

Water Microbiology

Drinking Water

- Total coliforms and *E. coli*: qualitative by presence/absence, enzyme substrate methodology (CF/MMO-MUG)

Environmental and Waste Waters

- Total coliforms, fecal coliforms or *E. coli*: quantitative by membrane filtration methods
- *E. coli* or *Enterococcus* spp: quantitative by enzyme substrate methodology

Drinking Water

The OSPHL water laboratory will provide support to the surveillance of water systems by DHS Office of Public Health Systems (OPHS), state agencies, and local health departments, including running split samples, special samples from surveys, inspections, studies, and disease investigations with the guidelines below.

Compliance monitoring testing by OSPHL will be limited to those systems listed below. All other water systems are directed to certified commercial laboratories for compliance monitoring testing.

Phone 503-693-4122 to obtain a list of commercial laboratories.

1. Compliance monitoring samples from federal and state government owned public water systems.
2. Compliance monitoring samples collected by the Oregon Department of Transportation, State Highway Division (rest areas), Parks and Recreation

Department (state parks), Department of Human Services (state institutions such as hospitals and schools) and Department of Corrections (correctional institutions).

3. Drinking water samples, regardless of source, will be accepted for testing when such samples are associated with reported illness or disease outbreak and collected by state or local health department staff.
4. Samples collected during inspections or surveys of licensed facilities by local health department or OPHS personnel.
5. Drinking water samples collected by Oregon OSHA personnel during inspections of migrant labor camps or other work sites will be accepted.

All samples must be collected by trained personnel in containers supplied by OSPHL (see **Supply Ordering** section). Sample bottles **must** be labeled and **must** be accompanied by a **completed** OSPHL request form.

Samples will be accepted 8:00 am to 5:00 pm, Monday through Friday.

Collection and Transport of Drinking Water

1. Sampling point must be a faucet from which water is commonly taken for public use. Should not be a swivel faucet, an outside faucet, or a fire hydrant. The faucet should not leak or



- have an aerator or screen.
2. Use the water collection kit supplied by the OSPHL. The sample bottle contains a dechlorinating agent in powder form.
3. Flush the line by running water 3-5 minutes before sampling.
4. Measure free chlorine residual and record result on the laboratory form.
5. Carefully open the sample bottle. Do not contaminate bottle or lid with hands.
6. Control the flow of water and gently fill the bottle past the 100 ml fill line. Do not fill past the 120 ml line on bottle.
7. Immediately secure lid to prevent leakage.
8. **Label** the sample bottle. All specimens **must be labeled** with name of water system, sample point and date/time of collection.
9. **Complete** the request/report form. Information **must** include:
 - a. Date and time sampled.
 - b. Name of water system.
 - c. Sample point.
 - d. Collector.
 - e. Type of sample, i.e., Routine, Repeat, Special.
 - f. County where water source is located.
 - g. Name, address and phone number of submitter.

- h. If special tests (other than standard presence/absence test) are needed, please contact OSPHL for instructions.

Note: Type or print legibly. Information on forms must be readable on all copies of the form.

10. Package sample in mailing container provided by the OSPHL.
11. Mail or deliver samples to OSPHL as soon as possible. All samples must be received at OSPHL within 30 hours of collection. Specimen should be stored refrigerated pending shipment.

Reporting Drinking Water

1. Turnaround time from time of receipt is 1-2 days. **Positive results are telephoned or faxed to submitter same day results are available.**
2. Copies of report are sent to submitter and to the agency responsible for monitoring the water quality of the sample. A copy of report is also maintained by the OSPHL.
3. Invalid sample reports will be generated for the following submissions:
 - a. Too old for testing.
 - b. Insufficient information: Incomplete information provided on laboratory requisition form. Refer to Instructions for Collection and Transport of Drinking Water.
 - c. Unlabeled sample container.
 - d. Insufficient quantity: Less than 100 ml received.

- e. Improper container.
- f. Unauthorized collector or submitter.

Environmental and Waste Waters

1. The OSPHL will test environmental water samples associated with situations posing a potential health hazard. Samples must be collected by county sanitarians or OPHS personnel and the OSPHL must be provided with advance notice.
2. Environmental water samples collected by DEQ personnel will be accepted Monday and Tuesday from 8:00 am to 5:00 pm.
3. Compliance monitoring samples from sewage treatment plants and landfills collected by DEQ will be accepted Monday and Tuesday from 8:00 am to 5:00 pm.

Collection and Transport of Environmental and Waste Waters

1. Collect sample in container supplied by the OSPHL according to standard methods for the type of water being sampled.
2. A volume of at least 150 ml is required for most tests.
3. Sample container must be labeled with water sample point and date/time of collection.
4. **Complete** the request/report form. Information **must** include:
 - a. Tests requested.

- b. Location, date and time of collection.
- c. Collector.
- d. Return address of submitter or agency to receive report. **Please complete information box on back of request form.**

5. Package and transport sample to the OSPHL in packaging supplied by the OSPHL or in box containing ice. Refrigerate specimens pending transport.
6. Mail or deliver samples to OSPHL. **All samples must be received within 30 hours of collection.**

Reporting Environmental and Waste Waters

1. Turnaround time is 1 to 2 days from time of receipt.
2. A copy of the completed request/report form is mailed to the address that appears on the back of this form within one working day of test completion.
3. The original report is kept on file at OSPHL.
4. Invalid sample reports will be generated for the following:
 - a. Too old for testing: Time from collection of sample to delivery to lab exceeds 30 hours.
 - b. Insufficient information on request: Refer to instructions for Collection and Transport of Environmental and Waste Waters Section.
 - c. Unlabeled specimen container.



- d. Insufficient quantity.
- e. Improper container: Not an OSPHL kit.
- f. Unauthorized collector/submitter.

Interpretation of Microbiological Test Results

The microbiological analysis performed on a sample of water is an examination for the presence of coliform bacteria.

The presence of coliform bacteria indicates that other disease causing organisms may also be present in the water and it may be unsafe to drink.

If coliforms are present in the sample, the lab must further analyze it to determine the presence of fecal coliforms or *E.coli*. Compliance with Oregon Drinking Water Quality Standards is determined by the results of individual samples and by all routine and repeat samples collected during a compliance period.

If the laboratory reports that the sample was too old, leaked in transit, or resulted in heavy non-coliform growth, a valid analysis could not be performed and you must collect another sample and send it to the laboratory to replace the invalid sample within 24 hours or by the next business day. If coliforms are present in the sample, you must:

1. Take immediate action to locate and correct the problem.

2. Contact the Drinking Water Program at one of our offices: Portland 971-673-0412; Pendleton 541-276-8006; or your county's Environmental Health Department within 24 hours or by the next business day.
3. Collect repeat samples within 24 hours of being notified.

Number of Repeat Samples:

Systems taking 1 routine sample per month or quarter must obtain a set of 4 repeat samples. Systems taking 2 or more routine samples per month must obtain a set of 3 repeat samples.

Location of repeat samples:

One from the same tap as the original sample; one from within 5 service connections **upstream** from the original sample location; one within 5 service connections **downstream** from the original location.

Increased routine samples for the month following a Total coliform positive sample:

Systems taking 4 or fewer routine samples per month must increase to 5 routine samples for the month following a positive result.

References

American Public Health Association. Standard Methods for the Examination of Water and Waste Water, 20th Edition.