

A Hg stable isotope study of wet and dry deposition to the Pinet peat bog.

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Gaseous elemental mercury is the dominant form of mercury in the atmosphere. Its oxidation into gaseous and particulate forms is thought to drive atmospheric mercury wet deposition to terrestrial ecosystems. The importance of gaseous elemental and oxidized mercury dry deposition is less well understood. We examined Hg mass balance and Hg stable isotope composition in a forested peat bog ecosystem, the Pinet bog in the French Pyrenees. We find that isotope signatures of living sphagnum moss, recently accumulated peat, and atmospheric Hg forms allow us to distinguish wet from dry Hg deposition. Sphagnum covered by UV-transparent and opaque glass surfaces, which eliminate wet deposition, confirm the observations. Similar isotope effects have been previously observed in a forested ecosystem. Together these findings suggest that Hg isotopes can be used to quantify Hg wet and dry deposition to terrestrial ecosystems.