Investigating sources of gaseous oxidized mercury in dry deposition at three sites across Florida, USA

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Hg in wet deposition in Florida is high compared to the rest of the United States, however there is little information on Hg dry deposition. From July 2009 to August 2010 passive samplers for the measurement of air Hg concentrations, and surrogate surfaces for measurement of Hg dry deposition, were deployed at locations near Ft. Lauderdale (DVE) and Pensacola (OLF), and in Tampa (TPA). These samplers were co-located with air quality monitoring stations put in place to collect data for development of a statewide total maximum daily load (TMDL) for mercury (Hg). All sampling locations were within 15 km of 1000 MW electricity generating plants (EGPs) and major highways. The overall objectives of this work were to: 1) investigate the utility of the passive sampling systems in an area with low and consistent air concentrations, 2) estimate dry deposition of gaseous oxidized Hg, and 3) investigate potential sources. Using 24 hour, biweekly, and seasonal Hg observations, criteria air pollutants, and meteorological data collected at each site, the potential sources of Hg deposited to surrogate surfaces were investigated. Using these data and event analyses, *in situ* oxidation of Hg appears to be a process contributing to deposition. The greatest deposition was measured at TPA where the sampling location was surrounded by highways. Hg imported into the area associated with long range transport is contributing to deposition measured at all sites in the spring. Local EGPs contribute GEM to the DVE site however the GOM contribution is uncertain. Based on the data collected with the Tekran® and passive sampling systems, we suggest that different chemical forms of Hg are associated with these sources.

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