Goldschmidt 2023 Abstract
https://doi.org/10.7185/gold2023.20060

Mercury in the active layer of Barton Peninsula soils, King George Island, Antarctica.

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The global biogeochemical cycle dictates that mercury (Hg) contamination may end up very far from its original source, meaning that not even the most pristine continent on the earth is exempt from the consequences of its presence. Furthermore, human footprint in Antarctica is increasing, with anthropogenic activity being especially concentrated in the ice-free areas of the continent, which are the habitats of the majority of the terrestrial species. The chemical characterization of Antarctic soils should be of priority focus in order to monitor its pristine environment. Frozen soils prevail in most of the ice-free areas of the continent and studies about their content in trace elements are scarce. The geographic location of the Western Antarctic Peninsula places permafrost near its climatic boundary and its thaw may lead to the remobilization of trace elements, namely specific key inorganic pollutants such as Hg. Although some studies have addressed the presence of this metal in surface layers, knowledge about its presence in deeper layers is still unknown.

The content and bioavailability of Hg was determined in sediments of Barton Peninsula, King George Island. This peninsula is located on the southwest corner of the largest island of the South Shetland Archipelago and home to a scientific research station operated by South Korea. It is an area with low anthropogenic pressure when compared to Fildes Peninsula across Maxwell Bay, where several countries operate year-round research stations.

The total Hg concentrations in sampled soils ranged from 2.6 - 35 ng g^{-1} with an average of 11.7 ng g^{-1}. The concentration does not increase with depth in the direction of the frozen layer and values are within the range reported by other authors for the same region. Samples collected from sediments close to late lying snow patches, presented slightly higher Hg concentrations, with an average of 16.2 ng g^{-1}, demonstrating the impact of atmospheric deposition and of multiyear snow as a concentration agent. Also, sequential extractions were performed to assess Hg bioavailability and results showed that Hg mobility is strongly influenced by the soils characteristics.