



# Fact sheet

## Drinking Water Treatment and Conditioning

*Theodore B. Shelton, Ph.D., Extension Specialist in Water Resources Management, retired*

### Understanding Water Treatment and Conditioning

By treating or conditioning well or tap water, homeowners may be able to remove most contaminants with the potential of causing negative short- and long-term health problems. In addition, nuisance problems such as water that stains or has a bad odor, taste, or hardness may be eliminated.

By talking to your water supplier, local health department, and water treatment equipment supplier, and testing your water for the appropriate contaminants, you should get a comprehensive picture of the quality of your drinking water. But before purchasing any water treatment devices, please consider the following suggestions.

### Facts to Consider Before Treating Your Water

Many water supply problems can be controlled or eliminated by using a variety of drinking water treatment devices. Before proceeding with the selection process, several facts should be considered.

- \* **If a Maximum Contaminant Level (MCL) Is Exceeded, Consult Your Health Department.**  
MCLs are health-based standards and you may be assuming additional risk if you continue to drink the water. Young children and infants are particularly susceptible. SMCLs are aesthetic standards.
- \* **Always Retest To Ensure You Have A Problem.**  
It is always good practice to have your water retested to ensure accuracy in sampling and in the laboratory. The second test should be done by a different laboratory to confirm results.

- \* **Consult With A Water-Quality Expert And/Or Your Local Health Department.**

When you are certain you have a particular contamination problem, consult with a water-quality expert. These individuals may be familiar with the preferred treatment methods in your area. Recent and historical water data should be reviewed by an expert to determine which processes are appropriate. The local health official or DEP may also be consulted if uncertainties arise.

- \* **Consider Alternatives**

Availability and cost of public water supplies or other alternatives including deeper private wells should be considered. If the home unit is preferred, then consider the use of a whole-house, faucet, or line-bypass unit. Bottled water may also be an alternative.

When you have more than one water-quality problem, choosing a treatment device is more complex. Many times you cannot treat one problem without treating an other first. In many cases, two problems can be eliminated with one treatment or the treatment method itself causes a problem.

- \* **Select Unit**

After choosing a treatment process, select a unit to install. Criteria for unit selection may include field experience, independent evaluations by the National Sanitation Foundation and the Water Quality Association, equipment safeguards, maintenance requirements, initial and ongoing costs, and warranties or performance guaranteed by the dealer.

- \* **Field Test**

Equipment reliability and performance can best be determined by field testing. Field data can help to determine a monitoring program.



- \* **Purchase and Install**  
Using reputable dealers, licensed plumbers, and certified installers should ensure that the device will perform according to specifications and warranties.
- \* **Monitor and Maintain**  
Safe operation of a home treatment unit requires monitoring and maintenance by an independent third party. While the above approach costs money not typically included in the purchase and installation price, the consumer should receive a safer product if this approach is followed.
- \* **For More Information**  
If you need more information about home water treatment technologies and devices, consult the ref-

erences at the end of this sheet, write the Rutgers Cooperative Extension office in your county, or contact the NJDEP Bureau of Safe Drinking Water in Trenton.

## References

- Faust, S.D. "Water From Home Wells - Problems and Treatments, Circular 594-B." New Brunswick, NJ 08903: New Jersey Agricultural Experiment Station, Cook College, Rutgers University, 1974.
- Schorr, P. "Point of Use Devices - Air Stripping, Activated Alumina, Reverse Osmosis, Activated Carbon, Distillation, Ion Exchange." NJDEPE-Division of Water Resources, CN 029, Trenton, NJ 08625, 1988.

## Home Drinking Water Treatment Technologies and Devices

### Activated Carbon Filtration

*Effective for:*

Some Organic Chemicals	Some Pesticides
Radon Gas	Taste
Trihalomethanes	Odor

### Air Stripping

*Effective for:*

Some Volatile Organic Chemicals	Hydrogen Sulfide
Iron (with filtration)	

### Bottled Water

*Effective for:*

A temporary solution to many water-quality problems	Emergency situations
Aesthetic problems	

### Chlorinators

*Effective for:*

Bacteria (Coliforms)	Microbiological contamination
----------------------	-------------------------------

### Distillation

*Effective for:*

All Inorganic Chemicals, i.e.,	Sodium
Nitrates, Some Organic	Chlorides
Chemicals	

### Ion Exchange

*Effective for:*

Hard Water (Water Softening)	Calcium
Manganese	Iron
Some Heavy Metals	

### Mechanical Filtration

*Effective for:*

Turbidity	Sediment
Dirt	Particulates
	(Loose Scale)

### Reverse Osmosis

*Effective for:*

Certain Inorganic Chemicals	Dissolved Solids
Nitrates	

### Ultraviolet Radiation

*Effective for:*

Bacteria (coliforms)	Microbiological contamination
----------------------	-------------------------------

For more detailed information request a copy of Extension Bulletin E214, "Interpreting Drinking Water Quality Analysis - What Do the Numbers Mean?" Priced publication from the Rutgers Cooperative Extension office in your county.

© 2003 by Rutgers Cooperative Extension, New Jersey Agricultural Experiment Station, Rutgers, The State University of New Jersey. This material may be copied for educational purposes only by not-for-profit accredited educational institutions.

Desktop publishing by RCE/Resource Center

Revised: March 1998

**RUTGERS COOPERATIVE EXTENSION  
N.J. AGRICULTURAL EXPERIMENT STATION  
RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY  
NEW BRUNSWICK**

Distributed in cooperation with U.S. Department of Agriculture in furtherance of the Acts of Congress on May 8 and June 30, 1914. Rutgers Cooperative Extension works in agriculture, family and consumer sciences, and 4-H. Adesoji O. Adelaja, Director of Extension. Rutgers Cooperative Extension provides information and educational services to all people without regard to race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Rutgers Cooperative Extension is an Equal Opportunity Program Provider and Employer.