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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

August 16, 1994

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Transmittal of EFED Recommendations and Mitigation Measures for Fenamiphos List A (Chemical # 100601) Case # 0333

FROM: Janice King Jensen
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Environmental Fate and Effects Division

THRU: Evert K. Byington, Chief
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TO: Esther Saito, Chief
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Background

Use Profile

Fenamiphos is a broad spectrum insecticide/nematicide registered for use on the following sites: apples, asparagus, bananas (plantains), beets, bok choy, brussels sprouts, cabbage, cherries, citrus fruits, cotton, eggplant, garlic, grapes, kiwi fruits, nectarines, okra, peaches, peanuts, non-bell peppers, pineapples, raspberries, strawberries, tobacco and tree nuts. Other uses also include application to ornamental or shade trees, ornamental herbaceous plants, ornamental woody shrubs and vines, ornamental nonflowering plants, ornamental lawns and turf, commercial and industrial lawns, and golf course turf. Per SRRD communication, dated July 27, 1994, all uses except tree nuts are being supported for reregistration.

cc:

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List A File	List A Cover Memo File	Peter Caulkins

Fenamiphos is formulated as either a granulated (G) or emulsifiable concentrate (EC) product. All end-use formulations should be classified as restricted use because of high acute toxicity of the product. However one end-use product, Nemacur 15 G, was not designated as RUP in the Reference On-Line Database (REFS). The chemical is applied to the soil by broadcast spray, soil injection, chemigation, ground spray, soil band treatment, or soil in-furrow treatment.

Levels of Concern Exceedances

Ground-water quality. EFED is concerned about the potential degradation of ground-water quality that occurs in fenamiphos use areas. Fenamiphos is registered for use on a variety of terrestrial food and nonfood crops. Fenamiphos and/or its degradates will probably be detected in ground water in areas where these crops are grown on vulnerable soils. This has already been demonstrated in Florida where fenamiphos was applied to a citrus grove on vulnerable soils and high levels of the pesticide and two of its degradates were detected.

Fenamiphos residues were detected in ground water in Florida at levels which greatly exceeded the 2 parts per billion (ppb) lifetime Health Advisory (HA). The concentration in ground water for the parent alone ranged up to 22.5 ppb or approximately 1100 percent of the HA. Health advisory levels have not been established for either of the primary degradates fenamiphos sulfoxide and fenamiphos sulfone. Total residues (parent and degradates) from the Florida study exceeded the concentration of the parent by over 10 times.

Surface-water quality. Fenamiphos has potential concerns for drinking water derived from surface water sources because of its relatively low soil-water partition coefficient, its resistance to hydrolysis, and relatively low lifetime health advisory of 2 micrograms per liter (ug/L) which may become its maximum contaminant level (MCL). It also has relatively low acute 1 to 10 day health advisories of 9 ug/L. Although fenamiphos is normally incorporated, it remains a potential threat to surface water due to frequently high application rates, and laid tile drainage in use areas where fenamiphos is applied.

Ecological risks. Fenamiphos, both as a granular and/or emulsifiable concentrate formulation, exceeds both the acute high risk and chronic level of concern for terrestrial, fresh water, and marine/estuarine organisms.

Risk Reduction Measures

Ground Water

Conduct prospective ground-water monitoring study in 1994. Because fenamiphos exceeds certain Levels of Concern for ground water, EFED recommended a ground-water advisory on the fenamiphos label in 1992. In addition, EFED requested that a prospective ground-water monitoring study be conducted for fenamiphos. This study is scheduled to begin sometime in 1994.

Conduct additional prospective ground-water studies. In light of the acetochlor decision, EFED recommended that several additional prospective ground-water monitoring studies be conducted for fenamiphos in difference use areas. EFED requested a meeting with representatives from Miles, Inc. to discuss fenamiphos use areas in the United States. The locations for the prospective studies requested above will depend on this information.

Monitor for ground-water concerns. Fenamiphos meets the persistence and mobility triggers for classification as a restricted use chemical for ground-water concerns. At the present time, insufficient monitoring information is available to determine whether fenamiphos would be classified as a restricted use chemical for ground-water concerns. Additional monitoring may be required for this chemical to determine whether all the restricted use criteria are met.

EFED recommends that the registrant attempt to make every effort to stop the contamination of ground water by fenamiphos residues. If contamination of ground water continues to occur from use in accordance with label directions or in accordance with commonly recognized practices, the registrant should consider voluntary cancellation of this chemical in the United States.

Surface Water

Monitor for surface water concerns. Because of potential concerns for drinking water derived from surface water sources, EFED recommends that reregistration of fenamiphos be contingent upon the registrants agreeing to fund at least a limited monitoring program for fenamiphos and its sulfoxide and sulfone degradates in surface water source supply systems which drain into watersheds which typically receive high fenamiphos applications. The numbers and locations of the systems for which monitoring would be funded can be negotiated as well as the duration of the monitoring programs.

Reduce turf application rate and enhance soil incorporation for cotton. In response to EPA's Avian Granular Initiative, Miles, Inc. proposed the following risk reduction measures which the EFED reviewed and drew the following conclusions:

1. The Nemacur 10% Turf label was amended to reduce the application rate from 20 to 10 lbs. a.i./A. Application reductions for other crops were considered but could not be supported because of a lack of efficacy data.

2. Enhancing soil incorporation was deemed feasible for only cotton. The label amendment now requires that fenamiphos on cotton be in-furrow application only.

3. Eliminating products with a high percentage of active ingredient is not possible for fenamiphos since only formulations with a relatively high percentage of a.i. are economically feasible.

4. Because nearly all use sites permit only one application/year this option is generally not feasible. Where more than one application is permitted;

reducing the number of applications to one would severely reduce efficacy.

5. Miles did not provide any new "innovative" risk reduction measures.

EFED agrees that #1 and #2 should result in less risk to terrestrial and aquatic organisms. However, EFED has no way to quantify the amount of risk reduction which may result from the implementation of these measures.

Reduce hazard to nontarget organisms. EFED believes the following measures may reduce hazard to nontargets: reduce application rates; reduce application frequency; use alternatives to fenamiphos from treatment to treatment or from season to season; and establish vegetative buffer zones around nearby aquatic environments.

Lastly, EFED is very confident that even when the above mitigation measures are implemented, the terrestrial and aquatic LOCs will continue to be exceeded.

Value of the Additional Information

Environmental Fate. At this time, three data requirements in the environmental fate guidelines are not fulfilled for fenamiphos: the unaged portion of the leaching/adsorption/ desorption (163-1), terrestrial field dissipation (164-1), and prospective ground water monitoring (166-1). Field dissipation studies using the granular formulations (Nemacur 15 percent G) are necessary to determine the formation and decline of degradates and the half-life, the dissipation routes, and the potential for leaching under actual use conditions. Prospective ground water monitoring studies are needed to establish the extent of fenamiphos leaching into ground water and to identify appropriate follow-up regulatory actions.

Ecological Effects. No additional data are being required at this time.

Labeling Requirements for Manufacturing-Use Products

The following label statement is required on all manufacturing-use products:

Front top panel of the label:

RESTRICTED USE PESTICIDE DUE TO HIGH ACUTE TOXICITY

Within Environmental Hazards section of the Precautionary Statements of the label:

This pesticide is extremely toxic to birds, mammals, fish, and aquatic invertebrates. Birds feeding in the treated areas may be killed. This pesticide is highly toxic to bees. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or public water unless this product is

specifically identified and addressed in an NPDES permit. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

Labeling Requirements for Granular End-Use Products

Environmental hazard for granular end-use products requires the following labeling statement:

Front top panel of label:

RESTRICTED USE PESTICIDE DUE TO HIGH ACUTE TOXICITY

For retail sale and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

Within Environmental Hazards section of the Precautionary Statements:

This pesticide is extremely toxic to birds, mammals, fish and aquatic invertebrates. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Runoff may be hazardous to aquatic organisms in neighboring areas. This chemical is known to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water contamination.

Within the Storage and Disposal Section of the label:

Do not contaminate water when disposing of equipment washwater or rinsate.

Labeling Requirements for Nongranular End-Use Products

Environmental hazard for nongranular end-use products requires the following labeling statement:

Front top panel of label:

RESTRICTED USE PESTICIDE DUE TO HIGH ACUTE TOXICITY

Within Environmental Hazards section of the Precautionary Statements:

This pesticide is extremely toxic to birds, mammals, fish and aquatic invertebrates. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Runoff may be hazardous to aquatic organisms in neighboring areas. This chemical is known to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water contamination.

For retail sale and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

Within the Storage and Disposal Section of the label:

Do not contaminate water when disposing of equipment washwater or rinsate.

Labeling for Endangered Species

No use limitations to protect endangered plant species will be suggested until the OPP Endangered Species Protection Program is complete.
