



Appendix A

GENERAL SAMPLING REQUIREMENTS

This is a review of sampling techniques to be used when you collect samples for the Safe Drinking Water Act, required by the Minnesota Department of Health.

These instructions apply to all contaminants:

- ▶ Do not rinse or empty bottles. Several bottles contain a preservative that must remain in the bottle.
- ▶ Assume that any liquid present when a bottle arrives from the laboratory is caustic. If it comes in contact with skin or eyes, use first aid procedures for acid burns.
- ▶ If there is an overflow while filling a sample bottle, restart the procedure using a new sample bottle.
- ▶ Samples should be mailed the same day they are collected. Be aware of “holding times.” The holding time is the maximum amount of time a sample has to be analyzed. The holding time starts at the time of collection and ends when the sample is received by the lab. Once the holding time has been exceeded the sample may need to be recollected. Holding times vary for contaminants.
- ▶ A lab form must always be returned with samples.

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| BACTI | Bacteriological (Positive/Absent Total Coliform) (30 Hour Holding Time) |
| ARSENIC | Arsenic (14 Day Holding Time) |
| FLUORIDE | Fluoride (28 Day Holding Time) |
| NITRATE (NO ₃) | Nitrate + Nitrite Nitrogen, Total (14 Day Holding Time) |
| DBP | Disinfection By-products (THM & HAA5s) (14 Day Holding Time) |
| THM | Trihalomethane (consists of 4 contaminants) Bromodichloromethane Bromoform Chlorodibromomethane Chloroform |
| HAA5 | Haloacetic Acids (consists of 5 contaminants) Dibromoacetic Acid Dichloroacetic Acid Monobromoacetic Acid Monochloroacetic Acid Trichloroacetic Acid |
| RADCHEM | Radiochemical (consists of 2 contaminants) (5 Day Holding Time) Radium 226+Radium 228 Gross Alpha |
| PBCU | Lead and Copper (14 Day Holding Time) |



PROCEDURES

BACTI

SAMPLE BOTTLE: One (1) - 100 ml clear “round” bottle. **WARNING:** DO NOT flush out any powder that is in the bottle, this is a dechlorinating agent.

SAMPLING LOCATION: The bacteriological sample must be taken at a representative location on the distribution system. Do not take the sample at the pumphouse.

Important Note: The sample must be received by the designated lab within 30 hours of being collected or the sample may be rejected. Collect the sample on a MONDAY, TUESDAY or WEDNESDAY and immediately deliver to the post office for shipment, by FIRST CLASS mail.

Collecting the Sample:

1. Before sampling, remove any point-of-use devices or faucet attachments such as screens, aerators, washers, or hoses.
2. Turn on the faucet and let the water run in a steady stream approximately 5 minutes or until the water temperature is stabilized. If sampling from a single lever faucet, be sure the handle is pushed over to the cold side completely.

RECOMMENDATION: You may sterilize the faucet prior to collecting the sample. The sterilization is done after removing any attachments and before turning the faucet on. The sterilization can be done by flaming the edge of the faucet with a torch or cigarette lighter for at least 15 seconds, or wiping the edge with an alcohol wipe. **IF FLAMING IS ATTEMPTED, DO SO WITH CAUTION. DO NOT FLAME PLASTIC FAUCETS.**

3. Reduce the water flow to a steady stream that allows for filling without spilling. DO NOT change the flow rate once you have started sampling (changing the flow rate while sampling could dislodge microbial growth and unwanted contaminants).
4. Remove the cap from the bottle and hold the cap in hand. DO NOT touch the underside of the cap or inside the bottle.
5. Quickly position the bottle under the water flow. DO NOT allow the bottle to touch the faucet or water to splash up onto the faucet.
6. Fill the bottle up to the fill line, indicated by the line on the bottle that reads “100 ml.” DO NOT overfill the bottle. Quickly remove the sampling bottle from the water flow, replace the cap and tighten.
7. Turn the faucet off and replace point-of-use devices or faucet attachments, if necessary.
8. Wipe the outside of the bottle dry. Write the date and the sampling location (name or address of business/residence of where the sample was taken from) on the label provided by MDH and put the label on the bottle.
9. Complete the front of the labform provided by MDH by filling in the date the sample was collected, time collected, the name of the person who collected the sample, and sampling point (name or address of where the sample was taken).



ARSENIC

SAMPLE BOTTLE: One (1) 250-ml rectangular plastic bottle (provided by MDH)

SAMPLING LOCATION: Arsenic sample(s) must be taken at the designated well or entry point listed in the “sampling point” area(s) on the front of the labform provided by MDH. There should be a tap in the well house or treatment plant from which to take the sample(s). **Samples are to be taken after any treatment. For systems that use filtration, the sample should be collected after the filter.**

Collecting the Sample:

1. Before sampling, remove any point-of-use devices or faucet attachments such as aerators, screens or hoses.
2. If sampling from a well, allow the well pump to run for at least one hour (or until the well drawdown level is reached and stabilized) before sampling.
3. Turn on the tap and let the water run in a steady stream for approximately 5 minutes or until the water temperature is stabilized. **DO NOT** change the flow rate once you have started sampling (changing the flow rate while sampling could dislodge unwanted contaminants). If sampling from a single lever faucet, be sure the handle is pushed over to the cold side completely.
4. Remove the cap from the bottle and hold the cap in hand. **DO NOT** touch the underside of the cap or the inside of the bottle.
5. Quickly position the bottle under the water flow. **DO NOT** allow the sampling bottle to touch the faucet or water to splash up onto the faucet.
6. Fill the bottle, replace the cap and tighten.
7. Turn off the tap and replace the point-of-use device or faucet attachments, if necessary.
8. Wipe the outside of the bottle dry. Write the date the sample was collected on the label provided by MDH and put the label on the bottle. If you have more than one sample to collect, be sure that the description of the sampling site on the label you are attaching to the bottle corresponds with the location where you have taken the sample from.
9. Complete the labform provided by MDH by filling in the date the sample was collected, and the name of the person who collected the sample(s) and the time the sample was collected.

FLUORIDE

SAMPLE BOTTLE: One (1) 100-ml cylindrical plastic bottle (provided by MDH)

SAMPLING LOCATION: Samples must be taken at a representative location on the distribution system. Do not take the sample on or near the wellhouse or treatment plant. Provide specific location where sample was collected from in the Sampling Point area on the front of the labform provided by MDH.

Collecting the Sample:

1. Before sampling, remove any point-of-use devices or faucet attachments such as screens, aerators, washers, or hoses.
2. Turn on the faucet and let the water run in a steady stream approximately 5 minutes or until the water temperature is stabilized. If sampling from a single lever faucet, be sure the handle is pushed over to the cold side completely.
3. Reduce the water flow to a steady stream that allows for filling without spilling. **DO NOT** change the flow rate once you have started sampling (changing the flow rate while sampling could dislodge microbial growth and unwanted contaminants).
4. Remove the cap from the bottle and hold the cap in hand. **DO NOT** touch the underside of the cap or inside the bottle.
5. Quickly position the bottle under the water flow. **DO NOT** allow the bottle to touch the faucet or water to splash up onto the faucet.



6. Fill the bottle and quickly remove the sampling bottle from the water flow, replace the cap and tighten.
7. Turn the faucet off and replace point-of-use devices or faucet attachments, if necessary.
8. Wipe the outside of the bottle dry. Write the date and the sampling location (name or address of business/residence of where the sample was taken from) on the label provided by MDH and put the label on the bottle.
9. Complete the front of the labform provided by MDH by filling in the date the sample was collected, time collected, the name of the person who collected the sample, and sampling point (name or address of where the sample was taken).

NO₃ (Nitrate)

SAMPLE BOTTLE: One (1) - 120 ml cylindrical bottle with a yellow sticker on the cap (provided by MDH)

WARNING:

KEEP BOTTLE(S) OUT OF THE REACH OF CHILDREN and DO NOT INGEST. The sampling bottle contains a sulfuric acid solution (H₂SO₄) and will burn skin and clothing upon contact.

SAMPLING LOCATION: The nitrate sample(s) must be taken at the designated well or entry point requested on the MDH labform. If water is treated, collect the sample after any treatment has taken place. There should be a tap in the well house or treatment plant from which to take the sample(s). Emergency back-up wells are also required to be sampled for nitrate.

Collecting the Sample:

1. Before sampling, remove any point-of-use devices or faucet attachments such as screens, aerators or hoses.
2. Turn on the tap and let the water run in a steady stream for approximately 5 minutes or until the water temperature is stabilized. If sampling from a single lever faucet, be sure the handle is pushed over to the cold side completely.
3. Reduce the water flow to a steady stream that allows for filling without spilling. **DO NOT** change the flow rate once you have started sampling (changing the flow rate while sampling could dislodge microbial growth and unwanted contaminants).
4. Remove the cap from the bottle and hold the cap in hand. **DO NOT** touch the underside of the cap or the inside of the bottle.
5. Quickly position the bottle under the water flow. **DO NOT** allow the sampling bottle to touch the faucet or water to splash up onto the faucet.
6. Fill the bottle to the shoulder. **DO NOT** overfill the bottle. Quickly remove the sampling bottle from the water flow, replace the cap and tighten.
7. Turn the tap off and replace the point-of-use device or faucet attachments, if necessary.
8. Wipe the outside of the bottle dry. Write the date on the label provided by MDH and put the label on the bottle. **IF** you have more than one sample to collect, be sure that the description of the sampling site on the label you are attaching to the bottle corresponds with the location where you have taken the sample from.
9. Complete the front of the labform provided by MDH by filling in the date and time the sample was collected, and the name of the person who collected the sample(s).



DBPs (Trihalomethane and Haloacetic Acids – THM/HAA5)

SAMPLING LOCATION:

- A set of 3 THM vials and a HAA5 amber bottle must be filled at the same tap.
- Sample taps must not be downstream of any point-of-entry (POE) or point-of-use (POU) on-site treatment system.
- Samples must be collected from the distribution system. Do not collect the samples from a hydrant or private residence.
- The location must represent your system's maximum residence time (MRT) water. MRT water is the oldest water in your system. It is usually the longest distance from wells, treatment plants and/or storage tank(s).

Collecting the Samples:

1. Take the samples at the Sample Point(s) listed on the labform provided by MDH.
2. Write the date and the sampling point location (if it is not already shown) on the bottle labels (provided). There are 4 bottle labels per sampling site.
3. Complete the following on the labform provided by MDH: Date Collected, Time Collected, Collector Name and the Sampling Point (address/location where sample is taken - must match the bottle labels)
4. Choose a cold water tap that is clean, free of attachments (aerator, strainer, hoses, etc.), in good repair, and not attached to a carbon (charcoal) treatment device. Avoid faucets with swivel necks, and drinking fountains.
5. Run a full flow of cold water for 2 to 3 minutes. When sampling from a single-lever faucet, be sure the handle is pushed all the way over to the cold water side. The time required to flush the system will vary depending on location. In most cases, the water temperature will drop after the interior plumbing has been flushed.
6. Reduce the water flow to a constant steady stream that allows filling without spilling. Do not change the water flow once you have started collecting the samples (changing the flow rate could dislodge microbial growth and unwanted contaminants).

HAA5s: One (1) 250-ml with a Teflon lined cap (pre-preserved). Do not rinse or overfill the bottle.

7. Remove the cap from the bottle and hold the cap in your hand or place it on a clean surface. DO NOT touch the underside of the cap or the inside of the bottle.
8. Fill the bottle to the shoulder, cap the bottle, and agitate for one minute. Do not over-tighten.
9. Set sample aside and continue with filling the THM vials.

THM: Three (3) 40-ml vials per site. Each vial contains a powder preservative, and each vial requires an additional preservative (provided) to be added during the collection process. DO NOT RINSE OR CONTINUOUSLY OVERFLOW THE VIALS

10. Remove the cap from the vial and hold the cap in your hand or place it on a clean surface. DO NOT touch the underside of the cap or the inside of the vial.
11. Begin the filling process by quickly positioning the vial under the water flow (6 to 8 inches below the faucet) with the vial held at a slight angle. The objective is to collect the water with as little agitation as possible. Do not allow the sampling container to touch the faucet, or water to splash up onto the faucet. Add water until the vial is half full. Remove the vial from the water flow. Do not turn off the water.
12. Add 3 to 4 drops (1:1 Hydrochloric Acid) preservative using the dropper that is provided in the sampling kit. Use caution when adding preservatives. They are corrosive and can be damaging to skin, eyes, and clothes. Proper eye and skin protection precautions should be used.



13. Continue to fill the vial with water from the water flow or use the vial cap to top off the vial to form a meniscus (the curved surface at the top of a column of liquid).
14. Carefully replace the cap on the vial so that the milky white side of the septum is in contact with the water. Do not touch the septum. Do not over-tighten.
15. Check for air bubbles by turning the vial upside down and tapping it lightly against your other hand. If bubbles are present, add additional water and form a new meniscus. Recheck for air bubbles and repeat this step until no air bubbles are present. Do not empty the sample and start over. The presence of air bubbles will result in rejection of the sample.
16. Shake sample container vigorously for one minute.
17. Wipe the outside of the vials and amber bottle dry.
18. Turn the tap off and replace the aerator, strainer, or hose if necessary
19. Put the bottle labels on the vials and bottle. Confirm the sampling site on the labels and Sample Point on the labform to be sure they correspond with the location from which you are collecting the samples.
20. Avoid light exposure and **chill the samples to 4 degrees C.**

RADCHEMS (Radiochemicals)

SAMPLE BOTTLE: 1 gallon collapsible plastic container

SAMPLING LOCATION: Radiochemical sample(s) must be taken at the designated well, treatment plant or combined discharge (after any treatment has taken place), listed in the “sampling point” area(s) on the front of labform provided by MDH. There should be a tap in the well house or treatment plant from which to take the sample(s).

Collecting the Sample:

1. Before sampling, remove any point-of-use devices or faucet attachments such as aerators, screens or hoses.
2. Let the water run for at least 20 minutes before sampling. **DO NOT** change the flow rate once you have started sampling (changing the flow rate while sampling could dislodge unwanted contaminants).
3. Remove the cap from the bottle and open up (pull apart) the expandable container completely.
4. Position the bottle under the water flow. **DO NOT** allow the sampling bottle to touch the faucet or water to splash up onto the faucet.
5. Once the expanded container is as **completely full of water as possible**, replace the cap and tighten.
6. Turn off the tap and replace the point-of-use device or faucet attachments, if necessary.
7. Wipe the outside of the container dry. Write the date the sample was collected on the label provided and put the label on the bottle. **IF** you have more than one sample to collect, be sure that the description of the sampling site on the label you are attaching to the bottle corresponds with the location where you have taken the sample from.
9. Complete the labform provided by MDH by filling in the date the sample(s) was collected, the name of the person who collected the sample(s) and what time the sample(s) were collected.



PB/CU (Lead/Copper)

SAMPLE BOTTLE: 1 L plastic

SAMPLING LOCATION:

Lead and copper sampling is required by the U.S. Environmental Protection Agency's (EPA) Lead and Copper Rule to determine the contribution of faucet fixtures and household plumbing to the lead and copper levels in tap water.

- Samples must be collected at occupied private residences that meet the EPA Tier requirements. Sampling locations will be listed on the Laboratory Analysis Request Form which will be enclosed in your sampling kit.
- Instructions for the Public Water Supply (PWS), and lead/copper sampling instructions for the resident/sample collector will be enclosed with the sample bottles.
- The sampling kit will be sent from a contract laboratory approximately one month prior to when samples are to be collected.
- Samples must be collected during your designated sampling month.
- The number of samples you are required to collect is based on the population of your system. No system will collect less than 5 samples. If you receive 10 bottles, you must collect 10 samples.

Collecting the Samples (PWS Responsibility):

1. Contact each resident/sample collector to arrange a date/time to drop off a sample bottle and a copy of the lead/copper sampling instructions.
2. Using the site numbers that are listed on the Laboratory Analysis Request Form write a site number on the sample bottle label using water-proof ink. When dropping the sample bottle off with the resident/sample collector, be sure the site number/address on the bottle matches the resident's address.
3. Make copies of the lead/copper sampling instructions document. A copy is to be given to each resident/sample collector.
4. Discuss sampling procedures with the resident/sample collector, and arrange a pickup date/time and location (i.e. front door step) of the sample.
5. When picking up the sample, ensure the bottle cap is on securely and the bottle does not leak. Verify the collection date is written on the bottle, and enter the collection date for each sample collected on the Laboratory Analysis Request Form. Provide a complete street address for each site if none is listed,
6. Remove the Tap Water Sample Form from the sample bottle. Verify the home owner completed the form. If the resident/sample collector has indicated that plumbing repairs/replacement has been done or a whole-house water softener has been installed in the home since the previous sampling event, report those to MDH. The PWS keeps the Tap Water Sample Form, do not send it to the laboratory.
7. Place the Laboratory Analysis Request Form in a waterproof zip lock bag, and place it in the shipping container with the lead/copper samples.
8. Mail the samples and the completed Laboratory Analysis Request Form to the contract lab. The samples must be received by the laboratory within 14 days of collection. The Minnesota Department of Health is responsible for the cost of lead and copper analysis; however, the postage/cost for shipping the samples to the designated lab is your system's responsibility.



Collecting the Samples (Resident/Sample Collector Responsibility):

PWS must review the following instructions with each resident/sample collector.

1. Use extreme care to keep the bottle clean. Do not remove the sample bottle cap until you are ready to sample.
2. Water within the household plumbing should not be used for at least 6 hours, but do not go past 12 hours before the sample is collected.
3. Prior to the 6-hour hold on water use, run cold water through the faucet for about 1 minute.
4. Samples are collected by the resident/sample collector upon waking or after returning from work and before any water in the house has been used.
5. Samples are to be taken from a non-softened kitchen or bathroom cold-water faucet. Do not sample at an outside spigot or faucet, faucets that are seldom used, or from a water faucet that has a point-of-use or point-of-entry treatment device designed to remove inorganic contaminants (e.g., filter unit, etc.).
6. Position the faucet to sample from the cold water line only. Do not remove the faucet's aerator.
7. Uncap the sample bottle and place it under the faucet.
8. Open the faucet slowly and allow the sample bottle to fill at about the same flow that you would normally fill a drinking glass. As the water level in the sample bottle approaches the shoulder, close the faucet slowly. Leave about 1 inch of air space in the bottle.
9. Tightly cap the sample bottle. After the sample is collected, the bottle should be set upside down for 1 or 2 minutes to ensure the cap will not leak. If the bottle cap is leaking, re-tighten the cap or use tape around the cap to seal. Wipe the bottle dry.
10. Write the date the sample was collected on the bottle label, in water-proof ink.
11. Complete the Tap Water Sample Form and fasten it to the sample bottle with tape or a rubber band.
12. Place the sample bottle and Tap Water Sample Form at the predetermined pick-up location, on the date/time decided on with your PWS.