

# Healthy Drinking Waters for Rhode Islanders

SAFE AND HEALTHY LIVES IN SAFE AND HEALTHY COMMUNITIES

## Drinking Water Standards

THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) WAS AUTHORIZED BY THE 1974 SAFE DRINKING WATER ACT and its amendments to establish limits on the concentrations of certain contaminants that are allowed in public drinking water supplies. These limits, or standards, are set to protect public health by ensuring good water quality. EPA standards for drinking water fall into two categories: Primary Standards and Secondary Standards.

### National Primary Drinking Water Standards

Primary standards protect consumers from microbial contaminants, radioactive elements, and toxic chemicals. The EPA sets a non-enforceable goal and an enforceable goal for each drinking water contaminant that is a concern for health. The non-enforceable, maximum contaminant level goal (MCLG) is based entirely on health considerations; as a health goal, it is set at a level at which no adverse health effects should occur. The maximum contaminant level (MCL) represents an enforceable limit. The MCL is the highest concentration of a contaminant allowed in public drinking water supplies.



The MCL is set as close as possible to the MCLG for any particular contaminant. However, the MCL also takes into consideration the ability of laboratories to detect the contaminant at low levels; the feasibility of treatment; and the cost of maintaining the levels of the contaminant below the MCL.

### National Secondary Drinking Water Standards

Secondary standards relate to aesthetic contaminants that cause offensive taste, odor, color, corrosivity, foaming, or staining. The concentration limit is called the secondary maximum contaminant level (SMCL). Secondary standards are not enforced; they are guidelines for water treatment plant operators and state governments attempting to provide communities with the best quality water possible.

### Health Advisories

EPA also issues Health Advisories (HA) which provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. Health Advisories are guidance values based on non-cancer health effects for different durations of exposure (e.g., one-day, ten-day, and lifetime). They provide technical guidance to EPA Regional Offices, State governments, and other public health officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination.

### How Standards Are Set

Primary standards for drinking water contaminants are based on three criteria:

- ◆ The contaminant causes adverse health effects.
- ◆ The contaminant is detectable in drinking water.
- ◆ The contaminant is known to occur in drinking water.

### How EPA Sets Primary Drinking Water Standards

In setting Primary Standards for a drinking water contaminant, the EPA first looks at the toxicological data on that contaminant, usually obtained from acute and chronic animal studies. (Human clinical or epidemiological data are used when available, but scientific data linking human health to drinking water contaminants are limited.) Experts use this information to estimate the concentration of the contaminant that may be toxic and the concentration level, if any, at which the contaminant causes no adverse health effects.

## Acute and Chronic Health Effects

Toxic doses of chemicals cause either acute or chronic health effects. An acute effect usually follows exposure to a large dose of a chemical and occurs almost immediately. Examples of acute health effects are nausea, vomiting, lung irritation, skin rash, dizziness, and even death.

The levels of contaminants found in drinking water are seldom high enough to cause acute health effects. Levels of some contaminants may cause chronic health effects, which occur long after exposure to small amounts of a contaminant. Examples of chronic health effects include cancer, birth defects, organ damage, disorders of the nervous system, and damage to the immune system.

enforce drinking water standards for EPA-regulated and other contaminants. States are permitted to set standards that are stricter, but not less stringent, than those set by EPA. When a standard is exceeded, the EPA, through the designated state agency, requires that the contaminant level be reduced to the MCL. The corrective treatment is left to the individual water supply system. The Rhode Island Department of Health (HEALTH) has jurisdiction over drinking water quality.

## Rhode Island Department of Health's Role

HEALTH has authority to regulate the design, construction, maintenance and operation of public water supplies. HEALTH has adopted the EPA's National Primary Drinking Water Standards for contaminants known to impact health as enforceable standards for public water supplies. Informally, HEALTH takes into consideration EPA's Secondary Drinking Water Standards and Health Advisories for contaminants that are indicators of impaired water quality.

"An Act Relating to Drinking Water Quality Standards for Private Wells" was passed by the RI General Assembly and became law during Summer 2002. The law requires each home that is sold with a private water well to have the water tested for 8 parameters- coliform bacteria, fluoride, iron, lead, manganese, nitrate, nitrite and turbidity. Enforcement authority for the law will reside with municipal building officials who issue certificates of occupancy.

The law gives HEALTH authority to establish drinking water standards for private wells, establish minimum qualifications for professionals engaged in water sample collection and interpretation of data, and to create a database for use on HEALTH's web site showing known areas of contaminants of concern to private well owners. A draft implementation plan has been drawn up by HEALTH, but implementing the plan will be delayed because funds are not yet available.

## Private Well Owner Responsibility

As a private well owner, you are responsible for the quality of your own drinking water. Homeowners with private wells are generally not required to test their drinking water to meet standards. However, you can use the public drinking water standards as guidelines when evaluating the quality of your drinking water. Public water systems provide treated, potable water to



## Acceptable Daily Intake

The acceptable daily intake (ADI) is the daily dose of a substance (including a safety margin) that a person can ingest over a lifetime without suffering adverse health

effects. The ADI is used to establish the MCLG for a contaminant, which in turn is used to set the enforceable MCL.

## Risk Estimate

If a contaminant causes cancer, it is assumed that no concentration is safe. Consequently, the MCLG is set at zero, a level that is not always possible to achieve. However, at very low levels the risk of cancer becomes so small that it is considered negligible. Therefore, regulatory officials must decide what level of risk is acceptable. The risk estimate is the level of exposure to a chemical estimated to cause this "acceptable level" of risk.

## Current Drinking Water Standards

The EPA is required to update the list of regulated contaminants every 5 years. Currently, EPA regulates over 80 contaminants found in drinking water. Although the EPA oversees community drinking water quality, regulatory officials in each state ultimately set and

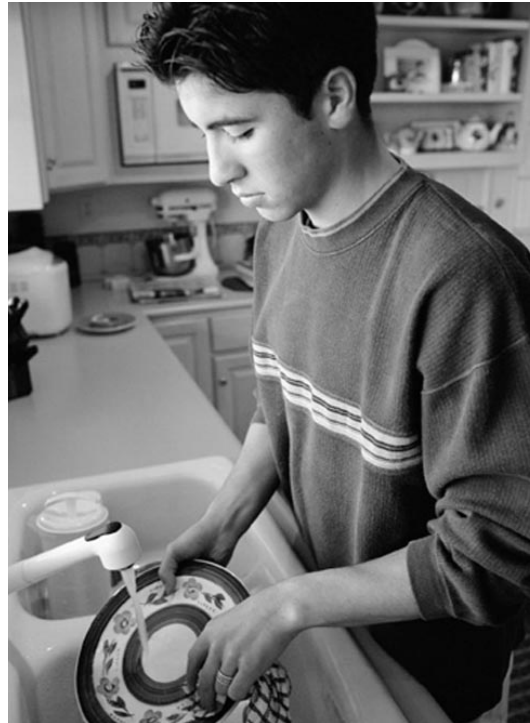
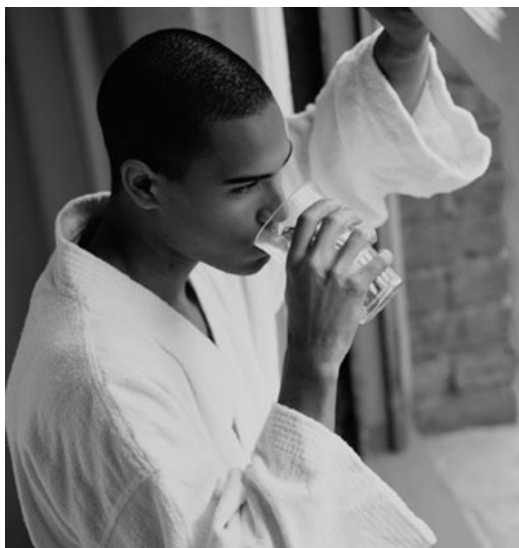
their customers for a fee. The cost of public water includes the costs of protecting the water source, managing and training personnel to use the water supply equipment, monitoring the water for contaminants, obtaining professional engineers' opinions and advice, making improvements to the water treatment and distribution system, planning for expansion, reporting to State and Federal agencies, and managing the financial aspects of the business.

Private well owners should consider the cost of well water maintenance and protection as a budget item, just as if they were paying a water bill. Improvements to water wells, treatment systems and plumbing are a necessary expense that directly benefits the homeowner. Although some treatment systems are more expensive, the costs are often less than the price paid by the owner in health effects or nuisance problems.

The seller must disclose the condition of a private well water system at the time of sale of their home. The buyer will likely investigate the water quality and quantity and it will be considered in the final sale price. It is advisable for both parties to work with qualified professionals to inspect the condition of homes and to seek legal advice from attorneys during their transactions.

### **Drinking Water Standards Are Not Absolute**

Setting drinking water standards is an imperfect process influenced by economic, political, and social considerations, in addition to scientific data. In fact, data relating human health effects to chemicals in drinking water are limited, and scientists have difficulty predicting the effects of drinking small amounts of chemicals for many years. Furthermore, standards do not take into account



the presence of multiple chemicals, which may increase or decrease the toxicity of a particular contaminant. For these reasons, it is important to understand that primary drinking water standards do not guarantee that water with a contaminant level below the standard is risk-free, nor do they indicate that water with a higher level is unsafe. Drinking water standards represent conservative judgments of scientists and regulatory officials, which are based on all available information on the health effects of drinking water contaminants. Testing your drinking water will tell you what is in your water at the time the sample is collected. Test results from 6 months ago represent the water quality at that well 6 months ago. The levels of most naturally occurring contaminants stay fairly consistent, or slowly increase or decrease over time, or have a seasonal fluctuation, depending on water levels.

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## For More Information:

This factsheet is one in a series on drinking water wells, testing, protection, common contaminants, and home water treatment methods. Contact the URI Home\*A\*Syst Program for more information.

### **University of Rhode Island Cooperative Extension Home\*A\*Syst Program**

Offers assistance, information, and workshops on private well water protection. 401-874-5398 [www.uri.edu/ce/wq](http://www.uri.edu/ce/wq)

### **RI Department of Health, Office of Drinking Water Quality**

Offers assistance, information on testing and state certified laboratories.

401-222-6867 <http://www.health.ri.gov/environment/dwq/Home.htm>

For a listing of HEALTH's certified private laboratories in Rhode Island <http://www.health.ri.gov/labs/instate.htm>

**US EPA New England** website: <http://www.epa.gov/ne/eco/drinkwater/>

**US Environmental Protection Agency.** For a complete list of primary and secondary drinking water standards: <http://www.epa.gov/safewater>

### **RI Department of Environmental Management, Office of Water Resources**

Maintains listing of registered well drillers, information on well location and construction.

401-222-4700 <http://www.state.ri.us/dem/programs/benviron/water/permits/privwell/index.htm>

### **NSF International**

For information on water treatment systems, NSF International has tested and certified treatment systems since 1965.

800-NSF-MARK <http://www.nsf.org/water.html>

### **Water Quality Association**

The Water Quality Association is a not-for-profit international trade association representing the household, commercial, industrial, and small community water treatment industry. For information on water quality contaminants and treatment systems. [www.wqa.org](http://www.wqa.org)

*This project is a collaboration of the staff at HEALTH and the University of Rhode Island Cooperative Extension Water Quality Program.*

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