ENVIRONMENTAL MONITORING PLAN

for imidacloprid

ASIAN LONGHORNED BEETLE COOPERATIVE ERADICATION PROGRAM
Boston & Worcester, Massachusetts
2013

United States Department of Agriculture

Animal and Plant Health Inspection Service

Plant Protection and Quarantine

Prepared by the Environmental Compliance Team

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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 Massachusetts Asian Longhorned Beetle (ALB) Cooperative Eradication Program.

Environmental sampling for residues of imidacloprid is proposed 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. Targets identified for monitoring include groundwater, surface water, and non-target organisms. 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 Environmental Compliance Team (ECT). It is designed to be a reference document for staff that will work with the Environmental Compliance Team to 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 Bob Baca at 301-851-2292 or by email at robert.m.baca@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

In Boston, it is recommended that sample locations from 2012 are used again in 2013. Pre-treatment samples should be obtained in the weeks prior treatment if at all possible, followed by samples through time as described below. If new treatment locations are added, additional sample locations should be considered in consultation with the ECT. In Worcester, where no treatments are expected again this year, the sample locations used in 2012 should be used in 2013 in order to track residues through time, especially if those areas may be treated at some point in the future. If not sampling all prior locations, sites should be sampled throughout the entire area as opposed to concentrating sampling in one or a few treatment areas. If treatments might occur in Worcester, please contact the ECT for guidance.

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 ground or 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 vernal pools.

Descriptions and locations of sensitive sites identified by the program will be provided to the ECT. 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 (ground, surface, 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 ECT at the following address:

Dr. Robert Baca, USDA-APHIS-PPQ, 4700 River Road, Unit 150, Room 5A-04B, Riverdale, MD 20737 or via email to robert.m.baca@aphis.usda.gov

Minimum Required Sample Sizes

Samples 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 Size**
Leaves, twigs, bark	50 grams
Soil, sediment	50 grams
Sap, honey	50 ml
Water	4800 ml
Bees	40 bees

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

Surface water samples will be collected near the shore of ponds, lakes, or reservoirs, with priority given to any identified as a source of drinking water. Pre-treatment surface water samples should be collected approximately one week prior to the initiation of the spring 2013 programmatic chemical treatments. Additional samples should be collected at these stations approximately one week following treatments and then approximately one, three, and six months later. Care should be exercised to ensure the water samples are free of turbidity and sediment. 4.8 liters of water will be collected for analysis from each sample station. (For minimum sample sizes for all sample types, see the last page of this document.) 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/plant_health/plant_pest_info/emt/support_docs.shtml.

Groundwater samples

Groundwater monitoring wells, installed as part of third-party subsurface environmental investigations, have been identified in the City of Worcester, and the Towns of Holden, West Boylston, and Shrewsbury. Groundwater samples should mirror those done in the past by using the same sites and methods (where Program staff work with city staff in collecting the water samples.) If new well are identified, they also may be sampled. Once collected, water samples should be processed according to *SOP EM-03 Collection of Water Samples.* (Do not use *SOP EM-14 Collection of Groundwater Samples,* as that describes techniques for collecting water from wells. It is understood that city staff will actually collect the water from the well and provide it to Program staff.)

Leaf Litter Samples

Whenever possible, leaf litter samples (not leaves taken directly from treated trees) will be collected each time ground- and surface water samples are collected. Leaf litter will be collected around treated trees (no conifer needles) and near and up-gradient from the monitoring wells. If no leaf litter is available, please note that on the 2060 Environmental Monitoring Form for the groundwater sample. Do not collect leaves that are on trees if no leaf litter is available. For more detailed information on sampling procedures, refer to *SOP EM-07 Collection of Vegetation Samples.*

Soil Samples

Whenever possible, soil samples will be collected each time ground- and surface water samples are collected. Soil from within about three to six inches from the surface will be collected around treated trees. For more detailed information on sampling procedures, refer to *SOP EM-06 Collection of Soil Samples.*

Vernal Pool-Related Samples

If vernal pools are identified for environmental monitoring, the same sampling techniques above for water, soil, and leaf litter are appropriate. Water should be collected from the pool directly, and care should be taken to not stir up the sediment (sediment makes the chemical analysis more difficult). Soil samples should be taken from the dry pool area at those times of year when water is absent. If water is present, soil samples should be taken from the wet soil adjacent to the vernal pool, but no so close as to mix up the soil and pool water. Leaf litter samples should also be taken in close proximity to the vernal pool.

Bee-Related Samples

The Agricultural Research Service (ARS) of USDA is working cooperatively with APHIS to investigate the response of bee hives to imidacloprid treatments in the Worcester area. The ARS experiment is very thorough with very sensitive analytical capabilities. Any monitoring conducted as part of this plan will be used to supplement the samples collected by ARS, and will not seek to duplicate their work. Monitoring of bees and honey is not anticipated in the Boston area at this time, but could easily be incorporated into the monitoring scheme as needed.

If safe and practical, the Program should work with ARS and local beekeepers to collect bee and honey (from the hive) samples. As sampling through time is expected, it is optimal to work with beekeepers who will agree to multiple sampling events each year. Preference should be given to beekeepers with hives in proximity to treatments, but sampling is encouraged throughout the Worcester area.

Bee and honey samples should be collected from each hive. Samples should be collected prior to the start of spring treatments, approximately one week following treatments, one month following treatments, and at two-month intervals thereafter. A single sample of bees from a hive should comprise 40 or more bees. Healthy bees should be collected whenever practical, placed in a foil bag, and frozen prior to shipping (for details, see *SOP EM-08 Collection of Insect Samples*). A single honey sample from a hive should be 50 ml, and need only be kept dark prior to shipping. Freezing the honey may break the glass sample container.

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 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 ECT at 301-851-2292 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 ECT as soon as possible on Monday.

Proper documentation of the incident, investigation, and samples is <u>extremely</u> important. When responding to priority incidents, send to the ECT all GPS maps showing the site, location where samples were collected, the nearest treatment area, and treatment history. Be sure to completely fill out all information on the APHIS 2060 forms with each sample. Be sure to provide an

incident/complaint report to the ECT, along with any other information that you feel will be helpful in resolving the incident (i.e. photos, observations at the site, etc.).

Endangered and Threatened Species

There are no federally protected species in the eradication area at this time. Should the eradication area expand to areas where protected species become a concern, monitoring may be required and this monitoring plan will be updated accordingly.

Sample Processing

Shipment of Samples

Ship all samples, including dye cards, 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 USPS Priority Mail or standard ground service with other carriers. Overnight delivery allows the sample to stay frozen or at least cold. Shipping any other way will take several days and can ruin the sample. As part of sampling supplies, you should order a shipping label for the overnight delivery of monitoring samples (see order form at the end of this document).

All samples must be shipped 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

DO NOT ship samples to Gulfport, MS as that lab is now closed.

Be sure that all samples are frozen (except for honey), shipped in a cooler box or hard-sided cooler (not a regular cardboard box), 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. Either use "blue ice" containers (the reusable plastic containers with the blue liquid/gel inside) or contained regular ice (that is, seal the ice in zip-loc bags). 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 supplied by the Gulfport Laboratory for documentation. 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 AMS-NSL Laboratory with the sample, the **white** copy of the form to the lab in the sample shipping container but separate from the sample, and

the **yellow** copy of the form (and any maps, photos, etc.) to the ECT. Keep the **pink** copy of each form you submit as a record in your local office.

Supplies

Although APHIS staff in Mississippi will no longer be conducting chemical analyses, they will continue to provide monitoring supplies. A form for ordering supplies is located at the end of this document. Phone numbers are different from 2012, so only use the form from this document. The lab prefers that supply orders be faxed 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 Environmental Compliance staff in Riverdale, Maryland will*:**

1. Review and interpret field and pesticide residue data from the sample collectors and the laboratory. Contact the sample collector for clarification as soon as possible if any field data is incomplete or unclear. Notify the Program Director or Manager immediately if any residue data is unexpectedly high in value.
2. Provide training, clarification, and interpretation on how to implement the Environmental Monitoring Plan.
3. Submit a comprehensive interpretive report to the Program Director and the National Coordinator within 60 working days of receiving all of the Program's field data and sampling results.

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 the AMS-NSL to resolve sample condition and analysis issues.
4. Review and report AMS-NSL analysis 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. Collection of the type and number of samples recommended in the EMP.
    b. Completion of a separate APHIS 2060 form for each sample that is collected.
    c. Providing all the information necessary to document the samples. Send all supporting documentation, including a copy of the appropriate APHIS 2060 forms to the ECT. Send all samples and appropriate APHIS 2060 forms to the AMS-NSL laboratory. Ship all samples and supporting documentation in accordance with protocols and procedures.
    d. Notification of the laboratory 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

NOTE NEW CONTACT NUMBERS BELOW FOR 2013

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
Styrofoam 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 a copy of this form to APHIS-CPHST in Mississippi at 228-285-9280. If fax machines are not working, leave a message with Richard King at 228-215-4729 or Robert Smith at 228-323-5326. 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.