



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

JUN 21 1991

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

MEMORANDUM

SUBJECT: Methyl Bromide (MEBR) Product and Residue Chemistry
Reregistration Standard Updates (No CBRS #, No
Barcode No..).

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

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

and

Reto Engler, Ph.D., Chief
Science Analysis and Coordination Branch
Health Effects Division (H7509C)

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

Revised data requirement tables are included.

If you need additional input please advise.

Attachment 1: MEBR Product Chemistry Reregistration Standard Update.

Attachment 2: MEBR Residue Chemistry Reregistration Standard Update

Attachment 3: Confidential Appendices A, B, C, D and E For MEBR Products.

cc (With Attachments 1, 2 and 3): RBP, MEBR Reregistration
Standard file, MEBR Subject File, C. Furlow/J. Burrell (PIB/FOD)
and Acurex.

cc (With Attachments 1 and 2) : Circulation (7).

cc (Without Attachments): RF.

ATTACHMENT 1

**METHYL BROMIDE
(Chemical Code 53201)**

TASK 3

**Reregistration Standard
Update**

Product Chemistry

May 6, 1991

Contract No. 68-DO-0142

Submitted to:

U.S. Environmental Protection Agency
Arlington, VA 22202

Submitted by:

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METHYL BROMIDE

REREGISTRATION STANDARD UPDATE

PRODUCT CHEMISTRY

TASK 3

INTRODUCTION

A Product Search Listing conducted on January 25, 1991 identified several registered manufacturing use products of methyl bromide, the 99.9999% technical (T), EPA Reg. No. 3377-9, registered to Ethyl Corporation, the 98% technical (T), EPA Reg. No. 3377-27, registered to Ethyl Corporation, the 67% technical (T), EPA Reg. No. 3377-26, registered to Ethyl Corporation, the 99.9999% technical (T), EPA Reg. No. 5785-51, registered to Great Lakes Chemical Corporation, the 98% technical (T), EPA Reg. No. 5785-56, registered to Great Lakes Chemical Corporation, the 67% formulation intermediate (FI), EPA Reg. No. 5785-52, registered to Great Lakes Chemical Corporation, and the 99.5% technical (T), EPA Reg. No. 15298-4, registered to Ameribrom Inc., formerly Bromine Compounds, Ltd.

The material provided indicates that the Ethyl Corp. 98% T, EPA Reg. No. 3377-27, is, in fact, a formulation intermediate since the final step in its manufacture is a physical admixture with an inert material. Throughout this document this material will be reviewed and referred to as an FI.

The Methyl Bromide Guidance Document dated August, 1986 requires additional generic and product specific product chemistry data for the technical product. Ethyl Corp. (1987; MRIDs 40254201, 40254204, 40254205, 40254206, 40254207, 40315901, 40315903, and 1989; MRID 41032803), Great Lakes Chemical Corp. (1987; MRIDs 40253201 to -03), and Ameribrom (1987; MRID 40138201) have submitted data in response to the Guidance Document. These data are reviewed below for their adequacy in fulfilling data requirements.

The Guidance Document states that end-use products with methyl bromide as the active ingredient which will be used for any purpose other than the fumigation of RACs in enclosed chambers are required to contain 0.25 to 2.0% chloropicrin as an odor warning agent. Further, it states that chloropicrin at this concentration shall be listed as an inert ingredient.

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 methyl bromide.

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 Product Chemistry data are required:

- o All data requirements remain outstanding for the Ethyl Corp. 67% T (EPA Reg. No. 3377-26), for the Ethyl Corp. 98% FI (EPA Reg. No. 3377-27), for the unspecified technical used in the formulation of the Ethyl Corp. 98% FI (EPA Reg. No. 3377-27), for the Great Lakes Chemical Corp. 67% FI (EPA Reg. No. 5785-52, and for the Great Lakes Chemical Corp. 98% FI (EPA Reg. No. 5785-56).
- o For the Ameribrom Inc. 99.5% T (EPA Reg. No. 15298-4) material a signed Confidential Statement of Formula, nominal concentrations, a certified upper limit for the active ingredient, names and certified upper limits for the impurities, additional information pertaining to starting materials and the manufacturing process, a preliminary analysis for the active ingredient and all potential impurities, additional physical and chemical data, and enforcement analytical methods for the active ingredient and any toxicologically significant impurities requiring certified limits.
- o For the Ethyl Corp. 99.9% T (EPA Reg. No.3377-9) material additional physical and chemical data, a signed Confidential Statement of Formula, nominal concentrations for the identified impurities, additional information pertaining to the starting materials and manufacturing process, additional information pertaining to the formation of impurities, description of the analytical methods used in the preliminary analysis of the active ingredient, analytical methods and preliminary analysis for the potential impurities identified in Confidential Appendix C, and enforcement methods for the active ingredient and any toxicologically significant impurities requiring certified limits.
- o For the Great Lakes Chemical Corp. 99.9% T (EPA Reg. No. 5785-51) material additional physical and chemical data, a signed Confidential Statement of Formula, additional information pertaining to the starting materials and manufacturing process, preliminary analysis results and procedures for the remaining impurities, and validation data for the enforcement analytical method.

PRODUCT IDENTITY AND COMPOSITION

61-1. Product Identity and Disclosure of Ingredients

The Methyl Bromide Guidance Document dated August, 1986 does not require generic data concerning product composition. The Guidance Document does require additional product specific data concerning product composition. Ameribrom Corp. has submitted data (MRID 40138201) applicable to product identity for the technical product (EPA Reg. No. 15928-4); Ethyl Corp. has submitted data (MRIDs 40254201, 40315901, 40254204) for the products M-B-R-100 (EPA Reg. No. 3377-8), M-B-R 98 (EPA Reg. No. 3377-27), Methyl Bromide Technical (EPA Reg. No. 3377-9), respectively; and Great Lakes Chemical Corp. has submitted data (MRID 40253201) for the product Methyl Bromide (EPA Reg. No. 5785-51). MRID 50254201 is not reviewed since it has been determined that EPA Reg. No. 3377-8 was voluntarily canceled on January 22, 1991. No data pertinent to these requirements has been submitted by Great Lakes Chemical Corp. to support the registration of their formulation intermediate products (EPA Reg. Nos. 5785-52 and 5785-56). No data pertinent to these requirements has been submitted by Ethyl Corp to support the registration of their M-B-R 33 Technical product (EPA Reg. No. 3377-26). The remaining data is summarized in Confidential Appendix A.

The data provided by Ameribrom Inc. do not satisfy the requirements of 40 CFR §158.175, (Guideline Reference No. 61-1) regarding product composition for the Ameribrom 99.5% T because the following were not provided: nominal concentration for the active ingredient. Identification of the impurities and nominal concentrations for same are missing. A signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85) must be submitted.

The data provided by Great Lakes Chemical Corp. do not satisfy the requirements of 40 CFR §158.175, (Guideline Reference No. 61-1) regarding product composition for the Great Lakes 99.7% T because the following were not provided: A signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85) must be submitted. Final evaluation of these values cannot be completed until preliminary analyses are provided for the other potential impurities identified in Confidential Appendix C.

These data do not satisfy the requirements of 40 CFR §158.175, (Guideline Reference No. 61-1) regarding product composition for the Ethyl Corp. 99.9% T because nominal concentrations are missing for the impurities. A signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85) must be submitted. A final review of this data cannot be made until a complete preliminary analysis is provided.

These data do not satisfy the requirements of 40 CFR §158.175, (Guideline Reference No. 61-1) regarding product composition for the Ethyl Corp. 98% FI because the information submitted is not applicable to the current product. All data requirements remain outstanding. A signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85) must be submitted.

No data pertinent to the requirements of these Guideline Reference Nos. has been submitted by Ethyl Corp. to support the reregistration of their 67% T (EPA Reg. No. 3377-26), or the unspecified technical material used in the formulation of their 98% FI (EPA Reg. No. 3377-27); or by the Great Lakes Chemical Corp. to support the reregistration of their 67% FI (EPA Reg. No. 5785-52), or their 98% FI (EPA Reg. No. 5785-56). All data requirements remain outstanding for these materials.

61-2. Starting Materials and Manufacturing Process

The Methyl Bromide Guidance Document dated August, 1986 requires additional generic and product specific data concerning the starting materials and manufacturing process. Ameribrom Corp. has submitted data (MRID 40138201) applicable to product identity for the technical product (EPA Reg. No. 15928-4); Ethyl Corp. has submitted data (MRIDs 40254201, 40315901, 40254204) for the products M-B-R-100 (EPA Reg. No. 3377-8), M-B-R 98 (EPA Reg. No. 3377-27), Methyl Bromide Technical (EPA Reg. No. 3377-9), respectively; and Great Lakes Chemical Corp. has submitted data (MRID 40253201) for the product Methyl Bromide (EPA Reg. No. 5785-51). MRID 50254201 is not reviewed since it has been determined that EPA Reg. No. 3377-8 was voluntarily canceled on January 22, 1991. No data pertinent to these requirements has been submitted by Great Lakes Chemical Corp. to support the registration of their formulation intermediate products (EPA Reg. Nos. 5785-52 and 5785-56). No data pertinent to these requirements has been submitted by Ethyl Corp to support the registration of their M-B-R 33 Technical product (EPA Reg. No. 3377-26). The remaining data is summarized in Confidential Appendix B. The data reviewed in Confidential Appendix B satisfy the requirements of 40 CFR §158.160-162 (Guideline Reference No. 61-2).

These data do not satisfy the requirements of 40 CFR §158.162 (Guideline Reference No. 61-2) regarding starting materials and manufacturing process for the Ethyl Corp. 99.9% T (EPA Reg. No. 3377-9). The sources of, and technical data on, starting materials is incomplete. The physical conditions, and control procedures for same, occurring during the process should be described. The equipment used for the manufacturing process, purification, and storage should be described. Procedures for the recovery and recycling of starting materials, intermediates, and products should be described. A flow chart should be provided. Additional information is required.

These data do not satisfy the requirements of 40 CFR §158.162 (Guideline Reference No. 61-2) regarding starting materials and manufacturing process for the Ethyl Corp. 98% FI (EPA Reg. No. 3377-27). The names, sources of, and technical data on, starting materials are incomplete. If the supplied information describes an alternative formulation then EPA should be informed of the fact.

These data do not satisfy the requirements of 40 CFR §158.162 (Guideline Reference No. 61-2) regarding starting materials and manufacturing process for the Great Lakes Chemical

Corp. 99.9% T (EPA Reg. No. 5785-51). The names, sources of, and technical specifications for the starting materials are incomplete. The physical conditions, and control procedures for same, occurring at the several stages are not specified. The description of the process requires clarification. Quality control measures should be described. Materials of construction should be described.

These data do not satisfy the requirements of 40 CFR §158.162 (Guideline Reference No. 61-2) regarding starting materials and manufacturing process for the Ameribrom Inc. 99.5% T (EPA Reg. No. 15298-4). The names, sources of, and technical specifications for the starting materials are incomplete. The physical conditions, and control procedures for same, occurring at the several stages are not specified. Quality control measures for the scrubbers should be described. Materials of construction should be described. Any recovery/recycling steps should be described.

No data pertinent to the requirements of this Guideline Reference No. has been submitted by Ethyl Corp. to support the reregistration of their 67% T (EPA Reg. No. 3377-26), their 98% FI (EPA Reg. No. 3377-27), or the unspecified technical material used in the formulation of their 98% FI (EPA Reg. No. 3377-27); or by the Great Lakes Chemical Corp. to support the reregistration of their 67% FI (EPA Reg. No. 5785-52), or their 98% FI (EPA Reg. No. 5785-56). All data requirements remain outstanding for these materials.

61-3. Discussion of the Formation of Impurities

The Methyl Bromide Guidance Document dated August, 1986 specified generic and product specific data requirements for methyl bromide regarding a detailed discussion of formation of impurities. In response to the Guidance Document Ameribrom Corp. has submitted data (MRID 40138201) applicable to product identity for the technical product (EPA Reg. No. 15928-4); Ethyl Corp. has submitted data (MRIDs 40254201, 40315901, 40254204) for the products M-B-R-100 (EPA Reg. No. 3377-8), M-B-R 98 (EPA Reg. No. 3377-27), Methyl Bromide Technical (EPA Reg. No. 3377-9), respectively; and Great Lakes Chemical Corp. has submitted data (MRID 40253201) for the product Methyl Bromide (EPA Reg. No. 5785-51). MRID 50254201 is not reviewed since it has been determined that EPA Reg. No. 3377-8 was voluntarily canceled on January 22, 1991. No data pertinent to these requirements has been submitted by Great Lakes Chemical Corp. to support the registration of their formulation intermediate products (EPA Reg. Nos. 5785-52 and 5785-56). No data pertinent to these requirements has been submitted by Ethyl Corp to support the registration of their M-B-R 33 Technical product (EPA Reg. No. 3377-26). The remaining data is summarized in Confidential Appendix C.

This information does not satisfy the requirements of 40 CFR §158.167 (Guideline Reference No. 61-3) regarding the formation of impurities in the Ethyl Corp. 99.9% T (EPA Reg. No. 3377-9). Certain potential contaminants are stated without any discussion as their source. Other contaminants are not discussed at all. No discussion is presented as to the potential for carryover of starting materials. Additional information is required.

This information does not satisfy the requirements of 40 CFR §158.167 (Guideline Reference No. 61-3) regarding the formation of impurities in the Ethyl Corp. 98% FI (EPA Reg. No. 3377-27). The information presented is based upon starting materials which are no longer used in the production of the material. Additional information is required.

This information satisfies the requirements of 40 CFR §158.167 (Guideline Reference No. 61-3) regarding the formation of impurities in the Great Lakes Chemical Corp. 99.9% T (EPA Reg. No. 5785-51). No further information is required.

This information satisfies the requirements of 40 CFR §158.167 (Guideline Reference No. 61-3) regarding the formation of impurities in the Ameribrom Inc. 99.5% T (EPA Reg. No. 15298-4). No further information is required.

No data pertinent to the requirements of this Guideline Reference No. has been submitted by Ethyl Corp. to support the reregistration of their 67% T (EPA Reg. No. 3377-26), their 98% FI (EPA Reg. No. 3377-27), or the unspecified technical material used in the formulation of their 98% FI (EPA Reg. No. 3377-27); or by the Great Lakes Chemical Corp. to support the reregistration of their 67% FI (EPA Reg. No. 5785-52), or their 98% FI (EPA Reg. No. 5785-56). All data requirements remain outstanding for these materials.

62-1. Preliminary Analysis

The Methyl Bromide Guidance Document dated August, 1986 specified that five or more samples be analyzed for the amount of active ingredient and each impurity for which a certified limit is required. Complete validation data with accuracy and precision were requested for each analytical method used. In response to the Guidance Document for registration of the 99.8% T (EPA Reg. No. 3377-9), Ethyl Corp. has submitted data (MRID 40254205) which is applicable to Guideline Reference No. 62-1; the Great Lakes Chemical Corp. has also submitted data (MRID 40253202) to support the registration of their technical product (EPA Reg. No. 5785-51). No data pertinent to these requirements has been submitted by Great Lakes Chemical Corp. to support the registration of their formulation intermediate products (EPA Reg. Nos. 5785-52 and 5785-56). No data pertinent to these requirements has been submitted by Ethyl Corp to support the registration of their M-B-R 33 or M-B-R 98 products (EPA Reg. Nos. 3377-26 and 3377-27). This data is summarized and presented in Confidential Appendix D.

These data do not satisfy the requirements of 40 CFR §158.170 (Guideline Reference No. 62-1) for the Ethyl Corp. 99.9% T (EPA Reg. No. 3377-9). No description of the analytical method used to generate these results is provided. No statement is made regarding the method's accuracy and precision. Sample data and calculations should be provided. No methods or results are presented for the analysis of the potential impurities discussed in Confidential Appendix C. Additional data are required.

These data do not fully satisfy the requirements of 40 CFR §158.170 (Guideline Reference No. 62-1) for the Great Lakes Chemical Corp. 99.9% T (EPA Reg. No. 5785-51). The registrant should submit a corrected estimate of the accuracy of the supplied method. No methods or results are presented for the analysis of the potential impurities discussed in Confidential Appendix C. Additional data are required.

No data pertinent to the requirements of this Guideline Reference No. has been submitted by Ethyl Corp. to support the reregistration of their 67% T (EPA Reg. No. 3377-26), their 98% FI (EPA Reg. No. 3377-27), or the unspecified technical material used in the formulation of their 98% FI (EPA Reg. No. 3377-27); or by the Great Lakes Chemical Corp. to support the reregistration of their 67% FI (EPA Reg. No. 5785-52), or their 98% FI (EPA Reg. No. 5785-56); or by Ameribrom Inc. to support the reregistration of their 99.5% T (EPA Reg. No. 15298-4). All data requirements remain outstanding for these materials.

62-2. Certified Limits

The Methyl Bromide Guidance Document dated August, 1986 specified generic and product specific data requirements regarding certification of ingredient limits. In response to the Guidance Document for registration of the 99.8% T (EPA Reg. No. 3377-9), Ethyl Corp. has submitted data (MRID 40254205) which is applicable to Guideline Reference No. 62-1; the Great Lakes Chemical Corp. has also submitted data (MRID 40253202) to support the reregistration of their technical product (EPA Reg. No. 5785-51). No data pertinent to these requirements has been submitted by Great Lakes Chemical Corp. to support the reregistration of their formulation intermediate products (EPA Reg. Nos. 5785-52 and 5785-56). No data pertinent to these requirements has been submitted by Ethyl Corp to support the reregistration of their M-B-R 33 or M-B-R 98 products (EPA Reg. Nos. 3377-26 and 3377-27). This data is summarized and presented in Confidential Appendix A.

These data do not satisfy the requirements of 40 CFR §158.175, (Guideline Reference No. 61-1 and 62-2) regarding product composition and certified limits for the Ameribrom 99.5% T because an upper certified limit for the active ingredient was not supplied. Identification of the individual impurities and the respective upper certified limits must be provided. The active ingredient certified limits cannot be evaluated until data is provided for the preliminary analysis requirement. A signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85) must be submitted.

These data do not satisfy the requirements of 40 CFR §158.175, (Guideline Reference No. 61-1 and 62-2) regarding product composition and certified limits for the Great Lakes 99.7% T because the following were not provided: A signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85) must be submitted. Final evaluation of these values cannot be completed until preliminary analyses are provided for the other potential impurities identified in Confidential Appendix C.

These data do not satisfy the requirements of 40 CFR §158.175, (Guideline Reference No. 61-1 and 62-2) regarding product composition and certified limits for the Ethyl Corp. 99.9% T because the following were not provided: A signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85) must be submitted. A final review of this data cannot be made until a complete preliminary analysis is provided.

These data do not satisfy the requirements of 40 CFR §158.175, (Guideline Reference No. 61-1 and 62-2) regarding product composition and certified limits for the Ethyl Corp. 98% FI because the information submitted is not applicable to the current product. All data requirements remain outstanding. A signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85) must be submitted.

No data pertinent to the requirements of this Guideline Reference No. has been submitted by Ethyl Corp. to support the reregistration of their 67% T (EPA Reg. No. 3377-26), their 98% FI (EPA Reg. No. 3377-27), or the unspecified technical material used in the formulation of their 98% FI (EPA Reg. No. 3377-27); or by the Great Lakes Chemical Corp. to support the reregistration of their 67% FI (EPA Reg. No. 5785-52), or their 98% FI (EPA Reg. No. 5785-56). All data requirements remain outstanding for these materials.

62-3. Enforcement Analytical Methods

The Methyl Bromide Guidance Document dated August, 1986 specified that analytical methods be provided to determine the active ingredient, any intentionally added inert ingredients, and each toxicologically significant impurity for which a certified limit is required. In response to the Guidance Document for registration of the 99.8% T (EPA Reg. No. 3377-9), Ethyl Corp. has submitted data (MRID 40254205) which is applicable to Guideline Reference No. 62-1; the Great Lakes Chemical Corp. has also submitted data (MRID 40253202) to support the registration of their technical product (EPA Reg. No. 5785-51). No data pertinent to these requirements has been submitted by Great Lakes Chemical Corp. to support the registration of their formulation intermediate products (EPA Reg. Nos. 5785-52 and 5785-56). No data pertinent to these requirements has been submitted by Ethyl Corp to support the registration of their M-B-R 33 or M-B-R 98 products (EPA Reg. Nos. 3377-26 and 3377-27). Method descriptions and validation data are presented in Confidential Appendix E.

Enforcement method QC-85-11 was provided by Great Lakes Chemical Corp. to support the reregistration of their 99.9% T (EPA Reg. No. 5785-51). This method cannot be evaluated at this time since no validation data were provided.

No data pertinent to the requirements of this Guideline Reference No. has been submitted by Ethyl Corp. to support the reregistration of their 67% T (EPA Reg. No. 3377-26), their 98% FI (EPA Reg. No. 3377-27), or the unspecified technical material used in the formulation of their 98% FI (EPA Reg. No. 3377-27); or by the Great Lakes Chemical Corp. to support the

reregistration of their 67% FI (EPA Reg. No. 5785-52), or their 98% FI (EPA Reg. No. 5785-56). All data requirements remain outstanding for these materials.

PHYSICAL AND CHEMICAL CHARACTERISTICS

The Methyl Bromide Guidance Document dated August, 1986 specified that generic and product specific data be provided regarding the physical and chemical characteristics of products based upon methyl bromide as the active ingredient. No data has been submitted to support the registration of EPA Reg. Nos. 3377-26, 5785-56, 5785-52, and the unspecified technical used in the formulation of 3377-27. Physical and chemical data were submitted by Ameribrom Inc. (1987; MRID 40138201), Great Lakes Chemical Corp. (1987; MRID 40253203), and Ethyl Corp. (1987; MRIDs 40254206 and 40315903) to satisfy the requirements of 40 CFR §158.190 (Guideline Reference Nos. 63-2 through 63-21). This information is reviewed in the following sections.

Table 1. Physical and Chemical Properties of Methyl Bromide Based Registered Materials

Guideline Reference No.; 40 CFR §158.190: Name of Property	Description (Substrate; EPA Reg. No.; MRID)
63-2. Color	colorless to light yellow (TGAI; 5785-51; 40253203) clear, colorless to straw- colored (TGAI; 15298-4; 40138201)
63-3. Physical state	gas (TGAI; 5785-51; 40253203) gas at STP (TGAI; 15298-4; 40138201)
63-4. Odor	odorless (TGAI; 5785-51; 40253203) (TGAI; 15298-4; 40138201)
63-5. Melting Point	not required; not a solid at room temperature -94 °C (TGAI; 15298-4; 40138201)

63-6. Boiling Point	<p>not required; not a liquid at room temperature</p> <p>4 °C (TGAI; 5785-51; 40253203)</p> <p>3.5 - 5 °C (TGAI; 15298-4; 40138201)</p>
63-7. Density	<p>1.732 g/mL @ 0 °C (TGAI; 5785-51; 40253203)</p> <p>1.73 g/mL @ 0 °C (TGAI; 15298-4; 40138201)</p>
63-8. Solubility	<p>1.75 g/100 mL in ? (TGAI; 5785-51; 40253203)</p> <p>1.34 g/100 mL H₂O (sealed system); <0.1 g/100 mL H₂O (open system); "infinitely" soluble in low alcohols, ethers, esters, ketones, and halogenated aromatics (TGAI; 15298-4; 40138201)</p>
63-9. Vapor pressure	<p>1400 mm Hg (PAI; 5785-51; 40253203)</p> <p>1420 mm Hg @ 20 °C (TGAI; 15298-4; 40138201)</p>
63-10. Dissociation constant	<p>not applicable (PAI; 5785-51; 40253203) (TGAI; 15298-4; 40138201)</p>
63-11. Octanol/water partition coefficient	<p>log P=1.19 (PAI; 5785-51; 40253203) (TGAI; 3377-9; 40254206)</p> <p>log P=1.19 ± 0.04 (TGAI; 15298-4; 40138201)</p>

Table 1. (continued)

Guideline Reference No.; 40 CFR §158.190: Name of Property	Description (Substrate; EPA Reg. No.; MRID)
63-12. pH	<p>not applicable (TGAI; 5785-51; 40253203) 8.1 ± 0.1 (TGAI; 15298-4; 40138201)</p>
63-13. Stability	<p>stable indefinitely in absence of water degrades by hydrolysis with half life of 35 days (TGAI; 5785-51; 40253203)</p>
63-14. Oxidizing or reducing action	<p>no activity (TGAI; 5785-51; 40253203) (TGAI; 3377-9; 40254206) (MP; 3377-27; 40315903)</p>
63-15. Flammability	<p>not required; not a combustible liquid at STP non- flammable (TGAI; 5785-51; 40253203)</p>
63-16. Explodability	<p>non-explosive (TGAI; 5785-51; 40253203) moderate at 10 - 15.4 % by volume in air (TGAI; 3377-9; 40254206) (MP; 3377-27; 40315903)</p>
63-17. Storage stability	<p>stable indefinitely on storage (TGAI; 5785-51; 40253203)</p>

(Continued)

Table 1. (continued)

Guideline Reference No.; 40 CFR §158.190: Name of Property	Description (Substrate; EPA Reg. No.; MRID)
63-18. Viscosity	not required; not a liquid at room temperature (TGAI; 5785-51; 40253203) 0.33 cp @ 20 °C (TGAI; 3377-9; 40254206) 0.358 cp @ 20 °C (MP; 3377-27; 40315903)
63-19. Miscibility	not required; not a liquid at room temperature (TGAI; 5785-51; 40253203)
63-20. Corrosion characteristics	non-corrosive to metal containers in the absence of water (TGAI; 5785-51; 40253203)
63-21. Dielectric breakdown voltage	not required; not a liquid at room temperature

No data is required for Guideline Reference Nos. 63-5, 63-6, 63-7, 63-9, 63-10, 63-18, 63-19, and 63-21 since these materials are gases at STP. No data is required for Guideline Reference No. 63-4 since performance of this test would be hazardous. The data supplied for Guideline Reference Nos. 63-2 and 63-3 are satisfactory to support the registration of EPA Reg. Nos. 5785-51 and 15298-4; while no supporting details were provided with the results, a simple visual observation is all that is required. The data provided for Guideline Reference Nos. 63-8, 63-11, 63-12, 63-13, 63-14, 63-15, 63-16, 63-17, and 63-20 are judged to be unsatisfactory. Either the tests were not performed on the registered material or methods, data, and calculations were not supplied. The registrants are referred to Guideline Reference No. 63-1(c)(1) and (2). Since there is a disagreement as to whether or not methyl bromide is explodable we are requiring that this test be performed.

All generic and product specific physical and chemical data requirements remain outstanding for the Ethyl Corp. technical material, EPA Reg. No. 3377-26, and the unknown technical material used in the manufacture of the Ethyl Corp. FI, EPA Reg. No. 3377-27. All product specific physical and chemical data requirements remain outstanding for the Great Lakes Chemical Corp. FI, EPA Reg. No. 5785-52, for the Great Lakes Chemical Corp. formulation intermediate material, EPA Reg. No. 5785-56, and the Ethyl Corp. formulation intermediate, EPA Reg. No. 3377-27. Outstanding requirements for color, physical state, solubility, dissociation constant, octanol/water partition coefficient, pH, stability, oxidizing/reducing action, explodability, storage stability, and corrosion characteristics remain for the Ethyl Corp. technical, EPA Reg. No. 3377-9. Outstanding requirements for solubility, dissociation constant, octanol/water partition coefficient, pH, stability, oxidizing/reducing action, explodability, storage stability, and corrosion characteristics remain for the Great Lakes Chemical Corp technical, EPA Reg. No. 5785-51 and for the Ameribrom Inc. technical, EPA Reg. No. 15928-4.

PRODUCT CHEMISTRY CITATIONS (USED)

MRID documents containing data which have been previously reviewed by the agency are designated in bold print in the following bibliographic listing of Product Chemistry Citations (used).

Product Chemistry Citations (used):

- 40138201 Ameribrom Inc. (1987) 158.125 Product Chemistry. Reregistration Process for Pesticide Products Containing Methyl Bromide as the Single Active Agent. Unpublished Study prepared by Ameribrom Inc. 13p.
- 40253201 McAllister, D.L. (1986) Methyl Bromide - Product Identity. Laboratory Project ID 921-157. Unpublished Study prepared by Great Lakes Chemical Corp. 13p.
- 40253202 McAllister, D.L. (1986) Methyl Bromide - Analysis and Certification of Product Ingredients. Laboratory Project ID 921-163. Unpublished Study prepared by Great Lakes Chemical Corp. 28p.
- 40253203 McAllister, D.L. (1986) Methyl Bromide - Physical and Chemical Characteristics. Laboratory Project ID 921-150. Unpublished Study prepared by Great Lakes Chemical Corp. 4p.
- 40254204 Ethyl Corp. (1987) Methyl Bromide Technical - Product Chemistry Data Requirement 40 CFR §158.120 - Guideline 61. Unpublished Study prepared by Ethyl Corp. 10p.

- 40254205 Ethyl Corp. (1987) Methyl Bromide Technical - Product Chemistry Data Requirement 40 CFR §158.120 - Guideline 62. Unpublished Study prepared by Ethyl Corp. 3p.
- 40254206 Ethyl Corp. (1987) Methyl Bromide Technical - Product Chemistry Data Requirement 40 CFR §158.120 - Guideline 63. Unpublished Study prepared by Ethyl Corp. 3p.
- 40315901 Ethyl Corp. (1987) M-B-R 98 Technical - Product Chemistry Data Requirement 40 CFR §158.120 - Guideline 61. Unpublished Study prepared by Ethyl Corp. 7p.
- 40315903 Ethyl Corp. (1987) M-B-R 98 Technical - Product Chemistry Data Requirement 40 CFR §158.120 - Guideline 63. Unpublished Study prepared by Ethyl Corp. 3p.

TABLE A. GENERIC DATA REQUIREMENTS FOR THE METHYL BROMIDE TECHNICAL GRADE OF THE ACTIVE INGREDIENT.¹

Data Requirements	Test Substance ²	Does EPA have data to satisfy this requirement?	Bibliographic Citation	Must additional data be submitted under FIFRA Sec. 3(C)(2)(B)? ³
<u>40 CFR §158.155-190 Product Chemistry</u>				
<u>Product Composition</u>				
61-2. Beginning Materials and Production Process	TGAI	Partially	<u>40254204 40253201</u> <u>40138201</u>	Yes ⁴
61-3. Formation of Impurities	TGAI	Partially	<u>40254204 40253201</u> <u>40138201</u>	Yes ⁵
<u>Analysis and Certification of Product Ingredients</u>				
62-1. Preliminary Analysis of Product Samples	TGAI	Partially	<u>40254205 40253202</u>	Yes ⁶
62-2. Certification of Limits	TGAI	Partially	<u>40254205 40253202</u>	Yes ⁷
62-3. Analytical Methods to Verify Certified Limits	TGAI	Partially	<u>40253202</u>	Yes ⁸
<u>Physical and Chemical Characteristics</u>				
63-2. Color	TGAI	Partially	<u>40253203 40138201</u>	Yes ⁹
63-3. Physical State	TGAI	Partially	<u>40253203 40138201</u>	Yes ⁹

(Continued, footnotes follow)

TABLE A. (Continued)

Data Requirements	Test Substance ²	Does EPA have data to satisfy this requirement?	Bibliographic Citation	Must additional data be submitted under FIFRA Sec. 3(C)(2)(B)? ³
63-4. Odor	TGAI	Not Required	<u>40253203 40138201</u>	No ¹⁰
63-5. Melting Point	TGAI	Not Required	<u>40253201</u>	No ¹⁰
63-6. Boiling Point	TGAI	Not Required	<u>40253203 40138201</u>	No ¹⁰
63-7. Density, Bulk Density, or Specific Gravity	TGAI	Not Required	<u>40253203 40138201</u>	No ¹⁰
63-8. Solubility	TGAI or PAI	Partially	<u>40253203 40138201</u>	Yes ¹¹
63-9. Vapor Pressure	TGAI or PAI	Not Required	<u>40253203 40138201</u>	No ¹⁰
63-10. Dissociation Constant	TGAI or PAI	Partially	<u>40253203 40138201</u>	Yes ¹¹
63-11. Octanol/Water Partition Coefficient	PAI	Partially	<u>40253203 40254206 40138201</u>	Yes ¹¹
63-12. pH	TGAI	Partially	<u>40253203 40138201</u>	Yes ¹¹
63-13. Stability	TGAI	Partially	<u>40253203</u>	Yes ¹¹
<u>Other Requirements</u>				
64-1. Submittal of Samples	TGAI or PAI			

¹Data requirements pertain to the Ethyl Corp. 99.9% T (EPA Reg. No. 3377-9), the Ethyl Corp. 67% T (EPA Reg. No. 3377-26), the unknown technical material used in preparation of the Ethyl Corp. 98% FI (EPA Reg. No. 3377-27), the Great Lakes Chemical Corp. 99.9% T (EPA Reg. No. 5785-51), and the Ameribrom Inc. 99.5% T (EPA Reg. No. 15298-4). Additional data requirements are listed in the following Table B, "Product Specific Data Requirements for Manufacturing-Use Products."

TABLE A. (Continued)

²Test Substance: TGAI = technical grade of the active ingredient; PAI = purified active ingredient; MP = manufacturing use product.

³All data requirements remain outstanding for the Ethyl Corp. 67% T (EPA Reg. No. 3377-26), and the unspecified technical material used in the formulation of the Ethyl Corp. 98% FI (EPA Reg. No. 3377-27).

⁴Additional information is required for all products listed in footnote one in terms of starting materials, physical conditions during the production process, equipment used, description of the process, and any recovery/recycling steps used.

⁵All requirements of this guideline have been satisfied by Great Lakes Chemical Corp. for their 99.9% T (EPA Reg. No. 5785-51) and by Ameribrom Inc. for their 99.5% T (EPA Reg. No. 15298-4). Additional information is required for the other products listed in footnote one.

⁶Ethyl Corp. submitted data for the preliminary analysis of their 99.9% T (EPA Reg. No. 3377-9) which is judged unsatisfactory. The analytical method used was not described. Method precision and accuracy should have been described. No data or methods were provided for potential impurities. Additional data is required. The Great Lakes Chemical Corp. submitted data for the preliminary analysis of their 99.9% T (EPA Reg. No. 5785-51). This data is incomplete. A statement of accuracy must be submitted to support the current data submission. Additional data are required for other potential impurities identified in Confidential Appendix C. This requirement remains outstanding for the other products listed in footnote one.

⁷The certified limits provided by Great Lakes Chemical Corp. for their 99.7% T (EPA Reg. No. 5785-51) will be acceptable once they are submitted on a signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85). The certified limits proposed by Ethyl Corp. for their 99.7% T (EPA Reg. No. 3377-9) cannot be evaluated until the requirements for preliminary analysis are satisfied. Ethyl Corp. must submit the certified limits on a signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85). The data supplied by Ameribrom Inc. for their 99.5% T (EPA Reg. No. 15298-4) is not satisfactory. Separate upper and lower certified limits are required for the active ingredient. Upper certified limits are required for each individual impurity. These certified limits must be submitted on a signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85). This requirement remains outstanding for the other products listed in footnote one.

⁸Method QC-85-11 has been submitted for the Great Lakes 99.9% T (EPA Reg. No. 5785-51). Validation data must be submitted before this method can be evaluated. This requirement remains outstanding for the other products listed in footnote one.

TABLE A. (Continued)

⁹This requirement has been satisfied for the Great Lakes 99.9% T (EPA Reg. No. 5785-51) and the Ameribrom Inc. 99.5% T (EPA Reg. No. 15298-4). This requirement remains outstanding for the other products listed in footnote one.

¹⁰This requirement does not apply to products which are gases at STP.

¹¹This requirement has not been satisfied for any of the products listed in footnote one. The registrants should refer to Guideline Reference No. 63-1(c)(1) and (2). In addition to results, the submitted data should include the description of the experimental procedure, raw data and calculations, and the registrant's estimate of precision and accuracy for the procedure in their laboratory.

TABLE B. PRODUCT SPECIFIC DATA REQUIREMENTS FOR THE METHYL BROMIDE MANUFACTURING-USE PRODUCTS.¹

Data Requirements	Test Substance ²	Does EPA have data to satisfy this requirement?	Bibliographic Citation	Must additional data be submitted under FIFRA Sec. 3(C)(2)(B)? ³
<u>40 CFR §158.155-190 Product Chemistry</u>				
<u>Product Composition</u>				
61-1. Product Identity and Disclosure of Ingredients	MP	Partially	<u>40253201 40315901</u> <u>40254204 40138201</u>	Yes ⁴
61-2. Beginning Materials and Production Process	MP	Partially	<u>40254204 40253201</u> <u>40138201 40315901</u>	Yes ⁵
61-3. Formation of Impurities	MP	Partially	<u>40254204 40253201</u> <u>40138201 40315901</u>	Yes ⁶
<u>Analysis and Certification of Product Ingredients</u>				
62-1. Preliminary Analysis of Product Samples	MP	Partially	<u>40254205 40253202</u>	Yes ⁷
62-2. Certification of Ingredient Limits	MP	Partially	<u>40254205 40253202</u>	Yes ⁸
62-3. Analytical Methods to Verify Certified Limits	MP	Partially	<u>40253202</u>	Yes ⁹
<u>Physical and Chemical Characteristics</u>				
63-2. Color	MP	Partially	<u>40253203 40138201</u>	Yes ¹⁰
63-3. Physical State	MP	Partially	<u>40253203 40138201</u>	Yes ¹⁰
63-4. Odor	MP	Not Required	<u>40253203 40138201</u>	No ¹¹

(Continued, footnotes follow)

TABLE B. (Continued)

Data Requirements	Test Substance ²	Does EPA have data to satisfy this requirement?	Bibliographic Citation	Must additional data be submitted under FIFRA Sec. 3(C)(2)(B)? ³
63-7. Density, Bulk Density, or Specific Gravity	MP	Not Required	<u>40253201</u>	No ¹¹
63-12. pH	MP	Partially	<u>40253203 40138201</u>	Yes ¹²
63-14. Oxidizing or Reducing Action	MP	Partially	<u>40253203 40254201 40315903</u>	Yes ¹²
63-15. Flammability	MP	Not Required	<u>40253203</u>	No ¹⁰
63-16. Explodability	MP	Partially	<u>40253203 40254206 40315903</u>	Yes ¹¹
63-17. Storage Stability	MP	Partially	<u>40253203</u>	Yes ¹¹
63-18. Viscosity	MP	Not Required	<u>40253203 40254206 40315903</u>	No ¹⁰
63-19. Miscibility	MP	Not Required	<u>40253203</u>	No ¹⁰
63-20. Corrosion Characteristics	MP	Partially	<u>40253203</u>	Yes ¹¹
<u>Other Requirements</u>				
64-1. Submittal of Samples	MP			

¹Data requirements pertain to the Ethyl Corp. 99.9% T (EPA Reg. No. 3377-9), the Ethyl Corp. 67% T (EPA Reg. No. 3377-26), the Ethyl Corp. 98% FI (EPA Reg. No. 3377-27), the unknown technical material used in preparation of the Ethyl Corp. 98% FI, the Great Lakes Chemical Corp. 99.9% T (EPA Reg. No. 5785-51), the Great Lakes Chemical Corp. 67% FI (5785-52), the Great Lakes Chemical Corp. 98% FI (5785-56) and the Ameribrom Inc. 99.5% T (15298-4).

TABLE B. (Continued)

²Test Substance: MP = manufacturing use product.

³All data requirements remain outstanding for the Ethyl Corp. 67% T (EPA Reg. No. 3377-26), the unspecified technical material used in the formation of the Ethyl Corp. 98% FI (EPA Reg. No. 3377-27), the Ethyl Corp. 98% FI (EPA Reg. No. 3377-27), the Great Lakes Chemical Corp. 67% FI (EPA Reg. No. 5785-52), and the Great Lakes Chemical Corp. 98% FI (EPA Reg. No. 5785-56).

⁴Additional information is required for the Ameribrom 99.5% T (EPA Reg. No. 15298-4). The impurities must be identified. Nominal Concentrations are required for the active ingredient and all impurities certified at a concentration of >0.1% w/w. Nominal Concentrations should be submitted on a signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85). A signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85), is required for the Great Lakes Chemical Corp. 99.7% T (EPA Reg. No. 5785-51). Additional information is required for the Ethyl Corp 99.9% T (EPA Reg. No. 3377-9). Nominal concentrations are required for the active ingredient and all impurities certified at a concentration of >0.1% w/w. Additional information is required for the Ethyl Corp. 98% FI (EPA Reg. No. 3377-8). The information supplied is not pertinent to the current product. All data requirements remain outstanding for all other products listed in footnote one.

⁵Additional information is required for all products listed in footnote one in terms of starting materials, physical conditions during the production process, equipment used, description of the process, and any recovery/recycling steps used.

⁶All requirements of this guideline have been satisfied by Great Lakes Chemical Corp. for their 99.9% T (EPA Reg. No. 5785-51) and by Ameribrom Inc. for their 99.5% T (EPA Reg. No. 15298-4). Additional information is required for the other products listed in footnote one.

⁷Ethyl Corp. submitted data for the preliminary analysis of their 99.9% T (EPA Reg. No. 3377-9) which is judged unsatisfactory. The analytical method used was not described. Method precision and accuracy should have been described. No data or methods were provided for potential impurities. Additional data is required. The Great Lakes Chemical Corp. submitted data for the preliminary analysis of their 99.9% T (EPA Reg. No. 5785-51). This data is incomplete. A statement of accuracy must be submitted to support the current data submission. Additional data are required for other potential impurities identified in Confidential Appendix C. This requirement remains outstanding for the other products listed in footnote one.

TABLE B. (Continued)

⁸The certified limits provided by Great Lakes Chemical Corp. for their 99.7% T (EPA Reg. No. 5785-51) will be acceptable once they are submitted on a signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85). The certified limits proposed by Ethyl Corp. for their 99.7% T (EPA Reg. No. 3377-9) cannot be evaluated until the requirements for preliminary analysis are satisfied. Ethyl Corp. must submit the certified limits on a signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85). The data supplied by Ameribrom Inc. for their 99.5% T (EPA Reg. No. 15298-4) is not satisfactory. Separate upper and lower certified limits are required for the active ingredient. Upper certified limits are required for each individual impurity. These certified limits must be submitted on a signed Confidential Statement of Formula, EPA Form 8570-4 (Rev. 2-85). This requirement remains outstanding for the other products listed in footnote one.

⁹Method QC-85-11 has been submitted for the Great Lakes 99.9% T (EPA Reg. No. 5785-51). Validation data must be submitted before this method can be evaluated. This requirement remains outstanding for the other products listed in footnote one.

¹⁰This requirement has been satisfied for the Great Lakes 99.9% T (EPA Reg. No. 5785-51) and the Ameribrom Inc. 99.5% T (EPA Reg. No. 15298-4). This requirement remains outstanding for the other products listed in footnote one.

¹¹This requirement does not apply to products which are gases at STP.

¹²This requirement has not been satisfied for any of the products listed in footnote one. The registrants should refer to Guideline Reference No. 63-1(c)(1) and (2). In addition to results, the submitted data should include the description of the experimental procedure, raw data and calculations, and the registrant's estimate of precision and accuracy for the procedure as well in their laboratory.

TABLE A. GENERIC DATA REQUIREMENTS FOR METHYL BROMIDE RESIDUE CHEMISTRY.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)?
171-2. Chemical Identity				
171-3. Directions for Use ⁴				
171-4. Nature of Residue (Metabolism)				
Plants	PAIRA	Partially	41627701	Yes ⁵
Livestock	PAIRA & Plant Metabolites	No	N/A	Reserved ⁶
171-4. Residue Analytical Method				
Plant residues	TGAI & Metabolites	Partially	40579501 40607801	No ⁷
Animal residues	TGAI & Metabolites	No	N/A	Reserved
171-4. Storage Stability Data	PAI	Partially	40618501	Yes ⁸
171-4. Magnitude of the Residue - Residue Studies ^{9,10,11,12}				
Root and Tuber Vegetables ¹³				
- Beets	TEP	No	N/A	Yes ¹⁴
- Carrots	TEP	No	N/A	Yes ¹⁵

(Continued, footnotes follow)

TABLE A. (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)?
- Ginger Roots	TEP	Partially		N/A
- Horseradish	TEP	No		N/A
- Jerusalem Artichokes	TEP	No		N/A
- Parsnip Roots	TEP	No		N/A
- Potatoes	TEP	No		N/A
(processed commodities)				
- Radishes	TEP	No		N/A
- Rutabagas	TEP	No		N/A
- Salsify Roots	TEP	No		N/A
- Sugar Beets	TEP	No		N/A
- Sweet potatoes	TEP	No		N/A
- Turnips	TEP	No		N/A
Leaves of Root & Tuber Vegetables	TEP	No		N/A
Bulb Vegetables ²⁸				
- Cippolini bulbs	TEP	No		N/A
- Garlic	TEP	No		N/A

(Continued, footnotes follow)

TABLE A. (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)?
- Onions	TEP	No	No	N/A
Leafy Vegetables ³²				
- Lettuce	TEP	No	No	N/A
Brassica Leafy Vegetables ³⁴				
- Broccoli	TEP	No	No	N/A
- Cabbage	TEP	No	No	N/A
- Cauliflower	TEP	No	No	N/A
Legume Vegetables ^{38,39}				
- Beans				
Succulent (processed commodities)	TEP	No	No	N/A
Dry (processed commodities)	TEP	No	No	N/A
- Peas	TEP	No	No	N/A
Succulent	TEP	No	No	N/A
Dry	TEP	No	No	N/A

(Continued, footnotes follow)

TABLE A. (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)?	Yes ³⁹ Yes ⁴⁴ Yes ⁴⁵ Yes ⁴⁶ Yes ⁴⁷ Yes ⁴⁹ Yes ⁵⁰ Yes ⁵¹ Yes ⁵² Yes ⁵³ Yes ⁵⁵ Yes ⁵⁶
- Soybeans (processed commodities)	TEP	No	No	N/A	Yes ³⁹ Yes ⁴⁴
Foliage of Legume Vegetables ¹²	TEP	No	No	N/A	Yes ⁴⁵
- Bean vines and hay	TEP	No	No	N/A	Yes ⁴⁶
- Pea vines and straw	TEP	No	No	N/A	Yes ⁴⁷
- Soybeans forage and silage	TEP	No	No	N/A	Yes ⁴⁹
Fruiting Vegetables (Except Cucurbits) ⁴⁸	TEP	No	No	N/A	Yes ⁵⁰
- Eggplant	TEP	No	No	N/A	Yes ⁵¹
- Peppers	TEP	No	No	N/A	Yes ⁵²
- Pimentos	TEP	No	No	N/A	Yes ⁵³
- Tomatoes (processed commodities)	TEP	No	No	N/A	Yes ⁵⁵
Cucurbit Vegetables ⁵⁴	TEP	No	No	N/A	Yes ⁵⁶
- Cantaloupes	TEP	No	No	N/A	
- Cucumbers	TEP	No	No	N/A	

(Continued, footnotes follow)

TABLE A. (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)?	
- Honeydew melons	TEP	No	No	N/A	Yes ⁵⁷
- Muskmelons	TEP	No	No	N/A	Yes ⁵⁸
- Pumpkins	TEP	No	No	N/A	Yes ⁵⁹
- Squash, summer	TEP	No	No	N/A	Yes ⁶⁰
- Squash, winter	TEP	No	No	N/A	Yes ⁶¹
- Squash, zucchini	TEP	No	No	N/A	Yes ⁶²
- Watermelons	TEP	No	No	N/A	Yes ⁶³
Citrus Fruits ^{64,65}					
- Citron	TEP	No	No	N/A	Yes ⁶⁶
- Grapefruit	TEP	No	No	N/A	Yes ⁶⁷
- Lemons	TEP	No	No	N/A	Yes ⁶⁸
- Limes	TEP	No	No	N/A	Yes ⁶⁹
- Kumquats	TEP	No	No	N/A	Yes ⁷⁰
- Oranges	TEP	No	No	N/A	Yes ⁷¹
(processed commodities)	TEP	No	No	N/A	Yes ⁷²
- Tangerines	TEP	No	No	N/A	Yes ⁷³

(Continued, footnotes follow)

TABLE A. (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)?
Pome Fruits ⁷⁴				
- Apples	TEP	No	No	N/A
- Apples/dried	TEP	No	No	N/A
(processed commodities)	TEP	No	No	N/A
- Pears	TEP	No	No	N/A
- Quinces	TEP	No	No	N/A
Stone Fruits ⁸⁰				
- Apricots	TEP	No	No	N/A
- Apricots/dried	TEP	No	No	N/A
- Cherries	TEP	No	No	N/A
- Nectarines	TEP	No	No	N/A
- Peaches	TEP	No	No	N/A
- Plums	TEP	No	No	N/A
- Prunes	TEP	No	No	N/A
Small Fruits and Berries ⁸⁷				
- Blueberries	TEP	No	No	N/A

(Continued, footnotes follow)

TABLE A. (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)?	
- Grapes	TEP	No	No	N/A	Yes ⁸⁹
- Raisins	TEP	No	No	N/A	Yes ⁹⁰
(processed commodities)	TEP	No	No	N/A	Yes ⁹¹
- Strawberries	TEP	No	No	N/A	Yes ⁹²
Tree Nuts ⁹³					
- Almonds	TEP	No	No	N/A	Yes ⁹⁴
(processed commodities)	TEP	No	No	N/A	Yes ⁹⁵
- Brazil nuts	TEP	No	No	N/A	Yes ⁹⁶
- Bush nuts	TEP	No	No	N/A	Yes ⁹⁷
- Butternuts	TEP	No	No	N/A	Yes ⁹⁸
- Cashews	TEP	No	No	N/A	Yes ⁹⁹
- Chestnuts	TEP	No	No	N/A	Yes ¹⁰⁰
- Filberts	TEP	No	No	N/A	Yes ¹⁰¹
- Hickory nuts	TEP	No	No	N/A	Yes ¹⁰²
- Macadamia nuts	TEP	No	No	N/A	Yes ¹⁰³
- Pecans	TEP	No	No	N/A	Yes ¹⁰⁴

(Continued, footnotes follow)

TABLE A. (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)?	
- Walnuts	TEP	No	No	N/A	Yes ¹⁰⁵
Cereal Grains ¹⁰⁶					
- Barley	TEP	No	No	N/A	Yes ¹⁰⁷
- Corn, field	TEP	No	No	N/A	Yes ¹⁰⁸
(processed commodities)	TEP	No	No	N/A	Yes ¹⁰⁹
- Corn, sweet	TEP	No	No	N/A	Yes ¹¹⁰
(processed commodities)	TEP	No	No	N/A	Yes ¹¹¹
- Corn, pop	TEP	No	No	N/A	Yes ¹¹²
- Oats	TEP	No	No	N/A	Yes ¹¹³
- Rice	TEP	No	No	N/A	Yes ¹¹⁴
(processed commodities)	TEP	No	No	N/A	Yes ¹¹⁵
- Rye	TEP	No	No	N/A	Yes ¹¹⁶
- Sorghum	TEP	No	No	N/A	Yes ¹¹⁷
(processed commodities)	TEP	No	No	N/A	Yes ¹¹⁸
- Wheat	TEP	No	No	N/A	Yes ¹¹⁹
(processed commodities)	TEP	No	No	N/A	Yes ¹²⁰

(Continued, footnotes follow)

TABLE A. (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)?
Forage, Fodder, and Straw of Cereal Grains ¹²				
- Corn forage, silage and fodder	TEP	No	No	N/A
- Rice straw	TEP	No	No	N/A
- Sorghum forage, silage and fodder	TEP	No	No	N/A
- Wheat forage	TEP	No	No	N/A
Nongrass Animal Feeds ¹²				
- Alfalfa hay	TEP	No	No	N/A
Grass Forage and Hay ¹²				
- Timothy	TEP	No	No	N/A
Herbs and Spices ¹²⁷				
- Cumin	TEP	No	No	N/A
- Herbs and Spices (processed commodities)	TEP	No	No	N/A
Miscellaneous Commodities				
- Asparagus	TEP	Partially	Partially	N/A

(Continued, footnotes follow)

TABLE A. (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)?	
- Avocados	TEP	Partially		N/A	Yes ¹³⁰
- Bananas/dried	TEP	No		N/A	Yes ¹³¹
- Carob/dried	TEP	No		N/A	Yes ¹³¹
- Cocoa Beans	TEP	Partially		N/A	Yes ¹³²
- Coffee Beans	TEP	Partially		N/A	Yes ¹³³
- Copra	TEP	Partially		N/A	Yes ¹³⁴
- Cottonseed	TEP	Partially		N/A	Yes ¹³⁵
(processed commodities)					
- Dates	TEP	Partially		N/A	Yes ¹³⁶
- Dates/dried	TEP	No		N/A	Yes ¹³⁷
- Figs	TEP	Partially		N/A	Yes ¹³⁸
- Figs/dried	TEP	No		N/A	Yes ¹³⁹
- Mangoes	TEP	No		N/A	Yes ¹³⁸
- Mustard seeds	TEP	No		N/A	Yes ¹⁴⁰
- Okra	TEP	Partially		N/A	Yes ¹⁴¹
- Papayas	TEP	No		N/A	Yes ¹⁴²
					Yes ¹⁴³

(Continued, footnotes follow)

TABLE A. (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)?
- Papayas/dried	TEP	No	No	N/A
- Peanuts	TEP	Partially	Partially	N/A
- Peanuts/vines and hulls	TEP	No	No	N/A
- Pineapples	TEP	Partially	Partially	N/A
- Pineapple/dried	TEP	No	No	N/A
- Pistachio Nuts	TEP	Partially	Partially	N/A
- Pomegranates	TEP	No	No	N/A
- Tobacco	TEP	Partially	Partially	N/A
171-4. Processed Foods	TEP	Partially	Partially	N/A
171-4. Meat/Milk; Poultry/Eggs	TGAI or Plant Metabolites	Partially	Partially	N/A
				Reserved ¹⁵¹

¹The requirements stated in this table are based on current Agency policy regarding residues of methyl bromide to be regulated and conclusions of Chemistry Branch II/Reregistration Section with respect to the registrant's proposed protocols.

²Test substance: TGAI = technical grade of the active ingredient; PAI = purified active ingredient; PAIRA = purified active ingredient, radiolabeled; TEP = typical end-use product; EP = end-use product.

(Continued, footnotes follow)

³These references were submitted in response to the Methyl Bromide Guidance Document dated March, 1987. Underlining indicates documents that have been reviewed for this update.

⁴The MBIP has submitted protocols for fumigating commodities with methyl bromide. Product labels will have to be revised to reflect the dosage rates and exposure times used in the residue studies, in cases where differences occur between the test parameters and the established label rates. The labels and the labels should bear a statement that commodities may not be removed from the chambers until the methyl bromide in the chamber air is ≤ 5 ppm. The minimum fumigation temperature should be specified and if the minimum aeration temperature differs from this, it should be added to the labels. Whether commodities are to be waxed before or after fumigation needs to be specified. Intervals between fumigation and waxing should be specified on the labels, where appropriate. When more than one fumigation is conducted, a minimum interval between fumigations must be specified and the labels should state the interval as well as the number of fumigations specified for each commodity. Each individual crop or commodity for which methyl bromide is registered for any use must be included on pertinent product labels.

⁵The registrant may submit additional information within 3 months in order to up-grade the present study or they must repeat the study designed to quantify the total residue, including the contribution of methyl bromide ~~per se~~ remaining physically bound in the commodity matrices. Representative commodities must be fumigated for 24 hours at 24 mg ai/L and sampled after 1-2 hours of aeration. The study should simulate commercial fumigation. The study must be designed so that the values obtained for total residues can be used as estimates of total radioactive residues for purposes of calculating the contribution to the total residue of components constituting the chemically bound ^{14}C -residues, identified in interim report LVW-89-267. Otherwise, the registrant should conduct the new study using [^{14}C]methyl bromide and repeat the residue characterization work.

⁶The following data requirement is reserved. Data are required depicting the metabolism of methyl bromide in ruminants and poultry. Animals must be dosed with [^{14}C]methyl bromide at levels high enough to make residue identification possible. The test substance must be administered for at least 3 days. Milk and eggs should be collected twice daily. The animals sacrificed within 24 hours of the final dose. ^{14}C -Residues must be characterized in milk, muscle, liver, kidney, and fat of ruminants and in eggs, muscle, liver, fat, and skin of poultry. Representative samples from animal metabolism studies must be analyzed using accepted enforcement methodology to ascertain that the method(s) are able to quantify all residues of concern.

⁷Methyl bromide ~~per se~~ has been judged a residue of concern. A description of the King, et al. headspace procedure for methyl bromide has been forwarded to FDA for inclusion in PAM Vol. II as Method A. This method is adequate for data collection of methyl bromide residues and would be suitable for tolerance enforcement. The nature of the residue in plants and animals is not adequately understood. If the additional metabolism data requested indicate that there are residues of concern other than methyl bromide ~~per se~~, additional methodology may be required. Methodology for inorganic bromide is no longer required.

- ⁸The registrant has submitted data on storage stability of residues in walnuts, rice, and strawberries. Additional storage stability data are not required for methyl bromide unless the samples are stored for longer than 12 hours. Samples must be placed in impermeable containers and cooled to <3.7 °C as soon as possible. The registrant must provide information on the time that samples are removed from storage, the temperatures of the samples between removal from storage and extraction, and the time when extraction begins. The nature of the residue in plants and animals is not adequately understood. If the additional metabolism data requested indicate that there are residues of concern other than methyl bromide per se, additional storage stability data may be required.
- ⁹All registrants/generic data generators should consult the MBIP master protocol for Magnitude of the Residue studies in commodities as amended and finalized (CBRS Nos. 6243, 6879 and 8041, N. Dodd, 8/15/90, 7/30/90 and 6/3/91 respectively) before initiating any residue experiments.
- ¹⁰The Magnitude of the Residue data requirements in this table reflect a large number of commodities having registrations for the use of methyl bromide. However, residue data will be required for any and all commodities having registered uses/tolerances for methyl bromide regardless of whether they appear in this table. (This includes any recent tolerances established for bromide residues as a result of the use of methyl bromide).
- ¹¹If the registrants decide to obtain crop group tolerances, then residue data will be required for representative crops and processed commodities in each crop group, and those dried commodities listed in CBTS memo of 6/3/91 (CBTS #8041).
- ¹²Residue data are required from soil fumigations for forages.
- ¹³The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on the following representative members of the root and tuber vegetables crop group: carrots, sampled after 2 hours aeration following fumigation at 4 lb ai/1,000 cu ft for 4 hours at a minimum temperature of 10 °C; potatoes, sampled after 2 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 6 hours at a minimum temperature of 15 °C; radishes, sampled after 2 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 4 hours at a minimum temperature of 10 °C; and turnips, sampled after 2 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 4 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate

samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or crop group tolerances, if appropriate.

- 14The registrant is seeking a crop group tolerance that will apply to beets. When the group tolerance is established, the individual tolerance for beets will be revoked.
- 15The registrant intends to submit data on carrots in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for carrots will be revoked.
- 16The registrant is seeking a crop group tolerance that will apply to ginger roots. When the group tolerance is established, the individual tolerance for ginger roots will be revoked.
- 17The registrant is seeking a crop group tolerance that will apply to horseradish. When the group tolerance is established, the individual tolerance for horseradish will be revoked.
- 18The registrant is seeking a crop group tolerance that will apply to Jerusalem artichokes. When the group tolerance is established, the individual tolerance for Jerusalem artichokes will be revoked.
- 19The registrant is seeking a crop group tolerance that will apply to parsnip roots. When the group tolerance is established, the individual tolerance for parsnip roots will be revoked.
- 20The registrant intends to submit data on potatoes in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for potatoes will be revoked.
- 21The registrant intends to conduct a processing study with potatoes. Data are required to show the concentration of methyl bromide residues of concern in wet peel processed from potatoes bearing measurable residues following fumigation with methyl bromide. If residues concentrate in this commodity, an appropriate feed additive tolerance must be proposed.
- 22The registrant intends to submit data on radishes in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for radishes will be revoked.
- 23The registrant is seeking a crop group tolerance that will apply to rutabagas. When the group tolerance is established, the individual tolerance for rutabagas will be revoked.

- 24 The registrant is seeking a crop group tolerance that will apply to salsify roots. When the group tolerance is established, the individual tolerance for salsify roots will be revoked.
- 25 The registrant is seeking a crop group tolerance that will apply to sugar beets. When the group tolerance is established, the individual tolerance for sugar beets will be revoked.
- 26 The registrant is seeking a crop group tolerance that will apply to sweet potatoes. When the group tolerance is established, the individual tolerance for sweet potatoes will be revoked.
- 27 The registrant intends to submit data on turnips in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for turnips will be revoked.
- 28 The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on the following representative members of the bulb vegetables crop group: green onions, sampled after 2 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 6 hours at a minimum temperature of 10 °C; large-bulb onions, sampled after 2 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 6 hours at a minimum temperature of 15 °C; and garlic, sampled after 2 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 4 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or crop group tolerances, if appropriate.
- 29 The registrant is seeking a crop group tolerance that will apply to cippolini bulbs. When the group tolerance is established, the individual tolerance for cippolini bulbs will be revoked.
- 30 The registrant intends to submit data on garlic in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for garlic will be revoked.

³¹The registrant intends to submit data on onions in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for onions will be revoked.

³²The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on the following representative members of the leafy vegetables crop group: head lettuce, celery, and spinach, all sampled after 2 hours aeration following fumigation at 4 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.

³³The registrant intends to submit data on lettuce in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for lettuce will be revoked.

³⁴The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on the following representative members of the brassica leafy vegetables crop group: broccoli, cabbage, and mustard greens, all sampled after 2 hours aeration following fumigation at 4 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.

³⁵The registrant intends to submit data on broccoli in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for broccoli will be revoked.

- ³⁶The registrant intends to submit data on cabbage in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for cabbage will be revoked.
- ³⁷The registrant is seeking a crop group tolerance that will apply to cauliflower. When the group tolerance is established, the individual tolerance for cauliflower will be revoked.
- ³⁸The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on the following representative commodities in support of a group tolerance for the legume vegetables group (see footnote 39 for data required for soybeans): succulent beans, sampled after 2 hours aeration following fumigation at 3.5 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 10 °C; dry beans, sampled after 2 hours aeration following fumigation at 3.5 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 15 °C; succulent peas, sampled after 2 hours aeration following fumigation at 4 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 10 °C; and dry peas, sampled after 2 hours aeration following fumigation at 4 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.
- ³⁹The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on soybeans sampled after 24 hours aeration following fumigation at 6 lb ai/1,000 cu ft for 12 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on soybeans.

⁴⁰The registrant intends to submit data on succulent beans in support of a crop group tolerance. When the group tolerance is established, the individual tolerances for succulent beans will be revoked.

⁴¹The registrant intends to conduct a processing study with beans. Data are required to show the concentration of methyl bromide residues of concern in cannery waste from beans bearing measurable residues following fumigation with methyl bromide. If residues concentrate in this commodity, an appropriate feed additive tolerance must be proposed.

⁴²The registrant intends to submit data on succulent beans in support of a crop group tolerance. When the group tolerance is established, the individual tolerances for dried beans will be revoked.

⁴³The registrant intends to submit data on succulent and dried peas in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for peas will be revoked.

⁴⁴Data are needed for residues of methyl bromide on grain dust.

⁴⁵Methyl bromide is registered for preplant soil fumigation application of "vegetables." This use would apply to beans and could result in residues in or on vines and hay, RACs that would not be covered by postharvest fumigation testing. Therefore, data are required depicting methyl bromide residues of concern in or on bean vines and hay harvested after preplant fumigation soil treatment with methyl bromide at the maximum registered rate. Alternatively, the registrant may elect to place a feeding restriction on pertinent product labels.

⁴⁶Methyl bromide is registered for preplant soil fumigation application of "vegetables." This use would apply to peas and could result in residues in or on vines and straw, RACs that would not be covered by postharvest fumigation testing. Therefore, data are required for these RACs, and will be translated from bean vines and hay. Alternatively, the registrant may elect to place a feeding restriction on pertinent product labels.

⁴⁷Data on soybean forage and silage are needed.

⁴⁸The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on the following representative members of the fruiting vegetables crop group: field tomatoes and greenhouse tomatoes, sampled after 2 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 10 °C; and peppers, sampled after 2 hours aeration following fumigation at 4 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum

fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.

⁴⁹The registrant is seeking a crop group tolerance that will apply to eggplant. When the group tolerance is established, the individual tolerance for eggplant will be revoked.

⁵⁰The registrant intends to submit data on peppers in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for peppers will be revoked.

⁵¹The registrant is seeking a crop group tolerance that will apply to pimentos. When the group tolerance is established, the individual tolerance for pimentos will be revoked.

⁵²The registrant intends to submit data on tomatoes in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for tomatoes will be revoked.

⁵³Data are needed for wet tomato pomace.

⁵⁴The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on the following representative members of the cucurbit vegetables crop group: cucumbers, sampled after 2 hours aeration following fumigation at 2.5 lb ai/1,000 cu ft for 4 hours at a minimum temperature of 10 °C; cantaloupes, sampled after 2 hours aeration following fumigation at 2.5 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 10 °C; and summer squash, sampled after 2 hours aeration following fumigation at 4 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the

forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.

- 55 The registrant intends to submit data on cantaloupes in support of a crop group tolerance. When the group tolerance is established, the individual tolerances for cantaloupes and melons will be revoked.
- 56 The registrant intends to submit data on cucumbers in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for cucumbers will be revoked.
- 57 The registrant is seeking a crop group tolerance that will apply to honeydew melons. When the group tolerance is established, the individual tolerance for honeydew melons will be revoked.
- 58 The registrant is seeking a crop group tolerance that will apply to muskmelons. When the group tolerance is established, the individual tolerance for muskmelons will be revoked.
- 59 The registrant is seeking a crop group tolerance that will apply to pumpkins. When the group tolerance is established, the individual tolerance for pumpkins will be revoked.
- 60 The registrant intends to submit data on summer squash in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for summer squash will be revoked.
- 61 The registrant is seeking a crop group tolerance that will apply to winter squash. When the group tolerance is established, the individual tolerance for winter squash will be revoked.
- 62 The registrant is seeking a crop group tolerance that will apply to zucchini squash. When the group tolerance is established, the individual tolerance for zucchini squash will be revoked.
- 63 The registrant is seeking a crop group tolerance that will apply to watermelons. When the group tolerance is established, the individual tolerance for watermelons will be revoked.
- 64 The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on the following representative members of the citrus fruits crop group: oranges, lemons, and grapefruit, all sampled after 2 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 18 °C. CBRS emphasized that the tests must be

conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the appropriate residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.

65 The SP05 Site Listing for Methyl Bromide lists three products registered for foliar application to citrus. Data for post harvest treatment of citrus will cover this use.

66 The registrant is seeking a crop group tolerance that will apply to citron. When the group tolerance is established the individual tolerance for citron will be revoked.

67 The registrant intends to submit data on grapefruit in support of a crop group tolerance. If a group tolerance is established, the individual tolerance for grapefruit will be revoked.

68 The registrant intends to submit data on lemons in support of a crop group tolerance. If a group tolerance is established, the individual tolerance for lemons will be revoked.

69 The registrant is seeking a crop group tolerance that will apply to limes. If a group tolerance is established, the individual tolerance for limes will be revoked.

70 The registrant is seeking a crop group tolerance that will apply to kumquats. If a group tolerance is established, the individual tolerance for kumquats will be revoked.

71 The registrant intends to submit data on oranges in support of a crop group tolerance. If a group tolerance is established, the individual tolerance for oranges will be revoked.

72 The registrant intends to conduct a processing study with oranges. Data are required to show the concentration of methyl bromide residues of concern in citrus oil and wet pulp processed from fruit bearing measurable residues following fumigation with methyl bromide. If residues concentrate in this commodity, an appropriate food additive tolerance must be proposed.

- 73The registrant is seeking a crop group tolerance that will apply to tangerines. If a group tolerance is established, the individual tolerance for tangerines will be revoked.
- 74The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on the following representative members of the pome fruits crop group: apples and pears, sampled after 2 hours aeration following fumigation at 5 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.
- 75The registrant intends to submit data on apples in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for apples will be revoked.
- 76The registrant intends to submit separate data on dried apples.
- 77The registrant intends to conduct a processing study with apples. Data are required to show the concentration of methyl bromide residues of concern in wet pomace processed from apples bearing measurable residues following fumigation with methyl bromide. If residues concentrate in this commodity, an appropriate feed additive tolerance must be proposed. (Note: processing may be performed with or without heat).
- 78The registrant intends to submit data on pears in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for pears will be revoked.
- 79The registrant is seeking a crop group tolerance that will apply to quinces. When the group tolerance is established, the individual tolerance for quinces will be revoked.

80The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on the following representative members of the stone fruits crop group: cherries, sampled after 2 hours aeration following fumigation at 5 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 10 °C; and peaches and plums, sampled after 2 hours aeration following fumigation at 5 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.

81The registrant is seeking a crop group tolerance that will apply to apricots. When the group tolerance is established, the individual tolerance for apricots will be revoked.

82The registrant intends to submit separate data on dried apricots and prunes.

83The registrant intends to submit data on cherries in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for cherries will be revoked.

84The registrant is seeking a crop group tolerance that will apply to nectarines. When the group tolerance is established, the individual tolerance for nectarines will be revoked.

85The registrant intends to submit data on peaches in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for peaches will be revoked.

86The registrant intends to submit data on plums in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for plums will be revoked.

87The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on the following representative members of the small fruits and berries crop group: Rubus spp., sampled after 2 hours aeration following fumigation of unspecified dosage, duration, and temperature; blueberries and cranberries, sampled after 2 hours aeration following fumigation

at 2 lb ai/1,000 cu ft for 4 hours at a minimum temperature of 10 °C; grapes, sampled after 2 hours aeration following fumigation at 4 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 10 °C; and strawberries, sampled after 2 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 4 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.

⁸⁸The registrant intends to submit data on blueberries in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for blueberries will be revoked.

⁸⁹The registrant intends to submit data on grapes in support of a crop group tolerance. If a group tolerance is established, the individual tolerance for grapes will be revoked.

⁹⁰The registrant intends to submit separate residue data on raisins.

⁹¹The registrant intends to conduct a processing study with grapes. Data are required to show the concentration of methyl bromide residues of concern in wet pomace processed from grapes bearing measurable residues following fumigation with methyl bromide. If residues concentrate in this commodity, an appropriate feed additive tolerance must be proposed. Processing may be performed with or without heat.

⁹²The registrant intends to submit data on strawberries in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for strawberries will be revoked.

⁹³The Methyl Bromide Industry Panel has responded to the Guidance Document by indicating that data for the tree nuts crop group will be submitted by the USDA/California Prune, Raisin, and Walnut Marketing Board, depicting residues of methyl bromide in or on almonds, pecans, English walnuts, and pistachios. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. Almonds without hulls and shelled pecans and walnuts should be treated. Nonpariel almonds, Stewart pecans, and Eureka walnuts are acceptable representative varieties. The

pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.

⁹⁴The registrant intends to submit data on almonds in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for almonds will be revoked.

⁹⁵Data are needed for almond hulls.

⁹⁶The registrant is seeking a crop group tolerance that will apply to Brazil nuts. When the group tolerance is established, the individual tolerance for Brazil nuts will be revoked.

⁹⁷The registrant is seeking a crop group tolerance that will apply to bush nuts. When the group tolerance is established, the individual tolerance for bush nuts will be revoked.

⁹⁸The registrant is seeking a crop group tolerance that will apply to butternuts. When the group tolerance is established, the individual tolerance for butternuts will be revoked.

⁹⁹The registrant is seeking a crop group tolerance that will apply to cashews. When the group tolerance is established, the individual tolerance for cashews will be revoked.

¹⁰⁰The registrant is seeking a crop group tolerance that will apply to chestnuts. When the group tolerance is established, the individual tolerance for chestnuts will be revoked.

¹⁰¹The registrant is seeking a crop group tolerance that will apply to filberts. When the group tolerance is established, the individual tolerance for filberts will be revoked.

¹⁰²The registrant is seeking a crop group tolerance that will apply to hickory nuts. When the group tolerance is established, the individual tolerance for hickory nuts will be revoked.

- 103 There is no tolerance for residues of methyl bromide on macadamia nuts at present. The crop group tolerance will apply to macadamia nuts.
- 104 The registrant intends to submit data on pecans in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for pecans will be revoked.
- 105 The registrant intends to submit data on walnuts in support of a crop group tolerance. When the group tolerance is established, the individual tolerance for walnuts will be revoked.
- 106 The Methyl Bromide Industry Panel has responded to the Guidance Document by indicating that data for the cereal grains crop group will be submitted by the American Spice Trade Association. No proposed protocols were available for review. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.
- 107 The registrant is seeking a crop group tolerance that will apply to barley. When the group tolerance is established, the individual tolerance for barley will be revoked.
- 108 The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on field corn sampled after 24 hours aeration following fumigation at 4 lb ai/1,000 cu ft for 12 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or crop group tolerances, if appropriate.

¹⁰⁹The registrant intends to conduct a processing study with field corn. Data are required to show the concentration of methyl bromide residues of concern in grits, meal, flour, and grain dust processed from corn grain bearing measurable residues following fumigation with methyl bromide. If residues concentrate in any commodity, an appropriate feed additive tolerance must be proposed.

¹¹⁰The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on sweet corn sampled after 2 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 4 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on sweet corn.

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¹¹¹The registrant intends to conduct a processing study with sweet corn. Data are required to show the concentration of methyl bromide residues of concern in cannery waste processed from sweet corn bearing measurable residues following fumigation with methyl bromide. If residues concentrate in this commodity, an appropriate feed additive tolerance must be proposed.

¹¹²The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on popcorn sampled after 24 hours aeration following fumigation at 1.5 lb ai/1,000 cu ft for 12 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or crop group tolerances, if appropriate.

- 113 The registrant is seeking a crop group tolerance that will apply to oats. When the group tolerance is established, the individual tolerance for oats will be revoked.
- 114 The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on rice sampled after 24 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or crop group tolerances, if appropriate.
- 115 The registrant intends to conduct a processing study with rice. Data are required to show the concentration of methyl bromide residues of concern in polished rice, hulls, bran, and grain dust processed from rice grain bearing measurable residues following fumigation with methyl bromide. If residues concentrate in any commodity, an appropriate feed additive tolerance must be proposed.
- 116 The registrant is seeking a crop group tolerance that will apply to rye. When the group tolerance is established, the individual tolerance for rye will be revoked.
- 117 The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on sorghum sampled after 24 hours aeration following fumigation at 6 lb ai/1,000 cu ft for 12 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or crop group tolerances, if appropriate.

11¹⁸The registrant intends to conduct a processing study with sorghum. Data are required to show the concentration of methyl bromide residues of concern in flour and grain dust processed from grain bearing measurable residues following fumigation with methyl bromide. If residues concentrate in this commodity, an appropriate feed additive tolerance must be proposed.

11¹⁹The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on wheat sampled after 24 hours aeration following fumigation at 3 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 15 °C. CBRs emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.

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12⁰The registrant intends to conduct a processing study with wheat. Data are required to show the concentration of methyl bromide residues of concern in wheat germ, bran, flour, middlings, shorts, and grain dust processed from grain bearing measurable residues following fumigation with methyl bromide. If residues concentrate in any commodity, an appropriate feed additive tolerance must be proposed.

12¹Methyl bromide is registered for preplant soil fumigation application of "vegetables." This use would apply to corn and could result in residues in or on sweet corn forage, silage and fodder, RACs that would not be covered by postharvest fumigation testing. Therefore, data are required depicting methyl bromide residues of concern in or on sweet corn forage and fodder harvested after preplant fumigation soil treatment with methyl bromide at the maximum registered rate. Alternatively, the registrant may elect to place a feeding restriction on pertinent product labels.

12²Data are needed for rice straw.

12³Data are needed for sorghum forage, silage and fodder.

12⁴Data are needed for wheat forage.

¹²⁵The registrant did not include alfalfa hay in its submitted protocol; however, data are required depicting residues of methyl bromide in or on alfalfa hay following fumigation. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on alfalfa hay.

¹²⁶The registrant did not include timothy hay in its submitted protocol; however, data are required depicting residues of methyl bromide in or on timothy hay following fumigation. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on timothy hay.

¹²⁷The Methyl Bromide Industry Panel has responded to the Guidance Document by indicating that data for herbs and spices will be submitted by the American Spice Trade Association, depicting residues of methyl bromide in or on basil, chives, dill, marjoram, and sage. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities or a crop group tolerance, if appropriate.

¹²⁸The registrant is seeking a crop group tolerance that will apply to cumin. When the group tolerance is established, the individual tolerance for cumin will be revoked.

129The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on asparagus sampled after 2 hours aeration following fumigation at 4 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on asparagus.

130The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on avocados sampled after 2 hours aeration following fumigation at 2 lb ai/1,000 cu ft for 4 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on avocados.

131The registrant intends to supply data on dried bananas and carob.

132The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on cocoa beans sampled after 24 hours aeration following the second sequential fumigation of 1.5 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be

ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Methyl bromide is registered for preplant soil fumigation application cotton. cotton forage would not be covered by postharvest fumigation testing. Therefore, data are required depicting methyl bromide residues of concern in or on cotton forage harvested after preplant fumigation soil treatment with methyl bromide at the maximum registered rate. Alternatively, the registrant may elect to place a feeding restriction on pertinent product labels. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on cotton commodities.

¹³⁶The registrant intends to conduct a processing study with cottonseed. Data are required to show the concentration of methyl bromide residues of concern in meal and hulls processed from cottonseed bearing measurable residues following fumigation with methyl bromide. If residues concentrate in either commodity, an appropriate feed additive tolerance must be proposed.

¹³⁷Although no tolerance currently exists for residues of methyl bromide in or on dates, the registrant intends to submit residue data on dates sampled after 24 hours aeration following fumigation at 1 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on dates.

¹³⁸The registrant intends to submit separate data on dried dates, papayas, figs and pineapple.

¹³⁹Although no tolerance currently exists for residues of methyl bromide in or on figs, the registrant intends to submit residue data on figs sampled after 24 hours aeration following fumigation at 1 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be

required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on cocoa beans.

¹³³The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on coffee beans sampled after 24 hours aeration following the third sequential fumigation of 2.5 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on coffee beans.

¹³⁴The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on copra sampled after 24 hours aeration following the second sequential fumigation of 2.5 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a food/feed additive tolerance for residues of methyl bromide in or on copra.

¹³⁵The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on cottonseed sampled after 24 hours aeration following fumigation at 4 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5

required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on figs.

¹⁴⁰The registrant did not include mangoes in its submitted protocol; however, data are required depicting residues of methyl bromide in or on mangoes sampled following fumigation. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on mangoes.

¹⁴¹Data are needed for mustard seeds.

¹⁴²The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on okra sampled after 24 hours aeration following fumigation at 3.5 lb ai/1,000 cu ft for 2 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on okra.

¹⁴³The registrant did not include papayas in its submitted protocol; however, data are required depicting residues of methyl bromide in or on papayas sampled following fumigation. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance

for residues of methyl bromide in or on papayas.

¹⁴⁴The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on peanuts sampled after aeration (duration not specified) following fumigation at 3.5 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on peanuts.

¹⁴⁵Data are needed for peanut vines and hulls.

¹⁴⁶The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on pineapple sampled after 2 hours aeration following fumigation at 2 lb ai/1,000 cu ft for 6 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Methyl bromide is registered for preplant soil fumigation application to pineapples. This use could result in residues in or on forage, a RAC that would not be covered by postharvest fumigation testing. Therefore, data are required depicting methyl bromide residues of concern in or on pineapple forage harvested after preplant fumigation soil treatment with methyl bromide at the maximum registered rate. Alternatively, the registrant may elect to place a feeding restriction on pertinent product labels. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on pineapple commodities.

¹⁴⁷The registrant did not include pistachios separately in its submitted protocol; however, data are required depicting residues of methyl bromide in or on pistachios sampled following fumigation. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on

the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on pistachios.

¹⁴⁸The registrant did not include pomegranates in its submitted protocol; however, data are required depicting residues of methyl bromide in or on pomegranates sampled following fumigation. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose a tolerance for residues of methyl bromide in or on pomegranates.

¹⁴⁹The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on cured tobacco sampled after 24 hours aeration following the second sequential fumigation of 3 lb ai/1,000 cu ft for 72 hours at a minimum temperature of 15 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. If methyl bromide residues on cured tobacco are observed to be >0.1 ppm a radiolabeled pyrolysis study will be required.

¹⁵⁰The Methyl Bromide Industry Panel has responded to the Guidance Document by submitting protocols for residue tests to the Agency. The registrant intends to submit data depicting residues of methyl bromide in or on processed foods sampled after 24 hours aeration following fumigation at 2.5 lb ai/1,000 cu ft for 24 hours at a minimum temperature of 10 °C. CBRS emphasized that the tests must be conducted using the maximum rates, maximum exposure times, maximum number of fumigations, and

minimum fumigation temperature specified on the labels. If different conditions are used, the labels will need to be revised. Chocolate candy, cheese, meats, dried eggs, corn meal, rolled oats, and flours must be included. (Residue data on any other processed commodity for which methyl bromide is registered for use is also required.) The pre-sampling aeration interval must be the minimum necessary to allow the methyl bromide level in the chamber air to drop to 5 ppm, and the aeration temperature must be reported. Small (28.3 L) exposure chambers may be used, provided that bridging data are presented indicating that the results are similar to those from use of large-scale commercial chambers. Duplicate samples must be collected from duplicate tests. If the results are not similar, additional data will be required. Based on the forthcoming residue data, the registrant must propose tolerances for residues of methyl bromide in or on individual commodities.

¹⁵¹Tolerances for residues of methyl bromide have not yet been established for food or feed commodities. When the commodity residue data have been evaluated, the need for tolerances for residues in or on animal commodities will be determined.

ATTACHMENT 2

**METHYL BROMIDE
(Chemical Code 053201)**

TASK 3

**Reregistration Standard
Update**

Residue Chemistry

May 6, 1991

Contract No. 68-DO-0142

Submitted to:

U.S. Environmental Protection Agency
Arlington, VA 22202

Submitted by:

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METHYL BROMIDE
REREGISTRATION STANDARD UPDATE

RESIDUE CHEMISTRY

Task - 3

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METHYL BROMIDE

REREGISTRATION STANDARD UPDATE

RESIDUE CHEMISTRY

Task - 3

INTRODUCTION

Methyl bromide is an insecticide and antimicrobial agent registered for soil fumigation application to a variety of raw agricultural commodities. In addition, methyl bromide is registered for postharvest fumigation of numerous commodities in fumigation chambers and transportation vehicles. The uses of methyl bromide on food/feed crops are summarized in Table 1.

The Methyl Bromide Guidance Document dated August, 1986 required data on plant metabolism, residue analytical methods, storage stability, and the residues of methyl bromide per se in or on all RACs having registered uses or representative commodities of each crop group as listed in 40 CFR 180.34, all miscellaneous commodities for which a registered use existed, and appropriate processed commodities, following preplant soil fumigation and/or fumigation of stored commodities.

In response to these requirements, the Methyl Bromide Industry Panel (MBIP) submitted data on plant metabolism (MRID 41627701) that have been reviewed by the Agency (DEB No. 7101 dated March 8, 1991). With respect to the requirements for residue data, the MBIP submitted test protocols, including analytical methodology (MRIDs 40579501 and 40607801) and storage stability (MRID 40618501) that have undergone several cycles of Agency review and modification by the registrant. Details as to the current status of the MBIP protocols are presented in the section on "Magnitude of the Residue" later in this Update.

Tolerances for residues in or on food and feed commodities are for inorganic bromide (40 CFR 180.123 and 40 CFR 180.199). The Agency has determined that inorganic bromide is not of toxicological concern, and the requirements for residue data on inorganic bromide have been waived (letter from Anne Lindsay to the MBIP dated July 7, 1989). The MBIP requested, in a letter dated December 29, 1989, a temporary exemption for the requirement for tolerances for inorganic bromide from pre-plant soil fumigation uses. DEB stated that the Branch had no objection to this request, but pointed out that an exemption will not be granted for methyl bromide per se (N. Dodd, memo of May 18, 1990, no DEB No. assigned). The Agency is now requiring the registrant to submit data on residues of methyl bromide per se to support the registered uses of this fumigant and to propose tolerances for residues of methyl bromide to replace the inorganic bromide tolerances.

Table 1. Registered uses of methyl bromide on food/feed commodities, summarized from the SP05 site listing dated 2/4/91.

Commodity	Soil Fumigation	Postharvest Stored	Transportation Vehicles
Alfalfa (hay)		X	
Almonds	X	X	X
Animal Feed		X	X
Apples (fresh)	X	X	
Apples (dried)		X	X
Apricots (fresh & dried)	X	X	
Artichoke (Jerusalem)		X	
Asparagus	X		
Bacon (cured)		X	
Barley		X	X
Beans		X	
Beets (roots)		X	
Brazil Nuts		X	X
Broccoli	X		
Bushnuts		X	
Butternuts		X	X
Cabbage		X	
Candy		X	
Cantaloupes		X	
Carrots		X	
Cashews		X	X
Cauliflower	X		
Cheese (incl. by products)		X	X

(continued)

Table 1. (continued)

Commodity	Soil Fumigation	Postharvest Stored	Transportation Vehicles
Cereals		X	
Cherries (fresh & dried)	X	X	
Chestnuts		X	X
Citron Melon		X	
Citrus	X		
Cipollini Bulbs		X	
Cocoa Beans		X	X
Copra		X	
Corn (sweet & field)		X	X
Corn Grits		X	X
Corn (pop)		X	X
Cotton	X	X	X
Cottonseed		X	X
Cucumbers		X	
Dates		X	X
Eggs		X	
Eggplant	X	X	
Feed/Food commodities in: airtight chambers airtight flat storage bins grain elevators storage areas under tarpaulin		X	
Filberts		X	X
Figs (dried)		X	X

(continued)

Table 1. (continued)

Commodity	Soil Fumigation	Postharvest Stored	Transportation Vehicles
Flour (packaged)		X	
Fruit trees	X		
Garlic		X	
Grain		X	
Grapes	X	X	
Grapefruit		X	
Ham (Cured)		X	
Hazelnuts		X	
Herbs (processed)		X	
Hickory Nuts		X	X
Honeydew Melon		X	
Horseradish (roots)		X	
Kumquat		X	
Lemons		X	
Lettuce	X		
Limes		X	
Macadamia Nuts		X	X
Meat Products (Cured)		X	X
Melons	X		
Muskmelon	X	X	
Nectarines		X	
Nut Trees	X		
Oats		X	X

(continued)

Table 1. (continued)

Commodity	Soil Fumigation	Postharvest Stored	Transportation Vehicles
Okra		X	
Onions	X	X	
Oranges		X	
Parsnips		X	
Peaches (dried)		X	X
Peaches (fresh)	X	X	
Peanuts		X	X
Pears (fresh & dried)		X	
Peas		X	X
Pecans	X	X	X
Peppers	X	X	
Pimentos		X	
Pineapple	X	X	
Pistachio Nuts	X	X	X
Plums	X	X	
Prunes (dried)		X	X
Prunes (fresh)	X	X	
Potatoes		X	
Potatoes (Sweet)		X	X
Processed Food		X	X
Pumpkin		X	
Radishes		X	
Raisins		X	X
Rice		X	X

(continued)

SUMMARY

The Agency is no longer requiring residue data on inorganic bromide. The inorganic bromide tolerances will be replaced with tolerances for methyl bromide per se, which has been judged a residue of concern. The following data are required:

- o Additional data on plant metabolism.
- o Residue data on methyl bromide and any other residues of concern in or on all raw agricultural commodities, processed commodities, and processed food and feed items for which there is a registered use of methyl bromide. Some raw and processed commodities may be covered by the establishment of crop group tolerances.

QUALITATIVE NATURE OF THE RESIDUE IN PLANTS

Conclusions:

The Methyl Bromide Guidance Document dated August, 1986 required data concerning the metabolism of methyl bromide in representative raw agricultural commodities. It specified that the commodities be fumigated according to common commercial procedures at or above the maximum registered rate using [¹⁴C]methyl bromide and methyl bromide containing radioactive bromine. Since the date of the Guidance Document, the MBIP has engaged in correspondence with DEB regarding interpretation of the data requirement and study protocols (memoranda by C. Deyrup, DEB Nos. 4399, dated November 3, 1988; a memo dated December 8, 1988, no DEB No.; 4680 dated February 9, 1989; and 5001 dated April 25, 1989). The Agency has emphasized the need for data showing the contribution of methyl bromide per se to the total radioactive residue (TRR). In addition, concern was expressed that 5-bromouracil and 7-methyl guanine and methylated amino acids be sought and quantified as to their contribution to the TRR. A preliminary study was reviewed by N. Dodd (DEB No. 5834, March 7, 1990). That study investigated the nature of chemically bound residues in commodities following fumigation with [¹⁴C]methyl bromide. Methylated proteins accounted for most of the radioactive residues, and evidence was presented for O-, S-, and N-methylated species. Identified residues included methyl bromide, S-methylcystiene, 1-methylhistidine, 3-methylhistidine, 7-methylguanine, 1-methyladenine, 3-methyladenine, 3-methylcytosine, 3-methyl guanine, and S-methylglutathione. The review pointed out that the study addressed the nature of chemically bound ¹⁴C-residues but that volatile residues, specifically the parent compound, remaining physically bound in the commodity matrix needed to be taken into account (DEB No. 7101, R. Perfetti, March 8, 1991). It was recommended that an additional study to determine methyl bromide residues in samples collected after 1-2 hours of aeration following exposure, and stated that the use of non-radioactive methyl bromide would be acceptable.

Table 1. (continued)

Commodity	Soil Fumigation	Postharvest Stored	Transportation Vehicles
Rutabagas		X	
Rye		X	X
Salsify (Roots)		X	
Sorghum		X	X
Spices (processed)		X	X
Squash (Summer)		X	
Squash (Winter)		X	
Squash (Zucchini)		X	
Strawberries	X	X	
Sugar Beets		X	
Tangelos		X	
Tangerines		X	
Tobacco	X	X	X
Tomatoes	X	X	X
Turnips (Roots)		X	
Vegetables	X		
Walnuts	X	X	X
Watermelon		X	
Wheat		X	X
Yams		X	

A recent Agency review (R. Perfetti, DEB 7101; March 8, 1991) provides a summary of the correspondence between the Agency and the registrant regarding the plant metabolism protocol and includes a review of the MBIP's most recent submission (MRID 41627701) addressing the contribution of physically bound methyl bromide to the total residue. The review concluded that the study was inadequate because the exposure and aeration times were different from those used in the previous study and that, therefore, the total residues quantified in the most recent study could not serve as accurate TRR estimations for determining the contributions made to the total residue by previously identified components. The following additional data are required:

- o The registrant may submit additional information within 3 months in order to upgrade the present study or they must repeat the study designed to quantify the total residue, including the contribution of methyl bromide per se remaining physically bound in the commodity matrices. Representative commodities must be fumigated for 24 hours at 24 mg ai/L and sampled after 1-2 hours of aeration. The study should simulate commercial fumigation. The study must be designed so that the values obtained for total residues can be used as estimates of total radioactive residues for purposes of calculating the contribution to the total residue of components constituting the chemically bound ¹⁴C-residues, identified in interim report LVW-89-267. Otherwise, the registrant should conduct the new study using [¹⁴C]methyl bromide and repeat the residue characterization work.

References (used):

MRID: 41627701.

Discussion of the data:

N/A.

QUALITATIVE NATURE OF THE RESIDUE IN ANIMALS

Conclusions:

The Methyl Bromide Guidance Document dated August, 1986 stated that animal metabolism data would be required if the requested plant metabolism studies revealed residues of toxicological concern in or on plant commodities. The following data are reserved at this time:

- o Data are required depicting the metabolism of methyl bromide in ruminants and poultry. Animals must be dosed with [¹⁴C]methyl bromide at levels high enough to make residue identification possible. The test substance must be

administered for at least 3 days. Milk and eggs should be collected twice daily. The animals must be sacrificed within 24 hours of the final dose. ¹⁴C-Residues must be characterized in milk, muscle, liver, kidney, and fat of ruminants and in eggs, muscle, liver, and fat of poultry. Representative samples from animal metabolism studies must be analyzed using accepted enforcement methodology to ascertain that the method(s) are able to quantify all residues of concern.

References (used):

N/A.

Discussion of the data:

N/A.

RESIDUE ANALYTICAL METHODS

Conclusions:

The Methyl Bromide Guidance Document dated August, 1986 required validation data for methodology for methyl bromide analysis. C. Deyrup (DEB No. 3890; July 14, 1988) reviewed a modification of the King headspace procedure (MRIDs 40579501 and 40607801), a method favorably reviewed in conjunction with PP#5F3300 (W. Hazel, May 28, 1987). It was concluded that additional fortification and recovery data were needed for the modified method as well as sample chromatograms and a description of precautions taken during sample maceration to prevent loss of volatile methyl bromide residues. The Deyrup review also indicated that if the requested data were adequate, the method would be suitable for inclusion in PAM, Vol. II as a "letter method." The MBIP responded by explaining that the method was essentially the same as that previously validated by the Agency for PP#5F3300 (C. Deyrup review of the MBIP response of 9/22/88, DEB No. 4399; November 3, 1988). The Agency accepted this explanation. Citing the need for tolerances and an enforcement method for methyl bromide, C. Deyrup forwarded a description of the method to FDA for inclusion in PAM, Vol. II as method A (letter dated July 31, 1989). A review of the most recent protocol modification (N. Dodd, DEB No. 6879; July 30, 1990) indicates that the registrant intends to provide a calibration curve for each commodity and to verify 0.1 ppm as the limit of detection for methyl bromide in or on nuts and 0.01 ppm for these residues in or on dried fruits. This review noted also previous validations of the method at 0.01 and 0.05 ppm in oranges, 0.005 and 0.01 ppm in wheat, and 0.05 and 0.1 ppm in walnuts. The method as sent to the FDA lists the limit of detection as 0.002 ppm. In summary, DEB has concluded that the King headspace method is adequate for data collection of methyl bromide residues and would be suitable for tolerance enforcement.

The Guidance Document requested also data pertaining to methodology for inorganic bromide. All residue chemistry data requirements for inorganic bromide have been waived (letter from Anne Lindsay to MBIP dated July 7, 1989).

The nature of the residue in plants and animals is not adequately understood. If the additional metabolism data requested indicate that there are residues of concern other than methyl bromide per se, additional methodology may be required.

References (used):

MRIDs: 40579501. 40607801.

Discussion of the data:

N/A.

STORAGE STABILITY DATA

Conclusions:

The Methyl Bromide Guidance Document dated August, 1986 required storage stability data to support of all requested residue data. In response, MBIP submitted data (MRID 40618501) on storage stability of residues in walnuts, rice, and strawberries (reviewed by C. Deyrup, DEB No. 3890; July 14, 1988). The data indicated that residues are stable in walnuts and strawberries, but declined about 30% in rice stored at dry ice temperatures for 48 hours. The Agency review was critical of the study because the methodology used was judged inadequate, owing to the lack of a useful standard curve and the absence of recovery data on each commodity. In addition, the reviewer took issue with the way in which the residue data were expressed, the choice of GLC detector, and the lack of data on residue decline. The registrant provided an explanation for the detector used (C. Deyrup, DEB No. 4399; November 3, 1988). This review emphasized the need for residue decline data on each commodity to be tested in the residue protocol, since waxing, sample volume, and other parameters could influence residue decline.

In a response reviewed in April, 1989 (C. Deyrup, DEB No. 4999), the registrant explained that sampling for analysis would be done within 45 minutes for most commodities. The reviewer concluded that decline curves and data on additional commodities would not be required if samples were taken within 2-3 hours and if samples were placed in impermeable containers and cooled to <3.7 °C as soon as possible, but she cautioned that additional data would be required if samples were stored for longer intervals (10-12 hours). CBTS later concluded that additional storage stability data are not required for methyl bromide unless the samples are stored for longer than 12 hours (N. Dodd, DEB No. 6879, July 30, 1990).

The registrant has promised to provide information on the time that samples are removed from storage, the temperatures of the samples between removal from storage and extraction, and the time when extraction begins.

The nature of the residue in plants and animals is not adequately understood. If the additional metabolism data requested indicate that there are residues of concern other than methyl bromide per se, additional storage stability data may be required.

References (used):

MRID: 40618501.

Discussion of the data:

N/A.

MAGNITUDE OF THE RESIDUE IN PLANTS

The Methyl Bromide Guidance Document dated August, 1986 required data pertaining to residues of inorganic bromide and methyl bromide in or on all raw agricultural commodities for which registered uses existed. Alternatively, it stated that data could be submitted for representative commodities from crop groups listed in 40 CFR 180.34(f); all groups were listed in the Guidance Document except grasses. Data were also required for numerous miscellaneous commodities. It specified that each major application method be represented, including commercial chamber fumigation in both normal atmospheric pressure and partial vacuum, fumigation of the most often used type of transportation vehicle, and fumigation under tarpaulin. It stipulated that only the one or two prevalent treatment methods could be represented if it could be documented that the method predominated the commercial market. In addition, for those crops for which preplant soil fumigation was permitted, the commodities grown in treated soil were to be subjected to postharvest fumigation also. The Guidance Document did not specify details of testing requirements in all cases, but stated that fumigations be conducted at the maximum registered rate for the maximum registered exposure period and that multiple treatments were required if >5% of the crop was multiplied in commercial practice. It also advised that minimum aeration times should be proposed and observed in the fumigation tests.

Processing studies were required in the Guidance Document for potatoes, sugar beets, succulent beans, tomatoes, citrus fruits, apples, prunes, grapes, corn, alfalfa, cocoa beans, coffee beans, cottonseed, peanuts, and pineapples.

In response to these data requirements, the Methyl Bromide Industry Panel (MBIP) submitted protocols for postharvest fumigation tests, first reviewed by C. Deyrup under DEB No. 3890, July 14, 1988. Since then, the protocols have undergone several cycles of

modification and review (C. Deyrup, DEB Nos. 4121 through 4135, August 10 and September 23, 1988; DEB No. 4399; November 3, 1988). In 1989, the Agency determined that inorganic bromide was not a residue of concern (letter from A. Lindsay, Registration Division, to the MBIP, July 14, 1989), and the purpose for requiring residue data shifted from support of the established tolerances for inorganic bromide to the need for data in order to propose tolerances for methyl bromide *per se*. Separate protocols have been submitted and reviewed for grapes and cocoa beans (C. Deyrup, DEB No. 5115; May 22, 1989), dried fruits and nuts (N. Dodd, DEB No. 5774, February 22, 1990), herbs and spices (C. Deyrup, DEB No. 4152, September 8, 1988), cherimoyas (C. Deyrup, DEB No. 4825, February 6, 1989), cocoa beans and coffee beans (A. Aikens, DEB No. 7109, November 14, 1991), and pineapples (F.B. Suhre, DEB No. 4825, February 6, 1989). These protocols have been incorporated into the most recent version of the proposed comprehensive protocol.

The most recent modifications of the MBIP protocol was reviewed by DEB (N. Dodd, DEB Nos. 6243; August 15, 1990, 5774; February 22, 1990, and 6879; July 30, 1990). The protocol for various commodities, summarized in Table 2, addresses the crops to be tested to support crop group tolerances as well as miscellaneous commodities to be treated. The protocol indicated that data for the cereal grains group and herbs and spices group will be submitted by the American Spice Trade Association, although we note that the MBIP included corn sorghum, rice, and wheat among the commodities in its "miscellaneous" list. In addition, MBIP indicated that data for the tree nuts will be submitted by the USDA/California Prune, Raisin, and Walnut Marketing Board. The DEB review noted that the rates and exposure times specified in the protocol for some commodities differed from those listed in the available EPA Compendium of Acceptable Uses (March, 1984). DEB emphasized that the labels will have to be revised to reflect the dosage rates and exposure times used in the residue studies, in cases where differences occur between the test parameters and the established label rates.

The Dodd review of August 15, 1990 (DEB No. 6243) discussed other Agency requirements for conducting the residue studies as follows. Duplicate samples from duplicate chambers are acceptable, although if the results from the duplicates are not similar, additional data will be required. Small 28.3-liter chambers may be used if bridging data are provided indicating that the results are similar to those obtained from large commercial chambers. Fumigations conducted at normal atmospheric pressure will cover vacuum treatments. Minimum aeration times should be specified on the labels and should be observed in the residue studies. Also the labels should bear a statement that commodities may not be removed from the chambers until the methyl bromide in the chamber air is ≤ 5 ppm. The minimum fumigation temperature should be 10 °C. Commodities should be waxed either before or after fumigation, according to commercial practice, and intervals between fumigation and waxing should be specified on the labels, where appropriate. When more than one fumigation is conducted, a minimum interval between fumigations must be observed and the labels should state the interval as well as the number of fumigations specified for each commodity.

With respect to the crop group tolerances to be supported by the residue data, the DEB reviewer pointed out in DEB No. 6243 that a crop group tolerance for "root and tuber vegetables (except sugar beets)" would be appropriate, since sugar beets was not included in the protocol. Since the fumigation of soybeans in the protocol differs from that of beans and peas, it was concluded that a group tolerance for "legume vegetables (except soybeans)" could be sought. In addition, it was noted that pistachios are not included in the tree nuts group and, therefore, a separate tolerance would be necessary for this miscellaneous commodity.

DEB had previously determined that processing studies did not need to be conducted if the processing involves extensive drying or elevated temperature. The review included a list of commodities processed without heat for which data are required. The need for specific processing studies is reflected in Table A (Generic Data Requirements). The Dodd review of August 15, 1990 emphasized that samples used for processing must bear measurable residues resulting from treatment and that fortified samples should not be used. Processed commodities such as raisins and copra that are themselves fumigated will require residue data and food/feed additive tolerances established for these commodities based on these data.

In comparing the tolerances listed in 40 CFR 180.123 and 180.199, with the sites listed in the SP05 (refer to Table 1) and the crops listed in the MBIP protocol (refer to Table 2), we note several discrepancies. Numerous crops, including representative commodities of various crop groups, for which the registrant intends to submit data are not listed in the SP05 site listing. The registrant must revise all pertinent product labels to include each commodity for which postharvest fumigation is intended. Currently tolerances for residues resulting from soil fumigation use are established for asparagus, broccoli, cauliflower, eggplant, lettuce, onions, peppers, pineapples, strawberries, and tomatoes. The registrant has stated that all crops with soil fumigation uses will have postharvest uses also. The Agency has concluded that data from postharvest fumigations will cover any possible residues from preplant soil fumigation, except for RACs of soil-treated crops that are not fumigated; data from preplant soil fumigation are required for these RACs. This pertains to all commodities that are listed separately in the SP05 for soil treatment and any crops covered under the listing for "vegetables" on some labels. Data are therefore required for bean vines and hay, pea vines and straw, beet or turnip tops, sweet corn forage, cotton forage, and pineapple forage grown in fumigated soil. Again, we emphasize that individual crops for which methyl bromide is registered for any use must be included on pertinent product labels.

The MBIP protocol includes studies on commodities for which no tolerances are currently established. The registrant will need to propose tolerances to cover each commodity or crop listed on product labels.

The SP05 lists a 45% RTU (EPA Reg. No. 5785-23) and 80 and 50% pressurized gas products (EPA Reg. Nos. 5785-47 and -48) as registered to the Great Lakes Chemical Corp. for foliar application to citrus. Data from postharvest treatments will cover this use as was the case for soil fumigants.

The MBIP has not included alfalfa hay or timothy hay, crops for which tolerances are currently established, in its proposed protocol. If the registrant wishes to establish a methyl bromide tolerances for these crops, appropriate residue data will have to be submitted.

References (used):

N/A.

References (not used):

[The following MRID contains data submitted in support of proposed tolerances for residues of inorganic bromide in or on various vegetable commodities following preplant fumigation. The data were not submitted in response to the Guidance Document.]

MRID: 00157701.

Table 2. Summary of methyl bromide residue data to be submitted by the MBIP, protocol submitted 12/29/89 and reviewed by DEB (N. Dodd, DEB No. 6243; 8/15/90). Specific modifications of this table are discussed in the Dodd review of 8/15/90, which see.

Crop Group	Crop	Dosage lb/1000 cu ft.	Exposure Time (Hours)	Minimum Commodity Temperature at Fumigation (°C)	Minimum Aeration Time (Hours)	Processing Required by Reg. Std.	Number of Sequential Post-Harvest Fumigations
Root and Tuber	Carrot	4	4	10	2	-	1
	Potato	3	6	15	2	+	1
	Radish	3	4	10	2	-	1
	Turnip	3	4	15	2	-	1
Bulb Vegetables	Onion (green)	3	6	10	2	-	1
	Onion (large bulb)	3	6	15	2	-	1
	Garlic	3	4	15	2	-	1
Leafy Vegetables	Head lettuce	4	2	10	2	-	1
	Leaf lettuce	4	2	10	2	-	1
	Celery	4	2	10	2	-	1
	Spinach	4	2	10	2	-	1
Brassica	Broccoli	4	2	10	2	-	1
	Cabbage	4	2	10	2	-	1
	Mustard Greens	4	2	10	2	-	1
Legume Vegetables (except soybeans)	Beans (succulent)	3.5	2	10	2	+	1
	Beans (dry)	3.5	24	15	2	-	1
	Peas (succulent)	3	2	10	2	-	1
	Peas (dry)	4	24	15	2	-	1

(Continued)

Crop Group	Crop	Dosage lb/1000 cu ft.	Exposure Time (Hours)	Minimum Commodity Temperature at Fumigation (°C)	Minimum Aeration Time (Hours)	Processing Required by Reg. Std.	Number of Sequential Post-Harvest Fumigations
Fruiting Vegetables	Tomatoes (field)	3	2	10	2	+	1
	Tomatoes (greenhouse)	3	2	10	2	-	1
	Peppers	4	2	10	2	-	1
Cucurbit Vegetables	Cucumbers	2.5	4	10	2	-	1
	Cantaloupe	2.5	2	10	2	-	1
	Summer Squash	4	2	10	2	-	1
Citrus Fruits	Orange	3	2	18	2	+	1
	Lemon	3	2	18	2	-	1
	Grapefruit	3	2	18	2	-	1
Pome Fruits	Apple	5	2	10	2	+	1
	Pear	5	2	10	2	-	1
Stone Fruits	Cherry	5	2	10	2	-	1
	Peach	5	2	15	2	-	1
	Plums	5	2	15	2	-	1
Cereal Grains*							

(Continued)

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Crop Group	Crop	Dosage lb/1000 cu ft.	Exposure Time (Hours)	Minimum Commodity Temperature at Fumigation (°C)	Minimum Aeration Time (Hours)	Processing Required by Reg. Std.	Number of Sequential Post-Harvest Fumigations
Small Fruits & Berries	Rubus spp.	-	-	-	2	-	1
	Blueberry	2	4	10	2	-	1
	Strawberry	3	4	10	2	-	1
	Grape	4	2	10	2	-	1
	Cranberry	2	4	10	2	-	1
Tree Nuts**	Almond						
	Pecan						
	English Walnut						
	Pistachio						
Herbs and Spices***	Basil						
	Chives						
	Dill						
	Marjoram						
	Sage						

(Continued)

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MAGNITUDE OF THE RESIDUE IN STORED PROCESSED COMMODITIES

Conclusions:

The Methyl Bromide Guidance Document dated August 1986 required data pertaining to residues of methyl bromide and inorganic bromide in chocolate candy, cheese, meats, dried eggs, corn meal, rolled oats, flours, "several dried fruits," and "several other miscellaneous processed products" fumigated in storage at 2 lb ai/1,000 cu ft for 24 hours (1.5 lb ai/1,000 cu ft for dried fruit). It specified multiple fumigations when permitted and that several techniques (ship hold, boxcar, tarpaulin, etc.) be represented.

The MBIP submitted a protocol for fumigation studies with dried fruits and nuts, discussed in DEB No. 5774 (N. Dodd, February 22, 1990). In response to Agency comments, the MBIP provided additional information on these protocols (discussed by N. Dodd, DEB No. 6879; July 30, 1990). The DEB review agrees with the registrant's choice of varieties of dried raisins, prunes, figs, and dates, to be tested and emphasizes that each individual commodity should be tested, if not covered under a crop grouping, specifying that bridging data for dried fruits will not be sufficient. The requirements for testing of both bulk and packaged commodities were addressed in this review also. The issues regarding fumigation rate, multiple fumigations, chambers, and aeration, along with the need to specify certain parameters on the product labels were addressed in this review in the same manner as in the Dodd review of August 15, 1990 (DEB No. 6243).

The need for data on chocolate candy, cheese, meats, dried eggs, corn meal, rolled oats, and flours was not addressed for the specific commodities, but the MBIP included an entry for "processed foods" in their protocol (Table 2) specifying the rate and fumigation interval that was required in the Guidance Document.

The data requirements for specific processed commodities are indicated in Table A (Generic Data Requirements). These requirements are based on current Agency policy regarding residues to be regulated and the Branch's conclusions with respect to the registrant's proposed protocols.

References (used):

N/A.

Discussion of the data:

N/A.

Crop Group	Crop	Dosage lb/1000 cu ft.	Exposure Time (Hours)	Minimum Commodity Temperature at Fumigation (°C)	Minimum Aeration Time (Hours)	Processing Required by Reg. Std.	Number of Sequential Post-Harvest Fumigations
Miscellaneous	Asparagus	4	2	10	2	-	1
	Avocado	2	4	10	2	-	1
	Cocoa Beans	1.5	24	10	24	+	2
	Coffee Bean	2.5	24	15	24	+	3
	Copra	2.5	24	15	24	-	2
	Corn	4	12	15	24	+	1
	Cottonseed	4	24	15	24	-	1
	Dates	1	24	10	24	-	1
	Figs	1	24	10	24	-	2
	Grape	4	2	10	2	+	1
	Okra	3.5	2	15	24	-	1
	Peanuts	3.5	24	15	-	+	1
	Pineapple	2	6	10	2	+	1
	Popcorn	1.5	12	15	24	-	1
	Rice	3	24	15	24	-	1
	Sorghum	6	12	15	24	-	1
	Soybean	6	12	15	24	+	1
	Sweet Corn	3	4	10	2	+	1
	Tobacco	3	72	15	24	-	1
	Wheat	3	24	15	24	-	1
	Processed Foods	2.5	24	10	24	-	2

*The MBIP has indicated that data for cereal grains will be submitted by the American Spice Trade Association.

**The MBIP has indicated that data for tree nuts will be submitted by USDA/CA Prune, Raisin, and Walnut Marketing Board.

***The MBIP has indicated that data for herbs and spices will be submitted by the American Spice Trade Association.

MAGNITUDE OF THE RESIDUE IN MEAT, MILK, POULTRY, AND EGGS

Conclusions:

No tolerances have been established for residues of inorganic bromide or methyl bromide in animal commodities. The Methyl Bromide Guidance Document dated August, 1986 stated that no conclusions could be reached regarding the magnitude of residues in animal products because the need for metabolism studies with animals had not been established. Tolerances for residues of methyl bromide have not yet been established for food or feed commodities. Therefore, magnitude of the residue data on meat, milk, poultry, and eggs are reserved at this time.

References (used):

N/A.

Discussion of the data:

N/A.

MASTER RECORD IDENTIFICATION NUMBERS

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

AGENCY MEMORANDA

DEB No. N/A
Subject: Methyl Bromide Reregistration Letter from the Methyl Bromide Industry Panel (MBIP) dated 12/29/89.
From: N. Dodd
To: W. Francis/L. Schnaubelt
Dated: May 18, 1990
MRIDs: N/A

DEB No. N/A
Subject: Entry for PAM Vol. II. Methyl Bromide - Method A.
From: C. Deyrup
To: A. Marcotte, FDA
Dated: July 31, 1989
MRIDs: N/A

DEB No. N/A
Subject: Administrative review of morganie Bromide Tolerances.
From: A. Lindsay
To: L. White, MBIP
Dated: July 7, 1989
MRIDs: N/A

DEB No. N/A
Subject: Proposal to revoke all 40 CFR §180.199 crop tolerances of inorganic bromide.
From: D. Ritter, Toxicologist, HED
To: J. Kempter
Dated: April 19, 1989
MRIDs: N/A

DEB No. N/A
Subject: Meeting of 11/10/88. Protocols for Postharvest and Preplant MeBr Fumigations.
From: C. Deyrup
To: RCB Files
Dated: December 8, 1988
MRIDs: N/A

DEB No. 3890
Subject: Follow-up to Methyl Bromide Registration Standard. Post Harvest Protocol, Interim Plant Metabolism Report, Analytical Methods, and Storage Stability.
From: C. Deyrup
To: J. Kempter
Dated: July 14, 1988
MRIDs: 40579501, 40607801, 40618501

DEB No. 4121 through 4135
Subject:
From: C. Deyrup
To:
Dated: August 10 and September 23, 1989
MRIDs: N/A

DEB No. 4399
Subject: Follow-up to Methyl Bromide Registration Standard. Methyl Bromide Industry Panel Response (9/22/88) to DEB Review of 7/14/88 on Postharvest Protocol, Analytical Methodology, and Storage Stability.
From: C. Deyrup
To: J. Kempter
Dated: November 3, 1988
MRIDs: N/A

DEB No. 4680
Subject: Follow-up to Methyl Bromide Registration Standard. Interim Reports on the Metabolism of MeBr Following Post Harvest Fumigation. Report of 11/17/88.
From: C. Deyrup
To: J. Kempter
Dated: February 9, 1989
MRIDs: N/A

DEB No. 4999
Subject: Follow-up to Methyl Bromide Registration Standard. Amendment of 2/10/89. MBIP Response to DEB's 11/3/88 Review on Postharvest Protocols, Analytical Methodology and Storage Stability.
From: C. Deyrup
To: J. Kempter
Dated: April 25, 1989
MRIDs: N/A

DEB No. 5000
Subject: Epa Registration No. 53201-1. Methyl Bromide Protocols for Pre- and Post-harvest Applications - Issues discussed in the November 10, 1988 Meeting (No Accession Number).
From: N. Dodd
To: J. Kempter/D. Ritter
Dated: April 27, 1989
MRIDs: N/A

DEB No. 5001
Subject: Follow-up to Methyl Bromide Registration Standard. Amendment of 2/9/89. Revised Plant Metabolism Protocols.
From: C. Deyrup
To: J. Kempter
Dated: April 25, 1989
MRIDs: N/A

DEB No. 5115
Subject: Follow-up to Methyl Bromide Registration Standard. Protocol for the Postharvest Fumigation of Grapes and Green Cocoa Beans.
From: C. Deyrup
To: J. Kempter
Dated: May 22, 1989
MRIDs: N/A

DEB No. 5774
Subject: Methyl Bromide Registration Standard Follow-up. Protocols for Postharvest Fumigation of Dried Fruits and Nuts. (EPA ID No. 53201-1, Record No. 251192)
From: N. Dodd
To: W. Francis/L. Rossi
Dated: February 22, 1990
MRIDs: N/A

DEB No. 5834
Subject: Methyl Bromide Registration Standard Follow-Up. Plant Metabolism Interim Report LVW-89-267.
From: N. Dodd
To: W. Francis/L. Rossi
Dated: March 7, 1990
MRIDs: N/A

DEB No. 6243
Subject: EPA Registration No. 53201-1 - Methyl Bromide Preplant/Postharvest Protocol and Letters Dated December 22 and 29, 1989 - Record No. 258230.
From: N. Dodd
To: W. Francis/L. Schnaubelt
Dated: August 15, 1990
MRIDs: N/A

DEB No. 6879
Subject: EPA Registration No. 053201 - Methyl Bromide Reregistration Letter and Attachments from the Methyl Bromide Industry Panel (MBIP) Dated May 25, 1990.
From: N. Dodd
To: W. Francis/L. Schnaubelt
Dated: July 30, 1990
MRIDs: N/A

DEB No. 7107
Subject: Methyl Bromide Industry Panel: Response to the Methyl Bromide Reregistration Standard: Metabolism Studies
From: R. Perfetti
To: R. Engler/L. Rossi
Dated: March 8, 1991
MRIDs: 41627701

DEB No. 8041
Subject: Methyl Bromide Postharvest Fumigation Protocols - Letter dated 5/23/91
From: N. Dodd
To: W. Francis/L. Rossi
Dated: June 3, 1991
MRIDs: N/A

Residue Chemistry Citations (used):

- 40579501 Secara, S. (1988) Post Harvest Chamber Fumigation Pre-study using Methyl Bromide as a Fumigant: Laboratory Project ID: B.R. #15.87.1. Unpublished study prepared by Bolsa Research Associates. 33 p.
- 40607801* [citation unavailable; reference cited in DEB No. 3890]
- 40618501 Secara, S. (1988) Residue Chemistry: Storage Stability of Fumigated Products: B.R. #28.88.1. Unpublished study prepared by Bolsa Research Associates. 24 p.
- 41627701* Starratt, A. and E. Bond (1990). Residues of Methyl Bromide in Fumigated Commodities.

Residue Chemistry Citations (not used):

- 00167701 Methyl Bromide Industry Panel (1986) The Results of Tests on the Amount of Residues Remaining in or on Various Crops Grown on Fumigated [sic] Soils and Description of the Analytical Method Used: [Methyl Bromide]. Unpublished compilation 494 p.

*Citations not included in PDMS run conducted on 12/31/90.

The confidential appendix is not included.
ATTACHMENT 3