



ANR-790-2.3.8

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Typical Contaminants And Problems

Lead

The elevated lead level in some drinking water is a new public concern. In 1970 a child's blood lead level that measured below 60 parts per billion (ppb) or 0.06 milligrams per liter (mg/L) was considered safe. Now the Centers for Disease Control suggest that a child's blood lead level should not be more than 10 ppb or 0.010 mg/L.

Lead has no beneficial effect on humans or animals. Chronic exposure occurring over an extended period of time to even low levels of lead can have severe effects since lead is accumulated and stored in the bone. When the concentration is so high that storage in the bone is saturated, blood lead levels begin to affect nerve tissue.

Excessive levels of lead in the blood contribute to a variety of health problems including reduced mental and skeletal development, interference with kidney and neurological functions, and hearing loss in children. The immature central nervous system of children is more sensitive to lead toxicity. If drinking water is found to contain lead levels exceeding 0.015 mg/L, a physician may recommend a blood test to determine lead levels.

Sources Of Lead

The natural lead content of surface water and groundwater in Alabama is negligible. Most lead in household water usually comes from the distribution systems or the plumbing in the house, not from the local water supply. The highest concentrations of lead occur in new plumbing installations; leaching is noticeably lower in those 5 years old or older. Soft, acidic, or low pH water can dissolve lead from the pipes or solder of household water systems. Leaching of lead is dependent upon water corrosiveness and temperature as well as the time the water remains in contact with the lead source.

Treatment Of Lead

When To Treat. If lead in the drinking water exceeds the primary drinking water standard of 0.015 mg/L, the potential risk of excessive lead intake must be

reduced. The threshold for some of lead's health effects may be close to 0, which is what EPA has now listed as a maximum contaminant level goal (MCLG).

If the plumbing contains lead, higher levels will be detectable in the morning after water has been standing in pipes throughout the night. To evaluate the highest levels of lead exposure, a sample should be taken from the tap after water has been held in the pipes for several hours or overnight. A second sample obtained after the water has flowed for 3 to 5 minutes will demonstrate if flushing the line decreases lead content substantially.

How To Treat. Treatments for removing high or persistent lead levels in water entering the household are reverse osmosis, distillation, or activated alumina filter. Some activated carbon filter systems remove lead but not as effectively as other methods.

Distillation units remove lead by boiling the water and then collecting and condensing the steam. Distillation removes approximately 99 percent of the lead from water, but the drinking water produced tastes rather bland.

Prevention Of Lead Contamination

Reduce Exposure. Lead levels seem to be highest after water has been held in the pipes for 6 hours or more. Before using water for drinking or cooking, flush the faucet by allowing the water to run 3 to 5 minutes. Do not use hot tap water for cooking or preparing baby formula since it seems to dissolve lead more easily and quickly than does cold water.

Use Alternative Plumbing Materials. To reduce lead contamination of drinking water, alternative products must be used in plumbing systems of new homes. Tin-antimony (95/5 percent) or tin-silver (96/4 percent) are considered better quality but more expensive than tin-lead (50/50 percent) solder. Both alternative materials provide a better seal than tin-lead solder although the high melting point of silver and antimony make these solders slightly more difficult to use. Tin-antimony solder is not recommended on brass fittings since brass becomes brittle. A study

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of tin-antimony and tin-silver solders showed both metals to be more resistant to corrosive-water leaching than lead solder. Since 1989, Federal law has required that lead solder not be used in new homes.

Lead At A Glance

Symptoms: Lead poisoning.

Short-term exposure: abdominal pains, decreased appetite, constipation, fatigue, sleep disturbance, and decreased physical fitness.

Long-term exposure: kidney damage, anemia, and nerve damage including brain damage and finally death.

Causes Of The Problem: Industrial contamination; leaching from lead solder and lead pipes in some water systems.

Suggested Treatments: Reverse osmosis, distillation, or activated alumina filter.

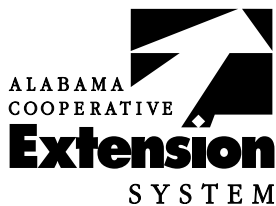
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ANR-790-2.3.8

This publication, supported in part by a grant from the Alabama Department of Environmental Management and the Tennessee Valley Authority, was prepared by James E. Hairston, *Extension Water Quality Scientist*, assisted by Leigh Stribling, *Technical Writer*.

For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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UPS, **New June 1995**, Water Quality 2.3.8