

# EDUCATIONAL CIRCULARS AND PRIVATE WELL OWNER RESOURCES: PROVIDING DRINKING WATER INFORMATION TO THE PUBLIC

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**Abstract.** A series of University of Georgia Cooperative Extension Service circulars was designed to help well owners deal with problems identified by water test reports. These circulars are brief, written in a non-technical fashion, and designed for county-delivery along with water test results or on their own to answer common questions. Topics include: wellhead protection, testing water, water treatment, shock chlorination, nitrate, pesticides, coliform bacteria, hydrogen sulfide and sulfate, corrosion and scaling, lead and copper, and iron and manganese. Circulars are available in English and Spanish as printed publications and through the UGA Extension website, [www.fcs.uga.edu/housing/water](http://www.fcs.uga.edu/housing/water).

## INTRODUCTION

In 2003, the Agricultural Services laboratory and the Housing & Environment units of the University of Georgia Cooperative Extension Service created a series of educational circulars dealing with drinking water resources. These circulars were designed specifically for users of private water sources (such as wells, springs, and cisterns) and were projected to improve overall health, promote environmental awareness, and prevent drinking water contamination by advocating: a) proper well siting and construction, b) maintenance and routine testing of water supply systems, c) proper storage and disposal of potential contaminants, d) consumer awareness of the warning signs of contaminated drinking water, and e) viable means of treating water for household use.

While city water systems continue to expand as urban centers grow, millions of Georgians continue to rely upon private water sources for their household water needs. Unfortunately, many of these private water source users make the assumption that these private water sources are uncontaminated and do not require testing. In addition, many of these users fail to realize that agriculture, industry, waste management, and even the actions of neighbors can detrimentally affect their private water sources. Proper management of wells is essential for the overall health of the users.

## DEVELOPMENT

To best reach the target audience of private water resource consumers, circulars were designed to be as user-friendly as possible. A single-sheet, two-sided format was chosen because it allows coverage to be brief, yet can contain all of the information essential to the proper understanding of the subject matter. Technical language was avoided, and adequate descriptions and definitions were provided to help consumers understand key terms. Bulleted lists, larger font sizes, and colorful illustrations were used to make the publication easier to read and add to the circulars' visual appeal. Sections were clearly labeled with bold headings to allow the reader to quickly assess what information would be provided. To attract reader attention, bright colors were used on each circular's borders, title, and illustrations. A total of eleven circulars in the "Household Water Quality Series" were published in 2003.

## OVERVIEW OF PUBLICATIONS

**Protecting Your Well and Wellhead.** Groundwater is susceptible to contamination from a variety of sources, including septic tanks, pesticides, and household chemicals. As hundreds of wells often tap into the same aquifer, it is essential to prevent contamination from reaching these vital underground resources. In addition, properly protecting the wellhead is often an easier and less expensive means of ensuring the safety of the water supply than is a water treatment system.

This circular includes information on proper well siting and construction, keeping contaminants away from wells, backflow prevention, sealing abandoned wells, and testing well water.

**Testing for Water Quality.** Water quality is an important issue to many Georgians. Because of an increased interest in health, coupled with new information about our environment, the quality of our water receives a great amount of attention. This new focus on water

quality has led many Americans to consider having their water tested.

This circular answers the question “Should I have my water tested?” and describes the various types of water quality tests, including bacteriological tests, mineral tests, and pesticide and other chemical tests.

**Home Water Quality and Treatment.** Unfortunately, many Georgians, especially those dependent upon well water, assume that their water is safe and healthy. Water that tastes good and looks clear is often mistaken for being clean. Georgians who choose to test their water often believe that one test can check for all contaminants.

This circular advises the consumer on what to consider before choosing a form of water treatment, how to avoid unscrupulous salespersons and companies, how to select a home water treatment system, and how to recognize problems.

**Disinfecting Your Well Water: Shock Chlorination.** A standard treatment for well water sanitization is shock chlorination. It is important that well users always follow the proper procedure to ensure that the chlorination process is done safely and effectively.

This circular outlines the shock chlorination process, providing information on when the process should be used, what type of chlorine should be used, what precautions should be taken, and how to determine the amount of chlorine to be used.

**Nitrate in Water.** Maintaining a healthy well requires routine testing for possible contaminants, including nitrate. To assist in water safety, the EPA has set standards for nitrate levels in public drinking water systems. Although private well owners are not required to meet these standards, they do serve as a reference for safe drinking water. The EPA Maximum Contaminant Level is 10 ppm (parts per million) or mg/L (milligrams per liter) nitrate-nitrogen or, if expressed as nitrate, 45 ppm.

This circular answers the questions “What causes nitrate contamination?”, “Why worry about nitrate?”, and “What should I do if my well tests high in nitrate?” The circular also provides information about removing nitrate.

**Pesticides, Solvents, and Petroleum Products.** Modern pesticides include a number of compounds, grouped according to the pest they control: insecticides, miticides, nematocides, herbicides, plant growth regulators, fungicides, bactericides, etc. Solvents include a number of organic liquids that are used in a variety of household products such as paint, cleaners, degreasers, and other applications. Common petroleum products include gasoline, kerosene, diesel, fuel oil, and road oil.

Information is provided on common pesticides, solvents, and petroleum products; prevention of

groundwater contamination; and prevention of exposure to chemicals in water supplies.

**Coliform Bacteria in Your Water.** Coliform are a group of several types of bacteria that live and reproduce in the intestines of animals. Coliform bacteria can also be found in soil, surface water, and plants—anywhere animal feces may be present.

This circular discusses E. coli, water quality testing, interpreting test results, the causes of testing positive for bacteria, and how well contamination can be corrected.

**Hydrogen Sulfide and Sulfate.** Hydrogen sulfide is produced from decomposing plant and animal tissue, and usually does not cause health problems. However, hydrogen sulfide is extremely corrosive to metals (including stainless steel) and will shorten the lifetimes of steel well casings and copper pipes. Sulfate comes from naturally occurring minerals in rocks and sediments, and can act as a laxative, leading to dehydration.

This circular introduces the reader to hydrogen sulfide and sulfate, and outlines their sources and removal from household water.

**Corrosive or Scaling Water.** Corrosiveness and scaling are an inherent property of some groundwater and are related to the type of rocks or sediments in contact with the groundwater.

Information is provided describing corrosion and scaling, the saturation index, and methods for reducing corrosiveness and scaling in water.

**Lead and Copper.** During the recent history of indoor plumbing, both pipes and plumbing fixtures have been made of lead and copper or their alloys, such as brass. Water can dissolve small amounts of these metals from plumbing that, upon drinking, may be harmful to the user’s health.

This circular outlines the health effects of drinking water containing lead or copper, what to do if water does contain these metals, and water treatment options.

**Iron and Manganese.** Elevated levels of iron and manganese are two of the most common water quality problems in Georgia’s groundwater. They do not pose a health concern but cause water to be unsightly, taste bad, and stain plumbing fixtures and laundry.

This circular provides information on the indicators of iron and manganese in well water, problems associated with iron and manganese, and the removal of these elements from domestic water supplies.

The *Household Water Quality Series* is available online at [www.fcs.uga.edu/housing/water](http://www.fcs.uga.edu/housing/water) and in print from county Extension offices.

