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Service



# **Pine Shoot Beetle Host Material from Canada**

## **Environmental Assessment, August 2001**

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# I. Need for the Proposal

## A. Introduction

The pine shoot beetle (*Tomicus piniperda*) is native to Europe and Asia, where it is a destructive pest of pine and related species. Heavy infestations of pine shoot beetle typically kill most of the lateral shoots near the tops of trees. In rare cases, whole trees may be killed either by direct damage or by pathogenic fungi introduced by the beetle. Managed and natural stands of pine are at risk from infestations of pine shoot beetle.

After its detection on a Christmas tree farm near Strongsville, Ohio, in July 1992, the U.S. Department of Agriculture (USDA) managed an extensive detection and delimiting survey effort. Following the survey, the USDA's Animal and Plant Health Inspection Service (APHIS) established a domestic quarantine for the pest. That quarantine, 7 Code of Federal Regulations (CFR) Part 301.50 (Domestic Quarantines, Pine Shoot Beetle), provides for quarantines of infested areas, designates regulated items, provides protocols for the movement of those items, and specifies regulatory control methods.

Eradication and suppression have not been considered viable alternatives in preventing human-assisted spread of this pest because no reliable methods are available and the current infestation in the United States is so widespread (in the following 11 States: Illinois, Indiana, Maryland, Michigan, New Hampshire, New York, Ohio, Pennsylvania, Vermont, West Virginia, and Wisconsin). Although natural dispersal of pine shoot beetle is quite slow, transport of infested host material by humans probably accounts for its widespread dispersion.

Currently, pine shoot beetle host material is unrestricted when imported from Canada into the United States. Some portions of Ontario and Quebec have been determined to be generally infested and there has been an increase in pine shoot beetle populations over the last 7 years. Canada has conducted a detection and delimiting survey similar to that of USDA. Canada has regulatory compliance practices in place in these areas to control the spread of pine shoot beetle populations. However, these practices have not been successful in controlling the spread of the pest. Movement of certain articles from these areas of Canada into the United States has been regulated by APHIS under the Emergency Provisions of the Federal Plant Pest Act (section 150dd(a)) and more recently under the Plant Protection Act of 2000, Title IV of Public Law 106-224. Regulations were, however, never promulgated to cover the importation of pine forest products into the United States.

Recently, the Pine Shoot Beetle Management Team, cooperators, APHIS Invasive Species and Pest Management Staff, and Eastern Regional Program Managers performed a thorough review of requirements necessary to regulate importation of pine shoot beetle host material into the United States from Canada. The results of this study indicated that pine shoot beetle host material imported into the United States from Canada must be regulated to prevent the spread of pine shoot beetle to uninfested areas.

On July 24, 2000, the Canadian Food and Inspection Agency (CFIA) implemented import restrictions on pine forest products and pine nursery stock based upon pest risk from pine shoot beetle infested areas of the United States. Canada's recent regulations are designed to be comparable to the United States' regulations under consideration for imports from Canada. Canada's intent is to promote continuity of border regulatory activities and to foster closer cooperation between the countries in dealing with common pest risk issues. The United States is obligated, under various trade agreements, to ensure that any new phytosanitary regulations (such as those under consideration for pine shoot beetle host material) be scientifically based and be of the least restriction to trade in achieving the requisite protection.

This environmental assessment (EA) has been designed to satisfy the provisions of the National Environmental Policy Act of 1969 (42 U.S.C. 4321–4327 (NEPA)) and its implementing regulations.

## **B. Purpose and Need**

APHIS is considering regulations to impose specific requirements on the importation of pine shoot beetle host material imported into the United States from Canada. The purpose of these regulations is to prevent unacceptable risks damage to softwood trees and forests from the potential spread of pine shoot beetle. Currently, pine shoot beetle host material is unrestricted when imported from Canada into the United States. The regulations would place certain restrictions on pine products entering the United States from infested portions of Ontario and Quebec. Some products would need to be inspected and accompanied by a phytosanitary certificate. Other products could have the inspection or certification requirements waived if certain treatment or processing to eliminate pest risk could be verified by the CFIA or certain required shipping documents. The available treatment and processing requirements include debarking, heat treatment, fumigation with methyl bromide, and regulatory pesticide treatments of growing trees. This approach would allow continuing movement of regulated articles without further restrictions. This reciprocal regulation is designed to parallel recent Canadian restrictions on U.S. exports of pine shoot beetle host materials into Canada. This regulation is needed to prevent

the spread of pine shoot beetle into non-infested portions of the United States. Regulatory enforcement of the provisions of these regulations would be conducted by APHIS and the U.S. Customs Service. The United States domestic quarantine would continue to be conducted by APHIS and the State plant regulatory agencies. The domestic quarantine applies to pine forest products, cut pine Christmas trees, and nursery stock species (pines) that are hosts of the pine shoot beetle in the infested areas. The domestic quarantine will continue to protect uninfested States.

APHIS has the authority to conduct 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 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 foreign quarantine regulations of logs, lumber, and other unmanufactured wood products under Title 7, Code of Federal Regulations (CFR), Part 319.40 and of nursery stock under Title 7 CFR Part 319.37. These two subparts include regulation of certain pine shoot beetle host materials. These regulations are designed to help prevent the entry and spread of nonnative pests. Through enforcement of these regulations, APHIS provides notices of quarantines, establishes requirements for import permits and phytosanitary certificates, inspects cargo, requires regulatory treatments and safeguards, and establishes pest risk assessment standards.

## **II. Alternatives**

APHIS is considering three alternatives for this program: (1) reciprocal regulation, (2) no action (no change in the current pine shoot beetle program), and (3) rescission of the domestic quarantine (elimination of the current domestic program and lack of promulgation of reciprocal regulation). Review of the pest risk assessments and of the potential for cumulative environmental and pest risks from this reciprocal regulation combined with the domestic pine shoot beetle quarantine made it evident that the alternatives should include consideration of the influence of both domestic and import quarantine regulations of pine shoot beetle host material. Therefore, this assessment includes a brief review of the environmental impacts from the domestic quarantine regulations, particularly as this action contributes to or decreases the potential for cumulative impacts. Each of the alternatives is characterized briefly in this section.

## **A. Reciprocal Regulation**

This regulation would apply new requirements to the import regulations of pine shoot beetle host material imported primarily from infested portions of two Canadian provinces to the United States. Currently, that host material is unrestricted. Some pine products from infested portions of Ontario and Quebec would have to be inspected and accompanied by a phytosanitary certificate. Other products could have the inspection or certification requirements waived if certain treatment or processing could be verified by the CFIA or certain required shipping documents. The primary justification for this regulation relates partly to harmonization with Canadian regulations of products with comparable pest risk and to the need for mitigation of the increased pest risk as characterized in a recent pest risk assessment (Pasek, 2000). There has been considerable concern expressed by State regulatory agencies about the elevated pest risk to pine forests in the western and southern United States. Consistent Federal regulation of potentially infested host materials from both domestic and Canadian sources serves to lower the pest risks to acceptable levels.

The provisions of the reciprocal regulation would place restrictions on pine forest products (bark, logs and pulpwood with bark, mulch), nursery stock, and cut pine trees. The regulations would be based upon origin and destination (regulated or non-regulated areas). Proper documentation of origin or of the lack of presence of pine shoot beetle at origin is sufficient for importation from non-regulated areas of Canada. A phytosanitary certificate is required for some products from non-regulated areas within partially regulated provinces of Canada. Importation from regulated areas of Canada to regulated areas of the United States requires proper documentation of origin and destination. Adherence to these regulations prevents risk of new infestations of pine shoot beetle in non-regulated areas. Importation of pine shoot beetle host materials from regulated areas of Canada to non-regulated areas of the United States would require specific documentation by the CFIA of fulfillment of all reciprocal provisions. This documentation may include verification of specific treatment, handling, or processing to eliminate pest risk. This includes methods such as heat treatment, debarking, methyl bromide fumigation, and conventional pre-harvest pesticide applications to regulated trees during growth. Most of these requirements have minimal potential to adversely impact the environment. There are, however, potential adverse impacts from fumigation treatments in Canada of pine shoot beetle host material with methyl bromide on stratospheric ozone depletion. This issue is addressed in some detail in the section on environmental consequences. Analysis of the environmental issues in this assessment relate directly to the potential depletion of stratospheric ozone effects on the global commons.

## **B. No Action**

Under the no action alternative, described and analyzed thoroughly in a previous EA for the Pine Shoot Beetle Compliance Management Program (USDA, 1998), there would be no change in the regulations currently being implemented by APHIS to limit the spread of the pine shoot beetle. The current regulations relate primarily to domestic quarantine requirements in the generally infested areas of the United States. This alternative regulates pine shoot beetle host materials from infested areas within the United States, but does not regulate materials of comparable pest risk from infested parts of Canada. Therefore, the pest risks to uninfested pine forest resources in United States would be considerably greater from infested sites in Canada than from comparably infested sites in the United States due to the lack of regulation of Canadian pine shoot beetle host material. The close proximity of Canadian pine forests to those across the United States border would result in increased risk of expanded infestation of Canadian forests as well, so the lack of cooperative regulation under this alternative presents potential adverse consequences from pest risk to both Canada and the United States. Environmental effects from the domestic program in the United States relate primarily to the program use of pesticides to eliminate pest risk. These potential impacts are minimized by program standard operating procedures and mitigation measures.

## **C. Recision of the Quarantine**

Under this alternative, the domestic pine shoot beetle quarantine and its associated restrictions on interstate movement of potentially infested pine shoot beetle host material would be eliminated. This alternative would involve no Federal action to control pine shoot beetle or regulate host material, so potential environmental impacts from selection of this alternative would relate strictly to adverse effects from increased pest risk to forests and forest products. At their discretion, individual States could examine the problem and implement quarantines and/or programs to serve their own needs. However, State regulatory authority is limited to restrictions through domestic quarantines on other States. Federal authority is required for regulation of Canadian pine shoot beetle host materials and products. The Canadian authorities could continue to impose regulatory quarantines and quarantine treatments, but the lack of a cooperative program with the United States would make it difficult for them to protect their pine forest resources that are often located in close proximity to pine forests in adjacent forests across the border in the United States.



### **III. Environmental Consequences**

The potential environmental consequences from the pine shoot beetle program relate primarily to impacts from pest risk and impacts from regulatory treatments. The ability of each alternative to decrease pest risks from pine shoot beetle relates to the ability to control pest populations and prevent their dissemination from infested areas to uninfested areas. The reciprocal regulation would be the most effective alternative at preventing pest risk. Recision of the quarantine would subject United States and Canadian forest resources to the greatest potential pest risk and would eliminate all regulatory treatments and associated adverse impacts. The use of program regulatory treatments would be increased under provisions of the reciprocal regulation. Although all pesticide regulatory treatments used to certify elimination of pest risk are issues of environmental concern, the primary environmental issue relates to the potential impacts from program use of methyl bromide fumigation. In particular, the potential impacts of fumigation with methyl bromide on ozone depletion is discussed in some detail in the environmental consequences section for the reciprocal regulation alternative.

#### **A. Reciprocal Regulation**

Implementation of the reciprocal regulation alternative would result in decreased pest risk to forests in the United States, in that potential pest risk from pine shoot beetle host materials from Canada would be lowered through regulation of imported pine wood and pine products from infested areas in Ontario and Quebec. This prevents spread of pine shoot beetle by closing one pathway (host material from Canada) through which forests in the United States could become infested. The regulation would be consistent with the rule already promulgated by the CFIA, and the cooperative international approach to regulating pine shoot beetle host material would make the current regulations more effective at controlling potential spread of pine shoot beetle. This helps to protect pine forests in both the United States and Canada from spread and damage by pine shoot beetle.

The reciprocal regulation maintains the current domestic quarantine regulations, and the potential environmental consequences of the domestic regulatory treatments would not be changed by the potential changes in importation regulations. In particular, environmental consequences from the log, trunk, and foliar applications used to certify host materials under the domestic compliance management program would not change. Those environmental consequences are described in detail in the next section under the no action alternative.

The specific handling and processing of regulated wood products required for regulatory certification of pine shoot beetle host material under the reciprocal regulation poses environmental risks similar to conventional processing of wood products. This processing involves common wood handling procedures, such as debarking and composting, that eliminate pest risk and pose minimal impacts to the environment. The proper disposal of the processing wastes provides for elimination through degradation and creates useful soil or mulch from composting. The cooperative aspects of this regulation provide for a mutual effort to control pine shoot beetle pest risk between APHIS and the CFIA. This cooperation is anticipated to result in better containment of the pine shoot beetle in North America due to regulation of potentially infested products by all pathways.

Methyl bromide is being considered by APHIS as one treatment option in the reciprocal regulation because of its known efficacy. Other potential treatment methods may not have been adequately tested for efficacy or logistical issues. The acceptance of a regulatory treatment method by APHIS is based upon comprehensive review, efficacy considerations, and approval. The review and approval processes take into consideration safety and health issues as well as logistical considerations. Although certain pest reduction processes may be a part of standard industry practices, these processes may not meet the standards of efficacy and approval required by APHIS. The handling and processing of regulated wood products under this alternative allows certification by the CFIA using methods approved by APHIS. This regulation would permit movement of pine shoot beetle host material for fuel plant, process plant, and mill procedures that eliminate pest risk.

In initial scoping for this EA, the U.S. Environmental Protection Agency (EPA) expressed their concern about the lack of alternative compliance methods to methyl bromide fumigation. Their concerns also related to fulfillment of compliance with phaseout of methyl bromide usage as required under the amended 1987 Montreal Protocol on Substances that Deplete the Ozone Layer and stipulated under recent Clean Air Act regulations (EPA, 1999). APHIS announced the availability of the draft EA and the opening of a 30-day comment period in a *Federal Register* notice (vol. 66, no. 44, pgs. 13484–13485) on March 8, 2001 to ensure that issues of concern to all interested parties would be addressed. No comments were received during this comment period. The use of methyl bromide for quarantine treatment purposes against pine shoot beetle is minor compared with most other uses, and the Montreal Protocol maintains an exemption to the restrictions on methyl bromide for quarantine use. Notwithstanding this exemption, APHIS is making an effort to seek acceptable alternatives to methyl bromide fumigation.

Although the primary goal of this regulation is to prevent the spread of the pine shoot beetle to uninfested parts of the United States, APHIS needs to consider how this regulation could affect trade. The United States is a signatory to the International Plant Protection Convention (IPPC), which establishes standards for acceptable phytosanitary regulations. 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 reciprocal regulation affects Canada which is also a signatory to the IPPC. The technical justification is based upon the pest risk assessment (Pasek, 2000). Based upon the IPPC standards, the phytosanitary measures imposed by APHIS under this regulation are not allowed to exceed the domestic program regulations of pine shoot beetle. Therefore, the regulation includes the same basic compliance methods used in the domestic program, including the option of fumigation with methyl bromide.

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. GATT has provided a definition clarifying acceptable sanitary and phytosanitary measures for trade in a footnote to paragraph 6 of Article 5 from the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS). The SPS measures may be “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.” Although there are alternative compliance methods with lower environmental impacts (USDA, APHIS, 2000) than fumigation with methyl bromide, these methods cost more than fumigation with methyl bromide and eliminating fumigation as an option could make the cost of compliance prohibitive to commerce. The lower cost of fumigation with methyl bromide relative to other measures that achieve the same level of phytosanitary protection makes this treatment method favorable for APHIS compliance with international phytosanitary agreements.

In addition to formal trade agreements, APHIS cooperates with other countries in control of common pest risks. APHIS has discussed pine shoot beetle pest risk thoroughly with the CFIA. Part of the intent of those discussions was to harmonize regulations of pine shoot beetle host materials between Canada and the United States. The option of fumigation with methyl bromide was provided for pine shoot beetle host materials imported from the United States under the CFIA rule and APHIS is expected to reciprocate unless there is some clear justification to deviate. Consistency between domestic quarantine regulations and

import/export regulations of the two countries is of interest to the facilitation of continuing trade in products derived from pine shoot beetle host materials.

The rule promulgated on July 24, 2000, by the CFIA, “Plant Protection Requirements on Pine Plants and Pine Materials to Prevent the Entry and Spread of Pine Shoot Beetle” (D-94-22), regarding the importation of pine shoot beetle host material from regulated areas of the United States, includes fumigation with methyl bromide as one of the acceptable treatment methods for certification. Although the Canadian regulations are not directly tied to the United States regulations, the effectiveness of regulations of pine shoot host material by both countries is interdependent, in that spread of pine shoot beetle from inadequate containment of the present infestation would be anticipated to affect the forests of both countries. Therefore, the environmental consequences of the Canadian rule are considered to be important from the standpoint of cumulative pest risk and cumulative ozone depletion risk. The growers and producers in the United States are already subject to the domestic program regulations and are expected to use similar approaches to comply with the Canadian rule. The Canadian rule for movement of pine shoot beetle host material from infested areas of Ontario and Quebec to other parts of Canada allows fumigation also, but this method was applied sparingly to Christmas trees during the first year of implementation and found to damage the product. No fumigations of pine shoot beetle host material in Canada have occurred since those first fumigations. Therefore, it is anticipated that growers in Canada will select compliance certification methods other than fumigation with methyl bromide to allow movement of their products.

The continuing limited treatments of logs with methyl bromide from the domestic program was determined to pose no significant risks to the human or physical environment in a previous EA (USDA, 1998). The findings of this document are incorporated by reference in this EA. Although methyl bromide is an acutely toxic vapor that has the potential to produce systemic and cumulative effects on humans that are excessively exposed, its limited and controlled use in this program presents minimal potential for environmental impact. This anticipated lack of environmental impact is a result of (1) the carefully controlled manner in which it is used, (2) its short half-life and quick dispersal, (3) the relatively small use from the domestic program, and (4) the minimal contribution of the agricultural use of methyl bromide to the ozone depletion phenomenon. The APHIS treatment manual requires specific safety procedures and protective clothing for all fumigations with methyl bromide. The domestic pine shoot beetle compliance program provides fumigation of pine shoot beetle host material as a regulatory treatment, but certification of pine shoot beetle host material by fumigation with methyl bromide was only used sparingly in the first year of the domestic regulatory program.

Having considered the low frequency of fumigation in the domestic program and the unlikely use of fumigation as a certification treatment in compliance with the Canadian rule, the potential prospects under the reciprocal rule for use of methyl bromide in fumigations for regulatory certification need to be considered. The use of fumigation for other regulatory compliance requirements related to pine shoot beetle has been historically very limited, and it is anticipated that growers and producers will continue to prefer other acceptable treatment methods for their regulated products over fumigation with methyl bromide. Use is also expected to be very limited under the reciprocal rule.

Based upon data from Statistics Canada, the quantity of imports of potentially affected pine was determined. The data includes quantities from the entire provinces of Ontario and Quebec because available data are not limited to regulated (infested) areas. Many pine products cannot be fumigated due to potential damage. This includes articles such as Christmas trees. The general categories of pine products that could be fumigated include wood waste/scrap, fence posts, pine logs, and railroad ties. Although other compliance methods exist for the reciprocal regulation, the conservative assumption for this quantitative analysis was that all potential pine products would be fumigated. Using this conservative approach, the potential annual cubic feet of wood that could be fumigated is just under 4 million cubic feet.

Applying the maximum treatment rate for methyl bromide fumigation of 15 lbs/1000 cubic feet to the quantity of imports, the potential annual methyl bromide use in Canada in compliance with the reciprocal regulation would amount to 26 metric tons (MT). The 1996 worldwide methyl bromide use was determined to be 63,960 MT. The relative annual increase in worldwide methyl bromide use resulting from the reciprocal regulation based upon this data is 0.0407%. The estimated methyl bromide emissions from this use would be 22.88 MT. Based upon these emissions, the potential annual contribution to ozone depletion from this regulation could amount to 0.000407% and the potential hindering effect on restoration of the ozone layer from this regulation could be from 0.00204 to 0.00611%. As was pointed out in the previous paragraphs, this compliance method has not been preferred by the growers and producers. It is anticipated that most growers and producers will not use fumigation to comply with the regulations being considered. The maximum potential use of methyl bromide and the maximum potential ozone depletion resulting from this compliance method are minimal compared to other use patterns and sources of ozone depletion.

Therefore, methyl bromide use resulting from the reciprocal regulation should be insignificant. Nevertheless, impacts on ozone depletion must also be considered in light of any potential cumulative aspects. As stated earlier, the domestic and

Canadian rules for pine shoot beetle host materials are not resulting in methyl bromide fumigations as a preferred compliance strategy. There are, however, other potential regulatory compliance treatments that could involve greater use of fumigation with methyl bromide. Some regulatory treatments with methyl bromide are anticipated as part of reasonably foreseeable future actions. The potential cumulative impacts of these treatments have been described in the draft environmental impact statement (EIS) for importation of unmanufactured wood articles from Mexico (USDA, 2000). The information and analyses of that document are incorporated by reference into this EA. The anticipated potential releases of methyl bromide in Mexico from fumigation of Mexican unmanufactured wood articles determined in the EIS amount to 21 MT. Like the limited releases anticipated from fumigation under the reciprocal regulation alternative, this is a small quantity with minimal impact on the annual levels of ozone depletion. Increasing trade and introduction of new pest risks, such as pine shoot beetle, can be expected to periodically make compliance methods, such as fumigation with methyl bromide, necessary to eliminate pest risk. Although the need for these new regulations is expected to be infrequent, APHIS expects to provide protection to agricultural resources through regulatory actions which may include fumigation with methyl bromide.

Most of the pending regulatory decisions are unlikely to greatly increase methyl bromide usage due to other preferable cost-effective treatment options. The influence on ozone depletion from these actions is, therefore, not expected to be measurable. However, there is an anticipated rule regarding regulation of solid wood packing material (SWPM) from all foreign worldwide releases that could pose more substantial cumulative consequences if the rule includes methyl bromide as a treatment option. An analysis of the potential annual releases of methyl bromide from SWPM regulation was made based upon 1998 rates of commodity trade. Using low and high methyl bromide fumigation scenarios, it was determined that the potential annual worldwide releases from SWPM regulations could vary from 8,536 to 102,893 MT of methyl bromide per year. This amounts to an increase in anthropogenic releases of methyl bromide from 12.9 to 155.4%. This potential increase in anthropogenic release of methyl bromide would be expected to increase the current contribution of methyl bromide to ozone depletion from 1 to 2.5%. Independent of the environmental and scientific implications of such increases in methyl bromide use, the effect on the dynamics of the stratospheric ozone layer from this pending SWPM rule is of concern and the regulatory decisions regarding that rule will have to address cumulative impacts of a much greater magnitude than the other pending rules.

Consistent with Executive Order No. 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 any minority populations and low-income populations. No disproportionate effects on such populations are anticipated as a consequence of implementing the reciprocal regulation.

Likewise, APHIS considered the potential for any disproportionate adverse effects to children from the regulations being considered for this program in compliance with the policy of Executive Order 13045, "Protection of Children From Environmental Health Risks and Safety Risks." No disproportionate effects on children are anticipated as a consequence of implementing the reciprocal regulation.

## **B. No Action**

Potential environmental impacts from this alternative would be qualitatively similar to those for the reciprocal regulation, but the magnitude would differ considerably. There would be no regulatory quarantine of pine shoot beetle host material from Canada, so this alternative would allow the pine shoot beetle to spread more rapidly and greater losses would occur to pine timber and pine products. The resulting increase in infested trees would be expected to result in increased overall use of pesticides by the growers to minimize beetle damage and by landowners to protect their ornamental trees.

The amount of fumigation with methyl bromide under this alternative would be less than under the reciprocal regulation in that pine shoot beetle host materials from Canada would not be fumigated. The domestic pine shoot beetle compliance program provides fumigation of pine shoot beetle host material as a regulatory treatment, but certification of pine shoot beetle host material using this method has not been widely used. In fact, there were a few fumigations conducted in Michigan during the first year of the domestic quarantine and there have been no fumigations since. This lack of use of fumigation with methyl bromide in the domestic program relates primarily to grower preference. The same grower preference for other methods is expected for the reciprocal rule. The compliance management program described under the no action alternative using other chemical treatments (log, trunk, and foliar applications) provides a more acceptable treatment to growers for their pine products. Accordingly, growers have selected these chemical treatments over methyl bromide fumigation for certification of compliance with the pine shoot beetle regulations for logistical considerations and marketing reasons. However, the amount of fumigation with methyl bromide used to treat pine shoot beetle host material under either the no action or the reciprocal rule alternative is expected to be minimal.

Therefore, there should continue to be no significant impacts for all actions taken to control pine shoot beetle. The impacts of this program alternative have been

described in detail in an earlier EA (USDA, 1998) and those findings are incorporated by reference into this assessment. Those findings are summarized in the next paragraphs.

Continuation of the domestic quarantine (no action alternative) would result in no changes in overall impacts. The domestic quarantine would continue to impede the spread of pine shoot beetle, resulting in beneficial environmental impacts (minimization of ecological disruption in natural ecosystems and minimization of losses in commercially managed agricultural systems). Heavy infestations of pine shoot beetle which typically kill most of the lateral shoots near the tops of trees would increase to the extent that the domestic program is unable to limit spread of the beetle. In rare cases, whole trees could be killed either by direct damage or by pathogenic fungi introduced by the beetle. However, most loss would be to the valuable lumber products from healthy pine trees. Beneficial impacts are difficult to quantify because they are related to host distribution and diversity, but it is clear that the use of pine and related tree stands for commercial purposes, aesthetic purposes, recreation, and wildlife cover is enhanced when the spread of pine shoot beetle is impeded. The quarantines placed on newly infested areas limit the ability of pine shoot beetles to spread and damage pine trees. In some cases, where those natural ecosystems provide habitat for endangered and threatened species, the survivability of those species are enhanced by this domestic quarantine.

Adherence to the domestic pine shoot beetle compliance management program limits potential spread of the pine shoot beetle to natural means or movement from Canada. In addition, this limitation on the artificial spread of the beetle makes it more feasible to benefit from the introduction of biological control agents, which are anticipated to further limit natural spread (Chawkat, 1994). This management plan continues the Federal domestic quarantine and requires intensive efforts on the part of cooperating State plant regulatory agencies to enforce the provisions.

The existing domestic compliance actions in the United States have minimal adverse impacts. This plan uses the several sanitation practices and pest monitoring that pose no significant impacts from these activities. The trapping of pine shoot beetles through trap logs or pheromone traps only affects populations of the beetle itself. Minimal adverse impact occurs from the disposal of some regulated items, such as cut Christmas trees.

Requirements in the United States for chemical control treatments under the compliance agreement with growers have greater potential for adverse effects. These regulatory compliance treatments are designed to eliminate pest risk and have minimal adverse impact to the environment. These compliance pesticide treatments are expected to be fewer and of less intensity than the treatments made



by commercial growers and private landowners if the pine shoot beetle were allowed to spread, as with rescission of the quarantine.

A thorough environmental risk assessment was completed for domestic program use of pesticides to control pine shoot beetle (USDA, 1997). The analysis and findings of that document are incorporated by reference into this EA. The pesticides proposed for application as foliar sprays are bifenthrin, carbaryl, chlorpyrifos, and cyfluthrin. The pesticides proposed for application as log sprays and trunk sprays are bifenthrin, chlorpyrifos, cyfluthrin, lambda cyhalothrin, lindane, and permethrin. A brief summary of the findings of the risk assessment follows.

The human health risks were determined for typical, extreme, and accident scenarios in the risk assessment. Determination of exposure and potential risk were analyzed for workers and the general public in these scenarios. The risks determined for each scenario assume that pesticide applications are made in compliance with label application rates, but no special protective measures are taken and no special protective clothing is worn. The results, therefore, tend to overestimate the actual risks. The highest human health risk for all pesticide applications is for workers in the accident scenario where there is a broken hose or spill of concentrated pesticide. Immediately cleansing exposed skin and adhering to the required mitigation measures (appendix A) decrease the risk considerably for this unexpected scenario. The typical scenarios are those that would most likely occur from program pesticide applications. Although ground applicators have substantial risk under some scenarios, adherence to the program mitigation measures and proper use of protective clothing ensure that risks to all workers (including applicators) are within acceptable limits, even for extreme scenarios. Typical exposures pose negligible risk to the public.

Extreme exposures pose negligible risks to the public for the synthetic pyrethroids (bifenthrin, cyfluthrin, lambda cyhalothrin, and permethrin), but pose moderate risks to the public for the other pesticides (carbaryl, chlorpyrifos, and lindane). Adherence to program mitigation measures decreases exposure to these pesticides and ensures that there are no significant risks to the public from any exposure scenario. Although bifenthrin and lindane have been classified by EPA as possible human carcinogens (Class C oncogens), the exposure from domestic program applications is low and risks are less than 1 in a million of carcinogenic effects from the program use.

The risks to terrestrial wildlife were determined for typical and extreme exposure scenarios in the risk assessment. Risks to terrestrial wildlife (except insects) for typical scenarios were low for all chemicals except lindane. The potential hazards to mammals are moderate for program use of lindane, but the restricted use of

lindane to only log and trunk sprays limits the actual exposure. Adherence to program mitigation measures (appendix A) helps restrict the residues of pesticides to the treatment areas and prevent exposure of nontarget mammals. Risks to terrestrial insects from program use of chemicals vary. Lindane and permethrin pose high risk to honey bees, but lambda cyhalothrin poses low risk. Bifenthrin, carbaryl, chlorpyrifos, and cyfluthrin pose moderate risks to honey bees. Apiarists should be notified of program applications of pesticides in the area, so they can protect their hives during the program treatments.

The risks to aquatic wildlife from program use of chemicals have the potential to be more severe than the risks to terrestrial wildlife. All program pesticides except carbaryl are very highly toxic to fish and aquatic invertebrates. Carbaryl is moderately toxic to fish and highly to very highly toxic to aquatic invertebrates. The risks were determined to be high for all pesticides to aquatic organisms in ponds and high for bifenthrin and chlorpyrifos in creeks. The risks for the other pesticides in creeks were lower. This risk does not take into account the decrease in exposure from use of several program mitigation measures. The 25-foot buffer around water bodies, applications restricted to ground treatments, and the mitigations (appendix A) to minimize drift all decrease the likelihood that program pesticides will enter water. Adherence to these mitigations ensures that adverse effects of program chemicals on aquatic organisms will be minimal.

The Endangered Species Act (ESA) and its implementing regulations require Federal agencies to consult with the U.S. Department of the Interior's Fish and Wildlife Service (FWS) and/or the U.S. Department of Commerce's National Marine Fisheries Service (NMFS) to ensure their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of critical habitat. Federal agencies must determine if their actions "may affect" an endangered or threatened species or its habitat; if that determination is positive, they must initiate consultation with FWS and/or the NMFS. APHIS has consulted with FWS regarding endangered and threatened species, submitted biological assessments for all program areas, and complies with all protection measures stipulated in that consultation with FWS.

The risk of adverse effects to the physical environment was also considered in the risk assessment. The half-life of most program chemicals is relatively short in air, water, soil, and vegetation with are two exceptions. Lindane binds strongly to soil particles and remains active on foliage for extended periods of time. Bifenthrin also binds strongly to soil particles. The bound pesticides in soil are not a problem as long as the particles are not carried away in runoff. This is further reason for the buffers around water bodies.

The program applications of lindane are not made to foliage, so lindane residues on foliage would occur only through drift of pesticide residues. There are mitigations designed specifically to minimize drift and runoff (appendix A). Adherence to these mitigations ensures that residual lindane on foliage will not be a significant environmental concern.

A monitoring plan has been prepared to analyze effectiveness of the mitigations for these compliance treatments. The program conducts some monitoring of pesticide drift, runoff, and human health effects from pesticide applications. This helps to ascertain the extent to which program mitigations are adequate to protect against adverse environmental impacts. FWS also requires the program to do some monitoring as part of interagency cooperation related to protection of endangered and threatened species and their critical habitat.

### **C. Recision of the Quarantine**

In the absence of any Federal action to regulate movement of pine shoot beetle host material from newly infested areas, natural pine ecosystems and pine timber industries would be at considerable risk. This would be particularly true for softwood forests in the southern and western United States. Although individual States have indicated that they would adopt their own quarantines on other States if the Federal quarantine is rescinded, the effectiveness of overall Federal regulation would be lost and differences in State quarantines could result in increased risk by not providing the same level of management and protection. The current Federal program is viewed as a good model for State regulation if the Federal quarantine were rescinded. In addition to allowing the spread of pine shoot beetle to natural and agricultural ecosystems to go largely unchecked, this alternative could also lead to increased use of chemical insecticides as individual growers or local communities attempt to suppress or eradicate pine shoot beetle infestations. Heavy infestations of pine shoot beetle which typically kill most of the lateral shoots near the tops of trees would be more frequent. Occasionally, whole trees would be killed either by direct damage or by pathogenic fungi introduced by the beetle. This alternative also increases pest risk to Canadian forests due to the increased likelihood of spread of pine shoot beetle infestations to new sites near the border where dispersive movement into Canada is possible. Therefore, this alternative removing all Federal quarantines on pine shoot beetle host material would have some adverse impacts.

There is good support for the Federal quarantine to protect pine forest resources and facilitate continuing trade. It has yet to be determined that the documentation of “new” infestations represents movement of pine shoot beetle from previously documented infestations, rather than representing previously established infestations that have been newly detected. The pathway for human-assisted

spread of pine shoot beetle has yet to be fully documented. Although human-assisted spread may contribute to the movement of pine shoot beetle, it is uncertain if this spread is primarily through movement of host plant commodities or by other means, such as beetles that “hitchhike” to new destinations in cars or other modes of transportation. Although methyl bromide fumigation is quite effective in killing pine shoot beetle, its contributing role in preventing the spread of pine shoot beetle is unquantified. The effectiveness of field treatments at limiting infestation size and preventing spread is also unclear. This alternative could be considered more comprehensively in the future if the distribution of areas infested with pine shoot beetle were to approach the overall range of host plants in the United States and Canada.

## **IV. Agencies, Organizations, and Individuals Consulted**

Environmental Services  
Policy and Program Development  
Animal and Plant Health Inspection Service  
U.S. Department of Agriculture  
4700 River Road, Unit 149  
Riverdale, MD 20737-1238

Import Services  
Plant Protection and Quarantine  
Animal and Plant Health Inspection Service  
U.S. Department of Agriculture  
4700 River Road, Unit 140  
Riverdale, MD 20737-1236

Program Support  
Plant Protection and Quarantine  
Animal and Plant Health Inspection Service  
U.S. Department of Agriculture  
4700 River Road, Unit 134  
Riverdale, MD 20737-1234

# Appendix A

## Mitigation Measures for Pesticide Applications of Pine Shoot Beetle Compliance Management Program

1. All growers will be required to follow applicable Federal, State, and local environmental laws and regulations related to pesticide application.
2. All chemicals will be applied in strict accordance with the EPA- and State-approved label instructions.
3. All pesticides will be applied by hand-operated or motorized ground equipment—not aerial. This will decrease the potential for drift of pesticide residues.
4. All pesticides will be applied only to the regulated commodity. There will be no applications to adjacent areas or unplanted borders of the pine groves. This reduces potential for drift and runoff to areas adjacent to the treated commodity.
5. Applicators and persons within the treatment area are required to wear protective clothing or remain inside a closed vehicle with recirculating air during pesticide applications.
6. Workers will be advised of the respective reentry periods following pesticide treatments and will not reenter without protective clothing prior to the completion of this period of time.
7. Applicators will cease treatments if unprotected members of the public are observed in the treatment area. Treatments may continue when such persons are no longer present.
8. Pesticide applications will not be made within 25 feet of any body of water. This 25-foot buffer prevents potential adverse effects to water quality, human health, and aquatic wildlife from drift and runoff of chemical residues.
9. To minimize drift and runoff (and increase efficacy), pesticide applications will not be made when any of the following conditions exist in the treatment area: wind velocity exceeding 10 miles per hour (or less if required by State law), rainfall or imminent rainfall within 48 hours, air turbulence that could seriously affect the normal spray pattern, or temperature inversions that could lead to off-site movement of spray.

10. Before beginning treatment, growers will notify any apiarists in the immediate vicinity of the date and approximate time of application to provide the apiarists an opportunity to protect their bees from potential adverse effects of pesticide exposure.
11. Before initiating operations, APHIS will obtain concurrence from the U.S. Department of the Interior's Fish and Wildlife Service on protection measures that may be required for endangered and threatened species or their critical habitat.
12. Environmental monitoring of the program for drift, runoff, and human health effects will be conducted in accordance with the current environmental monitoring plans.

## Appendix B. References

Chawkat, A.M., 1994. Pest risk assessment (PRA) on pine shoot beetle (PSB). Biological Assessment and Taxonomic Support, Plant Protection and Quarantine, Animal and Plant Health Inspection Service, U.S. Department of Agriculture.

EPA—See U.S. Environmental Protection Agency

Pasek, J.E., 2000. Pine shoot beetle (*Tomicus piniperda* (L.)): pest-initiated pest risk assessment for likelihood and consequences of spread within the continental United States - March 24, 2000. Center for Plant Health and Technology, Raleigh Plant Protection Center, Plant Protection and Quarantine, Animal and Plant Health Inspection Service, U.S. Department of Agriculture, Raleigh, NC.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1997. Pine shoot beetle compliance management program chemicals risk assessment, April 1997.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1998. Proposed interim rule for pine shoot beetle quarantine environmental assessment, November 1998.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2000. 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.

USDA—See U.S. Department of Agriculture

U.S. Environmental Protection Agency, 1999. Protection of stratospheric ozone: incorporation of Montreal Protocol adjustment for a 1999 interim reduction in Class I, Group VI controlled substances. Federal Register 64(104):29240–29245.



**Finding of No Significant Impact  
for  
Reciprocal Regulation of Pine Shoot Beetle Host Material  
from Canada  
Environmental Assessment,  
August 2001**

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), has prepared an environmental assessment (EA) that analyzes potential environmental consequences of regulatory alternatives for the importation of pine shoot beetle host material from Canada. The EA, incorporated by reference in this document, is available from:

U.S. Department of Agriculture  
Animal and Plant Health Inspection Service  
Plant Protection and Quarantine  
Plant Health Programs  
4700 River Road, Unit 140  
Riverdale, MD 20737-1236

The EA analyzed alternatives of (1) reciprocal regulation (preferred alternative), (2) no action (continuing the existing program), and (3) rescission of the domestic quarantine. Each alternative was determined to have some potential but insignificant environmental consequences. The reciprocal regulation was preferred because of its capability to decrease pest risk by preventing spread of pine shoot beetle in a way that reduces the magnitude of those potential environmental consequences and to maintain the effectiveness of domestic control programs. Program standard operational procedures and mitigative measures serve to negate or reduce the potential environmental consequences of this program.

APHIS has determined that there would be no significant impact to the human environment from the implementation of the preferred alternative. APHIS' Finding of No Significant Impact for this program was based upon the limited nature of the program and its expected limited environmental consequences, as analyzed in the EA. In addition, APHIS anticipates no adverse impacts to threatened or endangered species or their habitats from this regulatory action. I find that the preferred program poses no disproportionate adverse effects to minority and low-income populations and the actions undertaken for this program are entirely consistent with the principles of "environmental justice," as expressed in Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." Likewise, I find that the preferred program poses no disproportionate adverse effects to children and the actions undertaken for this program comply with the policy of Executive Order 13045, "Protection of Children From Environmental Health Risks and Safety Risks."

Lastly, because I have not found evidence of significant environmental impact associated with the proposed program, I further find that an environmental impact statement does not need to be prepared and that proposed program may be implemented.

/s/ \_\_\_\_\_  
Richard Dunkle  
Deputy Administrator  
Plant Protection and Quarantine  
Animal and Plant Health Inspection Agency

9/10/01 \_\_\_\_\_  
Date