## Atmospheric metal pollution over the last 250 years inferred from speleothem geochemistry

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concentrations and Lead isotope ratios from two speleothems from the Han-sur-Lesse cave in southern Belgium were measured in order to study the ability of speleothems to act as archives of atmospheric pollution. To address this aim we analyzed trace elemental Al and Pb compositions by LA-ICP-MS and ICP-MS as well as Pb isotopes by MC-ICP-MS. The results help to identify three Pb-enriched intervals: from 1880 to 1905 AD, from 1945 to 1965 AD, and from 1975 to 1990 AD. The speleothem record is consistent with the evolution of atmospheric pollution in Belgium. Lead isotope ratios confirm that coal and gasoline combustion, combined with regional metallurgical activities, were the predominant Pb pollution sources in the stalagmites during the last 250 years. This research underscores the importance of speleothems as a valuable tool for the discrimination between anthropogenic and natural lead contributions in the environment and consequently for quantifying the anthropogenic contribution or determining natural background values in continental settings.