

## **A review of mercury pollution in South Africa: current status.**

[Walters CR](#), [Somerset VS](#), [Leaner JJ](#), [Nel JM](#).

### **Source**

Natural Resources and the Environment, CSIR, Stellenbosch, South Africa. [cwalters@csir.co.za](mailto:cwalters@csir.co.za)

### **Abstract**

The present paper is a review on the status of mercury (Hg) as a pollutant in South African aquatic ecosystems. Spatial patterns of Hg distribution and bioaccumulation in water resources were investigated by collecting and analyzing multimedia samples for physiochemical and Hg-species determination from 62 sampling sites. The data presented showed a wide range in concentrations, which was expected given the array of environmental parameters, water chemistry and sources of Hg. Generally, higher Hg concentrations were measured in environmental compartments impacted by the major anthropogenic Hg sources which, in South Africa, are largely represented by emissions from coal-fired power stations (i.e. Olifants and Upper Vaal WMAs) and artisanal gold mining (i.e., Inkomati WMA). Ancillary water quality parameters (e.g. pH, temperature, DOC, EC and nutrients) were measured and regressed with the measured Hg concentrations to determine which environmental parameters most influenced regional Hg concentrations. The TotHg (sed) and DOC concentrations were identified as important factors controlling TotHg (aq), while TotHg(sed) were correlated to TotHg (aq). This result is indicative of the combined effects of sediment settling and resuspension in the aquatic environment. In contrast, MeHg (aq) was not correlated to DOC. MeHg<sub>invert</sub> were correlated to MeHg (sed), while MeHg (fish) were correlated to MeHg (aq) and water quality variables (chlorides--Cl(-) and electrical conductivity--EC). A steady progress has been made in Hg research in South Africa. However, despite the substantial knowledge about Hg toxicity, there are still considerable knowledge gaps on the fate and transport of Hg. Hence, further environmental and human health studies are proposed.