

**ENVIRONMENTAL PROTECTION
AGENCY**

40 CFR Part 82

[FRL-5962-1]

RIN 2060-AH26

**Protection of Stratospheric Ozone:
Control of Methyl Bromide Emissions
Through Use of Tarps**

AGENCY: Environmental Protection Agency (EPA).

ACTION: Direct final determination.

SUMMARY: Through this action EPA is making a determination that requiring the use of gas impermeable tarps to control emissions of the pesticide methyl bromide is not appropriate under section 608(a)(2) of the Clean Air Act (CAA or Act) at this time. This determination is based on a review of currently available studies and field data on the use of tarps, particularly gas impermeable tarps, to reduce methyl bromide emissions from soil fumigation in the period prior to January 1, 2001. Methyl bromide depletes stratospheric ozone, which protects the earth from harmful ultraviolet radiation, and existing CAA regulations call for U.S. production and importation of methyl bromide to cease by January of 2001. EPA is also announcing the availability of its report, "Feasibility of Using Gas Impermeable Tarps to Reduce Methyl Bromide Emissions associated with Soil Fumigation in the United States," dated January 26, 1998, which provides the analysis upon which EPA's determination is based.

EFFECTIVE DATE: This determination will become effective on April 6, 1998 unless adverse comment is received by March 9, 1998. If adverse comment is timely received on this determination, EPA will withdraw the determination and timely notice to that effect will be published in the **Federal Register**. All comments will then be addressed in a subsequent final determination based on the proposed determination contained in the Proposed Rules section of this **Federal Register** that is identical to this direct final determination. If no adverse comment is timely received on this direct final determination, then the direct final determination will become effective 60 days from today's **Federal Register** document and no further action will be taken on the parallel proposal.

ADDRESSES: Comments on this determination should be sent to Docket No. A-98-07, U.S. Environmental Protection Agency, OAR Docket and Information Center, Room M-1500, Mail Code 6102, 401 M Street, S.W.,

Washington, D.C. 20460. The docket may be inspected from 8:00 a.m. until 5:30 p.m., weekdays. The docket phone number is (202) 260-7548, and the fax number is (202) 260-4400. A reasonable fee may be charged for copying docket materials. A second copy of any comments should also be sent to Carol Weisner, U.S. Environmental Protection Agency, Stratospheric Protection Division, 401 M Street, SW, Mail Code 6205J, Washington, DC 20460, if by mail, or at 501 3rd Street, N.W., Washington, DC 20001, if comments are sent by courier delivery.

FOR FURTHER INFORMATION CONTACT: Carol Weisner at (202) 564-9193 or fax (202) 565-2096, U.S. Environmental Protection Agency, Stratospheric Protection Division, Mail Code 6205J, 401 M Street, SW., Washington, DC 20460.

SUPPLEMENTARY INFORMATION: The contents of this direct final determination are listed in the following outline:

- I. Background
- II. Basis for Today's Action
- III. Administrative Requirements
- IV. Judicial Review

I. Background

Section 608 of the CAA (42 U.S.C. 7671g) sets forth certain requirements for a national recycling and emission reduction program aimed at Class I and Class II ozone-depleting substances and their substitutes. Class I and Class II ozone-depleting substances are designated as such under section 602 of the Act, in accordance with the Montreal Protocol on Substances that Deplete the Ozone Layer, an international agreement to which the United States is a party.

Methyl bromide is a pesticide which is a Class I ozone-depleting substance under the Montreal Protocol and under the Act. Pursuant to section 602 of the Act and implementing regulations, production of methyl bromide in the U.S. and importation of methyl bromide into the U.S. will cease effective January 1, 2001.

Section 608(a)(1) of the Act provides for a national recycling and emission reduction program with respect to the use and disposal of Class I substances used as refrigerants. Section 608(a)(2) provides for such a program with respect to Class I and Class II substances not covered by section 608(a)(1).

The Sierra Club Legal Defense Fund (recently renamed the Earthjustice Legal Defense Fund) sued EPA in the U.S. District Court for the District of Columbia on March 31, 1995, claiming that EPA had not fulfilled its obligation

under section 608(a)(2) of the CAA. In a consent decree (notice of which was published on September 17, 1996, in the **Federal Register** at 61 FR 48950) EPA agreed to, among other things, issue either: (1) A proposed rule requiring control of the emission of the pesticide methyl bromide through the use of tarps, or (2) a direct final determination that no such rule is either necessary or appropriate under section 608(a)(2) of the Act.

EPA's agreement to make a choice between these two options was based on EPA's commitment to complete a study regarding the control of methyl bromide emissions through the use of tarps, particularly gas impermeable tarps ("virtually impermeable film" or "VIF" tarps). The study was to assess the economic feasibility of, and explore potential options for, increased use of these tarps. This study, "Feasibility of Using Gas Impermeable Tarps to Reduce Methyl Bromide Emissions Associated with Soil Fumigation in the United States," which EPA issued on January 26, 1998, is available in the Docket for this action. Based on the analysis in this study, EPA has determined that requiring the use of VIF tarps is not appropriate under section 608(a)(2) of the Act at this time.

II. Basis for Today's Action

Section 608(a) of the Act provides that regulations under this subsection shall include requirements that reduce the emission of the relevant ozone-depleting substances "to the lowest achievable level." Although the phrase "lowest achievable level" is not defined in the Act, EPA's interpretation of this phrase is based on the language of the Act and the legislative history of section 608.

In applying this standard to regulations issued under section 608(a), EPA takes both technological and economic factors into account, considering in an appropriate manner the technology available, costs, benefits, and leadtimes involved. See 58 FR 28660, at 28667-28669, for a discussion of this standard as applied in the final rule issued May 14, 1993, establishing a recycling program for ozone-depleting refrigerants recovered during the servicing and disposal of air-conditioning and refrigeration equipment.

EPA has considered the factors mentioned above to determine whether control of methyl bromide emissions through the use of VIF tarps would represent the "lowest achievable level." EPA has concluded, based on review of currently available literature and field data, that requiring the use of VIF tarps is not appropriate at this time.

Following is a discussion of the consideration of these factors.

Methyl bromide is injected into soil to control soil-borne plant pathogens, nematodes, weeds and insects. Existing EPA and state regulations generally require that when methyl bromide is used as a soil fumigant, tarps must be used to cover the fumigated area for 1 to 5 days, depending on the location and application circumstances. The tarps temporarily hold the pesticide in the soil to insure its effectiveness and reduce the exposure of farm workers and nearby residents to the toxic gas.

EPA and state regulations currently allow the use of tarps that are permeable to methyl bromide (polyethylene or "PE" tarps). These tarps can reduce the rate of methyl bromide emissions to the ambient air during the fumigation on a temporary basis. However, a significant portion of the methyl bromide injected into the soil eventually leaks through these permeable tarps and an additional portion is emitted to the atmosphere when the tarps are removed following fumigation.

VIF tarps are currently being manufactured and used in Europe. Use of these tarps in Europe has shown that the high application rates typical in Europe can be reduced. However, this experience is not directly relevant to the U.S. situation where use rates are much lower than what is common in Europe. Nevertheless, some have suggested that use of VIF tarps in the U.S. might achieve significant reductions in methyl bromide emissions from soil fumigation. EPA consequently focused its study on the feasibility of using VIF tarps in the near term to significantly reduce methyl bromide emissions to the air from soil fumigation.

In the U.S., VIF tarps have been tested in a variety of laboratory and university field studies for their potential to reduce emissions of methyl bromide. EPA's review of these studies leads to the conclusion that significant emission reductions are possible with the use of VIF tarps. However, significant reductions can be realized only if use of VIF tarps is accompanied by changes in methyl bromide application and tarping practices and the appropriate soil conditions exist.

Emissions of methyl bromide from the soil following fumigation are a function of several factors, including the amount of methyl bromide applied, the depth of its injection into the soil, and the type, moisture level, organic content, microbial composition, and temperature of the soil being fumigated. Use of tarps can reduce emissions, but the extent of any reductions depends on the type of tarp used, tarp handling practices

(including the amount of time the tarp is left on the field or "tarp cover time"), and the other factors listed above.

Available studies indicate that VIF tarps could result in significant reductions in methyl bromide emissions if certain conditions are met: (1) Tarp cover time is lengthened from 1 to 5 days to probably 10 or more days; (2) the depth of injection of methyl bromide into the soil is deeper than typically used with permeable tarps; and (3) soil conditions which promote degradation of the methyl bromide in the soil (thereby reducing emissions to the atmosphere) are either present or are optimized by application of soil amendments, irrigation, or fertilization. However, the effects of meeting such conditions on pest control effectiveness and crop production in the U.S. have not yet been adequately tested. VIF tarps and the changes that would be needed in application procedures and soil preparation have not been studied in U.S. commercial settings, where pest control efficacy and crop production over a typical growing season could be fully evaluated. Without such data, EPA does not have sufficient information to evaluate the efficacy and cost-effectiveness of requiring the use of VIF tarps (along with necessary changes to application procedures and soil preparation) to reduce emissions of methyl bromide, while still ensuring adequate pest control and crop production.

While VIF tarps are used in Europe, the European experience so far does not provide the information needed to make decisions about requiring VIF tarps in the U.S. European studies involving VIF tarping have primarily focused on the extent to which impermeable tarping can make it possible to lower application rates of methyl bromide while still achieving adequate crop protection. Those studies indicate that methyl bromide application rates used in Europe can be reduced by at least 50 percent. The direct relevance of those studies to the U.S. situation is limited, however, since application rates in the U.S. are typically far lower than the rates used in Europe. Also, the European studies have not focused on the emissions implications of VIF tarping, providing little data of the sort provided by U.S. studies. Beyond that, differences between European and U.S. crop, soil and climatic conditions, as well as agricultural production and tarping practices, make direct comparisons inappropriate. While the European experience suggests that VIF tarping has the potential to lower methyl bromide emissions, it does not establish how VIF tarping can be used

in the U.S. in a manner that will ensure consistently lower methyl bromide emissions, adequate crop protection, and farmworker safety.

In addition, available information indicates that requiring U.S. farmers to use VIF tarps in the near term (until methyl bromide's 2001 phase-out in the U.S.) would be impracticable. As mentioned previously, VIF tarps are currently made only in Europe. Current European production capacity is not great enough to supply the U.S. market if VIF tarps were to be required here. In addition, as currently made, VIF tarps come in sizes that are incompatible with U.S. application equipment. It is questionable whether tarp producers here or abroad would make the investment necessary to ensure adequate availability of VIF tarping to U.S. farmers in the few years left before methyl bromide's scheduled phase-out in the U.S.

Beyond questions of availability, there are also questions of efficacy if U.S. farmers were required to use VIF tarps before answers can be obtained about the need to couple use of VIF tarps with changes in application procedures and soil preparation. For example, due to the smaller size and different tensile strength and flexibility of currently available VIF tarps as compared to permeable tarps, tractors and other application equipment would need to be adapted. Application procedures for using VIF tarps in flat-field or "broadcast" fumigation, where the tarps must be glued together to cover an entire field for the specified tarping duration, have not been tested in a commercial setting, although there is anecdotal information that the glue used to seal permeable tarps may not be sufficient to seal VIF tarps for an extended tarping duration. Weather conditions may affect the tarp integrity for the extended tarping duration required for successful emission reductions with VIF tarps, but this has not been tested in a commercial setting.

The other conditions for successful use of VIF tarps in achieving significant emission reductions are subject to similar uncertainties because of the differences in soil conditions, weather conditions, and crop production requirements in the many areas of the U.S. where methyl bromide is used to fumigate the soil. For example, the depth of injection of methyl bromide into the soil depends on a number of factors specific to the crop which is to be planted. Shallow applications (such as 20 centimeters or 8 inches) are appropriate for soil to be planted with shallow root crops such as vegetables, but deeper applications (such as 46

centimeters or 18 inches) are appropriate for soil to be planted with fruit tree crops which have deeper roots. Most of the studies of emission reductions using VIF tarps indicate the need for very deep injection applications (such as 61 centimeters or 24 inches) but do not assess the resulting effect of such deeper injections on pest control efficacy and crop production.

Similarly, the ability to use application procedures such as irrigation, fertilization, or the addition of soil amendments, which help promote degradation of methyl bromide in the soil (thereby reducing emissions to the atmosphere) is affected by soil conditions, weather conditions, and crop production requirements. Tests of VIF tarps in reducing emissions of methyl bromide have not assessed the use of these tarps in commercial settings where one or more of these application procedures were used.

Without additional research testing the use of VIF tarps in commercial growing conditions, it is not possible to adequately evaluate the level of emission reductions that may be possible with the use of VIF tarps, and the effect that related changes may have on pest control and crop production. Without such information, EPA also cannot adequately evaluate the economic feasibility of using VIF tarps and making necessary changes to application practices and soil preparation.

Additionally, there are other potential environmental and health impacts of using VIF tarps about which little information is currently available. For example, VIF tarps may be more expensive to landfill than PE tarps since they are heavier, and may be more difficult to recycle because of the combination of plastics used to make them. Another concern is that bromine levels may increase in fumigated soil to

the extent methyl bromide is allowed to degrade in the soil rather than volatilize to the atmosphere. Finally, VIF tarps without longer tarp cover times could result in higher levels of methyl bromide exposures for farm workers and nearby residents when the tarps are removed. These issues add to the uncertainty of whether requiring VIF tarps in the near term would be, on balance, beneficial to the environment and society in general.

Given the environmental, technological, economic and other uncertainties associated with use of VIF tarps, EPA believes it is not appropriate at this time to require under section 608(a)(2) the use of these tarps as a means of reducing emissions of methyl bromide to the "lowest achievable level." Further information and discussion relevant to EPA's decision not to require VIF tarping at this time may be found in the study mentioned above. This study is available in the docket for this determination, as described above.

EPA encourages the use of tarps to control methyl bromide emissions where such use is appropriate given soil and weather conditions and crop production requirements. Options to promote emission reductions, including ways to optimize the use of tarps to achieve emission reductions, are discussed more fully in the study, especially in section 4.3, on "Additional Emissions Factors." Nothing in this determination should affect any existing legal requirements to use tarps such as federal pesticide labeling requirements or California use permit conditions.

III. Administrative Requirements

A. Executive Order 12866

Executive Order 12866 (58 FR 51735, October 4, 1993) provides for interagency review of "significant regulatory actions." It has been

determined by the Office of Management and Budget (OMB) and EPA that this action, which is a determination that requiring the control of methyl bromide emissions through the use of tarps is not appropriate, is not a "significant regulatory action" under the terms of Executive Order 12866 and is therefore not subject to OMB review under the Executive Order.

B. Regulatory Flexibility Act

The Regulatory Flexibility Act, 5 U.S.C. 601-602, requires that Federal agencies, when developing regulations, consider the potential impact of those regulations on small entities. Because this action is a determination that requiring the control of methyl bromide emissions through the use of tarps is not appropriate, the Regulatory Flexibility Act does not apply. By its nature, this action will not have an adverse effect on the regulated community, including small entities.

IV. Judicial Review

Because this direct final determination is of nationwide scope and effect, under section 307(b)(1) of the Act, judicial review of this action is available only by the filing of a petition for review in the United States Court of Appeals for the District of Columbia Circuit within sixty days of publication of this action in the **Federal Register**.

List of Subjects in 40 CFR Part 82

Environmental protection, Administrative practice and procedure, Air pollution control, Chemicals, Reporting and recordkeeping requirements, Stratospheric ozone layer.

Dated: January 30, 1998.

Carol M. Browner,
Administrator.

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