METHYL BROMIDE CRITICAL USE NOMINATION FOR POST HARVEST USE ON DRY CURED PORK PRODUCTS

FOR ADMINISTRATIVE PURPOSES ONLY: **DATE RECEIVED BY OZONE SECRETARIAT:**	
YEAR:	**CUN:**

NOMINATING PARTY:	**The United States of America**
BRIEF DESCRIPTIVE TITLE OF NOMINATION:	Methyl Bromide Critical Use Nomination for Post-Harvest Use on Dry Cured Pork Products (Submitted in 2006 for 2008 Use Season)

NOMINATING PARTY CONTACT DETAILS``

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Following the requirements of Decision IX/6 paragraph (a)(1), the United States of America 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: _____

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

LIST ALL PAPER AND ELECTRONIC DOCUMENTS SUBMITTED BY THE NOMINATING PARTY TO THE OZONE SECRETARIAT

1. PAPER DOCUMENTS: Title of Paper Documents and Appendices	Number of Pages	Date Sent to Ozone Secretariat

2. ELECTRONIC COPIES OF ALL PAPER DOCUMENTS: Title of Electronic Files	Size of File (kb)	Date Sent to Ozone Secretariat

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PART A: SUMMARY

1. NOMINATING PARTY

The United States of America (U.S.)

2. DESCRIPTIVE TITLE OF NOMINATION

Methyl Bromide Critical Use Nomination For Post Harvest Use on Dry Cured Pork Products (Prepared in 2006 for use in 2008)

3. SITUATION OF NOMINATED METHYL BROMIDE USE

This sector is for the production of cured meat products, such as country hams. These are produced primarily in the southern U.S. This sector has no viable alternatives available. Heat would destroy the product and phosphine does not control mites on the curing hams. Sulfuryl fluoride was registered in mid-July 2005 for use on this commodity and is currently being tested to determine its efficacy on the primary pests, especially mites.

4. METHYL BROMIDE NOMINATED

TABLE 4.1: METHYL BROMIDE NOMINATED FOR DRY CURED PORK PRODUCTS

YEAR	NOMINATION AMOUNT (KG)	NOMINATION VOLUME (1000 M^3)
2008	**19,669**	**1,022**

5. BRIEF SUMMARY OF THE NEED FOR METHYL BROMIDE AS A CRITICAL USE

Currently there are no viable alternatives to methyl bromide for the dried meat industry: phosphine does not control mites (a major pest) and heat would alter the product. Sulfuryl fluoride received a recent federal registration and is now being tested for efficacy against the mites and other pests of cured meat products.

In U.S. pork processing plants that produce dry-cured pork products 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 MB, making these alternatives technically and/or economically infeasible. Phosphine, alone or in combination with carbon dioxide does not control mites, a major pest on cured hams. Mites are not listed on the sulfuryl fluoride label, and there are no efficacy data available concerning mites.
- Geographic distribution of the facilities: Facilities included in this nomination are located in the southern U.S. where mild temperatures and high relative humidity result in key pest pressures that are moderate to severe. These ambient conditions require that pests be killed because they will only reinfest the facility after fumigation.

- Age and type of facility: older food processing facilities, especially those constructed of wood, experience more frequent and severe pest infestations that must be controlled by fumigation. In the U.S. it is usual for dry-cured processed pork to be produced in traditional facilities. These facilities are usually constructed of wood and many are decades old, if not older. Many newer facilities are constructed using the older facilities as models.
- 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). All of the pork products are relatively high fat products so rancidity would be a problem. In addition, using heat will alter the character of the final product, producing, for example, a cooked pork product rather than a dry-cured pork product with the attendant flavor differences.
- Transition to newly available alternatives: Sulfuryl fluoride recently received a Federal registration on July 15, 2005. Studies are underway to determine if this will be an effective alternative for all the pests of these products in commercial settings.
- Delay in plant operations: e.g., the use of some alternatives can add a delay to production by requiring additional time to complete the fumigation process. Production delays can result in significant economic impacts to the processors.

It is common for producers of cured pork products to experience pest pressure from insects such as the ham skipper, the red legged ham beetle, dermestid beetles, and mites. These insects infest and feed on meat as it cures and ages. Environmental conditions (temperature and humidity) in and around the facility strongly influence the level of pest pressure. Under favorable ambient conditions, such as those seen in silo curing, pest pressure increases and a regular fumigation schedule is recommended. In the U.S., the Food and Drug Administration (FDA) regulates the maximum levels of live or dead insects or insect parts that may be present in stored food products. Food commodities that exceed maximum limits allowed are considered adulterated by FDA and thus unfit for human consumption. There are currently no alternatives registered for use on hams in the U.S. that would provide the same level of pest control.

TABLE A.1: EXECUTIVE SUMMARY

	National Country Ham Association	*American Association of Meat Processors*	*Gwaltney of Smithfield*	*Nahunta Pork Center*
AMOUNT OF REQUEST				
2008 Kilograms	1,242	168,283	1,905	91
AMOUNT OF NOMINATION*				
2008 Kilograms	709	18,144	726	91

** See Appendix A for 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 6.1: METHYL BROMIDE CONSUMPTION FOR THE PAST 5 YEARS AND THE AMOUNT REQUIRED IN THE YEAR(S) NOMINATED (AMERICAN ASSOCIATION OF MEAT PROCESSORS)

	Historical Use[1]						**Requested Use**
For each year specify:	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2007**
Amount of MB (kg)	Information not provided						168,283
Volume Treated 1000 m^3	Information not provided						7,004
Formulation of MB	Information not provided						
Dosage Rate (kg/1000 m^3)	Information not provided						24.03
Actual (A) or Estimate (E)	Information not provided						

[1] American Association of Meat Processors did not provide historical data.

TABLE 6.2: METHYL BROMIDE CONSUMPTION FOR THE PAST 5 YEARS AND THE AMOUNT REQUIRED IN THE YEAR(S) NOMINATED (NATIONAL COUNTRY HAM ASSOCIATION)

	Historical Use[1]						Requested Use
For each year specify:	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2007**
Amount of MB (kg)	749	694	802	791	791	791	1,242
Volume Treated 1000 m^3	38	33	45	43	43	43	17
Formulation of MB	Information not provided						
Dosage Rate (kg/1000 m^3)	19.68	21.03	18.01	18.60	18.60	18.60	73.10
Actual (A) or Estimate (E)	Information not provided						

TABLE 6.3: METHYL BROMIDE CONSUMPTION FOR THE PAST 5 YEARS AND THE AMOUNT REQUIRED IN THE YEAR(S) NOMINATED (NAHUNTA PORK CENTER)

	Historical Use[1]						Requested Use
For each year specify:	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2007**
Amount of MB (kg)	363	109	218	109	109	109	91
Volume Treated 1000 m^3	16	5	9	5	5	5	4
Formulation of MB	Information not provided						
Dosage Rate (kg/1000 m^3)	23.3	23.3	23.3	23.3	23.3	23.3	23.3
Actual (A) or Estimate (E)	Actual						

TABLE 6.4: METHYL BROMIDE CONSUMPTION FOR THE PAST 5 YEARS AND THE AMOUNT REQUIRED IN THE YEAR(S) NOMINATED (GWALTNEY OF SMITHFIELD)

	Historical Use[1]						Requested Use
For each year specify:	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2007**
Amount of MB (kg)	363	1,361	907	2,177	1,361	3,266	1,905
Volume Treated 1000 m^3	21	21	21	21	177	177	177
Formulation of MB							Information not provided
Dosage Rate (kg/1000 m^3)	17.09	64.07	42.72	102.52	7.70	18.48	10.78
Actual (A) or Estimate (E)							Information not provided

7. LOCATION OF THE FACILITIES WHERE THE PROPOSED CRITICAL USE OF METHYL BROMIDE WILL TAKE PLACE

There more than 1,650 pork production facilities in the United States. Of these, approximately 850 facilities require the use of methyl bromide to fumigate dry cured pork products. The other facilities smoke their products and smoking prevents insects from invading their facilities.

General location information for the following facilities is known: Kentucky (Cadiz, Greenville counties), Missouri (California county), North Carolina (Boone, Goldsboro, Smithfield, Wayne counties), Virginia (Surry county), Tennessee (various locations), and South Carolina (various locations).

PART B: SITUATION CHARACTERISTICS AND METHYL BROMIDE USE

TABLE 8.1: KEY PESTS FOR METHYL BROMIDE REQUEST

GENUS AND SPECIES FOR WHICH THE USE OF METHYL BROMIDE IS CRITICAL	COMMON NAME	SPECIFIC REASON WHY METHYL BROMIDE IS NEEDED
Necrobia rufipes – common pest	Red Legged Ham Beetle ("Ham Borer")	The adults feed on the cured meat. The larvae burrow into the meat and/ or fat. Insect infested meat is adulterated and cannot be sold.[1]
Piophila casei – common pest	Cheese/Ham Skipper	The Skippers are larval stages of small flies that burrow into the cured meat.
Dermestes spp-common pests	Dermested beetles	
Mite species -- common pest	Ham Mites	These mites feed and breed on the surface of cured meats. Uncontrolled, mite populations can increase rapidly, reaching enormous numbers.

[1] FDA regulations can be found at: http://www.fda.gov/opacom/laws/fdcact/fdcact4.htm and http://www.cfsan.fda.gov/~dms/dalbook.html.

TABLE B.1: CHARACTERISTIC OF SECTOR

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Raw Material In	X	X	X	X	X	X	X	X	X	X	X	X
Fumigation Schedule (MB)	X	X	X	X	X	X	X	X	X	X	X	X
Retail Target Market Window	X	X	X	X	X	X	X	X	X	X	X	X

Raw pork product material can come into a curing facility in any month of the year.

The Methyl Bromide fumigation schedule will vary depending on several factors such as:

1. Type of pork product - Bone-in products have a higher probability of pest infestation since the pests are attracted to the bone, and these products typically age for longer periods of time.

2. Type of structure/facility - Typically, older curing facilities have a higher probability of pest infestations, which could be attributed to the lack of air tightness of the facility. A majority of the newer facilities have lower pest pressure due to increased air tightness. Additionally, silo facilities, those that are two to three stories in height, have a higher probability of insect infestations when compared to a single story facility.

A single curing and ham storage operation can typically process 10,307,878 kilograms (11,362.5 U.S. tons) of pork products each year. The curing facilities are fumigated with methyl bromide when pests are detected in the product or the smokehouses. This fumigation typically occurs about three to five times during a typical year. During this process the curing house, typically a small building (e.g. four stories), is covered with tarp and fumigated while full of hams.

3. Type of curing - Curing can be achieved by either temperature controlled room curing, or by ambient curing. Ambient curing, which involves uncontrolled environmental conditions, typically requires a regular fumigation schedule due to consistently high levels of pest infestations.

4. Location/climate of structure/facility - These curing facilities are located in southeastern states, where the temperature and humidity are higher for longer periods of time throughout the year and, therefore, there is a greater opportunity for pests to be active for longer periods of time. As the pest pressure increases, so does the need to fumigate with methyl bromide. Curing facilities are located near slaughter houses and feed lots, thereby having high insect populations nearby.

The retail target market window varies, but there are higher demands for cured pork products around holidays such as Thanksgiving, Christmas, and Easter.

9. Summary of the Circumstances in which Methyl Bromide is Currently Being Used

Table 9.1(a.): Dry Cured Pork Products

Methyl Bromide Dosage (g/m^3)	Exposure Time (*hours*)	Temp. (^oC)	Number of Fumigations per Year	Proportion of Product Treated at this Dose	Fixed (F), mobile (M) or Stack (S)
24	Varies	Varies with facility, but typically in excess of 27°C (80°F)	Varies from 2-8 fumigations per year. 3-5 times per year common	Up to 100% in some facilities.	Fixed

Table 9.1(b.): Fixed Facilities

Type of Construction and Approximate Age in Years	Vol (m^3) or Range	Number of Facilities (e.g. 5 silos)	Gastightness Estimate*
More than 850 curing facilities use methyl bromide. The age of the facilities varies.	Varies	Ranges from 1 story to silo facilities.	Varies

10. List Alternative Techniques that are being Used to Control Key Target Pest Species in this Sector

Currently, other than sanitation, no alternative techniques are being used. Sanitation is useful in increasing the time between methyl bromide fumigations but cannot, when used alone, replace methyl bromide fumigations.

PART C: TECHNICAL VALIDATION

11. SUMMARIZE THE ALTERNATIVE(S) TESTED STARTING WITH THE MOST PROMISING ALTERNATIVE(S)

Sulfuryl fluoride recently received a federal registration (July 15, 2005) for this use. The industry, in cooperation with USDA, university professors, and state researchers, is developing research to determine the effectiveness of sulfuryl fluoride against pests, especially mites, of cured meat products. For further information regarding the investigations see Section 16.

Phosphine, alone and in combination with carbon dioxide, does not control mites, a major pest in dry cured pork products. Additionally, according to the phosphine label, the state of North Carolina has further restricted the use of this alternative. According to state regulations, phosphine may only be used to control rats and mice, but not insects.

12. SUMMARIZE TECHNICAL REASONS, IF ANY, FOR EACH ALTERNATIVE NOT BEING FEASIBLE OR AVAILABLE FOR YOUR CIRCUMSTANCES (*For economic constraints, see Question 15*)

TABLE 12.1. SUMMARY OF TECHNICAL REASON FOR EACH ALTERNATIVE NOT BEING FEASIBLE OR AVAILABLE

NO.	METHYL BROMIDE ALTERNATIVE	TECHNICAL REASON (IF ANY) FOR THE ALTERNATIVE NOT BEING FEASIBLE	ESTIMATED MONTH/YEAR WHEN THE TECHNICAL CONSTRAINT COULD BE SOLVED
1	Phosphine alone & in combination	Does not control mites. North Carolina has additional use restrictions.	
2	Propylene oxide	Not registered for this use in the U.S.	
3	Contact insecticides	None registered for this use in the U.S.	
4	Irradiation	See Note below	
5	Sulfuryl fluoride	Recently received federal registration (July 15, 2005). Sulfuryl fluoride adsorbs to fats. Efficacy studies in commercial settings against the insect and mite pests are being planned.	Unknown

Note: Irradiation does not readily kill exposed insects, but rather prevents further feeding and reproduction. Although unable to feed or reproduce, the surviving insects would still create phytosanitary problems and the high doses required to kill exposed insects may affect product quality. Consumer acceptance of irradiated food would hinder the adoption of this method.

PART D: EMISSION CONTROL

13. HOW HAS THIS SECTOR REDUCED THE USE AND EMISSIONS OF METHYL BROMIDE IN THE SITUATION OF THE NOMINATION?

Nahunta and Gwaltney of Smithfield have built new facilities that are very gas tight and consolidated buildings to reduce their request of methyl bromide. In addition, members of this sector are participating in research to improve the gastightness and sanitation of their facilities in order to reduce emissions and number of fumigations.

PART E: ECONOMIC ASSESSMENT

14. COSTS OF ALTERNATIVES COMPARED TO METHYL BROMIDE OVER 3-YEAR PERIOD

Sulfuryl fluoride received a federal registration for use on cured pork products in the U.S on July 15, 2005. This pesticide is being registered by states and is being investigated for efficacy on mites and other pests of dry cured meats. Because of the recent registration, economic information is not yet available; therefore, no economic analysis was conducted.

15. SUMMARIZE ECONOMIC REASONS, IF ANY, FOR EACH ALTERNATIVE NOT BEING FEASIBLE OR AVAILABLE FOR YOUR CIRCUMSTANCES

An economic analysis has not been conducted because prior to July 2005 this sector did not have an alternative registered. This industry is awaiting results of trial to control mites, a key pest for this sector.

MEASURES OF ECONOMIC IMPACTS OF METHYL BROMIDE ALTERNATIVES

Sulfuryl fluoride received a federal registration for use on cured pork products in the U.S on July 15, 2005. This pesticide is being registered by states and is being investigated for efficacy on mites and other pests of dry cured meats. Because of the recent registration, economic information is not yet available; therefore, no economic analysis was conducted.

PART F: FUTURE PLANS

16. PROVIDE A DETAILED PLAN DESCRIBING HOW THE USE AND EMISSIONS OF METHYL BROMIDE WILL BE MINIMIZED IN THE FUTURE FOR THE NOMINATED USE.

Some of the applicants are constructing new facilities and consolidating buildings to reduce their emissions and minimize the use of methyl bromide in the future.

North Carolina State University and Mississippi State University Extension and research personnel are in the process of planning an industry-wide survey of country ham plants throughout North Carolina, Virginia, Kentucky, Tennessee, and Missouri. The survey will consist of various questions related to methyl bromide use. This will include: method, reason, frequency of use, total amount used, seasonal usage and application rate. In addition, questions regarding facility infrastructure as it affects methyl bromide utilization will be solicited. In January-February of 2006 audit teams will visit each plant applying for an exemption to survey plant conditions to ascertain possible deficits in facilities that might lead to poor methyl bromide utilization.

Members of this industry are cooperating with the registrant of sulfuryl fluoride to investigate the efficacy of this chemical under commercial conditions. Experiments are being planned to study the effects in curing facilities of sulfuryl fluoride on ham skippers, red-legged ham beetles, and mites.

For further details regarding the transition plans for this sector please consult the national management strategy.

17. Provide a Detailed Plan Describing what Actions will be Undertaken to Rapidly Develop and Deploy Alternatives for this Use

Now that sulfuryl fluoride received a federal registration July 15, 2005 for this use, investigations are beginning to understand how to incorporate this new alternative into the dry cured meat product pest management plans.

18. Additional Comments

Pheromone Traps

"One misconception about pheromone traps is that a pest population can be controlled by deploying these traps—that is not true for most situations. Traps usually attract only a small percentage of the population that is within the effective range of the trap. Also, female-produced sex pheromones attract only males; the females that lay eggs and perpetuate the infestation are not affected. Since males of the many insect species will mate with multiple females, any males that are not trapped can easily contribute to the production of a subsequent generation of pests. New methods are being researched for using pheromones in pest suppression, but current uses of pheromone traps are best used only for monitoring purposes." (Arthur and Phillips 2003)

Sulfuryl Fluoride

There are some industry concerns regarding sulfuryl fluoride. Primarily that it is temperature dependent and that higher concentrations are necessary to kill eggs of insect pests. The post harvest industry is very concerned about the price of sulfuryl fluoride at

these concentrations required to control all life stages of pests, especially when temperatures are low.

19. CITATIONS

Bell, C.H. 2000. Fumigation in the 21st Century. Crop Protection, 19:563-69.

APPENDIX A. METHYL BROMIDE USAGE NEWER NUMERICAL INDEX

2008 Methyl Bromide Usage Newer Numerical Index - BUNNI							Ham
January 24, 2006	Region		Gwaltney of Smithfield	National Country Ham Association	Nahunta Pork Center	American Assoc. of Meat Processors	Sector Total or Average
Dichotomous Variables	Currently Use Alternatives?		Yes	Yes	Yes	Yes	
	Pest-free Requirements?		Yes	Yes	Yes	Yes	
Other Issues	Frequency of Treatment of Product		1	1	2	1	
	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)			11	17	20	20	
2008 Applicant Requested Usage	*Amount - Pounds*	*Pounds*	*4,200*	*2,738*	*200*	*371,000*	*378,138*
	Volume - 1000ft³	*Pounds*	*6,240*	*600*	*161*	*247,333*	*254,334*
	Rate (lb/1000ft³)	*Pounds*	*0.67*	*4.56*	*1.24*	*1.50*	*1*
	Amount - Kilograms	Metric	**1,905**	**1,242**	**91**	**168,283**	**171,520**
	Volume - 1000m³	Metric	177	17	5	7,004	7,202
	Rate (kg/1000m³)	Metric	11	73	20	24	24
EPA Preliminary Value		**kgs**	**726**	**1,242**	**91**	**168,283**	**170,341**
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	726	709	91	18,144	19,669
EPA Transition Amount		kgs	-	-	-	-	-
Most Likely Impact Value (kgs)		kgs	**726**	**709**	**91**	**18,144**	**19,669**
		1000m³	**67**	**43**	**5**	**907**	**1,022**
		Rate	**11**	**17**	**20**	**20**	**19**
Sector Research Amount (kgs)			**-**	**2008 Total US Sector Nomination**			**19,669**

1 Pound = 0.453592 kgs

1 lb/1000 ft³ = 0.0624 kg/1000 m³

1000 cubic feet= 0.028316847 1000 cubic meters

(ounces/1000 ft³ ~ kg/1000 m³)

Footnotes for Appendix A:

Values may not sum exactly due to rounding.

1. **Dichotomous Variables** – dichotomous variables are those which take one of two values, for example, 0 or 1, yes or no. These variables were used to categorize the uses during the preparation of the nomination.
2. **Currently Use Alternatives** – Currently use alternatives is 'yes' if the applicant uses alternatives for some portion of pesticide use on the crop for which an application to use methyl bromide is made.
3. **Pest-free Requirements** - This variable is a 'yes' when the product must be pest-free in order to be sold either because of U.S. sanitary requirements or because of consumer acceptance.
4. **Other Issues**.- Other issues is a short reminder of other elements of an application that were checked
5. **Frequency of Treatment of Product** – This indicates how often methyl bromide is applied in the sector. Frequency varies from multiple times per year to once in several decades.
6. **Quarantine and Pre-Shipment Removed?** – This indicates whether the Quarantine and pre-shipment (QPS) hectares subject to QPS treatments were removed from the nomination.
7. **Most Likely Combined Impacts (%)** – Adjustments to requested amounts were factors that reduced to total amount of methyl bromide requested by factoring in the specific situations were the applicant could use alternatives to methyl bromide. These are calculated as proportions of the total request. We have tried to make the adjustment to the requested amounts in the most appropriate category when the adjustment could fall into more than one category.

8. **Regulatory Issues (%)** - Regulatory issues (%) is the percent (%) of the requested area where alternatives cannot be legally used (e.g., township caps) pursuant to state and local limits on their use.
9. **Key Pest Distribution (%)** - Percent (%) of the requested area with moderate to severe pest problems. Key pests are those that are not adequately controlled by MB alternatives. For structures/ food facilities and commodities, key pests are assumed to infest 100% of the volume for the specific uses requested in that 100% of the problem must be eradicated.
10. **Total Combined Impacts (%)** - Total combined impacts are the percent (%) of the requested area where alternatives cannot be used due to key pest, regulatory, and new fumigants. In each case the total area impacted is the conjoined area that is impacted by any individual impact. The effects were assumed to be independently distributed unless contrary evidence was available (e.g., affects are known to be mutually exclusive).
11. **Most Likely Baseline Transition** – Most Likely Baseline Transition amount was determined by the DELPHI process and was calculated by determining the maximum share of industry that can transition to existing alternatives.
12. **(%) Able to Transition** – Maximum share of industry that can transition
13. **Minimum # of Years Required** – The minimum number of years required to achieve maximum transition.
14. **(%) Able to Transition per Year** – The Percent Able to Transition per Year is the percent able to transition divided by the number of years to achieve maximum transition.
15. **EPA Adjusted Use Rate** - Use rate is the lower of requested use rate for 2008 or the historic average use rate or is determined by MBTOC recommended use rate reductions.
16. **2008 Amount of Request** – The 2008 amount of request is the actual amount requested by applicants given in total pounds active ingredient of methyl bromide, total volume of methyl bromide use, and application rate in pounds active ingredient of methyl bromide per 1,000 cubic feet. U.S. units of measure were used to describe the initial request and then were converted to metric units to calculate the amount of the US nomination.
17. **EPA Preliminary Value** – The EPA Preliminary Value is the lowest of the requested amount from 2005 through 2008 with MBTOC accepted adjustments (where necessary) included in the preliminary value.
18. **EPA Baseline Adjusted Value** – The EPA Baseline Adjusted Value has been adjusted for MBTOC adjustments, QPS, Double Counting, Growth, Use Rate/ Strip Treatment, Miscellaneous adjustments, and Combined Impacts.
19. **EPA Transition Amount** – The EPA Transition Amount is calculated by removing previous transition amounts since transition was introduced in 2007 and removing the amount of the percent (%) Able to Transition per Year multiplied by the EPA Baseline Adjusted Value.
20. **Most Likely Impact Value** – The qualified amount of the initial request after all adjustments have been made given in total kilograms of nomination, total volume of nomination, and final use rate of nomination.
21. **Sector Research Amount** – The total U.S. amount of methyl bromide needed for research purposes in each sector.
22. **Total US Sector Nomination** - Total U.S. sector nomination is the most likely estimate of the amount needed in that sector.