

Variation of Atmospheric Mercury in Minamata Area. What are the main causes?

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The results of long-term continuous mercury monitoring in ambient air in the Minamata coastal area using a Lumex RA-915+ Zeeman mercury analyzer are presented. The data obtained throughout all seasons of 2003-2005 show noticeable variation of the background mercury concentration from 1 to 4 ng/m³. Similar variations are reported in the literature. Possible causes of the variations could be associated with a number of factors, such as (1) the influence of external atmospheric conditions (pressure, temperature) on the mercury absorption coefficient; (2) interference of some volatile compounds in non-selective AF and AA spectrometers readings; (3) changes in the efficiency of mercury sorption on analyzers' ducts and traps due to the air composition (e.g. humidity); (4) gas-phase and heterogeneous reactions in the atmosphere; (5) processes induced in the air-surface interface by meteorological parameters (e.g. insolation); (6) dependence of the mercury flux on meteorological parameters (precipitation, temperature, pressure, etc.); (7) long-range transport of mercury from remote sources. The potential effects of these factors on the mercury monitoring data are discussed.