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Lead and Human Health

Updated: February 2013

Original Date: November 2002

# IT'S YOUR HEALTH



## Lead and Human Health

### THE ISSUE



**Lead** is a metal that occurs naturally in the earth. It has many industrial uses and is found in trace amounts everywhere in the human environment.

The amount of lead in the environment increased during the Industrial Revolution, and again in the 1920s with the introduction of leaded gasoline. However, levels of lead in the Canadian environment have gone down significantly over the past 30 years. Recent studies have also shown a decline of over 70% in blood lead levels in Canadians since the 1970s. Still, there are steps you can take to further reduce your exposure.

### HEALTH EFFECTS

Lead can be harmful to people of all ages. Recent scientific studies show that negative health effects are occurring at **lower levels of exposure to lead than previously thought**. Low-level exposure may have subtle

effects on the intellectual development and behaviour of infants and children. They are particularly vulnerable to the harmful effects of lead because their growing bodies absorb lead more easily and get rid of it less efficiently than adults. Also, infants and young children are more likely to ingest lead because of their normal habit of putting things in their mouths. In adults, the strongest scientific evidence to date suggests low levels of lead exposure may cause a small increase in blood pressure.

Ongoing exposure to even small amounts of lead may eventually result in harmful levels in the body. Once lead is absorbed into your blood, it is either eliminated from your body (mostly in urine) or builds up in your bones. It can remain stored in your body for over 30 years.

Health effects associated with exposure to high levels of lead include vomiting, diarrhea, convulsions, coma or even death. However, such severe cases of lead poisoning are rare in Canada.

### SOURCES OF LEAD EXPOSURE

Everyone is exposed to trace levels of lead through food, drinking water, air, household dust, and soil. Before leaded gasoline was phased out in Canada in the 1990s, lead in the air was the main source of exposure

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for Canadians. It is still a source of low-level lead exposure, but now adults are exposed mainly through food and drinking water.

For infants and children, the main sources are:

- food and drinking water
- household dust
- soil
- mouthing of products containing lead

### Drinking water

In most of Canada, the amount of [lead in natural water supplies](#) is very low. But lead can enter the water supply in your home from:

- old lead service connections (pipes)
- lead solder in the plumbing

Homes built before 1950 often have lead pipes. Also, lead solder was used for plumbing until 1990 when the *National Plumbing Code of Canada* no longer allowed its use in new drinking water plumbing or in repairs.

Water in a plumbing system is more likely to contain lead if it:

- sits in pipes for a long time
- is very soft or acidic

Hot water increases the leaching of lead into the drinking water. Many towns and cities have programs to replace lead service lines. To find out if your home has a lead service line, contact your municipality.

### Food

Lead is not added to food on purpose, but low levels have been found in a variety of foods. Lead may enter foods from the soil, water or air and may also contaminate foods during transport and processing. Lead can also be transferred to your food during preparation, serving or storage if you:

- cook with water contaminated with lead

- prepare or serve food using utensils, dishes and containers that leach lead
- store food in containers that leach lead, such as some lead-glazed ceramic, lead-glazed glass or lead crystalware
- eat wild game killed with lead shot

In Canada and most other countries, food manufacturers have stopped using lead-soldered food cans. This has greatly reduced dietary exposure to lead.

### Dust and soil

One of the main sources of lead exposure for infants and children is dust and soil. Lead levels in soil tend to be higher:

- in cities
- near roadways
- around industrial sources that use or emit lead
- near weapon firing ranges
- next to buildings where crumbling leaded paint has fallen into the soil



Lead-contaminated soil can be tracked into your home. Lead can also enter household dust from sources already in your home, especially in older homes that contain lead-based paints. Children can be exposed to lead in soil or household dust through normal hand-to-mouth activity.

### Air

Lead can be released into the air through industrial emissions, smelters and refineries. Unleaded gasoline was introduced in Canada in 1975

and leaded gasoline was banned in the 1990s. Lead levels in the air have dropped by more than 99% since 1984, so exposure through the air is less of a concern for most Canadians.

### Paint

Many older homes in Canada have indoor or outdoor surfaces coated with lead-based paint. If this paint is in good condition and not on a surface that a child might suck or chew, your risk is minimal. It is best to leave it alone or paint over it.

Lead-based paint in your home is a serious health hazard if it is:

- chipping or flaking
- within the reach of children who might suck or chew on it, or play with paint chips

If you have this problem in your home, or if you are planning renovations that will damage painted surfaces, you should remove the paint. It's important to follow [very specific instructions for safely removing old paint](#).



The levels of lead in consumer paints have steadily gone down since the introduction of restrictions in 1976 under the [Surface Coating Materials](#)

[Regulation](#). Homes built and painted between 1976 and 1990 may have small amounts of lead on indoor surfaces, while paints on outdoor surfaces are likely to contain higher amounts of lead. There is little need for concern about lead-based paint on indoor or outdoor surfaces of homes built in 1991 or later.

Some specialty surface coatings, like artists' paints and metal touch-up coatings, are allowed to contain lead.



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But if they do, they must have a label that warns against applying the product to surfaces that children and pregnant women might come in contact with.

### Other sources of lead

Other potential sources of exposure to lead include:

- mouthing or swallowing products that may contain lead, like costume jewellery, art supplies, or lead shot or fishing weights
- eating or drinking from lead-glazed ceramic or glass foodware that leaches lead
- eating or drinking from leaded crystalware that leaches lead
- hobbies that involve the use of lead or lead solder, like automotive work or making stained glass, lead shot or lead fishing weights
- smoke

Workers in smelters, refineries and other industries may be exposed to high levels of lead. Lead dust may be inhaled. It can cling to skin, hair, clothing, footwear and vehicles, and be [carried into your home](#). Most provincial governments require that workers exposed to lead be monitored regularly for lead in their blood.

### REDUCE YOUR RISK



Take these steps to reduce your family's exposure to lead:

- Run the cold water tap first thing in the morning or any other time the water hasn't been used for a number of hours. Always use cold tap water for drinking, cooking and making baby formula, since hot water is more likely to contain contaminants like lead.
- See Health Canada's fact sheet [Lead-based Paint](#) for important safety information about paint removal before starting any renovation project in an older home.
- Clean your house regularly to remove dust and particles. This is especially important for surfaces that young children might touch.
- Do not keep food or beverages in [lead crystal](#) containers for any length of time. Do not serve pregnant women or children drinks in crystal glasses. Infants and children should never drink from lead crystal.
- If you own glazed glass or [ceramic dishes](#) bought outside of Canada, do not use them to serve food or drinks. They may

have higher levels of lead than are allowed in Canada.

- If you work in a smelter, refinery or any other industry where you are exposed to high levels of lead, protect your family by showering and changing clothes before going home. Get your blood levels checked regularly.
- Never burn waste/old oil, battery casings or wood covered with lead paint, as lead fumes may be released. Dispose of them through your municipality's Hazardous Waste program.
- If you use lead solder in a hobby like stained glass-making, use a good quality breathing mask, keep surfaces clean, and keep children and pregnant women out of the area. Wash your hands after handling lead solder.
- Avoid eating animals and birds that were killed with lead shot. Use non-lead shot when hunting for food.
- Do not store lead fishing weights, lead stripping for stained glass work, or other items made of lead where children can reach them.
- Do not allow children to chew or suck on jewellery.



- If you are concerned that you or a family member has been exposed to lead, speak to your doctor.

## GOVERNMENT OF CANADA'S ROLE

The Government of Canada has been working to reduce exposure to lead and minimize health risks to Canadians for

many years. The significant decline of lead in the Canadian environment and in Canadians since the 1970s is mainly due to the phase-out of lead in:

- gasoline
- paints
- solder used in food cans

We have also worked with partners to develop many regulations and guidelines to reduce lead in cosmetics, drinking water, food, natural health and drug products, tobacco, industrial releases, and other sources like soil and air.

Examples are:

- limits for lead in drinking water in the [Guidelines for Canadian Drinking Water Quality](#)
- limits for lead in various foods in Canada's [Food and Drug Regulations](#)

Also, Health Canada's [Lead Risk Reduction Strategy for Consumer Products](#) has introduced or tightened lead content limits for:

- children's jewellery
- consumer paints and other surface coatings
- applied paints and surface coatings on furniture, toys and other children's articles and on pencils and artists' brushes
- glazed ceramic and glass foodware
- corded window coverings
- products whose use involves mouth contact, including all toys for children under 3 years of age

The Government of Canada continues to focus its efforts and resources on further reducing exposure to lead in ways that can make the most difference for the health of Canadians over the long term. For example, we are proposing further lead content limits for other product groups that children are most likely to be exposed to. As part of our [Risk Management Strategy for Lead](#), we are also:

- strengthening controls on releases of air pollutants from various industrial sectors, which will also provide co-benefit reductions in lead emissions
- updating the [Soil Quality Guidelines](#) for lead
- working with the provinces and territories to revise blood lead guidance for health care providers and public health officials
- updating the [Guidelines for Canadian Drinking Water Quality](#) for lead

We also provide active support for international efforts focused on reducing exposure to lead on a global basis, including:

- [The Great Lakes Water Quality Agreement](#)
- [The Arctic Monitoring and Assessment Program](#)
- [The United Nations Environment Programme \(UNEP\)](#)
- [The Organisation for Economic Co-operation and Development \(OECD\)](#)

## FOR MORE INFORMATION

- Health Canada [Lead web section](#) at: [www.hc-sc.gc.ca/ewh-semt/contaminants/lead-plomb/index-eng.php](http://www.hc-sc.gc.ca/ewh-semt/contaminants/lead-plomb/index-eng.php)
- Health Canada – [Lead in Food](#) at: [www.hc-sc.gc.ca/fn-an/securit/chem-chim/environ/lead\\_plomb-eng.php](http://www.hc-sc.gc.ca/fn-an/securit/chem-chim/environ/lead_plomb-eng.php)
- *It's Your Health* – [Lead-based Paint](#) at: [www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/paint-peinture-eng.php](http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/paint-peinture-eng.php)
- *It's Your Health* – [Lead Crystalware and Your Health](#) at: [www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/crystal-cristal-eng.php](http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/crystal-cristal-eng.php)
- *It's Your Health* – [Safe Use of Arts and Crafts Materials](#) at: [www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/arts-eng.php](http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/arts-eng.php)
- Health Canada video – [Simple steps to reduce your exposure to lead](#) at: [hc-sc.gc.ca/ahc-asc/media/video/index-eng.php?video=18#video](http://hc-sc.gc.ca/ahc-asc/media/video/index-eng.php?video=18#video)



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- Health Canada, Water Talk: *Minimizing Exposure to Lead from Drinking Water Distribution Systems* at: [www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/lead-plomb-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/lead-plomb-eng.php)

## FOR INDUSTRY AND PROFESSIONALS

- Final Human Health State of the Science Report on Lead at: [www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/dhhsr/rpecscepsh/index-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/dhhsr/rpecscepsh/index-eng.php)
- Risk Management Strategy for Lead at: [www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/prms\\_lead-psgr\\_plomb/index-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/prms_lead-psgr_plomb/index-eng.php)
- Canada Consumer Product Safety Act at: [hc-sc.gc.ca/cps-spc/legislation/acts-lois/ccpsa-lcspc/index-eng.php](http://hc-sc.gc.ca/cps-spc/legislation/acts-lois/ccpsa-lcspc/index-eng.php)

- Health Canada's *Total Diet Study* at: [www.hc-sc.gc.ca/fn-an/surveill/total-diet/index-eng.php](http://www.hc-sc.gc.ca/fn-an/surveill/total-diet/index-eng.php)

## RELATED RESOURCES

- For reliable health and safety information, visit the *Healthy Canadians* website at: [www.healthycanadians.gc.ca](http://www.healthycanadians.gc.ca)
- For more articles on health and safety issues go to the *It's Your Health* web section at: [www.health.gc.ca/iyh](http://www.health.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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Cat: H13-7/101-2013E-PDF  
ISBN: 978-1-100-21772-7  
Pub: 120175



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