

Home Do-It-Yourself Bacteriological Water Test

Kit contents:

- 2 tests for total bacterial population (Total Count Easygel)
(All bacteria in sample grow as white or colorless colonies)
- 3 tests for *E. coli* (fecal coliform) and other coliforms (Coliscan Easygel)
(*E. coli* grow as blue colonies and coliforms grow as pink colonies.)
- 5 individually packed sterile, calibrated 3 mL droppers
- 5 sterile sample tubes

Instructions

1. Collect the water sample to be tested in a sterile tube (supplied). Be careful to not allow any contamination from your hands or fingers to wash into the tube during filling. If collecting tap water, allow to run for 2 minutes before collecting water. If collecting from a pond or stream, collect water from several inches below the surface, being careful that currents do not wash bacteria from your hands into the sample. Carefully cap the sample and transport it to your test area.
2. For each test that you wish to do, you will need one bottle of liquid Easygel (**Total Count** for total population test, **Coliscan** for ***E. coli* and coliform** test) and one Easygel regular coated petri dish.
3. Using a calibrated dropper/pipette, add 1 to 5 mL of the water sample to be tested to one bottle of liquid Easygel, swirl to mix the water with the liquid Easygel, lift the petri dish lid and pour the mixture into the coated petri dish which is on a level surface. Replace the petri dish lid and swirl the petri dish on the surface so that the liquid covers the entire bottom of the petri dish. Be careful not to swirl so vigorously that the liquid spills out of the petri dish.
4. Allow the petri dish to stand about 45 minutes (until the liquid sample-medium mix is solid) and put in a warm place to incubate. You may invert the plate once the medium is solid. This will prevent any water from forming on the inside of the lid and falling onto the solid medium in the petri dish. The ideal warm place would have a temperature of 80-95° F. and may be over a heat register, close to a pilot light, etc. You can also make an effective incubator from using about a 40 watt light bulb in a foam box, but be careful that the bulb does not touch any flammable materials to avoid fire hazard. Also, do not allow the direct light of the bulb to shine on the petri dish (use a screen of some type as the direct light may cause too much heat to form in the petri dish).
5. After bacterial colonies start to appear, allow another 18-24 hours of incubation and count the colony forming units (CFUs). If you used 1 mL of water as the sample the number of CFUs represents the actual number of individual (or clumps) of bacterial cells that were present in the water sample. Record your results as #CFU/mL or multiply the number times 100 and record as #CFU/100 mL.

If you have used Coliscan Easygel medium, look for colored colony forming units. Blue-purple CFUs are ***E. coli*** which is an indication of fecal contamination. Pink-red CFUs are coliforms which are not generally of fecal origin, but nevertheless are significant indicator organisms.

Following are the numbers of maximum allowable ***E. coli*** CFUs/100 mL of water that the U.S.E.P.A. suggests.

*piped drinking water — 0

*moderate swimming area --- 298

As was stated previously, ***E. coli*** indicates the presence of fecal pollution and is the best indicator of the potential that water has for transmitting disease to humans. The rationale is that if there is fecal contamination, there may be present disease causing organisms (pathogens) which are dangerous to humans. Some pathogens which are transmitted primarily from the fecal route include those that cause typhoid fever, cholera, hepatitis, and dysentery.

6. **DISPOSAL:** Lift the lid of the petri dish and flood the surface of the solid medium with the growing colonies with a tablespoon full of commercial bleach (clorox, purex or other brand). This will kill the microbes within a matter of minutes and the plates can be recycled or thrown out in the trash. Another option is to put the plates in a sealed ovenproof bag and heat at 350°F for 45 minutes, which will also kill all the microbes.