ENVIRONMENTAL MONITORING PLAN

for imidacloprid

ASIAN LONGHORNED BEETLE COOPERATIVE ERADICATION PROGRAM

2015

United States Department of Agriculture

Animal and Plant Health Inspection Service

Plant Protection and Quarantine

Regulations, Permits and Manuals

Compliance and Environmental Coordination

February 2015

General

The United States Department of Agriculture (USDA) - Animal and Plant Health Inspection Service (APHIS) Directive 5640.1 (4/19/02) commits the Agency to a policy of fulfilling the mandates of the National Environmental Policy Act; the Endangered Species Act; the Federal Insecticide, Fungicide, and Rodenticide Act; and other statutes that require monitoring the potential effects of Federal programs on the environment. The monitoring described in this Environmental Monitoring Plan (EMP) supports these commitments for the Asian Longhorned Beetle (ALB) Cooperative Eradication Program.

Environmental sampling for residues of imidacloprid is used to validate the assumptions of the Environmental Assessments created for the program and to address specific concerns raised by the public. Imidacloprid is a systemic insecticide used as a treatment of ALB host trees at risk for infestation. ALB host trees may be treated via ground or trunk injection based on the size of the tree, local hydrology, and other factors. APHIS' risk analysis identified several pathways that could cause pesticide residues in the environment. The analysis evaluated the potential for harmful effects on several groups of organisms based on their possible pesticide exposures from pollen and leaves from treated trees, soil and groundwater at injection sites, and soil or surface water where fallen leaves accumulate. Monitoring will be conducted to determine if ALB Program systemic treatments of host trees result in the movement of imidacloprid beyond the immediate treatment area.

Samples collected as part of this plan will be reported to the ALB Program management in an annual report. If any residue samples seem unusually high, ALB Program management will be contacted immediately to determine what, if any, action may be needed to adjust Program operating procedures. This monitoring plan is a working document and will be updated as needed based on new information provided to the PPQ Compliance and Environmental Coordination (CEC) staff. It is designed to be a reference document for staff that will collect and document monitoring samples during the ALB eradication program.

Human and Environmental Health

Objectives

Monitoring for potential exposure is designed to:

1. demonstrate the effectiveness of ALB operational procedures in excluding or minimizing exposure of the public and the environment to Program-applied imidacloprid;
2. collect data which can be used to evaluate whether the assumptions used in the Environmental Assessments are valid estimates of potential exposure of the public and the environment to Program-applied imidacloprid; and
3. investigate any Program-related complaints or reports of adverse effects on public health, worker safety, environmental quality, or non-target species.

Methods

This document is a reference for ALB program staff. If additional or new types of monitoring are necessary, please contact the CEC staff (Kai Caraher) at 301-851-2345 or by email at kai.caraher@aphis.usda.gov for guidance. APHIS environmental monitoring is flexible and

easily altered, but discussions will be needed to determine the best course of action given the analytical tools available.

Sampling Locations and Schedule

The ALB program should monitor the same sample locations selected in previous years if the treatment areas have not changed. When program managers plan to apply imidacloprid, collection of pre-treatment samples allows APHIS to determine if the pesticide is already present in the environment. Collect post-treatment samples at these stations approximately one week after the treatments conclude and then approximately one, three, and six months later if possible. Where the ALB program initiates treatments at new areas, managers should consider additional sample locations and consult with the CEC staff.

Sensitive Site Inventory

The ALB program will identify sensitive sites prior to the initiation of chemical treatments. Sensitive sites are areas where the public may be exposed directly to chemicals and areas where there are specific concerns about potential impacts due to program activities. The program will identify any surface waters used as a source of drinking water in or adjacent to the proposed treatment area. Additional sensitive sites may include, but are not limited to, the location of apiaries, schools and playgrounds, and groundwater supply wells.

Program managers must provide descriptions and locations of sensitive sites near treatment areas to the CEC staff. It is preferred that these lists be submitted in an electronic form, but they may also be submitted as a printed hard copy. Note the name and location of the water, the type of water (river, lake, etc.), and the distance and direction from the nearest treatment area. Prior to the start of chemical treatments, provide the list of sensitive sites to the CEC staff at the following address:

Kai Caraher, USDA-APHIS-PPQ,
4700 River Road
Unit 150, Room 4C-01.33,
Riverdale, MD 20737
or via email to kai.caraher@aphis.usda.gov

Minimum Required Sample Sizes

Sample collection procedures are described below, but for easy reference, the following table provides the minimum sample sizes required to analyze a single sample type for imidacloprid:

Sample Type	**Minimum Sample Amount**
Leaves, twigs, bark	30 grams
Soil, sediment	100 grams
Water	1000 ml

It may be possible to analyze smaller samples, but at best, they will be less precise. If the minimum sample size is not available, collect as much as possible from the sample location. The table above shows the types of samples that the lab can currently analyze. If other types of samples are collected, their analysis is not guaranteed and it could take several months for the lab to develop a satisfactory analytical method. Do not take samples beyond those in the table, as the lab may not have techniques to analyze such samples.

Surface Water Samples

Program personnel may collect surface water samples near the shore of ponds, rivers, or reservoirs, with priority given to any identified as a source of drinking water. Approximately one week prior to the initiation of the spring treatments field personnel should collect pre-treatment surface water samples. Collect post-treatment samples at these stations approximately one week after the treatments conclude and then approximately one, three, and six months later if possible. Be careful to ensure the water samples are free of turbidity and sediment. One liter of water will be collected for analysis from each sample station. Following collection, samples will be kept on ice, in the dark, and remain chilled until they can be frozen for shipment. For more detailed information on sampling procedures, refer to *SOP EM-03 Collection of Water Samples.* This and other referenced SOPs are available at:

http://www.aphis.usda.gov/wps/portal/aphis/ourfocus/planthealth?1dmy&urile=wcm%3apath%3a%2Faphis_content_library%2Fsa_our_focus%2Fsa_plant_health%2Fsa_domestic_pests_and_diseases%2Fsa_emt%2Fct_support_docs.

Leaf Litter Samples

Whenever possible, the program should collect leaf litter samples where surface water samples are collected. Collect leaf litter around treated trees and near or up gradient from the surface water sample. If no leaf litter is available, please note that on the 2060 Environmental Monitoring Form for the water sample. If no leaf litter is available, do not collect leaves that are on trees, and do not collect conifer needles. For more detailed information on sampling procedures, refer to *SOP EM-07 Collection of Vegetation Samples.*

Soil Samples

Whenever possible, collect soil samples each time surface water samples are collected. Collect soil from three to six inches from the surface around treated trees or beneath windblown piles of leaves from treated trees. For more detailed information on sampling procedures, refer to *SOP EM-06 Collection of Soil Samples.*

Monitoring for Incidents or Complaints

Priority sampling will be conducted to investigate incidents of unknown origin involving non-target species or other unintended environmental or human health impacts possibly associated with ALB program applied imidacloprid. Information about priority sampling can be found in *SOP EM-09, Priority (Emergency) Sampling*. Collect priority samples as soon as possible after the complaint, request, or problem is reported. Contact the CEC staff to collaborate on a sampling plan, sampling methods, and types of samples to collect in order to optimize the investigation. If the incident occurs on a weekend, commence the investigation and sampling without delay, and contact the CEC staff as soon as possible.

Dr. Robert Baca, 301-851-2292, robert.m.baca@aphis.usda.gov, or
Kai Caraher, 301-851-2345 (office), 202-288-3086 (mobile), kai.caraher@aphis.usda.gov

Send all incident or complaint samples to the APHIS-PPQ laboratory in Miami, Florida instead of the AMS-NSL laboratory in Gastonia, North Carolina. Follow the directions in *SOP EM-09* for details.

Proper documentation of the incident, investigation, and samples is extremely important. When responding to priority incidents, send to the CEC staff all GPS maps showing the site, location where samples were collected, the nearest treatment area, and a narrative of the treatment history. Be sure to completely fill out all information on the APHIS 2060 forms with each sample. Be sure to provide an incident or complaint report to the CEC staff, along with any other information that you feel will be helpful in resolving the incident (i.e. photos, observations at the site, etc.).

Sample Processing

Shipment of Samples

All ***routine*** monitoring samples must be sent to the Agricultural Marketing Service, National Science Laboratory (AMS-NSL) in Gastonia, North Carolina at:

Attention: Roger Simonds
AMS National Science Laboratory (NSL)
801 Summit Crossing Place Suite B
Gastonia, NC 28054
Phone: 704-867-3873

The methods used by the AMS-NSL will require strict adherence to sample condition protocols. Therefore field samples that do not meet the recognized standards for collection and preservation will be rejected prior to analysis.

All ***priority*** (i.e. incident) samples must be sent to the PPQ - Center for Plant Health Science and Technology (CPHST) Laboratory in Miami, Florida at:

Attn: Lisa Mosser/Bill Guyton
USDA-APHIS PPQ S&T CPHST Miami Laboratory
13601 Old Cutler Rd, Bldg. 89
Miami, FL 33158
Phone: 305-278-4902 or -4885

Ship all samples by using some form of overnight delivery. See SOP EM-17, *Packaging and Shipping of Samples* for details. This applies to all samples, whether they are priority or routine. Do not ship samples using the U.S. Postal Service Priority Mail or standard ground service with other carriers. Overnight delivery ensures the sample will remain frozen or at least cold. Shipping any other way will take several days and can ruin the samples.

Be sure that all samples are frozen, shipped in a hard-sided cooler, and kept cold during shipment. To keep samples cold, ship samples on ice. *Do not use dry ice*, since it will cause the sample containers to crack or break. Pack the ice into two or more layers of sealable plastic

storage bags (e.g. Ziploc) and tape the seal closed. Use approximately twice as much bagged ice as water samples by weight. Therefore, for every three water samples, field personnel must place 10 pounds of ice into the cooler. Unsealed ice will melt and leak during shipment, causing unnecessary concern in transit or when received at the laboratory.

Documentation

Complete a separate APHIS 2060 form for each sample collected. Only use original 2060 forms because separation and routing of the copies is required. Instructions for completing the APHIS 2060 forms are on the back of each form. All appropriate sections of the form should be completed. Samples should be marked as "routine" unless they were collected for a complaint or incident investigation where they should be marked as "priority." For each sample, submit the **blue** copy of the APHIS 2060 form to the laboratory. The blue copy is in effect the sample label and must be included in a sealable plastic bag with the sample. After packing the cooler with samples and bagged ice, place all the **white** copies of the 2060 forms for every sample in a single sealable plastic bag on top of the samples inside the cooler. The bundle of white copies provides the laboratory personnel the information they need to properly unpack the cooler and sort the samples. Send the **yellow** copy of the form (and any maps, photos, etc.) to the CEC staff. Keep the **pink** copy of each form you submit as a record in your local office.

Supplies

The CPHST facility in Biloxi, Mississippi will continue to provide monitoring supplies. A form for ordering supplies is located at the end of this document. They prefer that supply orders be faxed or emailed to them using the numbers listed on the checklist rather than leaving a voice message for orders. Note that certain general office supplies cannot be ordered by this checklist and should be obtained locally by the program.

Responsibilities

***APHIS-PPQ Compliance and Environmental Coordination staff in Riverdale, Maryland will*:**

1. Review and interpret field and pesticide residue data from the habitat surveys and residue monitoring. Contact the surveyor or sample collector for clarification as soon as possible if any field data is incomplete or unclear. Notify the program managers immediately if any residue data is unexpectedly high in value.

2. Provide training, clarification, and interpretation on how to implement the Environmental Monitoring Plan (EMP).

3. Submit a comprehensive interpretive report to the program managers within 90 working days of receiving all of the field data.

APHIS-PPQ Center for Plant Health Science Technology staff in Mississippi will:

1. Prepare and ship sampling containers and equipment required for collection and submission of environmental monitoring samples.

2. Provide instructions on methods for collecting, preserving, and shipping samples.

3. Coordinate communication between the PPQ - Environmental Compliance staff and AMS-NSL and APHIS-Miami to resolve sample condition and analysis issues.

4. Review and report analytical results to PPQ - Environmental Compliance.

APHIS-PPQ Field Personnel or Cooperators, will:

1. Ensure that sufficient resources from the Program are allocated for completing the monitoring activities described in the Environmental Monitoring Plan (EMP).

2. Follow instructions in the EMP and referenced SOPs to develop a plan for sample collection and documentation, including:

    a. Collect the type and number of samples recommended in the EMP.

    b. Complete of a separate APHIS 2060 form for each sample that is collected.

    c. Provide all the information necessary to document the samples. Send all supporting documentation, including a copy of the appropriate APHIS 2060 forms to the CEC staff.

    d. Submit routine samples to the AMS-NSL in Gastonia, North Carolina for residue analysis and send priority or emergency samples to the CPHST-AQI laboratory in Miami, Florida.

    e. Notify the laboratory and the CEC staff prior to shipping any priority, spill, or unusual (i.e. other than water, insect, or vegetation) samples.

Environmental Monitoring Supplies Checklist

- use the blank areas to indicate the number of items to take to the field or how many of that item are being ordered

General Supplies		Dye Cards	
Monitoring plan/SOP's	Obtain from ECT	Oil-sensitive dye cards (one card per package)	
Field log notebook		Water-sensitive dye cards (two paired cards per package)	
2060 monitoring forms		5' bamboo poles/stakes	Obtain locally
Indelible marker	Obtain locally	Paper/alligator clips	Obtain locally
12" x 12" resealable plastic bags		Tacks/nails	Obtain locally
Large or small coolers for mailing		Tweezers	Obtain locally
Shipping label (AMS-National Science Laboratory in Gastonia, NC)		Nitrile gloves (box of S,M,L,XL)	Indicate size
Packing/strapping tape		**Vegetation/Fish/Insect Samples**	
Ice chest and wet or blue ice	Obtain locally	Pruning shears/scissors	Obtain locally
Soil Samples		Tweezers/forceps	Obtain locally
Hand trowel	Obtain locally	Packing/strapping tape	
10" x 14" foil envelopes		10" x 14" foil envelopes	
Neat (Pure) Chemical & Formulations		**Water Samples**	
Amber glass bottle (2 ounce size)		Cubitainer (gallon size)	
Disposable pipette and bulb		Cubitainer (liter size)	
Small mailing tubes		Sodium sulfate (small vials)	
Protective eyewear		pH paper (0-14 range)	
Nitrile gloves (box of S,M,L,XL)	Indicate size	Acid or base (in a squeeze bottle)	Obtain locally

Program: _____ **Requested by:** _____

Date: _____ **Phone:** _____

Address: _____

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To order supplies, indicate the quantity of each item needed. Fax or email a copy of this form to CPHST in Mississippi at 228-385-9280 or robert.d.smith@aphis.usda.gov. If fax machines are not working, leave a message with the CPHST monitoring supplies manager at 228-215-4729. It may be difficult to fill orders for large quantities of materials.

This is not an exhaustive supply list…items that are not listed here may be available through CPHST. Not all supplies listed above are required for all pest control programs.