Water Quality
Knowledge to Go
Purdue Extension

# Drinking Water Quality Reports—Your Right to Know

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## A Report from Your Water Supplier

Beginning in 1999, community water supply systems must provide an annual report describing the quality of their drinking water to consumers. Officially called "Consumer Confidence Reports," the reports are required by the federal Safe Drinking Water Act Amendments of 1996. Systems serving over 10,000 people must mail these reports to bill-paying customers. People who do not receive their water bills directly, such as renters, can find the reports in the newspaper, on the Internet, in public places, and through organizations they belong to, or they can request the report from their water supplier. Smaller water suppliers have the option to print reports in the newspaper. If you do not receive a report, call your water supplier for a copy.

### *In This Publication*



The reports provide consumers with information about the quality of their drinking water. This information has always been available to consumers who requested it from their water supplier. Now it is provided in an easy-to-read format sent to your home. Just as food labels have increased consumers' knowledge about their food, water quality reports provide a sort of "label" describing what is in the water.

The guiding principle behind making water quality reports public is that people have the right to know what is in their drinking water and the source of their water. Informed and involved citizens make wiser decisions. These decisions include investments made to protect and improve water quality, such as wellhead protection or treatment system upgrades. Consumer "right to know" is an important theme of environmental protection today.

## Interpreting Your Drinking Water Quality Report

Most people only want an answer to the simple question: "Is my water safe?" Many water quality reports start with a simple statement that the water has met all drinking water health standards. If yours does not have such a statement, read through the report to find whether any violations are mentioned. If no violations of drinking water standards are reported, you can assume the water has met the safety standards set by EPA. Remember that the water quality report provides a snapshot of past water quality conditions and may not represent current conditions.

Do not assume water is safe to drink just because it is clear and tastes good. Most contaminants have no taste, odor, or color. Your assurance that the water is safe should be based on the results of laboratory testing. The water quality report tells you what tests have been done, what levels of contaminants have been detected, and whether the levels detected violate any drinking water standards.

Although many people only want to know that the water is safe, others want to know more about the water they drink. Reports also include information on:

- the source of your drinking water,
- levels of detected contaminants compared to drinking water standards,
- the meaning of technical terms, and
- your water supplier.

To help you interpret your drinking water quality report, this publication explores some of the more technical report features. It also provides a glossary of technical terms commonly used in water quality reports.

## Your Drinking Water Source

The first step in protecting your water supply is to understand the source of the water. Water either comes from under the ground (ground water, obtained from aquifers through wells) or from rivers, reservoirs, or lakes (surface water). The water quality report identifies the aquifer, stream, or reservoir that serves as your drinking water source. If you do not understand the description, ask for an explanation. Names and telephone numbers for you to contact are included on the report.

After you know the source of your water, you should be more aware of human activities that could lead to contamination. Each time you drive by a river, you might think about it as drinking water rather than just "a river." When playing golf near the city's wells, consider how golf course maintenance might affect the water supply. When a new subdivision is proposed near the city's reservoir, you might question its impacts on your drinking water. You might lead an effort to check for failing septic systems in a drinking water protection area.

## Types of Contaminants

The EPA requires that the water quality report list the levels of all contaminants detected. If contaminants are found in excess of drinking water standards, a brief paragraph will describe the probable source of each contaminant and its potential health effects.

**Microbial contaminants** include total coliform bacteria, fecal coliform and *E. coli*, and turbidity. Coliform are bacteria naturally present in the environment, and they are an indicator that other, potentially harmful, bacteria may be present. Fecal coliform and *E.coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Turbidity, cloudiness caused by tiny suspended particles, is included in the microbial contaminants because it interferes with disinfection and provides a medium for microbial growth. Turbidity is regulated by a specific treatment technique, although it has no adverse health effects.

**Radioactive contaminants** are from certain minerals that are radioactive and may emit radiation. Most of these occur naturally.

**Inorganic contaminants** are materials that are not derived from living sources and in general do not contain carbon. Regulated inorganic contaminants include antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, copper, cyanide, fluoride, lead, mercury, nitrate, nitrite, selenium, and thallium. These contaminants get into drinking water supplies through industrial discharge or spills, erosion of natural deposits, corrosion, sewage discharge, fertilizer runoff, and other sources.

**Organic contaminants** are carbon-based materials. There are 52 regulated organic contaminants, many of which have long names, such as 1,2-Dibromo-3-chloropropane (DBCP) or Hexachlorocyclopentadiene. Organic contaminants include pesticides, industrial chemicals, solvents, and degreasing compounds such as benzene. Pesticides are more often found in surface water supplies than in ground water in Indiana. Some of the pesticides widely used in agriculture and found in drinking water in

Indiana include atrazine, alachlor, and metolachlor. These are all herbicides. Benzene and other petroleum products are more likely found in ground water than in surface water. Sources of organic contaminants include discharge from industrial facilities; leaching from plastic (PVC) pipes; agricultural and residential runoff containing herbicides, fungicides, insecticides, and termiticides; and leaching or runoff from landfills.

## What the Numbers Mean

Several numbers are given for each contaminant listed in your water quality report. For example, you may find mercury and nitrate listed in your water quality report, as in Table 1.

**Column 1** in Table 1 lists the contaminants and the units used. In this example, different units are used for these contaminants. Mercury is measured in parts per billion (ppb), while nitrate is measured in parts per million (ppm). The unit used for nitrate is much larger, because mercury is harmful at lower concentrations than nitrate.

**Column 2** gives the Maximum Contaminant Level Goal (MCLG), which is the level of the contaminant below which there is no known or expected health risk. The Maximum Contaminant Level Goal is just that, a goal. Given today's technology, in some cases it cannot yet be reached.

**Column 3** gives the Maximum Contaminant Level (MCL), or drinking water standard for the highest level of the contaminant allowed in drinking water. Safe water does not mean water that is totally free of all contaminants. Purifying water can be expensive, and these costs must be passed on to the people who use the water. Every chemical has an exposure level below which the benefits of removal are minimal. A level is chosen by the EPA that meets stringent health standards, with a margin of safety, based on extensive animal research. The MCL (the regulated standard) is set as close to the MCLG (the goal) as feasible using the best available treatment technology. In the example shown in Table 1, the MCL and MCLG are the same, which means that the standard required for drinking water is the same as the level at which you could drink for a lifetime and have no known adverse health effects.

**Column 4** gives the level of contaminant actually found in your drinking water supply. The numbers in column 3 (MCL) and column 4 (level found) are probably the most useful to most consumers. In the example in Table 1, the water is not considered a health concern by the EPA, because in both cases the level found in the water supply (column 4) is less than the MCL (column 3).

**Column 5** (Range of detections) is included because some consumers want to know how the contaminant level fluctuates. Only the average level shown in column 4 is used to determine whether the water meets standards. The range is usually much wider in systems that use surface water (streams, rivers, or reservoirs) than in those that use ground water, because conditions in a stream vary much more than in the ground. If no range is given, only one sample was tested during the year.

Some systems only monitor certain contaminants every few years. If the level reported in the table was found in tests done prior to the year in which the report is issued, the date of the tests will be included in the table.

**Column 6** (Typical source of contaminant) describes the probable sources of the contaminant. Remember that it is not unusual for some level of many substances to be in your water and that, if the contaminant is not above the MCL, it is not considered a health concern by the EPA.

**Table 1. Example Contaminant Report**

| *1* | *2* | *3* | *4* | *5* | *6* |
|---|---|---|---|---|---|
| Contaminant (units) | MCLG | MCL | Level found | Range of detections | Typical source of contaminant |
| Mercury (ppb) | 2 | 2 | 0.3 | N / A | Discharge from refineries and factories; runoff from landfills and cropland |
| Nitrate as nitrogen (ppm) | 10 | 10 | 7.1 | 5.7-8.2 | Runoff from fertilizer use; leaching from septic tanks; sewage |

### Vulnerability to Contaminants

Your water quality report also points out that some people are more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons undergoing chemotherapy, persons who have organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk. More information is available from the Safe Drinking Water Hotline and from healthcare providers. (See "For More Information.")

While the best science available suggests that water that meets drinking water standards is safe when consumed over a lifetime, some people prefer not to consume water with any measurable contaminants. By reporting the levels of all contaminants, the drinking water quality report gives consumers the information to decide for themselves if they should be concerned about their water supply and seek other sources.

## Two Options You May Be Considering

### Bottled Water

The water quality report ensures that you are well informed about your tap water. But what about bottled water? Although bottled water is subject to certain testing requirements, the law does not require that the results of those tests be made available to the public. The right-to-know provision does not extend to bottled water. Consequently, drinking bottled water does not necessarily protect you from specific contaminants.

The U.S. Food and Drug Administration (FDA) regulates bottled water used for drinking. The FDA sets quality standards that are roughly equivalent to EPA's drinking water standards. Bottled water quality varies among brands because of variations in water source, treatment, and handling. Water is rarely completely free of contaminants. In most cases, contaminants are present at very low levels that do not pose a known health concern.

Bottled water usually costs hundreds or thousands of times more than tap water, but it may be a good temporary choice if your tap water violates one or more drinking water standards or if possible contamination of the water supply has occurred, such as through flooding. The FDA recommends that bottled water be handled like other food products and refrigerated after opening, because bacteria can grow after the bottle is exposed to air.

### Home Water Treatment

In the long term, home water treatment is often more cost-effective than purchasing bottled water if you are concerned about any contaminants found in tap water. Water treatment systems generally use one or a combination of the following processes: disinfection (chlorination or ultraviolet light), filtration (including activated carbon filters), reverse osmosis, and distillation. When buying a treatment unit, make sure it is designed to remove the contaminants of concern to you. You must also maintain any unit as instructed. A unit not maintained can expose you to more contaminants than not having a unit. You can find more information in the Purdue Extension publication "Buying Home Water Treatment Equipment" (WQ-6) or other publications listed in "For More Information."

## How to Protect or Improve Your Water Quality

The public can no longer relax and assume safe drinking water will always be provided. Public participation is needed to protect water resources, build adequate treatment plants, improve water delivery, analyze costs vs. risks, and enact appropriate legislation. A 1997 Indiana Rule requires public water systems using ground water to develop a Wellhead Protection Plan by 2002.

Local citizens will guide the wellhead protection planning process. This is an excellent opportunity for anyone concerned about safe water—for today and for the future—to get involved in protecting it. More than 90% of community water systems in Indiana, serving about one-third of Indiana's citizens, use ground water and are required to develop a Wellhead Protection Plan. The "For More Information" section of this publication lists several Purdue Extension publications on wellhead protection planning.

Only 55 Indiana community water systems use surface water (rivers, lakes, or reservoirs) for their water supply, but they include some of Indiana's largest cities (such as Indianapolis and Fort Wayne). Protection of the watershed area that drains into the river used by these systems, although not required by law, is also important to ensure safe and affordable water for the future. Local citizens have already formed watershed partnerships to protect their watershed and water supply in many areas.

Nearly 30%, or over 1.7 million Hoosiers, use water from private wells. No government agency monitors or protects the quality of their water. Private well owners must test their water regularly and protect the area around the well. The Purdue Extension publication "Indiana Farmstead Assessment for Drinking Water Protection" (WQ-22) provides drinking water protection information for farms, and "Home*A*Syst" (WQ-25) provides information to help homeowners protect their well and drinking water supply.

## For More Information

Purdue Extension's drinking water information program, "Safe Water for the Future," provides information on wellhead protection and watershed protection for public water supplies. You can call 765-496-6331 or visit <http://www.ecn.purdue.edu/safewater>.

The following Purdue Extension may be helpful. You can order them through your county office of Purdue Extension or by calling 1-888-EXT-INFO. You can also find many Purdue Extension publications on the Web at <http://www.agcom.purdue.edu/AgCom/Pubs/menu.htm>.

WQ-2 "What Is Ground Water?"

WQ-6 "Buying Home Water Treatment"

WQ-11 "Sulfur Water Control"

WQ-12 "Distillation for Home Water Treatment"

WQ-13 "Home Water Treatment Using Activated Carbon"

WQ-14 "Reverse Osmosis for Home Treatment of Drinking Water"

WQ-15 "Bacterial Contamination of Household Water"

WQ-22 "Indiana Farmstead Assessment for Drinking Water Protection"

WQ-23 "Cryptosporidium: A Waterborne Disease"

WQ-24 "Wellhead Protection in Indiana"

WQ-25 "Home*A*Syst

WQ-26 "Lead in Drinking Water"

WQ-27 "Nitrate in Indiana's Ground Water"

WQ-28 "Forming the Wellhead Protection Planning Team"

WQ-29 "A Shortcut to Wellhead Protection Delineation for Some Systems"

WQ-30 "Choosing a Consultant to Delineate the Wellhead Protection Area"

WQ-31 "Inventorying Potential Sources of Drinking Water Contamination"

WQ-32 "Indiana Farmstead Assessment for Drinking Water Protection—Basic Questions"

You can also obtain information about contaminants and potential health effects by calling the EPA's Safe Drinking Water Hotline 1-877-EPA-WATER or visiting their website at <http://www.epa.gov/safewater>.

| Drinking Water Terms | Definition |
|---|---|
| Action Level (AL) | The concentration of a contaminant which, when exceeded, triggers treatment or other requirements that a water supplier must follow. |
| Aquifer | An underground formation (often sand or gravel) that contains water and easily transmits water to a well. |
| Consumer Confidence Report (CCR) | A report that is required to be sent or transmitted to all consumers of a public water supply, beginning in 1999. The report provides information about the water, such as contaminants detected. |
| Environmental Protection Agency (EPA) | Federal agency that regulates public water supplies in the U.S. |
| Food and Drug Administration (FDA) | Federal agency that oversees the safety and effectiveness of food, cosmetics, medicines, and other products. The FDA regulates bottled water in the U.S. |
| Ground water | Water contained in pores below ground, usually drawn from wells for drinking. |
| Maximum Contaminant Level (MCL) | The highest level of a contaminant allowed in drinking water. The MCL (the drinking water standard that is regulated) is set as close to the MCLG (the goal) as feasible using the best available treatment technology. |
| Maximum Contaminant Level Goal (MCLG) | The level of a contaminant in drinking water below which there is no known or expected risk to health. |
| Parts per billion (ppb) | Unit that represents 1 part contaminant in 1,000,000,000 parts water. |
| Parts per million (ppm) | Unit that represents 1 part contaminant in 1,000,000 parts water. |
| Safe Drinking Water Act | The main federal law, originally passed in 1974, that ensures the quality of Americans' drinking water. Amendments passed in 1996 reflect a consumer right-to-know emphasis. See <http://www.epa.gov/ogwdw/usdwa/sdwa.html>. |
| Surface water | Lakes, streams, reservoirs, and rivers. Surface water is used for drinking water in many large cities in Indiana, as well as in smaller cities in southern Indiana, where ground water is not plentiful. |
| Treatment Technique (TT) | A specific process (such as filtration) that must be followed to reduce the level of some contaminants in drinking water. |
| Turbidity | The cloudy appearance of water caused by the presence of tiny particles. High levels of turbidity may interfere with proper water treatment and monitoring. |
| Wellhead protection | Identification and protection from contamination of a certain area surrounding a drinking water well or well field. |

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