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ALABAMA A & M AND AUBURN UNIVERSITIES

Possible Treatments

Buying Water Treatment Equipment

Until recently the water treatment industry focused primarily on improving the appearance of household water. Now this industry is being called on to eliminate health-threatening contaminants in household water.

A variety of companies and many products promise to render the consumer's drinking water safe and contaminant-free. These products are not tested or regulated by the government. Potential buyers must sort through advertising claims and technical data to select the appropriate treatment method.

One source that can help consumers in selecting water treatment equipment is NSF International. NSF International is an independent, nonprofit organization that develops standards and then tests and evaluates products and materials to those standards. NSF International certifies plumbing products, drinking water additives, and drinking water treatment systems and devices. Accredited by the American National Standards Institute (ANSI), NSF International is the former National Sanitation Foundation. The organization still uses the circled NSF approval stamp for certified approval that products conform to specified standards.

The following steps can also help consumers to determine if a problem exists and to select a treatment system for that problem.

- Inspect household water for visible problems like unusual color, taste, or odor.
- Contact appropriate sources for information.
- Test household water.
- Choose appropriate water treatment equipment.

Inspect Your Water

Inspect your water and the effect it has on your clothes, dishes, and fixtures. Refer to Table 1 for common problems and possible contaminants or tests.

If any of these problems occur, you may want to test your water to confirm the problem. Then you may want to install a water treatment unit to improve the

Table 1. Common Problems.

Problem And Symptoms	Possible Contaminants Or Confirmation Tests
Stained fixtures and clothes:	
red or brown	Iron
black	Manganese
green or blue.....	Copper
Reddish-brown slime	Iron bacteria
Off-color appearance to water:	
cloudy	Turbidity
black	Hydrogen sulfide, manganese
brown or yellow	Iron, tannic acid
Unusual taste and odor:	
rotten egg.....	Hydrogen sulfide
metallic.....	pH, corrosive index, iron, zinc, copper, lead
septic, musty, earthy.....	Total coliform bacteria, methane
alkali.....	pH, total dissolved solids
gasoline or oil.....	Hydrocarbon scan
soapy	Surfactants
Corrosion of pipes or plumbing	pH, lead, iron, manganese, copper

Source: Mancl 1988.

physical or aesthetic quality of your water—that is, its color, taste, or odor.

Contact Appropriate Sources For Information

Before purchasing any water treatment equipment, you should find out all you can about your water. Much information about your water may already be available if you know which sources to contact.

If your water comes from a public system, you should contact your municipal supplier. If your water comes from a community well or a private well, you can contact your local health department.

Public Water Systems. If your water source is public, contact your city water utilities department and ask them to send you a copy of the Municipal Drinking Water Contaminant Analysis Report.

When you contact your **city water utilities** department, emphasize that you are considering supplemental treatment. Your water treatment professionals are justifiably proud of the quality of the water they produce. Public water supplies must meet the Primary Standards for drinking water established by the Environmental Protection Agency, and the utility may also measure other contaminants. However, there may be contaminant levels you would like to reduce further using supplemental treatment.

Review the report for any contaminants that may be present in your water. Compare identified contaminants with the Environmental Protection Agency's Primary Standards for drinking water.

If you suspect potential problem contaminants, contact a laboratory certified to conduct drinking water analysis. Request that the necessary sampling information be sent to you.

Private Water Supplies. If your water source is private, contact your local **Extension Service** and ask for assistance in obtaining information about typical contaminants of local well water and the names of analytical laboratories certified to conduct drinking water analysis.

Contact a certified laboratory to get your drinking water tested, requesting that the necessary sample bottles and instructions be sent to you.

Test Your Water

After contacting official sources and receiving their information, you may want to have your water tested.

Many treatment companies offer free in-home testing of drinking water. Unfortunately, some unscrupulous dealers use this as an opportunity to frighten customers into purchasing equipment that may not be needed. The salesperson might add chemicals to the water that cause particles to form or color changes to occur. These demonstrations prove nothing about the safety of the water for drinking. Some states are considering legislation to ban in-home testing.

Not all contaminants can be evaluated by in-home water testing. For example, organics, which have been associated with serious health problems, must be analyzed in a laboratory with sophisticated equipment. Be wary of home analysis claiming to determine more than basic water quality constituents such as hardness, pH, iron, chlorine, and sulfur.

What To Test. Testing for all possible contaminants is possible but very expensive and not necessary. If your water source is private, you should test regularly for contaminants which can cause adverse health effects. If your water supply is public, you may only need to test if someone in your family becomes ill or if the taste, odor, or color of your water changes.

How To Test. When you receive the materials from the test lab, read the instructions very carefully. Carry out the instructions exactly as stated when collecting and sending in the water samples. Sampling is the most important part of water testing. A carelessly collected or an inaccurate sample may cause misleading results.

When the lab sends you a report, review it for any contaminants that may be present in your water.

Choose Treatment Equipment

If no physical problems exist and there are no excessive contaminants, your water does not need treatment.

However, if you discover an excessive level of a contaminant or a visible problem, you may want to treat your water. Refer to Table 2 for water treatment equipment options.

For a complete listing of all the drinking water treatment units that are certified by NSF International, write to NSF International, P.O. Box 130140, 789 N. Dixboro Road, Ann Arbor, MI 48113-0140, USA, www.nsf.org. (1-800-673-6275). Their regional office nearest Alabama is in Atlanta, GA.

References

Mancl, Karen. 1988. Water Testing. AEX-314. Ohio Cooperative Extension Service. The Ohio State University. Columbus, OH.

NSF International. 1991. Determining The Quality Of Your Drinking Water: A Step By Step Guide. NSF International. Ann Arbor, MI.

Vogel, Michael P., James W. Bauder, and Jeffrey S. Jacobsen. Groundwater: Household Water Treatment. Montana Cooperative Extension Service. Montana State University. Bozeman, MT.

Table 2. Index Of Water Problems And Water Treatment Equipment.

Problem Pollutant	Filter Equipment Options				Other Equipment Options				
	Activated Carbon	Mechanical	Oxidizing	Activated Alumina Cartridge	Reverse Osmosis	Distillation	Cation Exchange	Anion Exchange	Chemical Feed
Aluminum					●	●			
Arsenic				●	●	●			
Asbestos		●			●				
Barium					●	●	●		
Cadmium					●	●	●		
Chloride					●	●		●	
Chlorine ^a	●				●				
Chromium					●	●			
Coliform bacteria						●			●
Color	●	●			●				●
Copper					●	●	●		
Corrosion		●							●
Endrin	●								
Fluoride				●	●	●		●	
Giardia cysts		●			●	●			
Hardness					●	●	●		
Iron (Fe ²⁺)			●		●	●	●		●
Iron (Fe ³⁺)		●			●	●			
Lead ^b	●			●	●	●			
Lindane	●								
Manganese			●		●	●	●		
Mercury					●	●			
Methoxychlor	●								
Nitrate					●	●		●	
Particulates		●			●	●			
Pesticides, Herbicides, PCBs	●								
Radium					●	●	●		
Radon	●								
Selenium				●	●	●			
Silver					●	●	●		
Sulfate					●	●		●	
Tannic acids	●					●			
Taste and odor	●	●	●		●				●
TDS ^c					●	●			
TTHMs ^d	●								
Toxaphene	●								
Turbidity	●	●			●	●			
VOCs ^e	●								
Zinc					●	●	●		
2,4-D	●								
2,4,5-TP Silvex	●								

^aNot all reverse osmosis units are effective for chlorine reduction. Ask for proof of performance.

^bNot all activated carbon filters are effective for lead reduction. Ask for proof of performance.

^cTDS=Total Dissolved Solids

^dTTHMs=Total Trihalomethanes

^eVOCs=Volatile Organic Compounds

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

Drinking Water Standards

- Safe Drinking Water: Who's In Charge?
- Drinking Water Standards: How Are They Set?
- Protecting Your Health: Primary Standards
- Regulating Nuisance Contaminants: Secondary Standards
- What Happens At A Water Treatment Plant?

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

Typical Contaminants And Problems

- Bacterial Contaminants
- Water Hardness
- Iron And Manganese
- Turbidity (Cloudy Water)
- Color, Odor, And Taste Problems
- Corrosion
- Metal Contaminants
 - Lead
 - Nitrate
 - Sodium Chloride
 - Fluoride
- Pesticides And Organic Contaminants
- Radionuclides (Radon)



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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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