



Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects may be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Meeting the Challenge

We are once again proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2011. Over the years, we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please share with us your thoughts or concerns about the information in this report. After all, well-informed customers are our best allies.

Where Does My Water Come From?

The sources of water for our Pirtle Spring Water Treatment Plant (PWP) are the Pirtle Spring, located at the plant site, and the Head of Rough Spring, located about 1.5 miles from the plant. Both sources are treated at the PWP. The plant is staffed 24 hours a day, 365 days a year.

We also are connected to the Fort Knox water system (Department of the Army, Directorate of Base Operations & Support). Fort Knox has two sources, including 15 deep wells on the West Point Aquifer and a spring source near Otter Creek. A copy of the Fort Knox annual water quality report may be obtained by contacting Mr. Dominic Anako or Mr. Luther Jenkins with Fort Knox DPW Environmental Management Division at dominic.i.anako.civ@mail.mil and luther.v.jenkins.civ@mail.mil or call (502) 624-8379. Our interconnection allows us to purchase up to 2.7 million gallons per day (mg/d).

In 2011, the PWP treated 1,030 million gallons (MG), and we purchased for resale 48 MG or 0.1 million gallons per day (mg/d). Our maximum demand was 4.0 mg/d, and the average daily demand was 3 mg/d. Of all our water demand, 37% was provided to other water systems for resale to their customers. For 2011, our customer and system total demand was 1,078 MG, which was 2% less than the previous year.

Definitions

AL (Action Level): The concentration of a contaminant, which if exceeded, triggers treatment or other requirements that a water system shall follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L (picocuries per liter): A measure of radioactivity.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

removal ratio: A ratio between the percentage of a substance actually removed to the percentage of the substance required to be removed.

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

¹ Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

How Is My Water Treated and Purified?

The Pirtle Spring Water Treatment Plant (PWP) uses a three-step treatment process. This includes clarification to remove larger particles in the raw water. We also add powdered, activated carbon to absorb many other types of chemicals or contaminants. The water then passes through a multimedia filter system that uses four sizes of sand and gravel, plus a layer of anthracite coal. The new filters (installed in 2009) are able to remove many other microscopic particles and contaminants. Finally, the treated water is kept in a holding tank where it is completely disinfected to meet all state and federal requirements. The finished water is then pumped through more than 200 miles of water mains until it reaches five storage tanks that can store up to 3.7 million gallons of treated water.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice

about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by

Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.



QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call Ms. Amanda Spalding, Water Quality/Measurement Specialist, by phone at (270) 862-4340 or by fax at (270) 862-5740. She can also be contacted via e-mail at aspalding@hcwd.com.



Award of Excellence

In 2011, our Pirtle Spring Water Treatment Plant was selected for an "Award of Excellence" for plants with capacity under 5 million gallons per day. This award came from the Kentucky/Tennessee chapter of the American Water Works Association. We provide tours of the plant for civic groups or schools. If you would like a tour, just use the contact information provided in this report.

In 2011, we also were awarded a contract from the Defense Logistics Agency (DLA), Department of Defense, to own and operate the Ft. Knox Potable Water System. We had formed a partnership in 2008 with the Louisville Water Company to submit proposals to DLA. This process took over three years in a competitive negotiation process. We took over operations of that system in February, 2012. The two water treatment plants on post are being operated by the Louisville Water Company. All other operations and construction projects will be carried out and completed by our staff.

This newly added utility increases annual revenues by about 40%. Because of regulations we must follow, this added utility cannot add costs to our other current water or sewer utilities. However, some of our fixed administrative costs will now be shared with this new utility, which will help hold down rates in future for our existing customers. In late 2011, we also received a grant from the Kentucky Economic Development Finance Authority, known as a "BRAC" grant. This \$4.5 million grant will allow us to connect our system, and the Ft. Knox system, to the Louisville Water Company's water system. This connection will provide a much more secure back-up supply which is not affected by droughts, as our current raw water sources are. This interconnection is expected to be completed within the next two years, or sooner.

Sampling Results

During the past year, we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The tables below show only those contaminants that were detected in the water. The state requires us to monitor for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES									
				Hardin County Water District No. 1		Fort Knox Water Plant			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2008	15	0	NA	NA-NA	0.98	0.16-1.8	No	Erosion of natural deposits
Atrazine (ppb)	2011	3	3	0.27	ND-0.27	NA	NA	No	Runoff from herbicide used on row crops
Barium (ppm)	2011	2	2	0.024	NA	0.026	0.022-0.026	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2011	[4]	[4]	1.27	0.4-2.2	3.16	1.42-3.16	No	Water additive used to control microbes
Combined Radium (pCi/L)	2008	5	0	0.9	0.2-1.6	0.48	0.45-0.51	No	Erosion of natural deposits
Fluoride (ppm)	2011	4	4	0.9	NA	1	1-1.04	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAAs] (ppb)	2011	60	NA	30	12.3-59	1	ND-2	No	By-product of drinking water disinfection
Nitrate (ppm)	2011	10	10	3.1	NA	2.35	0.17-2.35	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2011	80	NA	40	19-88	12	6-19	No	By-product of drinking water disinfection
Total Organic Carbon (ppm)	2011	TT	NA	1.72	0.8-2.9	NA	NA	No	Naturally present in the environment
Total Organic Carbon (removal ratio)	2011	TT	NA	NA	NA	1.65	0.35-4.53	No	Naturally present in the environment
Turbidity' (NTU)	2011	TT	NA	0.114	0.025-0.114	0.180	NA	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2011	TT	NA	100	NA	95	NA	No	Soil runoff
Uranium (ppb)	2008	30	0	NA	NA	0.14	0.1-0.18	No	Erosion of natural deposits

Tap water samples were collected for lead and copper analyses from sample sites throughout our community

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2010	1.3	1.3	0.464	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2010	15	0	4	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES (HARDIN COUNTY WATER DISTRICT NO. 1)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Aluminum (ppb)	2011	200	NA	60	NA	No	Erosion of natural deposits; Residual from some surface water treatment processes
Chloride (ppm)	2011	250	NA	12.9	NA	No	Runoff/leaching from natural deposits
Copper (ppm)	2011	1.0	NA	0.025	NA	No	Corrosion of household plumbing systems; Erosion of natural deposits
Corrosivity (Units)	2011	Noncorrosive	NA	-0.1	NA	No	Natural or industrially influenced balance of hydrogen, carbon, and oxygen in the water; Affected by temperature and other factors
Fluoride (ppm)	2011	2.0	NA	0.9	NA	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Manganese (ppb)	2011	50	NA	8	NA	No	Leaching from natural deposits
pH (Units)	2011	6.5–8.5	NA	7.45	NA	No	Naturally occurring
Sulfate (ppm)	2011	250	NA	15	NA	No	Runoff/leaching from natural deposits; Industrial wastes
Total Dissolved Solids [TDS] (ppm)	2011	500	NA	312	NA	No	Runoff/leaching from natural deposits

Community Participation

You are invited to attend our regular Board of Commissioner meetings. They normally meet monthly on the third Tuesday of each month at the District's Customer Service Center located at 1400 Rogersville Road, Radcliff, KY. For more information about the meetings, contact Ms. Andrea Palmer at (270) 351-3222. Minutes of past board meetings are available on our Web site at www.HCWD.com.

Lead in Home Plumbing

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high-quality drinking water, but we cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead.

Wellhead Protection Plan

The Hardin County Water District No. 1 (District) has completed Phase II of the Wellhead Protection Plan (WHPP). We have also completed a source water assessment study that classified our water source as groundwater that is affected by the flow and seepage of surface water. The WHPP requires us to identify the area basins that drain into our raw water source, to identify possible types and sources of contamination, and then to develop programs or additional measures to better protect this source water from these contaminants. Our water plant found that its sources include two separate sources that do not share the same water. The Pirtle Spring, located at the plant site, collects water from a 27-square-mile area. The Head of Rough Spring, located about 1.5 miles from the water plant, receives water from a 17-square-mile area. The District's staff and a public committee are working with the Kentucky Division of Water and the Kentucky Rural Water Association as well as the Hardin County Planning and Zoning to develop protection strategies and action plans. These requirements will provide better source water protection from possible contaminants.

For a copy of these reports, contact us during regular business hours.

Because of the karst aquifers through which both of our source waters traverse, our water is high in calcium, averaging about 80 ppm calcium and 200 ppm calcium hardness. The calcium that is provided in our drinking water is beneficial to our customers' health. Calcium is vital to several essential functions like blood clotting, muscle contraction (including the contraction of the heart), and bone and tooth formation. The Institute of Medicine recommends that each individual's recommended dietary allowance of calcium is 700-1300 mg/day, depending on the age and the gender of the individual. By consuming the recommended 0.2 to 1.0 gallon(s) of water per individual per day, our customers can satisfy over 20% of the recommended daily intake of calcium.

We do acknowledge that the hardness of our water has its drawbacks. Water heaters, dishwashers, and humidifiers seem to be the most problematic as calcium precipitates out of water at higher temperatures, causing scale to build up on these heating elements and in these systems. A preventative maintenance program performed every 3 to 6 months for these household appliances can dramatically extend the life of these conveniences.