United States Environmental Protection Agency | Prevention, Pesticides and Toxic Substances (7508C) | EPA 738-F-00-011 January 2001

Fenthion Facts

EPA has assessed the risks of fenthion and reached an Interim Reregistration Eligibility Decision (IRED) for this organophosphate (OP) pesticide. Provided that risk mitigation measures are adopted, fenthion fits into its own "risk cup"-- its individual, aggregate risks are within acceptable levels. Fenthion is not eligible for reregistration at this time but may be pending a decision by the Agency on appropriate mitigation after consultation with stakeholders.

Used as an adult mosquiticide in Florida only, fenthion residues in food and drinking water do not pose risk concerns**.** With mitigation limiting homeowners' and children's exposure via home lawns and other turf, fenthion fits into its own "risk cup." With other mitigation measures, fenthion's worker and ecological risks also would be below levels of concern for reregistration. The Agency is seeking input from stakeholders at a January 17, 2001, meeting on what mitigation measures to impose. EPA will then announce a final determination on the risk mitigation it believes must be adopted in order for products containing fenthion to remain eligible for reregistration.

After this individual decision on fenthion, EPA's next step under the Food Quality Protection Act (FQPA) is to complete a cumulative risk assessment and risk management decision encompassing all the OP pesticides, which share a common mechanism of toxicity. The interim decision on fenthion cannot be considered final until this cumulative assessment is complete. Further risk mitigation may be warranted at that time.

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 through a cumulative OP assessment.

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 FIFRA. OPs with residues in food, drinking water, and other non-occupational exposures also must be reassessed to make sure they meet the new FQPA safety standard.

The fenthion interim decision is being 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 continues to work extensively with affected parties to address the risks discussed in this interim decision document, which concludes the OP pilot process for fenthion.

Uses

- An insecticide, fenthion is used to control adult mosquitos in Florida only and dragonfly larvae in contained ornamental fish production ponds in Arkansas, Florida, and Missouri only.

- Annual domestic use is low-- use data from 1990 to 1998 indicate an average of about 246,100 a.i. was used domestically per year (up to 343,100 lbs a.i./year maximum). The average amount used for mosquito control was about 96,500 lbs a.i./year (up to 118.600 lbs a.i./year maximum).

Health Effects

- Fenthion 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.

Ecological Effects

- Fenthion is very highly toxic to birds and highly toxic to estuarine/marine invertebrates and non-target organisms. The mosquito adulticide use of fenthion has been implicated in several bird kill incidents, including recent bird kills on Marco Island, Florida. These kills on Macro Island are currently under investigation by the US Fish and Wildlife Service.

Risks

- Dietary exposures from eating food crops exposed to fenthion are above the level of concern for the entire U.S. population, including infants and children. However, these uses are being voluntarily cancelled by the registrant, and the Agency will not refine the fenthion dietary exposure analyses. Drinking water is not a significant source of exposure.

- Although there are no homeowner uses for fenthion, residential exposure to adults and children can occur because fenthion is used in mosquito control operations that involve wide area adulticide applications to residential areas in Florida. There are no risks of concern for homeowners performing yard work or performing other recreational activities on the treated areas. There are no risks of concern for children engaging in activities after typical applications. However there is a concern for children if they are exposed to repeated levels at the maximum

allowed rate. The inputs and approaches used to calculate the exposures result in conservative estimates.

- EPA also has risk concerns for workers who mix, load, and/or apply fenthion for both aerial and ground mosquito adulticide applications.

- There are potential risk concerns for acute dietary risks to birds, freshwater invertebrates and estuarine/marine invertebrates at maximum aerial and/or ground applications.

Risk Mitigation

In order to support a reregistration eligibility decision for fenthion, the following risk mitigation measures are being considered and will be discussed at the upcoming stakeholder meeting:

- To mitigate risks to workers who mix, load and apply fenthion for ground and aerial applications:
  - require generic mixer/loader/applicator exposure data for all mosquito pesticide applications;
  - handlers must use closed systems only. The current labels give protective clothing statements for both closed system and non-closed systems. The Agency believes that requiring closed systems for all types of mosquito control applications will result in less exposure to workers;
  - add a prohibition of human flaggers to the label;
  - change the use rate on the label to allow the highest rate only for public health use (i.e., with confirmation of mosquito-vectored diseases).

- To mitigate risks from aquaculture use:
  - eliminate the backpack sprayer method of application;
  - require a handwand sprayer.

- To mitigate risks to residential bystanders:
  - require chemical-specific deposition and turf transferrable residue studies to refine the risk assessment;
  - require a developmental neurotoxicity study;
  - change the use rate on the label to allow the highest rate only for public health use (i.e., with confirmation of mosquito-vectored diseases).

- To mitigate ecological risks:
  - require avian reproduction studies for the northern bobwhite and the mallard to refine the risk assessment;

- require three acute toxicity studies for the mysid shrimp: one using a formulation, one using the sulfoxide degradate, and one using the suflone degradate.
- restrict the use of fenthion to mosquito control districts in Florida that have developed a plan to identify critical/sensitive bird habitats and endangered species in their counties and have addressed ways to avoid exposure to those areas;
- change the use rate on the label to allow the highest rate only for public health use (i.e., with confirmation of mosquito-vectored diseases);
- require buffer zones to protect aquatic organisms, especially invertebrates;
- require certain label changes to improve applications and lessen risk to non-target organisms.

Next Steps

- Numerous opportunities for public comment were offered as this decision was being developed. The fenthion IRED therefore is issued in final (see www.epa.gov/REDs/ or www.epa.gov/pesticides/op) without a formal public comment period. The docket remains open, however, and any comments submitted in the future will be placed in this public docket.

- The Agency is sponsoring a public stakeholder meeting to gather information and hear concerns and comments about risks and possible risk mitigation for fenthion. This meeting will be held on January 17, 2001, from 9:00 am to 5:00 pm at the Embassy Suites, 8978 International Drive, Orlando, Florida 32819.

- The Agency will revoke all fenthion tolerances because the registrant has agreed to cancel all food uses. When the cumulative risk assessment for all organophosphate pesticides is completed, EPA may need to pursue further risk management for fenthion.