to cabbage and sweet potatoes.

Ecological Risk

To mitigate ecological risks, the following mitigation measures are necessary:

- all applications of ethoprop must be incorporated into the soil, either by mechanical means immediately after applications with ground equipment, or by water incorporation;
- the liquid formulation label will specify no-spray zone buffer strips for the protection of surface waters (including within 140 feet of inland freshwater habitats and along the Atlantic seaboard, within 800 feet of brackish water habitats); and
- various risk mitigation measures described above will also address ecological concerns, including:
  - restricting the maximum number of applications;
  - canceling certain uses;
  - reducing maximum application rates; and,
  - canceling broadcast applications for some uses.

Next Steps

- There is no additional comment period for the ethoprop IRED, which is in its final form. The registrant and stakeholders have commented on the risk assessments and the proposed risk mitigation measures. You can find more information about the Agency's public participation process for the OPs at www.epa.gov/pesticides/op. For documents specific to ethoprop, go to www.epa.gov/pesticides/reregistration/status.htm.

- EPA will revoke 9 tolerances for ethoprop as part of the IRED. When the cumulative risks are considered for the OP pesticides, the Agency will issue its final tolerance reassessment decision for ethoprop and may request further risk mitigation measures. At that time, EPA will raise and/or establish new tolerances.