

Is Your Drinking Water Safe?

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Introduction

Most Americans believe their drinking water is the best in the world. Servicemen and their families, vacationers, tourists, and others who travel abroad know the familiar problems of unsafe drinking water. At home we scarcely give it a thought. We believe that the purity of our water can be depended upon. And usually we are right. But there are exceptions.

These cases are serious enough to have moved the Congress of the United States to enact, in 1974, a far-reaching program to ensure that our drinking water is as good as we think it is. In 1986, Congress updated this program to set mandatory guidelines for regulating key contaminants, require the monitoring of unregulated contaminants, establish benchmarks for treatment technologies, bolster enforcement, and promote protection of ground water sources. This comprehensive program and what it means to your health is the subject of this pamphlet.

The Problem

If our water is good, why do we need a special program to protect it? The reason is that the situation has been changing dramatically during recent decades. Our sources of water supply, both surface and ground water, are being endangered by new chemicals or microbiological contaminants.

During these same years, our ability to detect contaminants has been improving. Modern science can now identify specific chemicals in terms of one part contaminant in one billion parts of water. In some cases, scientists can measure them in trillionths. One part per billion is equivalent to one pound in 500,000 tons or the first 16 inches or so of a trip to the moon. In case you think such small amounts can't be very significant, keep in mind that you can get sick from a single microscopic virus.

With information so detailed, new questions arise. What is the effect of consuming these contaminants in such small amounts over long periods of time? Doctors say that an acute, i.e., immediate illness, comes from this or that virus or poison. But chronic, i.e. long-term problems that develop over many years, are not so quickly diagnosed. There is genuine concern in the scientific community that prolonged exposure to certain elements, even at levels as low as a few parts per billion or trillion, may be increasing the incidence of cancer and heart disease.

The Centers for Disease Control tell us there were an average of almost 7,400 cases of illness in the United States linked to drinking water each year from 1971 to 1985. Total reported cases in this period ranged from 1983's high of 21,000 to 1985's low of 1,600. These numbers are generally thought to be considerably lower than the actual figures because drinking water contaminants are not always considered suspect.

While we have almost eliminated typhoid and cholera as water problems, we must continue to address the threat of viruses and other disease-causing organisms, as well as chemical contamination.

Although we currently know a great deal about the health impacts of drinking water contamination, many questions remain. Ongoing research will no doubt provide new information which will answer some old questions and generate some new ones. Meanwhile, we can take the following steps to reduce the risks to our health:

- Ensure that our water is treated to remove harmful contaminants,
- Test or monitor the purity of our water regularly to ensure its quality, and
- Develop an informed citizenry.

The National Approach

The Safe Drinking Water Act directs the U.S. Environmental Protection Agency (EPA) to establish minimum national drinking water standards. These standards set limits on the amounts of various substances sometimes found in drinking water.

This means that every public water supply in the country serving at least 15 service connections or 25 or more people must ensure that its water meets these minimum standards. Even non-community supplies, such as campgrounds and roadside motels with their own water supplies, are covered by the regulations.

In 1986, Congress passed a set of amendments that expanded the protection to be provided by the Safe Drinking Water Act of 1974. These amendments accelerated EPA's regulation of contaminants, banned all future use of lead pipe and lead solder in public drinking water systems, mandated greater protection of ground water sources of drinking water, and streamlined enforcement procedures to ensure that suppliers comply with the Act. The amendments gave EPA three years to set standards for 83 contaminants, including 26 for which the Agency had already set enforceable Maximum Contaminant Levels (MCLs). In addition, EPA must set MCLs for at least 25 more contaminants by 1991 and must regulate an additional 25 every three

years thereafter. Enforcement of each new standard will begin 18 months after each new or revised standard is set.

The lead ban prohibits the use of lead solders, flux and pipes in the installation or repair of public water systems and drinking water plumbing connected to these systems. Public water systems must tell their users of the potential sources of lead contamination, its health effects, and the steps they can reasonably take to mitigate lead contamination. States are responsible for enforcing the lead ban, and EPA can withhold up to 5 percent of a State's Public Water System Supervision grant if the Agency determines the State is not enforcing the requirements.

Ground Water has been protected under the 1974 Safe Drinking Water Act and by State programs that pre-date the Federal effort. The 1986 amendments extend that protection by establishing programs to protect critical ground water sources of drinking water, to protect areas around wells that supply public drinking water systems, and by regulating the underground injection of wastes below drinking water sources.

Enforcement is vital to the success of the Safe Drinking Water Act. The amendments to the Act authorize EPA to file civil suits or issue administrative orders against public water systems in violation when States are slow to take appropriate enforcement action, or when the State asks EPA to act. Maximum civil penalties are now \$25,000 per day of violation.

Small water systems face numerous obstacles to meeting these new mandates. Lack of resources and expertise are foremost among their problems. To help small systems comply with the new rules, EPA has taken steps to mobilize all groups interested in drinking water quality to use creative approaches to build local and State capacity through outreach, education, technical assistance and other institutional support.

Large systems, most of which easily complied with the requirements of the 1974 Safe Drinking Water Act, are also challenged by the new requirements. For example, one amendment requires that granular activated carbon (GAC) filtration, an effective but expensive technology, be considered the "best available technology" for controlling synthetic organic chemicals. That means any other (cheaper) technology that a water system substitutes for GAC must control these contaminants at least as well.

A new rule will require most large and small systems to filter surface water supplies of drinking water that are not adequately protected against contamination. Congress intended this requirement to protect the public against *Giardia lamblia*, a virulent protozoan, and other contaminants. Systems must also disinfect their drinking water supplies, something which all but some of the smallest have been doing all along. The filtration and disinfection requirements mean many drinking water systems must invest in new equipment.

The State Role

In the 1974 Safe Drinking Water Act, Congress said it wanted to ensure safe drinking water for all Americans. Congress preferred that the States take on the responsibility for the new program, which would build on existing State programs. Since 1974,⁵⁴ States and territories have been

granted primary enforcement authority for the program. EPA was responsible for protecting the quality of water on Indian lands. The 1986 amendments change that. Now, Indian tribes that meet the same criteria as States can assume primary enforcement authority over their drinking water. At publication, no Indian tribe has primacy for the drinking water program.

To be given primary enforcement authority for the program and to maintain it over time, a State or Indian tribe must adopt drinking water standards at least as stringent as the national ones. (They may set stricter standards if they wish.) Each State or tribe must also be able to carry out adequate monitoring and enforcement requirements. If a State or tribe cannot or does not do so, EPA will step in and conduct the program.

Public Notification

Since June 24, 1977, Federal law has required your water supplier to periodically sample and test the water supplied to your tap. Most of the larger suppliers were already doing that. If a water supplier has not tested the water or if tests reveal that a national drinking water standard has been violated--that is, if there is too much of any substance for which a national standard has been set--the supplier must move to correct the situation. The supplier must also notify the appropriate State agency of the violation.

And you, the customer, must be notified too. You may sometimes be notified by:

- A notice in the newspaper,
- An announcement on the radio or television, or
- A letter from the health department or your water system, telling you that a drinking water standards has been violated.

If you hear or read an announcement that a drinking water standard has been violated, don't panic. The announcement will explain the problem and its potential adverse health effects. It will also explain what precautions you should take and what the system is doing to correct the problem. You will also be told whether you should seek alternate supplies of drinking water until the violation is corrected.

Water systems must notify the principal radio and television stations serving their areas within 72 hours of discovering a violation that poses an acute risk to human health. Public notice of acute violations must appear in local newspapers within 14 days of their detection. Systems must report continuous violations every three months. Annual notification is required for less serious violations.

This flexibility in public notification provided by the 1986 amendments means EPA and the States can devote more attention to keeping the public informed of truly serious risks.

Certain violations are cause for immediate action by consumers to ensure that public health is not endangered. Other MCL violations will not mean that your health is at risk immediately. The limit on the amount of each substance allowed in drinking water was based on what you can consume for a lifetime without adverse health effects. The limit was based on the consumption of two liters (a little more than two quarts) of water (or water-based fluids such as coffee, tea or soft drinks) every day for a lifetime. A large safety margin was built into most standards so that you

will not be harmed even if the water you drink exceeds some of the maximum contaminant levels for short periods of time.

The fact that your State water agency or water supplier announces a violation of a drinking water standard is not by itself cause for alarm. It is a safety precaution required by Congress to call public attention to deficiencies in the drinking water supply. This procedure is intended to keep you informed so that you can make intelligent decisions about the problem. In essence, Congress said in the Safe Drinking Water Act that you have a right to expect water that meets minimum national standards for protection of public health. You have a right to be told and your water supplier must tell you if your water does not meet these standards. Your supplier is also obliged to inform you if the water is not being monitored as required. With such information from the supplier or State, you will know what precautions to take. And you will be able to seek the attention of the water supplier through public opinion to do whatever is necessary to bring you safe water.

That might require major or minor improvements in your public water supply system. It might require a new source of water. Most large systems will probably be able to remedy any problems that may be discovered. Some smaller systems may not. In some cases, the best alternative might be to tie into a nearby system.

Whatever the alternative, the public has a right to know about the quality of its drinking water, and the supplier has the clear responsibility to correct violations promptly or provide alternative, safe sources. With that information, the public can then weigh all possible alternatives and help make the decisions needed to ensure safe drinking water.

If adequate steps are not taken to correct violations of safe drinking water standards, you have additional rights.

You--or any individual or organization have the right to bring suit against anyone you believe is violating the law: the water supply system, the State, or EPA.

The Primary Standards

The drinking water standards established by EPA reflect the best available scientific and technical judgement. They were refined by the suggestions and advice of a 15-member National Drinking Water Advisory Council, made up of representatives of the general public, State and local agencies, and experts in the field of public water supply. Also, EPA's Science Advisory Board, made up of scientists, reviews the regulations to be sure they are based on sound science. In addition, the regulations are reviewed in draft by other Federal agencies, environmental groups, and State and industry associations, and the public.

All EPA regulations are published for review and are subject to public hearings before they go into effect. The National Primary Drinking Water Regulations are no exception. Many witnesses testify at the public hearings and EPA receives thousands of statements after the regulations were proposed. EPA considers these comments when preparing the final version of the regulations. The regulations set achievable levels of drinking water quality to protect your health. They were

originally called "interim" regulations because the 1974 Act stipulated that EPA was to issue MCLs on an interim basis and then to revise them periodically. The final MCL for only one chemical, fluoride, had been issued when Congress dropped "interim" from the regulations' status. When that happened, interim MCLs for 25 contaminants and the final MCL for fluoride became National Primary Drinking Water Regulations.

The 1986 amendments require EPA to issue a Maximum Contaminant Level Goal (MCLG) along with an MCL. (MCLGs were known as Recommended Maximum Contaminant Levels before the amendments.) An MCLG is an unenforceable health goal equal to the maximum level of a contaminant which is not expected to cause any adverse health effects over a lifetime of exposure and includes a margin of safety. EPA must, by law, set MCLs as close to MCLGs as technology and economics allow.

Not every contaminant must have an MCLG and an MCL. EPA can, instead, adopt a National Primary Drinking Water Regulation that requires the use of a specific treatment method be used to control a contaminant. The Agency has this option when it is not technically or economically feasible to determine how much of a contaminant is present in drinking water.

Most substances currently regulated under the Safe Drinking Water Act occur naturally in our environment and in the foods we eat. The national drinking water standards set by EPA reflect the levels we can safely consume in our water, taking into account the amounts we are exposed to from other sources.

Only two substances for which standards have been set pose an immediate threat to health whenever they are exceeded:

Bacteria

Coliform bacteria from human and animal wastes may be found in drinking water if the water is not properly treated. These bacteria may cause disease themselves or indicate that other harmful organisms may be present in the water. Waterborne diseases such as typhoid, cholera, infectious hepatitis and dysentery have been traced to improperly disinfected drinking water. If you should receive notice that the bacteria level in your water exceeds the minimum standard, follow the directions given in the notice.

Nitrate

Nitrate in drinking water above the national standard poses an immediate threat to children six months to one year old. In some infants, excessive levels of nitrate have been known to react with the hemoglobin in the blood to produce an anemic condition commonly known as "blue baby." If you receive notice that your drinking water contains an excessive amount of nitrate, do not give the water to infants under three months of age and do not use it to prepare a formula. Do not boil the water for extensive periods with the intention of reducing the nitrate, because such boiling will only increase the nitrate concentration. Simply read the notice you receive and follow its instructions carefully.

The table on the following pages presents the National Primary Drinking Water Standards for 30 contaminants. In addition to MCLs, the health effects and sources of each contaminant are listed. Other than for bacteria and nitrate, as discussed above, water that exceeds the MCLs for the

elements on the table will pose no immediate threat to public health. However, these substances must be controlled because drinking water that exceeds these standards over long periods of time may prove harmful.

The Secondary Standards

Unlike primary drinking water regulations, secondary drinking water regulations are not designed to protect the public health. Instead, they are intended to protect "public welfare" by providing guidelines regarding the taste, odor, color and other aesthetic aspects of drinking water which do not present a health risk. The effects of 13 contaminants for which EPA has developed Secondary Drinking Water Standards for the States are presented in the table following the National Primary Drinking Water Standards.

Summary

The Safe Drinking Water Act gave the country its first comprehensive national program to safeguard public drinking water. It established the national drinking water standards, which protect the health of everyone who receives their drinking water from systems serving at least 25 people or having at least 15 service connections. More than 80 percent of the U.S. population and a quarter million drinking water systems, including noncommunity water systems, are affected by the Act.

In 1986, Congress amended the Safe Drinking Water Act in response to various concerns raised by the public, EPA, State governments and the water supply industry. The pace of regulating drinking water contaminants was increased. EPA was given a schedule for regulating contaminants that threaten public health and deadlines for specifying criteria for the filtration of surface water supplies and the disinfection of drinking water from surface and ground water sources. The use of lead-containing plumbing materials in public water systems and private drinking water systems that connect to public supplies was outlawed. The amendments also increased protection of ground water, a crucial source of drinking water.

And they gave Indian tribes the same status as States in seeking primary responsibility for drinking water and underground injection control programs.

Many water supply systems will be able to meet the new national requirements with a minimum of effort. However, some water systems, especially the small ones, may have a hard time affording the investment in technology and technical expertise that these new regulations will require. EPA is providing them with technical assistance.

EPA is also aiding States that need help with technical assistance and grants for program administration. EPA is carrying on research to learn more about the health effects of other potential water contaminants, how to detect them in water, and how to get rid of them.

But the major responsibility for bringing you safe drinking water rests with your water supplier, your State, and ultimately with you as a concerned citizen.

This pamphlet has attempted to describe the drinking water program in simple, non-technical language. But the job of implementing the Safe Drinking Water Act and amendments is no simple matter. It is complex. It requires your cooperation and support.

And it requires your understanding that you may have to pay more for safe drinking water--especially if you are served by a small water supply system that has not kept up with modern technology.

It is expected that the cost of safe drinking water for some consumers will increase substantially as systems improve their disinfection or filtration practices. For consumers served by systems that have heavy metal or inorganic contaminant problems, the cost may be even greater.

Whatever the added cost might be, keep the alternatives in mind: water that's safe to drink, or the risk of disease or other harmful effects. It's a small price to pay for assuring yourself, your family, your community, and all Americans that our water is truly safe to drink.

Need More Information?

Additional information about safe drinking water, the 1986 amendments to the Safe Drinking Water Act, and other related issues is available from EPA's Safe Drinking Water Hotline: 1-800-426-4791. The following Regional Offices and State agencies can also provide you with information.

Regional Offices and States Covered

EPA Region 1

JFK Federal Building

1 Congress Street

Boston, MA 02203

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island,
Vermont

EPA Region 2

26 Federal Plaza

New York, NY 10278

New Jersey, New York, Puerto Rico, Virgin Islands

EPA Region 3

841 Chestnut Street

Philadelphia, PA 19107

Delaware, District of Columbia, Maryland, Pennsylvania, Virginia,
West Virginia

EPA Region 4

345 Courtland St. NE

Atlanta, GA 30365

Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina,
South Carolina, Tennessee

EPA Region 5

77 West Jackson Blvd.

Chicago, IL 60604

Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin

EPA Region 6

1445 Ross Avenue

12th Floor

Dallas, TX 75202

Arkansas, Louisiana, New Mexico, Oklahoma, Texas

EPA Region 7

726 Minnesota Avenue

Kansas City, KS 66101

Iowa, Kansas, Missouri, Nebraska

EPA Region 8

999 18th Street

Denver, CO 80202

Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming

EPA Region 9

75 Hawthorne Street

San Francisco, CA 94105

Arizona, California, Hawaii, Nevada, American Samoa, Trust
Territories of the Pacific, Guam, Northern Marianas

EPA Region 10

1200 Sixth Avenue

Seattle, WA 98101

Alaska, Idaho, Oregon, Washington