

How To Interpret Positive Colilert Results

E. coli bacteria along with other disease causing organisms are almost always present in water contaminated by fecal material. *E. coli* is the most common of the contaminating bacteria and the easiest to detect. Currently the best method for testing drinking water is to test for *E. coli*, and if we find *E. coli* in water samples, we can say with certainty that the water is contaminated and is not safe to drink. The methods that we use to test for *E. coli* contamination are the COLILERT tube test by IDEXX and the PETRIFILM plate by 3M

Colilert tubes have chemicals in them that when mixed with 10 mls. of the specimen provide food for the bacteria to grow in the tubes and chemicals that change color when bacteria are present. To grow and multiply, bacteria need both food and warmth, so the tubes must be kept warm while the bacteria are growing, for at least 18 to 24 hours.

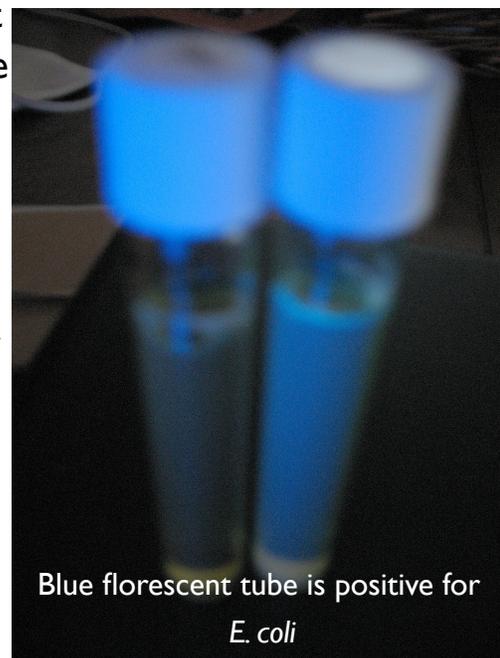
At the end of warming for 18 to 24 hours the *E. coli* bacteria will have grown and multiplied enough that they react with the chemicals that cause color changes. There are two color changes that are caused by *E. coli*.

The first color change is from a clear colorless liquid to a light yellow color. This is caused by an enzyme in the bacteria that breaks apart a chemical and releases a yellow color. *E. coli* and some other related bacteria have this enzyme, so a yellow color means that maybe *E. coli* is present in the water. *E. coli* also have another, second specific enzyme that other bacteria do not. This enzyme breaks apart a different chemical molecule that then fluoresces under a special light.

ONLY *E. coli* bacteria can cause both chemical reactions, and so if the Colilert tube turns yellow and fluoresces, we can say that the water is contaminated with *E. coli*.



Tubes positive for *E. coli* or related bacteria



Blue fluorescent tube is positive for *E. coli*