



Questions & Answers

Malathion Preliminary Risk Assessment

On May 11, 2000, EPA released the preliminary risk assessment for the organophosphate pesticide malathion for public comment, in accordance with the organophosphate pilot public participation process. The following questions and answers provide summary information about that risk assessment.

What is malathion and how is it used?

Malathion is an organophosphate insecticide. The main uses of malathion are:

- Cotton boll weevil and citrus medfly eradication programs (59-61%)
- Other agricultural crops (16-20%)
- Public health mosquito control (8-15%)
- Home and garden uses (10%)

It is used on more than 100 food crops. Five crops account for more than 50% of malathion's agricultural use in the U.S.: alfalfa, cotton, rice, sorghum, and wheat. In addition, malathion uses include treatment of stored commodities and empty storage facilities, outdoor homeowner uses (ornamental flowers, shrubs, and trees), golf course uses (ornamental flowers, shrubs, and trees), ornamental nursery stock, slash pine, woody plants, Christmas tree plantations, garbage dumps, outdoor dwellings, intermittently flooded areas, irrigation systems, sewage systems, pastures, and rangelands.

What are the documents EPA is releasing?

This is a preliminary risk assessment. It represents information available to EPA at the time the assessment was prepared. Some of the analyses could be further refined if EPA receives new information that would make them more comprehensive or realistic. EPA cautions against premature conclusions based on these preliminary assessments and against any use of information in the preliminary risk assessments out of their full context.

Is malathion a risk of concern in food or drinking water?

No. Based on our preliminary findings, risks from malathion residues in food and drinking water are within acceptable limits for both short-term (acute) and long-term (chronic) exposures to all groups, including children.

Is malathion a carcinogen?

EPA evaluated malathion for chronic effects such as cancer. The preliminary assessment has determined that there is insufficient evidence to assess the potential for causing cancer in humans, and the suggestive evidence of carcinogenicity in laboratory studies will be reviewed by our external Scientific Advisory Panel. This classification means that studies showed tumors in laboratory animals only at very high dose levels or that the number of tumors was so low that they could have occurred by chance rather than as a result of exposure to malathion. In addition, studies showed that malathion did not act as a mutagen to cause cancer. Also, the degradation product of malathion, malaoxon, is not carcinogenic in rats.

When malathion is used according to label directions, our analyses show very low potential for human exposure and therefore cancer risk from malathion is not of concern.

What about risks from malathion's use to control mosquitoes and eradicate boll weevils?

EPA assessed risks to bystanders from use of malathion in both aerial spraying and ground

application. In all cases the risks to bystanders from possible skin contact, inhalation, or incidental ingestion (such as hand- or object-to-mouth activities by children) were below EPA's level of concern. For more information see Malathion for Mosquito Control, May 2000 (EPA 735-F-00-001)*

Does malathion pose risks that are of concern?

Risks from malathion are lower than for most other organophosphate pesticides. However, based on this preliminary assessment, there is potential concern for exposures associated with certain kinds of equipment and formulations used by homeowners or others on lawns, ornamentals, or small fruit and vegetable gardens. Also, skin contact with residues in some commercial pick-your-own-produce operations results in risks that are of potential concern to EPA.

In addition three of sixteen worker exposure scenarios exceed EPA's level of concern:

- Applying sprays with an airblast sprayer to fruits and nuts
- Mixing/loading liquids for aerial application for mosquito control
- Reentry of agricultural workers into treated areas on the day of application

On what "effects" did EPA base its risk assessment?

EPA bases its risk assessment on the harmful effect that occurs at the lowest dose level in test animals. In this preliminary risk assessment, EPA is concerned about two potential effects: toxicity to maternal animals (reduced weight gain) and cholinesterase inhibition. Cholinesterase regulates nerve signal transmission. Inhibition of cholinesterase causes effects such as muscle weakness and tremors. For more information on EPA's risk assessment process, see Assessing Health Risks From Pesticides, January 1999 (EPA 735-F-99-002)*.

Does malathion pose ecological risks?

Malathion degrades rapidly in the environment, especially in moist soils. Malathion does not pose risks to birds from short-term exposure in food. However, malathion is toxic to beneficial insects,

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 encourages the public to participate in this review of the OP pesticides. Through a six-phase pilot public participation process, developed in consultation with the Tolerance Reassessment Advisory Committee, the Agency is releasing for review and comment its preliminary scientific risk assessments for each OP.

EPA is exchanging information with stakeholders, including 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 when the necessary methodology is available.

For more information on this process, see Public Involvement Opportunities for the Organophosphate Pesticides, April 1999 (EPA 735-F-99-012)*.

and there are risks of concern to aquatic animals.

When will EPA act to reduce risks that are found to be above levels of concern?

EPA will accept public comment on this risk assessment until July 10, 2000. At the end of the comment period, EPA will see whether any new information has been submitted that would result in changes to the risk assessment. Once this review and refinement process is complete, EPA will release the revised risk assessment and open a public

participation period inviting risk management ideas in Fall 2000. Risk management decisions would be made following the close of the comment period. However, throughout this process, if unacceptable risks are identified, EPA will act to reduce or eliminate the risks.

For More Information

- The malathion risk assessment documents and other background information about organophosphate pesticides are available on the Internet at www.epa.gov/pesticides/op/
- Fact sheets referenced in this document (marked with an * following the EPA publication number) can be found on EPA's web site (www.epa.gov/pesticides) or by calling the Office of Pesticide Programs Communication Services Branch at 703-305-5017.
- The National Pesticide Telecommunications Network can answer questions about pesticide toxicity. Contact NPTN at 800-858-7378 or on the Internet at <http://ace.orst.edu/info/nptn>.