

Methamidophos Facts

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EPA has assessed the risks of methamidophos and reached an Interim Reregistration Eligibility Decision (IRED) for this organophosphate (OP) pesticide. Although current uses may pose unreasonable adverse effects to human health and the environment, these effects can be mitigated by the measures identified in the Methamidophos IRED. Provided that these risk mitigation measures are adopted, methamidophos' individual, aggregate risks will be within acceptable levels, and the pesticide will be eligible for reregistration once EPA has considered the cumulative risks of the OPs.

Used to control insects on potatoes, cotton, and tomatoes, methamidophos residues in food do not pose risk concerns. Screening level modeling estimates indicate that drinking water from surface water sources may pose risk concerns. However, actual drinking water exposures and risks are likely to be lower than predicted by these estimates. EPA will require confirmatory surface water monitoring data to confirm its current interim conclusion that drinking water risks are not of concern and do not require mitigation. Methamidophos has no residential uses, so children and others should not be significantly exposed to this pesticide around the home. EPA assumes that methamidophos will fit into its own "risk cup;" it will not pose significant dietary or aggregate risk concerns. Methamidophos poses risks of concern to workers who mix, load, and apply the pesticide to agricultural sites, and to workers who re-enter treated agricultural areas. Birds, mammals, and freshwater invertebrates also encounter risks of concern. With mitigation measures, these worker and ecological risks will be below levels of concern for reregistration.

EPA's next step under the Food Quality Protection Act (FQPA) is to consider the cumulative effects of the OP pesticides, which share a common mechanism of toxicity. The interim decision on methamidophos will not be final until OP cumulative risks have been considered. The OP cumulative assessment may result in further risk mitigation measures for methamidophos.

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 FQPA.

The methamidophos interim decision was made through the OP pilot public participation process, which has increased transparency and maximized 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.

Uses

- An insecticide/acaricide, methamidophos is used to control a broad spectrum of insects in cotton, potato, and tomato crops (the latter for special local needs only). Methamidophos also is registered for use in California on alfalfa grown for seed, a nonfood use. It is used on peppers, strawberries, and squash grown in other countries and imported into the U.S. (import tolerances are established or pending for these uses). Methamidophos has no residential uses.
- Approximately 640,000 pounds of the active ingredient methamidophos are used annually. Use is highest on potatoes (87% of the total pounds applied), followed by tomatoes (8%) and cotton (5%).
- Methamidophos is classified as a Restricted Use Pesticide.

Health Effects

- Methamidophos 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.
- Methamidophos also is one of the most acutely toxic organophosphate pesticides.

Risks

- Methamidophos is a metabolite of the OP pesticide acephate. EPA's food risk assessments, and to some extent the drinking water assessment, encompass the risk from applications of methamidophos only and from "all sources," which includes applications of acephate.
- EPA's human health risk assessment for methamidophos indicates some risk concerns. Dietary risk from food sources alone is not of concern. Screening level modeling estimates indicate that acute and chronic dietary risks from surface water sources of drinking water are above the Agency's level of concern for all segments of the population. Due to uncertainties and limitations of model predictions, however, actual drinking water exposures and risks from methamidophos are likely to be lower than estimated.
- Residential risks are not of concern because methamidophos is not registered for use in residential settings. Methamidophos is a metabolite of acephate, which had numerous residential, recreational, and institutional uses that were evaluated and mitigated through the Acephate IRED. Post-mitigation risks for these uses, associated with the degradation of acephate to methamidophos, were evaluated in the Acephate IRED and found to be negligible.
- Occupational exposure to methamidophos is of concern to the Agency. EPA has risk concerns for workers who mix, load, and/or apply methamidophos to agricultural sites, and for workers who re-enter treated agricultural areas.
- EPA also has identified acute and chronic risks to birds and mammals, and some risk to freshwater invertebrates, that are of concern.

Risk Mitigation

The following mitigation measures are required for methamidophos to address drinking water, worker, and ecological risks of concern.

- To mitigate dietary risks:
 - Because actual drinking water exposures are likely lower than predicted by modeling estimates, EPA has made an interim determination that no additional mitigation is necessary at this time. The Agency will require confirmatory surface water monitoring data for methamidophos to refine the drinking water modeling values based on actual concentrations in drinking water sources, to confirm this interim conclusion.

- To mitigate residential risks:
 - Methamidophos has no residential uses, so risk mitigation is not necessary.
- To mitigate occupational risks to agricultural handlers:
 - The cotton use must be cancelled. This use will be phased out over 5 years to allow ample time for transition to alternatives.
 - Applicators must be in an enclosed cab tractor or enclosed cockpit.
 - Flaggers must be in enclosed vehicles, mechanical flaggers must be used, or global positioning system (GPS) equipment that negates the need for flaggers for aerial application must be used.
- To mitigate occupational risks to post-application agricultural workers:
 - For tomatoes, increase Restricted Entry Intervals (REIs) for all activities to 4 days in all states except California, where the REI will remain at 3 days per the current labels.
 - For potatoes, increase REIs for all activities to 4 days.
- To mitigate ecological risks to terrestrial birds and mammals, and to freshwater and estuarine invertebrates:
 - Phase out and cancel the cotton use, and implement the other occupational risk mitigation measures listed above.
 - For cotton during the phase-out period, reduce the maximum number of applications to 2 per season.
 - For tomatoes, reduce the maximum number of applications to 4 per season.

Next Steps

- Numerous opportunities for public comment were offered as this decision was being developed. The Methamidophos IRED therefore is issued in final, without a formal public comment period. (Please see <http://www.epa.gov/pesticides/reregistration/status.htm>). The docket remains open, however, and any comments submitted in the future will be placed in this public docket.
- Once EPA has considered the cumulative risks of the OP pesticides, the Agency will issue its final tolerance reassessment decision for methamidophos and may need to pursue further risk management measures. The Agency will revoke seven methamidophos tolerances now because no corresponding uses are registered at present; will modify three tolerances; and will correct several other commodity definitions. For all OPs, tolerances will not be raised or established until cumulative risks have been considered.