

## 2.033 Laboratory study for gaseous mercury uptake by atmospheric water.

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Abstract:

Mercury is a notorious pollutant causing severe nerve diseases. This metal has a semi-volatile nature under the STP condition, therefore, it is emitted to atmosphere as gaseous elemental mercury (GEM) from variety of sources. Because of the emissions and long atmospheric life time mercury spreads globally, consequently ubiquitous in our environment. The current global model for mercury cycle assumes that the atmospheric oxidation is a predominant pathway for the removal of GEM from the atmosphere. To the best of our knowledge, however, none of heterogeneous uptake of GEM by atmospheric water, such as cloud, fog, and rain droplets, has been evaluated to date. For more accurate understanding of the mercury cycle, the evaluation of this process is necessary. We conducted laboratory experiments to evaluate GEM uptake by atmospheric water. The experiments were carried out using a 3 L glass cell. 500 mL of acidified (pH 3-5) water by sulfuric acid, which represents atmospheric water, transferred into the cell. Approximately  $50 \text{ ng m}^{-3}$  of GEM gas mixture was then continuously introduced into the open space above the solution in the cell. After a definite time period the exposure was stopped and the solution was analyzed for mercury concentration. At this presentation preliminary results of these experiments will be presented.