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

JAN 26 1994

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

MEMORANDUM

**SUBJECT:** Product and Residue Chemistry Chapters for the Fenamiphos RED; Chemical No. 100601; Branch No. 11213; DP Barcode No. D187029

**FROM:** Christine L. Olinger, Chemist  
Reregistration Section I  
Chemistry Branch II - Reregistration Support  
Health Effects Division (7509C)  
*Christine L. Olinger*

**THRU:** Paula A. Deschamp, Section Head  
Reregistration Section I  
Chemistry Branch II - Reregistration Support  
Health Effects Division (7509C)  
*Paula A. Deschamp*

**TO:** Lois Rossi, Chief  
Reregistration Branch  
Special Review and Reregistration Division (7508W)

and

Flora Chow/Jane Smith  
Chemical Coordination Branch  
Health Effects Division (7509C)

Attached are the Product and Residue Chemistry Chapters to the Fenamiphos RED. The chapters were prepared by Dynamac Corporation under supervision of CBRS, HED. The data assessment has undergone secondary review in the branch and has been revised to reflect branch policies.

The database for fenamiphos is substantially complete. Additional storage stability data are required for plant and livestock commodities as well as a poultry feeding study. Sufficient data are available to do a tolerance reassessment with the exception of poultry commodities, for which tolerances have not been established, but will be required. Anticipated residues have been calculated for all commodities (C. Olinger, 12/20/93, D185627) and should be used when calculating the dietary risk assessment associated with the RED.



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Although the database for fenamiphos is substantially complete, there are uncertainties associated with the exposure/risk assessment as outlined below.

- Submission of the poultry feeding study could result in a higher or lower risk assessment. Residues in poultry commodities were estimated from the total radioactive residue values found in the poultry metabolism study.
- It is very unlikely that the outstanding storage stability data will significantly alter the exposure/risk assessment.
- The anticipated residue values are the best estimates CBRS can provide using the residue data available at the time of the RED. These values have an inherent uncertainty associated with variations in analytical methods, geographical representation of field trials, seasonal variation of residue levels, etc.

If you have any other questions, please advise.

cc: CLOlinger (CBRS), Circulate, Reg Std File, RF, SF, Dynamac  
7509C:CBRS:CLOlinger:clo:CM#2:Rm 816G:305-5406: 1/25/94

RDI: PADeschamp: 1/15/94      MMetzger: 1/24/94      EZager: 1/24/94

**DYNAMAC**  
**CORPORATION**

*Environmental Services*

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Final Report

**FENAMIPHOS**  
**Shaughnessy No. 100601**  
**(DP Barcode D187029;**  
**CBRS No. 11213; Case 0333)**

**TASK 2A**  
**Reregistration Eligibility Document:**  
**Product Chemistry Considerations**

August 25, 1993

Contract No. 68-D2-0053

**Submitted to:**

U.S. Environmental Protection Agency  
Arlington, VA 22202

**Submitted by:**

Dynamac Corporation  
The Dynamac Building  
2275 Research Boulevard  
Rockville, MD 20850-3268

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# FENAMIPHOS

## REREGISTRATION ELIGIBILITY DOCUMENT:

### PRODUCT CHEMISTRY CONSIDERATIONS

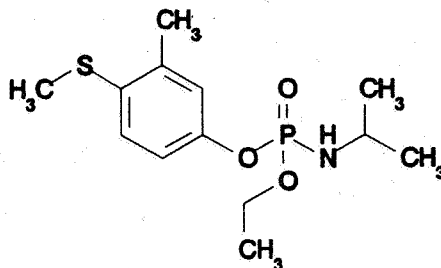
Shaughnessy No. 100601; Case No. 0333

(CBRS No. 11213; DP Barcode D187029)

### TASK 2A

#### DESCRIPTION OF CHEMICAL

Fenamiphos (O-ethyl-O-(3-methyl-4-methyl-thiophenyl)-isopropylphosphoramidate) is a systemic nematocide/insecticide used for the control of nematodes and thrips on terrestrial food crops and non-food sites.



Empirical Formula:	C <sub>13</sub> H <sub>22</sub> NO <sub>3</sub> PS
Molecular Weight:	303.4
CAS Registry No.:	22224-92-6
Shaughnessy No.:	100601

#### IDENTIFICATION OF ACTIVE INGREDIENT

Technical fenamiphos is an off-white to tan waxy solid with a melting point of 49 C and a vapor pressure of  $4.7 \times 10^{-5}$  mm Hg at 20 C. Fenamiphos is soluble in dichloromethane, 2-propanol, and toluene, only slightly soluble in n-hexane, and insoluble in water.

#### MANUFACTURING-USE PRODUCTS

A search of the Reference Files System (REFS) conducted 5/26/93 identified two fenamiphos manufacturing-use products (MPs), an 85% technical (T; EPA Reg. No. 3125-269) and a 72.3% formulation intermediate (FI; EPA Reg. No. 3125-333), both registered to Miles, Inc. (formerly Mobay Corp.). We note that although REFS lists the label claim as 85% for the Miles technical (EPA Reg. No. 3125-269), the Reregistration Standard refers to the product as a 90% T, and the Reregistration Standard Update refers to the product by the reported nominal concentration (92.5%). The technical product will be referenced throughout this RED by the label claim listed in REFS (85% T). Only the two Miles MPs are subject to a reregistration eligibility decision.

## REGULATORY BACKGROUND

The Fenamiphos Guidance Document dated 6/87 required all updated generic and product-specific product chemistry data for the Miles fenamiphos MPs. In response, Miles submitted a new database for the product chemistry topics. These data were reviewed in the Fenamiphos Reregistration Standard Update, dated 2/12/92, and additional data were then required under Guideline Reference Nos. 61-2, 61-3, 62-1, 62-2, and 62-3 for the 85% T, and under Guideline Reference Nos. 61-1, 62-1, 62-3, and 63-17 for the 72.3% FI.

The current status of the product chemistry data requirements for the Miles fenamiphos products is presented in the attached data summary tables. Please refer to these tables for listings of the outstanding product chemistry data requirements. Data pertaining to the nitrosamine content of some fenamiphos products is outstanding, but is not expected to be of dietary concern since nitrosamines have not been detected in previously submitted studies for some products.

## CONCLUSIONS

Provided that the registrant submits the data required in the attached data summary tables for the 85% T (EPA Reg. No. 3125-269) and 72.3% FI (EPA Reg. No. 3125-33), and either certifies that the suppliers of starting materials and the manufacturing process for the fenamiphos products have not changed since the last comprehensive product chemistry review or submits a complete updated product chemistry data package, CBRS has no objections to the reregistration of fenamiphos with respect to product chemistry data requirements.

## PRODUCT CHEMISTRY CITATIONS

Bibliographic citations include only MRIDs containing data which fulfill data requirements.

### References (cited):

40499801 Talbott, T. (1987) Product Chemistry of Nemaicur Technical: ANR-00187: ANR-00287. Unpublished compilation prepared by Mobay Corp., 34 pp.

40499802 Talbott, T. (1988) Product Chemistry of Nemaicur Technical: Mobay Reports 41338: 88717. Unpublished compilation prepared by Mobay Corp., 80 pp.

40499803 Talbott, T. (1988) Product Chemistry of Nemaicur Concentrate: AD No. 605210: AD No. 301421. Unpublished compilation prepared by Mobay Corp., 22 pp.

40499804 Talbott, T. (1988) Product Chemistry of Nemaicur Concentrate: 69295: 89046. Unpublished compilation prepared by Mobay Corp., 21 pp.

40774801 Talbott, T. (1988) Product Chemistry of Nemaicur Technical: BR 1619. Unpublished study prepared by Mobay Corp., 187 pp.

40774811 Talbott, T. (1988) Product Chemistry of Nemaicur Concentrate: BR 1620. Unpublished study prepared by Mobay Corp., 193 pp.

Case No. 0333  
Chemical No. 100601

Case Name: Fenamiphos  
Registrant: Miles, Inc.  
Product(s): 85% T (EPA Reg. No. 3125-269)

**PRODUCT CHEMISTRY DATA SUMMARY**

Guideline Number	Requirement	Are Data Requirements Fulfilled? <sup>a</sup>	MRID Number <sup>b</sup>
61-1	Product Identity and Disclosure of Ingredients	Y <sup>c</sup>	40499801
61-2	Starting Materials and Manufacturing Process	N <sup>d</sup>	40499801
61-3	Discussion of Formation of Impurities	N <sup>e</sup>	40499801
62-1	Preliminary Analysis	N <sup>f</sup>	40774801
62-2	Certification of Ingredient Limits	N <sup>g</sup>	40499801 40774801
62-3	Analytical Methods to Verify the Certified Limits	N <sup>h</sup>	40774801
63-2	Color	Y	40499802
63-3	Physical State	Y	40499802
63-4	Odor	Y	40499802
63-5	Melting Point	Y	40499802
63-6	Boiling Point	N/A <sup>i</sup>	
63-7	Density, Bulk Density or Specific Gravity	Y	40499802
63-8	Solubility	Y	40499802
63-9	Vapor Pressure	Y	40499802
63-10	Dissociation Constant	Y	40499802
63-11	Octanol/Water Partition Coefficient	Y	40499802
63-12	pH	Y	40499802
63-13	Stability	Y	40499802
63-14	Oxidizing/Reducing Action	Y	40499802
63-15	Flammability	N/A <sup>i</sup>	
63-16	Explosibility	Y	40499802
63-17	Storage Stability	Y	40499802
63-18	Viscosity	N/A <sup>i</sup>	
63-19	Miscibility	N/A <sup>i</sup>	
63-20	Corrosion Characteristics	Y	40499802

<sup>a</sup> Y = Yes; N = No; N/A = Not Applicable. The Fenamiphos Guidance Document dated 6/87 required all updated generic and product-specific product chemistry data for the technical product.

<sup>b</sup> References were reviewed in the Fenamiphos Reregistration Standard Update dated 2/12/92 unless otherwise noted.

<sup>c</sup> We note that the label claim (85%) does not reflect the nominal concentration of the active ingredient (92.5%) as per PR Notice 91-2 dated 5/2/91.

<sup>d</sup> These data do not fully satisfy the requirements of 40 CFR §158.160 and 162 (Guideline Reference No. 61-2) regarding the starting materials and manufacturing process because the relative amounts of the starting materials used in the manufacturing process are required.



• These data do not fully satisfy the requirements of 40 CFR §158.167 (Guideline Reference No. 61-3) regarding discussion of the formation of impurities because a discussion of the possible formation of impurities from post-production contamination must be submitted.

† These data do not fully satisfy the requirements of 40 CFR §158.170 (Guideline Reference No. 62-1) regarding preliminary analysis because a new preliminary analysis of five representative batches of the TGA1 for all components listed on the CSF is required. In addition, analysis for polar and nonpolar nitrosamines in the technical product following 0, 3, and 6 months storage under warehouse conditions is required.

• These data do not fully satisfy the requirements of 40 CFR §158.175 (Guideline Reference No. 62-2) regarding certified limits because the preliminary analysis does not support the proposed certified limits for the active ingredient (concentrations below the lower certified limit were found in the preliminary analysis) and three other components listed on the CSF.

• These data do not fully satisfy the requirements of 40 CFR §158.180 (Guideline Reference No. 62-3) regarding enforcement analytical methods because validation data are required for each component for which the method is used.

† Data are not required because the technical product is a solid.



Case No. 0333  
Chemical No. 100601

Case Name: Fenamiphos  
Registrant: Miles, Inc.  
Product(s): 72.3% FI (EPA Reg. No. 3125-333)

**PRODUCT CHEMISTRY DATA SUMMARY**

Guideline Number	Requirement	Are Data Requirements Fulfilled? <sup>a</sup>	MRID Number <sup>b</sup>
61-1	Product Identity and Disclosure of Ingredients	N <sup>c</sup>	40499803
61-2	Starting Materials and Manufacturing Process	Y	40499803
61-3	Discussion of Formation of Impurities	Y	40499803
62-1	Preliminary Analysis	N/A <sup>d</sup>	
62-2	Certification of Ingredient Limits	Y	40499803 40774811
62-3	Analytical Methods to Verify the Certified Limits	N <sup>e</sup>	40774801
63-2	Color	Y	40499804
63-3	Physical State	Y	40499804
63-4	Odor	Y	40499804
63-5	Melting Point	N/A <sup>d</sup>	
63-6	Boiling Point	N/A <sup>d</sup>	
63-7	Density, Bulk Density or Specific Gravity	Y	40499804
63-8	Solubility	N/A <sup>d</sup>	
63-9	Vapor Pressure	N/A <sup>d</sup>	
63-10	Dissociation Constant	N/A <sup>d</sup>	
63-11	Octanol/Water Partition Coefficient	N/A <sup>d</sup>	
63-12	pH	Y	40499804
63-13	Stability	N/A <sup>d</sup>	
63-14	Oxidizing/Reducing Action	Y	40499804
63-15	Flammability	Y	40499804
63-16	Explosibility	Y	40499804
63-17	Storage Stability	Y <sup>f</sup>	40499804
63-18	Viscosity	Y	40499804
63-19	Miscibility	Y	40499804
63-20	Corrosion Characteristics	Y	40499802 40499804

<sup>a</sup> Y = Yes; N = No; N/A = Not Applicable. The Fenamiphos Guidance Document dated 6/87 required all updated generic and product-specific product chemistry data for the manufacturing-use product.

<sup>b</sup> References were reviewed in the Fenamiphos Reregistration Standard Update dated 2/12/92 unless otherwise noted.

<sup>c</sup> These data do not fully satisfy the requirements of 40 CFR §158.155 (Guideline Reference No. 61-1) regarding the product identity for this product because the nominal concentration of the active ingredient must be based upon the nominal concentration of the active ingredient in the technical source product. In addition, the label claim (72.3%) does not reflect the nominal concentration of the active ingredient as per PR Notice 91-2 dated 5/2/91.

<sup>d</sup> The TGA1 data requirements will be satisfied by the technical source product (85% T; EPA Reg. No. 3125-269).

\* These data do not fully satisfy the requirements of 40 CFR §158.180 (Guideline Reference No. 62-3) regarding enforcement analytical methods because validation data are required for each component for which the method is used.

<sup>f</sup> The Fenamiphos Reregistration Standard Update (2/12/92) required additional data to satisfy this requirement. Subsequently the Agency has decided these data can be satisfied by data submitted for other products and is no longer required.

Final Report

**FENAMIPHOS**  
**Shaughnessy No. 100601**  
**(DP Barcode D187029;**  
**CBRS No. 11213; Case 0333)**

**TASK 2B**  
**Reregistration Eligibility Document:**  
**Residue Chemistry Considerations**

August 25, 1993

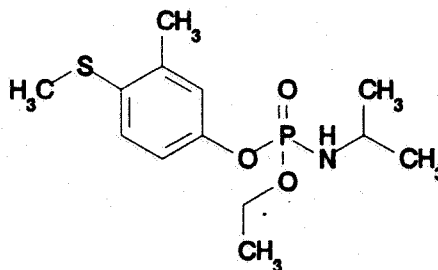
Contract No. 68-D2-0053

**Submitted to:**  
U.S. Environmental Protection Agency  
Arlington, VA 22202

**Submitted by:**  
Dynamac Corporation  
The Dynamac Building  
2275 Research Boulevard  
Rockville, MD 20850-3268

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## FENAMIPHOS



### REREGISTRATION ELIGIBILITY DOCUMENT

### RESIDUE CHEMISTRY CONSIDERATIONS

Shaughnessy No. 100601; Case 0333

(CBRS No. 11213; DP Barcode D187029)

### TASK 2B

#### INTRODUCTION

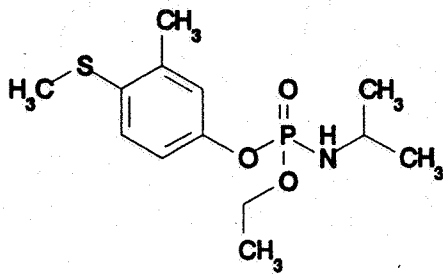
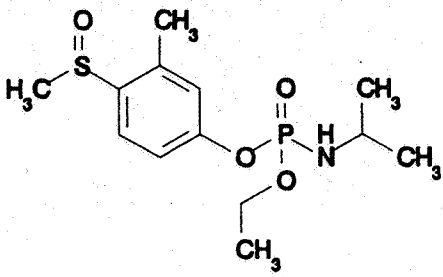
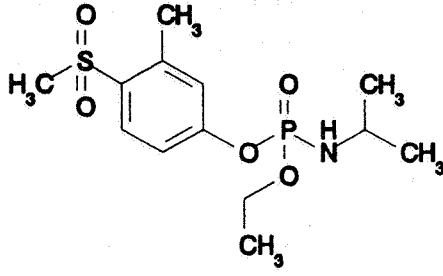
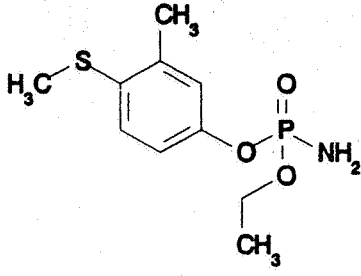
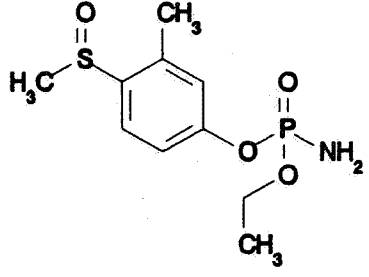
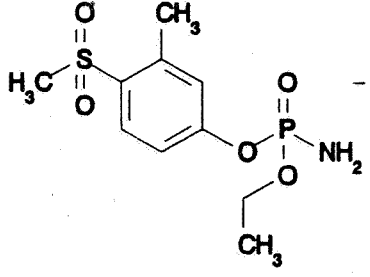
Fenamiphos [ethyl 3-methyl-4-(methylthio)phenyl (1-methylethyl)phosphoramidate] is an insecticide and nematocide registered for use on a variety of food and feed crops including apples, asparagus, bananas (plantains), beets (garden), bok choy (Chinese cabbage), Brussels sprouts, cabbage (including tight-headed varieties of Chinese cabbage), cherries, citrus fruits, cotton, eggplant, garlic, grapes, kiwifruits, nectarines, okra, peaches, peanuts, peppers, pineapples, raspberries, strawberries, and tobacco. The fenamiphos formulations registered for use on these crops include the granular (G) and the emulsifiable concentrate (EC). Fenamiphos is typically applied on registered crops as a band or broadcast soil application made pre-plant, at planting, or post-plant prior to emergence [Source: *LUIS General Chemical Report for Fenamiphos*, 5/14/92].

Tolerances for residues of fenamiphos in/on raw and in processed plant commodities are currently expressed in terms of the combined residues of fenamiphos and its cholinesterase-inhibiting metabolites, fenamiphos sulfoxide and fenamiphos sulfone [Source: 40 CFR §180.349(a) and (c), 185.2950, and 186.2950]. These tolerances are set at 0.02-0.60 ppm. Tolerances for food items derived from livestock (except poultry) are expressed in terms of the combined residues of fenamiphos and its cholinesterase-inhibiting metabolites fenamiphos sulfoxide, fenamiphos sulfone, des-isopropyl fenamiphos, des-isopropyl fenamiphos sulfoxide, and des-isopropyl fenamiphos sulfone [Source: 40 CFR §180.349(b)]. No tolerances have been established for residues of fenamiphos in poultry tissues or eggs. The chemical structures of the metabolites of concern are presented in Figure A. Adequate enforcement methods are available for the determination of these regulated compounds in/on plant and livestock (except poultry) commodities.

The Reregistration Standard Guidance Document for fenamiphos was issued 6/87. The Fenamiphos Product and Residue Chemistry Reregistration Standard Update was completed on 2/12/92. The

Information contained in this document outlines the Residue Chemistry Science Assessments with respect to the reregistration of fenamiphos.

Figure A. The chemical structures of the metabolites of concern of fenamiphos.

Structure Metabolite: Chemical name	Structure Metabolite: Chemical name
 <p data-bbox="239 851 826 904"><b>fenamiphos:</b> ethyl 3-methyl-4-(methylthio)-phenyl (1-methylethyl)phosphoramidate</p>	 <p data-bbox="850 851 1428 904"><b>fenamiphos sulfoxide:</b> ethyl 3-methyl-4-(methylsulfinyl)phenyl (1-methylethyl)phosphoramidate</p>
 <p data-bbox="239 1266 826 1319"><b>fenamiphos sulfone:</b> ethyl 3-methyl-4-(methylsulfonyl)phenyl (1-methylethyl)phosphoramidate</p>	 <p data-bbox="850 1266 1428 1319"><b>des-isopropyl fenamiphos:</b> ethyl 3-methyl-4-(methylthio)phenyl phosphoramidate</p>
 <p data-bbox="239 1681 826 1734"><b>des-isopropyl fenamiphos sulfoxide:</b> ethyl 3-methyl-4-(methylsulfinyl)phenyl phosphoramidate</p>	 <p data-bbox="850 1681 1428 1734"><b>des-isopropyl fenamiphos sulfone:</b> ethyl 3-methyl-4-(methylsulfonyl)phenyl phosphoramidate</p>

## SUMMARY OF SCIENCE FINDINGS

GLN 171-3: Directions for Use: A REFs search conducted 5/26/93 revealed that there are two end-use products (EPs) of fenamiphos presently registered to Miles Inc. (formerly Mobay Corporation) which may be used on food/feed crops grown in the U.S.; these EPs include a 15% G (Nemacur®15%; EPA Reg. No. 3125-236, dated 12/10/91) and a 3 lb/gal EC (Nemacur®3; EPA Reg. No. 3125-283, dated 2/27/92) formulations. The registrant has recently submitted copies of 10% G labels with English translations from countries (Costa Rica, Ecuador, Guatemala, and Philippines) which use fenamiphos on bananas targeted for export to the U.S. market.

A comprehensive summary of the registered food/feed use patterns of fenamiphos, based on these product labels, is presented in Table A. The conclusions regarding the reregistration eligibility of fenamiphos on the crops listed in Table B are based on the use patterns registered by the basic producer, Miles Inc. When end-use product DCIs are developed (e.g. at issuance of the RED), RD should require that all end-use product labels (e.g. MAI labels, SLNs, and products subject to the generic data exemption) be amended such that they are consistent with the basic producer labels.

GLN 171-4 (a): Plant Metabolism: The qualitative nature of the residue in plants is adequately understood. Studies with a variety of plants including beans, cabbage, carrots, mustard, oats, peanuts, pineapples, potatoes, soybeans, sugar beets, tobacco, tomatoes, and wheat indicate that fenamiphos is readily absorbed from soils, foliage, and fruits and translocated throughout the plant. Metabolism involves the oxidation of fenamiphos to fenamiphos sulfoxide and/or fenamiphos sulfone, subsequent hydrolysis to fenamiphos sulfoxide phenol and fenamiphos sulfone phenol, and the formation of the glucoside or other conjugates. The terminal residues of concern are fenamiphos, fenamiphos sulfoxide, and fenamiphos sulfone; the chemical structures of these metabolites are presented in Figure A.

GLN 171-4 (b): Animal Metabolism: The qualitative nature of the residue in animals is not adequately understood. Additional data are required to upgrade the previously submitted study pertaining to laying hens. [*Miles Inc. has committed to submitting these data by October 1993*]. The nature of the residue in ruminants is adequately understood. The major residues identified in ruminant tissues and milk consisted of fenamiphos sulfoxide phenol, fenamiphos sulfoxide, fenamiphos sulfoxide phenol sulfate, fenamiphos sulfone phenol sulfate, fenamiphos phenol sulfate, des-isopropyl fenamiphos sulfoxide (in milk only), and des-isopropyl fenamiphos sulfone (in muscle only). Currently, the terminal residues of concern are fenamiphos, fenamiphos sulfoxide, fenamiphos sulfone, des-isopropyl fenamiphos, des-isopropyl fenamiphos sulfoxide, and des-isopropyl fenamiphos sulfone; the chemical structures of these metabolites are presented in Figure A. The proposed metabolic pathway in ruminants is similar to that of plants with the exception of an additional de-isopropylation step of fenamiphos sulfoxide. No changes in the tolerance expression for animals are currently required.

The major residues identified in poultry tissues and eggs consisted of fenamiphos, fenamiphos sulfoxide phenol, fenamiphos sulfone phenol, fenamiphos phenol, fenamiphos sulfoxide, fenamiphos sulfone, and des-isopropyl fenamiphos sulfoxide (in liver only). Although the metabolism is not adequately understood in poultry, CBRS considers the information in the previously submitted metabolism study a reasonably reliable indication of the residues in poultry tissues and eggs. The total radioactive residue values from the metabolism study should be used when conducting the dietary risk assessment associated with this RED.

GLN 171-4 (c) and (d): Residue Analytical Methods - Plants and Animals: Adequate enforcement methods are available for the determination of residues of fenamiphos and its cholinesterase-inhibiting metabolites in/on plant and animal commodities. The Pesticide Analytical Manual (PAM) Vol. II lists two GLC methods, each with thermionic detection (TD) and a limit of detection of 0.01 ppm. Method I (Miles Method 25402) is available for the determination of the combined residues of fenamiphos and its

sulfoxide and sulfone metabolites, measured as sulfone, in/on plant commodities and Method II is available for the determination of the combined residues of fenamiphos, its sulfoxide and sulfone metabolites, des-isopropyl fenamiphos, des-isopropyl fenamiphos sulfoxide, and des-isopropyl fenamiphos sulfone in animal tissues and milk. CBRS waived the requirement for radiolabeled validation of the current enforcement methodology using representative samples from metabolism studies because the enforcement analytical method has been validated and much is known about metabolism (CBRS No. 11274, 3/18/93, C. Olinger).

Residue data submitted in response to the Guidance Document and in support of petitions for the establishment of new tolerances were collected using modifications of the available PAM Vol. II methods. CBRS has concluded that these modified methods, along with other methods listed in PAM Vol. II, are adequate for fenamiphos data collection and tolerance enforcement.

The FDA Pestrak database (PAM Vol. I, Appendix II) contains data concerning the applicability of all FDA multiresidue methods for recovery of fenamiphos and its sulfoxide and sulfone metabolites. Fenamiphos and its sulfoxide and sulfone metabolites are completely recovered through the Luke Method (232.2). Data pertaining to the multiresidue method testing of the des-isopropyl metabolites are no longer required.

The qualitative nature of the residue in animals (poultry) has not been adequately described. If the requested data on poultry metabolism indicate the presence of additional metabolites of toxicological concern, relevant additional analytical methods and data may be required.

GLN 171-4 (e): Storage Stability: For plant commodities, adequate storage stability data are available for Chinese cabbage (bok choy), eggplant, kiwifruits, non-bell peppers, and peanuts and their processed commodities. Storage stability data are also available for several commodities for which no tolerance has been established including corn, broccoli, potatoes, and carrots. Data have generally demonstrated stability of fenamiphos and metabolites for intervals up to 1170 days on some commodities.

CBRS has accepted the Miles Inc. proposal that storage stability studies with asparagus, bananas, garlic, and the processed commodities of cottonseed and grapes be used to fulfill the outstanding requirements for storage stability data on asparagus, bananas, Brussels sprouts, garlic, okra, and strawberries and the processed commodities of cottonseed, grapes, and pineapples. The representative data must be consistent with the storage intervals of commodities from magnitude of the residue and metabolism studies for both the commodities tested and commodities to which these data will be translated. Because all previous storage stability studies for both registered and unregistered commodities provide preliminary evidence of stability of fenamiphos residues in plant commodities, CBRS considers the outstanding data confirmatory and the existing information sufficient to support the magnitude of residue studies and the tolerance reassessments.

No storage stability data for animal commodities are available; these data remain outstanding and are considered confirmatory. Samples from the cattle feeding studies were stored for a short interval prior to extraction, but the extracts were stored for an extended period. CBRS has required submission of data pertaining to the storage stability in the extracts. Because available storage stability data in plant commodities indicate that residues are generally stable, and that the samples in the feeding studies were stored as extracts which are likely to be more stable, CBRS considers the information available sufficient to support the cattle feeding studies. The additional data are required to confirm the conclusions that the existing animal commodity tolerances (which exclude poultry) are adequate. Storage stability data must be submitted for eggs. Adequate storage study data must be available to support the new poultry feeding study [described under 171-4 (j)].

GLN 171-4 (k): Magnitude of the Residue in Plants: All data requirements for magnitude of the residue in plants have been evaluated and deemed adequate to reassess the tolerances for residues of fenamiphos; no additional data are required regarding this guideline topic. Field trials were performed representing the various conditions under which the pesticide could be applied. The geographical representation for each commodity is generally adequate and a sufficient number of trials reflecting representative formulation classes were conducted. The recently submitted fenamiphos labels from countries which use fenamiphos on bananas targeted for export to the U.S. market are supported by adequate residue data.

Magnitude of the residue and pyrolysis studies have been submitted for tobacco. Sufficient data are available to assess residue levels of fenamiphos and metabolites in tobacco.

GLN 171-4 (l): Magnitude of the Residue in Processed Food/Feed: All data requirements for magnitude of the residue in processed food/feed have been evaluated and deemed adequate to determine the extent to which residues of fenamiphos concentrate in food/feed items upon processing of the raw agricultural commodity. Existing food/feed additives tolerances have been reassessed and found appropriate. Residues tend to concentrate in dried, processed feed items (grape pomace, apple pomace, citrus pulp, pineapple bran, and raisin waste) and in citrus molasses. Residues also concentrate in raisins, citrus oil, and pineapple juice. A food additive tolerance for pineapple juice must be proposed.

GLN 171-4 (j): Magnitude of the Residue in Meat, Milk, Poultry and Eggs: Ruminant feeding studies that were reviewed in the Residue Chemistry Chapter have recently been reevaluated and found to be adequate to satisfy ruminant feeding study data requirements. Two studies were conducted where cattle were fed fenamiphos or fenamiphos sulfoxide at levels ranging from 0.3 to 3 times the maximum dietary burden. Residues were generally non-detectable in tissues and milk with the exception of one liver sample from the 3x cow, where residues of 0.012 ppm were found. The storage stability data to support this study remain outstanding. Because existing data provide preliminary evidence of stability of the residues, CBRS considers the available information adequate to conclude that the established tolerances on livestock commodities (except poultry) are appropriate.

New poultry feeding studies are required as the existing studies have been recently evaluated and found inadequate considering the new metabolism study and proposed poultry feed item tolerance revisions. Poultry feeding studies have been submitted previously but they are inadequate for tolerance assessment since the dosing period was inadequate. New studies must be submitted before CBRS can recommend for an appropriate tolerance level. The total radioactive residue levels from the poultry metabolism study will be used to provide a reasonably reliable estimate of the residue levels to be used for the risk assessment.

GLNs 165-1 and 165-2: Confined/Field Rotational Crops: Data pertaining to rotational crop studies are currently under review by CBRS (DP Barcode No. D194664). A preliminary review of the data indicates that residues of regulated metabolites in rotated crops are greater than 0.01 ppm at the currently established plant-back interval of 4 months. Residues in one commodity at a plant-back interval of 8 months were non-detectable. The registrant may choose to do one of the following: (1) provide limited rotational crop data at an interval greater than 4 months and increase the plant-back interval to an interval at which residues are non-detectable; or (2) if the registrant intends to keep a plant-back interval of 4 months, rotational crop tolerances must be proposed and extensive rotational crop data must be provided. These conclusions may change upon full review of the data by CBRS.



Table A. Maximum registered uses of fenamiphos for Miles Inc. (formerly Mobay Corporation) 10% G (foreign labels), 15% G (Nemacur®15%); EPA Reg. No. 3125-236, dated 12/10/91) and 3 lb/gal EC (Nemacur®3; EPA Reg. No. 3125-283, dated 7/20/93) formulations.

Crop	Formulation	Maximum Single	Maximum	PHI <sup>1</sup>	Use Limitation
		Application Rate (lb ai/A)	Seasonal Rate (lb ai/A)	(Days)	
Apples	3 lb/gal EC	10.0	10.0	72	Band soil incorporated application to established bearing and nonbearing orchards in all areas using ground equipment. Grazing or feeding of cover crops grown in treated areas to livestock is prohibited.
		4.5	9.0	72	Multiple broadcast soil applications in all areas to established bearing and nonbearing orchards using low pressure irrigation equipment with a retreatment interval of 14 days. Grazing or feeding of cover crops grown in treated areas to livestock is prohibited.
		2.0	2.0	270	Use limited to CT, DE, ME, MD, MA, NH, NJ, NY, PA, and RI as a single band or broadcast soil incorporated preplant application to asparagus nursery stock; and as a preplant, preemergence, or postharvest incorporated application to asparagus production fields.
Bananas (plantains)	3 lb/gal EC	5.0	10.0	15	Band or broadcast soil incorporated application for use in HI (HI920001 and HI920002) using ground or low pressure irrigation equipment. Retreatment interval is 3-6 months for band application (G) and 14 days for application by irrigation equipment (EC).
		15% G			
		15% G	4.5 g ai/plant		At-plant soil application to newly planted bananas or soil application to established plantations followed by subsequent applications at the same rate at 6-month intervals in PR (PR910006). No PHI or maximum seasonal rate has been established.

(continued; footnotes follow)

Table A (continued).

Crop	Formulation	Maximum Single Application Rate (lb ai/A)	Maximum Seasonal Rate (lb ai/A)	PHI <sup>1</sup> (Days)	Use Limitation
Bananas (foreign label uses)	10% G	3.0 g ai/plant for at-plant treatment followed by 2-4 g ai/plant or 4.4 lb ai/A for established plants	9.0 g ai/plant or 13.3 lb ai/A		Use limited to Costa Rica, Ecuador, Guatemala, and the Philippines for at-plant soil application to newly planted banana plants at 1.5-3.0 g ai/plant and for postemergence soil applications to established plants at 2-4 g ai/plant/application made at 4- to 6-month intervals. A maximum of three soil applications may be made during the growing season; the per acre rate is dependent on seeding density. No PHI has been established.
Beets, garden	3 lb/gal EC	0.14 lb ai/1000 ft of row (for any row spacing)	0.14 lb ai/1000 ft of row (for any row spacing)	90	Use limited to IL, IN, MI, NY, OH, and PA for a single soil incorporated band application made preplant or at plant using ground equipment.
Bok choy (Chinese cabbage)	15% G	0.17 lb ai/1000 ft of row (for any row spacing)			Use limited to CA for a band application to direct-seeded bok choy made preplant or at-plant.
Brussels sprouts	15% G	0.17 lb ai/1000 ft of row (for any row spacing)	0.17 lb ai/1000 ft of row (for any row spacing)		A single band soil incorporated application to transplanted Brussels sprouts (except Brussels sprouts grown for seed).
Cabbage (including tight-headed varieties of Chinese cabbage)	15% G	0.17 lb ai/1000 ft of row (for any row spacing)	0.17 lb ai/1000 ft of row (for any row spacing)		A single band soil incorporated application to direct seeded or transplanted cabbage (except cabbage grown for seed) made preplant, at-plant, or preemergence.
	3 lb/gal EC	1.69	1.69		Use limited to FL (FL840019) for a single postplant drench application to transplanted cabbage.

(continued; footnotes follow)

Table A (continued).

Crop	Formulation	Maximum Single Application Rate (lb ai/A)	Maximum Seasonal Rate (lb ai/A)	PHI <sup>1</sup> (Days)	Use Limitation
Cherries	3 lb/gal EC	10.0	10.0	45	Band soil incorporated application to established bearing and nonbearing orchards in all areas using ground equipment. Grazing or feeding of cover crops grown in treated areas to livestock is prohibited.
	3 lb/gal EC	4.5	9.0	45	Multiple broadcast soil applications in all areas to established bearing and nonbearing orchards using low pressure irrigation equipment with a retreatment interval of 14 days. Grazing or feeding of cover crops grown in treated areas to livestock is prohibited.
Citrus Fruits	3 lb/gal EC	10.0	10.0	30	Band soil incorporated application to established bearing and nonbearing citrus in all areas using ground equipment. Use of the 3 lb/gal EC formulation is prohibited in FL. Use of both formulations is prohibited in CA on kumquat, tangelo, and citrus hybrids. Grazing of treated areas by livestock is prohibited.
	3 lb/gal EC 15% G	4.5	9.0	30	Broadcast soil application to bearing and nonbearing citrus in all areas except FL using low pressure irrigation equipment with a retreatment interval of 14 days. Use prohibited in CA on kumquat, tangelo, and citrus hybrids. Grazing of treated areas by livestock is prohibited.

(continued; footnotes follow)

Table A (continued).

Crop	Formulation	Maximum Single Application Rate (lb ai/A)	Maximum Seasonal Rate (lb ai/A)	PHI (Days)	Use Limitation
Cotton	3 lb/gal EC 15% G	0.11 lb ai/1000 ft of row (for any row spacing)			Up to 0.17 lb ai/1000 ft of row is permitted for the 3 lb/gal EC formulation. In-furrow/covering soil or soil band application. Grazing or feeding treated foliage to livestock is prohibited. PHI has not been established.
	3 lb/gal EC	3.0			Use limited to CA for a soil injection application. Grazing or feeding treated foliage to livestock is prohibited. PHI has not been established.
	3 lb/gal EC	0.2 lb ai/1000 ft of row (for any row spacing)			Tank mix use.
	3 lb/gal EC	1.65			Use limited to TX (TX790035) for a soil band incorporated application based on 40-inch row spacing. Grazing or feeding treated foliage to livestock is prohibited. PHI has not been established.
Eggplant	3 lb/gal EC 15% G	0.14 lb ai/1000 ft of row (for any row spacing)			Applied in a band over the row at transplant. For a 36 inch row spacing application rate is equivalent to 2 lb ai/A.
Garlic (domestic)	15% G	0.17 lb ai/1000 ft of row (for any row spacing)	0.17 lb ai/1000 ft of row		At-plant in-furrow soil application. Based on 40-inch beds with two rows per bed application rate is equivalent to 4.5 lb ai/A.

(continued; footnotes follow)

Table A (continued).

Crop	Formulation	Maximum Single Application Rate (lb ai/A)	Maximum Seasonal Rate (lb ai/A)	PHI <sup>1</sup> (Days)	Use Limitation
Grapes	3 lb/gal EC	9.0	9.0	2	Band soil incorporated application to bearing and nonbearing grapes using ground equipment, followed by incorporation. Grazing or feeding treated crop to livestock is prohibited.
	3 lb/gal EC	3.0	6.0	2	Broadcast soil application to bearing and nonbearing grapes using low pressure irrigation equipment. Grazing or feeding treated crop to livestock is prohibited.
Kiwifruits	3 lb/gal EC	3.0	12.0	31	Use limited to CA for a preharvest broadcast soil application using low pressure irrigation equipment. Grazing or feeding of cover crops grown in treated areas to livestock is prohibited. A maximum of 9 lb ai/A may be used pre-harvest and 3 lb ai/A may be used post-harvest.
	3 lb/gal EC	3.0	12.0		Use limited to CA for a postharvest broadcast soil application using low pressure irrigation equipment. Grazing or feeding of cover crops grown in treated areas to livestock is prohibited.
Nectarines	3 lb/gal EC	10.0	10.0	45	see "Cherries."
	3 lb/gal EC	4.5	9.0	45	see "Cherries."
Okra	15% G	0.17 lb ai/1000 ft of row (for any row spacing)	0.17 lb ai/1000 ft of row		For use in all areas except CA as an at-plant band soil incorporated application. Based on 36-inch row spacing application rate is equivalent to 2.5 lb ai/A.

(continued; footnotes follow)

Table A (continued).

Crop	Formulation	Maximum Single Application Rate (lb ai/A)	Maximum Seasonal Rate (lb ai/A)	PHI <sup>1</sup> (Days)	Use Limitation
Peaches	3 lb/gal EC	10.0	10.0	45	see "Cherries."
	3 lb/gal EC	4.5	9.0	45	see "Cherries."
Peanuts	3 lb/gal EC	0.17 lb ai/1000 ft of row (for any row spacing)	0.17 lb ai/1000 ft of row		At-plant band soil incorporated application. Based on 36-inch row spacing rate is equivalent to 2.5 lb ai/A. Grazing or feeding of green peanut vines or peanut vine hay is prohibited. Treated fields may not be hogged down.
	15% G	0.14 lb ai/1000 ft of row (for any row spacing)	0.14 lb ai/1000 ft of row		Use limited to CA, GA, and PR to non-bell peppers for at-plant band soil incorporated application. Based on 36-inch row spacing rate is equivalent to 2 lb ai/A.
Pineapples	3 lb/gal EC	20	40	30	Use limited to HI for preplant soil incorporated application.
	3 lb/gal EC	3	40	30	Use limited to HI for multiple broadcast soil applications or through drip irrigation. Applications may be made at 1- to 3-month intervals as needed, beginning immediately after planting or following harvest of the previous crop. Feeding of green forage or fodder to livestock is prohibited.
	15% G	20	20		Use limited to PR for preplant soil incorporated application. Feeding of green forage or fodder to livestock is prohibited. Post-plant use of the 3 lb/gal formulation is permitted.

(continued; footnotes follow)

Table A (continued).

Crop	Formulation	Maximum Single Application Rate (lb ai/A)	Maximum Seasonal Rate (lb ai/A)	PHI <sup>1</sup> (Days)	Use Limitation
Pineapples (continued)	3 lb/gal EC	10	20	225	Use limited to PR for multiple broadcast soil applications. Applications may be made 1- to 3-months after planting or immediately following harvest of the previous crop. Applications may be repeated at 3- to 6-month intervals. Feeding of green forage or fodder to livestock is prohibited. May be used following pre-plant use of the 15% G formulation.
Raspberries	3 lb/gal EC	6	6	180	A single band soil incorporated application to established raspberry plantings in all areas except CA using ground equipment.
Strawberries	3 lb/gal EC 15% G	0.21 lb ai/1000 ft of row (for any row spacing)		110	Use limited to a single band soil incorporated application prior to transplanting using ground equipment. Based on a 40-inch row spacing rate is equivalent to 2.7 lb ai/A. Two soil band incorporated applications to nonbearing nursery stock immediately after transplanting and 8-weeks after transplanting. Fruit may not be harvested for 20 months after application.
Tobacco	3 lb/gal EC	6			Preplant broadcast soil incorporated application to tobacco (except shade-grown tobacco).

1. Preharvest interval.

Table B. Residue chemistry science assessments for reregistration of fenamiphos.

GLN: Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References <sup>1</sup>
171-3: Directions for Use		No	
171-4 (a): Plant Metabolism		No	00036831, 00036837, 00038506, 00041025, 00041027, 00041028, 00041030, 00045595, 00045612, 00052504, 00052509, 00052510, 00094349, 00117405, 00119223, 00134943
171-4 (b): Animal Metabolism		Yes <sup>2</sup>	00035114, 00036830, 00041206, 00134943, 40997701, 40997702
171-4 (c/d): Residue Analytical Methods		Yes <sup>3</sup>	00025103, 00025115, 00052495, 00052526, 00105945, 00112903, 00112904, 00118794, 00119223, 00121865, 00128729, 40303401, 40407701, <sup>4</sup> 40655401, <sup>5</sup> 40655501, <sup>6</sup> 41258101, <sup>7</sup> 41387501, <sup>8</sup> 41548502, <sup>9</sup> 41575601, <sup>10</sup> 41633101, <sup>11</sup> 41642101
171-4 (e): Storage Stability		Yes <sup>12</sup>	00036839, 00045605, 00052494, 00056049, 00112903, 00117753, 00118794, 00119223, 00152195, 40303401, 40407701, <sup>4</sup> 40655401, <sup>5</sup> 40655501, <sup>6</sup> 41387501, <sup>8</sup> 41548502 <sup>9</sup>
171-4 (k): Magnitude of the Residue in Plants			
<u>Root and Tuber Vegetables Group</u>			
- Beets, garden, roots	1.5 [§180.349(c)]	No	40655401 <sup>5</sup>
<u>Leaves of Root and Tuber Vegetables Group</u>			
- Beets, garden, tops	1.0 [§180.349(c)]	No	40655401 <sup>5</sup>
<u>Bulb Vegetables Group</u>			



Table B (continued).

GLN: Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References <sup>1</sup>
- Garlic	0.50 [§180.349(a)]	No	00103094, 00153468 <sup>13</sup>
<b><u>Brassica Leafy Vegetables Group</u></b>			
- Brussels sprouts	0.10 [§180.349(a)]	No	00036826, 00036829, 00036843, 00038522, 00052508, 00118790, 41633101 <sup>11</sup>
- Cabbage	0.10 [§180.349(a)]	No	00036827, 00118790, 00119223, 00152195, 00154528
- Chinese cabbage (bok choy)	0.5 [§180.349(c)]	No	41387501 <sup>8</sup>
<b><u>Legume Vegetables (Succulent/Dried) Group</u></b>			
- Soybeans	0.05 [§180.349(a)]	No <sup>14</sup>	00038507, 00038508, 00109257, 00154503, 00154528
<b><u>Foliage of Legume Vegetables (Succulent/Dried) Group</u></b>			
- Soybeans, forage and hay		No <sup>14</sup>	00038507, 00038508, 00109257, 00154503
<b><u>Fruiting Vegetables Group</u></b>			
- Eggplant	0.1 [§180.349(a)]	No	40655501 <sup>6</sup>
- Peppers, non-bell	0.6 [§180.349(c)]	No	40303401 <sup>16</sup>
<b><u>Citrus Fruits Group</u></b>			
- Grapefruit	0.60 [§180.349(a)]	No	00038510, 00038511, 00056049, 00101570
- Lemons	0.60 [§180.349(a)]	No	00038509, 00038510, 00049668, 00056049, 00101570
- Limes	0.60 [§180.349(a)]	No	00038510, 00038511

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Table B (continued).

GLN: Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References <sup>1</sup>
- Oranges	0.60 [§180.349(a)]	No	00036841, 00036842, 00038510, 00038511, 00049668, 00056049, 00098611, 00101570, 00117406, 00134808, 00154528
- Tangerines	0.60 [§180.349(a)]	No	00038504
<b><u>Pome Fruits Group</u></b>			
- Apples	0.25 [§180.349(a)]	No	00029106, 00112904, 00118794
<b><u>Stone Fruits Group</u></b>			
- Cherries	0.25 [§180.349(a)]	No	00029106, 00112903, 00112904, 00118794
- Nectarines	0.25 [§180.349(a)] (for peaches)	No <sup>16</sup>	
- Peaches	0.25 [§180.349(a)]	No	00029106, 00112904, 00118794
<b><u>Small Fruits and Berries Group</u></b>			
- Grapes	0.10 [§180.349(a)]	No	00028849, 00076988, 00098611, 00105945, 00154528
- Raspberries	0.1 [§180.349(a)]	No	00087556
- Strawberries	0.6 [§180.349(a)]	No	00158575, 00158576 <sup>17</sup>
<b><u>Miscellaneous Commodities</u></b>			
- Asparagus	0.02 [§180.349(c)]	No	00128729
- Bananas (Plantains)	0.10 [§180.349(a)]	No <sup>18</sup>	00025103, 00025112, 00025114, 00075270, 41575601 <sup>10</sup>

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Table B (continued).

GLN: Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References <sup>1</sup>
- Cocoa beans	0.02 [§180.349(a)]	No <sup>19</sup>	PP#2E2691
- Cottonseed	0.05 [§180.349(a)]	No	00052511, 00055868, 00052518, 00117754, 00118790, 00154528
- Kiwifruits	0.1 [§180.349(c)]	No	40407701 <sup>4</sup>
- Okra	0.30 [§180.349(a)]	No	00106037
- Peanuts	0.02 [§180.349(a)]	No	00052501, 00052525, 00078888, 40193501, <sup>20</sup> 41548502 <sup>9</sup>
- Pineapples	0.30 [§180.349(a)]	No	00079585, 00117406, 00121866, 00134943, 00157805 <sup>21</sup>
- Tobacco		No	41258102, <sup>7</sup> 42674901 <sup>22</sup>
171-4(l): Magnitude of the Residue in Processed Food/Feed			
- Apples	5.0 (dried pomace) [§186.2950]	No	00118794
- Cocoa beans		No <sup>19</sup>	PP#2E2691
- Cottonseed		No	00118790, 00052511, 41255701 <sup>7</sup>
- Grapefruit	25.0 (oil) 2.5 (molasses) 2.5 (dried pulp) [§186.2950]	No	PP#6F1865, 00154808
- Grapes	0.3 (raisins) [§185.2950] 1.0 (pomace) 3.0 (raisin waste) [§186.2950]	No	00076988, 00105945, 41194903 <sup>23</sup>

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Table B (continued).

GLN: Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References <sup>1</sup>
- Lemons	25.0 (oil) 2.5 (molasses) 2.5 (dried pulp) [§186.2950]	No	PP#6F1865, 00154808
- Limes	25.0 (oil) 2.5 (molasses) 2.5 (dried pulp) [§186.2950]	No	PP#6F1865, 00154808
- Oranges	25.0 (oil) 2.5 (molasses) 2.5 (dried pulp) [§186.2950]	No	PP#6F1865, 00154808
- Peanuts	0.40 (hulls) [§180.349(a)]	No	00052501, 00052525, 00078888, 41255702, <sup>7,9</sup> 41548502 <sup>9</sup>
- Pineapples	10.0 (bran) [§186.2950]	No <sup>24</sup>	00134943, 41194904 <sup>23</sup>
- Soybeans		No <sup>14</sup>	
- Tangerines	25.0 (oil) 2.5 (molasses) 2.5 (dried pulp) [§186.2950]	No	PP#6F1865, 00154808
171-4 (j): Magnitude of the Residue in Meat, Milk, Poultry, and Eggs			
- Fat, meat, and meat byproducts of cattle, goats, hogs, horses, and sheep	0.05 [§180.349(b)]	Yes <sup>25</sup>	00118794, 00119223, 41255706, <sup>7</sup> 41548501 <sup>9</sup>
- Milk	0.01 [§180.349(b)]	Reserved <sup>26</sup>	
- Eggs, and the fat, meat, and meat byproducts of poultry		Yes <sup>26</sup>	
165-1: Rotational Crops (Confined)		Reserved <sup>27</sup>	
165-2: Rotational Crops (Field)		Reserved <sup>27</sup>	

(continued; footnotes follow)

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**Table B (continued).**

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1. **Bolded references were reviewed in the Update of 2/12/92. Unbolded references were reviewed in the Residue Chemistry Science Chapter of the Reregistration Standard dated 1/2/87. Otherwise, references were reviewed as noted.**
2. **Additional data are required to upgrade the previously submitted metabolism study pertaining to laying hens. The nature of the residue in ruminants is adequately understood (C. Olinger, Barcode No. D195991, 1/14/94).**
3. **Data pertaining to the multiresidue method testing of des-isopropyl fenamiphos, des-isopropyl fenamiphos sulfoxide, and des-isopropyl fenamiphos sulfone are no longer required. The qualitative nature of the residue in poultry is not adequately understood. If the requested data on poultry metabolism indicate the presence of additional metabolites of toxicological concern, relevant additional analytical methods and data may be required.**
4. CBTS No. 3063, 2/2/88, M. Nelson
5. CBTS No. 4030, 2/28/89, W. Chin.
6. CBTS No. 4032, 8/25/88, F. Toghrol.
7. CBRS No. 5940, 1/22/90, E. Haeberer.
8. CBTS No. 6396, 3/14/90, S. Koepke.
9. CBTS Nos. 6964 and 7330, 1/29/91, F. Griffith.
10. CBRS No. 6965, 11/15/90, W. Anthony.
11. CBTS Nos. 8855 and 8856, 1/28/92, J. Morales.
12. **CBRS has accepted the Miles Inc. proposal that storage stability studies with asparagus, bananas, garlic, and the processed commodities of cottonseed and grapes be used to fulfill the outstanding requirements for storage stability data on asparagus, bananas, Brussels sprouts, garlic, okra, and strawberries and the processed commodities of cottonseed, grapes, and pineapples. The representative data must be consistent with the storage intervals of commodities from magnitude of the residue and metabolism studies for both the commodities tested and commodities to which these data will be translated. Because all previous storage stability studies for both registered and unregistered commodities provide preliminary evidence of stability of fenamiphos residues in plant commodities, CBRS considers the outstanding data confirmatory and the existing information sufficient to support the magnitude of residue studies and the tolerance reassessments. (CBRS No. 11274, 3/18/93, C. Olinger) Storage stability data remain outstanding for animal commodities as well. (CBRS No. 12875, 1/07/94, C. Olinger)**
13. CBRS No. 733, 5/16/86, F. Suhre.
14. **As there are no registered uses of fenamiphos on soybeans, we recommend that the established tolerance for soybeans be revoked.**
15. CBTS No. 2842, 12/22/87, N. Dodd.



Table B (continued).

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16. Residue data submitted for peaches satisfy the data requirements for nectarines.
17. CBTS No. 895, 6/24/86 and CBTS No. 1630, 11/25/86, F. Suhre.
18. The registrant has submitted labels with English translations from countries (Costa Rica, Ecuador, Guatemala, and Philippines) which use fenamiphos on bananas targeted for export to the U.S. market.
19. Since Miles Inc. has stated that they will not support the use of fenamiphos on cocoa beans (CBRS No. 5790, 10/13/89, D. Edwards), we recommend that the established tolerance for cocoa beans be revoked.
20. CBTS No. 2658, 9/3/87, M. Nelson.
21. CBRS Nos. 720 and 721, 5/19/86, F. Suhre.
22. CBRS No. 11587, D189117, currently under review by CBRS.
23. CBRS No. 5790, 10/13/89, D. Edwards.
24. A food additive tolerance for pineapple juice must be proposed.
25. Storage stability data are required for animal commodities to validate the existing ruminant feeding study. Provided residues in animal commodities and their extracts are shown to be stable for the period of storage in existing studies, then new cattle feeding studies will not be required. (CBRS No.: None, C. Olinger, 7/27/93) (CBRS No.: 12875; C. Olinger, 1/07/94).
26. A new poultry feeding study is required in which laying hens are dosed for a minimum of 28 days at levels of 0, 0.7, 2.1, and 7.0 ppm. CBRS will use the total radioactive residue values from the metabolism studies as a reasonably reliable estimate of the residues in poultry to do the risk assessment for the RED. (CBRS No.: None, C. Olinger, 7/27/93) The dosing interval was inadequate in previously submitted poultry feeding studies.
27. Data pertaining to this topic are currently under review by CBRS (DP Barcode No. D194664).

## TOLERANCE REASSESSMENT SUMMARY

### Tolerances Listed Under 40 CFR §180.349(a):

The tolerances listed in 40 CFR §180.349(a) are for the combined residues of fenamiphos and its cholinesterase-inhibiting metabolites fenamiphos sulfoxide and fenamiphos sulfone.

Sufficient data are available to ascertain the adequacy of the established tolerances listed in 40 CFR §180.349(a) for the following commodities: apples; bananas; Brussels sprouts; cabbage; cherries; cotton, seed; eggplant; garlic; grapefruit; grapes; lemons; limes; okra; oranges; peaches; peanuts; peanuts, hulls; pineapples; raspberries; strawberries; and tangerines; see Table C for modifications in commodity definitions and Table D for recommendations for harmonizing U.S. tolerances with Codex MRLs.

A crop group tolerance of 0.5 ppm should be established for the citrus fruits group concomitant with the revocation of the established tolerances for grapefruits, lemons, limes, oranges, and tangerines of 0.6 ppm. The tolerance for peanuts should be increased to 1.0 ppm.

The established tolerances for cocoa beans and soybeans should be revoked since there are no registered uses of fenamiphos on these crops.

Tolerances have been proposed for the following commodities: broccoli and cauliflower at 0.1 ppm (PP#0F3894, CBTS No. 6989, 10/11/90, F. Griffith); cantaloupe and coffee beans imported from Mexico at 0.05 and 0.2 ppm, respectively (PP#9E3721, CBTS No. 5054, 7/6/89, W. Chin); potatoes at 0.14 ppm (PP#6F1693, CBTS Nos. 11843 and 11844, 8/24/93, J. Garbus); sweet potatoes at 0.1 ppm (PP#6F1693, CBTS Nos. 11843 and 11844, 8/24/93, J. Garbus); carrots at 0.1 ppm (PP#6F1770, CBTS Nos. 11843 and 11844, 8/24/93, J. Garbus); tomatoes at 0.5 ppm and dried tomato pulp at 315 ppm (PP#6F1693/6H5109, CBTS Nos. 11843 and 11844, 8/24/93, J. Garbus); sugar beets roots at 0.05 ppm, sugar beet tops at 0.1 ppm, and dried sugar beet pulp at 0.1 ppm (PP#6F1693/6H5109, CBTS Nos. 11843 and 11844, 8/24/93, J. Garbus); and peppers at 0.6 ppm (PP#2E4047, CBTS No. 8899, 1/13/92, and CBTS No. 9737, 11/30/92, J. Morales).

### Tolerances Listed Under 40 CFR §180.349(b):

The tolerances listed in 40 CFR §180.349(b) are for food items derived from animals (except poultry) and are expressed in terms of the combined residues of fenamiphos and its cholinesterase-inhibiting metabolites fenamiphos sulfoxide, fenamiphos sulfone, des-isopropyl fenamiphos, des-isopropyl fenamiphos sulfoxide, and des-isopropyl fenamiphos sulfone.

The chemical name of one of the metabolites in the 40 CFR tolerance expression is incorrect. The name "ethyl-4-(methylsulfinyl)phenyl phosphoramidate" should be replaced with "ethyl 3-methyl-4-(methylsulfinyl)phenyl phosphoramidate."

Sufficient data are available to assess the adequacy of the established tolerances for milk and the fat, meat, and meat byproducts of cattle, goats, hogs, horses, and sheep; see Table C for modifications in commodity definitions. Tolerances for poultry commodities are required but insufficient data are available to recommend appropriate levels. Additional data are required. Total radioactive residue data from poultry metabolism studies will be used to provide a reasonably reliable estimate of residue levels in poultry commodities so the dietary risk from poultry commodities can be estimated.

Tolerances Listed Under 40 CFR §180.349(c):

The tolerances listed in 40 CFR §180.349(c) are with regional registrations, as defined in 180.1(n), for the combined residues of fenamiphos and its cholinesterase-inhibiting metabolites fenamiphos sulfoxide and fenamiphos sulfone.

Sufficient data are available to ascertain the adequacy of the established tolerances listed in 40 CFR §180.349(c) for the following commodities: asparagus; beets, garden, roots; beets, garden, tops; cabbage, Chinese; kiwifruits; and peppers, non-bell; see Table C for modifications in commodity definitions.

We note that if the proposed tolerance for peppers (PP#2E4047) is established, then the existing tolerance with regional restriction for non-bell peppers should be revoked.

Tolerances Listed Under 40 CFR §185.2950:

The tolerances listed in 40 CFR §185.2950 are for the combined residues of fenamiphos and its cholinesterase-inhibiting metabolites fenamiphos sulfoxide and fenamiphos sulfone.

Sufficient data are available to ascertain the adequacy of the established food additive tolerances listed in 40 CFR §185.2950 for citrus, oil, refined, and grapes, raisins; see Table C for modifications in commodity definitions.

A food additive tolerance must be proposed for the combined residues of fenamiphos and its sulfoxide and sulfone metabolites in pineapple juice (0.5 ppm).

Tolerances Listed Under 40 CFR §186.2950:

The tolerances listed in 40 CFR §186.3500(a) are for the combined residues of fenamiphos and its sulfoxide and sulfone metabolites.

Sufficient data are available to ascertain the adequacy of the established feed additive tolerances listed in 40 CFR §186.2950 for the following commodities: apples, pomace, dried; citrus, molasses; citrus, pulp, dried; grapes, pomace, wet and dried; pineapples, bran; and grapes, raisin waste; see Table C for modifications in commodity definitions.



Table C. Tolerance Reassessment Summary

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/Correct Commodity Definition
<b>Tolerances listed under 40 CFR 180.349(a):</b>			
Apples	0.25		
Bananas	0.10		
Brussels sprouts	0.10	0.05	Codex harmonization (see Table D)
Cabbage	0.10		
Cherries	0.25		
Cocoa beans	0.02	Revoke	No registered uses exist.
Cottonseed	0.05		<i>Cotton, seed</i>
Eggplant	0.1		
Garlic	0.50		
Grapefruit Lemons Limes Oranges Tangerines	0.60	Revoke and establish at 0.5	Codex harmonization (see Table D)/ <i>Citrus fruits group</i>
Grapes	0.10		
Okra	0.30		
Peaches	0.25		
Peanuts	0.02	1.0	
Peanuts, hulls	0.40		
Pineapples	0.30		
Raspberries	0.1		
Soybeans	0.05	Revoke	No registered uses exist.
Strawberries	0.6		
<b>Tolerances listed under 40 CFR 180.349(b):</b>			
Cattle, fat	0.05		
Cattle, meat	0.05		
Cattle (mbyp)	0.05		<i>Cattle, mbyp</i>
Goats, fat	0.05		
Goats, meat	0.05		
Goats (mbyp)	0.05		<i>Goats, mbyp</i>
Hogs, fat	0.05		
Hogs, meat	0.05		
Hogs (mbyp)	0.05		<i>Hogs, mbyp</i>
Horses, fat	0.05		
Horses, meat	0.05		

Table C (continued).

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/Correct Commodity Definition
<b>40 CFR 180.349(b) continued:</b>			
Horses (mbyp)	0.05		<i>Horses, mbyp</i>
Milk	0.01		
Sheep, fat	0.05		
Sheep, meat	0.05		
Sheep (mbyp)	0.05		<i>Sheep, mbyp</i>
<b>Tolerances listed under 40 CFR 180.349(c)</b>			
Asparagus	0.02		
Beets, garden, roots	1.5		
Beets, garden, tops	1.0		
Bok choy	0.5		<i>Cabbage, Chinese</i>
Kiwifruit	0.1		<i>Kiwifruits</i>
Peppers, non-bell	0.6		
<b>Tolerances listed under 40 CFR 185.2950</b>			
Citrus oil	25.0		<i>Citrus, oil, refined</i>
Pineapples, juice	None	0.5	Must be proposed by the registrant
Raisins	0.3		<i>Grapes, raisins</i>
<b>Tolerances listed under 40 CFR 186.2950</b>			
Apple pomace (dried)	5.0		<i>Apples, pomace, dried</i>
Citrus molasses	2.5		<i>Citrus, molasses</i>
Citrus pulp (dried)	2.5		<i>Citrus, pulp, dried</i>
Grape pomace	1.0		<i>Grapes, pomace, wet and dried</i>
Pineapple bran	10.0	revoke	No longer considered a major feed item
Raisin waste	3.0		<i>Grapes, raisin waste</i>

**CODEX HARMONIZATION**

Several maximum residue limits (MRLs) for fenamiphos have been established by Codex in various commodities. The fenamiphos residues regulated by Codex and the U.S. are equivalent. The Codex MRLs (currently expressed as the sum of fenamiphos, its sulfoxide and sulfone, expressed as fenamiphos) and applicable U.S. tolerances (currently expressed in terms of the combined residues of fenamiphos and its sulfoxide and sulfone metabolites) are listed in Table D.

Table D. Codex MRLs and applicable U.S. tolerances. Recommendations for compatibility are based on conclusions following reassessments of U.S. tolerances (see Table C).

Commodity	MRL (mg/kg) <sup>1</sup>	U.S. Tolerance (ppm)	Recommendation
Bananas	0.1	0.10	
Broccoli	0.05 <sup>2</sup>	0.1 (proposed)	
Brussels sprouts	0.05 <sup>2</sup>	0.10	decrease U.S. tolerance
Cabbages, head	0.05 <sup>2</sup>	0.10	
Carrot	0.2		
Cauliflower	0.05 <sup>2</sup>	0.1 (proposed)	
Coffee beans	0.1	0.2 (proposed)	decrease U.S. tolerance proposal
Coffee beans, roasted	0.1		
Cotton seed	0.05 <sup>2</sup>	0.05	
Grapes	0.1	0.10	
Kiwifruit	0.05 <sup>2</sup>	0.1	
Melons, except watermelon	0.05 <sup>2</sup>	0.05 (proposed for cantaloupes)	
Oranges, sweet, sour	0.5	0.6	decrease U.S. tolerance for citrus fruits group
Peanut	0.05 <sup>2</sup>	0.02 <sup>3</sup>	
Pineapple	0.05 <sup>2</sup>	0.30	
Potato	0.2		
Soya beans (dry)	0.05 <sup>2</sup>	0.05 <sup>4</sup>	
Sugar beet	0.05 <sup>2</sup>		
Sweet potato	0.1		
Tomato	0.2		

1. All fenamiphos MRLs are final (CXL).
2. At or about the limit of detection.
3. CBTS has recommended for an increase in the U.S tolerance to 1.0 ppm. This tolerance will not be compatible with the Codex MRL.

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4. CBRS has recommended for revocation of this tolerance since all of the registered uses have been dropped by the registrant.

The following conclusions can be made regarding efforts to harmonize the U.S. tolerances with the Codex MRLs:

- Compatibility between the U.S. tolerances and Codex MRLs exists for: bananas, cottonseed, and grapes.
- CBTS has recommended for an increase in the level of the U.S. tolerance for peanuts to 1.0 ppm. Compatibility cannot be achieved with the Codex MRL of 0.05 ppm.
- The level of the U.S. tolerances should be decreased to achieve compatibility with the Codex MRLs for Brussels sprouts (from 0.10 to 0.05 ppm) and oranges (from 0.6 for oranges to 0.5 ppm for citrus fruits group). The available residue data support these decreased tolerance levels.
- The U.S. tolerances for the following commodities were based on registered use patterns in the U.S. and cannot be lowered to achieve compatibility with the Codex MRLs: cabbage, kiwifruits, and pineapples.
- A tolerance of 0.05 ppm has been proposed for cantaloupe. This is compatible with the Codex MRL for "melons, except watermelon".
- A tolerance of 0.2 ppm has been proposed for coffee beans. To achieve compatibility with Codex, this proposed tolerance should be decreased to 0.1 ppm, which would be supported by the available data.
- Tolerances of 0.1 ppm have been proposed for broccoli and cauliflower. Since field residue data to support these tolerances remain outstanding, a decision regarding harmonization with Codex MRLs cannot be made at this time.
- No questions of compatibility exist with respect to commodities where: (i) no Codex MRLs have been established but U.S. tolerances exist; and (ii) Codex MRLs have been established but U.S. tolerances do not exist.

### Exposure Assessment Summary

Both the plant metabolism and field trial data are adequate. Some storage stability data for plant commodities are outstanding. However previously submitted studies for both registered and unregistered commodities give a preliminary indication of the stability of fenamiphos residues in plant commodities. CBRS therefore considers the available data adequate to support the established tolerances for plant commodities.

The nature of the residue in ruminants is understood, but additional data are required to upgrade the previously submitted poultry metabolism study. Cattle feeding studies are adequate to support the established tolerance, but storage stability data are outstanding. Because of the storage conditions used in the feeding study, and the preliminary indications of the stability of fenamiphos residues in plant commodities, CBRS considers the data from the feeding studies to be valid.

Additional information regarding procedures, calculations, and storage conditions is required to upgrade the poultry metabolism study. Although there is a slight possibility, CBRS does not consider it likely that different metabolites than those currently regulated in other animal commodities will require regulation in poultry commodities. However analytical methods will have to be developed if any new metabolites require regulation. Based on this metabolism study and CBRS recommendations for poultry feed item tolerance increases, it is likely that tolerances for poultry commodities will now be required. Previously submitted poultry feeding studies are unsatisfactory due to inadequate dosing intervals. Storage stability data may be required to support new feeding studies. The dietary risk assessment associated with this RED for poultry commodities will be based on the total radioactive residue values from the metabolism study. These values represent the maximum fenamiphos residues likely to be present since it includes all residues found, not just the residues of toxicological concern. Although they will provide a conservative estimate of the residues of concern, they are the best estimate of residues in poultry commodities until adequate feeding studies at the estimated dietary burden are submitted to the Agency.

The RfD for fenamiphos was greatly exceeded in the most recent dietary risk analysis for fenamiphos, even when using anticipated residue calculations from 1987. CBRS revised the anticipated residue calculations for commodities with permanent tolerances considering data that had been subsequently received by the Agency and using the most recent monitoring data available from the FDA (C. Olinger, CBRS No. 10995, 12/20/93).

The revised anticipated residue calculations are generally lower than the tolerance levels. Most of the values are below the limits of quantitation of the analytical methods. Since the toxicity endpoint is for chronic, non-carcinogenic risk, average values from field trials and 95<sup>th</sup> percentile residues from monitoring data were utilized. The dietary risk estimation for commodities with permanent tolerances is accordingly considerably lower.

The anticipated residue values are the best estimates CBRS can provide using the residue data available at the time of the RED. These values have an inherent uncertainty associated with variations in analytical methods, geographical representation of field trials, seasonal variation of residue levels, etc.

AGENCY MEMORANDA CITED IN THIS DOCUMENT

CBTS No.: 733  
Subject: EPA Reg. No. 3125-236: Residue Data To Support An Amended Registration for Nema-cur 15 Applied to Garlic Grown in the United States. Accession No. 259316, RCB No. 733.  
From: F. B. Suhre  
To: H. Jacoby  
Dated: 5/16/86  
MRID(s): 00153468

CBTS No.: 720 and 721  
Subject: EPA Registration No. 3125-298 and 3125-236: Amended Registration for NEMACUR 3 and NEMACUR 15% G on Pineapples in Hawaii. Accession Number 261774, RCB Numbers 720 and 721.  
From: F. B. Suhre  
To: H. Jacoby  
Dated: 5/19/86  
MRID(s): 00157805

CBTS No.: 895  
Subject: PP#6E3403 Fenamiphos on Strawberries. Accession Number 262427, RCB No. 895.  
From: F. B. Suhre  
To: H. L. Jamerson and Toxicology Branch  
Dated: 6/24/86  
MRID(s): 00158575, 00158576

CBTS No.: 1630  
Subject: PP#6E3403: Fenamiphos on Strawberries; Amendment of 10-24-86; Revised Labels (Section B) for Nema-cur 3 and Nema-cur 15G. No Accession Number. RCB Number 1630.  
From: F.B. Suhre  
To: H.L. Jamerson and Toxicology Branch  
Dated: 11/24/86  
MRID(s): None

CBTS No.: 2658  
Subject: PP#7F3523. Petition Review. Increase the Established 0.4 ppm Tolerance in/or on Peanut Shells to 0.5 ppm. Res. Chem. Br., HED Pet. Rev. Quick Form.  
From: M. J. Nelson  
To: L. Rossi  
Dated: 9/3/87  
MRID(s): 40193501

CBTS No.: 2842  
Subject: PP#7E3559 (RCB #2842) - Fenamiphos on Non-bell Peppers - Evaluation of Analytical Methods and Residue Data (MRID Nos. 40303400 and 40303401)  
From: N. Dodd  
To: H. Jamerson and Toxicology Branch  
Dated: 12/22/87  
MRID(s): 40303400 and 40303401

CBTS No.: 3063  
Subject: PP#8E3585. Petition Review for Establishment of Tolerance(s). Evaluation of Analytical Method(s) and Residue Data. (Kiwifruit).  
From: M. J. Nelson  
To: H. L. Jamerson and Toxicology Branch  
Dated: 2/17/88  
MRID(s): 40407700 and 40407701

CBTS No.: 4030  
Subject: PP#8E3651. Fenamiphos (Nemacur®) In or On Table Beets. Evaluation of Analytical Method and Residue Data (MRID #40655400 and 40655401; DEB #4030)  
From: W.T. Chin  
To: H. L. Jamerson and Toxicology Branch  
Dated: 2/28/89  
MRID(s): 40655400 and 40655401

CBTS No.: 4032  
Subject: PP#8E3650; Fenamiphos on Eggplants - Evaluation of Analytical Methods and Residue Data (MRID #'s. 40655500 and 40655501, RCB#4032)  
From: F. Toghrol  
To: H. L. Jamerson and Toxicology Branch  
Dated: 8/25/88  
MRID(s): 40655500 and 40655501

CBTS No.: 5054  
Subject: PP#9E3721: Proposal of Tolerances for Fenamiphos (Nemacur®) in or on Coffee Beans and Cantaloupe Imported from Mexico. Evaluation of Analytical Methods and Residue Data (MRID #40971701, 02; DEB#5054)  
From: W. T. Chin  
To: S. Lewis and Toxicology Branch  
Dated: 7/6/89  
MRID(s): 40971701 and 40971702

CBRS No.: 5790  
Subject: Fenamiphos Registration Standard Follow-up: Response to Residue Chemistry Data Requirements for Processing Studies for Grapes and Pineapples [DEB No. 5790, HED Project No. 9-2139, RD Record No. 251555, MRID Nos. 41194903 and -04]  
From: D. F. Edwards  
To: D. Williams  
Dated: 10/13/89  
MRID(s): 41194903 and 41194904

CBRS No.: 5940  
Subject: Fenamiphos (aka Nemacur®), Response to Reregistration Guidance Document, Residue Chemistry Data Requirements (MRID Nos. 41255701 through 41255706, 41258101, -02, DEB No. 5940, HED Project No. 0-0067).  
From: E. T. Haeberer  
To: D. Williams  
Dated: 1/22/90  
MRID(s): 41255701 through 41255706, 41258101, and 41258102.

CBTS No.: 6396  
Subject: PP#0E3845 Fenamiphos on Bok Choy. Evaluation of Analytical Methods and Residue Data. MRID No. 413875-00, 01 DEB No. 6396  
From: S. Koepke  
To: H. Jamerson and Toxicology Branch  
Dated: 3/14/90  
MRID(s): 41387500 and 41387501

CBRS No.: 6965  
Subject: ID#: 3125-236, -283: Fenamiphos [Nemacur]: Amended label use for bananas. [DEB: #6965; MRID: #41575601]  
From: W. Anthony  
To: S. Lewis/ S. Jackson  
Dated: 11/15/90  
MRID(s): 41575601

CBTS No.: 6964/7330  
Subject: PP#7F3523 - Fenamiphos (Nemacur®) in/on Peanuts, Peanut Hulls, and Peanut Processed Commodities. Review of the September 29, 1989 and July 2, 1990 Amendments. (MRID Nos. 412557-02, and 415485-01 and -02) [DEB Nos. 6964 and 7330] (HED Project Nos. 0-1815 and 1-0235)  
From: F. D. Griffith  
To: S. Lewis and Toxicology Branch  
Dated: 1/29/91  
MRID(s): 41255702, 41548501 and 41548502



CBRS No.: 6989  
Subject: PP#0F3894. Petition Review for Establishment of Tolerance(s). Evaluation of Analytical Methodology and Residue Data. (Broccoli and Cauliflower).  
From: F. D. Griffith  
To: S. Lewis and Toxicology Branch  
Dated: 10/11/90  
MRID(s): None

CBTS No.: 8028  
Subject: PP#9E3721: Fenamiphos (Nemacur®) in or on Coffee Beans and Cantaloupe. Amendment of 7/13/89 (no MRID #; CBTS 8028)  
From: W. T. Chin  
To: S. Lewis and Toxicology Branch  
Dated: 6/5/91  
MRID(s): None

CBTS Nos.: 8855/8856  
Subject: ID #'s 003125-00236/003125-00283. Fenamiphos on Brussels Sprouts. Label Amendment for Nemacur 15G and Nemacur 3EC. CBTS #'s 8855/8856. DP Barcode #'s D170526/D170531. HED # 2-0397. MRID # 41633101.  
From: J. J. Morales  
To: C. Giles-Parker  
Dated: 1/28/92  
MRID(s): 41633101

CBTS No.: 8899  
Subject: PP#2E4047. Fenamiphos on Peppers. Evaluation of Residue Data and Analytical Methodology. CBTS# 8899. DP Barcode D171113. HED# 2-0444. MRID#'s 420809-00, -01.  
From: J. Morales  
To: H. Jamerson and Toxicology Branch  
Dated: 1/13/92  
MRID(s): 42080901

CBTS No.: None  
Subject: PP#2E4045. Fenamiphos on Non-bell Peppers. Amendment to Review of 12/23/91.  
From: J. J. Morales  
To: H. Jamerson and Toxicology Branch  
Dated: 1/21/92  
MRID(s): None

CBTS No.: 9737  
Subject: PP#2E4047 - Fenamiphos in/on Peppers. Amendment in Response to Review of 1/13/92. DP Barcode D176833. CBTS# 9737. MRID# none.  
From: J. J. Morales  
To: H. Jamerson and Toxicology Branch  
Dated: 11/30/92  
MRID(s): None

**CBRS No.:** None  
**Subject:** The Metabolism Committee Meeting Held on February 23, 1993: Fenamiphos Animal Metabolism  
**From:** C. Olinger  
**To:** The Metabolism Committee  
**Dated:** 3/8/93  
**MRID(s):** None

**CBRS No.:** 11274  
**Subject:** Reregistration of Fenamiphos: Product and Residue Chemistry Issues; Chemical No. 100601; Branch No. 11274; DP Barcode No. D187223.  
**From:** C. Olinger  
**To:** L. Rossi  
**Dated:** 3/18/93  
**MRID(s):** None

**CBRS No.:** 11843 and 11844  
**Subject:** PP's Nos. 6F1693/G5109 and 6F1770: Fenamiphos (Nemacur) in/on Carrots, Sweet Potatoes, Potatoes, Yams, Sugar Beets, and Tomatoes. Amendment of 6F1693/6H5109 dated 4/19/1993. Revised sections B and F. Effect on Estimation of Anticipated Residues for Dietary Exposure Analysis. DP Barcodes D191115 and D191116  
**From:** J. Garbus  
**To:** C. Giles-Parker / J. Stone  
**Dated:** 8/24/93  
**MRID(s):** 42745100 and 42745101

**CBRS No.:** None  
**Subject:** Reregistration of Fenamiphos: Magnitude of Residue in Meat, Milk, Poultry, and Eggs; Chemical No. 100601; Branch No.: None; DP Barcode No.: None  
**From:** C. Olinger  
**To:** L. Rossi  
**Dated:** 7/27/93  
**MRID(s):** 118794; 119223

**CBRS No.:** 10995  
**Subject:** Reregistration of Fenamiphos: Anticipated Residue Calculations; Chemical No. 100601; Branch No. 10995; DP Barcode No. D185627.  
**From:** C. Olinger  
**To:** J. Housenger  
**Dated:** 12/20/93  
**MRID(s):** None

**CBRS No.:** 12875  
**Subject:** Reregistration of Fenamiphos: Storage Stability Issues; Chemical No. 100601; Branch No. 12875; DP Barcode No. D196987; MRID No.: None  
**From:** C. Olinger  
**To:** L. Rossi  
**Dated:** 1/07/94  
**MRID(s):** None

**CBRS No.:** None  
**Subject:** Reregistration of Fenamiphos: Upgrade to Ruminant Metabolism Study; Chemical No. 100601; Branch No.: None; DP Barcode No. D195991  
**From:** C. Olinger  
**To:** L. Rossi  
**Dated:** 1/13/94  
**MRID(s):**