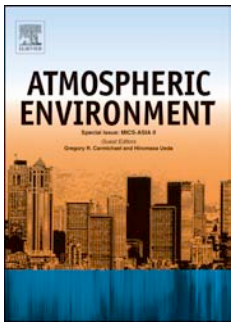
Accepted Manuscript



Wet and Dry Deposition of Mercury in Bermuda

Susan W. Gichuki, Robert P. Mason

PII: S1352-2310(14)00042-9

DOI: 10.1016/j.atmosenv.2014.01.025

Reference: AEA 12703

To appear in: *Atmospheric Environment*

Received Date: 15 September 2013

Revised Date: 8 January 2014

Accepted Date: 10 January 2014

Please cite this article as: Gichuki, S.W, Mason, R.P, Wet and Dry Deposition of Mercury in Bermuda, *Atmospheric Environment* (2014), doi: 10.1016/j.atmosenv.2014.01.025.

Wet and Dry Deposition of Mercury in Bermuda

Susan W Gichuki and Robert P Mason*

Departments of Marine Sciences and Chemistry, University of Connecticut, Groton, CT 06340

*Corresponding author: 860-4059129; Robert.mason@uconn.edu; 860-4059153 (fax)

Abstract

Elevated concentrations of mercury (Hg) in fish from around Bermuda and fish consumers promoted a study of the atmospheric inputs of Hg to the ocean in the region. The average concentrations of total mercury in rain (THg; volume weighted mean 4.7 ng L^{-1}) and in aerosols (particulate Hg; HgP; 9.5 pg m^{-3}) were found to be comparable to other coastal locations removed from local sources at similar latitudes in North America. The estimated wet and dry deposition fluxes of Hg suggest that Bermuda is impacted by anthropogenic sources. A mass balance for Hg across the air-sea interface for the region around Bermuda also suggests that atmospheric wet plus dry deposition is less than estimated gas evasion of elemental Hg, indicating that the ocean is a net source in the region. This likely reflects historic elevated deposition of Hg to the North Atlantic, as has been suggested by historic water column data and from Hg biogeochemical modeling.

Keywords: mercury, wet deposition, dry deposition, aerosols, flux, elemental mercury, air-sea exchange