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Marketing and Regulatory Programs

Animal and Plant Health Inspection Service

Proposed Rule for the Importation of Unmanufactured Wood Articles From Mexico, With Consideration for Cumulative Impact of Methyl Bromide Use

Draft Environmental Impact Statement—June 2000

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Executive Summary

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) enforces Federal laws and regulations that serve to prevent the entry and spread of harmful nonnative pests that, if established, could threaten U.S. agricultural, forestry, and other important resources. APHIS inspects commodities and requires treatment of some commodities, using chemical or nonchemical methods or a combination of both methods, to eliminate the risk of actionable pests through regulatory activities. The concern about the cumulative impact from a chemical treatment method, used to mitigate potential pest risk and proposed as a treatment option in a rule change to an existing regulation, precipitated the need to prepare this environmental impact statement (EIS).

Following is a chapter-by-chapter summary of this EIS, including the chapter about the cumulative impact issue from the incremental use of methyl bromide when added to the cumulative impact on the environment.

Chapter 1

The Introduction gives the history of this EIS, starting with a proposed rule change that resulted in the preparation of this EIS, having been preceded by an environmental assessment (EA) APHIS prepared for the proposed rule change. A general permit under the wood import regulation allows unmanufactured wood articles to be imported to the United States from states of Mexico next to the U.S. border without requiring any type of treatment unless pests are found during inspection upon U.S. entry. The general permit was based on the premise that forests in the United States shared a common forested boundary with adjacent states of Mexico and therefore shared the same forest pests. However, in 1998, the USDA Forest Service prepared a pest risk assessment, concluding that a pest risk existed to the United States based on the general permit system, because of the differences in pest species between U.S. forests and Mexico's forests. In response, APHIS proposed a rule change to respond to the pest risk associated with unmanufactured wood articles from the forests of states of Mexico next to the U.S. border. The change to the regulation would virtually eliminate the use of the general permit with regard to unmanufactured wood articles from states of Mexico next to the U.S. border, and would require treatment of those articles.

The U.S. Environmental Protection Agency (EPA) raised concern about the proposed rule change and its accompanying EA. The EPA's concern centered around APHIS' proposed use of methyl bromide as one of the treatment options to allow importation of unmanufactured wood articles from Mexico to the United States. APHIS uses methyl bromide as a

fumigant on some commodities for quarantine and preshipment (QPS) purposes to reduce pest risks associated with commodities. Although many uses of methyl bromide will not be allowed in the future (according to the Clean Air Act and the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer) because of its ozone-depleting characteristic, QPS uses will continue to be exempted until other comparable and reasonable alternatives are found.

Chapter 1 also sets the framework for the EIS. The chapters explains the National Environmental Policy Act (NEPA) requirements that led to preparation of the previous EA on the proposed action and the reason this EIS is prepared. Most of the EIS conforms to the traditional organization of a NEPA environmental document based on the proposed action; chapters 4 and 7 differ from the traditional EIS discussion and speak to the focus of this EIS—the consideration of the incremental contribution of methyl bromide use for importation of unmanufactured wood articles from Mexico when added to other methyl bromide uses to result in cumulative impact on the environment.

Chapter 2

This chapter, Purpose and Need, succinctly addresses the purpose and need for the proposed rule. The concern regarding the cumulative impact from additional methyl bromide use is the impetus for the EIS.

Chapter 3

The available and potential pest mitigation methods (nonchemical and chemical tools) to reduce pest risk associated with logs, lumber, and other unmanufactured wood articles are discussed in chapter 3, Pest Mitigation Methods. The methods to reduce pest risk include visual examination; bark removal; heat treatment; fumigation, including methyl bromide; chemical preservation; irradiation; microwaves; and a combined methods approach, integrated pest management. The discussion evaluates the potential for these methods to reduce pest risks associated with importation of unmanufactured wood articles.

No method alone serves to reduce pest risks; and combined methods, such as bark removal and fumigation or bark removal and heat treatment, appear to be the most effective methods at reducing pest risks. Fumigant treatment kills any pest exposed to the fumigant, however it does not allow deep penetration in wood and may not be effective against all deep-boring wood pests. Research has shown that methyl bromide use as a fumigant appears to be most effective against pests within 5 centimeters (approximately 2 inches) of the surface in oaks. It has not been conclusively demonstrated that methyl bromide is efficacious against pests that could bore deeply in wood. Heat treatment may not be practical for large volumes of logs without elaborate sensoring equipment to ensure

penetration. More research is needed to determine the efficacy of other treatments, such as wood preservatives, microwaves, and irradiation, against pests.

Chapter 4

The Affected Environment relates to the cumulative effect of methyl bromide on the environment. This chapter discusses the components of the environment that are affected from the destruction of atmospheric ozone. The use of methyl bromide, the treatment option that raised the NEPA level of the proposed rule from an EA to an EIS, could contribute to the destruction of the ozone layer and to cumulative impact on the environment. Cumulative effects on the environment from cumulative impact of methyl bromide use could contribute to adverse impact on important components and resources of the environment.

Chapter 5

The Alternatives chapter discusses the proposed action and alternatives to the proposed action. The proposed action is to change the wood import regulation to eliminate the pest risk associated with importation of unmanufactured wood articles from states of Mexico next to the U.S. border, thereby making a more consistent regulation for unmanufactured wood articles from all states of Mexico. The proposed changes to the regulation are (1) limit the use of the general permit for unmanufactured wood articles imported from the adjacent states of Mexico, (2) add methyl bromide fumigation as a treatment option for pine and fir lumber originating in Mexico and (3) add methyl bromide fumigation as a treatment option for railroad ties originating in Mexico if they are 100% free of bark and no thicker than 8 inches.

The alternatives include (1) no action (no change to the regulation; the exemption for importation of unmanufactured wood articles from states of Mexico next to the U.S. border would remain the same), (2) require heat treatment of regulated unmanufactured wood articles from all of Mexico, (3) allow methyl bromide as a treatment option for railroad ties (that are no thicker than 8 inches) and pine and fir lumber from Mexico, (4) adopt the proposed rule, combining alternatives 2 and 3 (the preferred alternative), and (5) prohibit unmanufactured wood articles from Mexico.

Under alternative 1, no action, the pest risk would not be reduced. All unmanufactured wood articles, including pine and fir lumber and railroad ties, from states of Mexico next to the U.S. border would continue to be imported under the general permit. The general permit requires unmanufactured wood articles from Mexico's U.S. border states be accompanied by an importer document stating that the articles are derived from trees harvested in, and have never been moved outside of, states of

Mexico next to the United States. The articles would remain subject toinspection and other regulatory requirements.

Under alternative 2, require heat treatment for all wood articles from Mexico, regulated unmanufactured wood articles from the states of Mexico next to the U.S. border would be held to the same requirements as similar articles from the states of Mexico that are not next to the U.S. border. Thus, the use of heat treatment for unmanufactured wood articles would increase from the importation of pine and fir lumber from the states of Mexico next to the U.S. border. Heat treatment would contribute to reducing the pest risk associated with the regulated wood articles from Mexico.

Alternative 3, allow methyl bromide as a treatment option, would add methyl bromide as a treatment option for the unmanufactured wood articles from Mexico's non-U.S. border states and an option for pine and fir lumber and railroad ties from Mexico's U.S. border states. Methyl bromide use would be allowed if it reduces the associated pest risk and would be a new option for the regulated wood articles from Mexico.

Alternative 4, adopt the proposed rule, is identified as the preferred alternative and would limit the general permit to certain unmanufactured wood articles from the states of Mexico next to the U.S. border and require that other articles, such as pine and fir lumber, are 100% debarked and either heat treated or treated with methyl bromide. This alternative also would allow methyl bromide as an option for railroad ties (besides the requirement of being 100% debarked and accompanied by an importer document stating that they will be pressure treated within 30 days of the date of importation) if the ties are 100% debarked and no more than 8 inches thick. This alternative would add the following treatment options: methyl bromide for unmanufactured wood articles from all states of Mexico and pressure treatment for railroad ties and heat treatment for pine and fir lumber from the states of Mexico next to the U.S. border. In essence, the uses of methyl bromide, pressure treatment, and heat treatment would increase under this option.

Alternative 5, prohibit unmanufactured wood articles from Mexico, would ban all unmanufactured wood articles from Mexico, including those imported under a general permit or according to the current wood import regulation (7 Code of Federal Regulations 319.40). Heat treatment for unmanufactured wood articles would decrease, and methyl bromide use for unmanufactured wood articles would not increase.

Chapter 6

Environmental Consequences, discusses the impacts that could occur to the environment under each alternative. Under the no action alternative, the pest risk remains an issue. The general permit remains in effect as it is currently applied and potential losses to U.S. forest and tree resources could occur from pest introductions. These losses would impact other environmental parameters, such as climate and biological diversity.

Under the second alternative, require heat treatment of all regulated unmanufactured wood articles from Mexico, the potential for pest introduction would be reduced. Unmanufactured wood articles from states of Mexico next to the U.S. border would require treatment according to the existing wood import regulation. Thus, heat treatments most likely would increase, causing an increase in the use of fossil fuel to heat kilns or generate electricity. An increase in fossil fuel consumption for heat treating wood would be minor and environmental effects associated with kiln operation and electricity generation would be minor and localized to kiln facility and electric generating station areas.

The environmental consequences under the third alternative, allow methyl bromide as a treatment option, considers the direct and local impacts from methyl bromide. These impacts are mitigated by the operational procedures and safety precautions used in carrying out methyl bromide fumigations. The chapter defers discussion about the cumulative effects of methyl bromide from the proposed rule to chapter 7.

The fourth alternative, adopt the proposed action (combining alternatives 2 and 3), would include environmental effects associated with both alternatives, heat treatment or methyl bromide as allowed treatment options. The use of the existing option, heat treatment, for wood would increase as would the use of methyl bromide. This chapter discusses the maximum increase of methyl bromide use that could reasonably be expected to occur from allowing this treatment option, based on the amount of imported unmanufactured wood articles from states of Mexico next to the U.S. border. It is presumed that heat treatment of the regulated wood articles from the non-U.S. border states of Mexico would continue to be the treatment of choice by suppliers because of the higher value of wood processed this way.

The fifth alternative, prohibit all unmanufactured wood articles from Mexico, would provide the least adverse impact on the environment. However, the United States is obligated to choose phytosanitary measures that are (1) effective and (2) the least restrictive of trade. This alternative would not comply with trade agreements. The chapter concludes with a summary of comparison among the alternatives.

Chapter 7

The Methyl Bromide Cumulative Effects Analysis chapter discusses the environmental consequences of methyl bromide on the environment. The chapter begins with a definition of "cumulative impact," states the potential cumulative effect issue associated with the proposed rule change, and briefly summarizes difficulties in conducting a cumulative effects analysis.

The discussion then focuses on methyl bromide and its worldwide, U.S., and APHIS use patterns. For the most part, the worldwide major use patterns of methyl bromide are being phased out by the Montreal Protocol. After the year 2005, the exempted methyl bromide uses, mainly for QPS, will continue; although exempted under the Montreal Protocol and the Clean Air Act (for the United States), QPS uses of methyl bromide by APHIS are not expected to increase significantly. At this time, it appears that the only substantial increase in QPS use could occur from a proposed rule regarding worldwide regulation of solid wood packing materials being considered by APHIS.

The chapter then discusses the incremental impact from the proposed rule and calculates that a realistic worst case scenario of annual methyl bromide increase from use would be 24 MT and the emissions from this increase would be 21 MT, less than one-tenth of 1% of the annual current total methyl bromide consumption. The actual increase most likely would be much less than this amount because it is believed that most suppliers of unmanufactured wood articles would choose heat treatment over methyl bromide treatment because of the higher profits realized from heat treated wood. Past, present, and reasonably foreseeable uses of methyl bromide are summarized. The discussion states that the collective total contribution of increased methyl bromide use from QPS uses will not decrease the rate of ozone restoration in the stratosphere to any measurable extent.

Thinning of the ozone layer reportedly has reached its maximum as have the total amount of ozone-depleting substances in the atmosphere. However, the crisis is not over yet and the integrity of the atmosphere will be at its most vulnerable during the 21st century. The cumulative effects on the environment from uses of methyl bromide and other ozone depleting substances will cause adverse effects on the environment. Secondary adverse effects from ozone depletion can occur to the Earth's biologic systems, agriculture, man-made and natural materials, humans, and animals.

The annual worldwide contribution to ozone depletion from methyl bromide use is 1% and will decrease as the phaseout of nonexempt uses iscompleted by the year 2005. However, decisions and actions need to be implemented to continue our decreased reliance on methyl bromide.

Chapter 7 concludes that although there currently are no alternatives to methyl bromide for many QPS applications, the public interest would be furthered if APHIS and other Federal agencies cooperatively review methyl bromide uses and develop environmentally friendly alternatives where acceptable treatment options are not available.

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I. Introduction

This chapter lays the groundwork for understanding the background and chain of events that started from an agency proposed action and an environmental assessment (EA) and led to the need to prepare this environmental impact statement (EIS), specifically to consider the potential cumulative impact of methyl bromide use that could result if the proposed action (a proposed change to a regulation) is adopted.

A. What are the legal authorities supporting the proposed action of this EIS?

The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) carries out pest prevention activities through the Plant Protection Act of 2000, Title IV of Public Law 106-224. This law authorizes APHIS, as delegated by the Secretary of Agriculture, to take actions to prevent the entry and establishment of harmful pest species, provide for their control, and minimize the economic, ecological, and human health impacts that harmful pests can cause. APHIS actions authorized by this law serve to protect U.S. agricultural, forestry, and other natural resources from devastation that could occur from the inadvertent introduction of nonnative pest species.

APHIS promulgates regulations under Title 7, Code of Federal Regulations (CFR), Parts 300–399 to enforce its pest prevention efforts under the laws. These regulations are designed to help prevent the entry and spread of nonnative pests. Through enforcement of these regulations, APHIS provides notices of quarantines on agricultural commodities; requires permits for importation of agricultural commodities; inspects cargo and passengers; can refuse entry of commodities found to be infested with certain pests; can require treatment of commodities with chemical or nonchemical methods, or with a combination of these methods; monitors for pests; provides for preclearance inspection programs of certain agricultural commodities in some countries; participates in cooperative efforts at the international, Federal, State, and local levels to help protect against the introduction and spread of harmful pests; and conducts control or eradication programs.

To help with the administrative requirements of the regulations, APHIS developed procedures for handling commodities. The procedures in the APHIS Plant Protection and Quarantine (PPQ) Treatment Manual (USDA, APHIS, 1998a) include information about treatments approved for

eradicating plant pests of quarantine concern found in, on, or with commodities offered for import to, export from, or movement within the United States.

B. What began the chain of events that led to this EIS?

In 1998, it came to APHIS' attention that the regulation for importation of unmanufactured wood articles from Mexico required a change to further reduce a potential major source of pest risk associated with these wood imports.

Under current regulations, unmanufactured wood articles imported from states of Mexico next to the U.S. border are allowed importation to the United States under a general permit. Under the general permit, these articles are subject to inspection and must be accompanied by a statement from the importer indicating that the articles are derived from trees harvested in and have never been moved outside the Mexico states next to the U.S. border. The wood articles do not have to be treated with any chemical or nonchemical methods to reduce pest risk unless the inspection finds they are infested with pests. If the articles are found to be infested with pests, their movement is restricted and they must be effectively treated to eliminate all pests before they can be moved into the United States. The current regulation allows importation of unmanufactured wood articles from states of Mexico that are not next to the U.S. border if they are (1) kiln dried or heat treated before importation to the United States or (2) kiln dried or heat treated within 30 days after release from the port of first arrival in the United States at an approved facility operating under a compliance agreement with APHIS.

The matter of additional pest risk associated with wood articles from Mexico was brought to APHIS' attention through the USDA Forest Service's (FS) "Pest Risk Assessment of the Importation into the United States of Unprocessed *Pinus* and *Abies* Logs from Mexico" (USDA, FS, 1998). This pest risk assessment found, as confirmed by USDA inspections, that a serious pest risk existed in the movement of raw wood material into the United States from the states of Mexico next to the U.S. border. The assessment reached a determination that mountain top forests in those states contain their own unique forest pests, different from those currently found in the United States. The earlier premise for the general permit was that ecological regions (ecoregions) do not correspond with human-made boundaries but extend across U.S. borders with both Canada and Mexico (Bailey, 1997). It was believed, therefore, that these

ecoregions also shared, to a reasonable degree, the same forest pests. Based on the risk assessment findings and the confirming inspections, APHIS was compelled to take action to reduce the pest risks associated with the wood articles by changing the treatment exemption for wood articles from states of Mexico next to the U.S. border.

C. What action did APHIS take to reduce pest risks?

APHIS sought to reduce the pest risk from unmanufactured wood articles through a rule change. The proposed rule change would limit the general permit to certain wood articles (unmanufactured mesquite wood for cooking, unmanufactured mesquite wood for firewood, and small, noncommercial packages of unmanufactured wood for personal cooking or personal medicinal purposes) from states of Mexico next to the U.S. border. The proposed rule change would add the option of methyl bromide treatment for railroad ties 8 inches or less at maximum thickness and pine and fir lumber, provided these articles originate from Mexico, are 100% free of bark, and are fumigated before importation to the United States with methyl bromide according to schedule T312 in the PPQ Treatment Manual (USDA, APHIS, 1998a), or with an initial methyl bromide concentration of at least 240 g/m^3 with exposure and concentration levels adequate to provide a concentration-time product of at least 17,280 gram-hours calculated on the initial methyl bromide concentration.

APHIS prepared an accompanying EA, "Proposed Rule for the Importation of Wood Articles From Mexico, Environmental Assessment, December 1998" (USDA, APHIS, 1998b), to comply with Federal agency requirements under the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*) (NEPA). According to APHIS' implementing procedures (7 CFR Part 372) for NEPA, a rulemaking that seeks to remedy a specific plant health risk or that may affect opportunities on the part of the public to influence agency environmental planning and decisionmaking, is classified as an APHIS action normally requiring the preparation of an EA (7 CFR 372.5(b)(1)).

On June 11, 1999, APHIS published the proposed rule and notice of availability of the EA in the *Federal Register* (64 FR 31512–31518). The proposed rule and EA are provided in appendix B in their entirety.

D. What was the next important event leading to this EIS?

In response to the proposed rule and the EA, the U.S. Environmental Protection Agency (EPA) provided a public comment. In their August 10, 1999, comment EPA stated:

> ". . . EPA is concerned that methyl bromide is being proposed as a treatment option for the importation of unmanufactured wood articles from Mexico when there are clearly effective and available alternative treatments. The potential environmental implications involved with pest control procedures as well as trade issues need to be considered carefully and evaluated in light of critical uses of methyl bromide and the need to protect the stratospheric ozone layer. As you know, the use of methyl bromide is exempted under the Montreal Protocol and the Clean Air Act as a quarantine treatment to control pests; however, this does not necessarily mean that this treatment should be added as an option when other effective treatments exist. For example, Decisions VI/11 and VII/5 of the Meetings of the parties to the Montreal Protocol urge all countries to refrain from use of methyl bromide in quarantine applications and to use non-ozone depleting technologies ***wherever possible*** (emphasis added). We believe that allowing the use of methyl bromide for quarantine treatment of Mexican wood articles where other effective treatments exist would be inconsistent with these Decisions."

The EPA further stated in their memorandum:

> "Our primary concern is the potential environmental impacts of ozone depletion from the added use of methyl bromide associated with this proposed regulation. . . ."
>
> "The December 1998 Environmental Assessment (EA) estimates an upper bound of 73.5 metric tons of methyl bromide per year could be required to fumigate all unmanufactured wood products imported from Mexico. The Assessment seems to dismiss this figure by comparing it to total worldwide methyl bromide consumption. Regardless of the relative incremental contribution, it is important to recognize that any additional methyl bromide would significantly delay recovery of the ozone layer and should not be allowed when effective alternatives exist. According to the most recent UNEP [United Nations Environment Programme]

Scientific Assessment, the ozone layer will be at its most vulnerable state over the next ten-twenty years. Further ozone depletion will adversely affect public health as well as agricultural and natural resources."

What impact did EPA's comment have?

EPA's memorandum on the proposed use of methyl bromide to allow importation of unmanufactured wood articles from Mexico prompted APHIS to consider the incremental contribution of methyl bromide if the proposed rule were adopted. EPA commented that despite the relative incremental contribution of methyl bromide use from the proposed action, "it is important to recognize that any additional methyl bromide would significantly delay recovery of the ozone layer" and also stated that "encouraging methyl bromide as an appropriate treatment even where alternatives exist, global levels of methyl bromide use will increase significantly, representing a serious threat to the ozone layer." In the circumstances, consideration of the cumulative impact of methyl bromide from the proposed action was clearly warranted.

E. Is an EIS appropriate for the proposed action (proposed rule)?

Generally, an EIS is prepared when a major Federal action may significantly affect the quality of the human environment (40 CFR 1502.3). A proposed rule, according to APHIS' NEPA implementing procedures, is classified as an action that requires preparation of an EA. Thus, an EIS would not have been prepared for the proposed rule except for the concern raised about incremental contribution (cumulative impact) of methyl bromide. Cumulative impact is defined in the Council on Environmental Quality (CEQ) regulations as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

The CEQ regulations state that the scope consists of the range of impacts to be considered in an EIS and that it includes impacts which may be cumulative (40 CFR 1508.25(c)(3)). Also, section 1508.27 states:

> "'Significantly' as used in NEPA requires considerations of both context and intensity. . . . (b) Intensity . . . refers to the severity of

> impact. . . . The following should be considered in evaluating intensity: . . .(7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts."

The incremental contribution of methyl bromide use for wood imports from Mexico as a result of the adoption of the proposed rule would be insignificant. However, when added to other past, present, and reasonably foreseeable uses of methyl bromide, the cumulative impact could result in a significant impact on the environment. Thus, the need to consider cumulative impact of methyl bromide use for the proposed rule led APHIS to prepare this EIS.

F. What is the scope and focus of this EIS?

APHIS provided a 30-day scoping period from March 13 through April 12, 2000, for this EIS after publishing a notice of intent to prepare an EIS in the *Federal Register* (65 FR 13356, March 13, 2000). Two written comments were received during that period and were considered by APHIS for preparing this EIS. The issues identified by the commenters include the need to minimize the current pest risk of imported unmanu-factured wood articles from Mexico and the need to require phytosanitary safeguards for wood originating from Mexico to protect U.S. agricultural, forestry, and other natural resources. The commenters also expressed the need to find alternative treatment options to methyl bromide because of its inability to penetrate the interior of larger wood items and the potential of methyl bromide use to increase if its use is allowed for imported wood from Mexico, thus leading to additional ozone depletion.

According to the CEQ regulations, the scope is "the range of actions, alternatives, and impacts to be considered" (40 CFR 1508.25). The organizational scope of this EIS includes the range of alternatives specifically for the importation of unmanufactured wood articles from Mexico, as discussed in the EA for the proposed rule: (1) no action, (2) remove the Mexican border-states exemption, (3) allow methyl bromide as a treatment option for unmanufactured wood articles from Mexico, (4) adopt the proposed rule (combining (2) and (3) above), and (5) prohibit unmanufactured wood articles from Mexico. This EIS also discusses the treatment methods applicable to the alternatives and the treatment methods eliminated from further consideration. The

environmental impact of each alternative is discussed in chapter 5, Environmental Consequences.

The focus of this EIS is the incremental contribution of methyl bromide from the proposed action when added to other methyl bromide uses for the cumulative impact on the environment. Most of this EIS is developed according to the traditional organization of an EIS. The chapters discussing the alternatives (chapter 4) and the environmental consequences of those alternatives (chapter 5) relate much of the same discussion as written in the EA prepared on the proposed action. However, the major differences in this EIS analysis, applying to significance under NEPA, occur in chapter 4 (The Affected Environment) and chapter 7 (Methyl Bromide Cumulative Effects Analysis) of this document because these chapters address the methyl bromide concerns related to cumulative effects on the environment from the proposed action and other uses of methyl bromide.

G. What other background information helps to understand the focus of this EIS?

1. Consideration of Methyl Bromide Uses

To consider the cumulative effects of methyl bromide for the proposed action of this EIS, APHIS must consider its program uses of methyl bromide in the past, its current program uses, and program uses anticipated for the future. APHIS also must consider other methyl bromide uses "regardless of what agency (Federal or non-Federal) or person" undertakes them (40 CFR 1508.7). Other uses, besides APHIS uses, include soil treatment for noncrop uses, such as for golf courses; open field crops; nurseries and seed-beds, such as tobacco and tomatoes; commercial treatments required by importing countries and companies; and transport, such as disinfestation of transport vehicles for rodent control.

Examples of APHIS program uses of methyl bromide include—

< Regulatory quarantine restrictions for movement of fruits, vegetables, and other agricultural crops outside pest-infested eradication areas (e.g., fruit fly cooperative eradication programs).

< Regulatory quarantine restrictions for movement of agricultural commodities (e.g., Christmas trees under the pine shoot beetle cooperative regulatory program and domestic pink bollworm quarantine program).

< Quarantine and preshipment (QPS) of agricultural commodities (e.g., importation of cut chrysanthemums from Columbia; importation of

tomatoes from France, Morocco, Western Sahara, Chile, and Spain; and importation of Monterey pine logs from Chile).

- Treatment of infested warehouses and other infested sites, such as cargo holds (e.g., khapra beetle cooperative eradication programs and Karnal bunt cooperative regulatory program).

- Treatment of soil and infested crops (e.g., corn cyst nematode program and eradication of *Orobanche* species).

- General regulatory treatments for entry of infested commodities (e.g., relocation of the Los Indios, Texas, plant inspection station).

2. Laws, Treaties, and Executive Orders

APHIS quarantine activities affect the movement of commodities from foreign origins and by interstate transport. Most of the quarantine activities relate to import from foreign countries. These activities may affect trade directly and are subject to regulations under international treaties and related side agreements. Some quarantine activities involve treatment procedures that may directly or indirectly affect environmental quality within the United States and in foreign countries. In particular, the proposed use of methyl bromide as a quarantine treatment described within this EIS poses potential for adverse impacts to the global commons through its propensity to deplete ozone in the atmosphere. The recognition of this effect has resulted in the enactment and revision of certain laws and regulations by the United States and the acceptance of certain international treaties to regulate the potential adverse effects from methyl bromide. The following laws, treaties, and executive orders are related to APHIS quarantine activities and the focus of this EIS.

a. Montreal Protocol

The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer was designed to reduce and eventually to eliminate the emissions of man-made, ozone-depleting substances. The Protocol was developed in response to evidence that man-made substances, particularly chlorofluorocarbons, were damaging the ozone layer in the stratosphere (the part of the atmosphere that extends from 7 to 30 miles above the Earth's surface). The ozone layer protects the Earth's surface from excessive ultraviolet (UV) radiation. The Protocol came into force on January 1, 1989, when 29 countries and the European Economic Community (EEC) ratified it. Since then, several amendments have been made to the Protocol. The United States has signed the Protocol and ratified all amendments except the 1997 Montreal amendments.

The Montreal Protocol lists methyl bromide as a regulated ozone-depleting substance under Article 2H. Phaseout requirements for methyl bromide under the Montreal Protocol mirror those recently set by the EPA under the Clean Air Act (EPA, 1999). Methyl bromide use for quarantine treatment purposes is minor compared with most uses, and the Montreal Protocol maintains an exemption to the restrictions on methyl bromide for quarantine use. The intent of this Protocol, however, is to phase out this use pattern or promote the development of effective alternative quarantine treatments where possible.

b. Clean Air Act

The Clean Air Act, as amended in 1990 (42 U.S.C. 7401 *et seq*.), provides the basic framework to regulate air quality through air pollution control. The air quality regulatory program sets two types of regulatory standards (ambient and technology-limited). National Ambient Air Quality Standards pertain solely to six "criteria pollutants," none of which pertains to APHIS quarantine activities. The technology-limited regulatory standards are, however, directly applicable to APHIS quarantine chemical treatments.

A recent scientific assessment of ozone depletion (NOAA *et al.,* 1998) found that methyl bromide has an ozone depletion potential (ODP) of 0.4. Methyl bromide is a quarantine fumigant that APHIS routinely uses in the treatments of wood and other agricultural commodities to eliminate pest risk. Title VI of the Clean Air Act requires that all compounds with an ODP of 0.2 or greater be phased out in the United States by the year 2005. EPA defines these compounds as "Class I" ozone-depleting substances in section 602 of the Clean Air Act. Class I ozone-depleting substances have the potential to cause significant damage to the Earth's protective ozone layer.

The EPA amended the Clean Air Act in July 1999 to reflect changes in U.S. obligations under the Montreal Protocol. The changes are based on the methyl bromide phaseout schedule and specific exemptions under the Protocol. The amendment incorporates the Protocol's 25% interim reduction in the production and consumption of Class I, Group VI controlled substances (methyl bromide) for the 1999 control period and subsequent control periods. Methyl bromide has been designated as Group VI in the Accelerated Phaseout Final Rule (EPA, 1999). This rule states that EPA expects a complete phaseout of production and consumption of methyl bromide by January 1, 2005. This is designed to follow provisions agreed upon in the Montreal Protocol, described in the next section. The phaseout rule, however, suggests that EPA plans to publish a proposal for

a process for exempting quantities of methyl bromide used in the United States for QPS purposes.

c. General Agreement on Trade and Tariffs and the World Trade Organization

The General Agreement on Trade and Tariffs (GATT) is an international agreement designed to reduce and eliminate barriers to trade, investment, and services among its signatory countries. Since its implementation in 1947 to promote free trade, GATT's administration has changed several times—first administered by the International Trade Organization (ITO), then the GATT (de facto name organization), and now the World Trade Organization (WTO). The recent negotiations for GATT (the agreement) were completed in the 1986–1994 Uruguay Round and led to the creation of the WTO in 1995.

GATT's effort to reduce trade barriers includes elimination of unjustified sanitary and phytosanitary restrictions on agricultural trade, without impairing the right of individual nations to establish and apply appropriate measures to protect public health and control plant and animal pests and diseases. To comply with GATT, APHIS must cooperate with three international standards-setting organizations, one of which is the International Plant Protection Convention (IPPC) Secretariat. The IPPC rules are of particular concern to APHIS for this EIS (discussed in the next section).

d. International Plant Protection Convention

The IPPC is a treaty, dating from 1952, aimed at promoting international cooperation to control and prevent the spread of harmful plant pests. The most recent revision of this treaty was presented for adoption in November 1997. In 1995, the signing of the WTO's Agreement on the Application of Sanitary and Phytosanitary Measures (SPS agreement) placed more rigorous requirements on international phytosanitary regulations. The WTO mediates trade-related disputes and seeks international harmonization of SPS measures through the IPPC Secretariat and two other international standards-setting organizations. Phytosanitary regulations are those rules designed to protect plant health for imported and exported commodities. These regulations may be enforced domestically by individual countries, regionally by groups of countries, or worldwide based on an international agreement. The SPS agreement established that all countries should base their phytosanitary measures on relevant standards, guidelines, and recommendations developed under the auspices of the IPPC.

The IPPC requires a standard-setting commission and a Secretary to administer the implementation and activities of the commission. APHIS regulations are generally covered by submission of quarantine pests lists and regulated nonquarantine pests lists to the Secretary of the Commission for dissemination to all contracting parties (all signatory nations of the IPPC). The dissemination also may be done by the WTO. Before implementing a new regulation of pest species (e.g., changes in a rule for importation of wood from Mexico), APHIS is required to submit a pest risk assessment or other technical evidence to the Secretary of the Commission to justify enforcement of the new regulation. Phytosanitary measures imposed by a country against regulated pests are acceptable under the IPPC if such measures are (1) transparent (clear to all signatory nations), (2) technically justified, and (3) no more restrictive than measures imposed domestically. The APHIS proposed rule is made clear to all signatory nations in the *Federal Register* and by submission to the Commission. APHIS based the technical justification for this rule on a pest risk assessment prepared by USDA's FS for unprocessed softwood logs from Mexico (USDA, FS, 1998). Softwoods are the majority (approximately 98%) of the wood products transported from U.S. border states of Mexico. The pests of concern that could enter on the regulated articles are not present in the United States, and the proposed rule imposes restrictions that are comparable to existing regulations for the same level of pest risk (both for domestic and foreign).

A main focus of the proposed rule is to reduce the risk of pest introduction associated with unmanufactured wood articles from Mexico by requiring that those articles undergo heat treatment. It is, however, worthy to note that the proposed rule alternatively provides for wood articles to undergo methyl bromide fumigation, which is a pest mitigation method that achieves the same level of phytosanitary protection as heat treatment. Allowing the additional treatment method of methyl bromide fumigation could also be less restrictive of trade, although methyl bromide is being phased out for most uses.

The concern about methyl bromide use has caused APHIS to consider other options, including the requirement to recapture methyl bromide gas from the fumigation enclosure rather than phase out its phytosanitary uses. This requirement on Mexican wood fumigations, however, could not be considered until gas recapture is required for all domestic fumigations because of the requirement that phytosanitary measures under the IPPC be no more restrictive than measures imposed domestically. The placement of any quarantine requirement by APHIS that does not fully meet the three requirements for acceptable phytosanitary measures could be grounds for a claim of unfair trade practices to the WTO. Even if the pest risk is

legitimate, this new requirement, if it were proposed, could delay implementation of the phytosanitary regulation of concern if the WTO were to make a formal decision on the matter.

e. North American Free Trade Agreement

The North American Free Trade Agreement (NAFTA) is an agreement among the United States, Canada, and Mexico to create a free trade zone by reducing and eliminating barriers to trade, investment, and services. The U.S. Congress ratified NAFTA in 1993. The requirements for SPS regulations under NAFTA are similar to those under GATT, except for other requirements resulting from side agreements. In particular, the North American Agreement on Environmental Cooperation is a trilateral side agreement to NAFTA among the United States, Canada, and Mexico. This agreement established the Commission for Environmental Cooperation (CEC), whose primary function is the consideration and development of recommendations relating to environmental issues. The CEC has been actively involved in the establishment of uniform requirements for the preparation of transboundary environmental impact assessments (TEIA) by all NAFTA signatories. The intent of CEC is to negotiate procedures to prepare TEIA documents for "assessing the environmental impact of proposed projects subject to decisions by a competent government authority and likely to cause significant adverse transboundary effects." Although the procedures are in draft form, the transboundary effects from regulation of Mexican unmanufactured wood are based upon governmental decision and are likely to have an environmental effect on forests in Mexico. Transboundary documents and notification of proposed actions are likely to be required for some future phytosanitary regulations when the trilateral TEIA agreements are completed.

f. Related Executive Orders

APHIS must consider authorities, such as related Presidential executive orders, in carrying out its pest prevention activities, especially activities that may impact the environment outside the United States.

Executive Order (E.O.) 13112, Invasive Species, published in the *Federal Register* on February 8, 1999, (64 FR 6183–6186) is an order APHIS must consider with respect to pest prevention activities. A Federal agency whose actions may affect the status of invasive species is required to carry out certain actions stated in the order. These actions include preventing invasive species introduction, detecting and responding rapidly to such species and controlling their populations in a cost-effective and environmentally sound manner, monitoring for invasive species populations

accurately and reliably, providing for restoration of native species and habitat conditions in invaded ecosystems, researching and developing technologies to prevent invasive species, and promoting public education on invasive species. This order also contains other requirements for Federal agencies, including development of recommendations for international cooperation in addressing invasive species.

APHIS also must consider E.O. 12114, Environmental Effects Abroad of Major Federal Actions, published in the *Federal Register* on January 9, 1979, (44 FR 1957–1960). One of the categories of action under E.O. 12114 that applies to this EIS is that of a major Federal action that significantly affects the environment of the global commons (defined as parts of the planet—such as the oceans, the upper atmosphere, and Antarctica—in which all nations have a common but nonproprietary interest). The proposed action, which includes the option of using methyl bromide to allow importation of certain wood articles, potentially will affect the ozone layer of the stratosphere (an upper portion of the atmosphere); thus, consideration of E.O. 12114 applies to the proposed action. The stratosphere is the focus of protection by the international agreement, the Montreal Protocol (previously discussed), designed to reduce and eventually eliminate emissions from ozone-depleting substances. In addressing methyl bromide's cumulative effect on the ozone layer of the stratosphere, this EIS also complies with E.O. 12114 to the extent applicable.

A more recent Presidential order, E.O. 13148, Greening the Government Through Leadership in Environmental Management, published in the *Federal Register* on April 26, 2000, (65 FR 24595–24606), directs Federal agencies to address a variety of environmental concerns. Section 206 of the order states:

> *"Reductions in Ozone-Depleting Substances*. Through evaluating present and future uses of ozone-depleting substances and maximizing the purchase and the use of safe, cost effective, and environmentally preferable alternatives, each agency shall develop a plan to phase out the procurement of Class I ozone-depleting substances for all nonexcepted uses by December 31, 2010."

While the activities evaluated in this EIS are excepted under the terms of the Montreal Protocol, as implemented via provisions of the Clean Air Act, E.O. 13148 encourages the earliest possible elimination of all use of ozone-depleting substances.

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II. Purpose and Need

What is the purpose and need for the proposed action?

The CEQ NEPA implementing regulations (40 CFR 1502.13) state that an EIS shall "briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." The purpose and need for the proposed action (the proposed rule change) is to reduce the potential pest risk associated with imported wood from Mexico and thereby prevent the introduction of harmful nonnative pests that could become established in the United States by prescribing treatment methods, including the use of methyl bromide. APHIS is required by several Federal laws, mentioned in chapter 1, to take actions to prevent the introduction of harmful nonnative pests that, if they became established in the United States, could devastate U.S. agricultural, forestry, and other natural resources.

Unmanufactured wood articles from Mexico, including the states of Mexico next to the U.S. border, have been identified as a potential source of pest risk to forestry and other natural resources of the United States. To comply with responsibilities for enforcing laws and regulations designed to assist with pest interception and prevention, APHIS proposed the rule change to the wood import regulation because of the confirmed pest risk associated with the wood articles from states of Mexico next to the U.S. border.

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III. Related Pest Mitigation Methods

As discussed in chapter 1, APHIS takes actions to prevent the introduction and establishment of harmful pest species that would cause extensive damage to important resources of the United States. The purpose of this chapter is to discuss the available methods (nonchemical and chemical pest mitigation tools), including methyl bromide, that APHIS can consider for use when eliminating pest risk associated with unmanufactured wood articles. Although these methods may be utilized with regard to different agricultural commodities in other APHIS pest prevention/eradication programs, the methods in this chapter are discussed specifically as they relate to unmanufactured wood articles. As discussed in chapter 1, a variety of APHIS programs use methyl bromide treatment. Some methods discussed here are mentioned in chapter 5, Alternatives, as they pertain to the proposed action, an alternative considered for the proposed action, or an alternative eliminated from consideration.

Any unmitigated importation of logs, lumber, or other unmanufactured wood articles into the United States could provide an opportunity for introduction of plant pests. The introduction and establishment of exotic plant pests could have serious adverse impacts on the ecological and economic value of North American forest resources. Ecological effects on forests could include changes in species composition, deforestation, degradation of riparian and montane communities, alteration of biogeochemical cycles, and loss of biodiversity. Potential ecological impacts from introduced pests would vary with the pest, the severity of damage, the size and shape of the infested area, the type and level of effort employed to eradicate the introduced pest, and the structure and health of the forest system. Economic factors that might be affected could include loss of timber resources, decreased tourism to forests and parks, damage to the fisheries industry, cost of eradication of the introduced pest, control of forest fires, reforestation costs, and loss of property value.

While it is impossible to define the exact number of plant pests that are being imported across national boundaries without becoming established in their new habitat, there are sufficient examples of plant pests from other countries becoming major pests in the United States to conclude that introduction of organisms carries considerable risk. Chestnut blight, Dutch elm disease, white pine blister rust, and gypsy moth are but a few of the introduced plant pests that have caused economic and ecologic disruption in forests of the United States. Several methods can be used to reduce or eliminate pests associated with wood imports (Morrell, 1996a). The

following information describes the effectiveness and limitations for several of those methods.

A. Visual Examination

Visually inspecting wood is a simple method for detecting evidence of pest infestation. While inspections may reveal the actual presence of insects or other pests, indirect evidence of infestations—such as frass, discoloration, or wood damage—also indicates pests are likely to be present. Visual inspections are most effective on wood that has had all the bark removed (USDA, APHIS, 1991).

Visual inspections are limited in effectiveness for several reasons. Foremost, the ability to thoroughly inspect the entire surface of every item in a shipment is limited and often impractical. The experience and training of the inspectors is also variable. In addition, it is difficult to detect subsurface infestations and infestations that are in early stages. For these reasons visual inspections are often a part of, but not the only method used in, a wood pest mitigation strategy (Morrell, 1996a).

B. Bark Removal or Debarking

Because plant pests and pathogens may be found in or under the bark of trees and even on the surface of logs, debarking is a method that allows plant pests to be detected (USDA, APHIS, 1991). Debarking is the process of removing bark from logs and other regulated wood articles, including dunnage. The process is usually done mechanically; however, in less-developed countries, other processes using hand tools may be the only available way to remove bark. More recently, chemical methods for debarking have been developed, but these methods are not widely used yet. Debarking allows a more thorough inspection for the presence of wood boring insects and fungi on logs (Morrell, 1996a).

While debarking is essential to remove pests and pathogens in or under the bark and can help indicate if boring pests are present, there are limitations to this method. Some wood articles, such as raw lumber, are required to be 100% free of bark prior to entry into the U.S. For other wood articles, such as logs, it is impractical to remove 100% of the bark. For those articles no more than 2% of the bark can remain on the articles in a lot, with no single regulated article retaining bark on more than 5% of its surface. Because of these limitations, the debarking process often is used in addition to other pest prevention methods to assure the removal of all pests from the regulated articles.

Another disadvantage to debarking is that it is not a permanent treatment. A wood article that has been debarked can later be infested or reinfested by surface pests. Thus, debarked wood articles are frequently treated with pesticides or preservatives or are heat treated in order to remain pest and pathogen free.

C. Heat Treatment

As with other types of treatments, heat treatment is designed to kill plant pests without destroying or appreciably devaluing an infested commodity. The pest removal efficiency of heat treatment depends on both temperature and humidity (USDA, APHIS, 1991). Fungal infestations are considered the most difficult to eliminate (Morrell, 1996a), but the use of heat to eliminate pests represents one of the most certain approaches to minimizing the risk of pest introductions (Morrell, 1995).

The wood regulation requirements in 7 CFR 319.40–7(c) for heat treatment are that the center of each regulated article must reach a temperature of at least 71.1 °C and this temperature must be maintained for at least 75 minutes. Furthermore, heat treatments must be performed in a facility authorized by APHIS, or by an inspector authorized by the Administrator of APHIS and the national government of the country where the facility is located. Two heat treatment procedures are heat treatment without moisture reduction and heat treatment with moisture reduction (commonly referred to as kiln drying).

Heat treatments without moisture reduction commonly involve the use of pressurized steam or a hot-water dip to elevate and maintain the core temperature of the wood. These treatments have been shown to be effective in eliminating pests such as oak wilt fungus (USDA, APHIS, 1991) and other fungi (UNEP, 1998). In general, heat treatment in conjunction with moisture appears to increase the susceptibility of living pest organisms to thermal killing because it more rapidly denatures proteins, especially enzymes (USDA, APHIS, 1991). APHIS researched and provided more detailed information about heat treatment without moisture reduction in the "Importation of Logs, Lumber, and Other Unmanufactured Wood Articles, Final Supplement to the Environmental Impact Statement, May 1998" (USDA, APHIS, 1998c).

Kiln drying is designed to decrease the moisture content of the treated article and to eliminate pests. This process uses dry heat to reduce the moisture content of the treated article to 20% or less as verified by using an electrical conductivity meter. Kiln drying requires that the treated articles

be placed in a chamber or kiln and be exposed to heat for a specified time-temperature combination. Under 7 CFR Part 319, treated articles must be exposed to methods that raise the temperature of the center of each treated regulated article to at least 71.1 °C and maintains the regulated articles at that center temperature for at least 75 minutes. Dry heat is effective at controlling a wide range of pests, including fungi (Morrell, 1996a). In addition to the pest mitigation properties of kiln drying, for many wood products kiln dried lumber is essential (USDA, FS, 1991). APHIS researched and provided more detailed information about kiln drying in the "Importation of Logs, Lumber, and Other Unmanufactured Wood Articles, Final Supplement to the Environmental Impact Statement, May 1998" (USDA, APHIS, 1998c).

Despite the effectiveness of heat treatments in mitigating pests, there are limitations to heat treatments for wood articles. Heat treatments may be impractical for large volumes of logs without elaborate sensoring (Morrell, 1995; UNEP, 1998). Therefore, heat treatments will likely be limited to smaller, more easily treated wood articles or high value articles (Morrell, 1996b). For some wood products, heat treatments may not alter the appearance of the wood, and it may be difficult to confirm that the wood has received treatment (Morrell, 1996a) without the wood being permanently marked and accompanied by proper certification. Heat treated wood (without moisture reduction) that is still green is much more prone to reinfestation than is kiln dried lumber, but all heat treated articles must be handled and stored to protect those articles from pest infestation after treatment.

D. Fumigation

Fumigation is the act of releasing or dispersing a fumigant. A fumigant is the gaseous state of a toxic chemical that, when released and dispersed to a commodity, kills any pests exposed to the fumigant within the commodity. Fumigation has been widely used to eliminate pests from a variety of wood products because wood is permeable to fumigants and can be batch treated. The decision to use a fumigant is based on factors such as the commodity to be treated, pest and pest stages present, the type of structure where the fumigation will be carried out (such as chamber, tarpaulin, van, freight car, and ship hold), and the cost of fumigation.

PPQ inspectors supervise all program fumigations to ensure effective fumigant concentration levels are maintained according to the treatment schedules and to ensure efficacy and personal safety, to maintain pesticide residues within acceptable limits, and to preserve commodity quality. The

PPQ Treatment Manual provides detailed guidelines for supervision; technical specifications for fumigation facilities and equipment; temperature requirements; dosage rates; exposure duration; subsequent fumigation aeration; safety and first aid; and leak detection related to the use of the specific fumigant.

A fumigant may have some of the following characteristics that make it a choice treatment: high toxicity to the target pest, no toxicity to plants and vertebrates (including humans), harmless to foods and commodities, nonexplosive, nonflammable, inexpensive, insoluble in water, nonpersistent, easily diffuses and rapidly penetrates a commodity, stable in the gaseous state, and easily detected by human senses. No fumigant has all of these characteristics; however, APHIS uses fumigants that have many of these characteristics.

The toxicity of a fumigant depends on the target organism's respiration rate. Temperature (of air and commodity) is a factor in the organism's respiration rate, i.e., a lower temperature lowers the organism's respiration rate, thereby decreasing the pest's susceptibility to the fumigant. Thus, a fumigant works best on the target organism when the temperature is high. Some fumigants kill pests faster than other fumigants; some have a paralyzing effect on the pest while others will not allow the pest to recover.

APHIS uses the following authorized fumigants: methyl bromide, sulfuryl fluoride, and phosphine. Fumigants must be used according to their registration labels, as required by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 U.S.C. 136). A fumigant can only be used in States where it is registered for such use and can only be used on commodities listed on the label.

1. Methyl Bromide

Methyl bromide is one of the oldest and most widely used fumigants for phytosanitary purposes. This fumigant has long history of use for treatment of logs and other wood articles because of the chemical's high volatility, ability to rapidly penetrate most materials, and broad toxicity against a wide variety of plant pests (all life stages of insects, mites, and ticks; nematodes, including cysts; snails and slugs; and fungi, such as oak wilt fungus) (USDA, APHIS, 1991).

Methyl bromide fumigation involves the use of a volatilizer to heat the liquid form of methyl bromide and speed its conversion to a gas. Because it is three times heavier than air and diffuses outward and downward readily, fans are required to ensure upward movement and equal gas distribution of methyl bromide. Fan circulation also increases methyl bromide's ability to penetrate commodities. Once the gas is evenly

distributed, these conditions are maintained for the duration of the treatment. After the treatment period, the gas is vented from the treatment chamber to the surrounding environment or, in some cases, can be recaptured with methyl bromide extraction devices.

The development of an effective recapture system for methyl bromide gas from fumigations is a recent innovation. This system can be designed for all APHIS program fumigations, but there are high setup costs and modest maintenance costs involved. A conservative estimate of the amount of methyl bromide recovered by the recapture system from each fumigation is 75 to 80% of the total fumigant applied (McAllister, 2000). The system is currently being used for fumigations in Houston and Dallas, Texas. Several other APHIS program ports are considering installation of a recapture system for methyl bromide from fumigations. The basic recapture system consists of an intake from the fumigation chamber, an extraction unit, and an outflow for the purified air. The extraction unit houses a carbon absorption module that is designed to extract methyl bromide from the air as it passes through the extraction unit. At the completion of a fumigation, the gas from the fumigation chamber is pumped through the intake into the extraction unit, the methyl bromide gas is extracted, and the purified air is released to the atmosphere. The carbon absorption module continues to extract methyl bromide until it becomes saturated. The module must then be sent to a regeneration facility where the methyl bromide residues are extracted chemically before that module can again be used. The only regeneration facility presently extracting methyl bromide residues is located in Pittsburgh, Pennsylvania. Ports using this recapture system must have another module available for fumigations during the period when the used module is being regenerated. The size of the port and the number of fumigations determine how many extraction units and extra carbon absorption modules would be needed. This recapture system drastically decreases the amount of methyl bromide that escapes to the atmosphere and may be an important mitigation measure for future fumigations to minimize the release of methyl bromide.

This technology may be applied to quarantine fumigations in other countries, but there are restrictions limiting imposition of regulatory requirements for use of recapture systems for phytosanitary purposes. One requirement of the IPPC is that regulatory requirements based upon pest risk and placed on commodities from foreign countries be no more stringent than requirements placed on domestic commodities with comparable pest risk. The use of recapture systems for methyl bromide has only been required at two ports based upon air quality standards. Any new requirements for recapture of methyl bromide from fumigations as part of APHIS phytosanitary regulations must apply to domestic port fumigations

as well as foreign ports to fulfill all IPPC requirements for acceptable phytosanitary regulations. The required installation of recapture systems for all fumigation facilities at domestic ports would be costly; this approach to preventing methyl bromide emissions is not anticipated for the immediate future. This technology is being further developed and may provide another option for dealing with the concerns related to atmospheric release of methyl bromide.

APHIS provides two methyl bromide fumigation schedules for wood products in the PPQ Treatment Manual (USDA, APHIS, 1998a). Schedule T404 is a generic treatment for general insect control, and schedule T312 is a more rigorous treatment that has been demonstrated to be effective in eradicating the oak wilt fungus (Schmidt, 1996). In either of these schedules, the penetration of methyl bromide into wood is generally limited to the outer 5 centimeters (cm) (2 inches) (Morrell, 1995).

A major concern regarding methyl bromide fumigation is that the efficacy data of methyl bromide against many pests and pathogens do not exist (USDA, APHIS, 1991). Methyl bromide appears to be most effective against pests within 5 cm (2 inches) of the surface in oaks (Morrell, 1995). However, there are indications that pest penetration in pine may be up to 10 cm (4 inches) (Cross, 1994) and that pest penetration in other wood species may be up to 14 cm (5.5 inches) (Schmidt, 1996). It also has not been conclusively demonstrated that all pest species, especially those deep in the wood, can be controlled by methyl bromide fumigation. While research on the effectiveness of methyl bromide is being conducted against some pests such as pathogenic fungi (Rhatigan *et al.*, 1998), many other pest species remain untested.

In addition, methyl bromide fumigation of logs is ineffective if the commodity and air temperatures are low (USDA, APHIS, 1991). Accordingly, the wood regulation in 7 CFR 319.40-7(f) stipulates that for logs or lumber the treated articles and the ambient air must be at a temperature of 5 °C (41 °F) or above throughout fumigation with methyl bromide. Therefore, a substantial amount of heat could be required to fumigate a large shipment of logs or lumber with methyl bromide (Morrell, 1995).

2. Phosphine

Phosphine, generated from either aluminum phosphide or magnesium phosphide, is available under various trade names in tablets, pellets, prepacks, bags, or plates. More recently, phosphine gas has been registered for use from gas cylinders. Phosphine has a garlic-like odor, is highly flammable when in direct contact with a liquid (especially water), and is highly penetrative to many commodities. High humidity is needed to

generate the gas, and temperature above 40 °F (4.4 °C) is required to produce satisfactory results. Phosphine emits a colorless gas when exposed to moisture.

Phosphine fumigations are relatively long in duration (3 to 5 days) and are usually done under a tarpaulin or in a van or container (USDA, APHIS, 1991). Gas concentrations must be monitored during the fumigation period. Because phosphine has approximately the same density as air, fans are unnecessary to circulate phosphine. After fumigation has been completed, the phosphine is expelled into the surrounding environment.

APHIS provides several phosphine fumigation schedules (USDA, APHIS, 1998a). Various insects such as bark beetles, wood-wasps, longhorn beetles, and platypodids are susceptible to phosphine at a dose of 1.2 grams per cubic meter (g/m^3) for a 72-hour exposure at temperatures of 59 °F (15 °C) or more (UNEP, MBTOC, 1998). For some insects, long exposure at a low phosphine concentration is more effective than short exposure at a high phosphine concentration.

As was the case for methyl bromide fumigations, the effectiveness of phosphine fumigations is limited by the ability of the gas to penetrate wood. Also, fewer studies have conclusively demonstrated phosphine's effectiveness against specific pests than similar studies done for methyl bromide. Further research on phosphine efficacy is needed (USDA, APHIS, 1991).

3. Sulfuryl Fluoride

Sulfuryl fluoride is a colorless, odorless, nonflammable compressed-gas fumigant that is used primarily against insects that attack wood, especially termites that attack wooden structures. Sulfuryl fluoride is considered to have excellent penetrability into wood (USDA, APHIS, 1991), with dosages similar to those for methyl bromide. This fumigant is also effective against other major insect pests of timber such as bark beetles, wood-wasps, longhorn beetles, and powderpost beetles (UNEP, 1998). Scheffrahn *et al.* (1992), Schmidt and Kreber (1998), and Schmidt *et al.* (1998) also have studied the efficacy of sulfuryl fluoride against certain pests.

Limitations to sulfuryl fluoride are that eggs of many insects are tolerant to even high concentrations (USDA, APHIS, 1991), the chemical is not registered in many countries (UNEP, MBTOC, 1998), and sulfuryl fluoride is currently more expensive than methyl bromide (Schmidt, 1996). Although sulfuryl fluoride has potential use in quarantine treatments of logs, in the United States it is anticipated that the future primary market will be for fumigating cereal grains, dried fruits, and tree nuts.

4. Other Fumigants

Other fumigants, such as carbonyl sulfide and methyl iodide, have been proposed for treating wood products as an alternative to methyl bromide. While carbonyl sulfide is effective at controlling pests on certain commodities, the effectiveness on wood products has not been conclusively demonstrated, especially at commercial application levels (UNEP, 1998). Methyl iodide has shown early promise as a fumigant to remove pests from wood, but much more research is needed before this chemical could be considered as a replacement for methyl bromide (Schmidt, 1996).

E. Chemical Preservation

Chemicals, including fungicides and insecticides, can be applied to the surface of logs, green lumber, and other wood products to prevent pest establishment (Ward, 1996). Such prophylactic treatments typically remain near the surface of the treated articles unless the treatments are made under pressure. As of 1993, 73% of the preservatives produced were waterborne inorganic arsenicals; creosote solutions, oilborne systems, and fire retardants comprised the remaining 27% of preservatives used (Barnes and Murphy, 1995).

Creosote is the oldest wood preservative and preserves wood against attack by fungi, insects, and bacteria. Wood treated with creosote generally has a useful life at least five times longer than untreated wood. Pressure treatment is used to assure proper penetration of creosote into wood used for railroad ties. Human health issues are associated with creosote's use; however, following EPA's review that imposed additional measures to reduce human exposures, EPA granted creosote's reregistration status for wood preservative use (EPA, 1984). Amended label information was published for creosote in 1986 (EPA, 1986). The label specifies the application directions, including any restrictions for use or special precautions such as required protective gear and/or special equipment that must be used.

Borate is a chemical that also has been used to protect lumber from decay, fungi, and beetles during shipment (Amburgey, 1996). Most often borate treatments work best when the wood is kept moist during the diffusion period. Although generally considered to diffuse readily into green wood (Barnes and Murphy, 1995), borate may not be able to migrate through the larger dimension materials of less permeable species in the timeframes typical of imported wood products (Morrell, 1996a). In addition, borate treatments may not be effective against all life stages of insects and against some fungi.

Although chemical preservation often protects wood from insects and fungi, there are several limitations to their use. Preservative chemicals applied to wood surfaces generally penetrate only 1/8- to 1/4-inch, meaning that insects or pathogens in the wood's interior may not be reached. Also, the protective properties of chemical preservatives dissipate with time, which would require the treatment to be repeated. Some regulated wood articles would require treatments every few weeks, others may require treatments at 3- to 6-month intervals (Morrell, 1996). Applying the preservatives by pressure treatments increases the penetration of the preservative into the wood, but may also negatively alter the wood properties and decrease its commercial value.

F. Irradiation Treatment

Gamma irradiation is a nonchemical treatment method that has been used to sterilize or kill certain pest species. This method is mostly used to treat commodities other than wood. The irradiation source for such treatments generally is cobalt–60 or cesium–137. With irradiation, a target dose and exposure time that will destroy the target organisms are attempted. Fungi are more tolerant of irradiation than insects (Morrell, 1996a) because insects are more likely to be exposed to the rays. Electron beam irradiation is another form of radiation that has experimentally been used to treat wood. In electron beam irradiation, the radiation is generated by machine rather than from a radioactive isotope (USDA, APHIS, 1991).

In the SEIS for the importation of logs, lumber, and other unmanufactured wood articles (USDA, APHIS, 1998), the potential for irradiation to be used as treatment method was assessed. That document describes the APHIS proposal to use irradiation as an additional regulatory treatment method for phytosanitary certification of some agricultural commodities other than logs, lumber, or other unmanufactured wood articles. While APHIS proposed irradiation as a phytosanitary measure on foodstuffs in 61 FR 24433, May 15, 1996, it is not appropriate to infer efficacy data for logs and wood articles from available efficacy data on foodstuffs. Logs and other wood articles would require much higher radiation treatment dosages than foodstuffs require. The increase in dosages for treating wood articles would result in an increased human exposure to radiation and increased concerns regarding human health.

The SEIS (USDA, APHIS, 1998c) also states that a science panel consisting of scientists from APHIS, the Agricultural Research Service, and the U.S. Forest Service has been formed to establish a research protocol, review data, and oversee the research effort toward a generic dose

providing probit 9 (99.99683 percent) mortality for all organisms of concern in logs from Russia. The panel has yet to conclude its efforts, and no further recommendations have been developed for the use of irradiation as a pest mitigation method for use on logs, lumber, and other unmanufactured wood articles.

The use of irradiation as a treatment method for wood articles is limited mostly because the method has not been shown to be effective against a wide range of pests (UNEP, 1998) and there are few facilities where treatments could be done (USDA, APHIS, 1991). Yet another drawback to irradiation treatment is the inability to confirm that treatment has been made because irradiation does not visibly change wood's appearance (Morrell, 1996a).

G. Microwave Treatment

The use of microwaves as a treatment method involves exposing wood to ultra-high frequency magnetic fields, which elevates the temperature of any material containing moisture. When exposed to microwaves, dry wood has low dielectric properties and remains cool, but insects in the wood are heated to lethal temperatures. Fungi may not be as susceptible as insects are to microwaves, especially in wood with a high moisture content such as green wood (USDA, APHIS, 1991).

Among the concerns regarding the use of microwaves for wood treatment are the ability of microwaves to penetrate wood, the effectiveness of microwaves against fungi, and the ability to construct adequate treatment facilities given the large electrical power requirements for this method. Because extensive efficacy data is lacking and large treatment facilities are not available, the use of microwaves as a pest mitigation method for logs, lumber, and other unmanufactured wood articles is still considered experimental.

H. Integrated Pest Management

Integrated pest management (IPM) is a term that has been defined many different ways. One definition is that IPM is an approach to pest control that involves consideration of all practical chemical and nonchemical methods (UNEP, 1998). IPM programs use several techniques which, alone or in combination, result in the removal of the target pests. Each pest mitigation method described above has demonstrated at least a partial potential to control pests and could, therefore, be considered as part of an

inclusive IPM strategy for removing unwanted pests from unmanufactured wood articles.

IV. The Affected Environment

A. How is the affected environment defined in this analysis?

This chapter considers the affected environment as it applies to the cumulative effects from methyl bromide use. This chapter addresses potential cumulative effects on the environment that were not discussed in the EA previously prepared for the proposed rule.

B. How does methyl bromide cause cumulative effects on the environment?

Since 1991, four authoritative scientific panels have concluded that human-made methyl bromide contributes notably to the depletion of the ozone layer (WMO, 1992; UNEP, 1992; SORG, 1993; and WMO, 1994, as cited in Bell *et al.,* 1996). Every time methyl bromide is used, some percentage of it is released into the atmosphere. The percentage varies depending upon the use of the methyl bromide. For example, when used for quarantine and preshipment (QPS) purposes, which is the use related to the proposed action, the Methyl Bromide Technical Options Committee (MBTOC) estimates that between 69 and 79% of methyl bromide is released into the atmosphere (UNEP, MBTOC, 1998).

Methyl bromide is so destructive to ozone because it is a major source of bromine in the atmosphere, and bromine is one of the most potent destroyers of ozone (Bell *et al.*, 1996). The destruction of ozone in the atmosphere allows increased amounts of ultraviolet (UV) radiation to get through the atmosphere to the Earth's surface. As a consequence, the emissions associated with all ozone-depleting gases are the object of international regulation and monitoring, and under the terms of the Montreal Protocol, are targeted for elimination by 2005. It should be noted, however, that QPS use of methyl bromide, along with "critical" uses, are exempt from the terms of the phaseout of methyl bromide use (UNEP, MBTOC, 1998).

C. What are the possible effects from atmospheric ozone destruction?

According to the World Meteorological Organization (WMO), in 1998, depletion of the ozone layer reached about 6 to 7% during the summer/autumn seasons, and 12 to 13% during the winter/spring seasons

over Europe and North America, about a 1.5 to 2.5% increase over 1994 levels. This level of atmospheric ozone loss resulted in an estimated 8 to 15% increase in the amount of UV radiation reaching the surface of the Earth, with other influencing factors like clouds and pollution being constant (Bell *et al.*, 1996).

The World Health Organization (WHO) Environmental Effects Panel estimates that such additional radiation is expected to result in the following effects on the environment and human health (WHO, EEP, 1994, as cited in Bell *et al.,* 1996).

1. Impacts to Agriculture

- An increase in certain types of diseases in outdoor livestock will be consistent with this increase in exposure to UV radiation.
- Plant species that have not developed mechanisms for coping with increased UV radiation will experience negative effects on rates of growth and reproduction and in their ability to compete with nondesirable plants (weeds) for resources. Some crop species at risk are varieties of maize (corn), soybeans, oats, barley, sugar beets, rice, tomatoes, cucumbers, melons, cauliflower, and broccoli–all important human food plants.
- Increased levels of UV radiation will necessitate the development of UV-tolerant plants.
- Secondary plant effects, such as changes in plant structure or the timing of key stages of development, may be at least as important as direct plant UV damage.
- Although difficult to quantify, changes at the ecosystem level of organization will be important to both agriculture and to the management of the natural resources.

2. Impacts to Forestry

- Seedlings of half the conifer species are UV-sensitive, which affects their growth and the ability to compete for light, nutrients, and space.

3. Impacts to Fisheries

- Decreases predicted in fish stocks and other water organisms (because increased UV radiation affects reproduction and early development) will have serious implications on food resources, considering that humans consume 30% of their animal protein from the oceans.
- Fish farm harvests will be reduced.

4. Effects on Human Health

- A sustained 1% decrease in stratospheric ozone will result in an estimated 2% increase in the incidence of nonmelanoma skin cancer in the general population. This would pose an increased level of risk to outdoor workers and people participating in outdoor sports and recreation. To this and other related effects, children would be particularly vulnerable.

- A 1% increase in ozone depletion may be associated with a 0.6 to 0.8% increase in eye cataracts. Likewise, there would be an added level of risk to anyone spending a lot of time outdoors, particularly in the northern hemisphere.

- The possibility exists that the resulting suppression of certain immune responses may result in a decrease in the effectiveness of vaccination programs, a major concern considering the already serious epidemics facing much of the developing world, particularly in Africa and Asia.

5. Effects on the Physical Environment

- Increased UV radiation will result in both increased atmospheric production and destruction of pollutants. Some areas with current high concentrations of nitrous oxides will experience dangerous increases of ozone concentrations with attendant negative effects on human health, building surfaces, and plants.

- The integrity and useful life of many common polymers (plastics and rubbers) will be reduced by increased levels of UV radiation (Bell *et al.*, 1996).

D. Will these effects be the same everywhere?

Bromine does not impact the ozone layer equally around the globe. For various reasons related to the dynamics of the atmosphere and atmospheric chemistry, bromine appears to have a greater impact on the ozone layer in the northern hemisphere than in the southern hemisphere. In the southern hemisphere, bromine may account for 20 to 30% of springtime ozone depletion, while in the arctic (the northern hemisphere), the figure is closer to 50%.

The WHO panel reports that "The Canadian government has calculated that increased UV from ozone depletion has already increased the risk of skin cancer in the Canadian population by 7%," (circa, 1994). Also, "Actual UV exposure will vary from one geographic location to another, depending on factors such as cloud cover and air pollution." (Bell *et al.*, 1996).

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V. Alternatives

The CEQ NEPA implementing regulations (40 CFR 1502.14) require that an environmental analysis (EA) discuss the proposed action and the alternatives to the proposed action. Although the focus of this EIS is to consider the incremental contribution from methyl bromide use, which relates to both alternatives 3 and 4 in this chapter, the purpose of this discussion is to present the proposed action and its alternatives, and the alternatives eliminated from consideration and why they were eliminated. This proposal is similar in many respects to other proposals involving use of methyl bromide; understanding this proposal will lend perspective to concerns associated with cumulative effects of methyl bromide use.

A. What is the proposed action?

APHIS is proposing to almost entirely remove the exemption for unmanufactured wood articles imported from the Mexican border states for a more consistent regulation of those articles from all states of Mexico, and because of this, to make two main changes to 7 CFR 319.40-5. The changes are proposed to eliminate the potential pest risk that could result from the importation of unmanufactured wood articles from Mexico.

First, APHIS proposes to amend 7 CFR 319.40–5 to add a treatment option for pine and fir lumber from Mexico. That option is to allow importation of standard industry cut lumber made from pine or fir species originating in Mexico if, prior to arrival, that lumber is 100% free of bark and fumigated with methyl bromide in accordance with schedule T312 in the PPQ Treatment Manual (USDA, APHIS, 1998a), incorporated by reference at 7 CFR 300.1, or with an initial methyl bromide concentration of at least 240 g/m^3 with exposure and concentration levels adequate to provide a concentration-time product of at least 17,280 gram-hours calculated on the initial methyl bromide concentration.

Second, APHIS proposes to amend the regulation to add a treatment option for the importation of railroad ties originating from Mexico. This option would permit those ties to be imported if they are 100% free of bark, no thicker than 8 inches, and fumigated with methyl bromide in accordance with the above schedule specified for lumber.

B. What are the alternatives to the proposed action?

The following alternatives describe various actions to reduce pest risks. These alternatives range from taking no action, to various methods that could be used to treat unmanufactured wood articles, to prohibiting the importation of unmanufactured wood articles from Mexico.

1. No Action

The no action alternative would be to leave 7 CFR 319 unchanged. Under the existing regulation, unmanufactured wood articles from states in Mexico not adjacent to the U.S. border can be imported into the United States only if those articles have been (1) kiln dried or heat treated before importation or (2) kiln dried or heat treated within 30 days after release from the port of first arrival in the United States at a facility operating under a compliance agreement with APHIS. The existing regulation also permits importation of railroad ties from Mexican states that are not next to the U.S. border if the ties are completely free of bark and accompanied by an importer document stating that the railroad ties will be pressure treated within 30 days following the date of importation. The no action alternative would leave this regulation unchanged.

Also under the current regulation, unmanufactured wood articles (other than regulated articles of certain subfamilies of the botanical family Rutaceae) from states of Mexico adjacent to the United States are allowed entry under a general permit. The articles, however, must be accompanied by an importer document stating that the articles are derived from trees harvested in, and have never been moved outside, states of Mexico adjacent to the United States. The articles also are subject to inspection and other requirements in 7 CFR 319.40–9.

2. Remove the Mexican Border-states Exemption

This alternative would require that regulated unmanufactured wood articles from Mexican border states be held to the same import requirements as similar articles from non-border Mexican states or any other country except Canada. Under this alternative, the amount of unmanufactured wood articles undergoing treatments would increase.

3. Allow Methyl Bromide as a Treatment Option

Currently, kiln drying or heat treatment are the only treatment options for pine and fir lumber entering the United States from Mexico (lumber entering from a Mexican state bordering the United States is exempted from treatment). Railroad ties must be completely debarked and pressure treated within 30 days of the date of importation. This alternative, allow methyl bromide as a treatment option, would allow railroad ties (no thicker than 8 inches) and pine and fir lumber from any state of Mexico to be imported to the United States if, prior to arrival, those articles are 100% free of bark and fumigated with methyl bromide in accordance with

schedule T312 in the PPQ Treatment Manual (USDA, APHIS, 1998a), or with an initial methyl bromide concentration of at least 240 g/m^3 with exposure and concentration levels adequate to provide a concentration-time product of at least 17,280 gram-hours calculated on the initial methyl bromide concentration. Methyl bromide use would increase under this alternative.

4. Adopt the Proposed Rule (Preferred Alternative)

This alternative, adopt the proposed rule, is the preferred alternative. It combines alternatives 2 and 3 and would amend 7 CFR 319.40–3 to remove the Mexican border-states exemption, thereby requiring pressure treatment, debarking, and heat treatment or methyl bromide fumigation of certain unmanufactured wood articles from all states of Mexico. Both heat treatment and methyl bromide use would increase under this alternative.

5. Prohibit Unmanufactured Wood Articles From Mexico

This alternative would ban all unmanufactured wood articles from Mexico from entering the United States, including those articles that currently are imported under a general permit or in accordance with the current regulation under 7 CFR 319.40. Under this alternative, heat treatments would decrease and there would be no use of methyl bromide.

C. Were any treatment options or alternatives eliminated from detailed consideration, and if so, why?

APHIS' Center for Plant Health and Science Technology evaluates new wood pest mitigation measures. Import requirements for unmanufactured wood articles are subject to periodic review as new technologies are developed and efficacy data are obtained for those technologies. In this document, alternatives involving fumigants other than methyl bromide, irradiation, microwaves, and IPM could potentially have been developed. Chapter 2 provides a description of these pest mitigation methods. However, these potential treatment options and alternatives will not be considered for the following reasons.

The fumigants phosphine, sulfuryl fluoride, carbonyl sulphide, and methyl iodide were not considered as options for treating unmanufactured wood articles entering the United States from Mexico because information is generally lacking regarding the effectiveness of these fumigants against the wide range of pests that may be present in the wood articles. Also, the ability of some of these fumigants to penetrate deeply enough into wood to reach all pests has not been demonstrated. Treatment cost was another

consideration that precluded the development of some fumigants, such as sulfuryl fluoride, into an alternative.

The use of the chemical borate as a wood preservative was also not developed into an alternative. The reasons are because data are lacking regarding the efficacy of borate against a wide range of pests and it has not been demonstrated that borate will penetrate wood materials with large dimensions without extended treatment schedules. In general, preservatives are more useful in the long-term prevention of wood from rot and decay than in the rapid elimination of pests and pathogens for quarantine purposes.

Irradiation and microwave treatment technologies have not been developed to the point where large commercial shipments can reliably and effectively be treated. Also, facilities would need to be constructed to administer irradiation or microwave treatments. Therefore, those technologies were not developed into alternatives, and much more research would be required before these technologies could become accepted quarantine treatments.

IPM is another potential alternative that has been eliminated from detailed consideration. In developing an IPM program, consideration is given to all practical chemical and nonchemical controls and strategies (UNEP, 1998). While both the existing and the proposed quarantine programs for unmanufactured wood articles from Mexico are multi-faceted—relying on a combination of mitigation methods and visual inspections—the quarantine programs do not allow for all possible strategies to be used. Therefore, the approach to mitigating the risk of pest introductions on wood articles from Mexico does not fit the strict definition of a true IPM program.

VI. Environmental Consequences

According to the CEQ NEPA implementing regulations, the environm1ental analysis must discuss the environmental impacts of the proposed action, including any adverse environmental effects which cannot be avoided if the proposed action is implemented, direct and indirect effects and their significances, and a comparison of the alternatives (40 CFR 1502.18). This chapter discusses the environmental consequences related to the proposed action and the alternatives to the proposed action as presented in the "Proposed Rule for Importation of Wood Articles From Mexico, Environmental Assessment, December 1998," the EA previously prepared for the proposed action. The potential environmental consequences and relative extent of pest exclusion of each alternative are also compared and summarized. Direct impacts on human health from methyl bromide use are discussed for the alternatives that include such use. Indirect effects on the environment are related to the cumulative effects from methyl bromide use. Cumulative effects and significance on the environment are not discussed here. The analysis of environmental impact from the use of methyl bromide, as it relates to the incremental contribution to the overall cumulative impact on the environment, is presented in chapter 7, The Cumulative Effects Analysis.

A. Alternative 1: No Action

Under the no action alternative, the regulation 7 CFR 319.40 would be unchanged, and the pest risk potential associated with importing unmanufactured wood articles into the United States from Mexico would remain. Initially, the areas most likely to be affected by taking no action would be those areas in the United States where the potential for pest introductions is greatest and where ecological habitats are similar on both sides of the U.S./Mexico border. Yet, the possibility exists for pine and fir logs and lumber from Mexico to be imported to most regions in the United States; thus, forest resources throughout the United States are at risk from pest establishment (USDA, FS, 1998).

There are more than 295 million hectares of forest resources in the United States ranging from sparse noncommercial forests in the interior West, to the highly productive forests of the Pacific Coast and Southern United States. Forest types range from pure hardwood forests to multi-species mixtures to extensive natural stands of conifers (USDA, FS, 1990). Softwoods are the majority (approximately 98%) of the wood products transported from the U.S. border states of Mexico. These imported

softwoods are primarily pines and firs. The pests of softwood trees are generally specific to their preferred hosts and a few closely related plant species. Therefore, the greatest potential for pest risk to U.S. forests from importation of wood products from Mexico is to the pine and other coniferous trees. Besides the natural forest resources, there is a sizable industry devoted to production of ornamentals and Christmas trees that could be affected by introduced pests. Trees having a limited range or genetic variability and trees in urban environments would also be impacted should a forest pest enter the United States from Mexico (USDA, FS, 1998). Some scientists have written to APHIS stating that plant pests from Mexico may have already become established in the United States. A more detailed description of the forest resources in the United States can be found in USDA publications (USDA, FS, 1990, and USDA, APHIS, 1994).

In addition to the physical loss of trees, other severe environmental consequences would be expected should U.S. forest and tree resources be diminished by pests. The quality of the global environment is dependent upon healthy forests and trees which have a tremendous influence on environmental parameters such as climate, biological diversity, and the stratospheric ozone layer. The environmental consequences of pests entering the United States on unmanufactured wood articles and the potential effect on forest resources also have been analyzed in an EIS for importation of logs, lumber, and other unmanufactured wood articles into the United States (USDA, APHIS, 1994) and in a supplement to that EIS (USDA, APHIS, 1998c). Those documents and their findings are incorporated by reference as part of this document.

B. Alternative 2: Remove the Mexican Border- states Exemption

Under this alternative, unmanufactured wood articles imported from Mexican states that border the United States would be required to undergo treatments according to the same import requirements currently in effect for the rest of Mexico. A general permit would not be issued for unmanufactured wood articles from Mexican border states, except for commercial and non-commercial shipments of mesquite wood for cooking and firewood and small, noncommercial packages of unmanufactured wood for personal cooking or personal medicinal uses because these exemptions present a negligible pest risk. Other unmanufactured wood products, such as pine lumber, imported into the United States from the Mexican border states that are currently exempt from treatment would be required, under this alternative, to undergo treatments and special handling consistent with

7 CFR 319.40 for importing wood articles from all other countries except Canada. Regulated articles of the subfamilies Aurantioideae, Rutoideae, and Toddalioideae of the botanical family Rutaceae from Mexican border states would not be affected by this alternative since, under the current regulations, a general permit could not be issued for such articles.

This alternative would reduce the potential for pest introductions from those untreated, unmanufactured wood articles that currently enter the United States from Mexican border states under a general permit. Should inspections reveal actionable pests on unmanufactured wood articles from Mexican border states, the shipments may be required to be treated or may be refused entry into the United States.

Approximately 34% (which is roughly 100,000 cubic meters (m^3)) of all the unmanufactured wood articles imported from Mexico originates in the border states (USDA, APHIS, 1998d), with pine and fir lumber the most common wood imports from the border states. Some of the pine and fir lumber from Mexican border states is kiln dried in Mexico even though that lumber could currently enter the United States without treatment (under a general permit). This is because kiln dried lumber has many advantages over green lumber for producers and consumers alike (USDA, FS, 1991), and kiln dried lumber has a higher value than untreated lumber. Therefore, the amount of green lumber—the type of lumber that would require treatment under this alternative—will be somewhat less than the total 100,000 m^3 of unmanufactured wood articles originating from the border states.

Heat treatments are mostly done without adverse environmental impacts. Should there be an increase in the demand for heat treatments, there would then be an increase in the use of fossil fuel to heat kilns or generate electricity that is then consumed in other heat treatment processes. Yet, the increase in fossil fuel consumption for heat treating wood would be relatively minor, and the environmental effects associated with kiln operation and electricity generation would also be minor and localized to areas where kilns and electric power generating stations are located.

C. Alternative 3: Allow Methyl Bromide as a Treatment Option

Under this alternative, pine and fir lumber and railroad ties could be imported into the United States from any state in Mexico if, prior to arrival, the wood articles are 100% free of bark and fumigated with methyl bromide in accordance with schedule T312 in PPQ Treatment Manual

(USDA, APHIS, 1998a) or with an initial methyl bromide concentration of at least 240 g/m^3 with exposure and concentration levels adequate to provide a concentration-time product of at least 17,280 gram-hours calculated on the initial methyl bromide concentration. These treatments would effectively reduce pests that have been identified as threats to U.S. forest resources (USDA, FS, 1998).

Currently the only treatment options for pine and fir lumber entering the United States from Mexico (unless the lumber is entering from a Mexican state bordering the United States) are (1) kiln drying or heat treatment prior to importation or (2) kiln drying or heat treatment within 30 days after release from the port of first arrival in the United States at a facility operating under a compliance agreement with APHIS. Railroad ties may be imported if completely free of bark and accompanied by an importer document stating that the ties will be pressure treated within 30 days following the date of importation.

Under this alternative, the potential for methyl bromide use increases because fumigation would be an option to treat unmanufactured wood articles (e.g., lumber and railroad ties) from Mexico in accordance with schedule T312 of the Treatment Manual or with an initial methyl bromide concentration of at least 240 g/m^3 with exposure and concentration levels adequate to provide a concentration-time product of at least 17,280 gram-hours calculated on the initial methyl bromide concentration. After the fumigation period, the methyl bromide in the chamber is vented to the atmosphere. The volume of unmanufactured wood articles imported into the United States from Mexico in 1997 was approximately 300,000 m^3 (USDA, FAS, 1998). Based on this volume, the 1998 EA for the proposed rule (USDA, APHIS, 1998b) estimated that the amount of methyl bromide required to fumigate wood articles was 72 MT. This figure was based on potentially fumigating every unmanufactured wood article (approximately 300,000 m^3) imported into the United States from all of Mexico. However, a USDA report (USDA, FAS, 1998) calculated that approximately 34% (roughly 100,000 m^3) of unmanufactured wood articles from Mexico were imported to the United States from the Mexican border states. Based on this information, 24 MT is a more likely estimate of methyl bromide use for the unmanufactured wood articles from the Mexican border states.

Despite the fact that fumigation is much less expensive than kiln drying (USDA, APHIS, 1998b), the amount of methyl bromide that would be used under this alternative is probably considerably less than 24 MT because kiln dried lumber is preferred for commercial purposes. In most instances, the decision pine and fir lumber exporters in Mexico will face is

whether to heat treat the lumber in Mexico, or to fumigate the lumber with methyl bromide to meet the import requirement and then have the lumber kiln dried after arrival in the United States. Because APHIS cannot accurately predict the amount of lumber that will be fumigated with methyl bromide, the maximum amount of 24 MT will be used in further discussions.

The environmental consequences of this alternative relate to the effect of methyl bromide on the ozone layer in the stratosphere and subsequent adverse effects on the environment. The stratosphere is that portion of the atmosphere that extends from about 7 to 30 miles above the Earth's surface. The ozone layer in the stratosphere serves to protect the Earth's surface from excessive ultraviolet radiation, preventing the potential adverse effects from excessive exposure on humans, animals, plants, and other components of ecological systems and the environment. The methyl bromide that reaches the stratosphere reacts chemically to release bromine atoms which combine with other atoms to form ozone-reactive compounds such as bromine monoxide. These ozone-reactive compounds can eliminate large amounts of ozone from the stratosphere before degrading to nonreactive compounds. The environmental effects contributed from methyl bromide use are discussed in detail in chapter 7.

Methyl bromide is a widely used fumigant in regulatory quarantine treatments for many agricultural commodities. The proposed program use for treatment of unmanufactured wood articles from Mexico would only constitute a small part of the much larger use pattern for methyl bromide. Regulatory quarantine fumigations required by APHIS have specific operational procedures and safety precautions described in the PPQ Treatment Manual (USDA, APHIS, 1998a). These procedures are designed to prevent adverse effects to personnel involved in the fumigation and to preclude adverse effects to the public, local wildlife, and environmental quality. The required use of an impervious surface in the floor of the fumigation chamber or under the tarpaulin stack prevents direct contamination of soil or groundwater. A 30-foot barrier zone placed around the fumigation stack is designed to prevent entry of unauthorized persons or wildlife during fumigation and aeration. Access within the stack barrier zone during regulatory treatments is limited to fumigation personnel wearing self-contained breathing apparatus. Use of this protective gear in this zone is required until the ambient air concentrations of methyl bromide decrease to less than 5 parts per million (ppm) during aeration. These safety precautions minimize exposure of program personnel to methyl bromide and limit high exposures of wildlife to those species present in the fumigated commodity. The rapid dispersion of methyl bromide during aeration minimizes exposure to other wildlife except any sessile species

(some invertebrates) that occur directly below the aeration vent. Most fumigation facilities and stacks are placed on physically disturbed sites that are not preferred habitat for wildlife.

Human health effects from methyl bromide are an important consideration. The potential adverse effects from methyl bromide exposure are described in detail in a chemical background statement prepared for APHIS (LAI, 1992). That document is incorporated by reference into this EIS and the more important information is summarized here. Methyl bromide gas and liquid are acutely toxic to humans. The median lethal inhalation dose of methyl bromide to rats for a 30-minute exposure is 2,700 ppm. Inhalation is the primary route of exposure. Exposure to skin from the liquid fumigant may cause irritation, burns, itching, redness, and blisters, but adherence to the mandatory APHIS safety precautions precludes exposure to these effects. Most inhaled methyl bromide is readily eliminated by respiration, but measurable amounts can be detected from urine following high exposures. The rapid elimination of methyl bromide makes prevention of acute short-term exposures the primary concern.

The actual biochemical mechanisms responsible for intoxication from methyl bromide exposure are not certain. Fumigants, such as methyl bromide, displace oxygen required for breathing. Methyl bromide has been shown to react with sulfhydryl enzymes causing irreversible inhibition, but this has not been associated with intoxication (Hayes and Laws, 1991). The most likely acute health effects from fumigations relate to injury to the lungs and irritation of mucus membranes, eyes, and skin. Proper protective gear and adherence to APHIS safety precautions prevent these effects. Typical symptoms of acute exposure are headache, dizziness, visual problems, gastrointestinal disturbances, and respiratory problems. The reference concentration (RfC) derived by EPA for general population exposure to methyl bromide was determined to be 0.48 mg/m^3 (EPA, 1992). The American Conference of Governmental Industrial Hygienists (ACGIH) has established exposure standards (Threshold Limit Value) of 5 ppm (20 mg/m^3) to protect workers against adverse neurotoxic and pulmonary effects (ACGIH, 1990). Chronic and high exposures to methyl bromide have been shown to cause damage to the nervous system, kidneys, liver, adrenal glands, heart, testis, and brain. Exposure to high level concentrations may result in convulsions, coma, and death. Proper adherence to required safety procedures ensures that none of these potential adverse effects occur.

D. Alternative 4: Adopt the Proposed Rule (Combine Alternatives 2 and 3) (Preferred Alternative)

This alternative combines the actions described in alternatives 2 and 3. This alternative would make the importation requirements for unmanufactured wood articles uniform within all states of Mexico. Heat treatment of pine and fir lumber and pressure treatment of railroad ties, as long as they are debarked, would remain as available treatment options. This alternative also would allow methyl bromide fumigation of pine and fir lumber and railroad ties, provided they are debarked, before they are imported from Mexico to the United States. The environmental effects associated with both alternatives 2 and 3 would occur under alternative 4.

E. Alternative 5: Prohibit Unmanufactured Wood Articles From Mexico

Prohibiting the importation of all unmanufactured wood articles from Mexico into the United States would eliminate the pest risks associated with those articles. However, other alternatives that are less restrictive of trade also can reduce the risk of forest pest establishment to negligible levels because of available effective mitigation measures. According to international treaties of which it is a party, the United States must justify trade restrictions. Under these circumstances, the United States is obligated to choose phytosanitary measures that are (1) effective and (2) the least restrictive of trade. However, under this alternative, there would be no options for treatment and/or certification that imports to the United States from Mexico are pest-free. This would reduce the number of wood product treatments and decrease the need for inspections if the alternative was implemented and followed in good faith.

The potential environmental consequences of this alternative are few. From an economic standpoint, the coniferous lumber exports from Mexico to the United States, which were valued at $97.6 million in 1997 (USDA, APHIS, 1998d), would be halted under this alternative. Markets in other countries would be expected to continue to import wood from Mexico and would probably purchase any wood no longer available to the U.S. market. The total amount of cutting and harvesting wood from forests in Mexico is unlikely to be affected by U.S. regulations. Should there be no lumber imported from Mexico, imports from other countries may increase, but only slightly, given the relatively small volume of lumber imported from Mexico. Under this alternative, the only possible pathways for pest entry could occur from natural events, illegal movement of unmanufactured

wood articles carrying pests, or movement of commodities not regulated under 7 CFR 319.

F. Comparison of the Alternatives

Alternatives to the proposed changes to 7 CFR 319.40 have been presented above. Each of the alternatives represents various actions that can be taken to reduce pest risks associated with importing unmanufactured wood articles from Mexico into the United States. Table 6–1 lists the alternatives, summarizes the potential environmental consequences, and provides the relative extent to which each alternative would exclude pests.

From the perspective of environmental consequences associated with the proposed treatments specified in the proposed rule, alternative 5 would be the alternative with the least environmental consequences, and alternative 4 would have the most environmental consequences because alternative 4 combines alternatives 2 and 3.

From the perspective of the ability to exclude pests associated with unmanufactured wood articles, alternative 1 would be the least effective and alternative 5 would be the most effective. Alternatives 2 and 4 would reduce pest risks associated with specific pathways because the general permit will no longer be issued for most unmanufactured wood articles.

The goal and the reason for proposing new mitigation measures against forest pests on unmanufactured wood articles from Mexico is to reduce the potential for pest introductions to a negligible level. It is realized that any humanly devised system can be inadvertently circumvented by natural forces and human error, or advertently circumvented by illegal actions such as smuggling. Therefore, the actual amount that the pest risk will be reduced by applying pest mitigation methods is likely to be high, but may be less than 100%.

Table 6–1. Comparison of the Alternatives

Alternative	Potential Environmental Consequences	Relative Extent of Pest Exclusion
1. Take no action (current status)	Pest infestation of U.S. forest resources	Less than alternatives 2, 3, 4, or 5
2. Remove the Mexican border-states exemption	Increase in wood treatments from border states only	More than alternative 1 or 3, less than alternative 5, same as alternative 4
3. Allow methyl bromide treatment option for pine and fir lumber and railroad ties	Increase in methyl bromide use by approximately 24 MT[1]	Same as alternative 1, less than alternative 2,4, or 5
4. Adopt the proposed rule; combine alternatives 2 and 3 (preferred alternative)	Increase in wood treatments and methyl bromide use	More than alternatives 1 or 3, less than alternative 5, same as alternative 2
5. Prohibit unmanufactured wood articles from Mexico	Few, if any	More than alternatives 1, 2, 3, and 4

[1] This figure is explained previously in this chapter.

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VII. Methyl Bromide Cumulative Effects Analysis

A. Introduction

This chapter begins with a definition of cumulative impact (effect), states the cumulative effect issue of concern associated with this EIS, and briefly identifies the difficulties of analyzing cumulative effects. An overview of methyl bromide consumption is provided, summarizing worldwide, U.S., and quarantine and preshipment (QPS) uses. The summary of consumption also discusses methyl bromide uses, including the decreased use anticipated in the future from methyl bromide's phaseout of the major current uses. The chapter considers the potential increase of methyl bromide use from the proposed rule and other uses—past, present, and future—that could contribute to methyl bromide's cumulative effect on the environment. The effects on the ozone layer from ozone-depleting chemicals, including methyl bromide, are summarized. The chapter concludes with discussion about APHIS opportunities to reduce or eliminate reliance on methyl bromide and measures to promote restoration of the ozone layer.

B. What are cumulative effects?

The Council on Environmental Quality (CEQ) NEPA implementing regulations (40 CFR 1500–1508) define cumulative effects as:

> ". . . the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions . . ." (40 CFR 1508.7).

Individual actions occurring at separate times and locations and occurring over a period of time can contribute collectively to result in cumulative effect on the environment. Cumulative effects can occur as adverse or beneficial impacts on resources (entities such as air quality or a trout fishery), ecosystems (local or landscape-level units where nature and humans interact), and human communities (sociocultural settings that affect the quality of life) (CEQ, 1997).

What is the potential cumulative effect issue associated with the proposed action (the proposed rule change) in this EIS?

With regard to this EIS, the cumulative effect of concern is the incremental contribution from the use of methyl bromide as a treatment for unmanufactured wood articles from Mexico when added to other methyl bromide uses—past, present, and future—no matter what agencies (Federal, State, or local) or persons (farmers or producers) contribute to these uses.

APHIS regulations require that some commodities, or sometimes items associated with the commodities, be treated to reduce the pest risk associated with them; and sometimes methyl bromide is used because it is the most efficacious treatment available for the associated pest risk. The concern with methyl bromide is its contribution as an ozone-depleting substance. Degradation of the ozone layer, which protects the Earth's resources from excessive exposure to ultraviolet (UV) radiation, causes concern for human and animal health, terrestrial and aquatic ecosystems, biogeochemical cycles, air quality, climate, and natural and man-made materials.

Are there geographic concerns related to cumulative effect from methyl bromide uses?

With regard to the cumulative impact from methyl bromide, there are no definitive geographic boundaries. Various locations of the Earth could be affected by loss of the protective ozone layer from ozone-depleting chemicals, including methyl bromide. In defining the areas affected, the World Meteorological Organization (WMO) reported that losses of stratospheric ozone relative to values in the 1970's were 50% in the Antarctic spring (the ozone hole), about 15% in the Arctic spring, about 6% in the Northern Hemisphere mid latitudes in winter and spring, about 3% at Northern Hemisphere mid latitudes in summer and fall, and about 5% at Southern Hemisphere mid latitudes year-round. The WMO further stated that no significant ozone trend has been found in the equatorial regions (WMO, 1998, as cited in UNEP, 1998). These are the geographic areas of concern, although ozone depletion affects the environment's resources globally.

Difficulties in Determining Cumulative Effects

Obtaining data on cumulative effects is often the biggest challenge. Some of the challenges in analyzing cumulative effects are confirming the

resources and actions to be included; gathering information to identify cause-and-effect relationships for resources, ecosystems, and human communities; and determining the magnitude and significance of cumulative effects are. For this analysis, outside sources of information using the best data available have been applied to determining the cumulative effects on the environment from ozone depletion.

C. Methyl Bromide and Its Uses

Methyl bromide is one of the oldest and most widely used fumigants for phytosanitary purposes. Methyl bromide is a highly effective fumigant used to control insects, nematodes, weeds, and pathogens in more than 100 crops, in forest and ornamental nurseries, and in wood products. Its primary uses are for soil fumigation, postharvest protection, and quarantine treatments (USDA, ARS, 2000).

The United Nations Environment Programme (UNEP), Methyl Bromide Technical Options Committee (MBTOC), calculated global 1996 methyl bromide consumption at 63,960 MT, the largest percentage (38%) of which occurs in North America. Current figures are assumed to be slightly higher. The 1996 data were used because this data set is the most complete and current available. The global use data for 1996 are illustrated in the figure below.

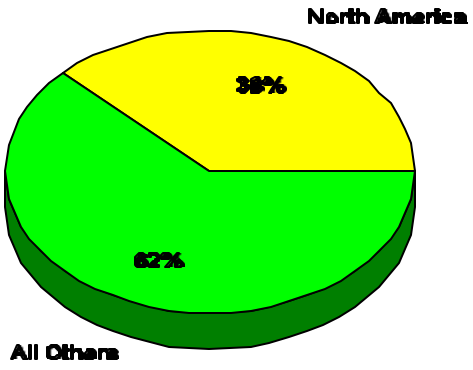

Fig. 7-1. Reported global methyl bromide consumption in 1996. Source: Thomas, 1999.

The use patterns for methyl bromide include preplant soil fumigations, structural fumigations, quarantine and preshipment (QPS) fumigations, and manufacturing use as a chemical intermediate. Quarantine applications, as defined under the Montreal Protocol, are treatments intended to prevent the introduction, establishment, and/or spread of quarantine pests, or to ensure their official control. Preshipment applications are defined as treatments applied immediately preceding and in relation to export and that are required to meet the phytosanitary or sanitary requirements of the importing country, or those imposed by the exporting country. Preplant and structural applications of methyl bromide are regulated under the Montreal Protocol. Phytosanitary fumigations include treatment of durable goods, perishable goods, and other commodities. Phytosanitary uses of methyl bromide have been classified as QPS applications under the Montreal Protocol and are not regulated thereunder.

The figure below illustrates the relative contribution of different use patterns worldwide to the total use of methyl bromide. Of the 63,960 MT of methyl bromide used in 1996, QPS accounted for approximately 28% of all uses.

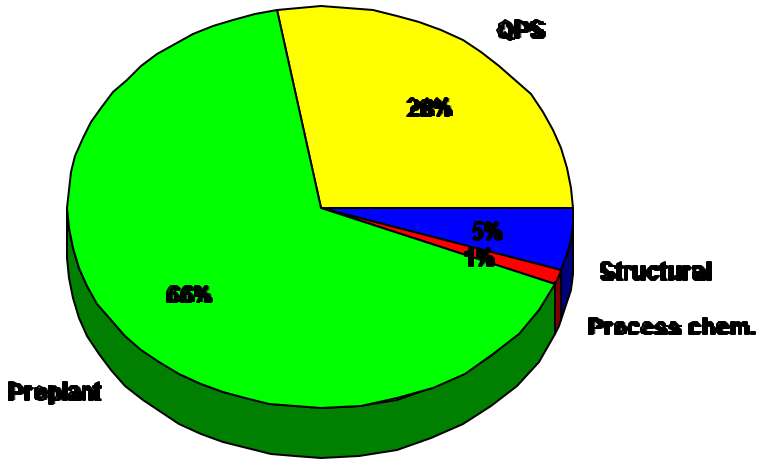

Fig. 7-2. Global methyl bromide end use. Source: Thomas, 1999.

The future use of methyl bromide is expected to change as regulated through provisions of the Montreal Protocol. QPS applications are critical uses not regulated under the Montreal Protocol; however, the Protocol promotes the use of alternative applications to methyl bromide treatment.

Uses other than QPS in developed countries are required to be phased out over the next few years with 100% reduction in 2005. The Montreal Protocol allows developing countries to continue use of methyl bromide with a more gradual reduction. As these other uses are phased out, the relative percentage of the total use of methyl bromide for QPS applications will increase. The recent increases in world trade have resulted in greater demand for QPS applications even though the demand has not resulted in an overall increased usage. The purpose of these QPS applications is to prevent pest risk, and most high risk commodities are already being treated. Increases in QPS applications are expected to occur commensurate with increases in world trade of regulated commodities. It is expected that some alternate treatments will be developed to replace methyl bromide fumigation for some commodities, but this potential reduction is expected to be a gradual process. It is also expected that future risk assessments may show that pest risk for some commodities from some countries will require methyl bromide fumigation, but these potential increases would be expected to occur infrequently.

Figure 7-3 below helps to place these overall global trends in perspective to the U.S. contribution. The United States uses 87% of the total North American use (38% of the world use) of methyl bromide.

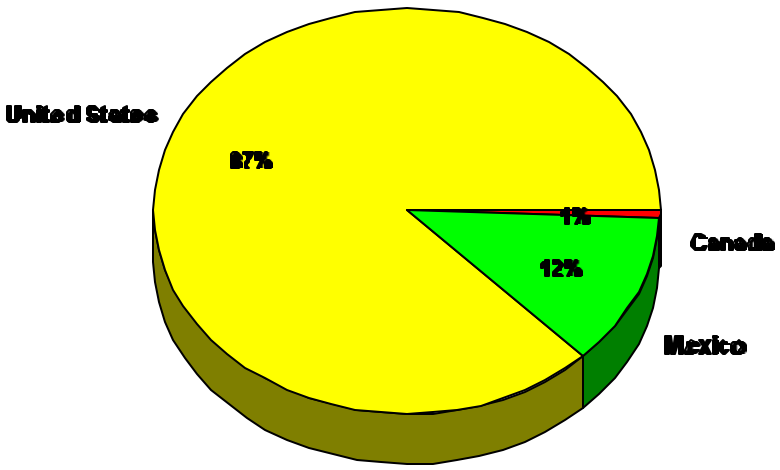

Fig. 7-3. Reported North American methyl bromide consumption in 1996.
Source: Thomas, 1999.

A breakdown of the U.S. usage of methyl bromide is illustrated in figure 7-4. The largest use pattern is for preplant applications and the smallest is for postharvest (QPS) applications.

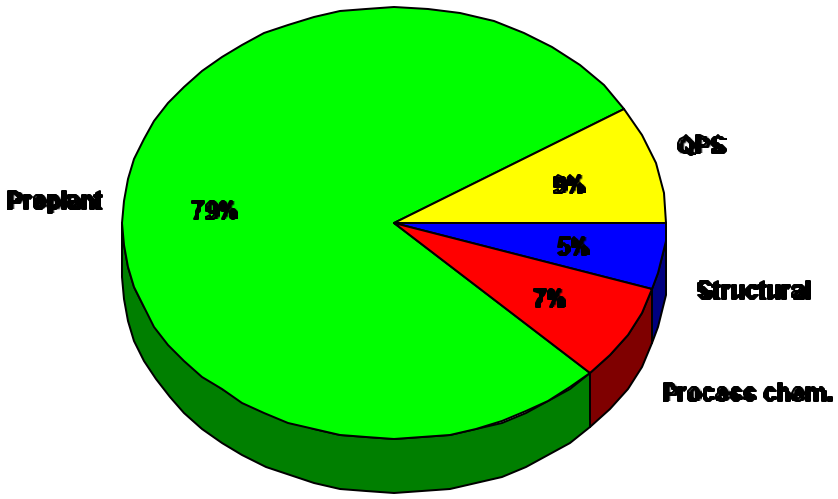

Fig. 7-4. United States methyl bromide end use. Source: Thomas, 1999.

As a signatory party to the Montreal Protocol, the United States is subject to the reduction requirements in total methyl bromide consumption. Adherence to these phaseout requirements of the Montreal Protocol will result in use patterns limited to restricted manufacturing uses and QPS applications in 2005.

The QPS applications in the United States exempted under the Montreal Protocol are regulated by APHIS. Therefore, any future QPS treatments will depend upon how APHIS decides to apply methyl bromide fumigations to eliminate pest risk in regulated commodities. Most foreign commodities with high pest risk are already regulated and APHIS treatment schedules are more likely to add future treatments other than methyl bromide for these commodities. There are, however, some commodities with high pest risks that are either not regulated (i.e., pest risk not yet identified or import demand and frequency for the commodity does not exceed threshold for high pest risk) or not presently allowed entry to the United States. Entry of presently prohibited commodities may be allowed if potential pest risk can be eliminated through treatments or other quarantine practices. Methyl bromide fumigation is often a phytosanitary treatment that must be considered.

The selection of a given phytosanitary treatment by APHIS depends upon the treatment's ability to eliminate pest risk effectively and comply with applicable provisions of the IPPC and WTO. The Agreement on the Application of Sanitary and Phytosanitary measures of the WTO stipulates that phytosanitary measures (regulations) not be more trade-restrictive than required to achieve their appropriate level of sanitary or phytosanitary protection, taking into account technical and economic feasibility. Such measures are defined as not more trade-restrictive than required unless there is another measure, reasonably available taking into account technical and economic feasibility, that achieves the appropriate level of sanitary or phytosanitary protection and is significantly less restrictive to trade. There are trade situations where phytosanitary measures other than methyl bromide treatment are available for specific commodities; however, logistical considerations and/or the high cost of implementation make these measures more restrictive to trade than methyl bromide fumigation. Adherence by APHIS to the WTO agreement requires some flexibility in selection of phytosanitary measures. Availability of cost-effective alternative phytosanitary measures that are not more trade-restrictive than methyl bromide fumigation is often limited for regulated commodities. Therefore, methyl bromide fumigation as a phytosanitary treatment may be required for some regulated commodities.

Based upon the above information, the cumulative impact of methyl bromide will decrease as use patterns are phased out. Phytosanitary uses of methyl bromide will constitute a larger percentage of the total usage, but this larger percentage does not necessarily represent an increase in QPS usage. As stated previously, most foreign commodities with high pest risk are already regulated and most new regulatory treatments with methyl bromide are expected to be few, with negligible increases in use. Some present uses are expected to be replaced by other acceptable phytosanitary measures. The population diversification of the United States has resulted in increasing trade requests for specific commodities. Some of these commodities pose high pest risk and may need fumigations. The quantities of most new commodities requested for import to the United States are small, and quantities of methyl bromide for fumigation would be minimal. The present rule for unmanufactured wood articles from Mexico involves regulation with comparable consequences.

There are, however, some pest risks that could involve larger and more frequent fumigations with methyl bromide. The most noteworthy regulations relate to recent decisions regarding pest risks from solid wood packing materials (SWPM). An environmental assessment (EA) was prepared for the proposed interim rule on SWPM from China (USDA, APHIS, 1998e). This action was projected to result in a potential increase

of 1.6 to 19% in the annual release of methyl bromide to the atmosphere. A proposed rule regarding worldwide regulation of SWPM is being considered by APHIS and this action could considerably increase consumption of methyl bromide. Although the projected potential use involves substantial increases in QPS applications, these projected numbers do not include alternate phytosanitary measures and potential use of recapture systems to recover methyl bromide.

D. Contribution of the Proposed Rule to Cumulative Impact

1. The Proposed Rule

Most wood imported from Mexico is heat treated by suppliers because the market value of heat treated wood is higher than untreated wood. Although some suppliers may select to fumigate unmanufactured wood articles with methyl bromide if the proposed rule is adopted, many suppliers most likely would heat treat the wood for higher profits. Approximately 34% (roughly 100,000 cubic meters (m^3)) of all the unmanufactured wood articles imported from Mexico originated in the U.S. border states in 1997 (USDA, FAS, 1998). The remaining two-thirds of unmanufactured wood articles from Mexico (nonborder states) currently are heat treated. Suppliers base their decisions to treat wood articles on profit, and the suppliers currently applying heat treatment most likely would not change to methyl bromide fumigation because this would result in smaller profit margins. Therefore, under the proposed rule, heat treatment would remain their preference. It is less certain what treatment measure will be preferred by suppliers in the Mexican border states. The calculation reflects a realistic "worst case" scenario for methyl bromide use under the proposed rule because it presumes fumigation with methyl bromide of the entire amount of unmanufactured wood articles imported to the United States in 1997 from border states of Mexico, 100,000 m^3, (USDA, FAS, 1998). Based on this figure, the amount of methyl bromide required to fumigate all of the unmanufactured wood articles imported to the United States from the U.S. border states of Mexico in 1 year would be 24 MT, shown as follows.

Amount of unmanufactured wood articles imported from the Mexico/U.S. border states in 1996 = 100,000 m^3
100,000 cubic meters (m^3) = 3,531,467 cubic feet (ft^3)
Maximum treatment rate (T312 schedule) = 15 lbs per 1,000 ft^3
Total methyl bromide use = 52,972 lbs = 24,027.691 kg = 24.03 MT
Potential annual methyl bromide use from proposed rule = **24 MT**

The 1998 EA for the proposed rule (USDA, APHIS, 1998b) estimated that the amount of methyl bromide required to fumigate wood articles was 72 MT, rather than the 24 MT stated above. The 72 MT figure was based on potentially fumigating every unmanufactured wood article (approximately 300,000 m^3) imported into the United States from all of Mexico. The 24 MT figure is a more likely estimate of methyl bromide use that is based on just the amount of unmanufactured wood articles from Mexican border states (approximately 100,000 m^3) that do not currently require treatment but that could potentially be fumigated under the proposed rule. Because we are overestimating the number of exporters in the Mexican border states that will most likely use fumigation, the estimate of 24 MT will more than make up for the number of exporters in the Mexican nonborder states that will use methyl bromide fumigation.

Because suppliers prefer heat treatment for unmanufactured wood articles for the higher profits in the market, it is important to realize that the actual increase in methyl bromide use and emissions that would result from the proposed rule would be considerably smaller than the maximum figures presumed in the following calculations.

24 MT ÷ 63,960 MT = **0.0003752 or 0.0375% increase in methyl bromide use**

Methyl Bromide Use From the Proposed Action

The 1996 total consumption figure discussed in section C above, 63,960 MT, is used to calculate the amount of methyl bromide increase from the proposed action to the cumulative impact of methyl bromide.[1]

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[1] In their review of the preliminary draft EIS (EPA, 2000b) EPA expressed disagreement with the EIS' characterization of increased methyl bromide use and emissions from the proposed rule. EPA disagreed with APHIS' use of the application rate (15 lb/1,000 ft^3 which equals 240 g/m^3) in calculating increases and stated that it reflects the minimum application rate specified in the proposed rule and that applicators would be free to increase the concentration or duration beyond the minimum rate in the rule. Realistically however, in order to obtain the highest profit margin, shippers and consignees who would select to treat their unmanufactured wood articles with methyl bromide most likely would elect to have the articles treated at the minimal concentration level that is acceptable for elimination of pest risk.

The EPA also stated that the draft EIS relies on a comparison of potential increase in methyl bromide use for the proposed rule with worldwide consumption figures rather than on a comparison of the potential increase in APHIS-required quarantine treatment for imported commodities. Treatment of cumulative effects is consistent with the NEPA implementing regulations. Although EPA has viewed APHIS' treatment of cumulative effects as overly broad, the EIS endorses EPA's argument that alternatives to methyl bromide should be employed whenever possible.

Thus, 24 MT of methyl bromide use from the proposed rule when compared to the worldwide figure (63,960 MT) for methyl bromide consumption (UNEP, 1998) adds an incremental increase of 0.0375% in methyl bromide use, or less than one-tenth of 1%.

Methyl Bromide Emissions From the Proposed Action

UNEP, MBTOC (1998) calculated the emissions rate (the amount of methyl bromide that escapes into the atmosphere) from methyl bromide use on wood (timber) as 88%. Estimates of the amount of methyl bromide released into the atmosphere vary because of differences in usage patterns, the condition and characteristics of fumigated materials, the tightness of the enclosure or facility used for fumigation, and local environmental conditions (UNEP, MBTOC, 1998). The figure of 88% is used to calculate emissions from methyl bromide use on unmanufactured wood articles from Mexico. Thus, the worst case scenario for increase in methyl bromide emissions from the proposed action is 21 MT, calculated as follows:

24 MT × .88 = 21.12 MT = **21 MT increase in methyl bromide emissions**

2. Past, Current, and Potential Future Actions

While the incremental amount from the proposed rule, representative of a single action, is considered a small increase in use when compared to the worldwide uses of methyl bromide, other methyl bromide uses must be considered when projecting the overall cumulative impact on the environment. In order to acknowledge the cumulative impact on the environment from methyl bromide use, all uses—past, present, and reasonably foreseeable—must be considered as they relate to ozone destruction and consequential adverse impacts.

Past Actions

Worldwide uses of methyl bromide include preplant soil treatments for field crops (such as strawberries and tomatoes), greenhouses, nurseries, and golf courses to eliminate soil organisms; QPS fumigation; structural fumigations (buildings and transport vehicles, e.g., ships, aircraft, freight containers, to control various types of pest infestations such as rodents and insects); food processing facilities (such as mills) and warehouses; and durable commodity storage fumigation, such as nuts, grain, and dried fruit.

The USDA's Agricultural Research Service (ARS) reported annual methyl bromide consumption data for the years 1996 through 1998. The

combined methyl bromide use data for U.S. import, export, and interstate QPS uses are 294 MT for 1996, 291 MT for 1997, and 256 MT for 1998 (Schneider and Vick, 1999). ARS compiled the import data from APHIS; the export data from commodity groups, county agriculture commissioners, APHIS, USDA's Economic Research Service, and fumigation companies; and the interstate/intrastate data from some State agriculture departments.

For the data collected, examples of imports are fruits, vegetables, and unmanufactured wood articles; examples of exports are fruit, cotton, oak logs, including packing crates, skids, and other packing material; and examples of interstate/intrastate quarantines are gypsy moth on plant material, household goods, and mobile homes; citrus pests and blueberry maggot in fruit originating in Florida or Texas and destined for California; Mediterranean fruit fly on fruit commodities between and within States, and agricultural equipment moving from areas infested with the golden nematode. ARS reported that these numbers are not all inclusive of methyl bromide consumption data because no comprehensive records are maintained on quarantine methyl bromide use for exported commodities and commodities moved interstate/intrastate (Schneider and Vick, 1999).

An EA, "Proposed Interim Rule on Solid Wood Packing Material from China," was prepared in September 1998 in response to the need for an interim rule on solid wood packing material from the China. Methyl bromide was one of the treatment options to prevent harmful pests that could enter the United States through wood packing materials (such as crating, pallets, skids, and packing blocks) used with imported products. The rule was changed to include the use of methyl bromide among other treatment options; however, there has not been sufficient time to determine the increase in methyl bromide use for this interim rule.

Current Actions

The use patterns mentioned above, preplant, QPS, structural, and durable commodity storage, also apply to current actions, although the gradual phaseout of methyl bromide for most uses is underway. QPS uses of methyl bromide for interstate/instrastate, export, and import continue when no other alternative satisfies the pest elimination requirement. New proposals to use methyl bromide for QPS treatment are occurring less frequently. Methyl bromide to treat imported dried herbs is one example of a more recent APHIS proposal for such use. This type of proposed action results in minimal new use of methyl bromide for treatment.

Future Actions

It is difficult to project the actual methyl bromide increase in the future for APHIS' QPS uses. Uses unrelated to QPS will be eliminated under the methyl bromide phaseout schedule by the year 2005 according to the Montreal Protocol and the Clean Air Act for U.S. uses. The phased out uses include fumigations for preplant (soil), structures, food processing facilities, and durable commodity storage. QPS uses for interstate/intrastate, export, and import will continue. As mentioned previously, any proposed Federal regulatory (QPS) uses of methyl bromide are carefully scrutinized before they are enacted. The determination that methyl bromide can be required or allowed for phytosanitary purposes is one that is not made without careful consideration of many factors.

An example of an anticipated future action is a proposal to require methyl bromide treatment for cucurbits (includes plants of the gourd family, such as watermelon, cucumber, and squash) that would be imported into the United States. Another example is the expansion of a regulated quarantine area (defined boundaries of agriculturally important pest infestations where host crops cannot be moved from unless first treated) for a program, such as a fruit fly eradication program in California, which potentially could pose an increase in methyl bromide treatment for some crops before they are allowed to be moved out of a quarantine area. These types of regulated uses would add minimal increases to the existing QPS methyl bromide applications.

Under the Montreal Protocol, methyl bromide uses after the year 2005, other than the exempted QPS, critical, and emergency uses will be phased out; thus, worldwide methyl bromide consumption will decline after the year 2005. The exempted uses will continue until other comparable and efficacious methods have been found to replace methyl bromide. Therefore, small increases in exempted methyl bromide use patterns most likely will continue in response to trade liberalization. As stated previously, many of the new commodities requiring treatment consist of small quantities of commodities requiring methyl bromide fumigation. It would be reasonable to expect some increased QPS use of methyl bromide as phytosanitary regulations are established to include the expanded trade for new commodities. Most commodities that require fumigation to eliminate pest risk are already subject to phytosanitary regulations. The need for new regulations of foreign commodities requiring methyl bromide fumigation is occurring less frequently as phytosanitary regulations for pest risks become more complete and inclusive. Therefore, the cumulative impact of methyl bromide from routine commodity regulations is not expected to be consequential.

However, the anticipated rule regarding regulation of solid wood packing materials (SWPM) from all foreign countries worldwide could pose more substantial consequences. Although not a commodity, packing material accompanies most shipments and SWPM poses substantial potential for pest risk. Unlike other limited rules, the scope of this proposed regulation would be broad and would include SWPM from all nations outside North America. The anticipated proposed rule for SWPM has the potential to dramatically increase methyl bromide use in QPS applications. Impacts from the proposed potential regulations of SWPM will depend upon the extent to which alternatives to methyl bromide fumigation can be employed to lower pest risk, and this proposal is still undergoing intensive review by APHIS' management team.

The collective total contribution of increased methyl bromide use from regulations other than SWPM will not decrease the rate of ozone restoration to any measurable extent in the stratosphere. The elimination of all methyl bromide uses (based on the current 63,960 MT rate of consumption) would result in a 1% reduction in ozone depletion per year and ultimately a 5 to 15% effect on the restoration of the ozone layer—unlike chlorofluorocarbons which are associated with the majority of ozone depletion. With the phaseout of the major uses of methyl bromide completed by the year 2005, the contribution to the annual ozone depletion rate from methyl bromide use will be less than 1%.

Independent of cumulative impact issues related to methyl bromide, the WTO and IPPC organizations carefully scrutinize the regulatory changes in phytosanitary requirements between and among signatory countries to the GATT. Requirements under this international agreement complicate regulatory decisions by setting requirements on the acceptance of any phytosanitary restrictions on trade. This makes any agency decisions about potential phytosanitary regulations using methyl bromide contingent upon adherence to trade regulations and contingent upon keeping with the intent of the Montreal Protocol to reduce the consumption of ozone-depleting substances. This regulatory issue is, therefore, expected to be an ongoing challenge for APHIS which will require integration of multiple alternatives to effectively meet both international agreements.

E. Cumulative Effects on the Environment

1. The Ozone Layer

Ozone is a compound consisting of three connected oxygen atoms. Most atmospheric ozone is found in a portion of the atmosphere known as the stratosphere, existing between 15 and 35 km above the Earth's surface. This part of the atmosphere is referred to as the ozone layer.

a. The Importance of the Ozone Layer

The ozone layer is quite effective at absorbing harmful UV radiation from the sun. However, thinning of the ozone layer in the atmosphere reduces its effectiveness in blocking harmful radiation, allowing more radiation to reach the Earth's surface. This exposes all living systems on the Earth's surface and in its oceans and other natural water resources to more damaging radiation.

Ultraviolet (UV) radiation is a type of energy produced by the sun and is not visible to the naked eye. Scientists categorize UV radiation into three types: UV-A, UV-B, and UV-C. The types relate to differences in wavelength. For the purpose of this discussion, wavelength may be thought of as representing how likely the radiation will interact with living cells and how energetic (destructive) that interaction will be.

UV-A radiation is minimally filtered by the atmosphere and restoration of the stratospheric ozone layer will have little effect on exposure to UV-A radiation. Therefore, its effects are not a concern in this analysis.

UV-B and UV-C radiation reaching the Earth is filtered by ozone in the atmosphere. The ozone layer acts as a UV radiation shield. This is fortunate because exposure to either UV-B or UV-C radiation can be harmful to living tissue.

Exposure to UV-B radiation can cause conditions ranging from minor, such as sunburn, to more severe, such as snowblindness (the formation of temporary cataracts resulting from a sunburn within the eye) and destruction of DNA within cells. Exposure to UV-B radiation has been identified as a major factor in the incidence of various types of cancers. The effect varies with the amount of radiation and the exposure duration and frequency.

UV-C radiation is almost entirely blocked by ozone in the atmosphere; thus, its effects also are not a concern in this analysis. While exposure to UV-B radiation can be damaging to living cells, exposure to UV-C radiation is deadly. UV-C radiation is often used to kill harmful infectious organisms in drinking water systems.

In this discussion, unless a distinction needs to be made, the term UV radiation will be used to describe both UV-B and UV-C radiation, but the main effects of concern are those related to exposure to UV-B radiation.

b. Methyl Bromide's Effect on the Ozone Layer

When methyl bromide is used as a fumigant for phytosanitary control and other uses, the methyl bromide that does not interact with the environment (such as the commodity fumigated) directly escapes into the atmosphere. Interaction with other chemicals in the atmosphere and with solar radiation act to break down methyl bromide to bromine, which can interact with surrounding atmospheric gases. Bromine's interaction with stratospheric ozone destroys and reduces the ozone available to filter out harmful UV radiation, increasing the amount of UV radiation that reaches the Earth's surface. Bromine has been found to be one of the most destructive chemicals to ozone in the atmosphere, and methyl bromide is a prime man-made source of atmospheric bromine. As a consequence, scientists have identified methyl bromide as a major ozone depleter, and it is classified as a Class 1 ozone depleter in the Montreal Protocol. This classification is reserved for chemicals that are most destructive to the ozone layer.

2. Effects of Increased UV Radiation

a. Earth's Biologic Systems

Increased UV-B radiation can be damaging to some terrestrial plants, animals, and microbes. UV-B and UV-A radiation have adverse effects on plant growth, photosynthesis, protein, and pigment content. The basis of Earth's food web, upon which all life on the planet depends, is abundant, healthy small organisms like phytoplankton, soil-building microbes, and algae. Many of these organisms constitute key building blocks of terrestrial and aquatic ecosystems and have been shown to be sensitive to UV-B radiation.

Scientists expect the impacts of ozone-related UV-B radiation increases to be greatest on oceanic ecosystems, especially polar marine ecosystems, where ozone-related UV-B radiation increases are the greatest. UV radiation can penetrate some distance below water surface and, as it does so, affects the growth patterns of the organisms, such as plankton and other microscopic food organisms concentrated just below the surface of saltwater and freshwater, and therefore affects the organisms which rely upon them for food. As a consequence of the elevated UV levels, scientists anticipate reductions in both farmed and oceanic fish stocks, which comprise a major source of protein for significant numbers of people, particularly in Asia and Africa (Bell *et al.,* 1996). Some developing countries with growing populations depend heavily on aquatic resources. Any reduction in the productivity of fish and other aquatic life could require countries to find alternative sources of protein. This in turn could put increasing strain on world agricultural resources.

Aquatic organisms also play a vital role in maintaining atmospheric chemistry. Marine phytoplankton are a significant source of oxygen and significant sinks (absorbers) of atmospheric gases such as carbon dioxide, one of the so called "greenhouse" gases implicated in global climate change. The surface temperature of the Earth is a major factor in creating weather on this planet. The effect of greenhouse gases is to prevent heat generated by solar radiation from passing through the atmosphere into space. This heats the atmosphere which drives changes in weather and climate.

b. Agriculture

According to the WHO, elevated UV radiation levels will effect agriculture. Plants in general exhibit varying sensitivity to UV radiation, some are highly sensitive while some seem to be insensitive, at least in the short term. The WHO identified some important agricultural crops as being sensitive to increased levels of UV radiation, including types of maize (corn), soybean, oats, barley, sugar beets, rice, tomatoes, cucumber, melons, cauliflower, and broccoli.

Forestry also is expected to be impacted, as many varieties of conifers studied appear to be adversely impacted by elevated UV-B radiation.

c. Materials

Some important man-made and natural materials are affected by increased UV radiation. UV-B radiation negatively affects the physical and mechanical properties of polymers, reducing the useful lifetimes of synthetic polymer products. It also adversely affects products containing biologically based materials such as wood, paper, wool, and cotton.

d. Humans

(1) Vision

Anticipated increases in UV-B radiation associated with the thinning of the ozone layer are likely to lead to increased incidence of and/or severity of a variety of short-term and long-term health effects. Cases involving serious physical damage to the eye, such as cataracts, will increase. The incidence of eye cancers also will increase.

(2) Immune System Effects

The UNEP report on the environmental effects of ozone depletion states, "Effects on the immune system will also affect all populations but may be both adverse and beneficial. Adverse effects include depressed resistance to certain tumors and infectious diseases, potential impairment of vaccination responses, and possibly increased severity of some auto-immune and allergic responses. Beneficial effects could include decreases in the severity of certain immunologic diseases/conditions such as psoriasis and nickel allergy."

Human society, particularly in the developing world, still wages ongoing battles against diseases such as tuberculosis, cholera, malaria, diphtheria, and acquired immunodeficiency syndrome (AIDS). New disease-causing organisms continue to be discovered every year. For South Africa and other countries, such as those in Asia, struggling to attain economic growth and development while also trying to carry on disease eradication programs, any development that might reduce the effectiveness (such as UV-induced immunosuppression) of already strained and expensive treatment or eradication programs would be a major setback.

(3) Effects on the Skin

The skin is considered the body's largest organ. UNEP reported that "Effects on the skin could include increases in photoaging, and skin cancer with risk increasing with fairness of skin. Increases in UV-B are likely to accelerate the rate of photoaging, as well as increase the incidence (and associated mortality) of melanoma and the non-melanoma skin cancer, basal cell and squamous cell carcinoma" (UNEP, 1998). Such effects have already been identified.

The Canadian government reported in 1994 that increased UV from ozone depletion had already increased the risk of skin cancer in the Canadian population by more than 7% (Bell *et al.,* 1996).

e. Domestic animals

Squamous cell carcinoma (SCC), one type of skin cancer, has been reported in cattle, horses, cats, sheep, goats, and dogs and is associated with ambient solar exposure. SCC tumors are frequently found on the eyelids, nose, ears, tail, and other areas where poorly pigmented skin is unprotected by hair.

Scientists expect an increase in other effects in domestic animals from ozone depletion, including infectious bovine keratoconjunctivitis in cattle and skin lesions and cataracts in farm-raised fish (UNEP, 1998).

3. Links Between Ozone Depletion and Global Climate Change

The dynamics governing both ozone depletion and global climate change are linked. The WMO states in its report, "The issues of ozone depletion and climate change are interconnected; hence, so are the Montreal and Kyoto Protocols. Changes in ozone affect the Earth's climate, and changes in climate and meteorological conditions affect the ozone layer, because the ozone depletion and climate change phenomena share a number of common physical and chemical processes. Hence, decisions taken (or not taken) under one Protocol have an impact on the aims of the other Protocol. For example, decisions made under the Kyoto Protocol with respect to methane, nitrous oxide, and carbon dioxide will affect the rate of recovery of ozone, while decisions regarding controlling HFCs may affect decisions regarding the ability to phase out ozone-depleting substances." (WMO, 1998). The critical point here is that these two important problems are connected in ways which require integrated thought and effective solutions.

4. Current Trends Concerning the Thinning of the Ozone Layer

At the time of the UNEP report on the effects of ozone depletion, scientists reported that levels of ozone in the atmosphere were near the lowest values since measurements were first taken (UNEP, 1998). As a consequence, scientists reported that the 1998 levels of UV-B radiation were close to the maximum values they anticipated. Based on that analysis, the maximum amount of ozone-depleting chemical present in the atmosphere has already been reached. As a consequence, barring unexpected occurrences like a sudden volcanic eruption adding chemicals to the atmosphere, the maximum amount of thinning of the ozone layer caused by ozone-depleting chemicals is also near or at its maximum. However, this does not mean that the crisis is over.

The integrity of the atmosphere will continue to be at it most vulnerable during the 21st century. In order to successfully reestablish the integrity of the atmosphere and to preserve the integrity of Earth's biological systems, it is important to consider the interaction factors affecting the atmosphere, such as those affecting global climate change and those contributing to the thinning of the ozone layer.

Components of those biologic systems experience stress from ongoing changes in climate and radiation. The ability of those systems to recover and adapt to stress is influenced by factors such as patterns of precipitation, temperature, and nutrient availability. These factors are themselves affected by climate changes and changes in radiation levels. Any decisions

made with the intention of addressing environmental concerns on ozone depletion and its effects on the environment need to consider these interactions and their consequences.

5. The Plan for Ozone Layer Recovery

The Montreal Protocol on Substances that Deplete the Ozone Layer and its amendment have adopted the following goals for ozone-depleting substances, which includes methyl bromide. More detail on the terms of the Protocol and related statutes are given elsewhere in this document. The United States, through the mechanism of specific amendments to the Clean Air Act, is implementing the Protocol goals for the gradual reduction and eventual elimination of methyl bromide uses, except for exemptions, as follows:

- 25% reduction from 1991 levels in 1999
- 50% reduction from 1991 levels in 2001
- 70% reduction from 1991 levels in 2003
- 100% reduction from 1991 levels in 2005

Preshipment and quarantine (QPS) uses and uses identified or to be identified as critical or emergency uses under the Protocol, are exempt from this schedule. Allocation of methyl bromide stocks in support of critical agricultural uses will occur in 2005.

6. Where We Now Stand

According to findings reported in the World Meteorological Organization's (WMO) "Scientific Assessment of Ozone Depletion: 1998," the total amount of chlorine (a major ozone depleter) is declining. However, the total amount of bromine in the atmosphere is increasing. For the northern midlatitudes, which covers much of the United States and parts of Europe, the rate of the thinning of the ozone layer has slowed down.

The concentration of chloroflourocarbon (CFC) compounds in the atmosphere has also been of concern. It appears that provisions of the Protocol that mandated using alternatives to CFC's are working. The amount of those substitute compounds detected in the atmosphere is increasing; and although they offset some of the decline, they are still about 10 times less than the total tropospheric growth rate during the 1980's.

As mentioned before, the amount of bromine (and chlorine) in the atmosphere is expected to have reached its maximum sometime before the year 2000. While still being destructive to ozone in the atmosphere, bromine is now considered less destructive than was previously thought. Bromine's rating for ozone-depletion potential has been reduced by one-third because of both an increase in the estimate of ocean removal

processes and identification of an uptake by soils, with a smaller contribution from the change in the scientific estimate of the atmospheric removal rate. However, even with the reduction in rating, it retains its Class 1 status, indicating it is among the most destructive ozone-depleting substances. The annual worldwide contribution to ozone depletion from the uses of methyl bromide is 1%—unlike chlorofluorocarbons which are associated with the majority of ozone depletion.

The hole in the ozone layer which occurs in the spring over the Antarctica is unchanged in its intensity. Ozone depletion of up to 50% in the atmosphere over Antarctica has been recorded. The WMO report further states, "Based on past emissions of ozone-depleting substances and a projection of the maximum allowances under the Montreal Protocol into the future, the maximum ozone depletion is estimated to lie within the current decade or the next two decades, but its identification and the evidence for the recovery of the ozone layer lie still further ahead." The provisions of the Montreal Protocol appear to be working in that the amounts of ozone-depleting chemicals in the atmosphere are decreasing and ozone depletion is slowing.

7. Necessity for Action

Although improvements appear to be underway, the long-term state of the atmosphere is not clear. Despite current successes, the atmosphere will remain vulnerable to the atmospheric effects of man-made chemicals for some time. It will be decades before we will be able to detect the actual recovery of the very complex system of interaction among the atmosphere, human activities and Earth's biologic and aquatic systems. Major indicators of ongoing ozone depletion, such as the existence of the large ozone hole over Antarctica, continue without significant change. And while the amount of some ozone depleting substances in the atmosphere is decreasing, for others, particularly bromine-related substances, amounts are increasing.

F. Promoting Recovery of the Ozone Layer

Any analysis that simply projects impacts of actions with similar environmental effects is of little value in achieving NEPA's purpose—"to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of [humankind]" (42 U.S.C. 4321). At the same time, however, substantial contributions—present and future—to degradation of the ozone layer are far beyond the control of USDA. Still, EPA has observed that, "[r]egardless of the relative incremental contribution, it is important to recognize that any additional methyl bromide would significantly delay

recovery of the ozone layer and should not be allowed when effective alternatives exist." In view of the impending phaseout of methyl bromide, the primary concern in the long term is those uses, such as QPS, that are exempted from the phaseout provisions of the Montreal Protocol. In the shorter term, it is certainly important to have in place cost-effective alternatives to methyl bromide for nonexempt uses.[2]

It appears that an effective alternative—heat treatment—to methyl bromide exists for imports of unmanufactured wood from states of Mexico. That does not end the administrative inquiry, however; the availability of alternatives to QPS uses of methyl bromide must be considered together with the requirements of prevailing trade agreements. Heat treatment of unmanufactured wood from states of Mexico, an environmentally preferable alternative, could be prescribed by APHIS only if that alternative (1) is capable of fulfilling the agency's mandate to protect U.S. agricultural resources and (2) is consistent with prevailing trade agreements.

The rulemaking under review here is representative of several current and reasonably foreseeable future USDA administrative proceedings in which methyl bromide may be considered as a QPS commodity treatment option. We may find that other treatment methods may be determined to be acceptable alternatives. There are APHIS-sponsored QPS methyl bromide applications, approved under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136) but not subject to administrative review by APHIS. Moreover, those applications do not account for all QPS uses in this country and constitute only a fraction of QPS uses worldwide. In addition, there are many commodities—fresh-cut flowers, for example—for which heat cannot be used as a pest treatment and methyl bromide may now be the only effective option.

It is not the purpose of this process to examine programmatically the use of methyl bromide by USDA. The scope of the rulemaking proposal is much more limited. This is not to suggest that searching for cost-effective

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[2] A considerable amount of research and development with respect to methyl bromide alternatives has been conducted and continues today. See e.g., U.S. EPA, Alternatives to Methyl Bromide, Ten Case Studies: Soil, Commodity, and Agricultural Use (Vol. 3, 1997); Chellemi, Alternatives to Methyl Bromide in Florida Tomatoes and Peppers, IPM Practitioner (Vol. 20, Apr. 1998); Liebman and Daar, Alternatives to Methyl Bromide in California Grape Production, IPM Practitioner (Vol. 17, Feb. 1995); Grossman and Liebman, Alternatives to Methyl Bromide—Steam and Solarization in Nursery Crops, IPM Practitioner (Vol. 17, July 1994); and Liebman, Alternatives to Methyl Bromide in California Strawberry Production, IPM Practitioner (Vol. 16, July 1994).

alternatives to major QPS uses of methyl bromide should not be a departmental priority or that mitigation—gas recapture technology, for example—should not be promoted, where feasible, for situations in which there is no acceptable alternative to methyl bromide. On the contrary, it would further the public interest if APHIS, the Agricultural Research Service, EPA, and other interests would agree to cooperate, not necessarily in the context of the NEPA process, in reviewing methyl bromide uses and developing environmentally friendlier alternatives where acceptable treatment options do not appear to be available.

Appendix A. Public Comments

RESERVED FOR FUTURE USE - This appendix will be an analysis of the public comments (from written and oral communications) received on the draft EIS. It will be prepared folowing the closure of the official public comment period and will be included in the final EIS.

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Appendix B. Proposed Rule and Environmental Assessment

Proposed Rules

Federal Register
Vol. 64, No. 112
Friday, June 11, 1999

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF AGRICULTURE

Animal and Plant Health Inspection Service

7 CFR Part 319

[Docket No. 98–054–1]

RIN 0579–AB02

Importation of Unmanufactured Wood Articles From Mexico

AGENCY: Animal and Plant Health Inspection Service, USDA.

ACTION: Proposed rule.

SUMMARY: We are proposing to add restrictions on the importation of pine and fir logs and lumber, as well as other unmanufactured wood articles, from Mexico. This change would require that these wood articles from Mexico meet certain treatment and handling requirements to be eligible for importation into the United States. We believe this action is necessary to prevent the introduction into the United States of dangerous plant pests, including forest pests, with unmanufactured wood articles from Mexico.

DATES: Consideration will be given only to comments received on or before August 10, 1999.

ADDRESSES: Please send an original and three copies of your comments to Docket No. 98–054–1, Regulatory Analysis and Development, PPD, APHIS, suite 3C03, 4700 River Road Unit 118, Riverdale, MD 20737–1238. Please state that your comments refer to Docket No. 98–054–1. Comments received may be inspected at USDA, room 1141, South Building, 14th Street and Independence Avenue SW., Washington, DC, between 8 a.m. and 4:30 p.m., Monday through Friday, except holidays. Persons wishing to inspect comments are requested to call ahead on (202) 690–2817 to facilitate entry into the comment reading room.

FOR FURTHER INFORMATION CONTACT: Ms. Jane E. Levy, Senior Staff Officer, Port Operations, PPQ, APHIS, 4700 River Road Unit 60, Riverdale, MD 20737–1236; (301) 734–8295.

SUPPLEMENTARY INFORMATION:

Background

The unrestricted importation of logs, lumber, and other unmanufactured wood articles into the United States could pose a significant hazard of introducing plant pests detrimental to agriculture and to natural, cultivated, and urban forests. ''Subpart—Logs, Lumber, and Other Unmanufactured Wood Articles,'' contained in 7 CFR 319.40–1 through 319.40–11 (and referred to below as the wood subpart), is intended to mitigate the plant pest risk presented by the importation of logs, lumber, and other unmanufactured wood articles.

Currently, § 319.40–3(a) provides a general permit for the importation of unmanufactured wood articles (other than articles from certain subfamilies of the family Rutaceae) into the United States from Canada and from States in Mexico adjacent to the United States/Mexico border. A general permit means the written authorization provided in § 319.40–3; no separate paper permit is required. Under a general permit, unmanufactured wood articles from Canada and from Mexican States adjacent to the U.S. border may be imported into the United States provided they are accompanied by an importer document stating that the articles are derived from trees harvested in, and have never been moved outside, Canada or adjacent States in Mexico, and subject to the inspection and other requirements in § 319.40–9. Unmanufactured wood articles imported into the United States from adjacent States in Mexico in accordance with § 319.40–3(a) include, but are not limited to, logs, lumber, railroad ties, fence posts, firewood, solid wood packing material, and mesquite wood for cooking.

In contrast, unmanufactured wood articles from Mexican States that are not adjacent to the United States/Mexico border are subject to the more rigorous requirements of the wood subpart for importing wood articles from all other countries except Canada. These more rigorous requirements include requirements for treatment and other special handling to ensure freedom from plant pests. Section 319.40–5 provides import and entry requirements for specified regulated articles such as bamboo timber (§ 319.40–5(a)), tropical hardwoods (§ 319.40–5(c)), temperate hardwoods (§ 319.40–5(d)), and railroad ties (§ 319.40–5(f)). Section 319.40–6 provides universal importation options, including treatment and handling options, for unmanufactured wood articles imported into the United States, including logs (§ 319.40–6(a)), lumber (§ 319.40–6(b)), wood chips and bark chips (§ 319.40–6(c)), wood mulch, humus, compost, and litter (§ 319.40–6(d)), and cork and bark (§ 319.40–6(e)).

The less restrictive importation requirements for unmanufactured wood articles imported into the United States from Canada and the States of Mexico adjacent to the United States/Mexico border are based on the premise that the forests in the United States share a common forested boundary with Canada and adjacent States in Mexico and, therefore, share, to a reasonable degree, the same forest pests.

However, in February 1998, the Forest Service, U.S. Department of Agriculture (USDA), published a study entitled ''Pest Risk Assessment of the Importation into the United States of Unprocessed *Pinus* and *Abies* Logs from Mexico.'' [1] This pest risk assessment was requested by the Animal and Plant Health Inspection Service (APHIS), USDA, to evaluate the forest insect and pathogen complexes in the forests of the United States and the adjacent States of Mexico. The Forest Service's pest risk assessment shows that a significant pest risk exists in the movement of raw wood material into the United States from the adjacent States of Mexico. This conclusion has also been confirmed by USDA inspectors finding a number of dangerous plant pests on wood imports from adjacent States in Mexico during inspections at ports of entry along the United States/Mexico border.

The Forest Service's pest risk assessment clearly indicates that the mountain top forests of the adjacent States in Mexico, from which unmanufactured wood articles are moving into the United States, should be viewed as biological islands, not as an extension of the U.S. forest ecosystem. These biological islands

[1] For copies of this pest risk assessment, contact the person listed under **FOR FURTHER INFORMATION CONTACT** or access the assessment on the Forest Service's Forest Products Laboratory Web site at Internet address http://www.fpl.fs.fed.us/documents/fplgtr/fplgtr104.pdf

contain their own unique combination of forest pests, which are different than those currently found in the United States. Those pests have the potential to substantially harm U.S. forests if they become established in the United States.

In its research, the Forest Service used pine and fir pests as surrogates for determining the overall pest risk associated with all of the native trees grown in these isolated biological forested regions in Mexico. This method was used in order to keep the assessment manageable. Timber species of pine and fir were chosen specifically because: (1) They constitute the majority of the unmanufactured wood articles imported into the United States from Mexico; and (2) the pest complexes of pine and fir trees have been the focus of more research, and are, therefore, better understood than the pest complexes for many other genera of imported timber trees. APHIS concurs with the Forest Service that extrapolation of this type of data is scientifically both rational and defensible.

Based on the conclusions of the Forest Service's pest risk assessment, we are proposing to amend the wood subpart in three ways.

First, we propose to limit the use of a general permit under § 319.40–3(a) for unmanufactured wood articles imported from the adjacent States in Mexico. Under proposed § 319.40–3(a), only unmanufactured mesquite wood for cooking, unmanufactured wood for firewood, and small, noncommercial packages of unmanufactured wood for personal cooking or personal medicinal purposes would be allowed importation under a general permit.[2] Mesquite is a woody species that is continuous on both sides of the United States/Mexico border and, therefore, presents little foreign pest risk. Firewood would not pose a significant pest risk because of its limited distribution and consumption near the border. Small, noncommercial packages of unmanufactured wood to be used for personal cooking or personal medicinal purposes also would not pose a significant pest risk because the packages would be limited in quantity and therefore easily inspected, and likely would be distributed and consumed near the border. Except as discussed below, all other unmanufactured wood articles from the adjacent States of Mexico would be allowed into the United States only in accordance with the importation and entry requirements in place for unmanufactured wood articles from the rest of Mexico and all other countries except Canada. This proposed rule would result in a more consistent regulation of unmanufactured wood articles from all the States of Mexico, as well as all other countries except Canada.

Second, we propose to amend § 319.40–5 to add an additional treatment option for pine and fir lumber from Mexico. Currently, the only treatment options for imported pine and fir lumber from Mexico are heat treatment (under § 319.40–7(c)) or heat treatment with moisture reduction (under § 319.40–7(d)) before importation into the United States, as required by § 319.40–6(b)(1); or heat treatment or heat treatment with moisture reduction within 30 days after release from the port of first arrival in the United States, at a U.S. facility operating under a compliance agreement with APHIS, as required by § 319.40–6(b)(2). However, based on conclusions of the Forest Service's pest risk assessment and on APHIS' evaluation of treatment options, we are proposing to allow standard industry cut lumber made from pine or fir species originating in Mexico to be imported into the United States from any State of Mexico if, prior to arrival, that lumber is 100 percent free of bark and fumigated with methyl bromide in accordance with schedule T–312 contained in the Plant Protection and Quarantine Treatment Manual, incorporated by reference at § 300.1, or with an initial methyl bromide concentration of at least 240 g/m^3 with exposure and concentration levels adequate to provide a concentration-time product of at least 17,280 gram-hours calculated on the initial methyl bromide concentration. This treatment is effective against the pine and fir pests identified in the Forest Service's pest risk assessment.

Third, we propose to amend § 319.40–5 to add an additional treatment option, with a thickness requirement, to the importation of railroad ties from Mexico. Currently, pursuant to § 319.40–5(f), railroad ties from nonborder States of Mexico must be completely free of bark and accompanied by an importer document stating that the railroad ties will be pressure treated within 30 days following the date of importation to be eligible for importation into the United States. Because of the proposed change to the general permit section of the wood subpart described earlier, railroad ties from States of Mexico adjacent to the U.S. border would no longer be eligible for importation into the United States under a general permit. Based on conclusions of the Forest Service's pest risk assessment, we propose to amend § 319.40–5 to provide an additional treatment option for the importation of railroad ties from Mexico that would allow the importation of railroad ties (cross-ties) originating from all States in Mexico if they are 100 percent free of bark, no thicker than 8 inches, and fumigated with methyl bromide using the concentration levels specified in the paragraph above. Railroad ties may continue to be imported under current requirements that they be completely free of bark and pressure-treated with a preservative approved by the U.S. Environmental Protection Agency (EPA) within 30 days following the date of importation. Under the existing requirements, we would also allow Mexican railroad ties that are debarked in accordance with § 319.40–7(b) to be imported into the United States if the railroad ties have been heat treated in accordance with § 319.40–7(c).

These actions appear to be necessary to reduce the risk of the introduction of dangerous plant pests on unmanufactured wood articles moving from Mexico into the United States.

Use of Methyl Bromide

Methyl bromide is currently in widespread use as a fumigant. It is proposed as a treatment option for standard industry cut lumber made from pine or fir species and railroad ties from Mexico. The environmental effects of using methyl bromide, however, are being scrutinized by international, Federal, and State agencies. EPA, based on its evaluation of data concerning the ozone depletion potential of methyl bromide, published a final rule in the **Federal Register** on December 10, 1993 (58 FR 65018–65082). That rule froze methyl bromide production in the United States at 1991 levels and required the phasing out of domestic use of methyl bromide by the year 2001. EPA's methyl bromide regulations were issued under the authority of the Clean Air Act. Recently, the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 1999, amended the Clean Air Act. The amendments provide that the production of methyl bromide shall not terminate prior to January 1, 2005, and directs EPA to promulgate new rules to reduce and terminate the production, importation, and consumption of methyl bromide in accordance with the phaseout schedule of the Montreal Protocol. The Montreal Protocol, an international treaty governing the production and use of ozone-depleting chemicals, provides for a phaseout of methyl bromide, with an

[2] Other unmanufactured wood articles, such as solid and loose wood packing material and bamboo timber, would continue to be allowed importation into the United States under a general permit in accordance with § 319.40–3(b), (c), (d), and (e).

exemption for quarantine and preshipment uses, in developed countries by the year 2005 and in developing countries, including Mexico, by the year 2015. EPA has indicated that it will publish proposed and final regulations to achieve production and importation reductions from the 1991 base levels of methyl bromide as follows: 25 percent reduction in 1999, 50 percent reduction in 2001, 70 percent reduction in 2003, 100 percent reduction in 2005. The Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 1999, further provides a quarantine-use exemption for the production, importation, consumption of methyl bromide to fumigate commodities entering or leaving the United States for purposes of complying with APHIS regulations. EPA has also indicated that it will work closely with USDA, State agricultural departments, and other stakeholders to define the preshipment and quarantine uses that will be exempt from the phaseout. Our proposal assumes the continued availability of methyl bromide for use as a fumigant for at least the next few years. Nonetheless, APHIS is studying the effectiveness and environmental acceptability of alternative treatments to prepare for the eventual unavailability of methyl bromide fumigation.

Miscellaneous

We are also proposing to amend § 319.40–5(f) to require that pressure treatment of railroad ties be conducted at a U.S. facility under compliance agreement with APHIS. This would affect railroad ties imported from all countries except Canada. We propose this action to help ensure compliance with the requirement that railroad ties must be pressure treated within 30 days following the date of importation into the United States.

In § 319.40–3, paragraph (a) requires articles imported under general permit to be accompanied by an importer document. The importer document must state that the regulated articles are derived from trees that were harvested in, and have never moved outside, Canada or States in Mexico adjacent to the U.S. border. We are proposing to amend § 319.40–3(a) to remove the requirement that the importer document must state that the articles have never been moved outside Canada or States in Mexico adjacent to the U.S. border; the ''derived from'' requirement will remain. We are also proposing to amend § 319.40–3(a) to specify that the importer document only needs to accompany commercial shipments of unmanufactured wood articles imported into the United States under a general permit. With respect to Mexico, the importer document requirement currently helps ensure that logs and lumber from adjacent States in Mexico are not moved into other States in Mexico for processing or milling and then imported into the United States. However, because we are proposing to disallow movement under general permit for most unmanufactured wood articles from adjacent States in Mexico, this precaution would no longer be necessary. With respect to Canada, it is highly improbable that wood articles from Canada would be processed or milled in another country and then returned to Canada for export to the United States. Therefore, we do not believe that this requirement is necessary for unmanufactured wood articles imported into the United States from Canada. Further, it is not administratively feasible to require an importer document for noncommercial shipments of mesquite wood for cooking and firewood, or for small, noncommercial packages of unmanufactured wood for personal cooking or personal medicinal uses imported into the United States from States in Mexico adjacent to the United States border; therefore, we propose to specify that commercial shipments of unmanufactured wood articles imported from Canada, and commercial shipments of mesquite wood for cooking and firewood imported from adjacent States in Mexico, be accompanied by the importer document described above.

Executive Order 12866 and Regulatory Flexibility Act

This proposed rule has been reviewed under Executive Order 12866. The rule has been determined to be significant for the purposes of Executive Order 12866 and, therefore, has been reviewed by the Office of Management and Budget.

We are proposing to amend the wood subpart by adding a treatment option for pine and fir lumber and railroad ties imported from Mexico, and by adding that unmanufactured wood articles from Mexico's border States meet certain treatment and handling requirements to be eligible for importation into the United States. We believe this action is necessary to help prevent the introduction into the United States of dangerous plant pests, including forest pests, with unmanufactured wood articles from Mexico.

Because this proposal concerns unmanufactured wood articles, it would affect the importation into the United States of both hardwood and softwood species from Mexico. However, this analysis focuses on softwood lumber, particularly pine and fir, since it comprises nearly all the unmanufactured wood articles imported from Mexico. In 1997, imports of U.S. lumber from Mexico consisted of about 98 percent softwood species, by value, and only about 2 percent hardwood species. Also in 1997, 97 percent of U.S. imports of unmanufactured softwood articles from Mexico, not including solid wood packing material (SWPM) and continuously shaped softwood (which may be manufactured), were softwood lumber.

The value of U.S. production of softwood lumber in 1996 was about $16 billion. U.S. production of softwoods that year totaled 33.9 billion board feet (bbf), compared to 12.7 bbf of hardwoods. Softwood imports in 1996 reached 18.0 bbf, compared to exports of 1.9 bbf, for net imports of 16.1 bbf. In other words, U.S. supply of softwoods, not including stocks, was about 50 bbf (production + imports − exports), with about one-third of the nation's supply imported.

Values of 1997 U.S. imports and exports of some major categories of unmanufactured softwood articles are found in table 1, below. U.S. trade with both the whole world and Mexico is shown, allowing some insight into Mexico's share of U.S. imports, and the U.S. trade position overall for these commodities. By far, the main commodity is softwood lumber, for which U.S. imports, worth $7.3 billion, dwarfed U.S. exports, worth $1.1 billion. Of the commodities included in table 1, 93 percent of imports were softwood lumber. Softwood lumber imports from Mexico, at $97.6 million, represent 1 percent of total U.S. softwood lumber imports.

Continuously shaped softwood is a category that includes both manufactured and unmanufactured articles. Therefore, the value shown for these imports from Mexico ($120 million) overstates the value of imports that would be affected by the proposed rule. (On the other hand, there are other unmanufactured wood articles that enter from Mexico, such as solid wood packing material, that are not shown in this table.) As indicated, one-fourth of continuously shaped softwood that is imported into the United States comes from Mexico. As is the case of softwood lumber, the value of U.S. imports of these articles is several times greater than the value of exports.

The United States is a large net exporter of untreated softwood logs and poles, with 1997 exports valued at about $1.5 billion, compared to 1997 imports

of $61 million. Of these imports, Mexico is a minor supplier, providing three percent of the total. Similarly, for fuel wood and railroad ties (not impregnated),[3] Mexico supplied only a small portion of total U.S. imports in 1997: 6 percent, in each instance.

In summary, unmanufactured softwood articles imported into the United States are predominantly lumber. Their value significantly outweighs that of exports of U.S. softwood lumber. In 1997, about one percent of softwood lumber imports, worth about $97.6 million, came from Mexico. Shipments from Mexico of continuously shaped softwood are of greater value ($120 million in 1997), but a large share may be manufactured articles. For softwood logs and poles, the United States is in a strong net export position, with the value of imports only about four percent of the value of exports. Importations from Mexico of softwood logs and poles, fuel wood, and railway ties represent small percentages of total U.S. imports of these commodities.

TABLE 1.—U.S. TRADE WITH MEXICO AND THE WORLD IN PRINCIPAL UNMANUFACTURED SOFTWOOD ARTICLES, 1997

Wood category	U.S. imports			U.S. exports		
	From the world (dollars)	From Mexico (dollars)	Percentage from Mexico	To the world (dollars)	To Mexico (dollars)	Percentage to Mexico
Softwood lumber	7,345,096,000	97,614,000	1	1,100,577,000	39,435,000	4
Softwood, continuously shaped	488,057,000	120,340,000	25	111,756,000	8,310,000	7
Softwood logs and poles, not treated	61,207,000	1,764,000	3	1,488,347,000	3,001,000	0.2
Fuel wood	6,220,000	377,000	6	5,601,000	170,000	3
Railway ties, not impregnated	3,850,000	232,000	6	8,938,000	11,000	0.1
Total	7,904,430,000	220,327,000	2.8	2,715,219,000	50,927,000	1.9

Source: Foreign Agriculture Service's Global Agricultural Trade System using data from the United Nations Statistical Office.

Notes: Listed commodities have the following six-digit codes from the Harmonized Tariff Schedule of the United States: softwood lumber, 440710; softwood, continuously shaped, 440910; softwood logs and poles, not treated, 440320; fuel wood, 440110; and railway ties, not impregnated, 440610. Continuously shaped softwood includes articles processed in various ways, such as wood molding. Many of these articles are ''manufactured,'' and therefore would not be affected by this proposed rule. Also, firewood included under the fuel wood category would not be affected by the proposed rule.

Since potential effects of the proposed rule largely concern imports of unmanufactured wood articles from Mexico's border States, it is necessary to estimate their share of Mexico's exports to the United States. Using data obtained from U.S. ports of entry, we estimate that affected commodities worth about $31.3 million came from Mexico's border States in 1997, which is slightly more than one-third of the value of all shipments of these articles from Mexico (see table 2).

El Paso, TX, is the principal port through which affected articles enter the United States. In 1997, approximately $81.7 million worth of these articles (89 percent of unmanufactured wood articles imported from Mexico) entered the United States through the port of El Paso. We estimate that 30 percent of these articles originated in Mexico's border States. Other U.S. border ports of entry report higher percentages coming from Mexico's border States—50 percent for Laredo, TX, and 100 percent for San Diego, CA, and Nogales, AZ—but the volumes of articles shipped were much smaller. Not surprisingly, most unmanufactured wood articles that enter through ports not near the United States/Mexico border (e.g., shipments by sea) originate from nonborder States in Mexico.

TABLE 2.—VALUE OF U.S. IMPORTS OF UNMANUFACTURED WOOD ARTICLES FROM ALL OF MEXICO AND FROM MEXICAN STATES ADJACENT TO THE UNITED STATES, BY PORT OF ENTRY, 1997

U.S. port of entry	Estimated value of imports from all of Mexico (dollars)	Estimated proportion of shipments from Mexico's border States (percentage)	Estimated value of imports from Mexico's border States (dollars)
El Paso, TX	81,730,000	30	24,519,000
San Diego, CA	5,551,000	100	5,551,000
Laredo, TX	1,859,000	50	929,500
Portland, OR	1,021,000	0	0
San Francisco, CA	735,000	0	0
Los Angeles, CA	591,000	0	0
Nogales, AZ	341,000	100	341,000
Mobile, AL	80,000	0	0
Total	91,908,000	.....	31,340,500

Sources: Foreign Agriculture Service, Forest and Fishery Products Division, for the estimated values of imports; Plant Protection and Quarantine, APHIS, for the estimated proportion of shipments from Mexico's border States.

Note: Percentages of imports estimated as originating in Mexico's border states are based on numbers of shipments. Therefore, estimated values in the last column do not account for differences in shipment values. Available data does not permit a more accurate estimation of values. Also, shipments of unmanufactured hardwood articles that may be included in these values are assumed to be very minor.

[3] Impregnated railway ties are not considered unmanufactured wood articles.

The significance of these levels of import can be put in perspective by comparing them to U.S. production and trade levels overall. Unmanufactured wood articles include a variety of commodities, but the value of softwood lumber production in the United States offers a reasonable basis for comparison, since the major timber species that would be affected by the proposed rule are pine and fir. When continuously shaped softwood articles are not considered, less than 2 percent (about 1.4 percent) of unmanufactured softwood articles imported into the United States came from Mexico in 1997 (see table 1). Assuming imports contribute about one-third of total U.S. supply, imports from Mexico would, therefore, amount to about 0.5 percent of the U.S. supply of unmanufactured softwood articles. Further, if about one-third of Mexico's shipments originate in Mexico's border States, shipments from the border States would represent about 0.5 percent of unmanufactured softwood articles imported by the United States, or about 0.15 percent of U.S. supply.

Mention should be made of SWPM, such as wooden pallets, crates, packing blocks, and dunnage. This packing material is used to prevent damage to cargo during shipment. Currently, SWPM originating in Mexico's border States and Canada may contain bark; SWPM entering the United States from anywhere else in the world must be without bark or be heat treated, fumigated, or treated with preservatives. In addition, SWPM from China has additional requirements (see § 319.40–5(g)). The proposed rule would require that SWPM restrictions for Mexico's border States be the same as for the rest of the world except Canada and China.

An informal survey of the ports of entry shown in table 2 found that a negligible amount of SWPM that is untreated or not free of bark enters the United States from Mexico. None is reported to enter through El Paso, TX, San Diego, CA, San Francisco, CA, Los Angeles, CA, or Nogales, AZ, and less than 1 percent is reported for Laredo, TX, and Portland, OR. (No contact was made with Mobile, AL.) Clearly, nearly all SWPM from Mexico's border States already meets the entry requirements that would be imposed by this proposed rule. Therefore, potential economic effects with respect to SWPM imports need not be given further consideration.

Economic Consequences

Two parts of the proposed rule could have an impact on U.S. imports of unmanufactured wood articles from Mexico: (1) Adding methyl bromide fumigation as a treatment option for pine and fir lumber and railroad ties from Mexico; and (2) placing unmanufactured wood articles from Mexico's border States under the same treatment requirements, in general, as the rest of the Mexico.

Adding Methyl Bromide Fumigation Option for Pine and Fir Lumber and Railroad Ties

For railroad ties from nonborder States of Mexico, current regulations require that the ties be completely debarked and either heat treated prior to importation or pressure treated within 30 days following importation. Under this proposed rule, fumigation would become an available treatment option. Virtually all railroad ties imported into the United States from Mexico are pressure treated for commercial reasons (i.e., in addition to eliminating pests, it protects the ties from decay). We expect that this would continue, and that few importers would utilize the proposed fumigation method. In order to comply with the wood subpart, importers may choose to fumigate railroad ties prior to importation if the railroad ties will be pressure treated beyond 30 days following importation. In any event, importations of railroad ties from Mexico represent a small percentage of total U.S. imports of railroad ties (6 percent of total U.S. imports, valued at $232,000). Therefore, we expect that adding methyl bromide fumigation as a treatment option would have very little or no impact on importers of railroad ties.

For pine and fir lumber imported from nonborder States of Mexico, treatments available under the current regulations are heat treatment and heat treatment with moisture reduction. Under this proposed rule, fumigation would become an available treatment method. Kiln drying is a type of heat treatment with moisture reduction, and is the most common method used to treat lumber from Mexico. Kiln drying is used almost exclusively over other treatments for lumber because kiln drying is the industrial standard and it increases the economic value of the wood. For this reason, this analysis focuses on comparing the most common method, kiln drying, to the proposed alternative, methyl bromide fumigation.

In 1997, softwood lumber imported from Mexico cost an average of $318 per cubic meter ($750.48 per thousand board feet), according to data compiled by the Foreign Agricultural Service, USDA. This figure is higher than average domestic unmanufactured green softwood prices of $137.71 per cubic meter ($325 per thousand board feet) in Northern California because: (1) Higher valued ponderosa pine constitutes a large percentage of imports from Mexico; (2)lumber imported from Mexico is mostly ''shop grade'' lumber, often used for making molding; (3) reported prices of lumber imported from Mexico may include delivery costs (F.O.B. delivered), whereas prices for domestic lumber do not (F.O.B. mill); and (4) some of the lumber imported from Mexico may already be kiln dried, which commands a higher price.[4]

Costs associated with kiln drying pine and fir lumber range between approximately $12 and $20 per cubic meter. In comparison, methyl bromide fumigation is reported to cost about one-third of this amount, or between $4.60 and $6.90 per cubic meter.[5] There is not an appreciable difference in the time required to apply the two treatments. Methyl bromide fumigation of lumber requires 2 days for the actual treatment and up to 2 days for setup and dismantling and airing of the cargo. Kiln drying of lumber takes 3 to 4 days.

At first glance, it would appear that there could be cost savings for Mexican exporters of pine and fir lumber to the United States—and potentially lower prices for U.S. importers—by replacing kiln drying with methyl bromide fumigation. However, kiln drying serves other commercial purposes besides satisfying phytosanitary requirements. U.S. importers may prefer kiln dried lumber, whereby fumigation would only result in an unnecessary additional cost. Information is not available to estimate the percentage of imports that would be fumigated instead of kiln dried.

Irrespective of the proposed addition of methyl bromide as a treatment option, any potential costs of this proposed rule for producers and consumers in the United States are likely to be very minor. As discussed above, the value of softwood lumber imported from Mexico is estimated to be only 0.5 percent of the value of the U.S. supply of softwood lumber. If it happens that kiln drying remains the preferred treatment alternative after fumigation is allowed, most shipments of pine and fir lumber imported into the United States from nonborder States of Mexico would not be affected.

[4] Based on communication with the Foreign Agricultural Service, USDA.

[5] Estimated costs for kiln drying are based on communication with the Forest Products Laboratory, Forest Service, USDA. Estimated costs for fumigation are based on communications with fumigation companies operating at California ports and the Port of Baltimore.

No Longer Exempting Unmanufactured Wood Articles From Mexico's Border States

As a result of this proposed rule, unmanufactured wood articles from Mexico's border States would be subject to the same importation and entry requirements as unmanufactured wood articles from the rest of Mexico (except for mesquite wood for cooking and firewood and small, noncommercial packages of unmanufactured wood for personal cooking or medicinal purposes). This change would have its primary impact on softwood lumber, which constitutes the vast majority of all unmanufactured wood articles imported from Mexico's border States.

Currently, softwood lumber from Mexico's border States can be imported without restriction, provided that the lumber was derived from trees harvested in Mexico's border States and has never been moved outside those States. Under this proposal, lumber from Mexico's border States would have to be either heat treated, heat treated with moisture reduction, or fumigated with methyl bromide. As with lumber from the rest of Mexico, the most likely treatments chosen would be kiln drying, at a cost of $12 to $20 per cubic meter, or methyl bromide fumigation, which could be done for, at most, one-third the cost of kiln drying.

As stated previously in this document, the total value of unmanufactured wood articles imported from Mexico's border States in 1997 was approximately $31.3 million; almost all of these imports were softwood lumber. If we assume that all unmanufactured wood articles imported from Mexico's border States are untreated, and would be kiln dried or fumigated to comply with this proposed rule, the impact of requiring treatment would range between $565,000 and $1.6 million, depending on whether most importers choose to kiln dry or fumigate the wood. (This calculation was made by first assuming that all unmanufactured wood articles imported from Mexico's border States in 1997 were softwood lumber, and then by using the value of $318 per cubic meter of softwood lumber to arrive at a total of 98,428 cubic meters of softwood lumber imported from Mexico's border States, multiplied by the midpoint in the range of costs for kiln drying and fumigation.)

Some of the lumber imported from Mexico's border States may already be kiln dried and would not require additional treatment as a result of this proposed rule. We do not have data to estimate the quantity of lumber imports from Mexico's border States that is already kiln dried nor what percentage of imports would be fumigated rather than kiln dried under this proposal. We welcome public comments with information that would help us more precisely estimate total potential treatment costs.

This proposed rule would result in small additional cost for an extremely small fraction of the U.S. supply of unmanufactured softwood articles. The benefit of the proposed rule is greater protection of U.S. forests. The potential for exotic pest introduction via imports of unmanufactured wood articles necessitates rigorous mitigation measures. The cost to producers and consumers could range in the millions of dollars if these measures are not taken.[6] The cost of treating unmanufactured wood articles imported from Mexico's border States is small, compared to the possible consequences of not changing existing regulations.

Regulatory Flexibility Analysis

The Regulatory Flexibility Act requires that APHIS specifically consider the economic impact of the proposed rule on small entities. The Small Business Administration (SBA) has established size criteria by Standard Industrial Classification for determining which economic entities meet the definition of a small firm. Data from the SBA was used to estimate the number of small entities potentially affected by this proposed rule.

The proposed rule would add a treatment option for railroad ties and pine and fir lumber from Mexico, and would add treatment and handling requirements for logs, lumber, and other unmanufactured wood articles imported from States in Mexico adjacent to the U.S. border. Entities most likely to be affected by the proposed rule are those that import pine and fir lumber. These entities include sawmills, lumber wholesalers, lumber retailers, wood article manufacturers, and general contractors of home construction. The SBA classifies sawmills and wood article manufacturers as small entities if fewer than 500 people are employed. Wood wholesalers and retailers are considered small with fewer than 100 employees. A general contractor is considered small with annual receipts of less than $17 million.

The number, size, and location of entities that actually import pine and fir lumber from Mexico could not be quantified by APHIS. According to SBA data, there are about 177,014 entities in these potentially affected industries. More than 87 percent of these firms, between approximately 154,029 and 155,447, are classified as small according to SBA criteria. Thus, the majority of firms likely to be affected by this proposed rule would be small entities. It is presumed that the majority of these entities would be ones located in the southwestern United States.

Given the small fraction of the U.S. supply of unmanufactured wood articles imported from Mexico, and the even smaller percentage originating in Mexico's border States, we expect that the effect of this proposed rule on small entities in the United States would be negligible. If the proposal is adopted, and kiln dried imports from nonborder States are instead fumigated, cost savings may be partly realized by U.S. buyers through lower prices. For imports from Mexico's border States, costs to U.S. buyers may increase due to the new treatment requirements. But as discussed above, treatment costs are a small fraction of total product costs, so any impact, negative or beneficial, would be slight.

Under these circumstances, the Administrator of the Animal and Plant Health Inspection Service has determined that this action would not have a significant economic impact on a substantial number of small entities.

Executive Order 12988

This proposed rule has been reviewed under Executive Order 12988, Civil Justice Reform. If this proposed rule is adopted: (1) All State and local laws and regulations that are inconsistent with this rule will be preempted; (2) no retroactive effect will be given to this rule; and (3) administrative proceedings will not be required before parties may file suit in court challenging this rule.

National Environmental Policy Act

We have prepared an environmental assessment for this proposed rule. The assessment provides a preliminary basis for the conclusion that the importation of unmanufactured wood articles from Mexico under the conditions specified in this proposed rule would reduce the risk of introducing or disseminating plant pests and would not have a significant impact on the quality of the human environment.

We prepared the environmental assessment in accordance with: (1) The

[6] Estimates of economic losses if representative insects and pathogens of concern were introduced into the United States are in the ''Pest Risk Assessment of the Importation into the United States of Unprocessed *Pinus* and *Abies* Logs from Mexico,'' referred to previously in this document. Estimated costs of introduction range from less than $1 million to more than $50 million, depending on the pest. To obtain copies of this pest risk assessment, see the instructions under footnote 1 of this document.

National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. 4321 *et seq.*), (2) regulations of the Council on Environmental Quality for implementing the procedural provisions of NEPA (40 CFR parts 1500–1508), (3) USDA regulations implementing NEPA (7 CFR part 1b), and (4) APHIS' NEPA Implementing Procedures (7 CFR part 372).

Copies of the environmental assessment are available for public inspection at USDA, room 1141, South Building, 14th Street and Independence Avenue SW., Washington, DC, between 8 a.m. and 4:30 p.m., Monday through Friday, except holidays. Persons wishing to inspect copies are requested to call ahead on (202) 690–2817 to facilitate entry into the reading room. In addition, copies may be obtained by writing to the individual listed under **FOR FURTHER INFORMATION CONTACT.**

We invite you to comment on all aspects of this proposed rule, including the environmental assessment. For information on when and where to send your comments, please refer to the **DATES** and **ADDRESSES** sections near the beginning of this document.

Paperwork Reduction Act

In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*), the information collection or recordkeeping requirements included in this proposed rule have been approved by the Office of Management and Budget (OMB). The forms that we are proposing to require for the importation into the United States of certain unmanufactured wood articles from the adjacent States in Mexico have been approved by OMB for the importation of unmanufactured wood articles from other areas of Mexico and other countries. The time that would be needed for the completion of forms under this proposal is included in the paperwork hours approved by OMB for the affected CFR sections. The assigned OMB control number is 0579–0119.

List of Subjects in 7 CFR Part 319

Bees, Coffee, Cotton, Fruits, Honey, Imports, Incorporation by reference, Nursery stock, Plant diseases and pests, Quarantine, Reporting and recordkeeping requirements, Rice, Vegetables.

Accordingly, we propose to amend 7 CFR part 319 as follows:

PART 319—FOREIGN QUARANTINE NOTICES

1. The authority citation for part 319 would continue to read as follows:

Authority: 7 U.S.C. 150dd, 150ee, 150ff, 151–167, 450, 2803, and 2809; 21 U.S.C. 136 and 136a; 7 CFR 2.22, 2.80, and 371.2(c).

2. In § 319.40–3, paragraph (a) would be amended as follows:

§ 319.40–3 General permits; articles that may be imported without a specific permit; articles that may be imported without either a specific permit or an importer document.

(a) *Canada and Mexico.* (1) The following articles may be imported into the United States under general permit:

(i) From Canada: Regulated articles, other than regulated articles of the subfamilies Aurantioideae, Rutoideae, and Toddalioideae of the botanical family Rutaceae; and

(ii) From States in Mexico adjacent to the United States: Commercial and noncommercial shipments of mesquite wood for cooking and firewood, and small, noncommercial packages of unmanufactured wood for personal cooking or personal medicinal purposes.

(2) Commercial shipments allowed in paragraph (a)(1) of this section are subject to the inspection and other requirements in § 319.40–9 and must be accompanied by an importer document stating that they are derived from trees harvested in Canada or States in Mexico adjacent to the United States border.

* * * * *

3. In § 319.40–5, paragraph (f) would be amended by adding the words ''at a U.S. facility under compliance agreement with APHIS'' immediately before the period, and a new paragraph (l) will be added to read as follows:

§ 319.40–5 Importation and entry requirements for specified articles.

* * * * *

(l) *Railroad ties and pine and fir lumber from Mexico.* Cross-ties (railroad ties) 8 inches or less at maximum thickness and lumber derived from pine and fir may be imported from Mexico into the United States if they:

(1) Originate from Mexico;

(2) Are 100 percent free of bark; and

(3) Are fumigated prior to arrival in the United States. The regulated article and the ambient air must be a temperature of 5 °C or above throughout fumigation. The fumigation must be conducted using schedule T–312 contained in the Treatment Manual. In lieu of the schedule T–312 methyl bromide concentration, fumigation may be conducted with an initial methyl bromide concentration of at least 240 g/m^3 with exposure and concentration levels adequate to provide a concentration-time product of at least 17,280 gram-hours calculated on the initial methyl bromide concentration.

Done in Washington, DC, this 7th day of June 1999.

Craig A. Reed,

Administrator, Animal and Plant Health Inspection Service.

[FR Doc. 99–14844 Filed 6–10–99; 8:45 am]

BILLING CODE 3410–34–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 99–NM–62–AD]

RIN 2120–AA64

Airworthiness Directives; Boeing Model 737–600, –700, and –800 Series Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This document proposes the supersedure of an existing airworthiness directive (AD), applicable to all Boeing Model 737–600, –700, and –800 series airplanes, that currently requires an inspection of the power distribution panels (PDP) to verify proper installation of the power feeder terminals and associated hardware, and corrective actions, if necessary. That AD also requires repetitive torque checks of the terminal attachment screws. This action would add a requirement for repetitive replacement of the PDP rigid bus assembly with a new assembly. This proposal is prompted by reports of loss of electrical power from the engine-driven generators or the auxiliary power unit due to overheating, melting, and subsequent failure of the power feeder terminals. The actions specified by the proposed AD are intended to prevent such conditions, which could result in increased risk of fire and the loss of electrical power from the associated alternating current power source.

DATES: Comments must be received by July 26, 1999.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), Transport Airplane Directorate, ANM–114, Attention: Rules Docket No. 99–NM–62–AD, 1601 Lind Avenue, SW., Renton, Washington 98055–4056. Comments may be inspected at this location between 9:00 a.m. and 3:00 p.m., Monday through Friday, except Federal holidays.

Information pertaining to this amendment may be obtained from or examined at the FAA, Transport

Proposed Rule for the Importation of Wood Articles From Mexico

Environmental Assessment, December 1998

Agency Contact:

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I. Introduction and Need for the Proposed Action

The unrestricted importation of logs, lumber, and other unmanufactured wood articles into the United States could pose a significant hazard of introducing plant pests and pathogens detrimental to U.S. agriculture and natural, cultivated, and urban forest resources. Under the Federal Plant Pest Act (7 United States Code (U.S.C.) 150aa *et seq*.) and the Plant Quarantine Act (7 U.S.C. 151 *et seq*.), the U.S. Department of Agriculture (USDA) is obligated to protect U.S. agriculture by preventing the entry and spread of foreign plant pests and establishing quarantines on and regulating the movement of potentially infested materials.

Currently, the regulation under Title 7 of the Code of Federal Regulations (CFR), section (§) 319.40–3(a), provides a general permit for the importation of unmanufactured wood articles (other than articles derived from certain subfamilies of the family Rutaceae) into the United States from Canada and from states in Mexico that are adjacent to the U.S. border (Mexican border states). A general permit means the written authorization provided in § 319.40–3; no separate paper permit is required. Under a general permit, unmanufactured wood articles from Canada and from Mexican border states may be imported into the United States provided that (1) they are accompanied by an importer document stating that the articles are derived from trees harvested in and have never been moved outside of Mexican border states or Canada and (2) they are subject to the inspection and other requirements in § 319.40–9. Unmanufactured wood products imported into the United States from the Mexican border states in accordance with this provision include but are not limited to logs, lumber, railroad ties, fence posts, firewood, solid wood packing material, and mesquite wood for cooking.

In contrast, unmanufactured wood products from Mexican states that are not adjacent to the U.S. border are subject to the more rigorous requirements of 7 CFR 319.40 for importing wood articles from all other countries except Canada. These more rigorous requirements include requirements for treatment and other special handling to ensure that the articles are pest-free. Title 7 CFR 319.40–5 provides import and entry requirements for specified regulated articles such as bamboo timber (§ 319.40–5(a)), tropical hardwoods (§ 319.40–5(c)), temperate hardwoods (§ 319.40–5(d)), and railroad ties (§ 319.40–5(f)). Title 7 CFR 319.40–6 provides universal importation options, including treatment and handling options, for unmanufactured wood articles imported into the United States, including whole logs (§ 319.40–6(a)); lumber (§ 319.40–6(b)); wood chips and bark chips (§ 319.40–6(c)); wood mulch, humus, compost, and litter (§ 319.40–6(d)); and cork and bark (§ 319.40–6(e)).

The importation requirements differ for unmanufactured wood articles imported into the United States from Canada and Mexican border states versus unmanufactured wood articles from other states of Mexico and other countries. The difference is based on the premise that ecoregions do not correspond with human-made boundaries, but extend across the U.S. borders with both Canada and Mexico (Bailey, 1997). Therefore, these ecoregions also may share, to a reasonable degree, the same forest pests. If this assumption were correct, then wood import requirements designed to prevent dangerous plant pests from being introduced into the United States could be minimal for imported wood articles originating in Canada and in Mexican border states.

In February 1998, the USDA's Forest Service completed the "Pest Risk Assessment of the Importation into the United States of Unprocessed *Pinus* and *Abies* Logs From Mexico" (USDA, FS, 1998). The analysis in this pest risk assessment shows that a significant pest risk exists in the movement of raw wood material into the United States from the Mexican border states. This conclusion also has been confirmed by USDA inspectors finding dangerous plant pests on wood imports from states in Mexico adjacent to the U.S. border during inspections at ports of entry.

The Forest Service's pest risk assessment clearly indicates that the mountain top forests of the Mexican border states, from which unmanufactured wood articles are moving into the United States, should be viewed as biological islands, not as an extension of the U.S. forest ecosystem. These biological islands contain their own unique combination of forest pests, which are different from those currently found in the United States. Those pests could cause major damage to U.S. forest resources if they were to become established in the United States. Based on the conclusions of the Forest Service's pest risk assessment (USDA, FS, 1998), the USDA, Animal and Plant Health Inspection Service (APHIS), is proposing to amend the regulations in 7 CFR 319.40 in three ways.

First, APHIS is proposing to limit the use of a general permit under § 319.40–3(a) for unmanufactured wood articles imported from the Mexican border states for a more consistent regulation of unmanufactured wood articles from all the states of Mexico, as well as other countries except Canada. Only unmanufactured wood for firewood, and small, noncommercial packages of unmanufactured wood for personal medicinal purposes would be allowed importation under a general permit from Mexican border states. Second, APHIS proposes to amend § 319.40–5 to add an additional treatment option for pine and fir lumber from Mexico. That option is to allow standard industry cut lumber made from pine of fir species originating in Mexico if, prior to arrival, that lumber is 100 percent free of bark and fumigated with methyl bromide in accordance with schedule T–132 in the Plant Protection and Quarantine Manual (USDA, APHIS, 1992), incorporated by reference at § 300.1, or with an initial

methyl bromide concentration of at least 240 grams per cubic meter (g/m^3) with exposure and concentration levels adequate to provide a concentration-time product of at least 17,280 gram-hours calculated on the initial methyl bromide concentration. Third, APHIS proposes to add an additional treatment option for the importation of railroad ties originating from Mexico. This option would permit those ties to be imported if they are 100 percent free of bark, no thicker than 8 inches, and fumigated with methyl bromide in accordance with the above schedule specified for lumber.

Information in this document provides analysis of the environmental effects of the proposed changes to 7 CFR 319.40. This document will compare information on the regulation and treatments that are currently in effect to prevent pest introduction on logs, lumber, and other unmanufactured wood articles from Mexico with the same information for the proposed changes. This document also will present the environmental effects of treating unmanufactured wood articles using existing approved methodologies and the proposed methodologies.

This environmental assessment is designed to satisfy the provisions of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321–4327), its implementing regulations, and Executive Order 12114, "Environmental Effects Abroad of Major Federal Actions" to the extent applicable.

II. Alternatives

Several approaches can be taken to reduce the risks of plant pest introductions associated with the importation of unmanufactured wood articles into the United States from Mexico. The following alternatives describe various actions to reduce pest risks and range from taking no action, to the combined actions specified in the proposed amendments to 7 CFR 319.40, to prohibiting the importation of unmanufactured wood articles from Mexico.

A. No Action

The no action alternative would be to leave 7 CFR 319 unchanged. Under the existing rules, unmanufactured wood articles can be imported into the United States under a general permit from Canada and from states in Mexico adjacent to the U.S./Mexico border. Pine and fir lumber from Mexican states that are not adjacent to the U.S. border can be imported into the United States only if those articles have been (1) kiln dried or heat treated before importation or (2) kiln dried or heat treated within 30 days after release from the port of first arrival in the United States at a facility operating under a compliance agreement with APHIS. The existing rules also permit railroad ties from Mexico to be imported

into the United States if the ties have been debarked and pressure treated within 30 days following the date of importation. The no action alternative would leave these regulations unchanged.

B. Remove the Mexican Border-states Exemption for the Movement of Unmanufactured Wood Articles Into the United States

This alternative would require that unmanufactured wood articles from Mexican border states be held to the same treatment requirements as similar articles from any other Mexican state or any other country except Canada. Under this alternative, the use of a general permit for unmanufactured wood articles from Mexico would be limited to only commercial and noncommercial shipments of mesquite wood for cooking and for firewood as well as small, noncommercial packages of wood for personal cooking or personal medicinal purposes. All other unmanufactured wood articles from Mexican states that currently qualify for a general permit (which may not require any treatment) would then be allowed into the United States only in accordance with the importation and entry requirements that are currently in place for unmanufactured wood articles from all other countries except Canada.

C. Allow an Additional Treatment Option Involving Debarking and Methyl Bromide Fumigation for Pine and Fir Lumber Entering the United States From Mexico

Currently the only treatment options for pine and fir lumber entering the United States from Mexico (unless the lumber is entering from a Mexican state bordering the United States) are (1) kiln drying or heat treatment prior to importation or (2) kiln drying or heat treatment within 30 days after release from the port of first arrival in the United States at a U.S. facility operating under a compliance agreement with APHIS. This alternative would allow standard industry cut lumber made from pine or fir species to be imported into the United States from any state in Mexico if, prior to arrival, that lumber is 100 percent free of bark and fumigated with methyl bromide in accordance with schedule T–132 in the Plant Protection and Quarantine Manual (USDA, APHIS, 1992), or with an initial methyl bromide concentration of at least 240 g/m^3 with exposure and concentration levels adequate to provide a concentration-time product of at least 17,280 gram-hours calculated on the initial methyl bromide concentration.

D. Allow an Additional Treatment Option That Railroad Ties From Mexico Are 100 Percent Debarked, No Thicker Than 8 Inches, and Fumigated With Methyl Bromide

Under this alternative, railroad ties imported from Mexico into the United States would be allowed an alternative treatment method. The new alternative would specify that railroad ties originating from Mexico must be 100 percent debarked and fumigated with methyl bromide prior to importation into the United States. Fumigated ties must have at least one dimension (such as width) that is not more than 8 inches to assure the adequate penetration of methyl bromide into the wood.

E. Amend 7 CFR 319.40 According to the Proposed Rule (Combine Alternatives B, C, and D)

This alternative combines alternatives B, C, and D. This alternative would make the importation requirements for unmanufactured wood articles uniform within all Mexican states and would allow an additional treatment method to be used on pine and fir lumber as well as railroad ties from Mexico.

F. Prohibit the Importation of All Unmanufactured Wood Articles From Mexico

Under this alternative, all unmanufactured wood articles from Mexico, including those articles that currently are imported under a general permit or in accordance with the current regulation under 7 CFR 319, would be banned from entering the United States.

III. Environmental Impacts of the Proposed Action and Alternatives

A. No Action

Under the no action alternative, 7 CFR 319 would be unchanged and the pest risk potential associated with importing unmanufactured wood articles into the United States from Mexico would remain. Areas most likely to be affected by taking no action would be those areas in the United States where the potential for pest introductions is greatest and where ecological habitats are similar on both sides of the U.S./Mexico border. Because no additional phytosanitary

measures would be taken to mitigate pest risk, the risks to U.S. forest resources would most likely be those described in the Forest Service's pest risk assessment (USDA, FS, 1998) in addition to forest pests not described by the Forest Service but which occur in Mexican states that do not border the United States.

Severe environmental consequences would be expected should U.S. forest and tree resources be diminished by pests. The quality of the global environment is dependent upon healthy forests and trees which have a tremendous influence on environmental parameters such as climate, biodiversity, and the stratospheric ozone layer. The environmental consequences of pests entering the United States on unmanufactured wood articles and the potential effect on forest resources also have been analyzed in an environmental impact statement (EIS) for importation of logs, lumber, and other unmanufactured wood articles into the United States (USDA, APHIS, 1994) and in a subsequent supplement to the EIS (USDA, APHIS, 1998a). Those documents and their findings are incorporated by reference as part of this environmental assessment.

B. Remove the Mexican Border-states Exemption for the Movement of Unmanufactured Wood Articles Into the United States

Under this alternative, unmanufactured wood articles imported from Mexican states that border the United States would be under the same treatment requirements, in general, as the requirements currently in effect for the rest of Mexico. A general permit would not be issued for unmanufactured wood articles from Mexican border states, except for commercial and non-commercial shipments of mesquite wood for cooking and firewood and small, noncommercial packages of unmanufactured wood for personal cooking or personal medicinal uses. Other unmanufactured wood products, such as pine lumber, imported into the United States from the Mexican border states that are currently exempt from treatment would be required, under this alternative, to undergo treatments and special handling consistent with 7 CFR 319.40 for importing wood articles from all other countries except Canada. However, wood articles that are already regulated in 7 CFR 319.40–5, such as bamboo timber and tropical hardwoods, would not be affected by this alternative.

This alternative would reduce the potential for pest introductions from those untreated, unmanufactured wood articles that currently enter the United States from Mexican border states under a general permit. Should inspections reveal actionable pests on unmanufactured wood articles from Mexican border states, the shipments may be refused entry into the United States or may be burned or buried.

Approximately 34 percent (which is roughly 100,000 m^3) of all the unmanufactured wood articles imported from Mexico originates in the border states (USDA, APHIS, 1998b), with pine and fir lumber the most common wood imports from the border states. Some, but not all, of the unmanufactured wood articles from border states enters the United States already in compliance with the wood regulation. However, it is likely that a substantial portion of the unmanufactured wood article imports from border states would require treatment in accordance with the existing wood regulation before entering the United States under this alternative.

In the existing wood regulation, pine and fir lumber from Mexico require heat treatment. Heat treatments are mostly done without adverse environmental impacts. Other treatment methods, such as fumigation and preservation, would increase under this alternative, but the increase would be minor given the amount of material that would likely require treatment. Therefore, this alternative would have minimal environmental effects. Greater detail about the environmental effects associated with wood treatment methods is in the EIS for importation of logs, lumber, and other unmanufactured wood articles into the United States (USDA, APHIS, 1994) and in a subsequent supplement to the EIS (USDA, APHIS, 1998a). Those documents and their findings are incorporated by reference as part of this environmental assessment.

C. Allow an Additional Treatment Option Involving Debarking and Methyl Bromide Fumigation for Pine and Fir Lumber Entering the United States From Mexico

Under this alternative, standard industry cut lumber made from pine or fir species could be imported into the United States from any state in Mexico if, prior to arrival, that lumber is 100 percent free of bark and fumigated with methyl bromide in accordance with schedule T-132 in the Plant Protection and Quarantine Manual (USDA, APHIS, 1992) or with an initial methyl bromide concentration of at least 240 g/m^3 with exposure and concentration levels adequate to provide a concentration-time product of at least 17,280 gram-hours calculated on the initial methyl bromide concentration. These treatments would effectively reduce pests that have been identified as threats to U.S. forest resources (USDA, FS, 1998). Currently the only treatment options for pine and fir lumber entering the United States from Mexico (unless the lumber is entering from a Mexican state bordering the United States) are (1) kiln drying or heat treatment prior to importation or (2) kiln drying or heat treatment within 30 days after release from the port of first arrival in the United States at a facility operating under a compliance agreement with APHIS.

Concerns regarding environmental consequences associated with methyl bromide fumigations mostly are about the possibility of ozone layer depletion. Most methyl bromide used for fumigations ultimately falls back to Earth as a relatively harmless acid. However, about 3 to 5 percent of the methyl bromide used for fumigations would be expected to reach the stratosphere (FOE, 1992). The stratosphere contains an ozone layer which protects Earth's surface from excessive ultraviolet radiation. The methyl bromide that reaches the stratosphere reacts chemically to release bromine atoms which, in turn, combine with other atoms to form ozone-reactive compounds such as bromine monoxide. These ozone-depleting compounds can eliminate large amounts of ozone from the stratosphere before degrading into nonreactive compounds. As ozone is depleted, ultraviolet radiation can reach the Earth. Human skin, wildlife, and plant photosynthesis could all be adversely affected by excessive ultraviolet radiation.

Ozone depletion is also a natural process; however, it is the acceleration of ozone depletion caused by human activities that is of concern. Human use of methyl bromide accounts for about 25 percent of the total atmospheric methyl bromide (FOE, 1992). The loss in the ozone layer that can be attributed to the methyl bromide put into the atmosphere by humans is estimated to be 5 to 10 percent of the current total loss, and the annual rate of ozone depletion is an estimated 4 to 6 percent per year (UNEP, 1992). The total use of methyl bromide in 1995 was determined to be 66,233 metric tons (MT) (German GTZ, 1997).

Under alternative C, the potential for methyl bromide use increases because fumigation would be an option to treat unmanufactured wood articles (i.e., lumber) from Mexico. The procedure used to fumigate wood products involves the procedures required in section T–312 of APHIS' Plant Protection and Quarantine Treatment Manual (USDA, APHIS, 1992). After the fumigation period, the methyl bromide in the chamber is vented to the atmosphere. The amount of unmanufactured wood articles imported into the United States from Mexico in 1997 was approximately 300,000 m^3 (USDA, FAS, 1998). The amount of methyl bromide that could be used to treat those articles would be approximately 72 MT, which represents 0.1 percent of the total methyl bromide used worldwide.

However, not every unmanufactured wood product exporter from Mexico to the United States would choose the fumigation option if it were available. Although fumigation is much less expensive than kiln drying (USDA, APHIS, 1998b), kiln drying serves other commercial purposes. Importers in the United States may prefer kiln-dried products which meet industry standards, in which case exporters would continue to rely on heat treatments

to satisfy U.S. import requirements. The extent to which fumigation would be used instead of kiln drying is unknown and will depend on nonphyto-sanitary advantages of kiln drying compared to the lower costs of fumigation. Therefore, the actual amount of methyl bromide used would likely be smaller than the estimate of 72 MT that could occur under alternative C should the future amount of wood products imported into the United States from Mexico be comparable to the 1997 level.

Methyl bromide gas and liquid are acutely toxic to humans and nontarget organisms as well as the target pests. However, regulatory fumigations have specific mandatory safety precautions to prevent exposure. These safety precautions result in very little direct risk to human health from program-related methyl bromide fumigations. In addition, methyl bromide is likely to dissipate rapidly as it is released from the fumigation facility, producing low concentrations of methyl bromide in the air surrounding the fumigation site. These concentrations are not likely to be high enough to adversely affect living organisms in the area. Greater detail about the environmental effects associated with methyl bromide use is in the EIS for importation of logs, lumber, and other unmanufactured wood articles into the United States (USDA, APHIS, 1994) and in a subsequent supplement to the EIS (USDA, APHIS, 1998a). Those documents and their findings are incorporated by reference as part of this environmental assessment.

The debarking requirement would have little environmental consequences. Debarking is a widely used practice throughout the wood processing industry that is conducted with little, if any, adverse environmental effects. Only minimal increases in debarking would be expected under this alternative.

D. Allow an Additional Treatment Option That Railroad Ties From Mexico Are 100 Percent Debarked, No Thicker Than 8 Inches, and Fumigated With Methyl Bromide

Under this alternative an additional treatment option of fumigation would be allowed for railroad ties imported into the United States from Mexico. The requirements of this option would be that the railroad ties must be 100 percent free of bark, no thicker than 8 inches, and fumigated with methyl bromide in accordance with schedule T–132 in the Plant Protection and Quarantine Manual (USDA, APHIS, 1992), or with an initial methyl bromide concentration of at least 240 g/m^3 with exposure and concentration levels adequate to provide a concentration-time product of at least 17,280 gram-hours calculated on the initial methyl bromide concentration. The stipulation that the ties be no thicker

than 8 inches assures that methyl bromide could permeate the ties during the fumigation process (Cross, 1992).

Railroad ties are a minor component of the unmanufactured wood articles imported into the United States from Mexico. Although exact figures are unavailable for Mexico alone, 64,185 m^3 of railroad ties were imported into the United States from all countries combined in 1997 (USDA, FAS, 1998). Assuming that all railroad ties were from Mexico, less than 1.5 MT of methyl bromide would be needed to fumigate those railroad ties. In practice, the amount of methyl bromide used under this alternative would be even less than 1.5 MT because (1) other countries also import railroad ties into the United States, and (2) railroad ties from Mexico would continue to be eligible for importation if the ties have been pressure treated or heat treated in accordance with the existing wood regulation and would not require fumigation. Greater detail about the environmental effects associated with fumigation is in the EIS for importation of logs, lumber, and other unmanufactured wood articles into the United States (USDA, APHIS, 1994) and in a subsequent supplement to the EIS (USDA, APHIS, 1998a). Those documents and their findings are incorporated by reference as part of this environmental assessment.

E. Amend 7 CFR 319.40 According to the Proposed Rule (Combine Alternatives B, C, and D)

This alternative combines the actions described in alternatives B, C, and D. This alternative would make the importation requirements for unmanufactured wood articles uniform within all Mexican states and would allow methyl bromide fumigation of pine and fir lumber as well as railroad ties from Mexico. The environmental effects associated with each of the alternatives B, C, and D all would occur under alternative E.

These actions, if enacted, would increase the amount of unmanufactured wood articles that are treated to remove pests. In addition, because fumigation with methyl bromide would be a treatment option for pine and fir lumber and railroad ties under this alternative, the use of methyl bromide also would increase to some extent. Should fumigation be used to treat every pine and fir lumber and railroad tie shipment, the maximum increase in methyl bromide would be an estimated 73.5 MT (72 MT to treat lumber plus 1.5 MT to treat railroad ties).

While the maximum methyl bromide use of 73.5 MT under this alternative was estimated using import data for all pine and fir lumber and railroad ties imported into the United States from Mexico, the actual amount used would be less. Not all Mexican exporters would choose the fumigation option. Some exporters would continue to use the existing approved treatment methods, such as heat

treating or preserving, which do not use methyl bromide. Even though the exact amount of methyl bromide used under this alternative cannot be exactly determined, it can be stated that the maximum amount of 73.5 MT represents less than 0.1 percent of the total methyl bromide used worldwide in 1997 (German GTZ, 1997).

It should be noted that worldwide methyl bromide use is scheduled to be drastically reduced in the future. According to the provisions of the Montreal Protocol, an international treaty governing production and use of ozone-depleting chemicals, methyl bromide use will be completely phased out in the year 2005, with an exemption for quarantine uses. Much of the future reduction will be in the discontinued methyl bromide use for soil fumigation purposes. Thus, the amount of methyl bromide that could be used under this alternative will represent a larger proportion of the worldwide use in future years; however, it is unlikely that methyl bromide use will decrease to the point where 73.5 MT of methyl bromide would constitute more than a small fraction of the total worldwide use.

Other future actions could result in a cumulative increase in methyl bromide use. APHIS is studying the effectiveness and environmental acceptability of alternative treatments to prepare for an eventual unavailability of methyl bromide fumigation. Until such time that alternative treatments are adopted, methyl bromide will continue to be viewed as an effective pest treatment option for unmanufactured wood articles. For example, an interim rule involving methyl bromide fumigation of solid wood packing material from the People's Republic of China was recently published (63 *Federal Register* (FR) 50100). Although no specific decisions have been promulgated, it would be reasonable to expect that methyl bromide fumigations would be considered for reducing the risk of pest infestations on other unmanufactured wood articles. The cumulative aspect of this alternative and future actions is discussed further in section H.1. of this assessment.

F. Prohibit the Importation of All Unmanufactured Wood Articles From Mexico

Prohibiting the importation of all unmanufactured wood articles from Mexico into the United States would eliminate the pest risks associated with those articles. However, other alternatives that are less destructive of trade also can reduce the risk of forest pest establishment to negligible levels because of available effective mitigation measures. According to international treaties of which it is a party, the United States must justify trade restrictions. Under these circumstances, the United States is obligated to choose phytosanitary measures that are (1) effective and (2) the least restrictive of trade. However, under this

alternative, there would be no options for treatment and/or certification that imports to the United States from Mexico are pest-free. This would reduce the number of wood product treatments and decrease the need for inspections if the alternative was implemented and followed in good faith.

The potential environmental consequences of this alternative are few. From an economic standpoint, the coniferous lumber exports from Mexico to the United States, which were valued at $97.6 million in 1997 (USDA, APHIS, 1998b), would be halted under this alternative. This alternative would not affect the potential for exotic forest pests to enter the United States because of natural forces, illegal movement of unmanufactured wood articles, or the movement of commodities not covered under 7 CFR 319.

G. Comparison of the Alternatives

Alternatives to the proposed changes to 7 CFR 319.40 have been presented above. Each of the alternatives represents various actions that can be taken to reduce pest risks associated with importing unmanufactured wood articles from Mexico into the United States. Table 1 lists the alternatives, summarizes the potential environmental consequences, and provides the relative extent to which each alternative would exclude pests.

From the perspective of environmental consequences associated with the proposed treatments specified in the proposed rule, alternative F would be the alternative with the least consequences, and alternative E would have the most environmental consequences because alternative E combines alternatives B, C, and D.

From the perspective of the ability to exclude pests associated with unmanufactured wood articles, alternative A would be the least effective and alternative F would be the most effective. Alternatives B, C, and D would reduce pest risks associated with specific pathways. Because it combines the pest reduction strategies in alternatives B, C, and D, alternative E provides a greater level of pest risk reduction than alternatives A, B, C, or D.

Table 1. Comparison of the Alternatives

Alternative	Potential environmental consequences	Relative extent of pest exclusion
A: Take no action (current status)	Pest infestation of U.S. forest resources	Less than alternatives B, C, D, E, or F
B: Remove Mexican border-states exemption	Increase in wood treatments from border states only	More than alternative A, less than alternatives E or F, not comparable to C or D
C: Permit methyl bromide treatment option for pine and fir lumber	Increase in methyl bromide use by up to 72 MT	Same as alternative A, less than alternatives E or F, not comparable to B or D
D: Permit methyl bromide treatment for railroad ties	Increase in methyl bromide use by up to 1.5 MT	More than alternative A, less than alternatives E or F, not comparable to B or C
E: Implement proposed rule; combine alternatives B, C, and D	Increase in heat treatments and pressure treatments. Methyl bromide use increased by up to 73.5 MT (0.1% of worldwide consumption).	More than alternatives A, B, C, or D; less than alternative F
F: Prohibit unmanufactured wood articles from Mexico	Few, if any	More than alternatives A, B, C, D, and E

H. Applicability to Other Environmental Requirements

1. Other Changes to the Wood Import Regulation

APHIS recently notified the public of other proposed changes to the regulation to reduce the risk of pest introductions associated with importing unmanufactured wood articles into the United States. For example, APHIS has proposed changes to 7 CFR 319 that would allow the importation of *Pinus radiata* wood chips from Chile if the surfaces of the chips are treated with a pesticide (63 FR 40193). APHIS also has implemented an interim rule regarding solid wood packing material from the People's Republic of China (63 FR 50100).

The environmental effects described in this environmental assessment would be added to the effects that would result from the other changes to 7 CFR 319 if those changes are fully implemented. Therefore, changes to 7 CFR 319 could result in not only an increased use of 73.5 MT of methyl bromide annually to treat unmanufactured wood articles from Mexico, but an additional 1,040 to

12,565 MT of methyl bromide annually to treat solid wood packing material from China (USDA, APHIS, 1998c).

As more is learned about the risk for pest introductions associated with the importation of unmanufactured wood articles into the United States, APHIS is likely to propose measures that would reduce, or possibly eliminate, those risks. It is likely that risks associated with solid wood packing material from countries other than China will be addressed in the future, although APHIS has yet to propose the measures that could be taken to mitigate those risks. Fumigation with methyl bromide is only one of many treatment options that can be considered. The extent to which methyl bromide fumigation will continue to be used for agricultural quarantine purposes is uncertain. Although methyl bromide fumigation has been a commonly applied treatment method in the past, APHIS continues to search for other options that are as dependable and effective as methyl bromide fumigation.

2. Executive Order 12898 (Environmental Justice)

Consistent with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," APHIS considered the potential for disproportionately high and adverse human health or environmental effects on minority populations and low-income populations as a result of this proposed rule. The environmental effects described in this environmental assessment would not impact minority populations and low-income populations any differently than the effects would be to the general population.

3. Executive Order 13045 (Protection of Children)

In accordance with Executive Order 13045, "Protection of Children From Environmental Health Risks and Safety Risks," APHIS has evaluated the environmental health or safety effects of the proposed rule on children. APHIS has concluded that the proposed rule would not impose an environmental health risk or safety risk on children.

4. Clean Air Act and the Montreal Protocol

The U.S. Congress attached an amendment to the Fiscal Year 1999 appropriations bill that makes specific changes to the Clean Air Act. The amendment requires the U.S. Environmental Protection Agency to make regulatory changes to the U.S. phaseout of methyl bromide. These changes will essentially "harmonize" the U.S. phaseout of methyl bromide with the Montreal Protocol phaseout schedule for developed countries. However, in addition to these reductions in methyl bromide consumption, the Parties to the Montreal Protocol exempted from any control measures quarantine and preshipment uses of methyl bromide.

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Appendix F. Acronyms and Glossary

A

ACGIH — American Conference of Governmental Industrial Hygienists

APHIS — Animal and Plant Health Inspection Service, United States Department of Agriculture

ARS — Agricultural Research Service, United States Department of Agriculture

B

Biodiversity — Genetic variability of species and variability of environmental processes within a given geographical area or ecological community.

C

CEC — Commission for Environmental Cooperation

CEQ — Council on Environmental Quality

CFC's — Chlorofluorocarbons

CFR — Code of Federal Regulations

Chlorofluoro-carbons — Organic chemical substances containing chlorine and fluorine.

cm — Centimeters

Cumulative impact or effects — ". . . the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." (40 CFR 1508.7).

D

Debarking — The process of removing bark from logs and other regulated wood articles, including dunnage.

E

EA Environmental assessment

Ecological regions Geographical areas with common environmental characteristics.

Ecoregions See Ecological regions.

Ecosystem A functioning natural unit including the biological species present, the physical environment (soil, water, air), and relationships among the components present.

EEC European Economic Community

EIS Environmental impact statement

Electron beam irradiation A form of radiation that has experimentally been used to treat wood; the radiation is generated by machine rather than from a radioactive isotope.

Entry The physical arrival of a pest organism at a particular port or location.

E.O. Executive Order

EPA Environmental Protection Agency

Established A permanent infestation of a pest organism in a given area.

Establishment Perpetuation, for the foreseeable future, of a pest within an area after introduction.

F

FAO Food and Agriculture Organization, United Nations

FIFRA Federal Insecticide, Fungicide, and Rodenticide Act

Frass Excretory products from insects.

FS USDA, Forest Service

Fumigant The gaseous state of a toxic chemical which, when released and dispersed to a commodity, is designed to kill any pests found on or within the commodity.

Fumigation The act of releasing or dispersing a gaseous or aerosol compound (fumigant) to eliminate pest risk.

Fumigation chamber Enclosed structure where commodities are treated with gaseous or aerosol compound to eliminate pest risk.

G

Gamma radiation A nonchemical treatment method that has been used to sterilize or kill certain pest species by exposure to specific wavelengths of light rays and is a method that is most often used to treat commodities other than wood.

GATT General Agreement on Trade and Tariffs; an international agreement designed to reduce and eliminate barriers to trade, investment, and services among its signatory countries.

Global warming/global climate change The process by which energy distribution within the atmosphere affects temperature and climate worldwide.

Grams per cubic meter (g/m^3) Measurement of fumigant concentration in air.

Greenhouse gases/effect Any one of several chemicals present in air that store and retain heat and may cause warming of air temperatures (effect).

H

Heat treatment Regulatory quarantine action of applying high temperature to a commodity to eliminate pest risk.

Hectare Unit of area measure equal to 2.471 acres.

I

IJC International Joint Commission

Introduction	The intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity.
IPM	Integrated Pest Management; an approach to pest control that involves consideration to all practical chemical and nonchemical methods.
IPCC	International Panel on Climate Change
Irradiation	Regulatory treatment which exposes a commodity to light rays resulting in elimination of pest risk.
ITO	International Trade Organization

K

Kiln drying	A process for heating and drying wood in an enclosed facility. The specific procedures are described in the Dry Kiln Operators Manual.

M

m^3	Cubic meters
MBTOC	Methyl Bromide Technical Options Committee
Mexican border states	The Mexican states of Baja California, Sonora, Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas that share a common border with the United States.
Microwave treatment	Exposing wood to ultra-high frequency magnetic fields that elevate the temperature of any material containing moisture.
Montane	Mountainous areas.
MT	Metric tons

N

NAFTA	North American Free Trade Agreement
NEPA	National Environmental Policy Act
NIS	Non-indigenous species

Nonquarantine pest An undesirable organism not officially controlled but of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed.

O

ODP Ozone depleting potential (under stratospheric ozone layer).

ODS Ozone depleting substance; literally, a substance which acts to reduce the amount of ozone in the atmosphere.

Ozone A compound consisting of three connected oxygen atoms found in two layers of the atmosphere, the stratosphere and the troposphere.

P

Phytosanitary measures Any legislation, regulation, or official procedure having the purpose to prevent the introduction and/or spread of pests.

Phytotoxicity The ability of a chemical to adversely affect plant growth or survival.

Plant pest "Any living stage of any insects, mites, nematodes, slugs, snails, protozoa, or other invertebrate animals, bacteria, fungi, other parasitic plants or reproductive parts of parasitic plants, noxious weeds, viruses, or any organism similar to or allied with any of the foregoing, or any infectious substances, which can injure or cause disease or damage in any plants, parts of plants, or any products of plants." (7 CFR 319.40–1).

PPM Parts per million

PPQ Plant Protection and Quarantine

Q

QPS Quarantine and preshipment

Quarantine pest An undesirable organism, officially controlled and of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed.

R

Recapture system — The part of fumigation equipment designed to remove methyl bromide when treatment is completed. Equipment consists of an intake from fumigation chamber, an extraction unit, and an outflow for the purified air.

Regeneration facility — An industrial plant designed to remove bromine residues from carbon absorption modules to allow future use in recapture systems of methyl bromide.

Regional standards — Standards established by a regional plant protection organization for the guidance of the members of that organization.

Regulated article — "The following articles, if they are unprocessed or have received only primary processing: logs; lumber; any whole tree; any cut tree or any portion of a tree, not solely consisting of leaves, flowers, fruits, buds, or seeds; bark; cork; laths; hog fuel; sawdust; painted raw wood products; excelsior (wood wool); wood chips; wood mulch; wood shavings; pickets; stakes; shingles; solid wood packing materials; humus; compost; and litter." (7 CFR 319.40–1).

Regulated non-quarantine pest — A nonquarantine pest whose presence in plants for planting affects the intended use of those plants with an economically unacceptable impact and which is therefore regulated within the territory of the importing contracting party.

Regulated pest — A quarantine pest and/or a regulated nonquarantine pest.

RfC — Reference concentration

Riparian areas — The zones along water bodies that serve as interfaces between terrestrial and aquatic ecosystems.

S

Sessile — Animals that are slow moving or sedentary.

SPS — Sanitary and phytosanitary regulations/standards.

Stratosphere — The upper portion of the atmosphere, in which temperature varies very little with changing altitude and clouds are rare.

Sulfhydryl enzymes — Biologically active units (enzymes that serve as catalysts) that use functional groups of compounds containing sulfur and hydrogen (e.g., mercaptans).

T

TEIA Transboundary environmental impact assessments

Trace gas An aerosol present at low concentration that is barely detectable.

U

UN United Nations

UNEP United Nations Environment Programme

USDA United States Department of Agriculture

UV Ultraviolet radiation

V

Volatilizer Heating unit to convert methyl bromide liquid to a gaseous form.

W

Watershed A terrestrial area that contributes to water flow.

WHO World Health Organization

WMO World Meteorological Organization

WTO World Trade Organization

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Appendix G. Index

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