

SAMPLING TECHNIQUES FOR COLIFORM BACTERIA

By Russ Topp, Circuit Rider

Procedures for sampling coliform bacteria seems to be a subject that just never seems to go away. For new water operators it is imperative to develop and follow a technique to insure an accurate lab result of the quality of water in your system. Seasoned operators must remember to never get in a hurry or shortcut their technique for coliform sampling. Whether you are a new operator or have been in the business for a long time, if the technique is working, don't change! If the technique isn't working and you are experiencing positive samples, you may want to read on. I will try to explain a technique that works for me, as well as, many operators across the state.

1) Site selection: All routine sample sites must be approved by the Department of Health and Human Services. It is imperative to select sites that will reflect the true quality of the water you provide to your customers. Always avoid dead end water mains. The water can become stagnant in these areas. If you have a water main valve that is broken in the closed position you actually have two dead end mains. This condition may not be apparent so be aware. Always be sure you open valves after repairs and after exercising. Be very careful to check for any type of water filter. You may find them on the service line as it enters the building or under the sink. Try to select homes without old galvanized piping. Some of these pipes have a lot of deposits inside them that can be flushed into your sample. Never use a site that has any type of water treatment such as a water softener or a reverse osmosis unit.

2) The type of sample tap you use must be looked at very carefully. A smooth nosed sample tap plumbed in line, just as the water enters the building, is a very good sample tap. A single cold water faucet is next best, but hard to find. Try to avoid mixing and swivel faucets if at all possible. Never use faucets that can be extended. These faucets have a flexible hose on them that is impossible to get disinfected. Never use a yard hydrant. Avoid long neck faucets, these are very difficult to disinfect. Avoid outside hose bibs, the seat on these hose bibs are actually 16 or more inches inside the home and are very difficult to disinfect properly. Sample stations may be an option for you. If you decide to invest in these stations I would make sure your coliform bacteria, sample site plan, has been approved by the Department of Health and Human Services before installing them. Be aware that you will be sampling in the elements. You may want to get some type of small tent to get out of the wind or cold.

3) Flushing the service line is next. Before you begin to flush the service line be sure to unscrew the aerator making sure all gaskets have been removed from the faucet. Flush the service line thoroughly before collecting your sample. While flushing I will normally turn the water on and off a couple times very fast. I am hoping if any deposits are going to become dislodged it will happen then and not while I'm filling the sample bottle. The water should be flushed long enough to be collecting water that comes from the main. Usually five minutes is adequate, but the length of the service line dictates how long you must let the water flush. You can avoid in house plumbing problems by installing a smooth nosed sample tap just after the water enters the building

4) Disinfect the sample tap. The best technique I have found to disinfect a sample tap is to fill a sandwich baggy (fold over type) half full with Clorox, place it around the neck of the faucet, twist the baggy tight around the faucet and push up on the baggy. This will displace the water in the faucet with Clorox. I will continue this for four to five minutes. Carefully remove the baggy. At this point you have everything disinfected, do not touch the faucet or move the neck. Run the faucet at a good pencil lead sized stream and be sure the water stream doesn't lap up around the faucet. Let the water run for a couple of minutes before filling the bottle.

5) Fill the sample bottle. Hold the bottle relatively close to the faucet. Unscrew the lid holding it in the downward position, fill the bottle to the 500 millimeter line and put the lid right back on. Do not put the lid in your pocket, do not put your thumb in the lid, do not sneeze, do not cough or even breathe heavily while you have the lid off of the sample bottle. Some operators go as far as to make sure the furnace isn't going to start while they are collecting the sample. If for any reason you suspect the sample bottle may have been compromised pitch it in the garbage and call the lab for a replacement.

6) Fill out the lab slip completely and accurately, attach shipping label and put the sample in the mail. Then hold your breath until the results return.

Mike Stanzel and I will be conducting a class at our Spring Conference in Columbus in March. We will be teaching sampling techniques and answering questions. Hope to see you there.