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ALABAMA A & M AND AUBURN UNIVERSITIES

Water Supply Wells

Testing Well Water

More than 720,000 people in Alabama depend on their own well, spring, or cistern for drinking water. Individual water supplies of this sort are considered private, and the owner is responsible for assuring the water source is safe. For this reason, routine testing for a few of the most common contaminants is highly recommended.

Which Tests?

Annual tests for household water supplies should include tests for total coliform bacteria, nitrate, pH, and total dissolved solids (TDS). Routine testing of livestock and poultry water supplies should include tests for pH, total dissolved solids, sulfate, fluoride, calcium, magnesium, iron, copper, arsenic, cadmium, lead, nitrate, barium, total coliform bacteria, and fecal coliform bacteria.

A common problem with Alabama well waters is bacterial contamination. Annual testing for coliform bacteria is relatively inexpensive and a good idea. Bacteria of this type are most commonly found in older, shallow wells in porous soils near faulty septic systems or animal feedlots. Coliform bacteria concentrations in excess of one colony per 100 ml of water indicate a possible source of animal waste contamination and possible presence of pathogenic (disease-causing) organisms which can cause intestinal infection, dysentery, typhoid, and hepatitis.

Bacteriological testing is important when any of the following conditions occur:

- Any noticeable change in color, odor, or taste of water.
- Any person or animal becomes sick from a suspected waterborne disease.
- Flooding has occurred near the well.
- The water supply system has been disassembled for repairs to components such as well, pump, tank, or lines.

Any well water that shows the presence of coliform bacteria is considered contaminated. The contaminated water should not be used for drinking or

cooking unless it is boiled for at least 1 minute or disinfected by other means.

Nitrate testing is also important and relatively inexpensive but generally is not necessary annually unless initial testing finds nitrates from home or farm sources. Nitrates in concentrations above health standards (more than 10 mg/L) are associated with health problems in infants and young farm animals.

Annual testing for pH and total dissolved solids is generally optional since they usually change very little over time and add little information about the immediate safety of water samples. However, a sudden change in either pH or TDS could be an indication of below-ground corrosion or other damage to your well. If neither have been tested, testing will tell you much about the corrosive potential of your water. Corrosion is a health concern because of lead solder in copper plumbing. A safe pH may range from 6.5 to 8.5 depending on other conditions. TDS should not exceed 500 mg/L.

Radon and pesticide testing can be important also, depending on where you live. Both tests can be expensive and may require special sampling procedures. The decision to conduct these tests will probably depend on your level of concern or indications that a problem may be developing. An elevated level of nitrate in your well water samples is a good indication that your well is contaminated from surface activities; therefore, you may want to test for pesticides, too. You will need to weigh the possible risks of their undetected presence against the cost of testing.

When To Test?

Water tests are especially important if the supply is threatened by nearby activities. Good records prior to contamination will be needed to prove that the supply was damaged. Listed below are situations that may affect a water supply and useful laboratory tests.

If your well is in an area of intensive agricultural use:

Test for pesticides commonly used in the area, coliform bacteria, nitrate, and pH.

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If your water smells like gasoline or fuel oil and your well is located near an operational or abandoned gas station or buried fuel storage tanks:

Test for fuel components or volatile organic compounds.

If your well is near a dump, junkyard, landfill, factory, or dry cleaning operation:

Test for volatile organic chemicals (such as gasoline components and cleaning solvents), pH, chloride, sulfate, and metals.

If your well is near seawater, a road salt storage site, or a heavily salted roadway and you notice the water tastes salty or signs of corrosion appear on pipes:

Test for chloride and sodium.

If there has been a chemical spill or leak within 500 feet of your well:

Test for chemical contamination.

How Frequently To Test?

An annual test for bacteria is recommended. More frequent tests may be needed in areas heavily concentrated with wells and septic tanks. However, if the soil thickness is more than 10 feet, the depth of water is more than 50 feet, the well is properly protected, and several previous samples were negative, you may consider extending this testing interval.

If you are expecting a baby in your home, you should test for nitrate at the beginning of the pregnancy. Depending on the test result, you may wish to test again before bringing the baby home and during the baby's first 6 months.

If you have an old or shallow well, it is especially important to test your water regularly. Older methods of well construction and the well's location in relation to septic or livestock facilities on many farms make older and shallow wells prone to contamination.

The testing frequencies listed here are general guidelines. Test more often if you suspect there is a problem with the quality of your drinking water.

Where To Test?

Many places in Alabama can test your water. Local colleges and universities, private laboratories, and water treatment companies can even help deter-

mine the tests you need and may make some of the analyses. Be sure to choose a lab that is currently certified for the test you want.

The **health department** in each county will provide packets at a cost for bacteriological testing. The samples are analyzed at state health labs or at certain private laboratories under contract with the county health department. Upon special request and indicated need, the **Alabama Department of Public Health** or the **Alabama Department of Environmental Management (ADEM)** can run additional tests. If a homeowner is simply curious or has personal concern, private testing sources will have to be used. This testing can become quite expensive.

If your county health department cannot sample your water for biological testing, they can tell you how to collect samples for testing by other labs. You may also wish to contact your county Extension office, the Alabama Department of Environmental Management, or your regional EPA office for the names of certified laboratories.

How To Collect Water Samples?

For the most accurate results, water samples should always be collected using proper sample collection procedures. Samples should be tested by a laboratory that uses methods approved by the Environmental Protection Agency.

Sampling is the most important part of water testing. A carelessly collected or an inaccurate sample will lead to misleading results, and false results can be costly to both your family's health and finances.

What To Do About The Test Results?

If the test results exceed water quality standards, your water is contaminated. The Department of Public Health may then recommend that you disinfect your well and water supply system again and submit another water sample.

Whatever the results, these tests provide a starting point. They establish a record of water quality. This record helps to identify changes in the supply, contamination of the water source, or deterioration of the water system. Be sure to keep records from the water tests to document the history of water quality from your well. Good records of water quality are important if you need to prove that your water has been contaminated by some outside activity.

References

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The following articles in the Water Quality series may be helpful:

Water Testing

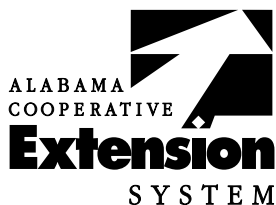
Should You Have Your Water Tested?

Where Can You Have Your Water Tested?

How Should You Collect Water Samples?

Which Tests Should You Request?

What Do The Numbers Mean? Interpreting Water Tests



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This publication, supported in part by a grant from the Alabama Department of Environmental Management and the Tennessee Valley Authority, was prepared by James E. Hairston, *Extension Water Quality Scientist*, assisted by Leigh Stribling, *Technical Writer*.

For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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UPS, **New June 1995**, Water Quality 2.5.4