OMB Control Number: 2060-0170
Expiration Date: 4/16/2023

For EPA Use Only ID # _____
SECTOR _____

EPA United States Environmental Protection Agency	**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, D.C. 20460**

Application for Critical Use Exemption of Methyl Bromide for Pre Plant Use in the United States

WHY IS THIS INFORMATION NEEDED?	Under the Clean Air Act and the international treaty to protect the ozone layer (the Montreal Protocol on Substances that Deplete the Ozone Layer), the production and import of methyl bromide was phased out in the United States on January 1, 2005. This application seeks information to support a U.S. request to produce and import methyl bromide for certain critical uses and circumstances beyond this 2005 phaseout date. The information in this application will be used to review whether your use of methyl bromide is "critical" because no technically and economically feasible alternatives are available. In order to estimate the loss as a result of not having methyl bromide available, EPA needs to compare data (yields, crops/crop groupings, prices, revenues and costs) for your use of methyl bromide with uses of alternative pest control regimens.

The information contained in this application is critical to process and assess the need for methyl bromide. Filling out this application in its entirety will bolster the U.S. government's ability to strengthen the nomination package for the international review boards.

INSTRUCTIONS

The information provided by you in this application will be used to evaluate the requested methyl bromide use. The U.S. and other countries that are parties to the Montreal Protocol On Substances That Deplete The Ozone Layer decided that: "a use of methyl bromide should qualify as "critical" only if the nominating Party determines that:

(i) The specific use is critical because the lack of availability of methyl bromide for that use would result in a significant market disruption; and

(ii) There are no technically and economically feasible alternatives available to the user that are acceptable from the standpoint of environment and health and are suitable to the crops and circumstances of the nomination …"

WHO APPLIES?	If you anticipate that you will need methyl bromide because you believe there are no technically and economically feasible alternatives, then you should apply for the critical use exemption. This application may be submitted either by a consortium representing multiple users or by individual users. We encourage users with similar circumstances of use to submit a single application (for example, any number of pre plant users with similar soil, pest, and climactic conditions can submit a single application.) If a consortium is applying for multiple methyl bromide users, the economic data should be for a representative or typical user within the consortium unless otherwise noted. If economic or technical factors (such as size of the farm) affecting the ability of this "representative user" to use alternatives are significantly different than other users in the consortium, more than one application should be submitted to reflect these differences. Please contact your local, state, regional or national commodity association and/or state representative agency to find out if they plan on submitting an application on behalf of your commodity group.
WHAT INFORMATION IS REQUIRED?	Critical use exemptions are valid for only one year and do not renew automatically. Users desiring to obtain an exemption must apply annually to EPA. Because of the latest changes in registrations, costs, and economic aspects for producing critical use crops and commodities, all applicants will be required to fill out the application form completely. If these Worksheets are not submitted, EPA will not include the application in the U.S. nomination submitted for international consideration.
HOW DO I APPLY?	You may either complete an electronic (Microsoft Word or Excel) or a printed version of the application. Please fill out each section in the application as completely as possible. If you are completing the printed version and need extra space you may attach additional sheets as needed.
IS MY INFORMATION CONFIDENTIAL?	The applicant may assert a business confidentiality claim covering part or all of the information in the application by placing on (or attaching to) the information, at the time it is submitted to EPA, a cover sheet, stamped or typed legend, or other suitable form of notice employing language such as trade secret, proprietary, or company confidential. Allegedly confidential portions of otherwise non-confidential documents should be clearly identified by the applicant, and may be submitted separately to facilitate identification and handling by EPA. If the applicant desires confidential treatment only until a certain date or until the occurrence of a certain event, the notice should so state. Information covered by a claim of confidentiality will be disclosed by EPA only to the extent, and by means of the procedures set forth under 40 CFR Part 2 Subpart B; 41 FR 36902, 43 FR 400000, and 50 FR 51661. If no claim of confidentiality accompanies the information when it is received by EPA, it may be made available to the public by EPA without further notice to the applicant. Applicants submitting their application via e-mail assume responsibility for the confidentiality of the electronic message transmission.
WHEN IS THE INFORMATION NEEDED?	This application must be postmarked to the EPA address below no later than **September 15**.

<table>
<tr><td rowspan="2">WHERE DO I SUBMIT THE APPLICATION?</td><td colspan="2">Electronic Address for applications: arling.jeremy@epa.gov
When submitting an application electronically, you should also sign Worksheet 1 and email or fax it to 202-343-2338</td></tr>
<tr><td>Mailing Address for applications being submitted by <u>mail</u> directly to the EPA:

US Environmental Protection Agency
Methyl Bromide Critical Use Exemption
Office of Air and Radiation
Stratospheric Protection Division
(6205T)
1200 Pennsylvania Ave, NW
Washington, DC 20460</td><td>Address for applications being sent by <u>courier</u> or <u>non-U.S. Postal overnight express</u> delivery to the EPA:

US Environmental Protection Agency
Methyl Bromide Critical Use Exemption
Office of Air and Radiation
Stratospheric Protection Division
1201 Constitution Ave, NW
Room 4355TT
Washington, DC 20004</td></tr>
<tr><td>HOW CAN I RECEIVE ADDITIONAL INFORMATION?</td><td colspan="2">For general questions about this application:
Stratospheric Ozone Information Inbox at spdcomment@epa.gov
More information is also at http://www.epa.gov/ozone/mbr</td></tr>
</table>

WORKSHEET 1: CONTACT AND METHYL BROMIDE REQUEST INFORMATION

The following information will be used to determine the amount of methyl bromide requested and the contact person for this request. It is important that we know whom to contact in case we need additional information during the review of the application.

Is this information Confidential Business Information: Yes ___ No ___
If yes, the applicant assumes responsibility for the secure transmission of electronic submissions.

Applicant Name:

Primary Contact:
Contact Name:
Address:
Daytime Phone:
Cell:
Fax:
Email Address:
Specialty: (check one) **Agronomic** ___ **Economic** ___

Alternate Contact:
Contact Name:
Address:
Daytime Phone:
Cell:
Fax:
Email Address:
Specialty: (check one) **Agronomic** ___ **Economic** ___

I certify that all information contained in this document is factual to the best of my knowledge.

Signature: _____ **Date:** _____

Print Name: _____ **Title:** _____

Information in this application may be aggregated with information from other applications and used by the United States government to justify claims in the national nomination package that a particular use of methyl bromide be considered "critical" and authorized for an exemption beyond the 2005 phaseout. **By signing below**, you agree now to assert any claim of confidentiality that would affect the disclosure by EPA of aggregate information based in part on information contained in this application.

Signature: _____ **Date:** _____

Print Name: _____ **Title:** _____

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. Public reporting burden for this collection of information is estimated to average 38 hours per response and assumes a large portion of applications will be submitted by consortia on behalf of many individual users of methyl bromide. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a current OMB control number.

WORKSHEET 1: CONTACT AND METHYL BROMIDE REQUEST INFORMATION (continued)

1. Location: Enter the state, region, or county.

2. Crop/Crop Grouping: Include all crops/crop groupings that benefit from an application of methyl bromide in a fumigation cycle. For a definition of fumigation cycle, see Definitions page at end of application.

3. Summary of Crop System: Enter the type of crop system used, e.g., open field [including tunnels added after treatment], permanent glasshouses (enclosed), open ended polyhouses, others (please describe).

4. Range of acres farmed by growers included in this application: Insert number or percentage of users in each category.

0 - 25 acres		**100 - 200 acres**	
25 - 50 acres		**200 - 400 acres**	
50 - 100 acres		**over 400 acres**	

5. Climate Zone: Indicate the climate zone designation by reviewing the U.S. climate zone map located at the end of this application or online at http://planthardiness.ars.usda.gov/PHZMWeb/. Please check all that apply.

1____ 2a____ 2b____ 3a____ 3b____ 4a____ 4b____ 5a____ 5b____ 6a____ 6b____ 7a____
7b____ 8a____ 8b____ 9a____ 9b ____ 10a____ 10b____ 11a____ 11b____

6. Soil Type & Organic Matter: Indicate the soil type and percent organic matter where methyl bromide would be applied. Please check all that apply.

Soil Type: **Light ___** **Medium ___** **Heavy ___**
Organic Matter: **0 to 2% ___** **2 to 5% ___** **over 5% ___**

7. Is this applicant eligible for Quarantine and Preshipment (QPS) uses of methyl bromide:
Yes ___ No ___ If yes, indicate amount: ____ pounds

8. Has this applicant previously applied for Critical Use Exemption of methyl bromide:
Yes ___ No ___ If yes, indicate CUE #: _____

9. What is the amount of methyl bromide being requested by this application? (Do NOT include QPS amounts.)

If a consortium is submitting this application, the data should be the total for the consortium.

		Year:_____	Year:_____
A	**Total Pounds Active Ingredient (a.i.) of Methyl Bromide**		
B	**Use: Broadcast or Strip/Bed Treatment**		
C	**If strip, then what percentage is treated with strip formulation? (E.g., If 30 inches out of a total of 60 inches are treated with strip, the percent is 50%)**		
D	**Formulation (Ratio of MB/Pic Mixture) to be Used for the CUE**		
E	**Total Area to be Treated with the Methyl Bromide or MB/Pic Formulation**		
F	**Use Rate (lbs a.i./acre)**		

10. Please explain why there may be variations in the pounds or acres treated from year to year, especially if the request is higher this year than in previous years:

11. Please explain why methyl bromide is being requested:

12. For the region where methyl bromide is being requested, if only part of the crop area is treated with methyl bromide, indicate the reason why methyl bromide is not used in the other area. Additionally, identify what alternative strategies are used to control the target pathogens and weeds without methyl bromide in that area:

12a. Would it be feasible to expand the use of these methods to cover at least part of the crop that has requested use of methyl bromide? What changes would be necessary to enable this:

13. Do you anticipate that you will have any methyl bromide in storage?

Yes ___ No ___ If yes, please specify amount: _____ lbs

14. Have you adjusted the request for the following issues?:

Regulatory Issues: Yes ___No ___ Disease Pressure: Yes ___No ___
Soils Issues: Yes ___No ___ Other (Please Explain): Yes ___No ___
_____

WORKSHEET 2: METHYL BROMIDE

Purpose of Data: To establish a baseline estimate of crop/crop grouping yields, gross revenue and costs using methyl bromide.

Instructions specific to each worksheet are located at the top of each sheet.

Worksheet	Title
2-A	**Methyl Bromide - Crop & Pest Information** If a consortium is submitting this application, the data for this table should reflect the representative user for the consortium. The purpose of this worksheet is to determine pest infestation and crop information where methyl bromide is used. This forms the baseline for evaluating the impacts of using an alternative to replace methyl bromide.
2-B	**Methyl Bromide - Historical Use** If a consortium is submitting this application, all data should reflect the actual data for the consortium. This worksheet provides data in actual usage for the last five years.
2-C	**Methyl Bromide - Crop/Crop grouping Yield and Gross Revenue** If a consortium is submitting this application, the data for this table should reflect the representative user for the consortium. This worksheet provides crop/crop grouping yield and gross revenue for the last five years. The purpose of this worksheet is to determine past gross revenues when methyl bromide is used. This forms the baseline for evaluating the revenue impacts of using an alternative to replace methyl bromide.
2-D(1 & 2)	**Methyl Bromide - Baseline - Operating Costs** If a consortium is submitting this application, the data for this table should reflect the representative user for the consortium. This data is needed to estimate a baseline for operating costs in order to estimate changes in costs and the impact on operating profit and short-run economic viability as a result of not using methyl bromide and to provide required information to the international review board. The purpose of this worksheet is to determine operating expenses when methyl bromide is used. This forms the baseline for evaluating the cost impacts of using an alternative to replace methyl bromide. The data requested are designed to help you identify how your operation would change if methyl bromide were unavailable, which will be shown in Worksheet 3-B. Worksheet 2-D(1) is for users with a fumigation cycle of less than 5 years. Worksheet 2-D(2) is for users growing perennial crops following a single fumigation at establishment. **EPA will estimate fixed and overhead costs across crops and regions to ensure consistency within the U.S. nomination.**

WORKSHEET 2-A: METHYL BROMIDE – CROP & PEST INFORMATION

1. Crop/Crop Grouping or Consortium:

2. Which month does your fumigation cycle start: Please check only one.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

3. Fumigation and Crop Timeline: Indicate when fumigation, major crop and pest management practices typically occur by shading the appropriate cells.

Show a second crop if part of the fumigation cycle. If the fumigation cycle is longer than one year, change the months to the appropriate interval. These tables are for annual crops but more than one crop may benefit from one methyl bromide fumigation. If application covers multiple crops/crop groupings not grown sequentially, they will need to provide this information for all crops/crop groupings. Please adjust timeline as necessary. **Please provide additional comments or description below or on a separate page.** Please begin the timeline with the first land preparation. For **perennials**, please begin with the **year** of land preparation and fumigation and indicate the years of production by yield or percentage of full production.

Beginning Fumigation Cycle	Time Interval (e.g. MONTH/YEAR/SEASON)											
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Land Preparation												
Fumigation												
Planting												
Harvest												
Fallow												
Other Key Crop Steps												
Other Key Pest Steps												

Continuation of Fumigation Cycle (if needed)	Time Interval (e.g. MONTH/YEAR/SEASON)											
	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
Land Preparation												
Fumigation												
Planting												
Harvest												
Fallow												
Other Key Crop Steps												
Other Key Pest Steps												

4. What is the typical soil temperature range during methyl bromide: _____ to _____ **°F**

Comments:

5. Target Pest(s) or Pest Problem(s): Please identify the key target pests or pest problems for which methyl bromide is requested. Provide at least common name and genus and species if possible. Additional pests or pest problems can be provided as an attachment. Please also explain the specific reasons why methyl bromide is being requested for each pest [e.g., effective herbicide is available, but not registered for this crop; mandatory requirement to meet certification for disease tolerance].

	Common Name	Genus	Specific Reasons Why Methyl Bromide Is Needed
Pest 1			
Pest 2			
Pest 3			
Pest 4			
Pest 5			

6. Pest Economic Threshold: Please provide the economic threshold information for each pest. Describe year and source of information such as survey or expert estimate.

	Threshold	Units (e.g. pests/sq ft)	Year	Source
Pest 1				
Pest 2				
Pest 3				
Pest 4				
Pest 5				

7. Target Pest Infestation: Please estimate the percentage of the consortia's total growing area with a moderate to severe problem with these pests. Describe source of information such as a survey or expert estimate.

	Percentage of Total Growing Area	Source
Pest 1	**%**	
Pest 2	**%**	
Pest 3	**%**	
Pest 4	**%**	
Pest 5	**%**	

8. Representative User: Please provide descriptive factors regarding your operation.

Average farm size: _____ acres
Average acres in this crop: _____ acres
Average area treated with methyl bromide: _____ acres
Describe a few crops that could follow this crop:
Other descriptive factors regarding representative user:

WORKSHEET 2-B: METHYL BROMIDE – HISTORICAL USE

Row A:	**Year** Enter dates for the last five years. For example, for applications filled out in 2015, provide data from 2010-2014.
Row B:	**Total Pounds Active Ingredient (a.i.) of Methyl Bromide** Enter the total actual pounds active ingredient (a.i.) of methyl bromide applied. Note: This number should be the total pounds a.i. applied by the individual user or the entire consortium, for the year indicated. Include only the pounds active ingredient of methyl bromide. Do not include the pounds of chloropicrin that may be part of the same product.
Row C:	**Use: Broadcast or Strip Bed Treatment** Indicate whether broadcast or strip bed treatment is used.
Row D:	**If strip, then what percentage is treated with strip formulation?** If strip treatments are used, enter the percentage treated with strip formulation (e.g., if 30 inches out of a total of 60 inches are treated with strip, the percent is 50%).
Row E:	**Formulation (Ratio of MB/Pic Mixture) to be Used for the CUE** Enter the formulation of methyl bromide used (e.g. MB 98:2; MB/Pic 70:30).
Row F:	**Total Area to be Treated with the Methyl Bromide or MB/Pic Formulation** Enter the total area to be treated with methyl bromide or MB/Pic Formulation.
Row G:	**Use Rate (lbs a.i/acre)** Enter the use rate in pounds a.i. of methyl bromide per area.

A.	**Year**					
B.	**Total Pounds Active Ingredient (a.i.) of Methyl Bromide**					
C.	**Use: Broadcast or Strip Bed Treatment**					
D.	**If strip, then what percentage is treated with strip formulation? (E.g., if 30 inches out of a total of 60 inches are treated with strip, the percent is 50%)**					
E.	**Formulation (Ratio of MB/Pic Mixture) to be Used for the CUE**					
F.	**Total Area to be Treated with the Methyl Bromide or MB/Pic Formulation**					
G.	**Use Rate (lbs a.i/acre)**					

What is the frequency of methyl bromide applied per area: (1x / year, 2x / year, 1x / 3 years, etc.)
_____ times per _____

If there is a variation (greater than 10%) in the quantity a.i., the acres treated or average application rate from year to year, please explain the reasons for the variation:

Comments:

WORKSHEET 2-C: METHYL BROMIDE – CROP/SPECIES YIELD & GROSS REVENUE

Column A:	**Year** Be sure to enter the year. Use as many rows as needed for each year for all the crops/crop groupings in the fumigation cycles for the last five years. If a fumigation cycle overlaps more than one calendar year, then the year of the fumigation cycle is the year methyl bromide was applied.
Column B:	**Crops/Crop Groupings** Enter all crops/crop groupings that benefit from methyl bromide in the fumigation cycle. If multiple crops/crop groupings are grown during the interval between fumigations (e.g. tomatoes followed by peppers in a single growing season, or strawberries followed by lettuce over 2 or 3 years) include all of the crops/crop groupings during the entire interval. If someone other than the applicant benefits from the application of methyl bromide in the fumigation cycle and you do not have the quantitative data for the crops/crop groupings grown on the same land, please indicate so in the comments section below.
Column C:	**Market Categories** Enter marketing categories that determine prices received, for example, grade (size, color), timeliness (early season, late season), or end use (fresh, processing). Itemize or aggregate these factors to the extent appropriate if lack of methyl bromide would affect the yields in each category.
Column D:	**Yield** Enter the yield per acre, or the proportion of total yields, obtained for that category. For perennial crops, please enter yields at full production. Be sure to indicate yields at other stages in the timeline in Worksheet 2-A.
Column E:	**Units of Measurement** Enter the unit of measurement for each crop/species (lbs, cwt, carton, bin). If not by weight, specify in the comments section the average weight of the measure.
Column F:	**Price** Enter average prices received by the users for that crop/crop grouping and market category. Average price over all categories can be calculated separately, if needed.
Column G:	**Gross Revenue** Gross revenue per acre for each market category and or each crop/crop grouping may be calculated using the data you entered as price times yield. If revenue is not equal to price times yield, you may enter a different revenue amount, but please explain the difference in the comments section below.

A	B	C	D	E	F	G
Year	**Crops/Crop Groupings**	**Market Category**	**Yield**	**Unit of Measurement**	**Price ($)**	**Gross Revenue per Acre ($)**

If this application is for multiple crops/crop groupings (e.g. nurseries producing evergreens, deciduous, and forbs) please indicate the proportion of land area allocated to each crop/crop grouping:

Comments:

WORKSHEET 2-D (1&2): METHYL BROMIDE – BASELINE – OPERATING COSTS

Enter all operating costs incurred during a fumigation cycle. Users with a relatively short fumigation cycle (less than five years) should use Worksheet 2-D(1); users cultivating perennial crops should use Worksheet 2-D(2). Users with multiple crops, either on the same area in a single fumigation cycle or on different areas treated separately, should copy this sheet or provide costs for each crop. If multiple crops are cultivated sequentially following a single fumigation, replace fumigation costs in Pre-plant Operations with any additional pest control costs used prior to the following crops. If a fallow season is an important part of the fumigation cycle, include costs incurred (for example, cultivating a cover crop) as a separate line or as a separate sheet, if costs are extensive. **Please fill in the unshaded areas. The shaded areas can be used if the information is known.**

Column A:	**Operation / Input** The operations/inputs listed here are not meant to be exhaustive or representative of your specific production system. They are meant to provide suggestions and to help you identify how your operation would change if methyl bromide were unavailable. Be as precise as necessary otherwise you may aggregate operations or inputs. For example, specify herbicide costs if additional treatments would become necessary with the use of a methyl bromide alternative, otherwise you may simply specify total pesticide costs. **Please specify only variable operating costs.** **Operation / Input for Perennial Crops** For perennial crops in Worksheet 2-D(2), we have divided the lifespan into three basic periods: pre-production (including establishment), initial production, and full production. Please ensure that the timeline in Worksheet 2-A indicates the years of each period. Operating costs should be an average of costs incurred during each period. Please consider expected replanting rates and indicate which year dead or poorly performing young trees would be replaced. You may copy columns/rows as needed if these periods need to be refined for your situation.
Column B:	**Quantity Used per Acre** This field is required only for methyl bromide. However, you may include specific amounts of other inputs or operations if you believe it helps to document the additional costs you would incur by using an alternative fumigant. **Constant Cost per Acre** For harvest operations, specify costs that depend on land area, for example, picking costs, per acre of land.
Column C:	**Units** For all inputs and operations detailed in Column B, please specify the units of measurement. **Cost per Unit of Yield** For harvest operations, specify costs that depend on amount of product harvested, for example, packing material, per unit of produce.
Column D:	**Unit Costs** For all inputs and operations detailed in Column B, please specify the unit cost. Also, indicate all costs of applying methyl bromide, including any material costs, for example, tarps. If custom applied and separate costs are unavailable, write 'custom' and enter total cost in Column E. **Yield** For harvest operations, indicate average yields or representative yields from Worksheet 2-C
Column E:	**Total Cost per Acre** For inputs and operations detailed in Columns B and D, total costs can be calculated as Column B times Column D. Otherwise, enter total cost of the input or operation. **As a check, you may add up Column E to obtain an estimate of total variable operating costs. These will not include fixed and overhead costs, nor a return to the owners' labor. It should, therefore, be less than gross revenues calculated in Question #2. If it is not, please explain any variations in yields and prices.** For perennial crops, Column E should only be totaled for the years at full production. Harvest costs may likewise be calculated as costs per acre (Column B) plus variable costs per unit of yield (Column C) times yield (Column D).

WORKSHEET 2-D(1): METHYL BROMIDE – BASELINE – OPERATING COSTS FOR 2013

A	B	C	D	E
Operation / Input	**Quantity Used per Acre**	**Units (lbs, hours, etc)**	**Unit Cost ($)**	**Total Cost per Acre ($)**
Pre-plant Operations				
Land preparation				
Fumigation				
product (MeBr)				
application				
Irrigation				
Other costs				
Cultural Operations				
Seed / Seedlings				
Fertilizer / Soil Amendments				
Pesticides				
Insecticide				
Herbicide				
Fungicide				
Nematicide				
Irrigation				
Labor (manual)				
Fuel / Machine Labor				
Other Costs				
Harvest Operations	**Constant Cost per Acre ($)**	**Cost per Unit of Yield ($)**	**Yield**	**Total Cost per Acre ($)**
Labor				
Hauling				
Material				
Grading / Packing / Storage				
Other Costs				

WORKSHEET 2-D(2): METHYL BROMIDE – BASELINE – OPERATING COSTS FOR PERENNIAL CROPS

A	B (1)	C (1)	D (1)	E (1)	B (2)	C (2)	D (2)	E (2)	B (3)	C (3)	D (3)	E (3)
	PRE PRODUCTION YEARS				INITIAL PRODUCTION YEARS				FULL PRODUCTION YEARS			
Operation or Input	**Quantity used per acre**	**Units (lbs, hours, etc)**	**Unit Cost**	**Total Cost per Acre**	**Quantity used per acre**	**Units (lbs, hours, etc)**	**Unit Cost**	**Total Cost per Acre**	**Quantity used per acre**	**Units (lbs, hours, etc)**	**Unit Cost**	**Total Cost per Acre**
Establishment Operations												
Land preparation												
Fumigation												
product												
application												
Irrigation												
Seedlings												
Other costs												
Cultural Operations												
Fertilizer/soil amendments												
Pesticides												
Insecticide												
Herbicide												
Fungicide												
Nematicide												
Irrigation												
Labor (manual)												
Fuel/machine labor												
Other costs												
Harvest Operations	**Constant Cost per Acre**	**Cost per Unit of Yield**	**Yield**	**Total Cost**	**Constant Cost per Acre**	**Cost per Unit of Yield**	**Yield**	**Total Cost**	**Constant Cost per Acre**	**Cost per Unit of Yield**	**Yield**	**Total Cost**
Picking/hauling												
Material												
Grading/packing												
Other costs												

WORKSHEET 3: ALTERNATIVES – FEASIBILITY OF ALTERNATIVE PEST CONTROL REGIMENS

Purpose of Data: To estimate the loss as a result of not having methyl bromide available. EPA needs to compare data (yields, crop/species prices, gross revenues and costs) on the use of methyl bromide and alternative pest control regimens.

Complete Worksheet 3-A for each alternative pest control regimen. Please indicate the name of the specific alternative pest control regimen addressed and add additional pages as required.

Enter all alternative pesticides and pest control methods (and associated cost and yield data) that would replace one treatment of methyl bromide throughout the fumigation cycle. See the Definition page for a comprehensive definition on fumigation cycles.

Worksheet	Title
3-A	**Alternatives - Technical Feasibility of Alternatives to Methyl Bromide** You must complete one worksheet for each alternative. Please inset the name of the alternative in the area on top of the page. If you prefer, you may provide the information requested in this worksheet in a narrative review. However, you must fill in the information in Question #1 and #3 or we will assume no yield or quality loss.
3-B	**Alternatives - Changes in Operating Costs** If a consortium is submitting this application, the data for this table should reflect the **representative user** for the consortium. This data is needed to estimate **changes in costs** and the impact on operating profit and short-run economic viability as a result of not using methyl bromide and to provide required information to the international review board. **Please fill out this worksheet for each alternative for which the economic evaluation would bolster the case that methyl bromide is needed.** The purpose of this worksheet is to determine operating expenses when alternatives are used for evaluating the cost impacts of using an alternative to replace methyl bromide. The data requested are designed to help you identify how your operation would change if methyl bromide were unavailable. Worksheet 3-B(1) is for users with a fumigation cycle of less than 5 years. Worksheet 3-B(2) is for users growing perennial crops following a single fumigation at establishment. **EPA will estimate fixed and overhead costs across crops and regions to ensure consistency within the U.S. nomination.**
3-C	**Alternatives - Economic Feasibility of Alternatives to Methyl Bromide** If a consortium is submitting this application, the data for this table should reflect the **representative user** for the consortium. **Please include in this worksheet data for each alternative included in worksheets 3-A and 3-B.**

WORKSHEET 3-A: ALTERNATIVES – TECHNICAL FEASIBILITY OF ALTERNATIVES TO METHYL BROMIDE

Name of Alternative: _____

1. Yield Loss & Pest Control When Comparing This Alternative to Methyl Bromide: Provide numerical estimates where possible. Please add additional rows if necessary.

Study # (list below)	Pest Being Tested	% Yield Loss *	% Pest Control *	Details
1				
2				
3				
4				
5				
Enter Average Loss				

* If no yield or quality loss information is given we will assume no losses. Only provide pest control information if yield or quality loss information is not available.
+Please report Quality Loss in Table 3.

2. Study Information: For the information in #1 above list: the study name, authors, publication, date, and if a copy is attached. Please add additional rows if necessary.

Study #	Attached?	Details
1		
2		
3		
4		
5		

3. Quality Loss*+: Describe quality impacts such as: percent smaller fruit, reduced grade, smaller plants, crop damage, disease vector, etc.

Market Category	Yield with Methyl Bromide	Units	Yield With Alternative	Units	Quality Impact Description

4. Are there any production delays (planting/ harvesting) associated with this alternative:
Yes ___ No ___ If yes, please explain:

5. Are there any variety or cultivar issues associated with this alternative:
Yes ___ No ___ If yes, please explain:

6. Restrictions on Alternative Use: This information will be used to determine the amount of methyl bromide needed.

	% of Area	Details
Regulatory Restriction		
- Label Restriction		
- Township Caps		
Soil Restriction		
Pest Resistant To Alternative		
Organic Matter Restriction		
Off Site Damage (outgassing)		
Other Restrictions (Describe)		

7. Use Rate of Chemical Alternative:

Active Ingredient (a.i.)	Name of Product and Formulation	Quantity a.i. per Acre	Units (gals, lbs. Etc.)	# of Acres Treated	Number of Applications per Year

8. Non-Chemical Pest Control: Please describe.

9. Alternative Timeline: Indicate when fumigation, major crop and pest management practices typically occur by shading the appropriate cells. Show a second crop if part of the fumigation cycle. If the fumigation cycle is longer than one year, change the months to the appropriate interval. These tables are for annual crops but more than one crop may benefit from one methyl bromide fumigation. If application covers multiple crops/crop groupings not grown sequentially, they will need to provide this information for all crops/crop groupings. Please adjust timeline as necessary. **Please provide additional comments or description below or on a separate page.** Please begin the timeline with the first land preparation. For **perennials**, please begin with the **year** of land preparation and fumigation and indicate the years of production by yield or percentage of full production.

Beginning Fumigation Cycle	Time Interval (e.g. MONTH/YEAR/SEASON)											
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Land Preparation												
Fumigation												
Planting												
Harvest												
Fallow												
Other Key Crop Steps												
Other Key Pest Steps												

Continuation of Alternative Cycle (if needed)	Time Interval (e.g. MONTH/YEAR/SEASON)											
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Land Preparation												
Fumigation												
Planting												
Harvest												
Fallow												
Other Key Crop Steps												
Other Key Pest Steps												

Comments:

WORKSHEET 3-B: ALTERNATIVES – CHANGES IN OPERATING COSTS

Name of Alternative: _____

Column A:	**Operation / Input** The operations/inputs listed here are not meant to be exhaustive or representative of your specific production system. They are meant to provide suggestions and to help you identify how your operation would change if methyl bromide were unavailable. Be as precise as necessary otherwise you may aggregate operations or inputs. For example, specify herbicide costs if additional treatments would become necessary with the use of a methyl bromide alternative, otherwise you may simply specify total pesticide costs. **Please specify only variable operating costs.** **Operation / Input for Perennial Crops** For perennial crops (Worksheet 3-B(2)) we have divided the lifespan into three basic periods: pre-production (including establishment), initial production, and full production. Please ensure that the timeline in Worksheet 3-A indicates the years of each period. Operating costs should be an average of costs incurred during each period. Please consider expected replanting rates and indicate which year dead or poorly performing young trees would be replaced. You may copy columns/rows as needed if these periods need to be refined for your situation.
Column B:	**Quantity Used per Acre** This field is required only for methyl bromide. However, you may include specific amounts of other inputs or operations if you believe it helps to document the additional costs you would incur by using an alternative fumigant. **Constant Cost per Acre** For harvest operations, specify costs that depend on land area, for example, picking costs, per acre of land.
Column C:	**Units** For all inputs and operations detailed in Column B, please specify the units of measurement. **Cost per Unit of Yield** For harvest operations, specify costs that depend on amount of product harvested, for example, packing material, per unit of produce.
Column D:	**Unit Costs** For all inputs and operations detailed in Column B, please specify the unit cost. Also, indicate all costs of applying methyl bromide, including any material costs, for example, tarps. If custom applied and separate costs are unavailable, write 'custom' and enter total cost in Column E. **Yield** For harvest operations, indicate average yields or representative yields from Worksheet 3-A.
Column E:	**Total Cost per Acre** For inputs and operations detailed in Columns B and D, total costs can be calculated as Column B times Column D. Otherwise, enter total cost of the input or operation. As a check, you may add up Column E to obtain an estimate of total variable operating costs. These will not include fixed and overhead costs, nor a return to the owners' labor. It should, therefore, be less than gross revenues calculated in Worksheet 2-C. If it is not, please explain any variations in yields and prices. For perennial crops, Column E should only be totaled for the years at full production. Harvest costs may likewise be calculated as costs per acre (Column B) plus variable costs per unit of yield (Column C) times yield (Column D).

WORKSHEET 3-B(1): ALTERNATIVES – CHANGES IN OPERATING COSTS

Name of Alternative:

A	B	C	D	E
Operation / Input	**Quantity Used per Acre**	**Units (lbs, hours, etc)**	**Unit Cost ($)**	**Total Cost per Acre ($)**
Pre-plant Operations				
Land preparation				
Fumigation				
product (methyl bromide)				
application				
Irrigation				
Other costs				
Cultural Operations				
Seed / Seedlings				
Fertilizer / Soil Amendments				
Pesticides				
Insecticide				
Herbicide				
Fungicide				
Nematicide				
Irrigation				
Labor (manual)				
Fuel / Machine Labor				
Other Costs				
Harvest Operations	**Constant Cost per Acre ($)**	**Cost per Unit of Yield ($)**	**Yield**	**Total Cost per Acre ($)**
Labor				
Hauling				
Material				
Grading / Packing / Storage				
Other Costs				

WORKSHEET 3-B(2): ALTERNATIVES – CHANGES IN OPERATING COSTS FOR PERENNIAL CROPS

A	B (1)	C (1)	D (1)	E (1)	B (2)	C (2)	D (2)	E (2)	B (3)	C (3)	D (3)	E (3)
	PRE PRODUCTION YEARS				INITIAL PRODUCTION YEARS				FULL PRODUCTION YEARS			
Operation or Input	Quantity used per acre	Units (lbs, hours, etc)	Unit Cost	Total Cost per Acre	Quantity used per acre	Units (lbs, hours, etc)	Unit Cost	Total Cost per Acre	Quantity used per acre	Units (lbs, hours, etc)	Unit Cost	Total Cost per Acre
Establishment Operations												
Land preparation												
Fumigation												
product												
application												
Irrigation												
Seedlings												
Other costs												
Cultural Operations												
Fertilizer/soil amendments												
Pesticides												
Insecticide												
Herbicide												
Fungicide												
Nematicide												
Irrigation												
Labor (manual)												
Fuel/machine labor												
Other costs												
Harvest Operations	Constant Cost per Acre	Cost per Unit of Yield	Yield	Total Cost	Constant Cost per Acre	Cost per Unit of Yield	Yield	Total Cost	Constant Cost per Acre	Cost per Unit of Yield	Yield	Total Cost
Picking/hauling												
Material												
Grading/packing												
Other costs												

WORKSHEET 4: EMISSION CONTROL

1. How do you currently minimize use and/or emissions of methyl bromide, and how do you plan to further reduce use and/or emissions in the future? For all use/emissions reduction technique that you use, please fill out the text, where provided, or state the adoption rate and/or describe changes.

	What use/emission reduction methods are you currently using? Please state the emission reduction amounts.	**What further use/emission reduction methods will be used for critical uses? Please project the reduction amounts for the year being requested.**
Methyl Bromide Rate Reduction	_____ lbs/acre _____ lbs/acre	_____ lbs/acre _____ lbs/acre
Less Frequent Application	____ times per____ ____ times per____	____ times per____ ____ times per____
Formulation Changes (please specify)	_____% MeBr, _____% Pic _____% MeBr, _____% Pic	_____% MeBr, _____% Pic _____% MeBr, _____% Pic
Tarpaulin (High Density Polyethylene)		
High Barrier Films		
Virtually Impermeable Film (VIF)		
Cultural Practices (please specify)		
Other Pesticides (please specify)		
Non-Chemical Methods (please specify)		
Other Measures (please specify)		

2. If methyl bromide emission reduction techniques are not being used, or are not planned for the future, state reasons:

WORKSHEET 5: FUTURE RESEARCH PLANS

1. Identify the top 3 to 5 target pests for your research:

1.
2.
3.
4.
5.

2. Provide a list of alternative chemicals or cultural practices that have been tested:

1.
2.
3.
4.
5.

3. Prioritize the alternative chemicals or cultural practices to be tested:

1.
2.
3.
4.
5.

4. What would be the best currently available alternative if methyl bromide were not available:

5. Are there any other potential alternatives under development which are being considered to replace methyl bromide:

Yes ___ No ___ If yes, please describe:

6. Are there technologies being used to produce the crop which avoid the need for methyl bromide? Please explain whether such technologies could replace a proportion of proposed methyl bromide use:

Yes ___ No ___ If yes, please describe:

7. Please provide an overview/timeline of the plan to transition away from using methyl bromide:

8. Please describe the management strategies that are in place or proposed to eliminate the use of methyl bromide for the nominated critical use, e.g., measures to avoid any increase in methyl bromide consumption, measure to encourage the use of alternatives, information on the market penetration of newly deployed alternatives and alternatives that may be used in the near future:

9. Will yield/quality loss be measured: **Yes ___** **No ___**

10. Will economic impacts be measured: **Yes ___** **No ___**

11. What is the cumulative amount spent and the types of contributions this consortium has made to fund research to develop alternatives to methyl bromide since 1992, e.g. consortium dues, direct research funding, etc.: Please add additional rows if necessary.

Years	Name of Organization / Research Institution	Amount ($)

12. Other total investments, if any, made to reduce your reliance on methyl bromide: $ _____
Describe each investment and its associated costs (e.g. specialized machinery, etc.). Please add additional rows if necessary.

Investment	Cost

13. Grant requests made to USDA, EPA, state, or other funding group:

For EPA Use Only ID # _____
SECTOR _____

WORKSHEET 6: APPLICATION SUMMARY

This section will be posted on the web to notify the public of requests for critical use exemptions beyond the 2005 phaseout for methyl bromide. Therefore, this section cannot be claimed as CBI.

1. Consortium Name:

2. Location:

3. Crop:

4. Year:

5. Pounds of Methyl Bromide Requested: _____ lbs.

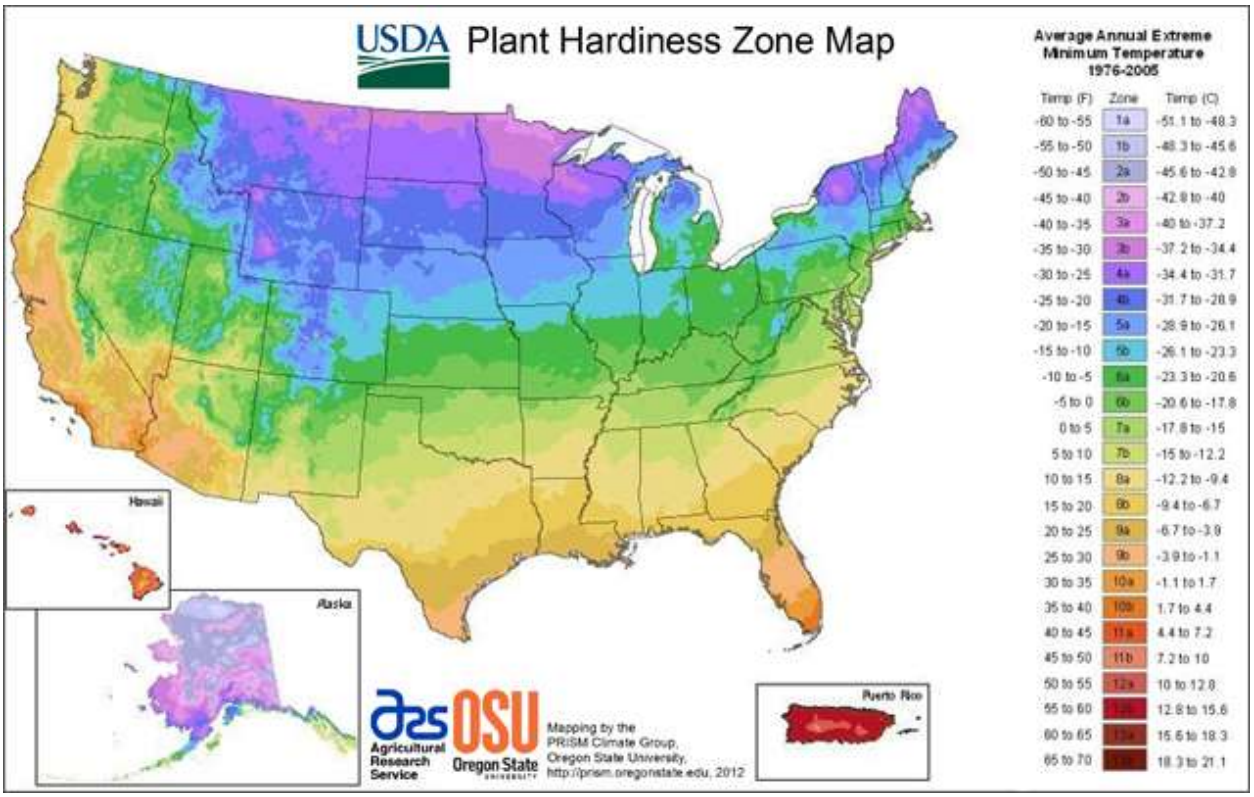
6. Acres Treated with Methyl Bromide: _____ acres

7. Summary of Alternatives Not Feasible: Place an "X" in the column(s) labeled "Not Technically Feasible" and/or "Not Economically Feasible" where appropriate. Use the "Reasons" column to describe why the potential alternative is not feasible. Please add additional rows if necessary.

Potential Alternative	Not Technically Feasible	Not Economically Feasible	Reasons

Definitions:

Fumigation cycle:	The period of time between methyl bromide fumigations.
Year:	If a fumigation cycle overlaps more than one calendar year, "year" refers to the calendar year when methyl bromide is applied (or the beginning of the cycle).
Comparable data:	In order to compare revenues and costs with and without methyl bromide, data on alternatives for pest control, yields, revenues, and costs must be for the same time interval as the methyl bromide fumigation cycle. If, however, quantitative data, is not available for the entire fumigation cycle, then to be comparable, the quantitative data for the alternatives should cover the same portion of the fumigation cycle as the quantitative data for methyl bromide, and the rest of the cycle should be discussed in the comments sections.
2-year example:	If a methyl bromide fumigation is made every 2 years, then the 2003 fumigation cycle began in 2003 and would end in 2005. The data should cover the methyl bromide costs and usage for the methyl bromide fumigation made in 2003, and all yields and revenues received and other costs incurred during the 2 year period. To be comparable, the data on alternatives should cover a similar 2 year period beginning at the same time of year when a methyl bromide fumigation would be made. The data should cover all methyl bromide alternatives used, and all yields and revenues received during that 2-year interval. Other pest control and other costs would only need to be provided for that interval if they would change from what they were with methyl bromide.
Other beneficiary example:	If someone other than the applicant benefits from a methyl bromide fumigation, you should comment on these benefits if you do not have quantitative data for the entire fumigation cycle. For example, if a rotational crop in the second year benefits from a methyl bromide fumigation a year earlier, but there is quantitative data only on the first crop, then the data on the alternatives should cover only the first crop, and the benefits of methyl bromide and the additional pesticides that would have to be used on the rotational crop should be discussed in the comments sections.
Crop cycle change example:	If in a one year interval, methyl bromide is applied, tomatoes are grown and harvested followed by peppers, then the fumigation cycle would be one year including the tomatoes and peppers. If, however, without methyl bromide, it is not possible to follow tomatoes with peppers in the same one year interval, then the alternative data on pesticides, costs, yields, and revenues should just cover tomatoes. The loss of profit from not being able to grow peppers with the alternatives would be part of the loss from not having methyl bromide.
Crop Grouping	The applicant can group similar crops together if: (i) Crops would experience similar yield and quality losses in the absence of methyl bromide; and (ii) Crops are grown on the same fumigation and cultivation cycle with similar operating costs. For example, nursery crops including various flower or tree species can be aggregated, with average yields per acre and prices. However, if crops are distinctly different in revenues and operating costs, or the cycles, the applicant may want to present yield, price and operating costs for each crop separately and also indicate the proportion of land area allocated to each crop.


USDA Plant Hardiness Zone Map
Average Annual Extreme Minimum Temperature 1976-2005
Temp (F) Zone Temp (C)
-60 to -55 1a -51.1 to -48.3
-55 to -50 1b -48.3 to -45.6
-50 to -45 2a -45.6 to -42.8
-45 to -40 2b -42.8 to -40
-40 to -35 3a -40 to -37.2
-35 to -30 3b -37.2 to -34.4
-30 to -25 4a -34.4 to -31.7
-25 to -20 4b -31.7 to -28.9
-20 to -15 5a -28.9 to -26.1
-15 to -10 5b -26.1 to -23.3
-10 to -5 6a -23.3 to -20.6
-5 to 0 6b -20.6 to -17.8
0 to 5 7a -17.8 to -15
5 to 10 7b -15 to -12.2
10 to 15 8a -12.2 to -9.4
15 to 20 8b -9.4 to -6.7
20 to 25 9a -6.7 to -3.9
25 to 30 9b -3.9 to -1.1
30 to 35 10a -1.1 to 1.7
35 to 40 10b 1.7 to 4.4
40 to 45 11a 4.4 to 7.2
45 to 50 11b 7.2 to 10
50 to 55 12a 10 to 12.8
55 to 60 12b 12.8 to 15.6
60 to 65 13a 15.6 to 18.3
65 to 70 13b 18.3 to 21.1
Hawaii
Alaska
Puerto Rico
Agricultural Research Service
Oregon State University
Mapping by the PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu, 2012