METHYL BROMIDE CRITICAL USE RENOMINATION
NOMINATION FOR STRUCTURES, COMMODITIES OR OBJECTS

NOMINATING PARTY:

The United States of America

NAME

USA CUN09 **POST HARVEST USE FOR COMMODITIES**

BRIEF DESCRIPTIVE TITLE OF NOMINATION:

Methyl Bromide Critical Use Nomination for Post Harvest Use on Commodities (Submitted in 2007 for 2009 Use Season)

STRUCTURE, COMMODITY OR OBJECT TREATED:

This sector includes walnut, dried fruit (prunes, raisins, figs), dates, and dried beans which are under intense pressure from numerous insect pests. Methyl bromide is being used to treat these commodities in a very short period, during the peak production season and shortly after harvest, before they can be stored and/or shipped to prevent pests from infesting and degrading the commodity in storage. Most fumigations are made over a few weeks, during the peak production season when the bulk of the harvest is moving into the storage and shipping channels. These periods can be compressed when harvest occurs close to key market windows, such as holiday markets for certain types of dried fruits and nuts.

QUANTITY OF METHYL BROMIDE REQUESTED IN EACH YEAR OF NOMINATION:

TABLE COVER SHEET: QUANTITY OF METHYL BROMIDE REQUESTED IN EACH YEAR OF NOMINATION

YEAR	NOMINATION AMOUNT (METRIC TONNES)*
2009	**58.921**

*This amount includes methyl bromide needed for research.

SUMMARY OF ANY SIGNIFICANT CHANGES SINCE SUBMISSION OF PREVIOUS NOMINATIONS:

There have been no significant changes since the previous nomination.

REASON OR REASONS WHY ALTERNATIVES TO METHYL BROMIDE ARE NOT TECHNICALLY AND ECONOMICALLY FEASIBLE:

(Details on this page are requested under Decision Ex. I/4(7), for posting on the Ozone Secretariat website under Decision Ex. I/4(8))

This form is to be used by holders of single-year exemptions to reapply for a subsequent year's exemption (for example, a Party holding a single-year exemption for 2005 and/or 2006 seeking further exemptions for 2007). It does not replace the format for requesting a critical-use exemption for the first time.

In assessing nominations submitted in this format, TEAP and MBTOC will also refer to the original nomination on which the Party's first-year exemption was approved, as well as any supplementary information provided by the Party in relation to that original nomination. As this earlier information is retained by MBTOC, a Party need not re-submit that earlier information.

The U. S. nomination is only for those facilities where the use of alternatives is not suitable. For U. S. commodities there are several factors that make the potential alternatives to methyl bromide unsuitable. These include:

- Pest control efficacy of alternatives: the efficacy of alternatives may not be comparable to methyl bromide, making these alternatives technically and/or economically infeasible.
- Constraints of the alternatives: some types of commodities (e.g., those containing high levels of fats and oils) prevent the use of heat as an alternative because of its effect on the final product (e.g., rancidity). In other cases the character of the final product is changed, becoming cooked (toasted) rather than raw nuts, for example.
- Transition to newly available alternatives: Sulfuryl fluoride recently received a Federal registration for dried fruits and nuts. California state registration for dried fruits and tree nuts, but not for use on dates or dry beans, was issued in early 2005. Many of the countries to which the U. S. exports have not yet registered sulfuryl fluoride, severely restricting its use in this sector. All of the dried fruit and nut operations requesting methyl bromide are located in California.
- Longer fumigations: e.g., the use of some methyl bromide alternatives can add a delay to production by requiring additional time to complete the fumigation process. Production delays can result in significant economic impacts if the delay causes the producers to miss a market window. Longer fumigation periods may not be feasible in situations where there is not excess fumigation capacity i.e. when facilities are in continuous use. In these situations longer fumigations for some products mean that others cannot be fumigated.

NOMINATING PARTY CONTACT DETAILS:

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Following the requirements of Decision IX/6 paragraph (a)(1) [*insert name of Party*] has determined that the specific use detailed in this Critical Use Nomination is critical because the lack of availability of methyl bromide for this use would result in a significant market disruption. ☐ Yes ☐ No

______________________________ ______________________________ ________________

Signature Name Date

Title: ____

CONTACT OR EXPERT(S) FOR FURTHER TECHNICAL DETAILS:

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LIST OF DOCUMENTS SENT TO THE OZONE SECRETARIAT IN OFFICIAL NOMINATION PACKAGE:

1. PAPER DOCUMENTS: **Title of paper documents and appendices**	**No. of pages**	**Date sent to Ozone Secretariat**
USA CUN09 POST HARVEST: COMMODITIES		
2. ELECTRONIC COPIES OF ALL PAPER DOCUMENTS: ***Title of each electronic file (for naming convention see notes above)**	**No. of kilobytes**	**Date sent to Ozone Secretariat**
USA CUN09 POST HARVEST: COMMODITIES		

* Identical to paper documents

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Part A: INTRODUCTION
Renomination Part A: SUMMARY INFORMATION

1. (Renomination Form 1.) NOMINATING PARTY AND NAME:
The United States of America
USA CUN09 POST HARVEST FOR USE ON COMMODITIES

2. (Renomination Form 2.) DESCRIPTIVE TITLE OF NOMINATION:
Methyl Bromide Critical Use Nomination for Post Harvest Use on Commodities (Submitted in 2007 for 2009 Use Season)

3. SITUATION OF NOMINATED METHYL BROMIDE USE (*e.g. food processing structure, commodity (specify)*):

Commodities: walnuts, dried fruit, dates, dried beans

4. AMOUNT OF METHYL BROMIDE NOMINATED (*Give quantity requested and years of nomination*):
(Renomination Form 3.) YEAR FOR WHICH EXEMPTION SOUGHT:

TABLE A.1: QUANTITY OF METHYL BROMIDE NOMINATION

YEAR	NOMINATION AMOUNT (METRIC TONNES)*
2009	**58.921**

*This amount includes methyl bromide needed for research.

(Renomination Form 4.) SUMMARY OF ANY SIGNIFICANT CHANGES SINCE SUBMISSION OF PREVIOUS NOMINATIONS (e.g. changes to requested exemption quantities, successful trialling or commercialisation of alternatives, etc.)

There have been no significant changes since the previous nomination.

5. BRIEF SUMMARY OF THE NEED FOR METHYL BROMIDE AS A CRITICAL USE (Describe the particular aspects of the nominated use that make methyl bromide use critical, e.g. lack of economic alternatives, unacceptable corrosion risk, lack of efficacy of alternatives under the particular circumstances of the nomination):

The U. S. nomination is only for those facilities where the use of alternatives is not suitable. For U. S. commodities there are several factors that make the potential alternatives to methyl bromide unsuitable. These include:

- Pest control efficacy of alternatives: the efficacy of alternatives may not be comparable to methyl bromide, making these alternatives technically and/or economically infeasible.
- Constraints of the alternatives: some types of commodities (e.g., those containing high levels of fats and oils) prevent the use of heat as an alternative because of its effect on the final product (e.g., rancidity). In other cases the character of the final product is changed, becoming cooked (toasted) rather than raw nuts, for example.
- Transition to newly available alternatives: Sulfuryl fluoride recently received a Federal registration for dried fruits and nuts. California state registration for dried fruits and tree nuts, but not for use on dates or dry beans, was issued in early 2005. Many of the countries to which the U. S. exports have not yet registered sulfuryl

fluoride, severely restricting its use in this sector. All of the dried fruit and nut operations requesting methyl bromide are located in California.

- Longer fumigations: e.g., the use of some methyl bromide alternatives can add a delay to production by requiring additional time to complete the fumigation process. Production delays can result in significant economic impacts if the delay causes the producers to miss a market window. Longer fumigation periods may not be feasible in situations where there is not excess fumigation capacity i.e. when facilities are in continuous use. In these situations longer fumigations for some products mean that others cannot be fumigated.

TABLE A.2: EXECUTIVE SUMMARY*

Region		California Bean Shippers	California Dried Plum Board	California Walnut Commission	California Date Commission	Sector Total
EPA Preliminary Value	kgs	7,070	18,234	45,401	3,016	73,721
EPA Amount of All Adjustments	kgs	(2,699)	(824)	(10,291)	(1,007)	(14,820)
Most Likely Impact Value (kgs)	kgs	4,371	17,410	35,110	2,009	58,901
	1000m^3	99	769	627	97	1,592
	Rate	44	23	56	21	37
Sector Research Amount (kgs)		20	2009 Total US Sector Nomination		58,921	

* *See Appendix A for a complete description of how the nominated amount was calculated.*

6. METHYL BROMIDE CONSUMPTION FOR PAST 5 YEARS AND AMOUNT REQUIRED IN THE YEAR(S) NOMINATED:

TABLE A.3: METHYL BROMIDE CONSUMPTION AND HISTORIC AMOUNTS

	Chang	MBR HISTORICAL USE (KILOGRAMS)						
Applicant Name		1999	2000	2001	2002	2003	2004	2005
CA Bean Shippers Assoc.		14,734	10,620	6,577	7,564	5,409	3,334	3,810
CA Dried Plum Board		17,001	16,251	18,218	18,250	16,571	19,225	-
CA Walnut Commission		81,025	68,305	77,111	67,132	93,159	83,007	112,722
CA Date Commision		2,616	2,468	2,887	3,145	1,999	2,019	-
SECTOR TOTALS		115,376	97,645	104,792	96,090	117,138	107,585	116,532
		VOLUME TREATED (1,000 CUBIC METERS)						
Applicant Name		1999	2000	2001	2002	2003	2004	2005
CA Bean Shippers Assoc.		334	241	149	172	123	76	87
CA Dried Plum Board		1,109	684	773	734	804	915	-
CA Walnut Commission		1,686	1,421	1,605	1,397	1,936	1,727	2,346
CA Date Commision		109	103	120	131	83	84	-
SECTOR TOTALS		3,239	2,449	2,647	2,434	2,945	2,802	2,433
		APPLICATION RATE (KGS/1,000 CUBIC METERS)						
Applicant Name		1999	2000	2001	2002	2003	2004	2005
CA Bean Shippers Assoc.		44.05	44.05	44.05	44.05	44.05	44.06	43.69
CA Dried Plum Board		15.33	23.76	23.57	24.85	20.62	21.01	#DIV/0!
CA Walnut Commission		48.06	48.06	48.06	48.06	48.13	48.06	48.06
CA Date Commision		24.03	24.03	24.03	24.03	24.02	24.00	#DIV/0!
SECTOR AVERAGE		35.62	39.87	39.59	39.48	39.77	38.40	47.90

7. LOCATION OF THE FACILITY OR FACILITIES WHERE THE PROPOSED CRITICAL USE OF METHYL BROMIDE WILL TAKE PLACE (*Give name and physical address. Continue on separate sheet(s) as annex to this form if necessary. Number each address from one onwards*):

This nomination package represents four commodity sectors, all produced entirely in California: walnuts, dried fruit (prunes, raisins, and figs), dried beans, and dates. Walnuts are grown and processed primarily in the Sacramento and San Joaquin Valleys. Significant production also occurs in the coastal valleys in the counties of Santa Barbara, San Luis Obispo, Monterey, and San Benito.

The majority of California prunes are grown in the Sacramento Valley. Other production areas in the San Joaquin Valley include primarily Tulare and Fresno counties.

About 99% of California's raisin grape production is in the southern San Joaquin Valley region. Fresno County alone produces about 70% of California's raisins. Merced County is the only northern San Joaquin Valley County with any significant commercial production of raisins.

The San Joaquin Valley is the predominantly fig-producing area in California with Madera, Merced, and Fresno counties leading in production.

California is the main black-eye and garbanzo bean producing state in the U.S. Most of the California dried beans are grown in the Northern San Joaquin and Sacramento Valleys.

Most U.S. dates are grown in California’s Coachella Valley, Riverside and Imperial counties.

Renomination Form Part G: CHANGES TO QUANTITY OF METHYL BROMIDE REQUESTED

This section seeks information on any changes to the Party's requested exemption quantity.

(Renomination Form 16.) CHANGES IN USAGE REQUIREMENTS

Provide information on the nature of changes in usage requirements, including whether it is a change in dosage rates, the number of hectares or cubic metres to which the methyl bromide is to be applied, and/or any other relevant factors causing the changes.

There are no changes in the usage requirements in this sector.

(Renomination Form 17.) RESULTANT CHANGES TO REQUESTED EXEMPTION QUANTITIES

TABLE RENOMINATION FORM G.1: RESULTANT CHANGES TO REQUESTED EXEMPTION QUANTITIES

QUANTITY REQUESTED FOR PREVIOUS NOMINATION YEAR:	67.699 MT
QUANTITY APPROVED BY PARTIES FOR PREVIOUS NOMINATION YEAR:	58.921 MT
QUANTITY REQUIRED FOR YEAR TO WHICH THIS REAPPLICATION REFERS:	58.921 MT

PART B: SITUATION CHARACTERISTICS AND MB USE

8. KEY PESTS FOR WHICH METHYL BROMIDE IS REQUESTED:

TABLE B 1. KEY PESTS FOR WHICH METHYL BROMIDE IS REQUESTED

NO	GENUS AND SPECIES FOR WHICH THE USE OF METHYL BROMIDE IS CRITICAL	COMMON NAME	INDICATE IF COMMON OR MINOR PEST	COMMODITY
1	*Cydia pomonella*	Codling moth	Common	Walnuts
2	*Amyelois transitella*	Navel orangeworm		
3	*Plodia interpunctella*	Indianmeal moth	Common	Walnuts, dried fruit, dates, beans
4	*Tribolium castaneum*	Red Flour Beetle	Minor	Walnuts
5	*Cadra figulilella*	Raisin Moth	Common	Dried fruit
			Minor	Dates
6	*Carpophilus* sp.	Dried Fruit Beetle	Common	Dried fruit
7	*Ectomyelois ceratoniae*	Carob pod moth	Common	Dates
8	*Carpophilus* spp., *Haptoncus* spp.	Nitidulid beetles		
9	*Callosobruchus maculatus*	Cowpea Weevil	Common	Beans
10	*Acanthoscelides obtectus*	Bean Weevil		

9. SUMMARY OF THE CIRCUMSTANCES IN WHICH THE METHYL BROMIDE IS CURRENTLY BEING USED (*Give ranges of dosage, exposure or temperatures, if appropriate*):

TABLE B 2A. COMMODITIES

COMMODITY	METHYL BROMIDE DOSAGE (G M^{-3})	EXPOSURE TIME (HOURS)	TEMP. (°C)	NUMBER OF FUMIGATIONS PER YEAR**	PROPORTION OF PRODUCT TREATED AT THIS DOSE *	FIXED (F), MOBILE (M) OR STACK (S)
Dried Fruit	24	24	Variable	3	100%	F, M
Walnuts	111	24	Variable	2.6	100%	F, M
Dates	21	24	Variable	1-2	100%	F, M
Beans	44	24	Variable	6-7	100%	F, M

TABLE B.2B: FIXED FACILITIES

	TYPE OF CONSTRUCTION AND APPROXIMATE AGE IN YEARS	VOL (M^3) OR RANGE	NUMBER OF FACILITIES (E.G. 5 SILOS)	GASTIGHTNESS ESTIMATE*
Dried Fruit	No information is available as to the type of construction, age, volume, number of facilities, and gas tightness of the diverse types of facilities in this sector.			
Beans				
Walnuts				
Dates				

10. LIST ALTERNATIVE TECHNIQUES THAT ARE BEING USED TO CONTROL KEY TARGET PEST SPECIES IN THIS SECTOR (*Include main alternative techniques for situations similar to the nomination such as given in MBTOC and TEAP reports indexed at http://www.unep.org/ozone/teap/MBTOC*):

Many of the MBTOC methyl bromide alternatives are used to monitor and manage pest populations, but are not designed to disinfest commodities that may have a zero tolerance for insect pests. Sanitation and integrated pest management (IPM) approaches are basic for commodities in storage. Sanitation are a major pest management component. Whenever feasible, pheromone traps are used to monitor insect pest populations. When pests are detected, contact insecticides are applied as spot treatments. These applications are intended to restrict pests from spreading throughout the facility and thus avoid fumigation (Arthur and Phillips, 2003). However, IPM is not designed to completely eliminate pests from any given facility or to ensure that a facility remains free from infestation. Although the U. S. Food and Drug Administration (FDA) allows minimal contamination of food products, there is a zero tolerance for insects imposed by market demands, therefore, neither sanitation nor IPM is acceptable as an alternative to methyl bromide fumigation; but these strategies are used to manage pest populations and extend the time between methyl bromide fumigations.

In addition to sanitation and IPM, most commodity operations in the United States currently use phosphine, alone and in combination, whenever feasible. Phosphine is suitable for fumigating commodities in storage, where fumigation time is not a factor, but it is generally too slow for treating large commodity volumes that need to be processed rapidly. Phosphine its also corrosive to certain metals, and this characteristic limits its use in some processing plants, especially those outfitted with electronic sorting and processing control equipment.

Part C: TECHNICAL VALIDATION
Renomination Form Part D: REGISTRATION OF ALTERNATIVES

11. SUMMARISE THE ALTERNATIVE(S) TESTED, STARTING WITH THE MOST PROMISING:

See Part F, Renomination Part C for information.

12. SUMMARISE TECHNICAL REASONS, IF ANY, FOR EACH ALTERNATIVE NOT BEING FEASIBLE OR AVAILABLE FOR YOUR CIRCUMSTANCES (*For economic constraints, see Question 14*):

TABLE C.1: TECHNICAL SUMMARY OF INFEASIBILITY OF ALTERNATIVES

METHYL BROMIDE ALTERNATIVE (AS SHOWN IN Q10)	TECHNICAL REASON (IF ANY) FOR THE ALTERNATIVE NOT BEING FEASIBLE
Contact and low volatility insecticides	The only insecticides registered for use in storage facilities in the U.S. are for crack and crevice treatment. These fogs, mists, and aerosols are effective only against exposed insects in the facilities and are not designed to penetrate the walnut shell or any kind of bulk commodity (Zettler, 2002).
Ethyl or methyl formate	Not registered in the U.S. for use on stored commodities.
Ethylene oxide	
Phosphine alone or in combination	Phosphine alone or in combination is not suitable to replace methyl bromide (MB) when rapid fumigation is needed to meet customer timelines. The delay would disrupt processing of dried fruit and nuts, increasing production costs and interfering with access to the holiday market. Furthermore, phosphine is corrosive to some metals in electric and electronic equipment in processing plants. Phosphine fumigation takes 3-10 days, depending on temperature, compared to 1 day for MB (Hartsell et al., 1991, Zettler, 2002, Soderstrom et al., 1984, phosphine labels). An additional 2 days are needed for outgassing phosphine. Phosphine fumigation is least feasible during the colder winter months when, according to label directions, the minimum exposure periods increases to 8-10 days (plus two days for aeration) when commodity temperature decreases to $5^{o}C$ - $12^{o}C$. Phosphine is not used when commodity temperature drops below $5^{o}C$ (Phosphine and Eco2fume® labels). For walnuts sold as in-shell (approximately 25% of the California production) phosphine fumigation takes too long during the peak production period, when large volumes of walnuts are processed and shipped rapidly. In some cases, however, phosphine has already replaced MB fumigation whenever feasible. For walnuts sold as shelled product, phosphine combined with carbon dioxide (Eco2fume®) is being used for in-storage fumigation by approximately 50% of the industry since 2001. The remaining 50% lack large storage facilities that can be sealed and left for at least five days, the time required to fully disinfest the commodity (California Walnut Commission & Walnut Marketing Board, 2003). Phosphine is not efficacious against the cowpea weevil in beans.
Propylene oxide	Propylene oxide (PPO) was recently labeled for use on in-shell nuts in California. PPO is a volatile, flammable liquid and must be used under vacuum conditions for safety. Several years of commercial-scale testing will probably be necessary before this technique is perfected for commercial use. Adoption for use on in-shell nuts will likely be limited by the need to use expensive vacuum chambers. At present, PPO is already being used by the walnut industry to sterilize approximately 20% of bulk shelled walnuts sold for dairy and bakery ingredients, targeting primarily mold and bacteria,

	and secondarily insects (California Walnut Commission & Walnut Marketing Board, 2003). PPO is not labeled for use on dried fruits.
Sulfuryl fluoride	Sulfuryl fluoride (SF) was recently registered in United States and in California for use on dried fruit and nuts. Research to date has shown that SF is effective against the adult, pupal, and larval stages of target insects, but less effective against the egg stage (Fields and White, 2002, Schneider et al. 2003). The efficacy of this chemical remains to be demonstrated in the field. It may take several years to validate its use as a methyl bromide replacement and for the necessary industry conversion. Furthermore, SF MRLs have not been established in countries that import U.S. commodities.
Biological agents	The only biological agent available for use in commodities is the granulosis virus, which acts specifically against Indian meal moth larvae (Johnson et al., 1998, Vail et al., 1991, Vail et al., 2002). No effective biological agents are available for use against other commodity pests. The U.S. Food and Drug Administration does not allow the use of predatory or parasitic insects in commodity storage areas.
Cold treatment	This technique is unfeasible for use on a commercial scale, especially during harvest when large volumes need to be processed rapidly. Longer treatment times would also interfere with meeting the demands of critical European markets by delaying shipments by 1-3 weeks. For example, at $0^{o}C$ to $10^{o}C$ a 4-week exposure time is needed to control the Indian meal moth in stored walnuts (Johnson et al., 1997). Although it has been demonstrated that at $-10^{o}C$ to $-18^{o}C$ several insect pests of dates can be controlled in a few hours, (Donahaye et al., 1991, 1995), the slow rate of cold penetration and daily introduction of fresh commodities would interfere with the ability to maintain a constant low temperature throughout storage areas. In California, the grower cooperative Diamond Walnuts (representing approximately 50% of the walnuts grown in that state) alone processes about 3,630 metric tons per day at its Stockton plant during the peak harvest season in September (California Walnut Commission & Walnut Marketing Board, 2003). The longer treatment would also affect the industry's ability to take advantage of national and international market windows. Furthermore, the cost of retrofitting storage facilities and the energy cost required to rapidly cool large volumes of walnuts would be prohibitive.
Controlled/modified atmospheres	Exposure to low oxygen or high carbon dioxide has been shown to effectively control pests of stored dried fruit and nuts in laboratory studies. However, this approach would require a minimum of 2-5 days, depending on temperature (Calderon and Barkai-Golan, 1990; Soderstrom and Brandl, 1984; Tarr et al., 1996), and would not be feasible when commodity needs to be moved rapidly during peak production periods and to meet international market demands. In California, the grower cooperative Diamond Walnuts (representing approximately 50% of the walnuts grown in that state) alone processes about 3,630 metric tons per day at its Stockton plant. Moreover, adopting this alternative would require considerable expenditures for special treatment facilities and retrofitting existing structures.
Cultural practices and integrated pest management	IPM, which includes cultural practices, is designed to manage pests at low population levels, not to completely eliminate them or prevent infestations.
Heat treatment	This approach is not feasible for treating commercial-scale commodity volumes. Under laboratory conditions, brief exposure of commodities to high temperatures may eliminate insects without adversely affecting product quality. Most insects do not survive more than 12 hours when exposed to $45^{o}C$ or more than 5 minutes when exposed to $50^{o}C$ (Fields, 1992). However, the effectiveness of this approach has not been tested with large volumes of commodities. Substitution of heat treatments where high temperatures are not already used for other applications would require extensive retrofitting of existing facilities, as well as heat delivery systems capable of rapidly and uniformly heating large volumes of walnuts in order to achieve total insect control. Furthermore, walnut quality may be adversely affected by exposure to heat, causing rancidity in walnut kernel oils (California Walnut Commission & Walnut Marketing Board, 2003). According to the California Dried Plum Board (2003), an attempt to use heat treatment commercially with prunes in California not only failed to control target pests, but resulted in several tons of prunes being damaged from heat exposure.
High pressure carbon dioxide	High-pressure carbon dioxide for commodity treatment requires the availability of small fumigation chambers designed to withstand the required high pressures. The small size of these units would limit the amounts of walnuts that could be treated at any one time,

	delaying the process and causing critical market windows to be missed. This technique is, therefore, not suitable for use on a commercial scale in U.S. warehouses, where large volumes of walnuts must be processed within relatively short periods. Furthermore, these chambers are not readily available, and the cost of building a large number of them would be prohibitive (Zettler, 2002).
Irradiation	Although rapid and effective, irradiation may result in living insects left in the treated product. Treated insects are sterilized and stop feeding, but are not immediately killed. The high dosages necessary to cause immediate mortality in target insects may reduce product quality. Irradiation affects walnut oils, causing changes in flavor, lowering kernel quality, and shortening walnut shelf life. Irradiation would, furthermore, require major capital expenditures. Moreover, irradiated food is not widely accepted by consumers, adding another element of uncertainty to this method's adoption (California Walnut Commission & Walnut Marketing Board, 2003).
Pest resistant packaging	This measure only prevents reinfestation of finished product, and is not designed to control infestations in bulk commodity storage (Johnson and Marcotte, 1999).
Physical removal/ cleaning/sanitation	This technique is widely used as an IPM component in all dried fruit and nut operations, but by itself not designed to disinfest a commodity.

If necessary, add further details on why an alternative was not technically feasible:

Progress in registration of a product will often be beyond the control of an individual exemption holder as the registration process may be undertaken by the manufacturer or supplier of the product. The speed with which registration applications are processed also can falls outside the exemption holder's control, resting with the nominating Party. Consequently, this section requests the nominating Party to report on any efforts it has taken to assist the registration process, but noting that the scope for expediting registration will vary from Party to Party.

(Renomination Form 11.) PROGRESS IN REGISTRATION

Where the original nomination identified that an alternative's registration was pending, but it was anticipated that one would be subsequently registered, provide information on progress with its registration. Where applicable, include any efforts by the Party to "fast track" or otherwise assist the registration of the alternative.

The registration status of the alternatives to methyl bromide has not changed since the previous nomination.

Methyl bromide alternatives do have a fast track for registration in the U.S. EPA. However, before registering a new pesticide or *new use* for a registered pesticide, EPA must first ensure that the pesticide, when used according to label directions, can be used with a reasonable certainty of no harm to human health and without posing unreasonable risks to the environment. To make such determinations, EPA requires more than 100 different scientific studies and tests from applicants. Where pesticides may be used on food or feed crops, EPA also sets tolerances (maximum pesticide residue levels) for the amount of the pesticide that can legally remain in or on foods.

There is a registration decision expected soon on applying an insect growth regulator, methoprene, onto a plastic film used for coating food boxes to control pests after food has been processed. It is undergoing review within the EPA Office of Pesticide Programs.

USG has no legal authority to compel registrations; it can only act on registrations requested by private entities. The timely submission of data to support a registration decision is at the sole discretion of the registrant. Please see table above for additional detail.

(Renomination Form 12.) DELAYS IN REGISTRATION

Where significant delays or obstacles have been encountered to the anticipated registration of an alternative, the exemption holder should identify the scope for any new/alternative efforts that could be undertaken to maintain the momentum of transition efforts, and identify a time frame for undertaking such efforts.

Methyl bromide alternatives have a fast track for registration in the U.S. EPA. However, before registering a new pesticide or *new use* for a registered pesticide, EPA must first ensure that the pesticide, when used according to label directions, can be used with a reasonable certainty of no harm to human health and without posing unreasonable risks to the environment. To make such determinations, EPA requires more than 100 different scientific studies and tests from applicants. Where pesticides may be used on food or feed crops, EPA also sets tolerances (maximum pesticide residue levels) for the amount of the pesticide that can legally remain in or on foods.

(Renomination Form 13.) DEREGISTRATION OF ALTERNATIVES

Describe new regulatory constraints that limit the availability of alternatives. For example, changes in buffer zones, new township caps, new safety requirements (affecting costs and feasibility), and new environmental restrictions such as to protect ground water or other natural resources. Where a potential alternative identified in the original nomination's transition plan has subsequently been deregistered, the nominating Party would report the deregistration, including reasons for it. The nominating Party would also report on the deregistration's impact (if any) on the exemption holder's transition plan and on the proposed new or alternative efforts that will be undertaken by the exemption holder to maintain the momentum of transition efforts.

Methyl bromide use on structures, commodities, and post harvest treatments is undergoing reregistration in the US. The proposed mitigations for that reregistration include a fumigation management plan, treatment buffers to enhance worker safety and ventilation buffers to enhance bystander safety. The proposed buffers are based primarily on use rate, total amount of methyl bromide used, and the type and duration of aeration.

This process will not lead to proposed restrictions until 2008, at which point the process to modify labels will start. This process can take several years to complete. Presently, the post-harvest uses of methyl bromide are going through this process.

An additional complication in forecasting changes in the registration of alternatives is that under the US federal system individual states may impose restrictions above those imposed at the Federal level. Examples of these additional restrictions may include increasing buffer zones around facilities and chambers and requiring capture and destruction technology.

Part D: EMISSION CONTROL
Renomination Form Part E: IMPLEMENTATION OF MBTOC/TEAP RECOMMENDATIONS

13. HOW HAS THIS SECTOR REDUCED THE USE AND EMISSIONS OF METHYL BROMIDE IN THE SITUATION OF THE NOMINATION? (*Describe procedures used to determine optimum methyl bromide dosages and exposures, improved sealing processes, (refer to gastightness standards given in Question 9(b) above) monitoring systems and other activities that are in place to minimise dosage and emissions***).**

The Methyl Bromide Technical Options Committee and the Technology and Economic Assessment Panel may recommended that a Party explore and, where appropriate, implement alternative systems for deployment of alternatives or reduction of methyl bromide emissions.

Where the exemptions granted by a previous Meeting of the Parties included conditions (for example, where the Parties approved a reduced quantity for a nomination), the exemption holder should report on progress in exploring or implementing recommendations.

Information on any trialling or other exploration of particular alternatives identified in TEAP recommendations should be addressed in Part C.

The dried fruit and nut industries in the United States have reduced the number of methyl bromide fumigations by incorporating many of the alternatives identified by MBTOC, such as implementing IPM strategies, especially sanitation, in storage facilities. Pest populations are monitored using visual inspections, pheromone traps, light traps and electrocution traps. When insect pests are found, plants will attempt to contain the infestation with treatments of low volatility pesticides applied to both surfaces and cracks and crevices. These techniques do not disinfest a facility but are critical in monitoring and managing pests. Furthermore, the phosphine + CO_2 (Eco2fume®) combination is already being used to fumigate a substantial proportion of dried fruit and nuts in storage.

The Industry is committed to studying how to improve insect control with IPM strategies and sanitation and further reduce the number of methyl bromide fumigations. They are also continuing to pursue research of heat treatments to maximize efficiency. The United States government is supporting research in this sector (see Section 17.1) and the United States Environmental Protection Agency (EPA or Agency) has made registering methyl bromide alternatives a priority (see Section 17.2). U.S. EPA registered sulfuryl fluoride for some commodities on January 23, 2004 (see Section 17.2.1).

(Renomination Form 14.) USE/EMISSION MINIMISATION MEASURES

Where a condition requested the testing of an alternative or adoption of an emission or use minimisation measure, information is needed on the status of efforts to implement the recommendation. Information should also be provided on any resultant decrease in the exemption quantity arising if the recommendations have been successfully implemented. Information is required on what actions are being, or will be, undertaken to address any delays or obstacles that have prevented implementation.

USDA has several grant programs that support research into overcoming obstacles that have prevented the implementation of methyl bromide alternatives. In addition, USEPA and

USDA jointly fund an annual meeting on methyl bromide alternatives. At this year's meeting (held in November in Orlando, Florida) sessions were to assess and prioritize research needs and to develop a use/emission minimization agenda for methyl bromide alternatives research.

Part E: ECONOMIC ASSESSMENT
Renomination Form Part F: ECONOMIC ASSESSMENT

14. (Renomination Form 15.) ECONOMIC INFEASIBILITY OF ALTERNATIVES – Methodology

TABLE E 1. SUMMARY OF ECONOMIC REASONS FOR EACH ALTERNATIVE NOT BEING FEASIBLE OR AVAILABLE

NO.	METHYL BROMIDE ALTERNATIVE	ECONOMIC REASON (IF ANY) FOR THE ALTERNATIVE NOT BEING AVAILABLE	ESTIMATED MONTH/YEAR WHEN THE ECONOMIC CONSTRAINT COULD BE SOLVED
1	PHOSPHINE	Economic losses from additional production downtimes due to longer fumigation time and from capital expenditures required to adopt an alternative.	Economic losses due to downtime with phosphine are persistent.

Economic costs in the post-harvest uses of the commodity sector can be characterized as arising from three contributing factors. First, direct pest control costs increase in most cases because phosphine is more expensive due to increased labor time required for longer treatment time and increased number of treatments. Second, capital expenditures may be required to adopt phosphine for accelerated replacement of plant and equipment due to the corrosive nature of phosphine. Finally, additional production downtimes for the use of alternatives are unavoidable. Many facilities operate at or near full production capacity and alternatives that take longer than methyl bromide or require more frequent application can result in manufacturing slowdowns, shutdowns, and shipping delays. Slowing down production would result in additional costs to the methyl bromide users. The additional economic cost per 1000 m^3 was calculated if methyl bromide users had to replace methyl bromide with phosphine.

The four economic measures in Tables E.1 through E.3 were used to quantify the economic impacts to post-harvesting uses for commodities. The four economic measures are not independent of each other since they can be calculated from the same financial data. The measures are, however, supplementary to each other in evaluating the CUE applicant's economic viability. These measures represent different ways to assess the economic feasibility of methyl bromide alternatives for methyl bromide users.

Net revenue is calculated as gross revenue minus operating costs. This is a good measure as to the direct losses of income that may be suffered by the users. It should be noted that net revenue does not represent net income to the users. Net income, which indicates profitability of an operation of an enterprise, is gross revenue minus the sum of operating and fixed costs. Net income should be smaller than the net revenue measured in this analysis. We did not include fixed costs because it is often difficult to measure and verify.

A separate analysis was conducted for each sub-sector (described below), and in each case the least cost alternative fumigation system, based on phosphine, was found to be not economically feasible. Production downtime was estimated on average at 84 days per year and total capital expenditures for accelerated replacement of plant and equipment due to corrosive nature of phosphine was assumed to be $1,076 per 1000 m^3 with 10-years lifespan with 10% interest rate from the data provided by the CUE applicants for post-harvesting uses. The potential economic losses associated with the use of phosphine mainly originate from the cost of production delay. The estimated economic losses are shown in Tables E.1 through E.3. The estimated economic losses as a percentage of net revenue are over 100% for all the CUE applicants in the commodity sector, which results in negative net revenues with use of phosphine. The industries that use methyl bromide for commodity fumigation are, in general, subject to limited pricing power, changing market conditions, and government regulations. Companies within these industries operate in a highly competitive global marketplace characterized by high sales volume, low profit margins, and rapid turnover of inventories. In addition, companies of this type generally managed by producers' associations and therefore, making new capital investment is often difficult. The results suggest that phosphine is not economically viable as an alternative for methyl bromide.

Walnuts

The United States walnut industry operates almost exclusively in California, where approximately 5,300 growers and 51 processors are located. Over the past five years, growers have produced an average of 265,000 tons of walnuts per year on 80,940 hectares in California. The largest processor is the Diamond Cooperative facility in Stockton, California, through which 50 percent of all harvested walnuts in California pass. The other 50 independent handlers operate much smaller facilities that process the remaining 50 percent of California walnuts. Sales of walnuts to Europe accounts for one-fifth of all revenue. Both production and sales peak in the fall in anticipation of the holiday season in December. Fumigation of walnuts takes place during the entire year, but fumigation capacity is primarily a limiting factor immediately after harvest. Approximately 25 percent of walnuts are sold in the shell, and these are usually packed and shipped to European market within a couple of days of the initial fumigation treatment. The remaining 75 percent of walnuts are processed further to create a variety of packaged shelled products. These walnuts must be fumigated before they are put in long-term storage or continue in the processing chain due to the key pests. The U.S. walnut industry already has replaced methyl bromide 70 percent with Eco2fume for in-storage fumigation. Diamond Cooperative has completely converted to using Eco2fume for in-storage fumigation.

The primary scenario for this analysis is based on the Diamond Cooperative facility for processing walnuts in the shell as the representative user using the existing phosphine capacity to treat all walnuts. Given the existing capacity of 1500 tons per day of processing walnuts in the shell, having to rely on phosphine alone would require an additional five days to treat walnuts in the shell. At the processing rate of one lot every five days with phosphine compared with 7-hour turn-around time currently achieved with methyl bromide under vacuum, the processing walnuts in the shell would be only 5 percent or fumigation chamber capacity would need to be expanded to approximately 20 times the existing capacity.

Alternatively, all the walnuts could be stored and processed. However, prices paid to growers would be reduced by the increased supply that would be forced onto the domestic market. Given that the nature of the demand for walnuts is inelastic, the impact of this supply increase is expected to result in a decrease in price to the growers. In addition to the price effect, there are increased costs from using phosphine. Additional expenditures are required to adopt phosphine for accelerated replacement of plant and electronic equipment due to the corrosive nature of phosphine. The net effect of price decreases and cost increases is shown in Table E.2.

Another scenario could represent the cost of building additional fumigation chambers, so that the same amount of commodity could be fumigated during the critical time period, and avoid commodity loss and price declines from missing key market windows. In case of the Diamond plant, it is estimated that a tank farm of ten 1-million pound capacity silos would be required to support substitution of phosphine for on-receipt fumigation of in-shell walnuts alone. The costs of these silos and fumigation chambers were not estimated due to lack of information, but the Diamond Cooperative indicates that there is no space for such a tank farm at the Diamond Cooperative facility, so an offsite location would have to be found; hence there would be the associated costs of land acquisition and development. An environmental impact study would also be required. The Diamond Cooperative estimates that at least three to five years would be required for permitting and development of an offsite fumigation facility.

Dried Fruit

California produces 99 percent of the domestic supply and 70 percent of the world's supply of dried plums. California also produces 99 percent of the domestic raisin crop, and 40 percent of world raisin production. California is responsible for nearly all of domestic fig production and 20 percent of global supply. The industry has already replaced 50% methyl bromide with phosphine in processing dried fruits.

The primary scenario for this analysis is based on the representative user using the existing phosphine capacity to treat all dried fruits. U.S. EPA reviewers estimated that having to rely on phosphine alone would require an additional 84 days to treat all dried fruits. In addition to the production loss, there are increased costs from using phosphine. Additional expenditures are required to adopt phosphine for accelerated replacement of plant and electronic equipment due to the corrosive nature of phosphine. The net effect of production losses and cost increases is shown in Table E.3.

Dates

An economic analysis was not done for dates because there are no technically feasible alternatives for dates.

Dried Beans

An economic analysis was not done for dried beans because there are no technically feasible alternatives for dried beans.

MEASURES OF ECONOMIC IMPACTS OF METHYL BROMIDE ALTERNATIVES

THESE ANALYSES ASSUME ONE TREATMENT PER YEAR FOR METHYL BROMIDE AND PHOSPHINE

TABLE E 2: ANNUAL ECONOMIC IMPACTS OF METHYL BROMIDE ALTERNATIVES FOR WALNUT

Loss Measure	Methyl Bromide	Phosphine
Total Commodity Treated (kg/1000 m³)	320,455	320,455
Average Market Price (US$/kg)	$ 1.16	$ 0.949
Gross Revenue (US$/1000 m³)	$ 370,766	$ 304,028
Operating Cost (a+b) per 1000 m³	$ 328,087	$ 328,149
a) Cost of MB or Alternative	$ 612	$ 459
b) Other Operating Costs	$ 327,475	$ 327,690
Net Revenue (US$/ha) (net of operating costs)	$ 42,680	$ (24,120)
Loss measures		
Time Lost (days)	0	84
Loss per 1000 m³ (US$/1000 m³)	$ -	$ 66,800
Loss per Kilogram MB (US$/kg)	$ -	$ 1,392
Loss as a % of Gross Revenue (%)	0%	18%
Loss as a % of Net Revenue (%)	0%	157%
Profit Margin (Net Revenue/Gross Revenue)	13.3%	-7.5%

Time lost with phosphine is assumed to result in a lower average market price for walnuts because less would be treated during peak prices, and increased supply at other times would depress off-peak prices.

TABLE E 3. ANNUAL ECONOMIC IMPACTS OF METHYL BROMIDE ALTERNATIVES FOR DRIED FRUIT

Loss Measure	Methyl Bromide	Phosphine
Total Commodity Treated (kg/1000 m³)	88,235	63,529
Average Market Price (US$/kg)	$ 0.75	$ 0.75
Gross Revenue (US$/1000 m³)	$ 66,176	$ 47,647
Operating Cost (a+b) per 1000 m³	$ 61,741	$ 57,889
a) Cost of MB or Alternative	$ 413	$ 310
b) Other Operating Costs	$ 61,328	$ 57,579
Net Revenue (US$/ha) (net of operating costs)	$ 4,435	$ (10,242)
Loss measures		
Time Lost (days)	0	84
Loss per 1000 m³ (US$/1000 m³)	$ -	$ 14,677
Loss per Kilogram MB (US$/kg)	$ -	$ 612
Loss as a % of Gross Revenue (%)	0%	22%
Loss as a % of Net Revenue (%)	0%	331%
Profit Margin (Net Revenue/Gross Revenue)	5%	-16.8%

Time lost with phosphine is assumed to reduce the total commodity that could be treated.

DATE

An economic analysis was not done for dates because there are no technically feasible alternatives for dates.

DRIED BEANS

An economic analysis was not done for dried beans because there are no technically feasible alternatives for dried beans.

Part F: NATIONAL MANAGEMENT STRATEGY FOR PHASE-OUT OF THIS NOMINATED CRITICAL USE
Renomination Form Part B: TRANSITION PLANS

Provision of a National Management Strategy for Phase-out of Methyl Bromide is a requirement under Decision Ex. I/4(3) for nominations after 2005. The time schedule for this Plan is different than for CUNs. Parties may wish to submit Section 21 separately to the nomination.

15. DESCRIBE MANAGEMENT STRATEGIES THAT ARE IN PLACE OR PROPOSED TO ELIMINATE THE USE OF METHYL BROMIDE FOR THE NOMINATED CRITICAL USE, INCLUDING:

1. Measures to avoid any increase in methyl bromide consumption except for unforeseen circumstances;
2. Measures to encourage the use of alternatives through the use of expedited procedures, where possible, to develop, register and deploy technically and economically feasible alternatives;
3. Provision of information on the potential market penetration of newly deployed alternatives and alternatives which may be used in the near future, to bring forward the time when it is estimated that methyl bromide consumption for the nominated use can be reduced and/or ultimately eliminated;
4. Promotion of the implementation of measures which ensure that any emissions of methyl bromide are minimised;
5. Actions to show how the management strategy will be implemented to promote the phase-out of uses of methyl bromide as soon as technically and economically feasible alternatives are available, in particular describing the steps which the Party is taking in regard to subparagraph (b) (iii) of paragraph 1 of Decision IX/6 in respect of research programmes in non-Article 5 Parties and the adoption of alternatives by Article 5 Parties.

The U.S. submitted the National Management Strategy in accordance with the Decision IX/6.

RENOMINATION FORM PART C: TRANSITION ACTIONS

Responses should be consistent with information set out in the applicant's previously-approved nominations regarding their transition plans, and provide an update of progress in the implementation of those plans.

In developing recommendations on exemption nominations submitted in 2003 and 2004, the Technology and Economic Assessment Panel in some cases recommended that a Party should explore the use of particular alternatives not identified in a nomination' transition plans. Where the Party has subsequently taken steps to explore use of those alternatives, information should also be provided in this section on those steps taken.

Questions 5 - 9 should be completed where applicable to the nomination. Where a question is not applicable to the nomination, write "N/A".

(Renomination Form 6.) TRIALS OF ALTERNATIVES
Where available, attach copies of trial reports. Where possible, trials should be comparative, showing performance of alternative(s) against a methyl bromide-based standard

(i) DESCRIPTION AND IMPLEMENTATION STATUS:

Sulfuryl fluoride and propylene oxide

The use of sequential or combined treatments with sulfuryl fluoride and propylene oxide is being explored as a methyl bromide alternative for nut fumigation by the California State University (Wample, 2006).

Vacuum

Exposure to vacuum in flexible PVC chambers ("cocoons") is being explored as a means to disinfest cowpeas, dried beans, and other legumes in storage, targeting mainly the cowpea weevil, *Callosobruchus maculatus* (Phillips et al., 2006).

Electromagnetic Energy

The use of radio frequency energy, as a methyl bromide alternative, for control of insects (codling moth, navel orangeworm, and Indianmeal moth) infesting harvested pistachios and walnuts is being investigated (Mitcham, 2006; Tang, et al. 2006).

(ii) OUTCOMES OF TRIALS: (*Include any available data on outcomes from trials that are still underway. Where applicable, complete the table included at Appendix I identifying comparative disease ratings and yields with the use of methyl bromide formulations and alternatives.*)

See above.

(iii) IMPACT ON CRITICAL USE NOMINATION/REQUIRED QUANTITIES:
(For example, provide advice on any reductions to the required quantity resulting from successful results of trials.)

During the preparation of this nomination the USG has accounted for all identifiable means to reduce the request. Specifically, approximately 15 million kilograms of methyl bromide were requested by methyl bromide users across all sectors. USG carefully scrutinized requests and made subtractions to ensure that no growth, double counting, inappropriate use rates on a treated hectare basis was incorporated into the final request. Use when the requestor qualified under some other provision (QPS, for example) was also removed and appropriate transition given yields obtained by alternatives and the associated cost differential, was factored in. As a result of all these changes, the USG is requesting roughly 1/3 of that amount.

The USG feels that no additional reduction in methyl bromide

(iv) ACTIONS TO ADDRESS ANY DELAYS/OBSTACLES IN CONDUCTING OR FINALISING TRIALS:

The USG has the ability to authorize Experimental Use Permits (EUPs) for large scale field trials for methyl bromide alternatives. As with other activities connected with registration of a pesticide, the USG has no legal authority either to compel a registrant to seek an EUP or to require growers to participate.

As noted in our previous nomination, the USG provides a great deal of funding and other support for agricultural research, and in particular, for research into alternatives for methyl bromide. This support takes the form of direct research conducted by the Agricultural Research Service (ARS) of USDA, through grants by ARS and CSREES, by IR-4, the national USDA-funded project that facilitates research needed to support registration of pesticides for specialty crop vegetables, fruits and ornamentals, through funding of conferences such as MBAO, and through the land grant university system

(Renomination Form 7.) TECHNOLOGY TRANSFER, SCALE-UP, REGULATORY APPROVAL FOR ALTERNATIVES

(i) DESCRIPTION AND IMPLEMENTATION STATUS:

The USDA maintains an extensive technology transfer system, the Agricultural Extension Service. This Service is comprised of researchers at land grant universities, county extension agents, and private pest management consultants. In addition to these sources of assistance for technology transfer, there are trade organizations and grower groups, some of which are purely voluntary but most with some element of institutional compulsion, that exist to conduct research, provide marketing assistance, and to disseminate "best practices."

(ii) OUTCOMES ACHIEVED TO DATE FROM TECHNOLOGY TRANSFER, SCALE-UP, REGULATORY APPROVAL:

See above.

(iii) IMPACT ON CRITICAL USE NOMINATION/REQUIRED QUANTITIES:

(*For example, provide advice on any reductions to the required quantity resulting from successful progress in technology transfer, scale-up, and/or regulatory approval.*)

The USG feels that no additional reduction in methyl bromide quantities is necessary, given the significant adjustments described above.

(iv) ACTIONS TO ADDRESS ANY DELAYS/OBSTACLES:

The USG has the ability to authorize Experimental Use Permits (EUPs) for large scale field trials for methyl bromide alternatives. As with other activities connected with registration of a pesticide, the USG has no legal authority either to compel a registrant to seek an EUP or to require growers to participate.

As noted in our previous nomination, the USG provides a great deal of funding and other support for agricultural research, and in particular, for research into alternatives for methyl bromide. This support takes the form of direct research conducted by the Agricultural Research Service (ARS) of USDA, through grants by ARS and CSREES, by IR-4, the national USDA-funded project that facilitates research needed to support registration of pesticides for specialty crop vegetables, fruits and ornamentals, through funding of conferences such as MBAO, and through the land grant university system

(Renomination Form 8.) COMMERCIAL SCALE-UP/DEPLOYMENT, MARKET PENETRATION OF ALTERNATIVES

(i) DESCRIPTION AND IMPLEMENTATION STATUS:

The issues are described in the National Management Strategy previously submitted.

(ii) IMPACT ON CRITICAL USE NOMINATION/REQUIRED QUANTITIES:

(*For example, provide advice on any reductions to the required quantity resulting from successful commercial scale-up/deployment and/or market penetration*.)

The USG feels that no additional reduction in methyl bromide quantities is necessary, given the significant adjustments described above.

(iii) ACTIONS TO ADDRESS ANY DELAYS/OBSTACLES:

USG has no legal authority to compel registrations; it can only act on registrations requested by private entities. The timely submission of data to support a registration decision is at the sole discretion of the registrant.
USG endeavors to identify methyl bromide alternatives to move them forward in the registration queue. However USG has no legal authority to compel registrations; it can only act on registrations requested by private entities. The timely submission of data to support a registration decision is at the sole discretion of the registrant.

The USDA maintains an extensive technology transfer system, the Agricultural Extension Service. This Service is comprised of researchers at land grant universities and county extension agents in addition to private pest management consultants. In addition to these sources of assistance for technology transfer, there are trade organizations and grower groups, some of which are purely voluntary but most with some element of institutional compulsion, that exist to conduct research, provide marketing assistance, and to disseminate "best practices". The California Strawberry Commission is one example of such a grower group.

(Renomination Form 9.) CHANGES TO TRANSITION PROGRAM

If the transition program outlined in the Party's original nomination has been changed, provide information on the nature of those changes and the reasons for them. Where the changes are significant, attach a full description of the revised transition program.

See Appendix A.

(Renomination Form 10.) OTHER BROADER TRANSITION ACTIVITIES

Provide information in this section on any other transitional activities that are not addressed elsewhere. This section provides a nominating Party with the opportunity to report, where applicable, on any additional activities which it may have undertaken to encourage a transition, but need not be restricted to the circumstances and activities of the individual nomination. Without prescribing specific activities that a nominating Party should address, and noting that individual Parties are best placed to identify the most appropriate approach to achieve a swift transition in their own circumstances, such activities could include market incentives, financial support to exemption holders, labelling, product prohibitions, public awareness and information campaigns, etc.

These issues are discussed in the US National Management Strategy for methyl bromide.

Part G: CITATIONS

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APPENDIX A 2009 METHYL BROMIDE USAGE NEWER NUMERICAL INDEX (BUNNI)

2009 Methyl Bromide Usage Newer Numerical Index - BUNNIE				California Bean Shippers	California Dried Plum Board	California Walnut Commission	California Date Commission	Sector Total	Notes
December 18, 2006	Region							Commodities	
Dichotomous Variables	Currently Use Alternatives?			Yes	Yes	Yes	Yes		
	Pest-free Requirements?			Yes	Yes	Yes	Yes		
Other Issues	Frequency of Treatment of Product			1x per year	1x per year	1x per year	1x per year		
	Quarantine & Pre-Shipment Removed?			Yes	Yes	Yes	Yes		
Most Likely Combined Impacts (%)	Regulatory Issues (%)			0%	0%	0%	0%		
	Key Pest Distribution (%)			100%	100%	100%	100%		
	Total Combined Impacts (%)			**100%**	**100%**	**100%**	**100%**		
Most Likely Baseline Transition	(%) Able to Transition			0%	0%	0%	0%		
	Minimum # of Years Required			0	0	0	0		
	(%) Able to Transition per Year			**0%**	**0%**	**0%**	**0%**		
EPA Adjusted Use Rate (kg/1000m3)				**44**	**23**	**56**	**21**		
2009 Applicant Requested Usage	*Amount - Pounds*	*Pounds*		*16,187*	*45,000*	*265,000*	*7,637*	*333,824*	
	Volume - 1000ft³			*5,560*	*30,000*	*88,333*	*5,901*	*129,794*	
	Rate (lb/1000ft³)			*2.91*	*1.50*	*3.00*	*1.29*	*3*	
	Amount - Kilograms	Metric		**7,342**	**20,412**	**120,202**	**3,464**	**151,420**	
	Volume - 1000m³			157	850	2,501	167	3,675	
	Rate (kg/1000m³)			47	24	48	21	41	
EPA Preliminary Value			**kgs**	**7,070**	**18,234**	**45,401**	**3,016**	**73,721**	
EPA Baseline Adjusted Value has been adjusted for:				MBTOC Adjustments, QPS, Double Counting, Growth, Use Rate, Miscellaneous Adjustments, and Combined Impacts					
EPA Baseline Adjusted Value			kgs	4,371	17,410	35,110	2,009	58,901	
EPA Transition Amount			kgs	-	-	-	-	-	
EPA Amount of All Adjustments			**kgs**	**(2,699)**	**(824)**	**(10,291)**	**(1,007)**	**(14,820)**	
Most Likely Impact Value (kgs)			kgs	**4,371**	**17,410**	**35,110**	**2,009**	**58,901**	
			1000m³	**99**	**769**	**627**	**97**	**1,592**	
			Rate	**44**	**23**	**56**	**21**	**37**	
Sector Research Amount (kgs)				**20**	**2009 Total US Sector Nomination**		**58,921**		

1 Pound = 0.453592 kgs | 1000 cubic feet= 0.028316847 1000 cubic meters

1 lb/1000 ft³ = 0.0624 kg/1000 m³ | (ounces/1000 ft³ ~ kg/1000 m³)