

汞同位素组成示踪汞污染来源

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汞在自然界有 7 种稳定同位素, 分别是 ¹⁹⁶Hg(0.15%)、¹⁹⁸Hg(10.02%)、¹⁹⁹Hg(16.84%)、²⁰⁰Hg(23.13%)、²⁰¹Hg(13.22%)、²⁰²Hg(29.80%)和 ²⁰⁴Hg(6.85%)。汞的 7 个稳定同位素的质量数跨度较宽(196-204 amu), 决定了汞在自然界可能会存在同位素分馏现象。为了确定不同污染来源的汞是否存在汞同位素组成的差异, 我们选择了 2 个不同污染类型的湖泊, 对其沉积物进行了详细的采样, 并选择了汞矿区、金矿区、炼锌区和背景区土壤样品。对这些样品汞同位素组成进行了详细的测定, 为了进行对比, 我们还对汞矿石和锌矿石汞的同位素组成也进行了分析, 结果见图 1。

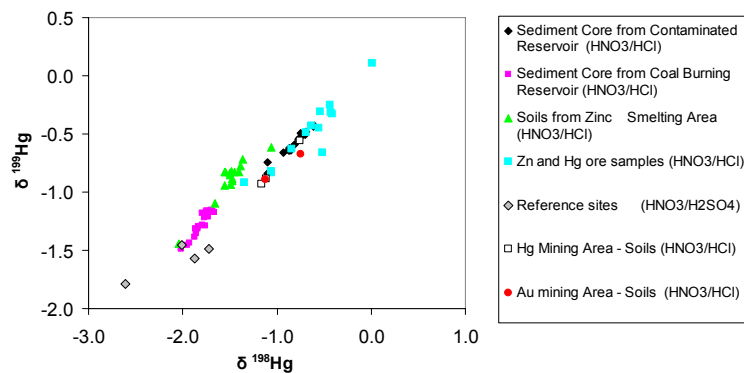


Fig. 1 Mercury isotopic ratios of sediment and soil samples collected from different areas

我们初步研究结果表明, 不同污染类型的沉积物和土壤样品中汞的同位素组成之间有明显的差异, 证明我们有可能用汞同位素组成数据来示踪汞污染的来源。

关键词: 汞污染; 同位素; 污染源示踪

Using Mercury Isotopic Ratios to Trace the Sources of Mercury Contamination

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Mercury isotopic ratios from sediment and soil samples collected from different contamination sources areas were studied. We obtained significantly differences of mercury isotopic ratios between samples collected from different areas. The preliminary results revealed that mercury isotopic ratios could be a powerful tool to attribute the sources of mercury contaminations in the environment.