



MBAS

Monterey Bay Analytical Services

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Total Coliform bacteria and E.Coli Test

Purpose

Outbreaks of enteric (intestinal) and opportunistic diseases caused by waterborne microorganisms still occur even in the most advanced nations with superior sanitation practices and sophisticated treatment and testing programs. Waterborne diseases include dysentery, hepatitis, cholera, cryptosporidiosis, and giardiasis. These diseases are spread by water contaminated with fecal material from humans and other warm-blooded animals.

It is not feasible to routinely test drinking water for every possible disease-causing organism. Instead, water quality standards are based on the concept of “**indicator**” organisms. According to this concept, drinking water is tested for organisms, which are not necessarily the cause of disease, but are associated with contaminated water and indicate the potential for disease transmission. The most commonly used indicator organisms for drinking water are total coliforms and *E. coli*.

The **total coliform** group is the broadest indicator classification and includes bacteria found in soil and vegetation, coliforms which originate from the intestinal tract of warm blooded animals are known as **fecal coliforms**. *E. coli* bacteria is a representative of the fecal coliform group.

Sample Collection

Water samples taken for coliform bacteria testing must be collected and handled carefully in order to insure that the sample taken truly represents the bacteriological quality of water in the system. The following procedure will help you in this regard:

1. Sterile containers provided by Monterey Bay Analytical Services must be used. Do not touch or otherwise contaminate the inside of the container, the inside of the cap, or the treads of the container. The container contains a chemical to neutralize chlorine; do not rinse the container.
2. Select a faucet that is used frequently – DO NOT take a sample from a faucet that is leaking around the handle. DO NOT take a sample from a dirty faucet or one that is equipped with an aerator and/or screen. Also, do not take a sample from a swing type faucet. Never take a sample from a hose or other device, which is attached to the faucet - - - remove them first.
3. When you have found a suitable faucet, open it just enough to produce a flow which can be collected without splashing. Let the water run for 2 to 3 minutes. Carefully fill the container up to the 100-ml mark. Immediately replace the cap (tightly), and label the sample with well identification, description of sample point, date and time of collection, and name of sample collector.
4. Complete the Chain-of-Custody form including mailing address, name of sample collector, well number, description of sample point, date and time of collection, and test ordered (i.e., “coliform”)

Care of Sample

Finished drinking water samples must be analyzed by Monterey Bay Analytical Services within 30 hours of collection. Raw water samples must be analyzed within 8 hours of collection.

Samples which cannot be delivered to Monterey Bay Analytical Services within one hour after collection must be refrigerated (e.g., iced cooler) and held at 10 degrees C during transit. Failure to follow these instructions will compromise the analyses. Temperatures of all water samples for coliform analyses are taken upon receipt by the laboratory and recorded on your chain of custody.

Interpretation of Results

Coliforms other than the fecal group are ubiquitous and it is impossible to eliminate them entirely from a water system. State and federal drinking water standards allow total coliforms to be present in up to 5% of samples tested by the water system each month; however, small drinking water systems which test fewer than 20 samples per month should have **no coliform positive** sample per month. Fecal coliforms (*E. coli*) should never be found in drinking water; if fecal coliforms are present, they indicate an urgent health threat and the water should be considered non-potable until properly treated. For further information on treating a small water system, consult Monterey Bay Analytical Services.



COUNTY OF MONTEREY HEALTH DEPARTMENT

ENVIRONMENTAL HEALTH BUREAU

INSTRUCTIONS FOR THE CARE OF SMALL WATER SUPPLIES WHEN COLIFORM BACTERIA IS FOUND

(Para obtener este documento en español vaya a - <http://www.mtyhd.org/waterforms>)

Coliform bacteria normally live in the soil, on plants and in the intestinal tract of humans and other warm-blooded animals. Coliform bacteria is not naturally present in groundwater. If water sampling shows the presence of coliform bacteria, this indicates that there is contamination in your water supply. If coliform bacteria are present, other organisms that cause disease can also be present in your water supply.

FOR THE PROTECTION OF THE SYSTEM USERS, IT IS VERY IMPORTANT THAT THE BACTERIA BE DESTROYED BY DISINFECTION.

- All users must be notified of the reasons for disinfection and precautions to be taken.
- During this process, the water may be used for toilets and bathing. Water should be provided from another source for cooking and drinking purposes. Beware of laundering clothes while chlorine is in the system, as it will bleach clothing.
- Please follow the procedures listed below to be sure that your water supply is properly disinfected and protected from future contamination.

1. Routine Protection of Water Supply:

- A. Seal all openings in the top of your well. The pump housing or well cover must be completely waterproof and insect-proof.
- B. Be sure that the cement slab around the well casing is not cracked and that it drains rain water away from the well.
- C. Electrical wires going into your well casing must be enclosed in electrical conduit. The conduit must form a waterproof and insect-proof seal with the well casing.
- D. All storage tanks and pressure tanks should be periodically cleaned and flushed out. All storage tank covers must be completely waterproof and insect-proof (all openings must be screened).

2. Chlorination Procedures:

Concentrating of Liquid Bleach- Sodium Hypochlorite (Unscented)

Sodium Hypochlorite	Down Well Casing	Storage tank- per 10,000 gallons
Standard Laundry Bleach $\approx$ 6%	Half ($\frac{1}{2}$) gal	1 gal
12.5%	One quarter ($\frac{1}{4}$) gal	Half ($\frac{1}{2}$) gal

***Verify concentration and adjust accordingly**

- A. Chlorinate your well by pouring one-half gallon of laundry bleach or one-quarter of 12.5% sodium hypochlorite down into your well casing. Do not use the discharge pipe from the submersible pump.
- B. Chlorinate all storage tanks by adding one gallon of laundry bleach or one-half gallon of 12.5% sodium hypochlorite per 10,000 -gallon tank capacity to the tanks when they are full. Overflow

- the storage tank to allow the chlorine to contact all surfaces within the tank.
- C. Open all cold-water taps until a chlorine smell is detected at all taps.
 - D. Close all taps. Leave the chlorine and water in the distribution lines for at least 24 hours.
 - E. After 24 hours, flush your well and tanks by opening all cold-water taps until the smell or taste of chlorine has subsided. (If superchlorinated, discharge tanks to waste after 24 hours.)

AFTER YOUR WATER SUPPLY IS PROPERLY PROTECTED AND CHLORINATED, HAVE YOUR WATER TESTED BY A STATE-CERTIFIED LABORATORY. SEND A COPY OF THE LABORATORY REPORT TO THIS DEPARTMENT WITHIN 30 DAYS OR AS OTHERWISE DIRECTED. INCLUDE THE NAME OF THE WATER SYSTEM WITH THE REPORT.

Be sure to do the following to ensure your safety and that of your family, pets, and livestock.

- Keep children and animals away from the well area while disinfecting.
- No one should use water from the water system until the disinfection procedures are done.
- **Use extreme caution** when working with electricity and water. Together, water and electricity can be deadly.
- Always follow the manufacturer's use and safety directions.
- Avoid eye and skin contact. Wear protective goggles or a face shield and rubber gloves when working with bleach.
- Do not mix bleach with other chemicals as they may form harmful gases.
- Do not leave bleach or the bleach solution unattended.
- Disinfection can create harmful gases. The area around the well must be well ventilated.
- Harmful gases can accumulate in well pits and create a lack of oxygen.

If you are unsure of these instructions, please call the Health Department and ask for a Drinking Water specialist.

Example images for disinfection products:



Sodium hypochlorite -12.5%

*NSF approved for drinking water



Clorox bleach or store brands ≈ 6%

*No additives including scent

Known locations to obtain chlorine: grocery stores, hardware stores, pool supply, and drug stores. (List may not include all locations.)