

FS 2300. Drinking Water Sampling

See also the following Standard Operating Procedures:

- FA 1000 and 2000 Administrative Procedures
- FC 1000 Cleaning/Decontamination Procedures
- FD 1000-9000 Documentation Procedures
- FM 1000 Field Planning and Mobilization
- FQ 1000 Field Quality Control Requirements
- FS 1000 General Sampling Procedures
- FS 2000 General Aqueous Sampling
- FT 1000 – FT 2000 Field Testing and Calibration Procedures

1. INTRODUCTION AND SCOPE

1.1. The following procedures describe generalized drinking water sampling from private potable wells and drinking water supply systems.

2. EQUIPMENT AND SUPPLIES

2.1. For information on the selection of appropriate sample containers, refer to Table FS 1000-2.

2.2. For information on preservation and holding time requirements, refer to Tables FS 1000-4 through FS 1000-9.

2.3. For information on documentation requirements, refer to FD 1000-9000.

3. SPECIAL SAMPLING PROTOCOLS

3.1. Follow special sampling for the types of analytes discussed in FS 2001 – FS 2010.

3.2. Depending on the sampling objective for collecting samples using installed plumbing, purge the system and collect samples closest to the point of consumption, or, as close to the source well as possible.

FS 2310. POTABLE WELL SAMPLING

1. SAMPLING DRINKING WATER WELLS

1.1. As a rule, purge and sample from a spigot closest to the well head.

1.1.1. Remove all hoses, aerators or filters (if possible).

1.1.2. Open the spigot and purge sufficient volume to flush the spigot and lines.

1.1.3. Do not use any kind of disinfectant (alcohol, bleach, etc.) or heat to sterilize the spigot.

1.2. Reduce the flow rate to approximately 500 mL/minute (a 1/8" stream) or approximately 0.1 gal/minute before collecting samples other than for VOCs. Minimize aeration when filling VOC sample containers. Reduce the flow rate to approximately ≤ 100 mL/minute when collecting VOC samples.

1.3. Sample Containers with no Preservatives

- 1.3.1. Remove the screw cap from the bottle. Do not touch the interior of the cap or the container with your hand or the rim of the spigot.
- 1.3.2. Tilt the container so that flow falls onto the interior surface. DO NOT AGITATE OR SHAKE THE CONTAINER WHILE FILLING.
- 1.3.3. Fill the bottle almost to capacity. For collection of volatile organics or trihalomethane samples, refer to FS 2004.
- 1.3.4. Replace the screw cap securely on the bottle.
- 1.3.5. Dry the exterior surface of the bottle using a clean paper towel.
- 1.3.6. Affix a sample label and seal (if required), and complete the chain of custody form.
- 1.3.7. Place the sample bottle in a plastic sample bag and cool (where required) to 4°C on wet ice or place sample rack in cooler and nestle in ice, making sure that any melted ice water does not raise above the sample containers.

1.4. Sample Containers with Preservatives

- 1.4.1. Follow the same protocol outlined above.
- 1.4.2. Since some of the preservatives may react with the sample water, hold the open end of the container away from you while filling.
- 1.4.3. Replace the screw cap securely on the bottle and gently tip the container several times to mix the preservative with the sample.
- 1.4.4. Dry the exterior surface of the bottle using a clean paper towel.
- 1.4.5. Affix a sample label and seal (if required), and complete the chain of custody form.
- 1.4.6. Place the sample bottle in a plastic sample bag and cool (where required) to 4°C on wet ice or place sample rack in cooler and nestle in ice, making sure that any melted ice water does not raise above the sample containers.

2. SAMPLING DRINKING WATER SOURCES FOR LEAD AND COPPER

- 2.1. Selection of the sampling point depends on whether the sample is being taken to verify compliance with the Drinking Water Regulations. If so, sample from a COLD WATER tap in either the kitchen or bathroom.
- 2.2. Collect samples after the water HAS NOT been used for at least SIX HOURS.
- 2.3. DO NOT FLUSH OR PURGE THE SYSTEM.
- 2.4. Collect the first flush into the sample container for trace metals. DO NOT RINSE SAMPLE CONTAINER.
- 2.5. Tilt the container so that the initial flow falls onto the interior surface. DO NOT AGITATE.
- 2.6. For prepreserved containers, hold the open end of the container away from you while filling.
- 2.7. Add preservatives (if needed). To avoid problems of residents handling nitric acid, acidification of first-draw samples may be done up to 14 days after the sample is collected. After acidification to resolubilize the metals, the sample must stand in the original container

for the time specified in the approved EPA method before the sample can be analyzed. (refer to EPA 40 CFR Part 141.86).

- 2.8. Replace the screw cap securely on the bottle and gently tip the container several times to mix the preservative with the sample.
- 2.9. Dry the exterior surface of the bottle using a clean paper towel.
- 2.10. Affix a sample label and seal (if required), and complete the chain of custody form.

FS 2320. DRINKING WATER SUPPLY SYSTEM SAMPLING

Use the following protocols when sampling drinking water supply systems.

1. When sampling for drinking water compliance, the sampling point is normally designated by permit or municipal authorities. If not specified by permit or municipal authority, select an accessible location near the supply line or, if at a private residence, at an outside spigot.
2. Follow the protocols outlined in FS 2310, section 2 when sampling for lead and copper.
3. Procedures to sample drinking water directly from the supply system are the same as above, except for treatment of residual chlorine.
 - 3.1. Flush the lines for two to five minutes before collecting any samples.
 - 3.2. Reduce the flow rate to less than 500 mL/minute (1/8" stream) or approximately 0.1 gal/minute before collecting samples other than for VOCs. Minimize aeration when filling VOC sample containers. Reduce the flow rate to approximately ≤ 100 mL/minute when collecting VOC samples.
4. In many instances, the water supply to residences may be treated with chlorine, which causes interference with certain types of analyses (e.g., VOCs, Extractable Organics and some bacteriological samples).
5. Use a chemical test kit to check a separate sample for residual chlorine. If residual chlorine is present, collect the sample in the appropriate sample container(s) using the required preservatives.
 - 5.1. Replace the screw cap securely on the bottle and tip the container several times to mix the preservative with the sample.
 - 5.2. Dry the exterior surface of the bottle using a clean paper towel.
 - 5.3. Affix a sample label and seal (if required), and complete the chain of custody form.
 - 5.4. Place the sample bottle in a plastic sample bag and cool (where required) to 4°C on wet ice or place sample rack in cooler and nestle in ice, making sure that any melted ice water does not raise above the sample containers.

FS 2330. SAMPLING CRYPTOSPORIDIUM AND GIARDIA

Samples collected for the analysis of *Cryptosporidium* and *Giardia* must follow the procedures in the U.S. EPA ICR Microbial Laboratory Manual, Section VII, Part 9 - Sampling.

1. Transport the sample to the laboratory on wet ice or with but not on cold packs and refrigerate at 2-5°C. DO NOT freeze the filter during transport or storage.
2. The initiation of sample collection and elution from the collection filter must be performed within 96 hours.