

## Module 5: Conducting Sampling and Interpreting Results

### Preservation of Samples

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In order to avoid analytical errors, pay particular attention to proper collection and handling of the sample before analysis. Sample containers (250-mL) should be obtained from a certified laboratory. The containers should have wide openings for easier sample collection and to allow samples to be collected with the water flowing at normal flow rates (i.e., A container with a narrow opening would make it difficult to collect water from a faucet that is turned on at the normal flow rate. Water collected from a faucet that is turned on “low” may not be representative of normal usage.) Other containers such as used jars or water bottles should not be used.

Make sure the containers are kept sealed between the time of their preparation by the lab and the collection of the sample. This will assure that no contaminants from the outside are introduced. If also taking bacteria samples, preserve the samples by icing, and promptly ship or deliver it to the laboratory. Most laboratories will provide the necessary shipping containers and cold packs. Upon receipt, the laboratory will acidify the sample. The sample can be held up to 14 days prior to acidification without loss of lead through absorption, but EPA recommends that you ship your samples as soon as possible.

It is best to have water samples analyzed for “total lead” rather than “dissolved lead.” Many laboratories may recommend the dissolved lead test because it is cheaper, but this test does not analyze for particulate lead, which can only be measured using the “total lead” test. However, both tests can also be conducted in order to determine if particulate lead is a problem. The difference in value of lead between the two results can be used to calculate particulate lead.



*A certified drinking water laboratory should be aware of these requirements. In addition, the laboratory may provide qualified individuals to collect samples or sample containers and instructions. The sample containers may have been prepared prior to reaching the school or child care facility. The laboratory will also specify how to handle the sample containers and when to submit them after taking the samples.*



When the laboratory returns the test results, the concentrations of lead in the drinking water samples will be reported in metric form such as milligrams per liter (mg/L) or micrograms per liter ( $\mu\text{g/L}$ ), or they will be reported as a concentration such as parts per million (ppm) or parts per billion (ppb), respectively.

Milligrams per liter (**mg/L**) is essentially the same as parts per million (**ppm**).

Micrograms per liter ( **$\mu\text{g/L}$** ) is essentially the same as parts per billion (**ppb**).

Examples:

- $1 \text{ mg/L} = 1000 \text{ } \mu\text{g/L} = 1 \text{ ppm} = 1000 \text{ ppb}$
- $0.020 \text{ mg/L} = 20 \text{ } \mu\text{g/L} = 0.02 \text{ ppm} = 20 \text{ ppb}$

For more detailed information, refer to the following documents:

***Methods for the Determination of Metals in Environmental Samples.*** U.S. EPA/600/4-94/111. May 1994 (available from the National Technical Information Service, Pub. No. PB95-125472 (703) 487-4650).

***Manual for the Certification of Laboratories Analyzing Drinking Water.*** U.S. EPA 815-R-05-004. January 2005 (available from the National Technical Information Service (703) 487-4650).

***Standard Methods for the Examination of Water and Wastewater, 22nd Edition.*** Co-published by the American Public Health Association, the Water Environment Federation and the American Water Works Association. 2012 (available from the American Water Works Association, ISBN # 0-87553-013-3, Catalog #10085).