

# EPA Terbufos Facts

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

Used on corn, sorghum, and sugar beets, terbufos residues in food and drinking water do not pose risk concerns with the implementation of certain risk mitigation measures. Terbufos has no residential uses. With other risk reduction measures, terbufos's worker and ecological risks also will be substantially reduced.

EPA's next step under the Food Quality Protection Act (FQPA) is to consider the cumulative risks of the OP pesticides, which share a common mechanism of toxicity. The interim decision on terbufos cannot be considered final until this consideration of OP risks is complete. 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 FFDCA safety standard, effected by the FQPA of 1996.

The terbufos 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 presented in this interim decision document, which concludes the OP pilot process for terbufos.

## 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](http://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 considering the cumulative risks of the OPs.

## Uses

- An insecticide, terbufos is used to control insects in corn, sorghum, and sugar beets. The major use is on corn to control soil insects such as; corn rootworm, wireworm, white grubs, seedcorn maggots, billbugs, and nematodes.
- According to Agency figures, annual domestic use is approximately 7.5 million pounds of active ingredient per year. Roughly 87% is used on corn.

## Health Effects

- Terbufos 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 terbufos are below the level of concern for the entire U.S. population, including infants and children. Drinking water, however, is a significant source of exposure.
- EPA also has risk concerns for workers who load, and/or apply terbufos. For the Counter 15G formulation, there are risk concerns for both scenarios on each crop, whereas, the Counter 20CR formulation in open bags only presents risk concerns for the loading scenario. There are no risk concerns for 20CR in lock-n-load containers.
- Terbufos presents high acute risks to non-target terrestrial wildlife species. Terbufos is the leading cause of fish kill incidents reported to EPA for any pesticide applied to corn, and ranks fourth in fish kill incidents reported to EPA for any pesticide applied to any crop. From 1976 to present, 96 fish kill incidents involving terbufos were reported to the Agency.

## Benefits

The benefits of terbufos on corn were estimated using a comparative product performance assessment. This assessment aimed at quantifying, to the extent possible, the benefits derived from the use of terbufos on corn primarily for control of corn rootworm.

- The benefits assessment concluded that under most conditions the alternative insecticides produced similar or greater yields than fields where terbufos was used.
- Terbufos did show an advantage over the alternative insecticides in controlling billbugs in North Carolina, corn rootworm in the Northeast, and some secondary corn pests.

## Risk Mitigation

In order to support a reregistration eligibility decision for terbufos, the following risk mitigation measures are necessary:

- To mitigate risks to agricultural workers:
  - Require the use of a closed loading system for the North Carolina Special Local Needs registration of Counter 20CR.
  - Require that the Counter 15G label be amended to indicate that applications must be made using enclosed cab tractors.
  - Reduce the application rate on sorghum from 1.96 lbs. active ingredient (a.i.) per acre to 1.7 lbs. a.i. per acre.
- To mitigate drinking water and ecological risks:
  - Require a 55% reduction in sales of terbufos by 2008, based on 2000 sales figures.
  - Require a 500 ft. vegetative buffer between treated area and surface water on neighboring land
  - Require a 500 ft. vegetative buffer between a standpipe drain outlet and surface water on neighboring land.
  - Require a 66 ft. setback between the treated area and entry points to surface water bodies on non-highly erodible soils.
  - Require a 300 foot setback between the treated area and entry points to surface water bodies on highly erodible soils.
  - Require a 66 ft. setback between treated area and standpipes on terraced fields as well as 66 ft. vegetative buffer between the tile outlet and surface water bodies
  - Restrict loading, rinsing, and washing equipment within 300 ft. from surface water bodies or within 50 ft. from wells unless conducted on an impervious surface.
  - Remove the "over the top" application on corn for European corn borer control.
  - Require placing granules for banded applications on corn in a 7 inch band over the row, in front of the press wheel, and incorporated into the top 1 inch of soil.

- To prevent the flow of rainfall down planted rows, the label text will be required to read "To prevent channeling of surface water run-off, adjust the planter row-cleaners appropriately to prevent rows lower in height than adjacent soil".

#### Next Steps

- For this IRED there will be a 60 day comment period before the document is finalized (see [www.epa.gov/pesticides/reregistration/status.htm](http://www.epa.gov/pesticides/reregistration/status.htm), or [www.epa.gov/pesticides/op](http://www.epa.gov/pesticides/op) ). In addition, the docket remains open and any comments submitted in the future will be placed in this public docket.
- When EPA has considered the cumulative risks of the OP pesticides, the Agency will issue its final tolerance reassessment decision for terbufos and may request further risk mitigation measures. The Agency will revoke 1 tolerance for terbufos, now. For all OPs, EPA will consider raising and/or establishing tolerances once the cumulative risks of the OPs have been considered.