Lead petrol pollution history traced through Australian lichens & fungi – ABSTRACT

The following is the abstract and key results figure 2 of *Insights into past atmospheric lead emissions using lead concentrations and isotopic compositions in historic lichens and fungi (1852-2008) from central and southern Victoria, Australia,* by Liqin Wu, Mark Patrick Taylor, Heather K. Handley, Brian L. Gulson, published in Atmospheric Environment 139 (2016) 46e55.
https://www.infona.pl/resource/bwmeta1.element.elsevier-0c0850a8-ef72-38a2-b29b-742a38e1a8a2

ABSTRACT

Lead concentrations and lead isotopic compositions were determined in historic central and southern Victoria, Australia lichen* (Cladonia and Usnea) and fungi (Trametes+) samples collected between 1852 and 2008 to evaluate long-term atmospheric lead contamination sources. The data are grouped into four time intervals of 1850-1931, 1932-1984, 1985-2001 and 2002-2008 corresponding to the history of leaded petrol use in Australia. Elevated lichen and fungi lead concentrations and relatively high isotopic compositions from the period 1850-1931 are attributed to lithogenic sources, gold mining activities and early industrialisation. Significant increases in lichen and fungi lead concentrations and concomitant lower lead isotopic compositions correspond to the marked increase in lead emissions from leaded petrol use after 1932. Following the end of leaded petrol use in 2002 lead isotopic composition values 'recover' toward more lithogenic values. However, the lead isotopic composition data indicate that the environmental impact from leaded petrol emissions persists in contemporary samples dated to 2002-2008. Overall, the data reveal that herbarium lichens and fungi from central and southern Victoria can be used as proxies for environmental lead emissions over the past 150 years.

* Lichens absorb most of their nutrients and minerals from the atmosphere and consequently are potential useful biomonitors of atmospheric contamination.
+ Trametes fungi are a wood-rotting genus which mainly uptake trace metals from the atmosphere.