



RTI Laboratories
Environmental Sciences Division
31628 Glendale Street
Livonia, MI 48150

Contact us:
Phone: (734) 292-2100
Email: test@rtilab.com

Safety Alert: The need to test drinking water across Michigan

What happened to the city of Flint's drinking water?

The city of Flint originally received treated water from the Detroit Water and Sewage Department. City officials then changed the water supply to the Flint River, without properly applying corrosion inhibitors, chemical compounds that are added to liquid to decrease the corrosion rate of metals. This allowed lead from aging pipes to leach into the water supply, causing the elevated levels of lead in the city's drinking water. The events in Flint highlight the need for regular lead testing as the long term public health effects could be detrimental to the community.

A brief history of lead use

Lead pipes were historically used for service lines from the water mains to residences/businesses. Lead pipe was promoted as easy to lay, seal, and repair, in addition to being safe for public water systems. By the late 1800s, lead pipes were recognized as a potential cause of lead poisoning and restrictions in the use of lead service lines began as early as the 1930s. However, intermittent use of lead pipes and solder continued until amendments to the Safe Drinking Water Act (SDWA) were passed in 1986. These amendments prohibited use of lead containing pipe, solder, and flux for public water systems that was not deemed "lead free." Specifically, "lead free" was defined as less than 8.0% lead content for pipes and pipe fittings or less than 0.2% for solder and flux. In 2011, the definition of "lead free" was restricted to include pipes, fittings, and fixtures with a weighted average lead content of less than 0.25% across wetted surfaces. The SDWA also established safe drinking water limits for several elements. The safe limit for lead in drinking water was determined to be 50 µg/L (ppb). There was adequate technology available for testing drinking water at this level, primarily using Atomic Adsorption (AA) methods with pre-concentration steps, and Graphite Furnace Atomic Adsorption (GFAA).

What are safe levels of lead in drinking water?

As a growing body of research produced a better understanding of lead poisoning, the Environmental Protection Agency (EPA) promulgated the Lead and Copper rule in June, 1991. Most of the lead poisoning in children stemmed from lead-based paint. However, it was discovered that additional lead consumed through drinking water at concentrations less than 50 µg/L could be contributing to lead poisoning in children and adults. The Lead and Copper Rule established a new limit for lead at the drinking water source of 15 µg/L, based on a specific sampling technique. There have been several modifications to the rule in order to improve reporting to end users. Just recently, there have been changes to the sampling method, including elimination of the pre-stagnation flush. These changes, coupled with the development of newer technologies, allowed lower limits of detection at lower costs.

What are the health concerns of lead contamination in drinking water?

According to the World Health Organization (WHO), high concentrations of lead can damage various body processes including the nervous and reproductive systems, heart, bones, intestines, and kidneys. Pregnant women and children are especially susceptible as lead poisoning affects the development of the nervous system and high blood lead levels could cause irreversible consequences such as behavioral problems, learning disabilities and mental retardation. According to the Mayo Clinic, symptoms of lead poisoning include mood disorders, memory loss, declines in mental functioning, headache, and abdominal pain, to name a few.

How can communities, hospitals, apartment complexes, etc. protect themselves?

If you are responsible for providing water to a large subset of people, the best way to ensure safe drinking water is to have it tested. RTI and many other environmental laboratories have abandoned the costly and slow GFAA technology in favor of Inductively Coupled Argon Plasma Emission Spectroscopy coupled with a Mass Spectrometer detector (ICP/MS). ICP/MS technology provides a very efficient and cost effective means of producing data for municipalities, school districts, and other large sources of samples.

How does RTI Laboratories test drinking water?

The method used at RTI, a Michigan Department of Environmental Quality-approved Drinking Water laboratory, is EPA method 200.8. Utilizing this method, RTI has a detection limit of approximately 0.05 µg/L and a quantification limit of 0.20 µg/L. Drinking water samples received with a turbidity measurement of less than 1.0 NTU can be acidified and analyzed directly. Samples with a turbidity measurement at 1.0 or above must be prepared, in order to assure that any suspended lead particles are brought into solution. Utilizing Method 200.8 with modern instrumentation and an ASXpress valve allows RTI to process over 100 samples per day for lead and copper in Drinking water. After analysis, the data is rapidly uploaded into the Omega Laboratory Information Management System (LIMS). Reports are generated in bulk for the community and as individual reports within minutes of the final quality assurance authorization.

About RTI Laboratories:

RTI Laboratories a full-service environmental, chemical and materials testing laboratory. Established in 1986 and operating out of 24,000 square feet in Livonia, Michigan, RTI has grown into one of the largest independent testing labs in the Midwest by serving clients such as the U.S. Government, major automotive companies and many tier one suppliers.

RTI has been able to establish itself as one of the most efficient and client-focused laboratories for the many communities and school systems that are working to ensure the safety of drinking water supplies. We hope to continue working closely with these as well as other communities in order to provide proper sampling and thorough reporting.



Call us: (734) 292-2100

Email us: test@rtilab.com