



# RISK BULLETIN

## Lead – Drinking Water Quality Liability Exposures

Drinking water quality is an exposure that has the potential to result in third-party bodily injury claims. Specifically, lead contamination may be present in the water supply source or leached from water service lines and plumbing materials used to bring water into the building. To effectively control this exposure, property owners should have an understanding of the water sources and water quality characteristics being supplied to their properties. Building managers should also understand any impacts that water storage and distribution activities



may have on water quality being supplied to various end users.

Minimizing the potential for third-party claims may include actions such as contacting water supply utilities for information, implementing at-the-tap sampling programs, improving supply/storage/distribution systems, installing water treatment systems, and establishing procedures for responding to third-party complaints. Ensuring that water quality aesthetics and chemical content are acceptable is a proactive step in reducing the potential for third-party claims.

### WHAT ARE THE HEALTH EFFECTS OF LEAD IN DRINKING WATER?

According to USEPA in 40 CFR Parts 9, 141 and 142, lead is considered a chronic contaminant that impairs and damages the nervous system and other systems after extended periods of exposure. Lead toxicity is believed to be a function of repeated exposures over time that results in a gradual accumulation of lead in the soft tissues and the skeleton.

### SHORT- AND LONG-TERM EFFECTS

Lead has the potential to cause a variety of adverse health effects when people are exposed at levels above the drinking water action level for a short time period. These effects may include:

- Interference with red blood cell chemistry
- Delays in normal physical and mental development in babies and young children
- Slight deficits in the attention span
- Interference with hearing and learning abilities of children
- Slight increases in the blood pressure of adults

Lead has the potential to cause the following effects from a lifetime exposure at levels above the action level: stroke, kidney disease and cancer.

Young children, infants, and fetuses appear to be particularly vulnerable to lead impacts as they more rapidly absorb any lead they consume. In infants, whose diets consist of liquids made with water – such as baby formula – lead in drinking water constitutes an even greater proportion of total lead exposure.

### WHAT ARE THE POTENTIAL SOURCES OF LEAD IN DRINKING WATER?

Lead may occur in drinking water either by contamination of the source water used by the water system or by corrosion of lead plumbing or fixtures. Corrosion of plumbing is by far the greatest cause for concern. All water is corrosive to metal plumbing materials to some degree. Over time, lead-containing plumbing materials will usually develop a scale that minimizes further corrosion of the pipe.

Lead in drinking water is most often a problem in buildings that are either very old or very new. Up through the early 1900s, 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 buildings' plumbing systems to public water supplies. (This practice ended only recently in some localities.) Plumbing installed before 1930 is most likely to contain lead. Copper pipes have replaced lead pipes in most residential plumbing. However, the use of lead solder with copper pipes is widespread. 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 indicates that the newer the home, the greater the risk of lead contamination. Lead levels decrease when a building ages as mineral deposits form a coating on the inside of the pipes (if the water is not corrosive) and insulates the water from the solder. But, during the first five years (before the coating forms), water is in direct contact with the lead. Water in buildings less than five years old is more likely to have higher levels of lead contamination (Actions You Can Take to Reduce Lead in Drinking Water, USEPA 2006).

Lead levels in drinking water are likely to be highest if:

- The building has faucets or fittings of brass which contain some lead, or

- The building or water system has lead pipes, or
- The building has copper pipes with solder, and
  - is less than 5 years old
  - has naturally soft water and
  - water often sits in the pipes for several hours

### LEAD IN DRINKING WATER REGULATIONS

The USEPA establishes drinking water quality standards. The Maximum Contaminant Level Goal (MCLG) for lead in drinking water is zero; however, this is a non-enforceable health goal. The Maximum Contaminant Level (MCL), an enforceable standard, for lead in drinking water is established as an Action Level of 0.015 mg/L or 15 parts per billion (ppb). An Action Level is defined as the concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

The National Primary Drinking Water Regulations for Lead and Copper in 40 CFR 141, also called the Lead and Copper Rule, became effective in 1991. This rule requires all community and non-transient non-community water systems to monitor for lead at a specified number of taps within homes and/or buildings served by that water system. It also establishes treatment technique requirements and public education programs. These requirements may be triggered if more than 10 percent of tap water samples collected during any monitoring period exceed the lead action level (0.015 mg/L) and/or the copper action level (1.3 mg/L).

**Public Water Systems.** According to the USEPA, a public water system means a system for the provision to the public of water for human consumption through pipes or, after August 5, 1998, other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This includes: any collection, treatment, storage, and

distribution facilities under control of the operator of such system and used primarily in connection with such system; and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. This does not include any “special irrigation district.”

A public water system is either a “community water system” (CWS) or a “non-community water system” (NCWS).

- CWS means a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.
- NCWS are public water systems that regularly serve at least 25 persons over 6 months per year and are divided into two categories; transient non-community water systems (TNCWS) and non-transient non-community water system (NTNCWS).
  - TNCWS means a public water system that is not a community water system and that regularly serves at least 25 different persons over 6 months per year.
  - NTNCWS means a public water system that regularly serves at least 25 of the same persons over 6 months per year.

**Private Wells.** Private water wells are subject to the same requirements as local water utilities and municipalities. The owner of a drinking water well or private well is required to determine if the well is classified as either a “non-public water system” or “public water system.” This classification is determined exactly as a local water municipality is defined; based on service connections and individuals served. Non-public water systems are not subject to federal requirements; however, if the well is classified as a public water system, then compliance with USEPA sampling requirements is required. The detection of contaminants in drinking water wells may trigger important notification requirements to regulatory agencies (sometimes within days) and actions to eliminate water user exposures.

## SAMPLING

Sampling requirements apply, depending on whether the public water system is classified as a “community water system” or a “non-community water system.” Tap sampling requirements for public water systems are based on the number they serve. For information on the requirements for a specific public water system, public water system owners should reference, Lead and Copper Rule: A Quick Reference Guide, USEPA 2004, and check with the local health department and state agency to determine site specific requirements.

Non-public water systems, comprised of private industrial/commercial property owners or residential property owners (including landlords, and housing corporations), are not required by USEPA to sample or treat drinking water provided to their employees, and/or customers. However, the requirements for sampling and treatment may vary between states, counties, cities and municipal water systems.

If lead is suspected or detected in drinking water, the property owner has many resources available to evaluate the situation: the state or local environmental agency, the municipal water provider, and environmental professionals that specialize in lead and drinking water quality .

In addition, many state and local health departments or state agencies require drinking water or private well registration and/or additional monitoring. Well owners may contact the local health department and state agency to determine site specific requirements.



## ABATEMENT

Public water systems, including properties that draw drinking water from a local well, are subject to treatment regulations and additional sampling



requirements if the action level for lead is exceeded. For site-specific regulations and requirements, public water systems may contact the local health department and state agency.

In non-public water systems, if lead is suspected or identified, the property owner may contact the local water municipality to discuss local rules, regulations, treatment options, and advice.

## CONCLUSION

The presence of lead in drinking water need not create panic. Instead, owners of industrial/commercial or residential properties, and owners and operators of public water systems should check with local and state regulations for rules and guidelines in the management of lead in drinking water in order to prevent potential problematic exposures and liabilities. Sampling should be conducted according to any required schedules and controls should be implemented as necessary to maintain water quality.

Property owners and private well operators that have knowledge of water supply sources, classifications, sampling requirements and treatment options, will be better prepared to implement a risk management program that reduces the potential for third party claims.

## RESOURCES

1. National Primary Drinking Water Regulations for Lead and Copper; Final Rule, Code of Federal Regulations, (40 CFR Parts 9, 141 and 142)
2. Consumer Factsheet on Lead in Drinking Water, EPA, 2006 ([www.epa.gov/safewater/lcrmr/fs\\_consumer.html](http://www.epa.gov/safewater/lcrmr/fs_consumer.html))
3. Actions You Can Take to Reduce Lead in Drinking Water, EPA, 2006 ([www.epa.gov/safewater/lead/lead1.html](http://www.epa.gov/safewater/lead/lead1.html))
4. Revisions to the Regulations Controlling Lead in Drinking Water: Factsheet, EPA, 2006 ([www.epa.gov/safewater/lcrmr/fs\\_lcr\\_2006\\_pro\\_rule.html](http://www.epa.gov/safewater/lcrmr/fs_lcr_2006_pro_rule.html))
5. Commonly Asked Questions: Section 1417 of the Safe Drinking Water Act and the NSF Standard, EPA, 2006, ([www.epa.gov/safewater/lcrmr/lead\\_nsfstandard.html](http://www.epa.gov/safewater/lcrmr/lead_nsfstandard.html))
6. Lead and Copper Rule: A Quick Reference Guide, EPA 2004 ([www.epa.gov/safewater.html](http://www.epa.gov/safewater.html))
7. 2006 Edition of the Drinking Water Standards and Health Advisories EPA 822-R-06-013, Office of Water, EPA, August 2006 <http://www.epa.gov/waterscience/criteria/drinking/dwstandards.pdf>

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