



IT'S YOUR HEALTH



Effects of Lead on Human Health

The Issue

Lead occurs naturally in the environment and has many industrial uses. However, even small amounts of lead can be hazardous to your health.

Background

Everyone is exposed to trace amounts of lead through air, soil, household dust, food, drinking water and various consumer products. The amount of lead in the environment increased during the industrial revolution, and again significantly in the 1920s with the introduction of leaded gasoline. However, since the early 1970s, lead exposure in Canada has decreased substantially, mainly because leaded gasoline and lead-based paint were phased out and the use of lead solder in food cans was virtually eliminated.

Health Risks of Lead Exposure

Short-term exposure to high levels of lead can cause vomiting, diarrhea, convulsions, coma or even death. Severe cases of lead poisoning are rare in Canada.

However, ongoing exposure to even very small amounts of lead can be harmful, especially to infants and young children. Lead taken in by pregnant women can also pose a danger to the health of unborn children. You may not notice the symptoms of long-term lead exposure but

they are still serious. Anaemia is common and lead can also damage the brain and nervous system. Other symptoms are:

- appetite loss
- abdominal pain
- constipation
- fatigue
- sleeplessness
- irritability
- headache.

If you are continually exposed to lead, as in an industrial setting, it can affect your kidneys.

Lead exposure is most serious for young children because their growing bodies absorb lead more easily than adults and they are more susceptible to its harmful effects. Even low level lead exposure may harm the intellectual development, behaviour, size and hearing of infants. During pregnancy, especially in the last trimester, lead can cross the placenta and affect the unborn child. Female workers exposed to high levels of lead have more miscarriages and stillbirths.

If you are concerned about lead exposure, your doctor can conduct a simple blood test to measure your blood lead level. Your doctor will recommend corrective action if the amount is over 10 micrograms per decilitre.

Sources of Lead Exposure

Food

Traces of lead are found in almost all food. Airborne lead falls onto crops or soil and is absorbed by plants. Lead solder used in making cans can also contaminate food. However, in Canada food manufacturers have eliminated the use of lead-soldered cans. Infants can also absorb lead from their mothers' bodies through breast milk.

Air

Lead is released into air through industrial emissions, smelters and refineries. With the introduction of unleaded gasoline in Canada in 1975, lead concentrations in the air have declined significantly, falling 76% between 1973 and 1985. Leaded gasoline in cars was banned in Canada in 1990. Since then levels of lead in the air of most Canadian cities have dropped below detectable limits.

Dust and Soil

Dust and soil can be significant lead exposure sources, especially for young children. Lead in soil can come from the air or from erosion of lead-bearing rocks, and may be carried indoors as dust. Lead dust can also come from within the home, especially older homes that used lead-based paints or lead solder. Lead dust is especially dangerous for babies and young children, because they tend to put things in their mouths and their breathing zone is closer to floor level where lead dust tends to collect.

Drinking Water

In most of Canada, the amount of lead in natural water supplies is very low. However, lead can enter the water supply from lead solder in plumbing, lead service connections or lead pipes in your home. Homes built before 1950 often have leaded distribution lines and service connections.

In newer homes, lead may leach from solder for several years until the pipes form a protective oxide layer. Lead is

more likely to be found in soft or very acidic water and in very old or very new homes. The National Plumbing Code of Canada does not permit the use of lead solder in new drinking water plumbing or in repairs to existing drinking water systems. Several provinces also limit the amount of lead solder in drinking water supply lines.

Lead levels in tap water increase as water stands in pipes. Drinking fountains may have higher levels of lead than water from nearby taps, because the water usually sits for a longer time. They may also have more soldered joints.

Paint

In 1976, the amount of lead that could be added to interior paints was limited by law, but exterior paints could still contain higher amounts of lead, provided they carried a warning label. Under the Surface Coating Materials Regulations, which came into effect in 2005, the lead limit was further reduced. Paint manufacturers could no longer add lead to their paint. Canadian manufacturers of interior and exterior consumer paints had already been voluntarily keeping to this limit since 1991. Some specialty coatings, such as artists' paints and metal touch-up coatings, can contain higher levels of lead, but if they do, they must be labelled to warn against applying the paint to surfaces that children and pregnant women might come in contact with.

Most indoor and outdoor paints produced before 1950 contained substantial amounts of lead. If you strip or sand old paint that contains lead, you could breathe in lead particles.

Other Sources of Lead

- Inexpensive, horizontal PVC (plastic) mini-blinds made in Asia or Mexico may contain lead. Health Canada recommends that if you have children six years of age or under, you should remove these blinds from your home. They should also be removed from schools and child care centres.

- Workers in smelters, refineries and other industries may be exposed to high levels of lead. Lead dust may be breathed in. It can also cling to skin, hair, clothing and vehicles and be carried to the home, exposing workers' families. Most provincial governments require that lead-exposed workers be monitored for blood lead levels.
 - Lead can enter food, especially acidic food such as fruit juice, from lead-based glazes on glassware and ceramics. Canadian regulations limit the amount of lead that can leach from glazes on glass and ceramic products sold in Canada, if they are intended for use in preparing, serving or storing food. However, glazed ceramic or glass dishes bought in other countries may contain enough lead to be a hazard to your health.
 - Leaded crystal is widely used for serving beverages. When the crystal comes in contact with beverages, especially acidic beverages such as port, wine, fruit juices and soft drinks, some lead dissolves into the liquid. The amount of lead that dissolves depends on the lead content of the crystal, the type of beverage and the length of time they are in contact with each other.
 - Lead fumes can be released when waste oil, coloured newsprint, battery casings or wood covered with lead paint are burned. Candles that contain lead in their wicks may also release harmful levels of lead vapour when burned. Using lead solder in a hobby, such as in making stained glass, lead shot or lead fishing weights, may expose you or your family to harmful lead vapours. The vapours may settle on nearby surfaces as lead dust.
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Minimizing Your Risk

Here are some steps you can take to reduce you and your family's exposure to lead.

- Run the cold water tap first thing in the morning or any other time the system hasn't been used for a number of hours. This is especially true if you have soft water. Use only cold tap water for drinking, cooking and making baby formula, since hot water is likely to contain more lead.
- If you have an older home and suspect that it might contain lead-based paint, do not use sanders, heat guns or blowlamps to remove it. They create dust and fumes that contain lead. Use a chemical paint stripper, preferably one with a paste that can be applied with a brush. Chemical strippers contain potentially harmful substances themselves, so use them carefully. Keep children and pregnant women away from the work area and always wear goggles, gloves and a good quality breathing mask. For more on lead-based paint, see the link in the Need More Info? Section.
- Clean your house regularly to remove dust and particles that may contain lead. This is especially important for surfaces that young children might be in contact with.
- Do not put food or beverages in lead crystal containers for any length of time. Do not serve pregnant women or children drinks in crystal glasses. Babies should never drink from lead crystal baby bottles. For more on lead crystal, see the link in the Need More Info? Section.
- If you own glazed glass or ceramic dishes you bought outside Canada, do not use them for serving food or beverages, as they may contain higher levels of lead than are allowed in Canada.
- If you have children six years of age or under, you should remove any horizontal PVC (plastic) mini-blinds made in Asia or Mexico from your home.
- If you work in a smelter, refinery or any other industry where you are exposed to high levels of lead, shower and change your clothing before going home, to minimize the amount of lead your family is exposed to. Make sure you have your blood lead level checked regularly.
- Never burn waste oil, coloured newsprint, battery casings or wood covered with lead paint in or near your home, as lead fumes may be released. Dispose of them as part of your municipality's Hazardous Waste program.
- If you use lead solder in a hobby, such as stained glass-making, use a good quality breathing mask, keep surfaces clean and keep children and pregnant women out of the area.
- If you are concerned about your exposure to lead, talk to your doctor, who can order a test to measure the amount of lead in your blood.

Government of Canada's Role

The Government of Canada continues to work to reduce the risks to Canadians of lead exposure from all sources.

In Canada, drinking water quality is a responsibility shared among various levels of government. Health Canada works closely with the provinces and territories, through the Federal-Provincial-Territorial Committee on Drinking Water, to establish the Guidelines for Canadian Drinking Water Quality. Each jurisdiction is responsible for setting its own enforceable guidelines or regulations, based on the Canadian guidelines. The Guidelines limit the lead content of drinking water to a Maximum Acceptable Concentration of 0.010 milligrams per litre of water.

Health Canada is also developing a Lead Risk Reduction Strategy to control lead levels in consumer products that children are most likely to be exposed to. It proposes to regulate, under the Hazardous Products Act, the lead content of four categories of consumer products that children are likely to come into contact with, such as:

- **Group 1** - Products whose normal pattern of use requires that the product be brought to the mouth, including all toys intended for children under three years of age and all children's crayons, paints and chalks
- **Group 2** - All children's products other than those included in Group 1
- **Group 3** - Products intended for use in preparing, serving, or storing food or beverages, such as cutlery, tableware and cooking utensils

- **Group 4** - Consumer products intended to be or likely to be melted or burned in enclosed spaces, such as candles and fuel for indoor lanterns.

The strategy will serve as the foundation for new lead regulations under the Hazardous Products Act.

Need More Info?

For additional information on lead go to:

Health Canada's Lead information package at:
www.hc-sc.gc.ca/ewh-semt/contaminants/lead-plomb/asked_questions-questions_posees-eng.php

Health Canada's warning about potential children's lead exposure at:
www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/_2003/2003_82-eng.php

Health Canada's Water Talk article Minimizing Exposure to Lead from Drinking Water Distribution Systems at:
www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/lead-plomb-eng.php

Canada Mortgage and Housing Corporation (CMHC), About Your House series at:
www.cmhc-schl.gc.ca/en/co/co_001.cfm

For more information on Lead see the following It's Your Health fact sheets :

- Lead-based Paint at : www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/paint-peinture-eng.php
- Lead Crystal at : www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/crystal-cristal-eng.php

For additional articles on health and safety issues go to the It's Your Health Web section at:
www.healthcanada.gc.ca/iyh

You can also call toll free at 1-866-225-0709 or TTY at 1-800-267-1245*

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