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Collection of Water Samples		
Revision: #10	**Replaces: 2/19/14 version**	**Effective: 9/3/19**

1. Purpose and Scope: Water samples are collected to measure the amount of pesticide in the water. There are different procedures for collecting standing water, flowing water, and ground water samples. This SOP describes how to collect, transport and store standing water and ground water samples. If flowing water is to be collected, contact the Environmental Compliance Team at (301) 851-2351 (Mike Hennessey) or (301) 851-2345 (Kai Caraher) for instructions and equipment requirements. Any instructions on water sampling and documentation found in the Environmental Monitoring Plan (EMP) for the Program under study supersedes instructions contained in this SOP.

2. Supplies Required: To request sampling supplies, contact the monitoring supplies coordinators, Lisa Mosser (305) 278 4902, or Richard King (305) 278 2905, Center for Plant Health Science and Technology, Miami, or email the Environmental Monitoring Supplies Checklist to lisa.k.mosser@usda.gov or richard.a.king@usda.gov.

2.1 1 gallon, collapsible plastic "cubitainers"

NOTE: cubitainers may introduce material that will interfere with the analysis of some compounds. Please check with CPHST when ordering supplies. If the pesticide to be analyzed is among those that might be affected by the cubitainer, then the laboratory will supply glass containers instead.

2.2 pH indicator paper or pH meter

2.3 sodium sulfate (pre-packaged 5 gm vials) *

2.4 sulfuric acid (in a plastic squeeze bottle) *

*NOTE: most pesticides used by PPQ are stable in acidic water. However, check with CPHST when ordering supplies to determine that the acid and buffer specified herein are correct for the pesticide being sampled. If not, the laboratory will provide alternate materials and instructions for stabilizing the sample.

2.5 12"x 12" resealable plastic bags

2.6 “grab sampler” – a large-mouthed plastic jug firmly attached to a pole

2.6 field log book

2.7 ice chest with bagged or containerized ice or frozen blue ice packs (obtain locally)

2.8 environmental monitoring forms (APHIS Form 2060)

2.9 indelible marker

2.10 thermometer

2.11 dissolved oxygen test kit or dissolved oxygen meter

3. Collecting Stationary Water Sample:

3.1 Remove the cap and inflate the cubitainer by exhaling into the opening of the cubitainer.

3.2 Partially submerge the opening of the cubitainer into the water body so that the water flows in until the cubitainer is slightly more than half full

or

to obtain a sample from a deeper portion of the water body use the "grab sampler" to collect water and dispense it into the cubitainer. Repeat until the cubitainer is slightly more than half full.

3.3 Check the pH of the sample, adjust if necessary, and add the stabilizer. See Section 5 of this SOP for instructions.

3.4 Collapse the cubitainer containing the stabilized sample to expel most of the air and screw on the cap securely.

3.5 Label the sample with the indelible marker with a unique identifier that will allow the sample to be matched to its documentation.

3.6 Place the sample in the ice chest to keep it chilled until it can be transported from the field and placed in a freezer for storage until shipping.

3.7 Measure and record the dissolved oxygen content of the water body, using the test kit or dissolved oxygen meter (refer to EM-21, *Measurement of Dissolved Oxygen in Water Samples*).

3.8 Measure and record the temperature of the water body being sampled.

4. Collecting Groundwater Samples (see SOP EM-14, *Collection of Ground water Samples*):

4.1 Remove the cap and inflate the cubitainer by exhaling into the opening of the cubitainer.

4.2 From as close to the well head as possible (i.e. before any water treatments), open a spigot and allow the water to flow for several seconds (enough to allow fresh water to enter the pipes between the well and the spigot. This is normally indicated by a temperature change in the water).

4.3 Place the cubitainer opening under the flow and allow the container to fill to slightly more than half full.

4.4 Check the pH of the sample, adjust if necessary, and add the stabilizer. See Section 5 of this SOP for instructions.

4.5 Collapse the cubitainer containing the stabilized sample to expel most of the air and screw on the cap securely.

4.6 Label the sample with the indelible marker with a unique identifier that will allow the sample to be matched to its documentation.

4.7 Place the sample in the ice chest to keep it chilled until it can be transported from the field and placed in a freezer for storage until shipping. Dissolved oxygen and water temperature should not be measured for ground water samples.

5. Adjusting pH and Stabilizing a Water Sample:

5.1 Measure and record the pH of the water using the pH meter or by dipping one end of a strip of pH paper into the sample.

5.2 If the pH of the water sample is greater than 5, add 3-5 drops of sulfuric acid to the sample. (NOTE: Sulfuric acid can cause chemical burns. Flush skin with water if exposure occurs. Reference the Material Safety Data Sheet provided by CPHST with this chemical.) Mix the acid and water, and measure the pH again with a fresh piece of pH paper or the pH meter. Repeat this step as until the pH of the water sample is about 5.

5.3 Record the final pH measured in step 5.2.

5.4 Stabilize the water sample by adding 3 sodium sulfate vials to the water sample container. Cap the sample container and mix by inverting the container until the sodium sulfate is dissolved. (NOTE: most pesticides used by PPQ are stable in acidic water. But check with CPHST when ordering supplies to determine that the acid and buffer specified herein are correct for the pesticide being sampled. If not, the laboratory will provide alternate materials and instructions for stabilizing the sample.)

6. Documentation:

6.1 Record all observations in the field log book (see SOP EM-12, *Using a Field Log Book*). For stationary water, record the estimated average depth and the surface area of the water body. Describe any vegetation between the treatment site and the sample collection site, or any other factors that you think might influence the amount of pesticide being deposited on the water body. For ground water samples, be sure to record the soil type, ground cover, and the topography of the treatment site. **For all samples, include GPS coordinates and a sketch of the sample location and its relation to the treatment site and any sensitive site(s) in the vicinity. The sketch should include an approximate scale and a North arrow. Annotated aerial photographs, topographical maps, or photographs of the site in addition to the sketch are useful**.

6.2 Complete an APHIS Form 2060 for each water sample.

6.3 Retain the pink copy of Form 2060 for your records and distribute the remaining copies as specified in the EMP.

7. Packaging and Shipping:

7.1 Package and ship the water samples to the laboratory as described in SOP EM-17, *Packaging and Shipping of Samples*.