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

JAN 29 1992

JAN 29 1992

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Acephate Product and Residue Chemistry Reregistration Standard Updates; Chemical No. 103301; Branch No.: 8984; DP Barcode No.: D171638

FROM: Edward Zager, Chief
Chemistry Branch II - Reregistration Support
Health Effects Division (H7509C)

TO: Lois Rossi, Chief
Reregistration Branch
Special Review and Reregistration Division (H7508C)

and

William Burnam, Ph.D., Acting Chief
Science Analysis and Coordination Branch
Health Effects Division (H7509C)

Attached are the updates to the Product and Residue Chemistry Chapters of the Acephate Reregistration Standard. These updates were prepared by Dynamac Corporation under supervision of CBRS, HED. They have undergone secondary review in the branch and have been revised to reflect Agency policies.

Revised product and residue chemistry data requirement tables are included. New requirements include new plant and animal metabolism studies. Methylthioacetate (an impurity in acephate technical material) residue data are no longer required.

Please note that there are several label amendment and tolerance proposal/revision issues which may involve action from Registration Division.

If you need additional input please advise.

Attachment 1: Acephate Product Chemistry Reregistration Standard Update.

Attachment 2: Acephate Residue Chemistry Reregistration Standard Update.

Attachment 1: Acephate Product Chemistry Reregistration Standard Update Confidential Appendix. (This document contains CBI.)

cc: (with Attachments 1, 2, and 3): CLOlinger (CBRS), Reg. Std. File, SF, RF, C. Furlow (PIB/FOD)

cc: (with Attachments 1 and 2 only): Circulation

ATTACHMENT 1

DYNAMAC
CORPORATION

Final Report

ACEPHATE
Shaughnessy No. 103301
Task 4: Product Chemistry
Reregistration Standard Update

August 8, 1991

Contract No. 68-D8-0080

Submitted to:
Environmental Protection Agency
Arlington, VA 22202

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

ACEPHATE

SHAUGHNESSY NO. 103301

REREGISTRATION STANDARD UPDATE

PRODUCT CHEMISTRY

TASK 4

INTRODUCTION

A Product Search listing conducted on 1/25/91 identifies four manufacturing-use products (MPs) registered for acephate: the Chevron Chemical Company 97% technical (T; EPA Reg No. 62499-23) and 75% formulation intermediate (FI; EPA Reg. No. 62499-26), and the Valent U.S.A. Corporation 97% T (EPA Reg. No. 59639-41) and 75% FI (EPA Reg. No. 59639-42). Chevron has two establishment numbers, the Chevron acephate manufacturing-use products (MPs) were reassigned from EPA Establishment Number 239 to 62499.

The Acephate Guidance Document dated 9/87 requires all updated generic and product-specific chemistry data for the Chevron acephate MPs. The Valent acephate MPs were registered subsequent to the Guidance Document and all product chemistry data are required for these products. In response to the Guidance Document, Chevron submitted (1986; MRID 00162500) data for the 97% T (EPA Reg. No. 62499-23) which have been reviewed by the Agency. Chevron has submitted (1983, 1987, 1988; MRIDs 40321801-02, 40322801, 40390601, 40504830-32, and 40645901) additional data for the 97% T and 75% FI (EPA Reg. Nos. 62499-23 and 62499-26, respectively). Valent has submitted Confidential Statements of Formula (product jackets) for the 97% T and 75% FI (EPA Reg. Nos. 59639-41 and 59639-42, respectively). These data are reviewed in this Update Document for their adequacy in fulfilling the outstanding data requirements.

Corresponding to each of the Topical Discussions listed below are the Guideline Reference Numbers from "Pesticide Assessment Guidelines - Subdivision D - Product Chemistry", referred to in Title 40 of the Code of Federal Regulations (40 CFR), Part 158, "Data Requirements for Registration", Subpart C, "Product Chemistry Data Requirements". These regulations and guidelines explain the minimum data that the Agency needs to adequately assess the product chemistry of acephate.

	Guidelines Reference No. from 40 CFR §158.155-190
Product Composition and Manufacture	61-(1-3)
Analysis and Certification of Product Ingredients .	62-(1-3)
Physical and Chemical Characteristics	63-(2-20)

SUMMARY

The following Acephate Product Chemistry data are required:

- For the Chevron 97% T (EPA Reg. No. 62499-23) data pertaining to product composition, discussion of the formation of impurities, certified limits, stability and corrosion.

- For the Chevron 75% FI (EPA Reg. No. 62499-26) data pertaining to product composition, starting materials and the manufacturing process, and certified limits.

- For the Valent 97% T and 75% FI (EPA Reg. Nos. 59639-41 and 59639-42, respectively) data pertaining to product composition, starting materials and the manufacturing process, discussion of the formation of impurities, preliminary analysis, certified limits, enforcement analytical methods, and all physicochemical characteristics.

PRODUCT IDENTITY AND COMPOSITION

61-1. Product Composition

The Acephate Guidance Document dated 9/87 requires updated information concerning product composition for the acephate manufacturing-use products. In response, the registrants have submitted the following data.

Chevron has submitted (1987; MRID 40321801) data concerning the product composition of the 97% T (EPA Reg. No. 62499-23) which are presented in the Chevron Confidential Appendix A. These data do not satisfy the requirements of 40 CFR §158.155 (Guideline Reference No. 61-1) regarding product composition of the 97% T because nominal concentrations were not provided for a process solvent, and for all impurities present at ≥0.1% or of toxicological concern. A component which has pesticidal activity was incorrectly identified as an impurity; the component must be identified as an active ingredient and a lower certified limit must be provided. In addition, the label claim of the active ingredient (97%) does not agree with the nominal concentration of the active ingredient; the label claim should be modified according to PR Notice 91-2 dated 5/2/91. Additional data are required.

Chevron has submitted (1987; MRID 40504830) data concerning the product composition of the 75% FI (EPA Reg. No. 62499-26) which are presented in the Chevron Confidential Appendix A. These data do not satisfy the requirements of 40 CFR §158.155 (Guideline Reference No. 61-1) regarding product composition of the 75% FI

because the nominal concentration of the active ingredient was not based upon the nominal concentration of the active ingredient in the technical source product, and the chemical name for the surfactant and the source of the diluent were not provided. In addition, the label claim of the active ingredient (75%) does not agree with the nominal concentration of the active ingredient; the label claim should be modified according to PR Notice 91-2 dated 5/2/91. Additional data are required.

Valent has submitted a CSF dated 7/30/91 (product jacket) for the 97% T (EPA Reg. No. 59639-41) which is presented in the Valent Confidential Appendix A. These data do not satisfy the requirements of 40 CFR §158.155 (Guideline Reference No. 61-1) regarding product composition of the 97% T because nominal concentrations were not provided for a process solvent, and for all impurities present at ≥0.1% or of toxicological concern. A component which has pesticidal activity was incorrectly identified as an impurity; the component must be identified as an active ingredient and a lower certified limit must be provided. In addition, the label claim of the active ingredient (97%) does not agree with the nominal concentration of the active ingredient; the label claim should be modified according to PR Notice 91-2 dated 5/2/91. Additional data are required.

Valent has submitted a CSF dated 12/10/87 (product jacket) for the 75% FI (EPA Reg. No. 59639-42) which is presented in the Valent Confidential Appendix A. These data do not satisfy the requirements of 40 CFR §158.155 (Guideline Reference No. 61-1) regarding product composition of the 75% FI because the nominal concentration of the active ingredient was not based upon the nominal concentration of the active ingredient in the technical source product, and the chemical name for the surfactant and the source of the diluent were not provided. In addition, the label claim of the active ingredient (75%) does not agree with the nominal concentration of the active ingredient; the label claim should be modified according to PR Notice 91-2 dated 5/2/91. Additional data are required.

61-2. Starting Materials and Manufacturing Process

The Acephate Guidance Document dated 9/87 requires updated generic and product-specific data regarding starting materials and the manufacturing/formulation process of the acephate MPs which yields methylthioacetate as an impurity. In response, the following data have been submitted.

Chevron submitted (1986; MRID 00162500) information on the starting materials and the manufacturing process of the 97% T (EPA Reg. No. 62499-23). These data were reviewed by the Agency (W.T. Chin; CBRS Memorandum No. 1395, dated 12/9/86) and were found to satisfy the data requirements for the 97% T. However,

Chevron has resubmitted (1987; MRID 40321801) the manufacturing process to include the quality control methods used during the procedure. These procedures are presented in the Chevron Confidential Appendix B and satisfy the requirements of 40 CFR §158.160-165 (Guideline Reference No. 61-2) concerning the starting materials and manufacturing process of the 97% T. No additional data are required.

Chevron has submitted (1987; MRID 40504830) information concerning the starting materials and formulation process of the 75% FI (EPA Reg. No. 62499-26) which is presented in the Chevron Confidential Appendix B. These data do not satisfy the requirements of 40 CFR §158.160-165 (Guideline Reference No. 61-2) regarding starting materials and the manufacture process for the 75% FI because specifications on the inerts added, and the type of equipment used in the formulation process were not provided. Additional data are required.

Valent has not submitted data pertaining to the starting materials and manufacturing process of its 97% T and 75% FI (EPA Reg. Nos. 59639-41 and 59639-42, respectively); all product chemistry data pertaining to this topic remain outstanding for these products.

61-3. Discussion of the Formation of Impurities

The Acephate Guidance Document dated 9/87 requires updated generic and product-specific data regarding discussion of formation of impurities in the acephate MPs. In response, the following data have been submitted.

Chevron submitted (1986; MRID 00162500) a discussion of the formation of impurities in the 97% T (EPA Reg. No. 62499-23) which was reviewed by the Agency (W.T. Chin; CBRS Memorandum No. 1396, dated 12/9/86) and was found to satisfy the data requirements for the 97% T. Chevron has resubmitted (1987; MRID 40321801) the discussion of the formation of impurities in the 97% T including additional information pertaining to impurities present in trace amounts. This information is presented in the Chevron Confidential Appendix C and does not satisfy the requirements of 40 CFR §158.167 (Guideline Reference No. 61-3) regarding discussion of the formation of impurities in the 97% T because two impurities listed on the CSF were not included in the discussion of the formation of impurities. Additional information is required.

Chevron has submitted (1987; MRID 40504830) a discussion of the formation of impurities for the 75% FI (EPA Reg. No. 62499-26) which is presented in the Chevron Confidential Appendix C. This information satisfies the requirements of 40 CFR §158.167 (Guideline Reference No. 61-3) regarding discussion of the

formation of impurities in the 75% FI. No additional information is required.

Valent has not submitted any information pertaining to discussion of the formation of impurities in its 97% T and 75% FI (EPA Reg. Nos. 59639-41 and 59639-42, respectively); all product chemistry data pertaining to this topic remain outstanding for these products.

ANALYSIS AND CERTIFICATION OF PRODUCT INGREDIENTS

62-1. Preliminary Analysis

The Acephate Guidance Document dated 9/87 requires updated generic and product-specific data regarding the preliminary analysis of the acephate MPs. In response, Chevron submitted (1986; MRID 00162500) data pertaining to the preliminary analysis of methylthioacetate (MTA) in the 97% T (EPA Reg. No. 62499-23) which were reviewed by the Agency (W.T. Chin; CBRS Memorandum No. 1395, dated 12/9/86) and additional data were required. Chevron has submitted (1987; MRID 40321802) additional preliminary analysis data for the 97% T which are presented in the Chevron Confidential Appendix D. These data satisfy the requirements of 40 CFR §158.170 (Guideline Reference No. 62-1) regarding the preliminary analysis of the 97% T. This information also satisfies the requirements for the preliminary analysis of the 75% FI (EPA Reg. No. 62499-26). No additional data are required for the Chevron acephate MPs.

Valent has not submitted preliminary analysis data for its 97% T and 75% FI (EPA Reg. Nos. 59639-41 and 59639-42, respectively); all product chemistry data pertaining to this topic remain outstanding for these products.

62-2. Certified Limits

The Acephate Guidance Document dated 9/87 requires updated product-specific data regarding the certification of ingredient limits for the acephate MPs. In response, the following data have been submitted.

Chevron has submitted (1987; MRID 40321801 and 40321802) ingredient limits for the 97% T (EPA Reg. No. 62499-23) which are presented in the Chevron Confidential Appendix A. These data do not satisfy the requirements of 40 CFR §158.175 (Guideline Reference No. 62-2) regarding certified limits of the 97% T because the registrant did not explain how the certified limits were determined, and the name and address of the producer was not included on the CSF. An amended CSF on EPA Form 8570-4 (Rev. 2-85) must be submitted. Additional data are required.

Chevron has submitted (1987; MRID 40504830 and 40504831) ingredient limits for the 75% FI (EPA Reg. No. 62499-26) which are presented in the Chevron Confidential Appendix A. These data satisfy the requirements of 40 CFR §158.175 (Guideline Reference No. 62-2) regarding certified limits of the 75% FI; however, the name and address of the producer was not included on the CSF. An amended CSF on EPA Form 8570-4 (Rev. 2-85) must be submitted. Additional information is required.

Valent has submitted a CSF dated 7/30/91 (product jacket) for the 97% T (EPA Reg. No. 59639-41) which is presented in the Valent Confidential Appendix A. These data do not satisfy the requirements of 40 CFR §158.175 (Guideline Reference No. 62-2) regarding certified limits of the 97% T because an explanation as to how the certified limits were determined must be submitted, and additional impurities may be identified from the outstanding data concerning the starting materials and manufacturing process, discussion of the formation of impurities, and preliminary analysis. In addition, the name and address of the producer was not included on the CSF. An amended CSF on EPA Form 8570-4 (Rev. 2-85) must be submitted. Additional data are required.

Valent has submitted a CSF dated 12/10/87 (product jacket) for the 75% FI (EPA Reg. No. 59639-42) which is presented in the Valent Confidential Appendix A. These data satisfy the requirements of 40 CFR §158.175 (Guideline Reference No. 62-2) regarding the certified limits of the 75% FI; however, the name and address of the producer was not included on the CSF. An amended CSF on EPA Form 8570-4 (Rev. 2-85) must be submitted. Additional information is required.

62-3. Enforcement Analytical Methods

The Acephate Guidance Document dated 9/87 requires updated product-specific information regarding analytical methods to verify certified limits for the acephate MPs. In response, Chevron submitted (1986; MRID 00162500) an analytical method for the determination of methylthioacetate in the acephate technical which was reviewed by the Agency (W.T. Chin; CBRS Memorandum No. 1395, dated 12/9/86). This method was found adequate for the determination of methylthioacetate; however, additional methods were required. Chevron has submitted (1987; MRID 40321802) analytical methods for the determination of the active ingredient and impurities of the acephate technical and products. The methods for the determination of the related impurities of acephate are presented in the Chevron Confidential Appendix E. Acephate per se is determined by a gas liquid chromatography method (GLC) using a flame ionization detector (FID). Samples and reference standards are dissolved in an internal standard solution of dipropyl phthalate in methylene chloride, and injected onto a glass column packed with 10% SP-2250 on 100/120

mesh Supelcoport. Six samples from the same manufacturing shift (shift # 2, 3/19/86) analyzed in duplicate resulted in a precision (coefficient of variation) of 0.1245%. The accuracy (recovery) of a technical sample fortified with 9.7 to 11.8 mg acephate ranged 97.94-100.94% with a mean of 99.91% recovery. Representative chromatograms were included in the submission. The methods for the determination of acephate and its related impurities satisfy the requirements of 40 CFR §158.180 (Guideline Reference No 62-3) regarding enforcement analytical methods for the Chevron 97% T and 75% FI (EPA Reg. Nos. 62499-23 and 62499-26, respectively). No additional data are required.

Valent has not submitted enforcement analytical methods for its 97% T and 75% FI (EPA Reg. Nos. 59639-41 and 59639-42, respectively); all product chemistry data pertaining to this topic remain outstanding for these products.

PHYSICAL AND CHEMICAL CHARACTERISTICS

The Acephate Guidance Document dated 9/87 requires generic and product-specific data for the physical and chemical characteristics pertinent to the technical grade of the active ingredient and manufacturing-use products of acephate. In response, the following data have been submitted.

Chevron has submitted (1983, 1987, 1988; MRIDs 40322801, 40390601, and 40645901) physicochemical characteristics for the 97% T (EPA Reg. No. 62499-23) which are presented in Table 1. These data satisfy most of the requirements of 40 CFR §158.190 (Guideline Reference No. 63-2 through 63-20) for the 97% T except the registrant must submit data on the stability of the TGAI in the presence of metals and metal ions, and corrosion data to support the statement that the 97% T is non-corrosive. Additional data are required.

Chevron has submitted (1987; MRID 40504832) physicochemical characteristics for the 75% FI (EPA Reg. No. 62499-26) which are presented in Table 1. These data satisfy the requirements of 40 CFR §158.190 (Guideline Reference No. 63-2 through 63-20) for the 75% FI; the data requirements for the TGAI will be satisfied by the Chevron 95% T. No additional data are required.

Valent has not submitted the physicochemical characteristics for its 97% T and 75% FI (EPA Reg. Nos. 59639-41 and 59639-42, respectively); all product chemistry data pertaining to this topic remain outstanding for these products.

Table 1. Physical and chemical properties of the Chevron 97% T (EPA Reg. No. 62499-23) and the 75% FI (EPA Reg. No. 62499-26).

Guidelines Reference No., 40 CFR §158.190; Name of Property		Description [Method] (Product; Substrate; MRID)[a]
63-2.	Color	**white** (97% T; TGAI; 40390601) (75% FI; MP; 40504832)
63-3.	Physical state	**powder** (97% T; TGAI; 40390601) (75% FI; MP; 40504832)
63-4.	Odor	**strong mercaptan-like** (97% T; TGAI; 40390601) (75% FI; MP; 40504832)
63-5.	Melting point	**86.9-91 C** [Thomas-Hoover Capillary Melting Point Apparatus] (97% T; TGAI; 40390601)
63-6.	Boiling point	**N/A; the TGAI is a solid at room temperature**
63-7.	Density, bulk density, or specific gravity	**28.12 lbs/ft^3** [Ortho Method DG07] (97% T; TGAI; 40390601) **27.38 lbs/ft^3** [Ortho Method DG07] (75% FI; MP; 40504832)
63-8.	Solubility	**soluble in water; moderately soluble in alcohol; slightly to moderately soluble in aromatic solvents** **Solvent — Solubility g/100 mLs at 25C** **hexane 0.0087** **toluene 1.0** **ethyl acetate 4.9** **ethanol 29.2** **water 81.8** (97% T; TGAI; 40390601)
63-9.	Vapor pressure	**3.0 ± 1.9 x 10^{-7} torr at 25 C** [gas saturation method] (PAI; 40645901)
63-10.	Dissociation constant	**pKa = 8.35 at 20 C** [titration method; OECD Guidelines for testing Chemicals 5/12/81, #112] (97% T; TGAI; 40390601)

(Continued.)

Table 1. (Continued.)

Guidelines Reference No., 40 CFR §158.190; Name of Property	Description [Method] (Product; Substrate; MRID)[a]
63-11. Octanol/water partition coefficient	**K_{ow} = 0.13** [Radiolabeled acephate] (97% T; TGAI; 40322801)
63-12. pH	**4.67 (1% solution), 4.05 (10% solution)** [pH meter at 25 C] (97% T; TGAI; 40390601) **4.99 (1% solution), 4.68 (5% solution)** [pH meter at 25 C] (75% FI; MP; 40504832)
63-13. Stability	**stable for 30 days when exposed to sunlight vs darkness** (97% T; TGAI; 40390601)
63-14. Oxidizing or Reducing action	**N/A; does not contain an oxidizing or reducing agent** (97% T; TGAI; 40390601) (75% FI; MP; 40504832)
63-15. Flammability	**N/A; solid at room temperature** (97% T; MP; 40390601) (75% FI; MP; 40504832)
63-16. Explodability	**N/A; not potentially explosive** (97% T; MP; 40390601) (75% FI; MP; 40504832)
63-17. Storage stability	**no significant loss of acephate when stored 1 year at ambient temperatures and 50 C; slight increase in MTA concentrations when stored for 1 year at ambient temperatures.** (97% T; MP; 40390601) **no significant loss of acephate when stored 1 year at ambient temperatures and 50 C; MTA increased from less than 10 ppm to 198 ppm after 1 year storage at ambient conditions.** (75% FI; MP; 40504832)
63-18. Viscosity	**N/A; solid at room temperature** (97% T; MP; 40390601) (75% FI; MP; 40504832)

(Continued.)

Table 1. (Continued.)

Guidelines Reference No., 40 CFR §158.190; Name of Property	Description [Method] (Product; Substrate; MRID)[a]
63-19. Miscibility	**N/A; solid at room temperature** (97% T; MP; 40390601) (75% FI; MP; 40504832)
63-20. Corrosiveness	**non-corrosive** (97% T; MP; 40390601) **storage stability in commercial containers exhibited no visible deterioration.** (75% FI; MP; 40504832)

[a] PAI = purified active ingredient. TGAI = technical grade of the active ingredient. MP = manufacturing-use product. Hyphenated numbers represent EPA Registration Numbers. Eight digit numbers are MRID documents from the Pesticide Document Management System (PDMS).

MASTER RECORD IDENTIFICATION NUMBERS

MRID documents containing data which have been reviewed by the Agency are designated in shaded blocks in the following bibliographic listing of Product Chemistry Citations (used). A summary of the subject memoranda and their associated MRID documents is presented below.

CBRS No. 1395
Subject: Product Chemistry and Acephate in/on Corn Grain, Corn Forage, and Corn Kernels Plus Cobs with husks removed
From: W.T. Chin
To: W. Miller (PM16)
Dated: 12/9/86
MRID(s): 00162500

Product Chemistry Citations (used):

00162500 Chevron Chemical Co. (1986) Orthene Technical: :Product Chemistry Data:. Unpublished compilation. 33 p. 239-2471

40321801 Thornberry, N. (1987) Product Identity and Composition: Orthene Technical: Laboratory Project ID: 8714322. Unpublished study prepared by Chevron Chemical Co. 68 p.

40321802 Thornberry, N. (1987) Analysis and Certification of Product Ingredients: Orthene Technical: Laboratory Project ID: 8714314. Unpublished study prepared by Chevron Chemical Co. 109 p.

40322801 Pack, D. (1983) n-Octanol/Water Partition Coefficient of Acephate: Lab Project ID: MEF-0054/8711449. Unpublished study prepared by Chevron Chemical Co. 8 p.

40390601 Thornberry, N. (1987) Physical and Chemical Characteristics: Orthene Technical: Lab. Proj. ID. 8714296. Unpublished compilation prepared by Chevron Chemical Co. 21 p.

40504830 Thornberry, N. (1987) Product Identity and Composition of Orthene MFG: Laboratory Project ID 8729080. Unpublished study prepared by Chevron Chemical Company. 12 p.

40504831 Thornberry, N. (1987) Analysis and Certification of Ingredients of Orthene MFG: Laboratory Project ID 8729081. Unpublished study prepared by Chevron Chemical Company. 13 p.

40504832 Thornberry, N. (1987) Physical and Chemical Characteristics of Orthene MFG: Laboratory Project ID 8729082. Unpublished study prepared by Chevron Chemical Company. 11 p.

40645901 Reynolds, R. (1988) Vapor Pressure Study for Acephate (RE 12420) by the Gas Saturation Method: Laboratory Project ID: 8809195. Unpublished study prepared by Chevron Chemical Co. 15 p.

Product Chemistry Citations (not used):
(These MRIDs pertain to end-use products.)

00137775 Chevron Chemical Co. (1984) [Chemistry: Ortho Multipurpose Rose & Flower Spray! (Compilation; unpublished study received Mar 28, 1984 under 239-2468; CDL:252785-A; 252786)

00143951 Chevron Chemical Co. (1984) Product Chemistry Data Requirements: Orthene Garden Spray. Unpublished compilation. 13 p.

00143952 Chevron Chemical Co. (1984) Product Chemistry Data Requirements: Ortho Multipurpose Rose and Flower Spray. Unpublished compilation. 15 p.

00144434 Leary, J. (1975) Orthene-Monitor - Distribution between Octanol and Water: File No. 721.2/Orthene. Unpublished Mobay Report no. 80869 prepared by Chevron Chemical Co. 2 p.

00145335 Chevron Chemical Co. (1984) Product Chemistry Data Requirements: Orthene Ornamental Insect Spray. 11 p.

00147499 Chevron Chemical Co. (1985) Product Chemistry Data :of Ortho Multipurpose Rose & Flower Spray:. Unpublished study. 8 p.

00150582 Koundakjian, T. (1985) Product Chemistry :Storage Stability Data: Ortho Multi-Purpose Rose & Flower Spray. Unpublished study prepared by Chevron Chemical Co. 6 p.

00161028 Chevron Chemical Co. (1984) Orthene Garden Spray: Product Chemistry Data. Unpublished compilation. 25 p.

00164064 Chevron Chemical Co. (1986) Product Identity and Composition; Analysis and Certification of Product Ingredients; Physical and Chemical Characteristics: Orthene Fire Ant Bait. Unpublished compilation. 40 p.

40556501 Thornberry, N. (1987) Product Identity and Composition: Analysis and Certification of Product Ingredients: Physical and Chemical Characteristics: Project No. 8709558. Unpublished compilation prepared by Chevron Chemical Co. 28 p.

40709805 Updyke, J.; Namnath, J. (1988) Product Identity and Composition Analysis and Certification of Product Ingredients Physical and Chemical Characteristics: Proj. ID. 8812837. Unpublished study prepared by Chevron Chemical Co. 39 p.

40709907 Updyke, J.; Namnath, J. (1988) Product Identity and Composition; Analysis and Certification of Product Ingredients; Physical and Chemical Characteristics: Isotox Insect Killer Formula IV: Project ID: 8812965. Unpublished study prepared by Chevron Chemical Co. 40 p.

40912201 Parker, C. (1988) Orthene Spike Product Chemistry [Data! Unpublished study prepared by International Spike, Inc. 6 p.

40912202 Anon. (1983) Orthene Assay Method AM-12-1233-1 Acephate by GLC: Project ID: File No: 750.10. Unpublished study prepared by Chevron Chemical Co. 5 p.

41081600 Valent USA Corp. (1989) Submission of Environmental and Residue Data in Response to Acephate Registration Standard. Transmittal of 6 studies.

41081601 Lai, J. (1988) Storage Stability of Acephate in Frozen Macerated Grass and Mint Hay. Unpublished Study Prepared by Chevron Chemical Co. 131 p.

41210301 Karczewski, A. (1989) Pesticide Assessment Guideline Series 61-63: Orthenex Insect & Disease Control Formula III: Supplement: Project ID 8913502. Unpublished study prepared by Chevron Chemical Co. 12 p.

41320401 Karczewski, A. (1989) Product Indentity and Composition: Physical and Chemical Characteristics: Storage Stability: Orthenex Insect & Disease Control Formula III: Lab Project Number: 8913502. Unpublished study prepared by Chevron Chemical Co. 12 p.

41320501 Karczewski, A. (1989) Physical and Chemical Characteristics: Storage Stability: Isotox Insect Killer Formula IV: Lab Project Number: 8910879. Unpublished study prepared by Chevron Chemical Co. 5 p.

41367501 Freenor, F. (1990) Storage Stability: Orthene 90S: Lab Project No. 9000763. Unpublished study prepared by Chevron Chemical Co., Ortho Agricultural Chemicals Div. 8 p.

41367502 Freenor, F. (1990) Corrosion Characteristics: Orthene 90S: Lab Project No. 9000762. Unpublished study prepared by Chevron Chemical Co., Ortho Agricultural Chemicals Div. 7 p.

41842201 Sarli, M. (1991) Whitmire PT 1310 Total Release Insecticide Aerosol Generator: Lab Project Number: WRL-90-15. Unpublished study prepared by Whitmire Research Laboratories, Inc. 12 p.

TABLE A. GENERIC DATA REQUIREMENTS FOR THE ACEPHATE (CHEVRON) TECHNICAL GRADE OF THE ACTIVE INGREDIENT.[1]

Data Requirement	Test Substance[2]	Does EPA have data to satisfy this requirement?	Bibliographic Citation[3]	Must additional data be submitted under FIFRA Sec. 3(c)(2)(B)?
40 CFR §158.155-190 Product Chemistry				
Product Composition				
61-2. Starting Materials and Manufacture Process	TGAI	Yes	00162500 40321801	No
61-3. Formation of Impurities	TGAI	Partially	00162500 40321801	Yes[4]
Analysis and Certification of Product Ingredients				
62-1. Preliminary Analysis	TGAI	Yes	00162500 40321802	No
Physical and Chemical Characteristics[5]				
63-2. Color	TGAI	Yes	40390601	No
63-3. Physical State	TGAI	Yes	40390601	No
63-4. Odor	TGAI	Yes	40390601	No
63-5. Melting Point	TGAI	Yes	40390601	No[6]
63-6. Boiling Point	TGAI	N/A	N/A	No
63-7. Density, Bulk Density, or Specific Gravity	TGAI	Yes	40390601	No
63-8. Solubility	TGAI or PAI	Yes	40390601	No
63-9. Vapor Pressure	TGAI or PAI	Yes	40645901	No
63-10. Dissociation Constant	TGAI or PAI	Yes	40390601	No
63-11. Octanol/Water Partitioning Coefficient	PAI	Yes	40322801	No
63-12. pH	TGAI	Yes	40390601	No
63-13. Stability	TGAI	Partially	40390601	Yes[7]
Other Requirements:				
64-1. Submittal of Samples	N/A	N/A	N/A	No

1. Data requirements pertain to the Chevron Chemical Company 97% T (EPA Reg. No. 62499-23). Additional data requirements are listed in the following Table B, "Product Specific Data Requirements for Acephate Manufacturing-Use Products".

TABLE A. (Continued).

2. Test substance: MP = manufacturing-use product; PAI = purified active ingredient; TEP = typical end-use product; TGAI = technical grade of the active ingredient.

3. Underlining indicates documents that have been reviewed in this Update Document.

4. Chevron has responded to data requirements for its 97% T; however a discussion of the source of two impurities listed on the Confidential Statement of Formula (CSF) must be discussed.

5. As required by 40 CFR §158.190 and more fully described in the Pesticide Assessment Guidelines, Subdivision D, Guidelines Reference Nos. 63-2 through 63-13, data must be submitted on physicochemical characteristics (color, physical state, odor, melting point, boiling point, specific gravity, solubility, vapor pressure, dissociation constant, octanol/water partition coefficient, pH, and stability). There are additional data requirements listed in Table B pertaining to physicochemical characteristics of those technical products which are also manufacturing use products.

6. Data are not required for this topic since the TGAI is a solid at room temperature.

7. Chevron has responded to data requirements for its 97% T; however, the registrant must submit data on the stability of the TGAI in the presence of metals and metal ions.

TABLE B. PRODUCT SPECIFIC DATA REQUIREMENTS FOR ACEPHATE (CHEVRON) MANUFACTURING-USE PRODUCTS.[1]

Data Requirement	Test Substance[2]	Does EPA have data to satisfy this requirement?	Bibliographic Citation[3]	Must additional data be submitted under FIFRA Sec. 3(c)(2)(B)?
40 CFR §158.155-190 Product Chemistry				
Product Composition				
61-1. Product Composition	MP	Partially	40321801 40504830	Yes[4]
61-2. Starting Materials & Manufacture/Formulation Process	MP	Partially	00162500 40321801 40504830	Yes[5]
61-3. Formation of Impurities	MP	Partially	00162500 40321801 40504830	Yes[6]
Analysis and Certification of Product Ingredients				
62-1. Preliminary Analysis	MP	Yes	00162500 40321802	No
62-2. Certified Limits	MP	Partially	40321801 40321802 40504830 40504831	Yes[7]
62-3. Enforcement Analytical Methods	MP	Yes	00162500 40321802	No
Physical and Chemical Characteristics[8]				
63-2. Color	MP	Yes	40390601 40504832	No
63-3. Physical State	MP	Yes	40390601 40504832	No
63-4. Odor	MP	Yes	40390601 40504832	No
63-7. Density, Bulk Density, or Specific Gravity	MP	Yes	40390601 40504832	No
63-12. pH	MP	Yes	40390601 40504832	No
62-14. Oxidizing or Reducing Action	MP	Yes	40390601 40504832	No[9]
62-15. Flammability	MP	N/A	N/A	No[9]
63-16. Explodability	MP	Yes	40390601 40504832	No
63-17. Storage Stability	MP	Yes	40390601 40504832	No[9]
63-18. Viscosity	MP	N/A	N/A	No[9]
63-19. Miscibility	MP	N/A	N/A	No[9]
63-20. Corrosion Characteristics	MP	Partially	40390601 40504832	Yes[10]

(Continued, footnotes follow)

TABLE B. (Continued).

Data Requirement	Test Substance[2]	Does EPA have data to satisfy this requirement?	Bibliographic Citation[3]	Must additional data be submitted under FIFRA Sec. 3(c)(2)(B)?
Other Requirements:				
64-1. Submittal of Samples	N/A	N/A	N/A	No

1. Data requirements pertain to the Chevron Chemical Company 97% T and 75% FI (EPA Reg. Nos. 62499-23 and 62499-26, respectively). Additional data requirements are listed in the preceding Table A, "Generic Data Requirements for the Acephate Technical Grade of the Active Ingredient".

2. Test substance: MP = manufacturing-use product; PAI = purified active ingredient; TEP = typical end-use product; TGAI = technical grade of the active ingredient.

3. Underlining indicates documents that have been reviewed in this Update Document.

4. Chevron has responded to the data requirements for its 97% T and 75% FI; however, additional data are required. For the 97% T nominal concentrations must be provided for a process solvent and all impurities present at ≥0.1% or of toxicological concern. In addition, an impurity which has pesticidal properties must be identified as an active ingredient and a lower certified limit must be provided. For the 75% FI the nominal concentration of the active ingredient must be based on the nominal concentration of the active ingredient in the technical source product, and the chemical name of the surfactant and the source of the diluent must be provided. In addition the label claim of both products does not agree with the nominal concentration of the active ingredient in that product; the label claim should be modified according to PR Notice 91-2 dated 5/2/91.

5. Chevron has responded to the data requirements for the 75% FI; however, the specifications of the inerts and the type of equipment used must be submitted. The registrant has adequately responded for the 97% T.

6. Chevron has responded to data requirements for 97% T; however a discussion of the source of two impurities listed on the Confidential Statement of Formula (CSF) must be discussed. The registrant has adequately responded for the 75% FI.

TABLE B. (Continued).

7. Chevron has responded to the data requirements for its 97% T and 75% FI; however, the registrant must explain how the certified limits of the 97% T were determined and submit amended CSFs on EPA Form 8570-4 (Rev 2-85) to include the name and address of the producer for both products.

8. As required in 40 CFR §158.190 and more fully described in the Pesticide Assessment Guidelines, Subdivision D, Guidelines Reference Nos. 63-2 through 63-20, data must be submitted on physicochemical characteristics of each manufacturing-use product (color, physical state, odor, specific gravity, pH, oxidizing or reducing action, flammability, explodability, storage stability, viscosity, miscibility, and corrosion characteristics). Additional data requirements regarding physicochemical properties of manufacturing-use products which contain only the technical grade of the active ingredient are listed in Table A, "Generic Data Requirements for the Acephate Technical Grade of the Active Ingredient."

9. Data are not required on this topic since the products are solids at room temperature.

10. Chevron has responded to data requirements for the 97% T; however, data to support the statement that the 97% T is non-corrosive are required. The registrant has adequately responded for the 75% FI.

TABLE A. GENERIC DATA REQUIREMENTS FOR THE ACEPHATE (VALENT) TECHNICAL GRADE OF THE ACTIVE INGREDIENT.[1]

Data Requirement	Test Substance[2]	Does EPA have data to satisfy this requirement?	Bibliographic Citation[3]	Must additional data be submitted under FIFRA Sec. 3(c)(2)(B)?
40 CFR §158.155-190 Product Chemistry				
Product Composition				
61-2. Starting Materials and Manufacture Process	TGAI	No	N/A	Yes[4]
61-3. Formation of Impurities	TGAI	No	N/A	Yes[4]
Analysis and Certification of Product Ingredients				
62-1. Preliminary Analysis	TGAI	No	N/A	Yes[4]
Physical and Chemical Characteristics[5]				
63-2. Color	TGAI	No	N/A	Yes[4]
63-3. Physical State	TGAI	No	N/A	Yes[4]
63-4. Odor	TGAI	No	N/A	Yes[4]
63-5. Melting Point	TGAI	No	N/A	Yes[4,6]
63-6. Boiling Point	TGAI	No	N/A	Yes[4,7]
63-7. Density, Bulk Density, or Specific Gravity	TGAI	No	N/A	Yes[4]
63-8. Solubility	TGAI or PAI	No	N/A	Yes[4]
63-9. Vapor Pressure	TGAI or PAI	No	N/A	Yes[4]
63-10. Dissociation Constant	TGAI or PAI	No	N/A	Yes[4]
63-11. Octanol/Water Partitioning Coefficient	PAI	No	N/A	Yes[4]
63-12. pH	TGAI	No	N/A	Yes[4]
63-13. Stability	TGAI	No	N/A	Yes[4]
Other Requirements:				
64-1. Submittal of Samples	N/A	N/A	N/A	No

1. Data requirements pertain to the Valent U.S.A. Corporation 97% T (EPA Reg. No. 59639-41). Additional data requirements are listed in the following Table B, "Product Specific Data Requirements for Acephate Manufacturing-Use Products".

TABLE A. (Continued).

2. Test substance: MP = manufacturing-use product; PAI = purified active ingredient; TEP = typical end-use product; TGAI = technical grade of the active ingredient.

3. Underlining indicates documents that have been reviewed in this Update Document.

4. Valent has not responded for its 97% T; all product chemistry data pertaining to this topic remain outstanding.

5. As required by 40 CFR §158.190 and more fully described in the Pesticide Assessment Guidelines, Subdivision D, Guidelines Reference Nos. 63-2 through 63-13, data must be submitted on physicochemical characteristics (color, physical state, odor, melting point, boiling point, specific gravity, solubility, vapor pressure, dissociation constant, octanol/water partition coefficient, pH, and stability). There are additional data requirements listed in Table B pertaining to physicochemical characteristics of those technical products which are also manufacturing use products.

6. Data are required if the TGAI is a solid at room temperature.

7. Data are required if the TGAI is a liquid at room temperature.

TABLE B. PRODUCT SPECIFIC DATA REQUIREMENTS FOR ACEPHATE (VALENT) MANUFACTURING-USE PRODUCTS.[1]

Data Requirement	Test Substance[2]	Does EPA have data to satisfy this requirement?	Bibliographic Citation[3]	Must additional data be submitted under FIFRA Sec. 3(c)(2)(B)?
40 CFR §158.155-190 Product Chemistry				
Product Composition				
61-1. Product Composition	MP	Partially	CSFs	Yes[4]
61-2. Starting Materials & Manufacture/Formulation Process	MP	No	N/A	Yes[5]
61-3. Formation of Impurities	MP	No	N/A	Yes[5]
Analysis and Certification of Product Ingredients				
62-1. Preliminary Analysis	MP	No	N/A	Yes[5]
62-2. Certified Limits	MP	Partially	CSFs	Yes[6]
62-3. Enforcement Analytical Methods	MP	No	N/A	Yes[5]
Physical and Chemical Characteristics[7]				
63-2. Color	MP	No	N/A	Yes[5]
63-3. Physical State	MP	No	N/A	Yes[5]
63-4. Odor	MP	No	N/A	Yes[5]
63-7. Density, Bulk Density, or Specific Gravity	MP	No	N/A	Yes[5]
63-12. pH	MP	No	N/A	Yes[5]
62-14. Oxidizing or Reducing Action	MP	No	N/A	Yes[8]
62-15. Flammability	MP	No	N/A	Yes[5]
63-16. Explodability	MP	No	N/A	Yes[5]
63-17. Storage Stability	MP	No	N/A	Yes[8]
63-18. Viscosity	MP	No	N/A	Yes[8]
63-19. Miscibility	MP	No	N/A	Yes[5]
63-20. Corrosion Characteristics	MP	No	N/A	Yes[5]

(Continued, footnotes follow)

TABLE B. (Continued).

Data Requirement	Test Substance[2]	Does EPA have data to satisfy this requirement?	Bibliographic Citation[3]	Must additional data be submitted under FIFRA Sec. 3(c)(2)(B)?
Other Requirements:				
64-1. Submittal of Samples	N/A	N/A	N/A	No

1. Data requirements pertain to the Valent U.S.A. Corporation 97% T and 75% FI (EPA Reg. Nos. 59639-41 and 59639-42, respectively). Additional data requirements are listed in the preceeding Table A, "Generic Data Requirements for the Acephate Technical Grade of the Active Ingredient".

2. Test substance: MP = manufacturing-use product; PAI = purified active ingredient; TEP = typical end-use product; TGAI = technical grade of the active ingredient.

3. Underlining indicates documents that have been reviewed in this Update Document.

4. Valent has responded to the data requirements for its 97% T and 75% FI; however, additional data are required. For the 97% T nominal concentrations must be provided for the process solvent and all impurities present at ≥0.1% or of toxicological concern. In addition, an impurity which has pesticidal properties must be identified as an active ingredient and a lower certified limit must be provided. For the 75% FI the nominal concentration of the active ingredient must be based on the nominal concentration of the active ingredient in the technical source product, and the chemical name of the surfactant and the source of the diluent must be provided. In addition, the label claim of both products does not agree with the nominal concentration of the active ingredient in that product; the label claim should be modified according to PR Notice 91-2 dated 5/2/91.

5. Valent has not responded to the data requirements for its 97% T and 75% FI; all product chemistry data pertaining to this topic remain outstanding.

6. Valent has responded to the data requirements for its 97% T and 75% FI; however, the registrant must explain how the certified limits of the 97% T were determined and additional impurities may be identified from the outstanding data concerning the starting materials and manufacturing process, discussion of the

TABLE B. (Continued).

formation of impurities, and preliminary analysis. In addition, amended CSFs on EPA Form 8570-4 (Rev 2-85) to include the name and address of the producer must be submitted for both products.

7. As required in 40 CFR §158.190 and more fully described in the Pesticide Assessment Guidelines, Subdivision D, Guidelines Reference Nos. 63-2 through 63-20, data must be submitted on physicochemical characteristics of each manufacturing-use product (color, physical state, odor, specific gravity, pH, oxidizing or reducing action, flammability, explodability, storage stability, viscosity, miscibility, and corrosion characteristics). Additional data requirements regarding physicochemical properties of manufacturing-use products which contain only the technical grade of the active ingredient are listed in Table A, "Generic Data Requirements for the Acephate Technical Grade of the Active Ingredient."

8. Data are required on this topic if the product is a liquid at room temperature.