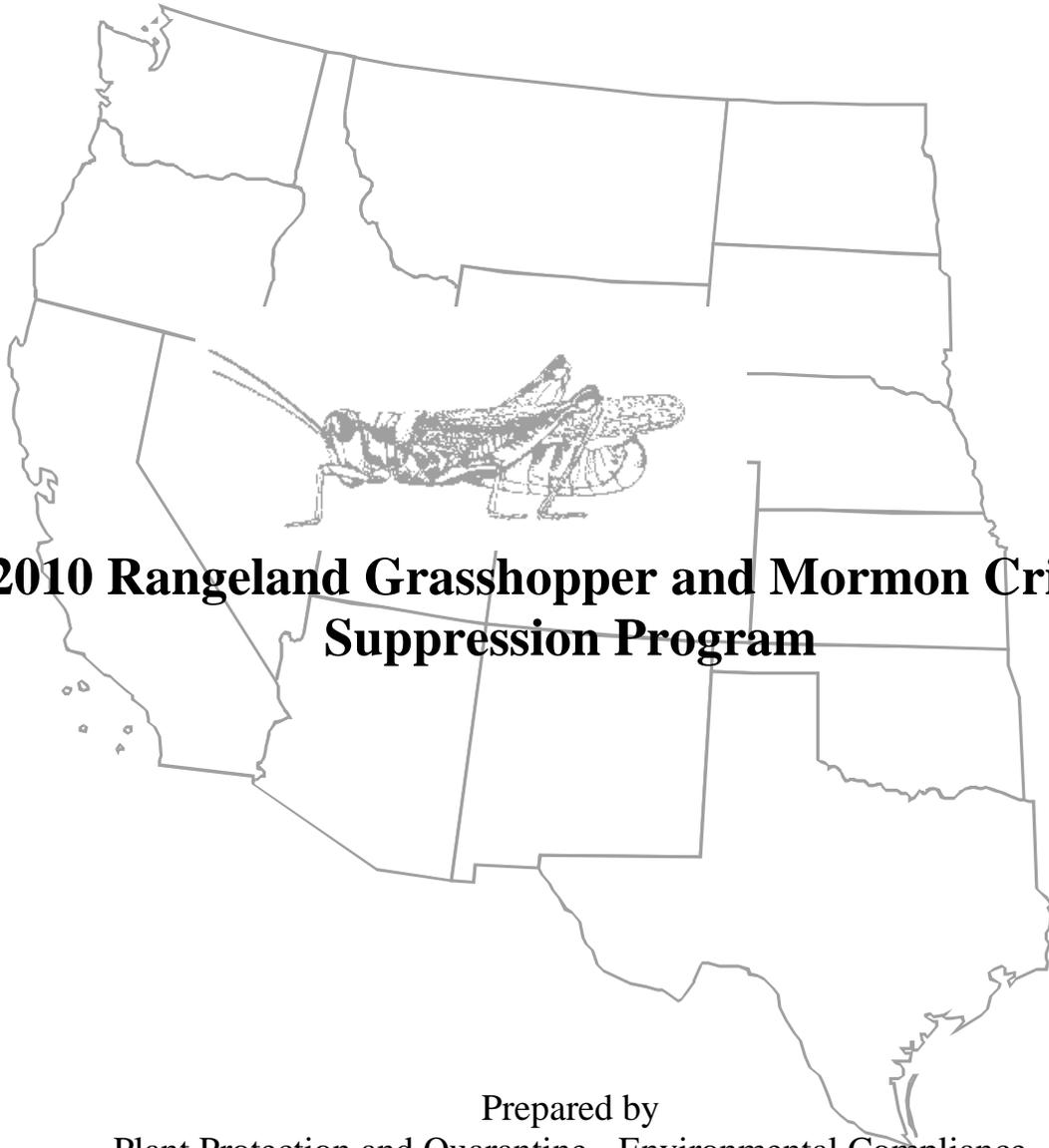


# **ENVIRONMENTAL MONITORING PLAN**



## **2010 Rangeland Grasshopper and Mormon Cricket Suppression Program**

Prepared by  
Plant Protection and Quarantine - Environmental Compliance  
Animal and Plant Health Inspection Service  
United States Department of Agriculture

January 2010

## GENERAL

The United States Department of Agriculture - Animal and Plant Health Inspection Service 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 effects of Federal programs on the environment. The monitoring described in this document partially fulfills these commitments for the Rangeland Grasshopper and Mormon Cricket Suppression Program (the Program).

## OBJECTIVES

1. Identify any sites within or near any program treatment that might have human health or environmental concerns.
2. Demonstrate that operational procedures, mitigations and protection measures were followed and implemented.
3. Collect data which can be used to evaluate whether or not the assumptions used in the Environmental Assessment (EA) and Environmental Impact Statement (EIS) are valid estimates of potential exposure of the public, program workers, endangered and threatened (E&T) species, or other sensitive environmental components, to pesticides used by the program.
4. Demonstrate that pesticides used for all program treatments are correctly identified and are accurately formulated.
5. Conduct investigations of incidents and/or complaints about possible adverse impacts suspected of being related to program operations.

## MONITORING METHODS

**Before undertaking any environmental monitoring for the treatment season, contact Environmental Compliance in Riverdale, Maryland for specific guidance at (301) 734-8876 or (301) 734-7592 if there are any questions regarding the monitoring plan.**

1. *Identify any sites within or near any program treatment that might have human health or environmental concerns.*

Prepare a comprehensive list of sensitive sites that are within 500 feet of aerial treatment locations and 200 feet of ground treatment locations. Sensitive sites are defined as human congregation sites (e.g., schools, hospitals, day care centers, prisons, playgrounds, etc.), residences, organic crops, and surface water bodies (natural, drinking, or recreational waters). Site lists should give a brief description of the site (i.e. residence, type of protected species, name of water body, etc.), its location (either address or map coordinates), and its distance and direction from the treatment block (direction is always measured from the treatment block towards the sensitive site). Parts A and B of the Project Planning and Reporting Worksheet, also called the Detailed Work Plan (DWP) cite environmental compliance documents prepared by the local programs that identify sensitive sites and protected species near the individual treatments. Sensitive sites lists, Parts A and B of the DWP and the Environmental Monitoring and Compliance Checklist (Appendix A) need to be provided to Environmental Compliance when the documents have been completed.

Kai Caraher, USDA-APHIS, 4700 River Road, Unit 150, Room 5A-04.3, Riverdale, MD 20737-1237; email kai.caraher@usda.gov; fax 301-734-3308.

Sites for federally protected species are reported based on the distances for each species listed in the Biological Opinion and/or Biological Assessment used in compliance with the Endangered Species Act (ESA). Each species has a different critical distance to treatment sites and those distances are listed under the 'protection measures' for the species in the ESA documents. In addition to the documents addressing sensitive sites, if E&T species are in a project area, provide the names of the species and the protection measures agreed on with the Fish and Wildlife Service. This information is often included in the EA prepared by the local program.

2. *Demonstrate that operational procedures, mitigations and protection measures were followed and implemented.*

Operational procedures, mitigations, and protection measures are detailed in the Grasshopper Guidebook Provisional, published January 2008, the Biological Assessment for the program, and the site-specific EA developed locally by the program. Copies of EAs and Findings of No Significant Impact are not required to be sent to Environmental Compliance (although they may be requested on a case by case basis). Instead send a copy of Part A of the DWP worksheet and the Environmental Monitoring and Compliance Checklist (Appendix A), which will be sufficient to show that such documents were completed.

The Environmental Monitoring and Compliance Checklist serves as self-certification that environmental compliance policies and required protection measures were adhered to for program treatments. In most cases a treatment-specific checklist will be completed for each program and signed by the State Plant Health Director or designee. Environmental compliance items in the checklist that are not relevant to the treatment should be marked as '*not applicable*' and must be accompanied by a brief explanation. Significant deviations from any procedure should be recorded on separate sheets, along with any corrective actions taken, and attached to the checklist. States that have multiple treatments may submit a single annual checklist rather than separate checklists for each treatment. Guidance documents detailing operational procedures, mitigations, and protection measures are referenced in the checklist, and those details are incorporated into the checklist by reference. At the conclusion of all program operations for the treatment season, send all signed checklists and attachments for each treatment to PPQ Environmental Compliance in Riverdale, Maryland so the information can be evaluated and included in the annual Rangeland Grasshopper and Mormon Cricket Suppression Program Environmental Monitoring Report.

3. *Collect data which can be used to evaluate whether or not the assumptions used in the EA and EIS are valid estimates of potential exposure of the public, program workers, E&T species, or other sensitive environmental components to pesticides used by the program.*

#### General Information:

An Environmental Monitoring Supplies Checklist is provided in Appendix B of this environmental monitoring plan. Use this form to ensure field personnel have the appropriate number and type of supplies and equipment for sampling. This form may also be used to order monitoring supplies from

Center for Plant Health Science Technology (CPHST) analytical chemistry laboratory in Gulfport, Mississippi.

For each treatment, conduct required monitoring for E&T species. Such monitoring is described in the Biological Opinion and/or Biological Assessment as ‘protection measures’ for the individual species. If a protected species is within the critical distance from a treatment, that protection measure must be fully implemented. If environmental monitoring is required under the protection measure, such monitoring must be conducted during every treatment near that E&T species site. Some monitoring requires residue sampling, other monitoring may only require buffers or observation. Samples, buffers, and observations must all be documented, and such documentation forwarded to PPQ Environmental Compliance in Riverdale, Maryland. Contact Kai Caraher if any clarification or additional guidance is needed.

All sensitive sites near treatment areas should be monitored to determine if further evaluation of potential environmental effects is required. If there are no sensitive sites, no monitoring is required, and a statement noting the lack of sensitive sites for that treatment must be forwarded to Environmental Compliance. Note that E&T species sites are always monitored during every treatment, following the protection measures described in the ESA documents.

#### Dye Cards:

For aerial treatments with liquid pesticides (not carbaryl bait), sensitive sites should be monitored with dye cards as detailed in SOP EM-01, Collection of Dye Card Samples. At least one hour prior to the treatment, place three dye card stations between the sensitive site and the treatment boundary, directly adjacent to the sensitive site (monitor for drift close to the sensitive site, not too close to the treatment). Locate the dye cards stations along a transect parallel with the treatment or sensitive site boundary spaced about 30 feet apart. Collect the dye cards two to four hours after the treatment. It is critical that the correct type and number of dye cards are used for each pesticide. Use one oil-sensitive dye card for malathion or one water-sensitive dye card for liquid carbaryl at each of the three sampling stations (i.e. three total cards per sensitive site). Use two water-sensitive dye cards at each sampling station for Dimilin treatments (i.e. six total cards per sensitive site). Whenever dye cards are used for monitoring, place a blank dye card (negative control of the same type) in the vehicle used by the sample collector as described in SOP EM-10. All dye cards are to be submitted to the CPHST Gulfport laboratory with their accompanying documentation.

Please realize that neither the water- or oil-sensitive cards are marked as such. Dye cards may be identified by their coloring; oil-sensitive cards are white on both sides, water-sensitive cards are white on the label side of the card and yellow on the sensitive side. If there is any doubt as to what kind of cards you may have, put a droplet of water or oil on the sensitive side of one of your cards. The droplet that forms the black spotting on the card denotes what kind of card it is. Take care to identify and store your cards carefully so that card substitutions are not made when the cards are used.

If dye cards cannot be collected because of logistical limitations, then an alternate media should be sampled after the treatment. Vegetation, water, or sediment samples should be collected from the sensitive site as soon as possible after the treatment, whichever would best characterize the potential exposure of the sensitive site being monitored. Vegetation samples should not be substituted for dye

cards due to naturally occurring volatile compounds in the organic matter, but only collected when dye card use is not possible.

#### Vegetation:

Vegetation should be collected if logistics prevented the collection of dye cards. A single composite vegetation sample should be collected from the sensitive site (or as close to the sensitive site as practical) two to four hours after the treatment. Grasses are the preferred matrix, but leafy vegetation is also acceptable. Enough vegetation (no woody material) should be collected to fill 70% of the foil sample bag. Guidance for collecting vegetation samples is provided in SOP EM-07, Collection of Vegetation Samples.

#### Water:

Surface drinking water sources within 500 feet of aerial liquid treatment, within 200 feet of aerial bait, or within 50 feet of ground bait treatment must be sampled before and two to four hours after any aerial treatment, regardless of whether or not dye cards samples are collected. If there is rainfall sufficient to cause runoff within one week following any treatment, then collect another water sample within 24 hours after the rainfall. Guidance for collecting water samples is provided in SOP EM-03, Collection of Water Samples. Realize that the pH of water samples must be adjusted and stabilized prior to shipping. Samples for carbaryl should be adjusted to a pH of 3, malathion to pH 5, and dimilin to pH 7. If the collection of dye cards (or sticky boards) is prevented because of logistics, then a sample of standing water could be collected within two to four hours after treatment.

#### Sediment:

If rainfall sufficient to cause runoff occurs within one week of any treatment, then collect a sediment sample from natural surface water bodies and drinking water sources within 24 hours after the rainfall. Sediment sampling of the water body is required within 500 feet of aerial liquid treatment, within 200 feet of aerial bait, or within 50 feet of ground bait treatment, the same as for water samples. Guidance for collecting sediment samples is provided in SOP EM-05, Collection of Sediment Samples.

Program personnel should be familiar with the standard operating procedures for the collection of environmental monitoring samples. Required sample amounts and containers for matrixes often collected by the Program are summarized in Table 1.

**Table 1 – Field Sample Requirements**

Matrix	Chemical	SOP	Sample Container/Media	Amount/Remarks
Dye Cards	Carbaryl liquid	01	Water sensitive dye card	1 card/station
Dye Cards	Diflubenzuron	01	Water sensitive dye card	2 cards/station
Dye Cards	Malathion	01	Oil sensitive dye card	1 card/station
Purity (neat)	Carbaryl liquid	10	Amber glass bottle	10 ml
Purity (neat)	Carbaryl bait	10	Amber glass bottle	20 grams
Purity (neat)	Diflubenzuron	10	Amber glass bottle	10 ml
Purity (neat)	Malathion	10	Amber glass bottle	10 ml
Sediment/soil	Carbaryl	06	Foil envelope	96 grams
Sediment/soil	Diflubenzuron	06	Foil envelope	96 grams
Sediment/soil	Malathion	06	Foil envelope	480 grams
Vegetation	Carbaryl liquid	07	Foil envelope	30 grams
Vegetation	Diflubenzuron	07	Foil envelope	30 grams
Vegetation	Malathion	07	Foil envelope	48 grams
Water	Carbaryl	03	Collapsible cubitainer	4800 ml
Water	Diflubenzuron	03	Collapsible cubitainer	2400 ml
Water	Malathion	03	Collapsible cubitainer	2400 ml

4. *Demonstrate that pesticides used for all program treatments are correctly identified and are accurately formulated.*

Each lot of pesticide (neat) and each tank mix (formulated) used for program treatments must be sampled and sent to the CPHST Gulfport laboratory for analysis. Purity samples are submitted with either a completed APHIS Form 2060 or a PPQ Form 750. Program personnel documenting neat and tank mixture samples on the forms are reminded to include the following information:

- Indicate whether the sample is a neat or formulated.
- Provide the lot number from which the sample originated.
- Describe the mixing ratio for formulated samples.
- When the sample was collected.
- Where the sample was collected (i.e. from the nozzle, from the mixing tank, etc.).

Guidance for collecting neat and formulated pesticide samples is provided in SOP EM-10, Preparation of Control Samples and Collection of Pesticide Samples.

5. *Conduct investigations of incidents and/or complaints about possible adverse impacts suspected of being related to program operations.*

Promptly investigate problems or complaints about possible adverse human health or environmental effects. If feasible, collect samples that will help determine if program pesticides were a potential cause of the effects. Immediately contact Environmental Compliance in Riverdale, Maryland at (301) 734-8876 to collaborate on a sampling plan, sampling methods, and type of information to collect. If the incident occurs when Environmental Compliance personnel are not available, commence your investigation and sampling without delay, and contact Environmental Compliance as soon as possible thereafter. Samples should be collected and shipped as soon as possible after the investigation (and freezing of samples) and must be marked as ‘priority’ in box 12 of the APHIS 2060 form. Samples

should be collected from every matrix appropriate to determine the possible cause of the reported effect. However, dead animals other than insects should not be collected for safety reasons without first contacting Environmental Compliance. For details, see SOP EM-09, Priority (Emergency) Sampling.

## **SAMPLE DOCUMENTATION**

Draw a clear diagram of the sample locations relative to the sensitive site and the treatment block. The diagram should include where each sample is collected, important features (i.e. residences, water bodies, roads) identified with labels, a North arrow, and an approximate scale. The sample figures can be created either on a Geographic Information System (GIS) map, on a separate piece of paper, or on the 2060 forms associated with the samples. If you are collecting a series of samples from the same site, submit the map and diagram only once, as long as the treatment block, sensitive site, and each sample location are clearly indicated on the map or the appropriate sections of the APHIS 2060 form.

Complete a separate APHIS 2060 form for each sample (note that each dye card is considered a separate sample, each requiring a 2060 form). Instructions for completing the 2060 forms can be found on the back of form originals. For each sample; submit the blue copy of the APHIS 2060 form with the sample, and the white copy to the CPHST Gulfport laboratory in the sample shipping container but separate from the sample, and the yellow copy (and any maps, photos, etc.) to PPQ Environmental Compliance in Riverdale, Maryland. For any samples that are not sent to the laboratory for analysis (i.e. unspotted dye cards), send only the APHIS 2060 form to PPQ Environmental Compliance. Keep the pink copy in your local office.

Properly identify each sample as “routine” or “priority” in box 12 of the 2060 form. An incorrect identification regarding the nature of the sample creates confusion for those who must interpret the data and delays the processing of samples. Mark samples as “priority” only for instances where a fast turnaround of samples is required. This applies to all complaint investigations, spill incidents, potential human health issues, and other samples considered to be of very high importance. Otherwise, mark the sample as “routine.”

## **SHIPPING OF SAMPLES**

Ship all samples 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. Preservation of the samples by freezing requires overnight delivery rather than alternative shipping arrangements which are more likely to result in the melting of ice and samples.

With the exception of neat (pure) chemical, be sure that all samples are frozen, shipped in a cooler box (not a regular cardboard box), and kept frozen during shipment. Neat samples should not be frozen, but should be placed on ice in a cooler box when shipped. To keep samples cold, use dry ice when possible since it does not turn to liquid when thawed and will not ruin forms or samples. Water samples should not be shipped in dry ice, since it will cause the sample containers to crack or break. Since dry ice may not be available in all areas, regular ice can be used for shipping any samples, but only if the ice is placed in a separate sealed container. Either use “blue ice” containers (the reusable plastic containers with the blue liquid 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 when received at the laboratory and possibly damaging the samples and documentation.

## **DISCRETIONARY MONITORING**

Additional monitoring samples can be collected at the discretion of program staff. Although the monitoring outlined in this plan should be adequate to generate the data needed to meet the objectives, the program may decide that additional sampling is necessary. Examples might include sites where there have been issues in previous years, sites that are highly visible to the public or are politically sensitive, or sites where environmental monitoring might help prevent future conflicts. Guidance involving any of these cases can be obtained by contacting PPQ Environmental Compliance in Riverdale, Maryland.

## **RESPONSIBILITIES**

*APHIS-PPQ Field Personnel or Cooperators will:*

- a. Ensure that sufficient resources from the program are allocated for completing the monitoring detailed in this Environmental Monitoring Plan.
- b. Coordinate with federal and local wildlife officials to identify E&T species and critical habitats near or within areas that may be affected by program activities, and inform PPQ Environmental Compliance in Riverdale, Maryland about any protection measures and monitoring requirements.
- c. Implement appropriate operational procedures, mitigations, and protection measures.
- d. Prepare a comprehensive list of all sensitive sites in a treatment program area and document in the PPQ Project Planning and Reporting Worksheet. Completed Worksheet Parts A and B are sent to Environmental Compliance.
- e. Identify monitoring sites for sampling, collect samples, record all relevant environmental and sample data, and submit samples to the CPHST Gulfport laboratory for residue analysis.
- f. Submit information describing the sample, sampling site, and treatment to Environmental Compliance.
- g. Complete Environmental Monitoring and Compliance Checklists for treatment programs, no later than the final treatment program within a state, sign and forward all checklists to Environmental Compliance.
- h. Inform Environmental Compliance when priority samples are collected and the CPHST Gulfport laboratory when priority samples are shipped.

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

- a. Provide training and support for the implementation of this monitoring plan.
- b. Respond to requests for additional information by field personnel when special sampling requirements occur.
- c. Review and interpret pesticide residue data.
  - (1) If adverse environmental effects are suspected: inform the Program Director and the National Program Manager, make recommendations if modifications to program operations might be in order, and reinitiate consultation with the Fish and Wildlife Service or National Marine Fisheries Service, if needed.

- (2) Send raw data for any priority samples within 1 working day of receipt from the CPHST Gulfport laboratory to the Program Coordinator.
  - (3) Prepare a final report within 90 days of analysis of all samples by the CPHST Gulfport laboratory and receipt of documentation from the field.
- d. Maintain liaison with field personnel to assure monitoring is being conducted and to review pertinent documentation for accuracy and completeness. Feedback to field personnel will be done in a timely manner so procedures can be modified, if needed.

*APHIS-PPQ Center for Plant Health Science Technology analytical chemistry laboratory staff in Gulfport, Mississippi will:*

- a. Prepare and ship sampling containers and equipment required for collection and submission of environmental monitoring samples.
- b. Provide instructions and training on methods for collecting, preserving, and shipping samples.
- c. Analyze samples for the program pesticides specified on the associated 2060 Form.
- d. Input APHIS Form 2060 data into the database system at the CPHST Gulfport laboratory. Send data to Environmental Compliance electronically within 23 working days of sample receipt for routine samples and five working days for priority samples.

## **2010 Rangeland Grasshopper and Mormon Cricket Suppression Program Environmental Monitoring and Compliance Checklist**

*The Program shall complete the following checklist after suppression program treatments. Indicate whether the tasks were accomplished or environmental compliance objectives were satisfied. A brief explanation should be included for items that are deemed not applicable. Reasons for significant deviations from operating procedures should be documented on additional paper.*

State: \_\_\_\_\_ Counties/Area Treated: \_\_\_\_\_

Treatment Dates: \_\_\_\_\_ Total Acres Treated: \_\_\_\_\_

Treatment Type (circle appropriate): Aerial Application      and/or      Ground Application

- \_\_\_\_\_ All procedures in the 2010 Environmental Monitoring Plan were followed (they are not included individually below).
- \_\_\_\_\_ Site-specific Environmental Assessments (EAs) and Findings of No Significant Impact (FONSIs) were completed prior to treatments.
- \_\_\_\_\_ The public was involved in the development of environmental compliance documents, as required by the National Environmental Policy Act (NEPA).
- \_\_\_\_\_ Completed ESA Section 7 consultations with US Fish & Wildlife Service and/or National Marine Fisheries Service prior to any treatments, and implemented all protection measures as required.
- \_\_\_\_\_ Provide a copy of Parts A and B of the PPQ Project Planning and Reporting Worksheet to Environmental Compliance prior to the start of pesticide applications.
- \_\_\_\_\_ Spill kit was present at APHIS-operated pesticide storage areas. The PPQ Treatment Manual, Guidelines for Managing Pesticide Spills was followed at APHIS locations.
- \_\_\_\_\_ U.S. Environmental Protection Agency and State approved labels for all pesticides were strictly followed.
- \_\_\_\_\_ Current pesticide labels and material safety data sheets (MSDS) were available to program staff.
- \_\_\_\_\_ Collected and shipped samples of neat and formulated pesticide to the CPHST laboratory in Gulfport, Mississippi for analysis.
- \_\_\_\_\_ Documented complaints and other correspondence including visits and telephone calls regarding program activities from the interested parties and stakeholders.
- \_\_\_\_\_ Documented any accidents, safety violations, pesticide spills, and leaks in aircraft systems or pesticide storage and loading systems.
- \_\_\_\_\_ Weather conditions were monitored and recorded before, during, and after applications to determine if rainfall or surface water runoff occurred.
- \_\_\_\_\_ Maintained daily and base logs. Flight paths and spray turn-on and cut-offs were monitored and recorded either by direct observation or by downloaded GPS flight data overlaid onto a map.
- \_\_\_\_\_ The public near treatment areas was notified prior to the application of pesticides.

\_\_\_\_\_  
Program Director/SPHD/Environmental Monitor Signature

\_\_\_\_\_  
Date

**Send completed checklist to:**

Kai Caraher, USDA-APHIS-PPQ, 4700 River Road, Unit 150 – Room 5A-04.3, Riverdale, MD 20737

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## ENVIRONMENTAL MONITORING SUPPLIES CHECKLIST

<b>SUPPLIES TO BRING EACH TIME YOU GO TO A SAMPLING SITE</b>					
Monitoring plan/SOP's		Obtain from ECT	Thermometer		
Field log notebook			Ice chest/wet or blue ice		Obtain locally
Compass			Baby wipes		
Wind gauge			2060 monitoring forms		
Indelible marker			Packing/strapping tape		

<b>Run-off Sampling</b>			<b>Dye Cards</b>		
Plexiglas cover			Oil sensitive dye cards		
8"x 8" mesh screen			Water sensitive dye cards		
Tent pegs/nails			5' bamboo poles/stakes		
Funnels attached to caps			Paper/alligator clips		
500 ml bottles			Tacks		
4" PVC pipe, 14" long			4" x 4" plastic bags		
Post hole digger			12" x 12" plastic bags		
Pea gravel			Tweezers/forceps		
Large rocks/bricks			disposable gloves		
Bamboo pole/flagging tape			<b>Water Samples</b>		
collapsible cubitainer			Dissolved oxygen kit		
Sodium sulfate (small vials)			collapsible cubitainer		
pH paper/pH meter			Sodium sulfate (small vials)		
Sulfuric acid (squeeze bottle)			pH paper/pH meter		
Styrofoam 'coffin'			Acid or base (squeeze bottle)		Obtain locally

<b>Vegetation/Fish/Insect Samples</b>			<b>Sediment Samples</b>		
Pruning sheers/scissors			Dredge tied to strong rope		
Aluminum foil envelopes			3 gallon galvanized pail		
Strapping tape			Hand trowel		
			3" mesh screen		
			Aluminum foil envelopes		

Soil Samples			Swab/Wipe Samples		
Soil core sampler			3" x 3" sterile cotton pads with resealable plastic bag		
3 gallon galvanized pail			Metric ruler		
Hand trowel			Pencil		
3" mesh screen			Disposable gloves		
Aluminum foil envelopes			Isopropyl alcohol		Obtain locally
Baby wipes					

Neat (Pure) Chemical Formulations			Miscellaneous Supplies		
Amber glass bottle			Labels		
Parafilm			Styrofoam coolers/mailers		
Small mailing tubes			Freezer		Obtain locally
Cat litter/packing material			Dry ice		Obtain locally
Disposable pipette			Resealable plastic bags:		
Pipetting bulb			4" x 4"		
Disposable gloves			6" x 6"		
Protective eyewear			8" x 8"		
			12" x 12"		

**Program:** \_\_\_\_\_ **Requested by:** \_\_\_\_\_

**Date:** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Address:** \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_

To order supplies, indicate the quantity of each items needed. Fax a copy of this form to the CPHST Gulfport laboratory at 228-822-3209 or 228-822-3137. If fax machines are not working, leave a message with the CPHST Gulfport laboratory supplies manager at 228-323-5329 or 228-822-3106. Please realize that it may be difficult to completely fill order for large quantities of materials.

**Note:** This is not an exhaustive supply list...items that are not listed here may be available through the CPHST Gulfport laboratory.