

A Biological Mechanism for the Reduction and Emission of Mercury from Soil

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Mercury emissions from soil are a well-known contributor to the global mercury cycle, and connected to environmental factors affected by climate change. One of these factors, water inclusion, has previously been linked to physio-chemical process in soil. However, research in our lab has suggested that this process is driven by biological processes. Specifically, we looked at the stimulation of mercury emissions in the presence of water in context of a series of experiments in which some samples were autoclaved to eliminate microbial activity. Autoclaving completely shut down the water-stimulated emission of mercury from soil. Additional experiments included the addition of LB Broth to stimulate microbial activity; and the addition of Levofloxacin, a broad spectrum antibiotic, to suppress activity. Mercury emissions were measured using a Teflon® dynamic flux chamber and a Tekran 2537X Mercury Analyzer. The results of these experiments will be presented in detail.