

Lead and Lead Toxicity

People living in industrialised societies like New Zealand have some lead in their bodies. Lead is taken into the body through food, water and air. Most of this lead is not absorbed by the body. However, some people will develop health problems if they are exposed to enough lead. If untreated, lead toxicity can be serious.

Where does lead come from?

Lead may come from a number of sources including old paint and petrol. With the removal of lead from petrol in 1996, the main source of non-occupational exposure to lead in New Zealand is lead-based paint on and around houses built before about 1970, but particularly before 1945. On many older houses, the old paint may still be in place, painted over or flaking off. When old paint is removed, the lead in it may settle in dust or soil.

Why are young children at risk of getting lead toxicity?

Infants and preschool children in contact with flaking paint or lead-contaminated dust or soil are particularly at risk of developing lead toxicity. This is because they often put into their mouths objects (such as toys or their fingers) that may be contaminated with dust or soil. Paint on old cots or old toys, such as rocking horses or blocks, could be lead-based. Young children absorb more of the lead they take in than older children and adults.

Are adults at risk?

Adults are exposed to lead by breathing it in as dust from activities such as restoring and cleaning older houses. Not washing lead-contaminated hands properly washed before smoking or eating may cause exposure to lead. The highest levels of lead in adults' blood occur in industrial workplaces.

The early stages of lead toxicity are non-specific and affect the gastrointestinal and nervous systems. Symptoms of lead toxicity that affects the nervous system can include mood changes (such as depression or irritability), memory impairment, sleep disturbance, headaches, and tingling and numbness in fingers and hands. Symptoms of lead toxicity that affects the stomach and intestine can include lack of appetite, nausea, diarrhoea, constipation, stomach pains and weight loss. In later stages, symptoms may develop in the blood, kidneys, bones, heart and reproductive systems and may, in extreme cases, cause death.

How does lead affect young children?

Contact with low levels of lead does not cause any obvious illness. However, if untreated, low blood lead levels can affect the developing brain and may impair children's development and later performance at school. High levels of lead can cause symptoms such as vomiting, stomach pains, difficulty sleeping, constipation and loss of appetite. It is important to know, however, that there are many causes of these symptoms other than lead. If untreated, very high blood lead levels can result in more serious problems and lead to brain damage.

How does lead affect the unborn child?

Lead can be carried to the unborn child through the mother's blood. Therefore, exposing the mother to lead through repainting, through her type of work (for example, car radiator repair, painting) or through hobbies involving lead exposure (for example, lead-lighting, indoor small bore rifle shooting) may affect the baby while it is still being formed. Exposure to lead can cause premature birth or low birth weight as well as later problems with development.

How is lead toxicity diagnosed?

Lead toxicity is diagnosed by measuring the amount of lead in the blood.

Most people will have some detectable levels of lead in their blood due to environmental exposure.

Levels below 0.24 $\mu\text{mol/l}$ do not require any medical attention. Lead is removed by the body slowly over time, so levels will remain low or fall if there is not ongoing exposure to sources of lead.

For people with blood lead levels of 0.24 $\mu\text{mol/l}$ or higher, Public Health South will have been in contact to help identify any possible exposures. It is recommended that the blood test is repeated by your GP, usually after 3 months

How can you protect your family from lead toxicity?

- Flush a mugful of water from drinking water taps each morning before use, to remove any metals that may have dissolved from household plumbing fittings.
- Make sure your child has a good diet. Calcium and iron can help prevent your child's body from absorbing lead. Calcium is in dairy foods, tinned salmon, beans, nuts and seeds, tofu, green leafy vegetables and fortified cereals. Foods rich in iron include lean meat, chicken or fish, eggs, dried fruit and legumes. Iron absorption is assisted by vitamin C, so servings of fruit and vegetables (eg, citrus fruits, kiwifruit, leafy green vegetables, broccoli, tomatoes, capsicums) should be promoted.
- Wash fruit and vegetables before consuming, especially root vegetables
- Make sure that your children wash their hands before they eat.
- Wash dummies and toys frequently, especially those used outside.
- Wet-dust floors, ledges, windowsills and other flat surfaces at least once a week. Use a common detergent when cleaning with water.
- If possible, use a vacuum cleaner with a HEPA filter, especially when dry vacuuming.
- Reduce exposure to sources such as lead-based paint. Take special care with home renovations. If renovating older houses, seek advice about controlling leaded paint chips and dust. If the house was built or repainted before 1970, assume that the paintwork is lead-based, unless a test shows that it is not.
- Avoiding drinking roof water that may have lead fixtures like lead-head nails – the collected rain water may then have lead in it

Where can you get further information?

For further information about lead toxicity, please visit the Ministry of Health website:

www.health.govt.nz/your-health/conditions-and-treatments/diseases-and-illnesses/lead-poisoning

For advice about how to protect yourself and your family from lead toxicity if your house is being repainted, please refer to the information sheet Removing Lead-Based Paint. Further information is also available from the Ministry of Health at:

www.health.govt.nz/your-health/healthy-living/environmental-health/hazardous-substances/removing-lead-based-paint

Adapted from New Zealand Ministry of Health, May 1997. Revised October 2005. Code 4158

If you are concerned about your health, please see your GP for advice.

You can also send questions about lead exposure to publichealth@southerndhb.govt.nz