

## Lead isotopic signatures of saprotrophic mushrooms: possible applications in geomycology

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Mushrooms are efficient accumulators of metals but the mechanisms of element uptake and transport from soils to fruit bodies are poorly known. Pb isotopic analyses of environmental samples are considered an efficient tool for tracing the sources of Pb pollution but further applications might be possible. We have analyzed a representative set of four saprotrophic mushroom species collected from four sites with differing sources of Pb pollution. To some extent, the Pb isotopic fingerprints of the fruit-bodies reflected those of the organomineral topsoils. However, at most sites the  $^{206}\text{Pb}/^{207}\text{Pb}$  ratio varied in a rather wide range, suggesting possible Pb uptake from lower soil layers. A detailed study was therefore conducted at a traffic-polluted site where contrasting vertical distribution of  $^{206}\text{Pb}/^{207}\text{Pb}$  ratios was detected in the soil profile. In 19 samples of *Agaricus bernardii* collected from a single plot (10×3 m), the  $^{206}\text{Pb}/^{207}\text{Pb}$  ratio varied between 1.124 and 1.175. In five specimens, the majority of accumulated Pb was undoubtedly transported from topsoil (0–5 cm) characterized by low  $^{206}\text{Pb}/^{207}\text{Pb}$  ratios (1.11–1.13), corresponding with gasoline-derived Pb from traffic emissions. In most samples, however, Pb must have been transported from lower depths. Since the mycelium of *A. bernardii* was not restricted to the topsoil but could be detected both visually and using PCR with specific primers even in a depth of 30 cm, such uptake appears to be possible. At suitable sites, Pb isotopes might therefore represent an interesting tool for tracing the macrofungal uptake and transport of Pb in soils.

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