

**Summary: Nomination for Critical Use Exemptions for Methyl Bromide Submitted by the
United States of America on January 25, 2008
[Requests 3,999,473 kg for 2010 calendar year]**

Nominating Party: United States of America		
1	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Post Harvest Use for Commodities
	Crop Name or Post-Harvest Use	Walnuts, dried fruit (prunes, raisins, figs), dates, and dried beans (garbanzo and blackeye) produced in California
	Quantity of MBr requested in 2010	43,007 kgs
	Reasons alternatives not technically and economically feasible	<p>Phosphine, alone and in combination: -- Suitable for fumigating commodities in storage, where fumigation time is not a factor, but generally too slow for treating large commodity volumes that need to be processed rapidly -- Switching to this slower product would require substantial operational changes that are economically infeasible</p> <p>Sulfuryl Fluoride: -- Early studies have shown that, under vacuum or atmospheric conditions, sulfuryl fluoride is effective against adult, pupal, and larval stages of insects infesting walnuts, but less effective against the egg stage -- USDA/ARS researchers anticipate running comparative efficacy tests with sulfuryl fluoride and methyl bromide in 2008</p> <p>Propylene Oxide: -- U.S. EPA has established tolerances for propylene oxide on prunes, figs, and raisins, but no comparative efficacy data for commodity fumigation seems to be currently available</p> <p>Sulfuryl Fluoride + Propylene Oxide: -- Research is ongoing to determine if this combination is more cost effective than methyl bromide, especially regarding the egg stage of several economically important insects that infest tree nuts and dried fruit</p>
2	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Preplant Soil Use for Cucurbits Grown in Open Fields
	Crop Name or Post-Harvest Use	Cucurbits (squash, melons, and cucumber) grown in Alabama, Arkansas, Delaware, Georgia, Kentucky, Louisiana, Maryland, Michigan, Mississippi, North Carolina, South Carolina, Tennessee and Virginia.
	Quantity of MBr requested in 2010	340,405 kgs
	Reasons alternatives not technically and economically feasible	<p>Michigan: -- Metam, 1,3-Dichloropropene (1,3-D) and chloropicrin (Pic) are the only alternatives with efficacy approaching that of methyl bromide -- Feasibility is limited by planting conditions and regulatory restrictions resulting in economic infeasibility: - Low soil temperatures are below label requirements - Mandatory 30 meter buffer for treated fields (due to human health concerns) - Delay in planting (phytotoxicity issues), which results in missing key market windows and premium prices</p>

		<p>- Not as efficacious as MBr, field trials showed yield reductions</p> <p>Maryland and Delaware: -- 1,3-D, Pic and metam use are hindered by environmental conditions -- The crop acreage involved is on low-lying coastal plains, and water-logged soils frequently occur in rain events near the fumigation period -- Water tables may be too close to the surface to allow timely fumigation with these materials</p> <p>Southeastern U.S.: -- Only 1,3-D, Pic and metam have shown potential as commercially viable replacements -- Non-chemical alternatives are either unviable for U.S. cucurbits or require more research and commercial development -- For some areas in the southeastern U.S., a three-way combination of 1,3-D + Pic, followed by Pic alone, followed by metam, has shown promise against key cucurbit pests in spring season fumigation -- The U.S. nomination includes a transition rate for the new three-way treatment system -- Iodomethane, a new methyl bromide alternative that has shown promise in research trials, received a one year registration in the U.S. in October, 2007, but the label does not include cucurbit crops</p>
3	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Preplant Soil Use for Eggplant Grown in Open Fields
	Crop Name or Post-Harvest Use	Eggplant grown in Florida, Georgia, and Michigan.
	Quantity of MBr requested in 2010	34,732 kgs
	Reasons alternatives not technically and economically feasible	<p>Michigan: -- 1,3-D, Pic and Metam are only alternatives with efficacy approaching that of methyl bromide -- However, their feasibility is limited by low soil temperatures and regulatory restrictions resulting in economic infeasibility: - Low soil temperatures are below label requirements - mandatory 30 meter buffer for treated fields (due to human health concerns) - Delay in planting (phytotoxicity issues), which results in missing key market windows and premium prices - Not as efficacious as methyl bromide; field trials showed yield reductions</p> <p>Florida and Georgia: -- 1,3-D + Pic: - Limited in FL and GA due to karst topographical features in all areas plus other soil restrictions in Florida. - Extended planting delay (phytotoxicity issue), which results in missing key market windows and premium prices -not as efficacious as methyl bromide, especially against nutsedge</p> <p>-- For spring solanaceous crops the new three-way treatment system has shown promise against key pests, but requires further validation before it is ready for widespread adoption</p>

		-- Iodomethane, a new methyl bromide alternative, was registered for one year in the U.S., in October, 2007. Iodomethane, however, is not registered for use on eggplant.
4	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Post-Harvest Use in Food Processing Plants
	Crop Name or Post-Harvest Use	Rice mills, flour mills, pet food manufacturing facilities, and bakeries
	Quantity of MBr requested in 2010	191,993 kgs
	Reasons alternatives not technically -- and economically feasible	<p>Phosphine, alone and in combination:</p> <ul style="list-style-type: none"> -- Limited because of corrosion to electrical equipment -- Takes longer, thereby delaying plant operations -- Temperature sensitive -- Some reports of resistance in stored product pests <p>Heat:</p> <ul style="list-style-type: none"> -- Takes longer, thereby delaying plant operations -- Constraints depending on building materials --cost typically very high <p>Sulfuryl Fluoride:</p> <ul style="list-style-type: none"> -- Efficacy is temperature dependent -- Requires applicator training -- Industry is incorporating into their IPM/best management practices --Costs often higher than methyl bromide -- Transition rates of 15-23% depending on industry
5	Descriptive Title of Nomination:	Methyl Bromide (MB) Critical Use Nomination for Preplant Soil Use for Forest Seedlings
	Crop Name or Post-Harvest Use	Conifer and hardwood seedlings
	Quantity of MBr requested in 2010	120,853 kgs
	Reasons alternatives not technically and economically feasible	<ul style="list-style-type: none"> -- The current nomination is for nurseries with moderate or high pest pressures where alternatives are not effective -- The most promising alternatives are Pic, 1,3-D, Metam and dazomet as a follow-up treatment -- Inconsistency in pest management performance by alternatives where pest pressure is moderate or high has been the primary reason that methyl bromide is currently used with a critical use exemption label -- Use protocols for the available alternatives have not been developed sufficiently to provide effective control of the key pests to depths of one meter -- There are very few markets for plants that do not meet strict certification standards, which mean that 100% losses are possible when inadequate pest control occurs -- Chloropicrin is an effective fungicide, and is being examined as an overall fumigant when used alone, but testing at diverse sites is required to address weed management issues as well as worker risk concerns

		-- The recent federal registration of iodomethane offers a future drop-in alternative, if pricing and long-term federal and state registrations are approved. For the 2010 nomination, however, iodomethane cannot be considered a feasible alternative
6	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination For Post Harvest Use on Dry Cured Pork Products
	Crop Name or Post-Harvest Use	Cured meat products, such as country hams
	Quantity of MBr requested in 2010	4,465 kgs
	Reasons alternatives not technically and economically feasible	Phosphine: -- Not registered in all states -- Not efficacious against mites Heat: -- Would affect the final product (rancidity, cooking) Sulfuryl Fluoride: -- Not tested in commercial setting -- No efficacy data on target pests, especially mites
7	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Preplant Soil Use for Nursery Stock – Fruit, Nut and Rose
	Crop Name or Post-Harvest Use	Nursery-grown raspberry, roses, and deciduous tree planting material
	Quantity of MBr requested in 2010	17,954 kgs
	Reasons alternatives not technically and economically feasible	-- In some situations the use of 1,3-dichloropropene (1,3-D) can provide an effective alternative to methyl bromide for nematode control to enable nurseries to attain certification for stock, but 1,3-D is restricted by township cap regulations and requires a soil type and moisture levels that are compatible with the chemical act -- Where pathogens <i>and</i> nematodes are key pests, as in most nurseries, methyl bromide is critical Other reasons why alternatives not feasible: -- 1,3-D is not an approved treatment for fine-textured soils -- Greater inputs are required for soil preparation and moisture management; -- Township caps and buffer zone requirements; -- Weed management efficacy; and -- Air quality standards related to volatile organic compounds. -- Iodomethane is not registered in California, where most of this sector is based
8	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Preplant Soil Use for Orchard Replant
	Crop Name or Post-Harvest Use	Stone fruit, almond, and walnut orchards, and table grape and raisin vineyards, in California
	Quantity of MBr requested in 2010	226,021 kgs
	Reasons alternatives not technically and economically feasible	-- For situations where moisture is greater than 12% at depths to 1.5 meters, 1,3-D is not regarded as effective at available rates -- Current research is identifying non-fumigation methods to kill remnant roots of outgoing orchard trees, which provide nutrients for soil-borne pests that may infest new tree plantings

		<ul style="list-style-type: none"> - Even difficult to kill grapevine roots were effectively treated with a specifically timed application of glyphosate - Large scale adoption will require additional efficacy testing <p>-- In experiments with Pic are promising, but only at rates that are not currently allowed in California, if efficacy can be attained with much reduced rates, a significant alternative to methyl bromide may be achieved</p> <p>-- The U.S. Nomination for orchard replant is for a portion of the sites where alternatives are not suitable, either because of legal restrictions or physical features, such as unacceptable soil type or moisture.</p> <p>-- Resistant rootstock to the specific pests present in these soils does not exist at this time</p>
9	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Preplant Soil Use for Cut Flower and Bulb Ornamentals Grown in Open Fields or in Protected Environments
	Crop Name or Post-Harvest Use	Ornamental Cut Flowers and Bulbs
	Quantity of MBr requested in 2010	111,391 kgs
	Reasons alternatives not technically and economically feasible	<p>-- Alternatives do not provide adequate control of the full pest spectrum, and use restrictions limit widespread use of alternatives</p> <p>-- Methyl bromide is needed to control diseases (e.g., <i>Fusarium</i> spp., <i>Pythium</i> spp., <i>Phytophthora</i> spp., and <i>Rhizoctonia</i> spp.), plant parasitic nematodes (e.g., root knot, root lesion, stunt and dagger), weeds (e.g., <i>Cyperus</i> spp. and other state prohibited weeds), and previous crop propagules</p>
10	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Preplant Soil Use for Peppers Grown in Open Fields on Plastic Tarpaulins
	Crop Name or Post-Harvest Use	Peppers grown in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Michigan, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia
	Quantity of MBr requested in 2010	658,952 kgs
	Reasons alternatives not technically and economically feasible	<p>Michigan:</p> <ul style="list-style-type: none"> -- Metam, 1,3-D and Pic are the only alternatives with efficacy approaching that of methyl bromide -- Feasibility is limited by planting conditions and regulatory restrictions resulting in economic infeasibility: <ul style="list-style-type: none"> -low soil temperatures are below label requirements -mandatory 30 meter buffer for treated fields (due to human health concerns) -delay in planting (phytotoxicity issues), which results in missing key market windows and premium prices -not as efficacious as MBr, field trials showed yield reductions <p>Southeastern U.S.:</p> <ul style="list-style-type: none"> -- Metam has over 40% yield losses compared to methyl bromide where weed infestations are moderate to severe -- Metam also creates a planting delay as long as 30 days to avoid risk of phytotoxic injury to crops compared to a 14-day delay for methyl bromide. -- 1,3-D + chloropicrin cannot be used in large portions of the

		southeastern United States due to the presence of karst topographic features, and anywhere in Dade County, Florida, where the majority of that region's peppers are grown -- There is also a 28 day planting delay due to regulatory restrictions for 1,3-D + chloropicrin -- Further testing and validation is required for a promising three-way treatment system involving 1,3-D, Pic and metam
11	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination For Post-Harvest Use By NPMA For Facilities and Commodities
	Crop Name or Post-Harvest Use	Commodities and food processing plants treated by National Pest Management Association (NPMA) members, not included in other US CUEs: spices and herbs, cocoa beans, cheese, processed foods not included in other sectors.
	Quantity of MBr requested in 2010	37,778 kgs
	Reasons alternatives not technically and economically feasible	-- Phosphine can not be used in facilities with sensitive electronic equipment because it corrodes metals -- Sulfuryl fluoride's efficacy has not been adequately established for situations with low temperatures and/or where killing eggs is paramount -- Heat as an alternative pest control method is dependent on the structural composition of the target structure, as different components expand and contract at different rates
12	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Preplant Soil Use for Strawberries Grown for Fruit in Open Fields
	Crop Name or Post-Harvest Use	Strawberry production in California, Florida, and states in the eastern U.S. (Alabama, Arkansas, Georgia, Illinois, Kentucky, Louisiana, Maryland, Mississippi, Missouri, New Jersey, North Carolina, Ohio, South Carolina, Tennessee, and Virginia).
	Quantity of MBr requested in 2010	1,191,815 kgs
	Reasons alternatives not technically and economically feasible	-- Alternatives are not feasible and methyl bromide is critical where: - Application difficulties exist due to hilly terrain; - Areas of environmental sensitivity (e.g., karst topography) or characteristics reducing the efficacy of alternatives; and - Moderate and heavy pest pressure eliminates the availability of an effective alternative. -- The increasing adoption of high barrier films will reduce the use rates of methyl bromide significantly in many production areas that currently use methyl bromide. The relatively recent use of high barrier films in California with alternative fumigants may help improve their efficacies, but research is mixed as to this effect (Fennimore et al., 2006).
13	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Preplant Soil Use for Strawberry Nurseries in Open Fields or in Protected Environments
	Crop Name or Post-Harvest Use	Strawberry seedlings in open fields in Southeast U.S. (North Carolina, and Tennessee) and in screen houses in California
	Quantity of MBr requested in 2010	7,381kgs
	Reasons alternatives not technically and economically feasible	-- The key alternatives appear to be 1,3-D, Pic, metam, dazomet, and possibly iodomethane, but The use protocols for the available alternatives have not been developed sufficiently to provide

		<p>effective control of the key pests to depths of one meter</p> <p>-- To maintain the very strict certification quality protocols, effective use of these alternatives have not been sufficiently developed to provide adequate disease and nematode control throughout the root zone, and these alternatives will require further study</p>
14	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Pre-plant Soil Use for Tomato Grown in Open Fields
	Crop Name or Post-Harvest Use	Fresh market tomatoes produced in Michigan and South-Eastern United States (Alabama, Arkansas, Delaware Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, and Tennessee)
	Quantity of MBr requested in 2010	994,582 kgs
	Reasons alternatives not technically and economically feasible	<p>-- Research results confirm that methyl bromide alternatives options provide inconsistent control of nutsedge weed species, an extremely competitive weed in tomato production that can cause significant yield losses in the mid-Atlantic and Southeast</p> <p>-- Methyl bromide alternatives also provide incomplete control of soil pathogens in the mid-Atlantic region and the state of Michigan</p> <p>-- There is a regulatory prohibition on the use of 1,3-D where karst topographical features are present in the South-Eastern United States, including Florida</p> <p>-- In Virginia and much of the mid-Atlantic, high water tables and the close proximity of production areas to environmentally sensitive estuaries limits the use of 1,3-D</p> <p>-- In Michigan, 1,3-D can only be used when soil temperatures are higher than required for using methyl bromide, and this results in a planting/harvesting/marketing delay</p> <p>-- For some areas in the southeastern U.S., a three-way combination of 1,3-D + Pic, followed by Pic alone, followed by metam, has shown promise against key cucurbit pests in spring season fumigation</p> <p>-- The U.S. nomination includes a transition rate for the new three-way treatment system</p> <p>-- Iodomethane has only a one year registration for the year 2008 and thus availability is unknown for subsequent seasons.</p>
15	Descriptive Title of Nomination:	Methyl Bromide Critical Use Nomination for Preplant Soil Use for Sweet Potato Slips in Open Fields
	Crop Name or Post-Harvest Use	Sweet potato plant propagules (slips)
	Quantity of MBr requested in 2010	18,144 kgs
	Reasons alternatives not technically and economically feasible	<p>1,3-D+chloropicrin:</p> <p>-Not permitted for use in California during Dec.-Jan.</p> <p>-Nomination is for use where township caps on 1, 3-D have been exceeded</p>

