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Quarantine and Interstate Movement of Citrus Greening and Asian Citrus Psyllid

Environmental Assessment
July 2009

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I. Purpose and Need

A. Introduction

Citrus greening disease (CG), also known as Huanglongbing disease of citrus, is considered to be one of the most serious citrus diseases in the world. CG is a bacterial disease caused by strains of the bacterial pathogen "*Candidatus* Liberibacter asiaticus" that attacks the vascular system of host plants. The pathogen presents no threat to humans or animals. The pathogen is phloem-limited, inhibiting the food-conducting tissues of the host plant, and causes yellow shoots, blotchy mottling and chlorosis, reduced foliage, and tip dieback of citrus plants. CG greatly reduces production, destroys the economic value of the fruit, and can kill trees. Once infected, there is no cure for a tree with CG. In areas of the world where CG is endemic, citrus trees decline and die within a few years and may never produce usable fruit. CG was first detected in the United States in Miami-Dade County, Florida, in 2005. Currently, CG is only known to be present in Florida, one county in Georgia, two parishes in Louisiana, and two counties in South Carolina.

The bacterial pathogen causing CG can be transmitted by grafting and, under laboratory conditions, by dodder. Additionally, there is some evidence that seed transmission may occur. The pathogen also can be transmitted by two insect vectors in the family Psyllidae: *Diaphorina citri* Kuwayama, the Asian citrus psyllid (ACP), and *Trioza erytreae* (del Guercio), the African citrus psyllid. In addition to transporting "*Candidatus* Liberibacter asiaticus", ACP can cause economic damage to citrus in groves and nurseries by direct feeding. Both adults and nymphs feed on young foliage, depleting the sap and causing galling or curling of leaves. High populations feeding on a citrus shoot can kill the growing tip. ACP is currently present in portions or all of Alabama, California, Florida, Georgia, Hawaii, Louisiana, Mississippi, South Carolina, Texas, Guam, and Puerto Rico. The African citrus psyllid will not be discussed further in this document because it is not known to be present in the United States.

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS) has undertaken measures to control the artificial spread[1] of CG and ACP to noninfested areas of the United States since the introduction of the CG in 2005. On September 16, 2005, APHIS issued a Federal Order designating all or parts of 10 affected counties in Florida as quarantined areas, and imposing restrictions on the interstate movement of all CG and ACP host material from these areas. Since then,

[1] Humans moving CG or ACP host plant material have been responsible for the long-distance spread of CG and ACP; this is often referred to as "artificial" spread.

it has been necessary to update the restrictions and expand the CG and/or ACP quarantine areas with subsequent Federal Orders[2] due to the continuing spread of both CG and ACP. APHIS has issued a total of twelve Federal Orders[3] to impose restrictions on the interstate movement of CG and ACP host plant material from quarantined areas.

APHIS is proposing a control program that would replace the July 29, 2009, Federal Order for CG and ACP. It would codify some of the provisions of the Order, clarify others, and add provisions that APHIS has determined to be necessary since the issuance of the last Federal Order so as to prevent the spread of CG and ACP to noninfested areas of the United States.

B. Purpose and Need

Under § 412(a) of the Plant Protection Act (7 United States Code (U.S.C.) 7701 et seq.), the Secretary of Agriculture may prohibit or restrict the movement of interstate commerce of any plant or plant product, if the Secretary determines that the prohibition or restriction is necessary to prevent the dissemination of a plant disease within the United States. Under the Act, the Secretary may also issue regulations requiring plants and products moved in interstate commerce to be subject to remedial measures determined necessary to prevent the spread of the disease, or requiring the objects to be accompanied by a permit issued by the Secretary prior to movement.

There is a need to control the spread of CG and ACP in order to minimize economic damage to citrus in groves and nurseries. The purpose of the proposed control program outlined below would be to protect the domestic citrus industry, including the individual farmers who comprise the base of that industry, by controlling the artificial spread of CG and ACP.

In September 2005, APHIS prepared an environmental assessment (EA) to analyze and evaluate potential environmental effects resulting from the proposed CG control program. On October 5, 2005, APHIS issued a notice of availability of a finding of no significant impact (FONSI) for the EA concerning the citrus greening control program in Florida nurseries. The EA was subsequently revised and finalized and a FONSI was issued in January 2006. APHIS prepared a second EA, and a FONSI was issued in October 2007. The EA evaluated the possible environmental impacts

[2] To view these Federal Orders, go to http://www.aphis.usda.gov/plant_health/plant_pest_info/citrus_greening/regs.shtml.

[3] The twelve Federal Order are as follows: September 16, 2005, DA#2005-30; May 3, 2006, DA#2006-19, 5/3/06; November 2, 2007, DA#2007-54; January 11, 2008, DA#2008-02; June 24, 2008, DA#2008-26; July 11, 2008, DA#2008-31; July 22, 2008, DA#2008-36; August 5, 2008, DA#2008-40; September 12, 2008, DA#2008-61; October 1, 2008, DA#2008-67; January 28 2009, DA#2009-06; and July 29, 2009.

associated with implementation of the revised Federal Order, and, in particular, the treatment schedules specified within it.

This EA analyzes the environmental impacts anticipated from implementation of the proposed program actions stated below. This EA has been prepared consistent with the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.) and APHIS' NEPA implementing procedures (7 CFR part 372). APHIS is providing a 30-day public comment period for response to this EA. (Please send any comments to Mr. Patrick Gomes, Animal and Plant Health Inspection Service, Plant Protection and Quarantine, 920 Main Campus Drive, Suite 200, Raleigh, NC 27606-5213).

II. Alternatives

APHIS has considered two alternatives in response to the need for better methods to control and contain CG and ACP: (1) no action, and (2) the proposed action. Each alternative is described briefly in this section, and the potential environmental impacts of each are considered in the following section.

A. No Action

Under the no action alternative, APHIS would withdraw the current Federal Order and would take no further regulatory action. APHIS would not implement any quarantine or control measures to eradicate or even attempt to locally contain the spread of CG or ACP. It is likely that this action would result in an increase in control measures from other Federal or non-Federal entities to control CG and ACP.

B. Proposed Action

Under the proposed action alternative, APHIS would adhere to the measures outlined below. The requirements in the current Federal Order, with some modifications, would remain in effect as a result of implementation of this program. This alternative would provide protection to the domestic citrus industry by controlling the artificial spread of CG and ACP.

The interstate movement of articles regulated for CG and ACP from an area quarantined for CG or ACP would be prohibited, except under certain conditions outlined below.

1. Quarantined Areas

A State, or a portion of a State, would be designated as a quarantined area for CG when the presence of CG is confirmed within the area following an APHIS-administered test.

A State, or a portion of a State, would be designated as a quarantined area for ACP when an established population[4] of ACP has been detected.

The Administrator[5] may also consider it necessary to quarantine an area because of its inseparability for quarantine enforcement purposes from localities in which CG and/or ACP have been found.

APHIS would publish the description of all areas quarantined for CG or ACP on the Plant Protection and Quarantine (PPQ) Web site (see http://www.aphis.usda.gov/plant_health/plant_pest_info/citrus_greening/index.shtml). Lists of all quarantined areas also may be obtained by request from any local office of PPQ; local offices are listed in telephone directories. APHIS would publish a notice in the Federal Register informing the public of any changes that have occurred to the quarantined areas.

Currently, the entire State of Florida and Georgia, two parishes in Louisiana, and two counties in South Carolina are designated as quarantined areas for CG. The entire States of Alabama, Florida, Georgia, Hawaii, Louisiana, Mississippi, and Texas, and the entire Territory of Guam, and the Commonwealth of Puerto Rico are quarantined for ACP. Additionally, portions of the States of California and South Carolina are quarantined for ACP.

2. Interstate Movement of Regulated Articles

The following are regulated articles for ACP and CG—

All plants and plant parts (including leaves), except fruit, of: *Aegle marmelos, Aeglopsis chevalieri, Afraegle gabonensis, A. paniculata, Atalantia* spp. *(*including *Atalantia monophylla), Balsamocitrus dawei, Bergera* (=*Murraya*) *koenigii, Calodendrum capense*, ×*Citroncirus webberi, Citropsis articulata, Citropsis gilletiana, C. schweinfurthii, Citrus madurensis* (=×*Citrofortunella microcarpa), Citrus* spp., *Clausena anisum-olens, C. excavata, C. indica, C. lansium, Eremocitrus glauca, Eremocitrus* hybrid, *Fortunella* spp., *Limonia acidissima, Merrillia caloxylon, Microcitrus australasica, Microcitrus australis, M. papuana,* ×*Microcitronella* spp., *Murraya* spp., *Naringi crenulata, Pamburus missionis, Poncirus trifoliata, Severinia buxifolia, Swinglea glutinosa, Tetradium ruticarpum, Toddalia asiatica, Triphasia trifolia, Vepris* (=*Toddalia*) *lanceolata,* and *Zanthoxylum fagara*[6].

[4] An "established population" under the CG and ACP control program is defined as the presence of ACP within an area that the Administrator determines is likely to persist for the foreseeable future.
[5] The Administrator refers to the Administrator of USDA's Animal and Plant Health Inspection Service or any individual authorized to act for the Administrator.
[6] Any other product, article, or means of conveyance may be designated a regulated article for ACP or CG, if an inspector determines that it presents a risk of spreading these pests and provides written a notification to the person in possession of the product, article, or means of conveyance that it is subject to restrictions.

Propagative seed of the species listed above is considered a host of CG, but not a host of ACP.

Labeling Requirements

All regulated nursery stock[7] offered for commercial sale within an area quarantined for CG must be prominently labeled with language alerting consumers to Federal prohibitions regarding the interstate movement of the article.

Nursery stock produced within a quarantined area for planting in a commercial citrus grove[8] within that same area and moved directly to that grove, without movement outside of the quarantined area, may be moved without being labeled.

Nursery stock that would be moved interstate for immediate export under a limited permit may be moved without being labeled.

Issuance of Certificates and Limited Permits

Certificates are issued when an inspector[9] or person operating under a compliance agreement[10] finds that a regulated article can be moved safely from a quarantined area without risk of spreading the disease or pest. Regulated articles accompanied by a certificate may be moved interstate without further movement restrictions.

Limited permits are issued for regulated articles when an inspector finds that the articles may safely be moved interstate only with additional restrictions, such as prohibitions on movement to certain locations. An inspector or person operating under a compliance agreement may issue a limited permit for the interstate movement of a regulated article only if the regulated article is to be moved interstate to a specified destination for specified handling, processing, or utilization (the destination and other conditions to be listed in the limited permit) and this movement of the regulated article would not result in the spread of CG or the ACP.

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[7] Nursery stock are any plants or plant parts, excluding fruit or propagative seeds, intended to be planted, to remain planted, or to be replanted. Nursery stock includes, but is not limited to, trees, shrubs, cuttings, grafts, scions, and buds.

[8] A commercial citrus grove is a solid-set planting of trees maintained for the primary purpose of producing citrus fruit for commercial sale.

[9] An inspector is an individual authorized by the APHIS Administrator to perform the duties required under the program.

[10] A compliance agreement is a written agreement between APHIS and a person engaged in the business of growing, maintaining, processing, handling, packing, or moving host articles for interstate movement, in which the person agrees to comply with this subpart. A compliance agreement can be a memorandum of understanding.

Certificates and limited permits would be issued only if the regulated articles are moved in compliance with additional emergency conditions that may be imposed to prevent the spread of CG or ACP and the articles are eligible for interstate movement under all other Federal domestic plant quarantines and regulations applicable to the article.

Any certificate or limited permit that has been issued may be withdrawn by an inspector if he or she determines that the holder of the certificate has not complied with all relevant regulations.

Additional Conditions

Regulated Articles from Areas Quarantined for Only ACP But Not CG

In addition to the general conditions for issuance of a certificate, an inspector or person operating under a compliance agreement may issue a certificate for the interstate movement of any regulated article to any State, if—

- The article is treated with methyl bromide in accordance with 7 CFR part 305; and
- The article is shipped in a sealed container; and
- The container is labeled with the certificate; and
- A copy of the certificate is attached to the consignee's copy of the accompanying waybill.

An inspector or person operating under a compliance agreement may also issue a limited permit for the interstate movement of regulated nursery stock if all of the following conditions are met—

- The nursery stock, unless fumigated with methyl bromide, is treated for ACP with an APHIS-approved soil drench or in-ground granular application (as discussed below) no more than 30 days and no fewer than 20 days before shipment, followed by an APHIS-approved foliar spray (as discussed below) no more 10 days before shipment. All treatments must be applied according to their EPA label, including directions on application, restrictions on place of application, and other restrictions and precautions, including statements pertaining to Worker Protection Standards.
- The nursery stock is inspected by an inspector and found free of ACP.
- The nursery stock has the following statement prominently and legibly displayed, **"Limited permit: USDA-APHIS-PPQ. Not for distribution in American Samoa, AZ, Northern Mariana Islands, and U.S. Virgin Islands or those portions of CA and**

SC not quarantined due to the presence of Asian citrus psyllid or citrus greening".

- The nursery stock is moved in a sealed container.
- The container also prominently and legibly displays the statement of the limited permit.
- A copy of the limited permit is attached to the consignee's copy of the accompanying waybill.
- The nursery stock is moved in accordance with the conditions specified on the limited permit.

An inspector or person operating under a compliance agreement may issue a limited permit for the interstate movement of regulated articles intended for consumption, for use as apparel or a similar personal accessory, or for other decorative use if—

- The articles are treated with irradiation in accordance with 7 CFR part 305 at an irradiation facility that is not located in an area quarantined for CG; and
- The container is clearly labeled with the limited permit; and
- A copy of the limited permit is attached to the consignee's copy of the accompanying waybill.

Regulated Articles from Areas Quarantined for CG

Prior to shipping regulated nursery stock from areas quarantined for CG, in addition to the general conditions for issuance of a limited permit, an inspector or person operating under a compliance agreement may issue a limited permit for the interstate movement of regulated nursery stock grown, produced, or maintained at a nursery or other facility located in the CG-quarantined area if all of the following conditions are met—

- The nursery stock is treated for ACP with an APHIS-approved soil drench or in-ground granular application, followed by an APHIS-approved foliar spray (as discussed below), or with methyl bromide or irradiation, in accordance with 7 CFR part 305.
- The nursery stock is inspected by an inspector and found free of ACP.
- The nursery stock is prominently and legibly labeled with the following statement **"Limited permit: USDA-APHIS-PPQ. For immediate export only."**
- The nursery stock is accompanied by a copy of the limited permit attached to the consignee's copy of the waybill.
- The nursery stock is directly moved in a sealed container in accordance with the conditions specified on the limited permit to the port of export specified on the limited permit.
- A copy of the limited permit is attached to or legibly printed on this container.

- The nursery stock remains in this sealed container as long as the plants are within the United States.

APHIS-Approved Treatments

APHIS would maintain a continually updated list of all pesticides approved for use in the control program on the PPQ Website (http://www.aphis.usda.gov/plant_health/plant_pest_info/citrus_greening/index.shtml). Currently, methyl bromide and several soil drenches and foliar sprays are approved for use in certain circumstances.

The treatment requirements for ACP are summarized below—

- Any regulated article that will be moved interstate must be treated with methyl bromide in accordance with 7 CFR part 305, or
- Any regulated nursery stock that will be moved interstate must be treated with a soil drench or in-ground granular application of dinotefuran or imidacloprid as the sole active ingredient in the pesticide product. The application must be made no more than 30 days and no less than 20 days before shipment, followed by a foliar spray containing either bifenthrin, chlorpyrifos, deltamethrin, fenpropathrin, or an imidacloprid and cyfluthrin mixture as the sole active ingredient(s) in the pesticide product. The foliar spray must be applied no more than 10 days prior to shipment.
- Regulated articles intended for consumption, for use as apparel or a similar personal accessory, or for other decorative use may be moved interstate if treated with irradiation, in accordance with 7 CFR part 305.

Treatments for CG do not currently exist.

III. Environmental Impacts

There are potential environmental effects from each of the alternatives being considered. The environmental risks from the spread of CG and ACP are important considerations for evaluating the alternatives. In addition, potential program impacts arising from chemical and irradiation treatments will be considered.

A. No Action

Under the no action alternative, APHIS would not implement any quarantine or control measures to eradicate or even attempt to locally contain the spread of CG or ACP. Some control measures, albeit limited control measures without APHIS' involvement, could be taken by other Federal or non-Federal entities—those actions would not be under APHIS'

authorities, expertise, control, or funding. For example, local business owners and area residents could attempt to control damages from CG and ACP by removing the infested trees from their properties. Absent APHIS' assistance and expertise along with the absence of more effective measures to contain and control the spread of CG and ACP, new areas of infestation would be expected to continue and become more widespread. The lack of effective control measures to prevent the spread of CG from sites of infestation to other areas and counties could lead to higher production costs and an increase in shortages of availability of citrus fruits and plants to the general economy. This would potentially result in increased costs for survey, detection, and treatment for the control of CG and ACP as it spreads to other areas and counties.

B. Proposed Action

Under the proposed action alternative, APHIS would be involved in the proposed control program measures previously discussed which include inspections, quarantines, and treatments. The aspects of the proposed control program, which include routine inspections and quarantines of commercial nurseries[11], are program activities that pose negligible environmental effects that need not be described in detail. Such "routine" control measures are specifically designated as "categorically excluded"[12] activities and actions pursuant to APHIS' NEPA implementing regulations (7 CFR § 372.5(c)(1)). The primary action in this proposed control program that could be associated with any potentially noteworthy environmental impacts is the use of chemical and irradiation treatments. The environmental impacts of these requirements will be discussed below.

1. Chemical Treatments

Under the proposed action alternative, APHIS would allow the use of multiple pesticides, which may provide some benefits to the environment over the use of a single pesticide. One such benefit may be the increased ability of nurseries to find one product that is registered to treat multiple pests. With a greater number of products to choose from, it is possible that applicators could find products that are not only registered for use

[11] The proposed program would consider a nursery to be any commercial location where nursery stock is grown, propagated, stored, maintained, or sold, or any commercial location from which nursery stock is distributed. In contrast, this environmental assessment primarily examines the application of treatments in commercial nurseries. APHIS recognizes that this is more limited in scope than the proposed program's definition; for example, it does not consider treatment applications in commercial retail stores. However, the EPA approved labels of most of the insecticide treatments that the program intends to approve for use limit application to a commercial nursery. Moreover, only commercial nurseries are currently shipping regulated articles interstate and APHIS considers it likely that only commercial nurseries would request to do so under the proposed action alternative. Finally, many States that are quarantined for ACP have elected to maintain quarantines that effectively limit treatment to the site of propagation.

[12] Categorical exclusion "means a category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations (§ 1507.3) and for which, therefore, neither an environmental assessment nor an environmental impact statement is required" (40 CFR § 1508.4).

against ACP, but are also registered against additional pests. Instead of applying two products against two pests, applicators may only need to apply one product to combat two pests. In addition, allowing multiple pesticides to be used against ACP increases the potential for applicators to employ sustainable pest management which may minimize pesticide resistance. EPA has defined pesticide resistance as a "heritable and significant decrease in the sensitivity of a pest population to a pesticide that is shown to reduce the field performance of pesticides" (EPA, 2001). EPA indicates that an important pesticide resistance management strategy is to avoid the repeated use of a particular pesticide (EPA, 2001). By alternating the chemicals used to combat ACP, applicators might reduce the ability of ACP to develop pesticide resistance.

The only potentially affected areas to be treated pursuant to the proposed program are within commercial nurseries. Provided that persons applying the chemical treatments follow the pesticide label, its applicable directions, and all restrictions and precautions, including statements pertaining to Worker Protection Standards[13], the effects to the environment and to humans from chemical treatments within nurseries are not expected to be substantial.

Due to the fact that chemical treatments would only be applied to specific articles in limited locations, the number of treatments that would be required under the proposed program is expected to be minimal. Currently, nurseries in portions or all of Alabama, California, Florida, Georgia, Hawaii, Louisiana, Mississippi, South Carolina, Texas, Guam, and Puerto Rico are required to use chemical treatments against ACP if they move their ACP host articles interstate.

While additional States may be added to this list, the number of treatments applied annually is still expected to remain low due to the limited number of nurseries that intend to move host plants interstate. The cumulative number of treated plants in any State will depend on the extent and duration of the proposed program in that State. The number of host plants and plant parts that would require treatment annually under the proposed control program is not available for most States; however, APHIS believes that use of chemicals to combat ACP in Florida, Louisiana, and Texas currently represents the vast majority of the use of chemicals to combat ACP.

In 2007, 32 Texas counties were quarantined for ACP. As part of the Texas Department of Agriculture's evaluation of the fiscal implications of the quarantine, they established that of the 18 commercial citrus nurseries that operate in Texas, nine were located inside the 2007 quarantine area.

[13] It is "unlawful for any person to use any registered pesticide in a manner inconsistent with its labeling" (7 U.S.C. 136j(a)(2)(G)).

Additionally, "89 percent (240,000) of the 275,000 citrus nursery plants produced annually in Texas are grown in the quarantine area….70 percent (168,000) of the 240,000 plants produced in the quarantined area are shipped outside the quarantined area" (4 TAC §§ 19.410–19.413[14]). Therefore, under the 2007 quarantine, when 32 Texas counties were under quarantine for ACP, approximately 168,000 plants were being chemically treated for ACP. APHIS expects the number of plants treated in these counties to remain constant; thus, APHIS predicts that no fewer than 168,000 plants would be treated for ACP in Texas annually.

Under the 2009 quarantine, in which the entire State of Texas became quarantined, APHIS expects the total the number of plants treated in Texas to increase, although minimally. If 240,000 of the 275,000 of the citrus nursery plants produced annually in Texas were grown inside the 2007 quarantined area, then approximately 35,000[15] citrus nursery plants were produced outside the 2007 quarantined area. These plants now fall within the statewide quarantine area. At most then, an additional 35,000 citrus plants could be treated for ACP within this newly quarantined area, although the actual number may be far less than 35,000.

Under the proposed program, Florida could only ship their plants out of the State for immediate exportation from the United States. Three commodities that are shipped out of Florida for immediate export are Murraya, Calamondin, and kumquat plants. According to the Florida Department of Agriculture and Consumer Services, in 2008, there were 13 nurseries which propagated 1,922,512 plants that were potential hosts of CG (FDACS, 2009). However, the number of plants that would need to be treated under the proposed program may be far less than 1,922,512.

In the State of Louisiana, the majority, if not all, commercial citrus nursery products are located within one parish, Plaquemines Parish. According to the Louisiana Department of Agriculture and Forestry, there are roughly 10 citrus nurseries located in Plaquemines Parish, which produce a total of 350,000 to 400,000 trees per year. Roughly 60 to 70 percent of the trees (210,000 to 280,000 trees) are moved interstate and, therefore, would require chemical treatment (LDAF, 2008).

Provided that EPA and/or State approved pesticide labels are adhered to, human and environmental exposure in each of the above mentioned States should be minimal.

[14] Texas Register, 2008. Volume 33, pp. 1465–1656.
[15] 275,000 citrus nursery plants – 240,000 citrus nursery plants = 35,000 citrus nursery plants

a. Soil Drench or In-ground Granular Treatment

Under the proposed action alternative, unless fumigated with methyl bromide, regulated nursery stock will need to be treated with a soil drench or in-ground granular treatment containing dinotefuran or imidacloprid as the sole active ingredient in the pesticide product, not more than 30 days and not less than 20 days prior to movement, in order to move interstate. Soil drenches and in-ground granular treatments are applied to the soil around the article, absorbed into the plant, and are then translocated within the plant's system. Potential human exposure and risk from these types of applications is greatest for applicators and workers in nurseries. To ensure adequate safety for the use of either chemical, they must be used according to label directions, including any restrictions or precautionary label language. Exposure would be less to those who may handle treated nursery stock after application, since the chemicals would have already moved into the treated articles. The potential environmental impacts of soil drenches and in-ground granular treatments are discussed below.

(1) Dinotefuran

(a) Human Health

Dinotefuran is a systemic insecticide, belonging to the neonicitinoid class but within the nitroguanidine sub-class. Dinotefuran has moderate acute toxicity to mammals and low inhalation and dermal toxicity. It is not considered a skin irritant based on skin sensitization and irritation studies; however, it is considered an eye irritant. Based on sublethal study results, dinotefuran is not considered a carcinogen or mutagen, and developmental effects only occur at doses that are maternally toxic. Immune- and endocrine-related effects have been observed in multiple studies (EPA, 2004a). These effects were observed during prolonged exposures and would not be anticipated in this program. The primary immune system-related effect observed in the studies was altered thymus weights which may not be related to direct immune toxicity of dinotefuran. However, they may be a secondary effect due to overall reduced body size and weight gain during exposures that were 13 weeks or greater, depending on the type of study. Based on EPA's evaluation of risk to different human population subgroups, including occupational exposures, it was determined that the dinotefuran risk alone, as well as aggregate risk when including other neonicitinoid insecticides, did not exceed agency levels of concern (EPA, 2004a).

The proposed use of dinotefuran in this program is restricted to applications to soil on regulated nursery stock; therefore, potential human-related exposure would be restricted to workers and applicators. Exposure to workers and applicators would be minimized by adherence to all

precautionary statements on the label, as well as the use of appropriate personal protective equipment.

(b) Nontarget Organisms

Dinotefuran has low to moderate acute and chronic toxicity to nontarget wildlife, such as mammals and birds. Dinotefuran also has low toxicity to fish and most aquatic invertebrates with the exception of some marine invertebrates, where it is considered highly toxic. Toxicity is also high for pollinators, such as the honey bee. Degradates of dinotefuran are less toxic to aquatic organisms based on available toxicity data. Based on the available effects data for nontarget organisms and the proposed use pattern for dinotefuran in this program, the risk to terrestrial and aquatic nontarget organisms is expected to be negligible (EPA, 2004a). All soil applications would be made on regulated nursery stock reducing off-site movement via drift or runoff. Potential impacts to terrestrial invertebrates would be restricted to the nursery where treatments occur to soil.

(c) Environmental Quality

The environmental fate of dinotefuran suggests it is highly mobile, based on solubility and soil adsorption characteristics. Dinotefuran is stable to hydrolysis, but is somewhat susceptible to microbial degradation and is very sensitive to photolysis. Based on the method of application, which would eliminate significant off-site drift, no adverse impacts on air quality are expected. Off-site negative impacts to soil and ground or surface water are not expected, based on the use pattern for dinotefuran and its environmental fate.

(2) Imidacloprid

(a) Human Health

Imidacloprid is a systemic, chloro-nicotinyl insecticide chemically related to the tobacco toxin nicotine. The mode of toxic action is unique and works by interfering with the transmission of stimuli in the insect's nervous system. Specifically, it causes a blockage in a type of neuronal pathway (nicotinergic) that is more abundant in insects than in warm-blooded animals. Because of their molecular shape, size, and charge, nicotine and nicotinoids fit into receptor molecules in the nervous system that normally receive the molecule acetylcholine. This molecule carries nerve impulses from one nerve cell to another or from a nerve cell to the tissue that a nerve controls. Imidacloprid overstimulates the nerve, ultimately resulting in the insect's paralysis and eventual death. Because this nicotinergic site of action is more prevalent in insects than in higher organisms, the pesticide is selectively more toxic to insects. Signs and symptoms in humans include fatigue, twitching, cramps, and muscle

weakness, including the muscles for breathing. Imidacloprid is not considered carcinogenic by EPA. The application of this pesticide is restricted to soil treatments for regulated nursery stock. Imidacloprid is the least toxic of the systemic program pesticides. None of the routine or extreme exposure scenarios pose unacceptable risks to workers or applicators. Moreover, required protective gear and safety precautions further ensure that no adverse effects to program workers are expected (USDA, APHIS, 2005).

(b) Nontarget Organisms

The program use of imidacloprid is unlikely to impact most nontarget wildlife. Imidacloprid is moderately to severely toxic to birds including, but not limited to, the American robin, northern mockingbird, European starling, red-winged blackbird, and house sparrow. However, the area affected by the pesticide would be limited to nurseries and should only affect a limited number of birds, if any at all. Although it is nontoxic to fish, it is highly toxic to aquatic insects. Adherence to label and program application restrictions should preclude any drift or runoff to water. Terrestrial invertebrates within the nursery where treatments would occur could be impacted; however, the effects would be localized and restricted to those plants that have been treated (USDA, APHIS, 2005).

(c) Environmental Quality

Any potential impacts of imidacloprid to the quality of the air, soil, and water would be limited to nurseries and of limited time duration. Imidacloprid is moderately soluble in water and will dissipate quickly. It is absorbed by soil particles and has low mobility. Imidacloprid is readily taken up by plants and translocated; however, program treatments are not expected to result in any bioaccumulation hazards (USDA, APHIS, 2005).

b. Foliar Treatment

Under the proposed action alternative, unless fumigated with methyl bromide, regulated nursery stock will need to be treated with a foliar spray 10 days prior to movement in order to move interstate. Foliar sprays are applied to the leaves of plants according to label instructions. The program would require foliar applications containing either bifenthrin, chlorpyrifos, deltamethrin, fenpropathrin, or a mixture of imidacloprid and cyfluthrin as the sole active ingredient(s) of the pesticide product. Potential human-related exposure to and risk caused by program insecticides would be greatest for applicators and workers in nurseries. The products must be used according to label directions, including any restrictions or precautionary label language. After regulated articles are treated, the potential for human exposure and risk decreases because as pesticide treatments dry, the potential for dermal exposure is greatly

reduced and pesticides degrade over time. The potential environmental impacts of foliar treatments are discussed below.

(1) Bifenthrin

(a) Human Health

Bifenthrin is a synthetic pyrethroid insecticide with a mode of action similar to other pyrethroids, such as fenpropathrin and cyfluthrin, which have been previously discussed. Bifenthrin has moderate acute oral toxicity but low dermal toxicity. It is not considered to be a dermal sensitizer or an eye or skin irritant (EPA, 2004b). Bifenthrin is not considered to be a reproductive or developmental toxicant. However, it is considered a potential carcinogen based on the formation of urinary bladder tumors administered at high doses to mice. The application of this pesticide is limited to treatments of regulated nursery stock. The potential for bifenthrin exposure would be restricted to applicators; however, by adhering to the label and other standard operating procedures, no adverse effects to applicators are expected.

(b) Nontarget Organisms

Bifenthrin has low to slight toxicity to birds and moderate acute toxicity to wild mammals. Bifenthrin is considered highly toxic to honey bees by oral and contact exposure.

Similar to other pyrethroid insecticides, bifenthrin is considered highly toxic to fish and aquatic invertebrates. Toxicity values for both groups of organisms range from the low part per trillion to the low part per billion, depending on the test species and conditions (Solomon et al., 2001; EPA, 2008).

Significant exposure and risk to most nontarget terrestrial and aquatic biota is not expected. Potential impacts are restricted to nurseries and, based on the application method, would not result in significant off-site movement of residues through drift or runoff. Impacts to terrestrial invertebrates from bifenthrin treatments within the nursery are expected; however, effects would be localized and populations would recover rapidly due to movement of invertebrates from untreated areas into previously treated nursery areas.

(c) Environmental Quality

Bifenthrin is not expected to have any off-site adverse impacts on soil, water, or air, based on the proposed use pattern and environmental fate for this class of insecticides. Bifenthrin has extremely low solubility and

mobility in soil, which suggests that it would not be a threat to groundwater. The low solubility and mobility, along with its use being restricted to nursery-only applications, would also reduce the potential exposure to surface water. Impacts to air are not expected based on the low vapor pressure for bifenthrin.

(2) Chlorpyrifos

(a) Human Health

Chlorpyrifos is an organophosphate insecticide that can cause neurotoxic effects. The toxicity of chlorpyrifos occurs primarily through the inhibition of acetylcholinesterase enzyme activity which permits the transmission of nerve impulses across the nerve synapse. Signs and symptoms of low doses include localized effects (such as nosebleeds, blurred vision, and bronchial constriction) and systemic effects (such as nausea, sweating, dizziness, and muscular weakness). At higher doses the signs and symptoms include irregular heartbeat, elevated blood pressure, cramps, and convulsions. Chlorpyrifos is not considered carcinogenic based upon studies acceptable to EPA (USDA, APHIS, 2005).

The application of this pesticide is limited to treatments of regulated nursery stock. The only individuals that might be affected by the use of this insecticide are the nursery workers and the occupational workers who apply the pesticide. Several chlorpyrifos scenarios (such as backpack applicators, hydraulic rig applicators, and ground personnel) do exceed the maximum acceptable exposure that poses no evident risk to human health (Regulatory Reference Value (RRV)) when proper safety precautions are not taken and protective gear is not worn. However, this elevated risk is not life-threatening. Protective gear and safety precautions required by label adherence and standard program operating procedures are designed to ensure that no adverse effects to program workers are expected (USDA, APHIS, 2005).

(b) Nontarget Organisms

The program use of chlorpyrifos is unlikely to impact most nontarget wildlife. Chlorpyrifos has a moderate toxicity to mammals when consumed. It can be moderately toxic to birds and severely toxic to some individual bird species; however, mammals and birds would generally not be in the affected area at the time of spraying. Symptoms of nonfatal exposure to birds include cholinesterase depression (ChE), weight loss, reduced egg production, and reduced hatchling survival. Impacts to terrestrial invertebrates, such as earthworms and worker honey bees, are expected; nevertheless, this effect would be restricted to areas within the nursery, and invertebrates from outside the treatment area would repopulate areas after treatment. Chlorpyrifos can be severely toxic to fish

and aquatic invertebrates; however, the label does not allow direct application to water. Residues from drift or runoff are not anticipated to pose substantial risks to these species (USDA, APHIS, 2005).

(c) Environmental Quality

Any potential impacts of chlorpyrifos to the quality of the air, soil, or water would be limited to nurseries and of limited time duration. Chlorpyrifos can persist in soil and water for several months under certain conditions; however, the persistence is generally only for a month or less. This is dependent on the organic content of the soil. Nevertheless, it can remain in silt which can run off or drift to surface waters. Significant bioaccumulation of chlorpyrifos in aquatic organisms is not expected due to its proposed use, which would minimize drift and runoff to aquatic areas.

(3) Deltamethrin

(a) Human Health

Deltamethrin is a pyrethroid insecticide that has both contact and ingestion activity to several pest insects. It is widely used on a variety of crops and ornamentals to control sucking insects as well as some lepidopteran pests.

Based on the test conditions and species, acute mammalian toxicity for deltamethrin is variable, with oral toxicity values ranging from toxic to practically nontoxic (CA DPR, 2000; Barlow et al., 2001). Dermal toxicity is considered to be low, as well as inhalation toxicity for most formulations, with the exception of one emulsifiable concentrate (EC) formulation which demonstrates moderate inhalation toxicity (CA DPR, 2000). Several studies have shown that deltamethrin is not a carcinogen, mutagen, or teratogen (Barlow et al., 2001; EPA, 2004b).

The application of this pesticide is limited to treatments of regulated nursery stock. The potential for exposure to deltamethrin would be restricted to applicators; however, by adhering to the label and other standard operating procedures, no adverse effects to applicators are expected.

(b) Nontarget Organisms

Comparative deltamethrin toxicity to nontarget birds and mammals suggests effects at lower concentrations for mammals when compared to birds, where deltamethrin is considered practically nontoxic (EPA, 2008). Deltamethrin is considered highly toxic to honey bees.

Deltamethrin is considered highly toxic to fish and aquatic invertebrates, with fish being less sensitive than aquatic invertebrates (EPA, 2008; Solomon et al., 2001). Acute fish toxicity values vary based on test species and conditions, but range from the mid-part per trillion to low-part per billion range (EPA, 2008). Acute aquatic invertebrate toxicity is also dependent on the test species and condition, with toxicity values that range from low-part per trillion to low-part per billion range (EPA, 2008). Aquatic chronic toxicity is also high for fish and aquatic invertebrates, with no effect concentrations in the low-parts per trillion range.

Significant risk to nontarget organisms is not expected due to the restricted use of deltamethrin on nursery stock. Application methods would reduce the possibility of off-site drift and runoff. There is the potential for localized impacts to terrestrial invertebrates; however, it would be limited to those insects that are foraging within the nursery during the time of treatment.

(c) Environmental Quality

Deltamethrin has low solubility and a strong binding affinity for soil and sediment. In aquatic environments, deltamethrin is stable to degradation at a neutral pH, but will degrade quickly in more alkaline environments. Deltamethrin is susceptible to photolysis and microbial degradation in water and soil (Laskowski, 2002). Deltamethrin has low vapor pressure and is not expected to have adverse impacts to air quality. Due to its use being restricted to application on nursery stock and its environmental fate, no off-site impacts to soil or ground and surface water are expected.

(4) Fenpropathrin

(a) Human Health

Fenpropathrin is a synthetic pyrethroid insecticide which affects the nervous system. It is a moderate skin and eye irritant. Signs and symptoms can include muscle contractions, tremors, ataxia, and nerve paralysis at moderate to high levels of exposure. Fenpropathrin is not considered carcinogenic by EPA (USDA, APHIS, 2005).

The application of this pesticide is limited to treatments of regulated nursery stock. Potential pesticide exposures are limited to nursery workers and the occupational workers who apply the pesticide. Backpack spray application and hydraulic rig applications for the extreme exposure scenario are the only circumstances that exceed the RRV. The extreme exposure scenario presumes that the worker would be exposed to higher quantities of the pesticide when that individual is not following safety protocols or wearing protective gear. Protective gear and safety precautions required by label adherence and standard program operating

procedures are designed to ensure that no adverse effects to program workers are expected (USDA, APHIS, 2005).

(b) Nontarget Organisms

The program use of fenpropathrin is unlikely to impact most nontarget wildlife. The toxicity of fenpropathrin is moderate to mammals and has a slight oral toxicity to birds and terrestrial stages of reptiles and amphibians. For shrews and bats there is a high risk for exposure; however, given the limited use of fenpropathrin in this program, shrews and bats are unlikely to be located in the affected area. It is highly toxic to most aquatic organisms; nevertheless, aquatic organisms would most likely not be affected because the limited area of application within the nursery should not pose any risk of drift or runoff to waters containing aquatic organisms. Terrestrial invertebrates could be impacted in areas of treatment; however, these effects would be restricted to the nursery and would be temporary due to recolonization from untreated areas (USDA, APHIS, 2005).

(c) Environmental Quality

Impacts to air, water, and soil from the proposed fenpropathrin applications are expected to be minimal, based on its use pattern and environmental fate properties. Fenpropathrin is persistent in water at a neutral pH but degrades more quickly at alkaline pH values, with a hydrolysis half-life of 14 days. Photolytic degradation in soil is much faster than photolytic degradation in water, with a reported half-life in soil of 14 days compared to a half-life in water greater than a year. Potential mobility is low, based on low water solubility and a high binding affinity for soil, which reduces the potential for runoff. Residues on treated vegetation are also of short persistence (USDA, APHIS, 2005).

(5) Imidacloprid/Cyfluthrin Mixture

(a) Human Health

Imidacloprid is a systemic, chloro-nicotinyl insecticide whose mode of toxic action and toxicity has been described above. Cyfluthrin is a synthetic pyrethroid insecticide which affects the nervous system in a manner similar to fenpropathrin. Cyfluthrin is not considered to be an eye irritant or skin sensitizer. Signs and symptoms can include muscle contractions, tremors, ataxia, and nerve paralysis at moderate to high levels of exposure. Cyfluthrin is not considered to be carcinogenic, mutagenic, or teratogenic by EPA. The difference in mechanism of toxic action ensures that this mixture does not pose increased toxicity through synergistic action. Although synergistic effects on toxicity are possible with simultaneous exposure to organophosphates (such as chlorpyrifos)

and cyfluthrin, this type of exposure is unlikely with the safety precautions required of this program. The application of this pesticide is limited to treatments of nursery stock. None of the routine or extreme exposure scenarios from this mixture pose unacceptable risks to workers or applicators. Moreover, required protective gear and safety precautions further ensure that no adverse effects to program workers are expected.

(b) Nontarget Organisms

The program use of this mixture for treatment in nurseries is unlikely to impact most nontarget wildlife. Although imidacloprid is moderately to highly toxic to some songbirds and cyfluthrin poses some risks to small mammals, program use of this mixture is not expected to pose a high risk because of the limited exposure potential. Both products are toxic to fish and most aquatic organisms; however, adherence to label and program application restrictions should reduce off-site drift and runoff to surface water. Terrestrial invertebrates could be impacted in treated areas, but these effects are restricted to the nursery and would be temporary due to the movement of invertebrates from untreated areas into previously treated nursery areas (USDA, APHIS, 2005).

(c) Environmental Quality

Any potential impacts of this formulation to the quality of the air, soil, and water would be limited to nurseries and of limited time duration. Although cyfluthrin is of low water solubility and adsorbs readily to organic matter, it is not as persistent as imidacloprid in soil. Imidacloprid is moderately soluble in water and dissipates quickly. It is also absorbed by soil particles and has low mobility. Both compounds are readily taken up by plants and translocated; however, program treatments are not expected to result in any bioaccumulation hazards.

c. Fumigation Treatment

Methyl bromide is a broad-spectrum fumigant chemical that can be used as an acaricide[16], antimicrobial, fungicide, herbicide, insecticide, nematicide, and vertebrate control agent. It is a colorless and odorless gas at normal temperatures and pressures. When used as a commodity treatment, methyl bromide gas is injected into an enclosure or chamber containing the commodities.

Under the proposed control program, regulated articles may be moved interstate if they are treated with methyl bromide according to the APHIS-approved treatment schedule MB T101-n-2, found in 7 CFR part 305.

[16] An acaricide is a pesticide toxic to mites, ticks, and spiders.

Methyl bromide T101-n-2 treatments are conducted at normal atmospheric pressure for 2 hours at the following rates:

Temperature (°F)	Dosage rate of methyl bromide (lb/1,000 cubic feet)
70 or above	2
60-69	2.5
50-59	3
45-49	3.5
40-44	4

The fumigation treatment facility must be certified by APHIS. Facilities are required to be inspected and recertified annually. Treatment must be monitored by an official authorized by APHIS to ensure proper administration of the treatment.

Since methyl bromide fumigation is conducted in contained facilities, potential exposure to the environment and to nontargets, including humans in the surrounding communities, is minimal. The greater concern is exposure of workers and bystanders to methyl bromide at the use site. EPA has identified potential human health risks associated with methyl bromide treatments on commodities from acute inhalation exposure to workers and bystanders. "Human exposure to high concentrations of methyl bromide can result in central nervous system and respiratory system failure, as well as specific and severe deleterious actions on the lungs, eyes, and skin" (EPA, 2009a). However, adherence to good practices and guidelines should ensure that there are no adverse effects on workers and bystanders.

To minimize risks, all methyl bromide products are classified as restricted-use pesticides (RUP). This restriction is required to appear on the product labels. Restricted-use products may only be used by certified pesticide applicators or those working under their direct supervision. Another label requirement includes aerating treatment enclosures and the treated commodity within the enclosures (EPA, 2006). These measures protect not only workers that must re-enter the fumigated area and other bystanders, but those that handle the commodity during transport.

To further reduce potential human exposures, additional requirements include (but are not limited to): site-specific fumigant management plans[17], respiratory protection, buffer zones in which only supervisors or pesticide applicators are allowed to enter, notification to workers that handle commodities that a commodity has been treated with methyl

[17] Fumigant management plans[17] (FMPs) must contain general site information, treatment and aeration procedures, buffer zones, personal protective equipment, posting and notification plans, record keeping, emergency procedures, site security, etc. FMPs must be made available to the surrounding community (EPA, 2006).

bromide, and notification to the community living or working in close proximity to commodity fumigation sites that methyl bromide is being utilized (EPA, 2006).

Lastly, consumers are unlikely to be impacted by handling a commodity which has been fumigated with methyl bromide because methyl bromide dissipates quickly once the commodity is removed from the fumigation chamber.

Methyl bromide is a substance classified by EPA under the Clean Air Act as a Class I ozone-depleting chemical. The expected use of methyl bromide in fumigations of articles under this quarantine is well below any levels that could contribute measurably to ozone depletion. A thorough review of the potential effects of methyl bromide uses in fumigations on ozone depletion was originally presented in the final environmental impact statement (EIS) for "Importation of Solid Wood Packing Material—August, 2003" (USDA, APHIS, 2003). This document has recently been updated and is titled "Importation of Solid Wood Packing Material, Supplement to the Final Environmental Impact Statement—October 2007" (USDA, APHIS, 2007). This EIS determined that the cumulative impact of methyl bromide on ozone depletion from routine commodity treatments is not expected to be consequential.

2. Irradiation

Under the proposed control program, regulated articles intended for consumption, for use as apparel or a similar personal accessory, or for other decorative purposes may be moved interstate if treated with irradiation. Irradiation treatment would involve exposure of the articles, under controlled conditions, to gamma rays or to electron beams. The amount of energy absorbed is expressed in units of Grays (Gy). The required minimum dose (Dmin) is 400 Gy to sterilize ACP.

Consumption of irradiated regulated articles poses no significant risk to consumers. The U.S. Department of Health and Human Services, Food and Drug Administration (FDA) issued a final rule regarding food irradiation in 1986 (21 CFR part179) which states that absorption rates below 1,000 Gy will not make food radioactive, affect the safety of the food, alter the nutritional value of the food, or adversely affect the balance between microbial spoilage organisms and pathogenic organisms.

Since irradiation is conducted in contained facilities, the potential exposure to the environment and nontargets, including humans in the surrounding communities, is minimal. Irradiation facilities are strictly regulated for human and environmental safety. Irradiation treatments involving gamma rays utilize radioactive sources, such as colbalt-60 or cesium-137. Facilities utilizing such radioactive sources must follow the United States Nuclear Regulatory Commission licensing requirements.

Facilities that utilize electron beams are regulated by the United States Food and Drug Administration (FDA) and by the appropriate State agencies. According to EPA, the basic elements of radiation protection at all food irradiation facilities consist of facility design; worker training, procedures, and supervision; and regulatory oversight. Shielding the radiation source is an important component of facility design. While the amount of shielding necessary depends on the strength of the radiation source, facility treatment chambers may be surrounded with as much as 9 feet of concrete or a combination of concrete and earth or sand (EPA, 2009b). Facility designs must also anticipate and protect workers and the surrounding communities from natural disasters such as an earthquake, fire, or tornado (EPA, 2009b). If workers need to enter an irradiation room, the energy source is turned off in an electron beam facility or the energy source is lowered into a pool of water that absorbs the radiation and protects the workers from exposure (FDA, 2000).

While EPA has indicated that accidents have occurred at irradiation facilities which resulted in contamination, all occurred when safety systems and control procedures were bypassed (EPA, 2009b). Under the proposed control program, a written certification by a licensed engineering and safety inspector would be issued showing that an irradiation facility meets all safety and health requirements for safe operation in compliance with 7 CFR part 305. Provided that safety standards are adhered to, no impacts to human health are expected.

IV. Other Environmental Considerations

A. Endangered Species Act

Section 7 of the Endangered Species Act and its implementing regulations require Federal agencies to ensure that 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. The potential for affecting endangered and threatened species exists only at the site where required pesticide treatments may occur, namely in nurseries. APHIS is in the process of gathering pertinent information and intends to consult with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service to ensure that proper measures are taken to protect endangered and threatened species. Any conservation measures decided upon would be incorporated into the compliance agreements required by APHIS for the nurseries.

B. Executive Orders

Consistent with Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations," APHIS considered the potential for the proposed control measures to have any disproportionately high and adverse human health or environmental effects on any minority populations and low-income populations. Because chemical treatments are being applied within very limited controlled areas, primarily nurseries, APHIS has determined that the human health and environmental effects from the proposed applications are minimal and are not expected to have disproportionate adverse effects to any minority or low-income populations.

Consistent with EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks," APHIS considered the potential for disproportionately high and adverse environmental health and safety risks to children resulting from the proposed control measures. Because chemical treatments are being applied within very limited controlled areas, primarily nurseries, no exposure to children is expected to occur. It is the responsibility and obligation of the program pesticide applicators (either employees of the commercial plant nursery or those hired by the commercial plant nursery to perform the pesticide applications) to ensure that the general public is not in or around areas being treated. This ensures that no exposure of the general public or children would occur during the application process. The only possible exposure would be to the applicator and nursery workers when not following the prescribed label use and safety directions. Therefore, it was determined that no disproportionate effects to children are anticipated as a consequence of implementing the proposed action alternative.

Executive Order (EO) 13175, "Consultation and Coordination with Indian Tribal Governments," was issued to ensure that there would be "meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications….". APHIS is in the process of complying with this EO by collaborating with Indian tribal officials to ensure that they are well-informed and represented in decisions regarding the proposed program.

V. Agencies, Organizations, and Individuals Consulted

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

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Emergency and Domestic Programs
4700 River Road, Unit 134
Riverdale, MD 20737

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Planning, Analysis, and Regulatory Coordination
4700 River Road, Unit 156
Riverdale, MD 20737

VI. References

Barlow, S.M., Sullivan, F.M., and Lines, J., 2001. Risk assessment of the use of deltamethrin on bednets for the prevention of malaria. Food Chem. Toxicol. 39:407–422.

CA DPR—See California Department of Pesticide Regulation.

California Department of Pesticide Regulation, 2000. Deltamethrin risk characterization document, volume 1. Medical Toxicology Branch–Department of Pesticide Regulation. 93 pp.

EPA—See U.S. Environmental Protection Agency

FDA—See U.S. Food and Drug Administration

FDACS —See Florida Department of Agriculture and Consumer Services

Florida Department of Agriculture and Consumer Services. Correspondence with U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2009.

Laskowski, D.A. Physical and chemical properties of pyrethroids. Rev. Environ. Contam. Toxicol. 174:49–177.

LDAF—See Louisiana Department of Agriculture and Forestry

Louisiana Department of Agriculture and Forestry. Correspondence with U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2008.

Solomon, K.R., Giddings, J.M., and Maund, S.J., 2001. Probabilistic risk assessment of cotton pyrethroids: I. Distributional analysis of laboratory aquatic toxicity data. Env. Toxicol. Chem. 20(3):652–659.

USDA—See U.S. Department of Agriculture, Animal and Plant Health Inspection Service

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2007. Importation of solid wood packing material, supplement to the final environmental impact statement—October, 2007. USDA, APHIS, Riverdale, Maryland.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2005. Citrus greening eradication program pesticide applications

human health and non-target species risk assessment, September, 2005. USDA, APHIS, Riverdale, Maryland.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2003. Importation of Solid Wood Packing Material—August, 2003. USDA, APHIS, Riverdale, Maryland.

U.S. Environmental Protection Agency. 2009a. Ozone Layer Depletion Regulatory Programs; Methyl Bromide Questions & Answers. April 14, 2009. [Online]. Available at http://www.epa.gov/ozone/mbr/qa.html. [May 18, 2009].

U.S. Environmental Protection Agency. 2009b. Radiation Protection; Facility Safety and Environmental Impact. [Online]. Available: http://www.epa.gov/rpdweb00/sources/facility_env.html. [May 18, 2009]

U.S. Environmental Protection Agency, Office of Pesticide Programs. 2008. OPP Ecotox Database. [Online]. Available: http://www.ipmcenters.org/index.cfm. [May 26, 2008].

U.S. Environmental Protection Agency. 2006. Report of Food Quality Protection Act (FQPA) Tolerance Reassessment and Risk Management Decision (TRED) for Methyl Bromide, and Reregistration Eligibility Decision (RED) for Methyl Bromide's Commodity Uses. August, 2006. [Online]. Available at: http://www.epa.gov/oppsrrd1/REDs/methyl_bromide_tred.pdf. [May 19, 2009].

U.S. Environmental Protection Agency, 2004a. Pesticide fact sheet: dinotefuran. Conditional Registration. 63 pp.

U.S. Environmental Protection Agency, 2004b. Deltamethrin pesticide tolerance—final rule. Federal Register. Vol. 69, No. 207:62602–62615.

U.S. Environmental Protection Agency, Office of Prevention, Pesticide and Toxic Substances, 2001. Guidance for pesticide registrants on pesticide resistance management labeling. [Online]. Available: http://www.epa.gov/opppmsd1/PR_Notices/#2001. [July 10, 2008]. Fax on demand: 202–401–0522.

U.S. Food and Drug Administration. 2000. Food Irradiation: A Safe Measure. [Online]. Available: http://www.fda.gov/opacom/catalog/irradbro.html. [May 19, 2009].