

Dangers in our soil

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The health of as many as 100,000 children under the age of five is under threat from lead pollution, linked to intellectual and behavioural problems.

Health

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- [Macquarie University](#)
- [Professor Mark Taylor](#)
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Children love playing in the dirt, but their games can have dangerous consequences.

The legacy of leaded petrol has put our most vulnerable at risk, with tests proving just how toxic Australian backyards can be.

Professor Mark Taylor is an environmental scientist at Macquarie University, and he's deeply worried.

"There's a risk that children living in leaded areas will lose IQ points, will have behavioural problems, attention problems - they have lifelong impacts," Professor Taylor said.

"People have described it as a silent epidemic."

Lead in petrol was phased out more than ten years ago, after fuelling cars since the 1920s. But Professor Taylor says it's by no means disappeared.

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A GUIDE TO DEALING WITH SOIL THAT MIGHT BE LEAD-CONTAMINATED

Your soil might be [lead-contaminated](#) if it is now or was once surrounding or nearby:

- A pre-1997 painted residential building or pre-2010 painted industrial building, and the paint has deteriorated or been dry-scraped, heat-gunned or dry-sanded and allowed to contaminate the yard;
- Older inner city homes - pre-2002 leaded petrol vehicle emissions emitted lead particulates to the atmosphere that accumulate in dusts, soils and ceilings;
- A lead mine, lead smelter, lead flashing or lead acid battery, etc, manufacturing or recycling plant, or a waste dump/landfill, or tailings dam.

Actions to prevent lead exposure from lead-contaminated soil:

- If you are concerned, then before buying or renting a home, and before building a vegetable garden or chicken run, get the soil tested at a [NATA accredited laboratory](#). Do the same for pre-1997 house paint, pre-2002 ceiling dust and all rainwater tanks where present. Where your results are adverse, take measures to stop ingestion of lead-contaminated soil, vegetables, herbs, eggs, chickens, rainwater, etc;
- Soil, water, household dust etc sample test kits and instructions are available for purchase from [The LEAD Group charity](#).
- If pregnant women or young children / pets are already living in the home, or if anyone is already drinking rainwater or eating home produce, and you are concerned you can ask your doctor / vet for a blood lead test.
- National Health and Medical Research information on lead in humans is [available online](#). NSW Government advice on managing lead exposures is also available online [here](#) and [here](#) – that is “Lead, Your Health & the Environment”, and following factsheets and booklets in [The LEAD Group's factsheet index](#).

The following lead exposure prevention tips are suggested if lead is a concern in your environment:

- Remove shoes at the door and use a commercial-quality outside door mat to reduce track-in. Feet should be wiped at least twice on the door mat.
- Purchase a High-Efficiency Particulate Air (HEPA) filter vacuum or safely remove pre-wetted carpets and rugs to avoid the need for vacuuming altogether if possible.
- Vacuum rugs, mats and carpets and damp mop floors once a week (twice a week if there are toddlers in the home). Vacuum each section of carpet at least four times.
- Do NOT vacuum hard surfaces (it redistributes dust).
- Clean window frames, windowsills, and other surfaces weekly. Use a mop or sponge with warm water and a general all-purpose cleaner or a cleaner made specifically for lead.
- Thoroughly rinse sponges and mop heads after cleaning dirty or dusty areas.
- Inspect the vacuum belt and bag monthly. Change bag when it is less than full.
- Cleaning surfaces below 1.5 metres that small children may put their mouths on, including but not limited to wall corners, doors, stairs, railings, windows, baseboards, and chair rails and parts of windows (with sills below 1.5 metres) that move or touch moving parts (once a month).
- Keep toddlers away from remodelling areas, peeling paint, foundation soil under house eaves, and window wells.
- Keep play areas clean. Wash bottles, pacifiers, toys, and stuffed animals regularly.
- Lay down a clean sheet before putting a baby on a carpet.
- Keep children clean. Ensure that children wash before they eat. Wash toddlers' hands often.
- Protect food from settled dust by covering and/or washing.
- When remodelling, seal off the work area and avoid tracking dust from remodelled area.
- Cover bare soil in gardens and areas beside house with wood chips or mulch.
- Grow grass where soil is bare, or place wood chips or mulch on bare soil.
- Make sure children eat regular nutritious meals, since more lead is absorbed on an empty stomach. Make sure children's diets contain plenty of iron and calcium: Examples of foods high in iron are liver, fortified cereal, cooked beans, spinach, and

raisins. Examples of foods high in calcium are milk, yogurt, cheese, and cooked greens.

- Have children wash their hands after playing outside, and before meals, naps and at bedtime.
- Regularly wash children's toys. Toys can become contaminated from household dust or exterior soil.
- Keep pets outside. If allowed inside, brush fur outside and clean all dirt from paws.
- Clean up paint chips immediately, with a wet cloth or wet paper towel.
- Prevent children from playing in bare soil; if possible, provide them with sandboxes filled with clean and tested sand – available from hardware stores. If using a sandbox, parents should also cover the box when not in use.
- Do not remove lead-based paint yourself. It is extremely hazardous.
- If soils are contaminated, avoid growing leafy and root vegetables. Used raised garden beds with clean brought-in soil for growing food plants.
- If soils are contaminated, wear gloves when handling soil and wash gardening clothes separately from regular wash. Avoid bringing soil into the house.

In the event that a resident has a high blood lead level, a more aggressive approach may be warranted, which may include: removing ceiling dust, removing or covering contaminated soil around the home, stabilising flaking lead-based paints, cleaning or replacing carpets, cleaning soft furnishings.

- To permanently remove lead hazards, you must hire a certified lead "abatement" contractor. Abatement (or permanent hazard elimination) methods include removing, sealing, or enclosing lead-based paint with special materials.
- Always hire a person with special training for correcting lead problems—someone who knows how to do this work safely and has the proper equipment to clean up thoroughly. Certified contractors will employ qualified workers and follow strict safety rules – see www.painters.edu.au

Contact details

- Professor Mark P. Taylor, Faculty of Science, Macquarie University - www.envsci.mq.edu.au
- The National Environmental Protection Council's report: Guideline on the Investigation Levels for Soil and Groundwater - www.ephc.gov.au

Recent papers and reports on the risk of lead exposure to children:

- *Eliminating childhood lead toxicity in Australia: a call to lower the intervention level (2012)*. Authors: Mark P. Taylor, Chris Winder and Bruce P. Lanphear. Medical Journal of Australia - www.mja.com.au
- *Time to rethink blood lead goals to reduce risk to children's health (2012)*. Authors: Mark P. Taylor, Chris Winder and Bruce P. Lanphear. The Conversation - www.theconversation.edu.au
- *The Final Human Health State of the Science Report for Lead* - www.hc-sc.gc.ca
- *Risk Management Strategy for Lead* - www.hc-sc.gc.ca
- *Public Health Statement for Lead*. Agency for Toxic Substances and Disease Registry - www.atsdr.cdc.gov

- *Health Effects of Low-level Lead Evaluation*. National Toxicology Program - www.ntp.niehs.nih.gov
- *Advisory Committee On Childhood Lead Poisoning Prevention (ACCLPP)*. Centers for Disease Control and Prevention - www.cdc.gov

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Dangerous soil in your home

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