

US EPA ARCHIVE DOCUMENT

Acephate Facts

EPA has assessed the risks of acephate and reached an Interim Reregistration Eligibility Decision (IREED) for this organophosphate (OP) pesticide. Provided that risk mitigation measures are adopted, acephate fits into its own “risk cup”-- its individual, aggregate risks are within acceptable levels. Acephate also is eligible for reregistration, pending a full reassessment of the cumulative risk from all OPs.

Acephate residues in food and drinking water do not pose risk concerns, and by reducing exposure in homes and through residential lawns, acephate fits into its own “risk cup.” EPA made this determination after the registrants agreed to drop indoor residential uses and certain turf uses. With other mitigation measures, acephate’s worker and ecological risks also will be below levels of concern for reregistration.

EPA’s next step under the Food Quality Protection Act (FQPA) is to consider risks from cumulative exposure to all the OP pesticides, which share a common mechanism of toxicity. The interim decision on acephate cannot be considered final until the cumulative risk has been considered. 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 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 acephate interim decision was made through the OP pilot public participation process, a process that 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 presented in this interim decision document that concludes the OP pilot process for acephate.

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 after the cumulative risk from all OPs has been considered.

Uses

- Acephate is an organophosphate insecticide currently registered for use on a variety of field, fruit, and vegetable crops (e.g., cotton, tobacco, cranberries, mint); in food handling establishments; on ornamental plants both in greenhouses and outdoors (e.g., nonbearing fruit trees, Christmas trees, and cut flowers); and in and around the home.
- Annual domestic use is approximately 4 to 5 million pounds of active ingredient per year.

Health Effects

- Acephate 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 to acephate from eating food crops treated with acephate are below the level of concern for the entire U.S. population, including infants and children. Drinking water is not a significant source of acephate exposure. However, people in the U.S. may be exposed to amounts of the acephate degradate methamidophos through food and drinking water as a result of acephate use. This exposure will be more fully addressed in the methamidophos IRED.
- EPA found risks are of concern for homeowners and children entering homes and lawn areas treated with acephate (excluding golf courses and spot or mound treatments for ant control).
- For agricultural and turf/Pest Control Operator (PCO) uses of acephate, several mixer/loader/applicator risk scenarios currently exceed the Agency's level of concern. In addition, there are postapplication risks from the use of acephate in cut flowers.
- Ecological risks are also of concern to the Agency. Acephate and its degradate methamidophos are highly toxic to honey bees and beneficial predatory insects on an acute contact basis. Acute and chronic risks to birds and chronic risk to mammals are also high.

Risk Mitigation

Dietary Risk

No mitigation is necessary at this time for any dietary exposure to acephate. The acute and chronic dietary risks from acephate do not exceed the Agency's level of concern.

However, the Agency reserves the right to require further acephate mitigation to address risks from methamidophos residues resulting from acephate uses. Any additional mitigation measures will be addressed when the methamidophos interim RED is completed.

Occupational Risk

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

- Formulate all soluble powder formulations into water soluble bags, except for soluble powders sold for fire ant, harvester ant, or hopper box seed treatment uses.
- Limit the 1 pound active ingredient per acre (lb ai/A) cotton aerial application rate to cotton grown in California and Arizona; reduce the maximum aerial application rate for cotton to 0.75 ai/A for all other areas of the United States.
- Delete aerial application to turf.
- Require enclosed cockpits and mechanical flagging for all aerial applications.
- Reduce maximum sod farm and golf course turf application rates (non-granular formulations) to 3 lb ai/A and 4 lb ai/A, respectively.
- Reduce maximum application rates for greenhouse floral and foliage plant crops, and outdoor floral and ground covers to 1 lb ai per 100 gallons water (not to exceed 0.75 lb ai/A for cut flowers and 1.0 lb ai/A for other ornamentals).
- Delete the application of acephate by low pressure handwand to treat trees, shrubs, and outdoor flora; for the control of wasps; and for perimeter treatment by PCOs.
- Delete the use of granular formulations to be applied by belly grinder, shaker can, or by hand to trees, shrubs, and 12" pots.
- Add personal protective equipment to end use product labels for workers who mix and load, and/or apply acephate.

Residential Risk

In order to mitigate residential postapplication risk, the following risk mitigation measures are necessary:

- Delete residential indoor uses.
- Delete all turfgrass uses (except golf course, sod farm, and spot or mound treatment for ant control).
- Establish a 3 day pre-harvest interval (PHI) for the harvesting of sod.

Ecological Risk

The Agency has determined that the following mitigation measures are needed to address ecological risk concerns:

- Establish minimum spray intervals for all agricultural crops of 3 days for application rates up to 0.5 lb ai/A and of 7 days for application rates greater than 0.5 lb ai/A.
- Require labeling to protect honeybees.
- Require labeling to reduce the potential for spray drift.

In addition, the measures to reduce occupational and residential risk will also reduce environmental loading and the potential impact to non-target organisms.

Next Steps

- Numerous opportunities for public comment were offered as this decision was being developed. The acephate IRED therefore is issued in final (see www.epa.gov/pesticides/reregistration/status.htm 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.
- In addition, further mitigation of acephate uses may be necessary to reduce risks from methamidophos residues that result from acephate applications. Once the methamidophos IRED is complete, the Agency will determine whether the methamidophos exposure resulting from acephate use poses risk concerns. Any potential further mitigation will be discussed at the time the methamidophos interim RED is released.
- When the cumulative risk assessment for all organophosphate pesticides is completed, EPA will issue its final tolerance reassessment decision for acephate and may request further risk mitigation measures. The Agency will revoke 3 tolerances and lower 4 tolerances for acephate now. Reassessment of 14 tolerances will be made once additional residue data on cotton gin byproducts have been reviewed. For all OPs, raising and/or establishing tolerances will be considered once a cumulative assessment is completed.