

TREADING CAREFULLY

Are old tyres safe to use in the garden? JO IMMIG looks at recent findings that suggest it might be better to give them a miss.

OLD TYRES OFTEN FEATURE IN organic and permaculture gardens, where they are seen as a good way of recycling materials. They are used to protect trees, as small retaining walls for ponds and as 'towers' for growing vegetables like potatoes or rhubarb. But is this practice safe?

Advocates of using old tyres believe that any chemicals in the tyres are 'stable', with only a small potential for them to leach out. But many concerned individuals believe that chemicals can leach out, posing a risk to plants and, consequently, our health.

While there appears to be no definitive research that specifically links the re-use of tyres in home gardens to toxic levels of chemicals in the soil – or the plants that grow in it – this doesn't mean that the practice is safe; rather, that the research hasn't yet been done to find out.

Tyre chemicals

Tyres are made from a combination of numerous chemicals, including petroleum-based rubber, carbon black [a material produced by the incomplete combustion of heavy petroleum products and a small amount from vegetable oil], pigments, antioxidants, accelerators and additives.

A recent study into the use of tyre crumb surfaces (such as pulverised tyres for playground surfaces and mulches) by the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment, does raise some concerns.

This comprehensive study looked at the available scientific data on tyre

chemicals and found that up to 49 chemicals could be released from recycled tyres, including metals and, to a lesser extent, volatile organic compounds. Among the 15 metals that were found to leach from tyres, zinc and iron were detected most frequently and at the highest levels, while lead, barium and chromium were also regularly detected.

There are many variables that impact on the rate at which chemicals leach out of tyres, so absolute statements about chemicals in old tyres being 'locked up', or 'stable', are simply not valid. The age and condition of the tyre affects the potential for chemicals to migrate, as does the soil surface area that comes into contact with the tyre, the soil pH (for example, zinc is known to leach more readily in acidic soils) and the level of biological activity in the soil. Then there are climatic factors, such as exposure to water and sunlight, and whether the tyre is steel-belted or not.

Any concentration of toxic metals, such as zinc, lead or cadmium, in the soil is an important issue for both human and plant health.

Garden worries

The accumulation of metals is also known to vary greatly between species and cultivars of plants. For instance, potatoes tend to accumulate cadmium, as do lettuce and leafy greens, while carrots can accumulate copper and zinc.

Government agencies are reluctant to comment on the issue, but they are clear in their advice for appropriate ways to recycle tyres – and this doesn't include their use in the garden.

The Victorian Environment Protection Authority (EPA) advises that old tyres should not be used to make artificial reefs because of toxicity to fish – which puts paid to the idea of using them in ponds or other water bodies.

These findings should lead gardeners to err on the side of caution in the use of old tyres until conclusive proof of their safety is available. After all, better safe than sorry.

Sources

- Office of Environmental Health Hazard Assessment of California Environmental Protection Agency (2007), 'Evaluation of Health Effects of Recycled Waste Tires in Playground and Track Products': www.ciwmb.ca.gov/Publications/Tires/62206013.pdf
- Paul Alexander & Brian Alloway, Royal Horticultural Society: www.rhs.org.uk/Learning/Research/Projects/heavy_metals_veg.ht
- *The Ecologist* (November 2005), 'Tyre dust: where the rubber meets the road': www.theecologist.org
- Victorian EPA (2007), 'Correct disposal and reuse options for used tyres': www.epa.vic.gov.au **OG**

FEEDBACK

Chemical Watch is a new regular column covering a wide range of issues, from chemical spraying of crops, to toxins in the home environment and in household products. We welcome your comments and feedback.