

LANSING BOARD OF WATER & LIGHT

2007 ANNUAL WATER QUALITY REPORT

Disinfectants and Disinfection By-products

The BWL adds chloramine to its water at the conditioning plant to protect against bacterial growth. We use chloramine rather than other disinfectant options because it minimizes the number and level of chlorination by-products, persists better in the distribution system, and leaves little or no unpleasant odor and taste. The following table lists the chloramine levels and disinfectant by-products created by the reaction of our chloramine treatment and naturally occurring organic compounds. The chloramine levels were measured at the water plant tap and the disinfectant by-products were measured in the distribution system.

Substance	Unit	MCL	MCLG	Average Detected Level	Range of Detected Levels	Major Sources	Violation?
Haloacetic Acids (HAA5)	PPB	60	NA	2.3	ND to 2.7	By-product of drinking water chlorination	No
Total Trihalomethanes (THMs)	PPB	80	NA	4.5	2.5 to 6.0	By-product of drinking water chlorination	No
Chloramine	PPM	4	4	2.1	1.0 to 3.0	Water additive used to control microbes	No

Unregulated Contaminants

Unregulated contaminants are those that have no MCL or MCLG but are monitored for the purpose of providing information to MDEQ and EPA on their occurrence.

Substance	Unit	Average Detected Level	Lowest Detected Level	Highest Detected Level	Major Source	Violation?
Sodium	PPM	89	89	89	Natural constituent in groundwater	No

Cryptosporidium: We tested for Cryptosporidium in 2000 and did not detect any. Cryptosporidium is a microbial pathogen occasionally found in surface waters. If ingested it can cause cryptosporidiosis, a gastrointestinal infection with symptoms of cramping, nausea or diarrhea. Cryptosporidium can be spread by means other than drinking water. It is not a concern for water systems like ours, which draw drinking water from deep wells.

Radon: We last monitored for radon in 2000. The results were between 140 and 150 picoCuries per liter (pCi/l). This is a relatively low level for groundwater, which contains radon gas that has dissolved into the water from surrounding soils. A proposed EPA Rule for radon, since withdrawn, would have established maximum contaminant levels of between 300 to 4,000 pCi/l for public water supplies. Radon is a radioactive gas that you can't see, taste, or smell. It is found throughout the United States. Radon can move up through the ground and into a home through cracks and holes in the foundation. Radon can build up to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will, in most cases, be a small source of radon in indoor air. Radon is a known human carcinogen. Breathing air containing radon can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 pCi/l or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call your state radon program or EPA's Radon Hotline (800-SOS-RADON).

Radium 226 and 228: We monitored for both radium 226 and radium 228 in 2003 and did not detect either.

General Health Information Provided by EPA

To ensure that tap water is safe to drink, EPA prescribes limits on the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water.

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 can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

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 and radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- A.** Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- B.** Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- C.** Pesticides and herbicides, which may come from a variety of sources such as agriculture, stormwater runoff and residential uses.
- D.** Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, can also come from gas stations, urban stormwater runoff and septic systems.
- E.** Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Some people may be more vulnerable to contaminants in drinking water than is the general population. Immune-compromised 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 can be particularly at risk from infections. These people should seek advice about drinking water from their healthcare providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium are available from the Safe Drinking Water Hotline (800-426-4791).

National Primary Drinking Water Regulation Compliance

For more information about our water quality, please contact Water Quality Analyst Bill Maier at 517-702-6813. Learn more about the Lansing Board of Water & Light water system at www.lbwl.com. For more information about safe drinking water, visit the U.S. Environmental Protection Agency (EPA) at www.epa.gov/safewater/.

Dear Customer:

We are pleased to present the tenth annual report summarizing the quality of the drinking water provided to you during the past year. This "Consumer Confidence Report" is required by the Safe Drinking Water Act (SDWA). It tells you where your tap water comes from, what our tests show about it, and includes other things you may wish to know about drinking water.



The BWL is a publicly owned utility. We encourage public interest and participation in our community's decisions affecting drinking water. Our Board of Commissioners meets on the fourth Tuesday of every other month at our Customer Service Center, 1232 Haco Drive in Lansing. Meeting dates and times are published in advance and may be accessed on the BWL's web site at www.lbwl.com, or by calling us at 517-702-6006. Our meetings are open to the public.

The Bottom Line

During 2007 your drinking water from the BWL met or exceeded all quality standards issued by the U.S. Environmental Protection Agency (EPA) and the Michigan Department of Environmental Quality (MDEQ).



Virtually all the Lansing area's drinking water comes from deep water wells, but the BWL's water conditioning plants greatly improve water quality. Here at the John Dye Water Conditioning Plant, a process removes 80 percent of the water hardness, producing a fresh, good-tasting drinking water that's also easy on your dishes and laundry.

Water Source

Our drinking water comes from 118 wells, drilled about 400 feet into the earth's surface. The source of this plentiful supply is an underground aquifer called the Saginaw Formation, which underlies much of the mid-Michigan region. Water from our wells is transported through large transmission mains to one of two conditioning plants. There, a process removes about 80 percent of the water hardness. The softened water is then chlorinated, fluoridated, filtered and stored in reservoirs for distribution to our customers. Lansing is the largest in Michigan and one of the larger cities in the country to take its drinking supply entirely from groundwater.



Protecting Your Water Supply

Lansing’s drinking water source is shielded in most places from direct contact with the surface by layers of clay and shale, so contaminants don’t easily reach it. There are areas at the surface, however, that directly contribute to the aquifer without the benefit of clay and shale filtration. During 2003, the MDEQ conducted an assessment of the vulnerability of our aquifer to impacts from human activities. Because there are several known and potential sources of contamination in and near the BWL’s wellhead protection areas, the aquifer in this region has been assessed as “highly susceptible” to contamination. If you desire more information on this local Source Water Assessment, contact Bill Maier, Water Quality Analyst, at 517-702-6813.

The BWL has been active in its support for regional wellhead protection activities. A regional aquifer computer model that will inform us on our groundwater supplies has been developed by the United States Geological Survey over the past 4 years. Major support for the project has been provided through a state-administered wellhead protection grant to the BWL. The Lansing Wellhead Protection Team also continues its work alongside neighboring teams to help protect our drinking water source.

Important Information About Lead

Lead is a common, naturally occurring metal that is found throughout the environment in lead-based paint, as well as air, soil, household dust, and, sometimes, water. Lead can pose a significant risk to your health if too much of it enters your body.

Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won’t hurt adults can slow down normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination – like dirt and dust – that rarely affects an adult. It is important to wash children’s hands and toys often, and to try to make sure they only put food in their mouths.

Lead in Drinking Water

Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person’s total lead exposure, particularly the exposure of infants who drink baby formula and concentrated juices that are mixed with water. EPA estimates that drinking water can make up 20 percent or more of a person’s total exposure to lead.

How Lead Enters Our Water

There is no detectable lead in BWL drinking water when it leaves our conditioning plants. But, since water is naturally corrosive, small amounts of lead can dissolve into your drinking water if your water sits for several hours in plumbing, fixtures or service lines that contain lead. Lead levels in drinking water are likely to be highest:

- In homes with lead service lines connecting the water main to the house
- In homes with lead indoor plumbing
- In homes that have copper plumbing with lead solder
- In homes that have brass fixtures.

Lead Service Lines

From the early 20th century through the early 1950s the BWL and other water utilities across the country commonly used lead service lines to deliver water from the distribution mains to individual customers. In 2004 our Board of Commissioners made a decision to remove all of the estimated 14,000 lead service lines in our system over the next 10 years, even though we’re in compliance with the EPA’s lead regulations and are not required to take this action. We simply believe it’s in the best interest of our customers and our utility to get lead service lines out of our system.

Protecting Against Lead Exposure

The EPA provides the following guidelines for minimizing exposure to lead in drinking water.

1. Flush your pipes before drinking, and only use cold water for consumption. Any time the water in a particular faucet has not been used for six hours or longer, flush your cold-water pipes by running the water until it becomes as cold as it will get. This could take as little as five to thirty seconds if there has been recent heavy water use such as showering or toilet flushing. Otherwise, it could take two minutes or longer. The more time water has been sitting in your home’s pipes, the more lead it may contain.

While this advice is appropriate for customers with standard copper service lines, tests conducted for the BWL by a national consulting firm have concluded that **customers with lead service lines should flush their water longer.** Customers with lead service lines should flush their water for seven minutes before using water for drinking or cooking if the water has been sitting idle in plumbing for six hours or longer. Following high-water usage, such as bathing or washing clothes, flush pipes for at least two minutes. Due to this longer flushing requirement, the BWL provides free water filters and replacement cartridges to its customers with lead service lines.

2. Use only water from the cold-water tap for drinking, cooking, and especially for making baby formula. Hot water is likely to contain higher levels of lead.

The actions recommended above are very important to the health of your family. They will reduce lead levels because most of the lead in household water comes from the plumbing in your house or, if you have one, the lead service line serving your house, not from the local water supply.

Monitoring results for lead can be found on page 3 of this report under the heading, “Substances We Measured in Homes and Businesses.” A new round of lead monitoring was conducted in 2007 and will be every year thereafter until all lead service lines are removed from the BWL system.

How to Read These Tables

The following tables show the results of our water quality tests. Every regulated contaminant we detected in the water, even in the smallest traces, is listed here. The tables contain the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health (MCLG), the amount detected, the usual sources of such contamination, footnotes explaining our findings and a key to units of measurement.

The state allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. All the data are representative of the water quality, but some are more than a year old.

The tables do not list the hundreds of contaminants we tested for but did not detect.

Key To Tables:

- AL Action Level:** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must 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 the addition of a disinfectant is necessary for control of microbial contaminants.
- MRDLG Maximum Residual Disinfectant Level Goal:** The level of a disinfectant in drinking water 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 contamination.
- PPM Parts Per Million**, or milligrams per liter (mg/l)
- PPB Parts Per Billion**, or micrograms per liter (ug/l)

SUBSTANCES WE MEASURED AT THE WATER CONDITIONING PLANT

Substance	Unit	MCL	MCLG	Highest Detected Level	Range of Detected Levels	Major Sources	Violation?
Barium	PPM	2	2	0.03	0.02 to 0.03	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	No
Fluoride	PPM	4	4	0.97	0.97 to 0.97	Erosion of natural deposits; water additiue which promotes strong teeth; discharge from fertilizer and aluminum factories	No

SUBSTANCES WE MEASURED IN HOMES AND BUSINESSES

Substance	Unit	AL	9 out of 10 homes were below a level of:	Number of samples above the action level:	Major Sources	Violation?
Copper	PPM	*1.3 at 90th percentile	0.03	0	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives	No
Lead	PPB	**15 at 90th percentile	12	1	Corrosion of household plumbing systems; erosion of natural deposits	No

Water Quality Table Footnotes:

*9 out of 10 homes tested must show a concentration equal to or lower than 1.3 parts per million

**9 out of 10 homes tested must show a concentration equal to or lower than 15 parts per billion

Infants and young children are typically more vulnerable to lead in drinking water than is the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home’s plumbing. If you are concerned about elevated lead levels in your home’s water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791). Tests at our conditioning plants detect no copper or lead in your water before it’s sent to you. Typically, if these substances enter your water they do so through your indoor plumbing system or, if you have one, a lead water service line. Our water conditioning process naturally provides some corrosion protection to prevent this.

If you’re concerned about possible lead content in your tap water, there are precautions you can take to minimize exposure:

1. Any time the water in a particular faucet has not been used for six hours or longer, flush your cold-water pipes by running the water until it becomes as cold as it will get. This could take as little as 5 to 30 seconds if there has been recent heavy water use such as showering or toilet flushing. Otherwise, it

could take two minutes or longer. The more time water has been sitting in your home’s pipes, the more lead it may contain. Customers with lead service lines should flush their pipes longer. Customers with lead service lines should flush their water for seven minutes before using water for drinking or cooking if the water has been sitting idle in the plumbing for six hours or longer. Even after heavy water use, such as flushing, bathing or washing clothes, a water tap used for drinking should also be flushed until the water turns cold. As an alternative, use filtered water for drinking or cooking. The BWL offers free water filters and replacement cartridges to customers with lead service lines.

2. Use only water from the cold-water tap for drinking, cooking, and especially for making baby formula. Hot water is likely to contain higher levels of lead.

If you’re concerned about lead, have the water tested. Arrangements can be made for water testing through the Ingham County Health Department at 517-887-4312. A test costs about \$20. Or, you may choose to install a water filter that is NSF-certified for lead removal. If a water filter is installed, replace filters at least as often as recommended by the manufacturer.

SUBSTANCES WE MEASURED IN THE DISTRIBUTION SYSTEM

Substance	Unit	MCL	MCLG	Highest Detected Level	Major Sources	Violation?
Total Coliform	Samples	Presence in less than 5% of samples taken on a monthly basis	0	0.8%	Naturally present in the environment	No