Helping Consumers Understand Lead Issues

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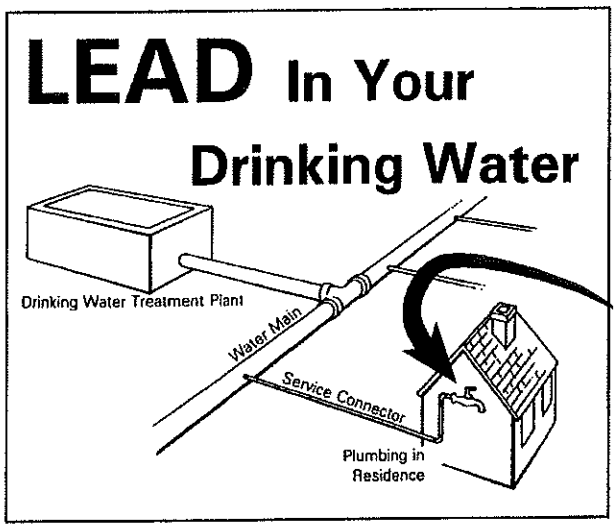

The Lead and Copper Rule was issued by EPA back in 1991. Since then the sampling requirements of this rule have become a routine part of water quality monitoring. The recent events in Flint, Michigan have focused new attention to the issues of lead in the drinking water and raised public concern. The result can be that water system managers and health officials are thrust into the role of having to educate consumers about issues relating to lead in drinking water. Fortunately, there are documents available that can assist in this effort. The graphic above was taken from an EPA education document prepared in 1993 and titled "Lead in Your Drinking Water: Actions You Can Take to Reduce Lead in Drinking Water". This document is available at their website and can be found at http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=20001R4V.txt

Water system managers are encouraged to review this document as well as similar documents made available by EPA and consider making these available in the water office to consumers that inquire about lead issues.

Perhaps it would be good to also take a look back at how lead might get into the drinking water, how the Lead and Copper Rule came about, and what it was intended to accomplish.

Historically, lead has been utilized in manufacture of piping used to convey water, especially within home plumbing systems and service lines. Use of lead piping goes back to early water systems constructed by the Romans and lead piping was routinely used as recently as the early 1900's.

Lead was and is a popular material to use because of its malleability (ability to be shaped without breaking or cracking). Even though pure lead piping has not been commonly used since the 1930's, lead can still be found as a part of the chemical composition of copper tubing and brass and bronze components utilized in waterworks and plumbing materials. This is because the presence of lead in these materials improves their machinability and durability. However, over time, the industry has reduced the lead content in these products in an effort to reduce consumer's exposure to lead. In 1986, a federal law was passed limiting lead content of these products to 8%. In 2011, a federal law was passed further reducing lead content of these products to 0.25 % (wetted surfaces).

When the Lead and Copper Rule was issued in 1991, it was understood that:

* Lead was rarely present in the water system source nor in the water distribution system
* Rather, lead was occasionally present in the water in homes and buildings due to corrosion in plumbing systems
* Some water systems provided more corrosive water than others
* When corrosion occurred, the source of lead was usually privately owned plumbing rather than publicly owned distribution piping
* Lead exposure through drinking water was estimated to be 10% to 20% of overall exposure that people experience.

The thrust of the Lead and Copper Rule issued in 1991 is to use lead and copper sampling in private homes to determine if corrosion is imparting significant amounts of lead and copper into the drinking water. If so, the drinking water system is required to conduct public education regarding lead exposure and to demonstrate that they are controlling corrosion. Control of corrosion may take the form of pH adjustment or addition of a corrosion inhibitor chemical. Ongoing monitoring is a part of the requirements.

Public education materials focus not only on informing consumers of the harmful effects of lead exposure but also indicates things the consumer can do to limit their exposure. The EPA document referenced at the beginning of this article does both and can be printed out and provided to customers that inquire about these

issues. Some highlights of this document are as follows:

Health Threats From Lead Too much lead in the human body can cause serious damage to the brain, kidneys, nervous system, and red blood cells. You have the greatest risk...if you are a young child, or if you are pregnant.

Does Lead Affect Everyone Equally? Young children, infants, and fetuses appear to be particularly vulnerable to lead poisoning. A dose of lead that would have little effect on an adult can have a big effect on a small body. Also, growing children will more rapidly absorb any lead they consume. A child's mental and physical development can be irreversibly stunted by over-exposure to lead. In infants, whose diet consists of liquids made with water – such as baby formula – lead in drinking water makes up an even greater proportion of total lead exposure (40 to 60 percent).

Only Use Cold Water for Consumption 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 (due to hot water being more corrosive).

Flush Your Pipes Before Drinking Anytime 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. The more time that water has been sitting in your home's pipes, the more lead it may contain.

Have Your Water Tested The only way to be sure of the amount of lead in your household water is to have it tested by a competent laboratory. Testing typically costs between $20 and $100.

How Do I Have My Water Tested? Water samples from the tap will have to be collected and sent to a qualified laboratory for analysis. You may find a qualified testing company under "Laboratories" in the yellow pages of your telephone directory.

Does my home's age make a difference? Lead-contaminated drinking water is most often a problem in houses that are either very old or very new. Up through the early 1900's, it was common practice, in some areas of the country, to use lead pipes for interior plumbing. Also, lead piping was often used for the service connections that join residences to public water supplies. Plumbing installed before 1930 is most likely to contain lead. Copper pipes have replaced lead pipes in most residential plumbing. However, use of lead solder with copper pipes was widespread (up until 1986). Experts regard this lead solder as the major cause of lead contamination of household water in U.S. homes today. New brass faucets and fittings can also leach lead, even though they are "lead-free." Scientific data indicate that the newer the home, the greater the risk of lead contamination. Lead levels decrease as a building ages. This is because, as time passes, mineral deposits form a coating on the inside of the pipes (if the water is not corrosive). This coating insulates the water from the solder. But, during the first five years (before the coating forms) water is in direct contact with the lead. (**Note:** Lead solder was banned in 1986 and theoretically plumbing systems constructed with lead solder should now be almost 30 years old.)

What If I Use A Private Well? If you own a well or another water source, you can treat the water to make it less corrosive. Corrosion control devices for individual households include calcite filters and other devices. Calcite filters should be installed in the line between the water source and any lead service connections or lead-soldered pipe.

Homeowners should also be reminded that when they purchase plumbing parts to conduct repairs on their home plumbing, they should make sure and purchase parts that meet the current lead free definition. Parts that meet the current lead free definition should be marked as being in compliance with National Sanitation Foundation Standard No. 372 or Annex G of National Sanitation Foundation Standard No. 61. Verification of this compliance is most important when purchasing brass and bronze components such as faucets, pressure reducing valves, etc.

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