

- Place mats at the front and back doors to prevent soil being walked through the house.
- Leave shoes outside where possible.
- Do not dig in soils that have known elevated contaminant levels. Soil contaminants that are present a metre or more under the surface should not be a risk if the soil is not disturbed.
- If you eat home-grown fruit and vegetables, thoroughly wash all produce that may be contaminated with soil and peel the skin off root vegetables.

Should I avoid eating home-grown fruit and vegetables if my soil is contaminated?

It is hard to know how much contaminant is absorbed by fruit and vegetables grown on contaminated soil. Uptake of contaminants depends on many factors, including the type of plant and soil characteristics.

If your property is contaminated, your home-grown fruit and vegetables may contain elevated levels of contaminant. If you regularly eat fruit and vegetables containing elevated levels of contaminant, you may increase your risk of experiencing long-term health effects. This is because any contaminant you absorb from these home-grown fruit and vegetables adds to the amount of this contaminant that you absorb from the soil and dust from your property. Children are most likely to be affected. Adults who regularly eat home-grown fruit and vegetables may also be at risk.

There is no doubt that fresh fruit and vegetables are good for you. You should take into account the health benefits of fresh, home-grown produce before you decide whether to eat produce you've grown yourself in soil that might be contaminated. Be very cautious with what you eat if you are pregnant and be careful what you give young children.

How can I minimise my exposure to soil contamination when I'm gardening?

Here are some simple steps to minimising your exposure while you're gardening.

Cover the garden area with clean materials such as uncontaminated soil, compost, manure or peat moss.

Adjust your soil pH so that it is near neutral; raising pH levels in the soil can help to immobilise metal contaminants and prevent uptake by plants.

Build raised beds with clean soil at least 30 centimetres deep. A layer of landscape fabric will prevent plant roots from entering the contaminated soil below the bed. You can also grow vegetables in pots that contain clean soil or potting mix.

Don't use CCA-treated timber³ for raised beds, because this may contaminate the soil even more.

Don't grow fruit and vegetables directly next to old buildings, where lead levels from old lead-based paint are likely to be highest.

Reduce dust and bare soil surrounding the garden from contaminating produce by maintaining grass or other ground-cover plants.

³ Timber that has been treated with a chemical mix of chromium, copper and arsenic to preserve it.



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Soil Contaminants and Health

This brochure contains information on soil contamination.

It tells you about the ways in which you may be exposed to soil contamination, and about the actions you can take to protect your family's health. Soil contamination results where hazardous substances are either spilled on or buried in the soil or migrate to the soil from a spill that has occurred elsewhere.

How do I find out if my land is contaminated?

The Ministry for the Environment provides useful information if you want to find out if your land may be contaminated. The information is available at environment.govt.nz/facts-and-science/land/

What are the sources of soil contaminants?

Soil quality is affected by many factors, including past and present land use and activities and nearness to pollution sources. Land uses and activities that may cause soil contamination include:

- fuel storage (including service stations)
- chemical manufacturing or storage (including pesticide production)
- power stations
- gasworks
- agricultural use
- large industrial facilities
- timber treatment
- sheep dipping
- historic mining.

Examples of soil contaminants include lead, arsenic, cadmium, mercury, organochlorine pesticides and polycyclic aromatic hydrocarbons.

How can people be exposed to soil contaminants?

You can be exposed to soil contaminants by:

- directly ingesting soil by hand to mouth contact or from unwashed or unpeeled home-grown produce
- inhaling or ingesting dust
- direct skin contact with the contaminated soil.

Soil contaminants may be harmful to your health, depending on:

- the type of contaminant
- the level of contaminant in the soil
- the amount of soil and dust that you have eaten
- your age and weight
- the length of time you've been exposed to the soil.

Young children tend to eat more dust and soil, because they get it on their hands when they crawl or play on the ground and often put their fingers or toys in their mouths. Children with pica may deliberately eat soil.¹

Children are especially vulnerable to harmful health effects, so it is important for parents and caregivers to be aware of the dangers of soil contaminants.

What are the health effects of soil contaminants?

The health effects that may occur vary depending on what soil contaminants are present. Given the large number of contaminants that may be present in soil, a description of their properties and hazards is not possible within the scope of this brochure.

How can I reduce exposure to soil contaminants?

You can reduce the health risk of soil contaminants by reducing the amount of soil and dust that you and your children eat.

Here are some simple steps that you can take.

- Cover contaminated soil with clean soil and grass or ground-cover plants to reduce dust and to keep the soil away from young children. Don't let children play on bare contaminated soil.
- Prevent young children from putting contaminated soil in their mouths.
- Don't put contaminated soil in your child's sandpit.
- Wash your hands and ensure your children wash their hands before eating and sleeping.
- Wash young children's hands often.
- Wash children's outdoor toys often.
- Wash family pets often.
- Remove your footwear before going indoors to avoid carrying soil dust indoors, especially if your household includes babies or young children.
- Mop and dust often, with a damp cloth. A vacuum cleaner (unless it has a HEPA² filter) or a broom may actually spread dust around.

¹ Pica is the persistent eating of non-food substances, such as soil or paint flakes.

² High-Efficiency Particulate Air