

FACTS



Lead in Drinking Water



Division of Environmental and Occupational Health Services
Consumer and Environmental Health Services

FACTS Lead In Drinking Water

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INTRODUCTION

- **People are exposed to lead from a variety of sources, including drinking water.**
- **Your drinking water probably contains some amount of lead, especially if your home has copper plumbing with lead solder, or lead pipes.**
- **Young children and fetuses are at greatest risk of the toxic effects of lead.**
- **Too much lead in the human body can cause serious damage to the brain, kidneys, nervous system, and red blood cells.**
- **There are simple steps you can take to lower your exposure to lead in drinking water:**

If the water from the cold water faucet has not been used in six hours or more, let the water run for 15 to 30 seconds before using it for drinking, cooking, or preparing beverages.

Never drink, cook, or prepare beverages from the hot water faucet.

WHAT IS LEAD?

Lead is a soft, gray metal that has been used for many years in a variety of ways. Until it was banned by federal law in 1986 and by New Jersey law in February 1987, lead had been used in the solder that connects copper pipes in household drinking water plumbing. During the early part of this century, pipes made completely of lead were used in household plumbing and in service lines that connect houses to the public water mains in the street. Some of these lead pipes may still be found in parts of New Jersey where the housing is more than 50 years old. Lead is also one of the metals used to make brass plumbing fixtures.



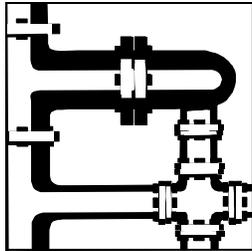
Paints containing lead were commonly used inside houses built before 1960. After 1960, the use of such paints was limited. Lead (tetraethyl lead) was extensively used in the United States as an additive to gasoline until 1978 and is still produced for export purposes. Lead is still used in fishing sinkers and car batteries, as well as in some imported glazed ceramic ware, crystal, and food cans.



Due to its widespread use, lead is commonly found in the air, food, soil and water. According to the U.S. Environmental Protection Agency (USEPA), 80-90% of lead exposure comes from air, food and soil, while 10-20% comes from drinking water.

HOW CAN LEAD GET INTO YOUR DRINKING WATER?

Typically, lead gets into your drinking water from the plumbing and fixtures in your house. As a result of corrosion, lead and other metals from the pipes slowly dissolve into the water.



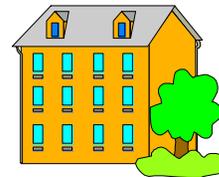
If you have a private well, there are other ways that lead can get into your drinking water, such as from well parts made of lead, or from a nearby industrial waste facility or municipal landfill.

WHAT FACTORS AFFECT HOW MUCH LEAD CAN GET INTO IN YOUR DRINKING WATER?

There are several factors that affect how much lead can get into your drinking water:

- **Type of plumbing materials:** For most homes, the source of lead in drinking water is likely to be from lead solder that was used routinely until 1987 to seal the joints of copper pipes. Lead solder typically contains about 50% lead. Sloppy soldering can increase the amount of lead that is dissolved into the water. Homes built after 1987 are least likely to have lead in drinking water, unless lead solder was used after the ban took effect.

The presence of indoor lead pipes or lead service lines in homes built before 1940 makes it more likely that there will be elevated levels of lead in drinking water. Under the 1991 National Primary Drinking Water Regulation for lead, water companies were required to locate lead water mains in the street beginning in early 1992. In most cases, the service line connecting to the water main is the property and responsibility of the homeowner. (Plastic and galvanized steel pipes are usually *not* sources of lead.)



Brass fixtures and faucets can contain up to 8% lead and are also a significant source of lead in drinking water.

- **Length of time that water stands in the pipes:** The longer the time that water resides in the plumbing, the more likely it is that lead will build up in drinking water.



- **Corrosivity of water:** Corrosive water can increase the amount of lead that can get into drinking water. Corrosive water can be caused by high acidity or low mineral content. Acidic water tends to dissolve lead from pipes or solder into the water. Water that has a low mineral content is more likely to come in contact with lead solder and to dissolve lead into the water. Typically, minerals form a protective barrier or "scale" around lead solder and decrease the amount of lead that can get into the water.



Certain areas of New Jersey have corrosive water. One indicator of corrosion in copper pipes is a blue-green stain around the drain of a white enamel sink. (The absence of such a stain does **not** mean that corrosion is not occurring). Public water companies are required to correct this problem where it occurs.

- **Grounding of electrical wires to water pipes:** The grounding of electrical wiring and telephone lines to water pipes can increase the rate of corrosion.

IS LEAD HARMFUL TO YOUR HEALTH?

Lead can cause a variety of harmful health effects. The type and severity of these health effects depend upon how much lead has built up in the body over time. Children and fetuses appear to be the most sensitive to the harmful effects of lead. Some children with too much lead in their blood may not exhibit any symptoms. At school age, learning and behavioral problems can appear. Other health effects include brain and

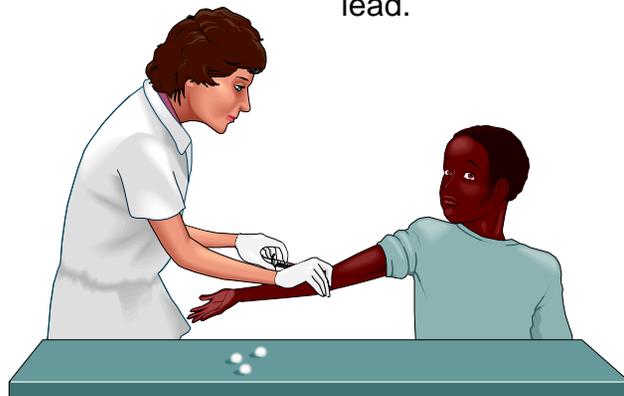
kidney damage, anemia, and reductions in birth weight. There are also indications that lead can cause high blood pressure. Symptoms of severe lead poisoning may include stomach aches, vomiting, poor appetite, or nausea.



When lead is swallowed in water or food, some of it is absorbed through the digestive tract. Children absorb more lead into their bodies than adults. Once absorbed, lead is distributed to all parts of the body through the blood and builds up mostly in the bone. A certain amount of lead remains in the blood.

A lead screening test can be performed to find out if you or your children have been exposed to too much lead.

It is recommended that children be screened at one and two years of age. (Children between the ages of two and six should also be screened, if they have not been screened previously.)



Since some lead stays in the blood, the amount of lead measured in the blood can be used as an indicator of the total amount in the body. The U.S. Centers for Disease Control and Prevention (CDC) has set a blood lead level of 10 micrograms per deciliter (ug/dL) as a guideline for health professionals involved in childhood lead screening activities.

Consult your physician or local health department if you have a reason to believe that you or a member of your family has been exposed to too much lead.

DOES LEAD AFFECT PEOPLE AT THE LEVELS SOMETIMES FOUND IN DRINKING WATER?



Lead from drinking water is only one of the sources of lead exposure that contributes to the total amount of lead in your body. It is the build up of lead from all sources over time that determines whether harmful health effects will occur.

Typically, drinking water alone has not been associated with blood lead levels of concern. Combined with other sources, however, the amount of lead from drinking water may be enough to increase the chances of harmful health effects in sensitive individuals, such as infants and children.

Contact your local health department or the New Jersey Department of Health and Senior Services (NJDHSS) to discuss your test results.

HOW CAN YOU TELL IF YOUR DRINKING WATER CONTAINS TOO MUCH LEAD?

The best way to tell how much lead is in your water is by having it tested by a New Jersey-certified laboratory. You can find a laboratory in your area by looking in your telephone directory or by asking your local health department. Contact the New Jersey Department of Environmental Protection (NJDEP) to make sure that the laboratory is currently certified by the State to test for lead in drinking water. You can also call your water company to ask if they are offering testing or can recommend a certified laboratory in your area.

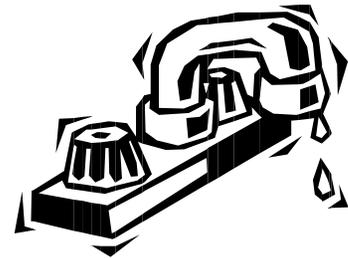
The laboratory will provide you with one-liter bottles to collect the water samples. At least one sample should be taken from your kitchen

tap in the morning before any water has been used (or after the water has been allowed to sit in the plumbing for at least six hours). ***This "first draw" water sample will probably contain the highest level of lead to which you are likely to be exposed.***

In general, if your first draw sample contains more than 15 micrograms of lead per liter of water (ug/L), it is important to follow the simple steps described in the next section to reduce your exposure to lead.

HOW CAN YOU REDUCE YOUR EXPOSURE TO LEAD IN DRINKING WATER?

Fortunately, in most cases, reducing your exposure to lead in drinking water is easy. You should try to get into the habit of following these simple steps:



- ***If the water from the cold water faucet has not been used for several hours, such as overnight, let it run for 15 to 30 seconds before using it for drinking, cooking, or preparing beverages.*** One way to test if the plumbing has been flushed is to feel the temperature of the water. When it becomes and stays colder, you have probably flushed the plumbing. (Save the flushed water for watering plants or for household chores.)

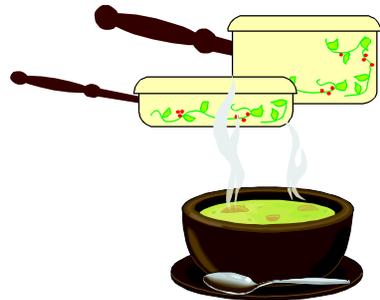
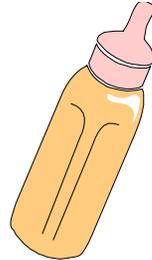
- ***After flushing, you may want to fill a pitcher with water and keep it in the refrigerator for drinking during the same day.***

Contact your local health department or NJDHSS for more information about how to reduce your exposure to lead.



- **Never drink, cook or prepare beverages using water from the hot water faucet.** Lead is likely to be highest in hot water. Always use fresh water from the cold water tap.

- **When preparing beverages, especially infant formula, avoid boiling water excessively.** Excessive boiling water may increase the concentration of lead in tap water due to evaporation.

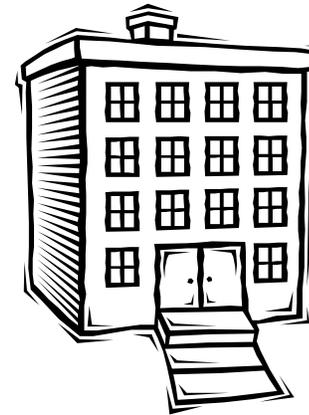


- **Avoid using lead-based cookware.** Lead can get into food during cooking. (Lead based cookware is most commonly made outside this country.)

Washing clothes and dishes, showering, and bathing are considered to be safe uses of water containing lead.



Running the water for a long period of time may not adequately flush the plumbing if you (1) have a corrosive public water supply **and** lead service lines or water mains; (2) live or work in a large building; or



(3) have a private well in an area where the groundwater supply is corrosive. Consult with your water company or local health department for advice in these situations.

You should also keep the following in mind:

If you hire a plumber, make sure that only lead-free materials are used in drinking water plumbing as required by the New Jersey construction code. Information on lead-free solders can be obtained from plumbing manufacturers or building contractors. (In general, lead solder is a duller gray color than lead-free solder, and is softer and easier to scratch.)

If you are moving into a newly built home or repairs have been done to your plumbing, remove strainers from the faucets and flush the water for 15 minutes to remove any loose lead solder particles. Check each faucet strainer periodically and remove any debris.

WHAT CAN BE DONE TO REMOVE LEAD FROM PRIVATE WELL WATER?

If you have a private well, there are water treatment devices that can (1) remove lead at your tap; or (2) reduce corrosivity at the point where the water supply enters your home:

- **Point-of-use devices**, such as reverse osmosis or distillers, are installed at the tap, and can effectively remove lead from your drinking water. However, these devices are sometimes impractical for use in the home.
- **Point-of-entry devices** are installed where the water supply enters your home. Corrosion control devices, such as calcite filters, reduce the tendency of water to dissolve lead from indoor plumbing materials.

If lead is a problem in your home *and* you have a water softener, the USEPA recommends that you *do not* connect the softener to your drinking water tap. (Some homes have separate pipes that lead to the drinking water tap.) The softener can make the water more corrosive by removing minerals and can increase the amount of lead that dissolves from the plumbing into the water. A water treatment device that removes minerals from the water, such as reverse osmosis, can also make the water more corrosive. Therefore, these systems should not be installed at the point where the water supply enters your home.

For any treatment system, always ask the manufacturer for proof that the device is capable of removing lead, including certification by a third-party agency of that capability. Neither the USEPA nor the State of New Jersey has programs that certify the claims of water filter manufacturers. For information on treatment devices that meet defined standards and testing requirements, contact NSF International at (313) 769-8010.

All treatment systems require careful maintenance in order to be effective and safe.



WHAT IS GOVERNMENT DOING ABOUT THE LEAD IN DRINKING WATER PROBLEM?

- In 1986, the U.S. Congress passed amendments to the Federal Safe Drinking Water Act that banned the use of lead containing solders for indoor drinking water plumbing. This law, which took effect in New Jersey in February 1987, is reflected in the plumbing subcode of the New Jersey Uniform Construction Code and is enforced by local building inspectors.



- In 1988, the U.S. Congress passed the Lead Contamination Control Act. This Act required the USEPA to provide guidance to schools about lead in drinking water, including the identification of water coolers that have lead components. At that time, the New Jersey Department of Education notified all school districts about testing for lead in school drinking water. You can contact your school administrator to find out if the drinking water has been tested and to request a copy of test results.



- In June 1991, the USEPA established an action level of 15 ug/L for lead in public drinking water supplies. Water companies are required to test a specified number of residential water taps for lead. If more than 10% of those tested are above the action level, the water company is required to reduce the corrosiveness of the water and remove any lead water mains in the street. This regulation is unique because indoor plumbing is considered to be the major source of lead in drinking water.
- In October 1991, the CDC lowered its blood lead level for lead intervention activities from 25 to 10 ug/dL. This change recognizes the importance of all sources of lead exposure, including drinking water.

FOR MORE INFORMATION...



- ◆ **Local Health Department**
Local telephone directory
Local water issues, private well testing guidance, lead screening programs, and health effects of lead in drinking water
- ◆ **New Jersey Department of Health and Senior Services
Consumer and Environmental Health Services**
PO Box 369
Trenton, NJ 08625-0369
(609) 588-3120
Health effects of lead in drinking water
- Community Health Services**
(609) 292-5666
Health effects of lead in children
- ◆ **New Jersey Department of Environmental Protection
Bureau of Safe Drinking Water**
(609) 292-5550
Federal and State drinking water regulations and public water supply monitoring results
- Office of Quality Assurance**
(609) 292-3950
NJ certified laboratories for lead in drinking water
- ◆ **United States Environmental Protection Agency
Safe Drinking Water Hotline**
(800) 426-4791
Federal drinking water regulations, health effects of lead in drinking water, and other water safety issues
- ◆ **NSF International**
(313) 769-8010
(800) NSF-6275
Home water treatment device and bottled water information
- ◆ **Environmental and Occupational Health Clinical Center
University of Medicine and Dentistry/New Jersey**
(732) 445-0123
Physician referral or consultation on health effects of lead

OTHER AVAILABLE MATERIALS...



- FACTS: Mercury in Drinking Water*
- FACTS: Microorganisms in Drinking Water*
- FACTS: Nitrate and Nitrite in Drinking Water*
- FACTS: Pesticides in Drinking Water*
- FACTS: Volatile Organic Compounds in Drinking Water*
- Parasites and New Jersey Drinking Water: Information on Giardia and Cryptosporidium*
- Contacts and Information: Drinking Water Issues*
- Don't Drink Lead (11" x 17" poster)*
- Don't Drink Lead (8½" x 11" flyer)*
- Keep Your Baby Safe From Lead (11" x 17" poster)*
- Keep Your Baby Safe From Lead (8½" x 11" flyer)*

Name _____

Address _____

Town _____ State _____ Zip _____

Please send this order form to:

New Jersey Department of Health and Senior Services
Consumer and Environmental Health Services
PO Box 369
Trenton, NJ 08625-0369



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