

Variations of Elemental Concentration in PM 10 and PM 2.5

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ABSTRACT

A National Programme to address air pollution has been initiated by Central Environmental Authority (CEA) of Sri Lanka under the Clean Air 2000 programme funded by the Asian Development Bank. The Atomic Energy Authority supports this programme through the implementation of the IAEA/RCA Project on "Improved Urban Air Quality Management" and two sampling sites are being operated at the Air Quality Monitoring Station and AEA premises.

The AEA has the capability for XRF analysis of 12 elements in air particulate matter. Concentration of 28 elements analyzed by ED-XRF in USA, for fine particulates were used for principal component analysis (PCA) and positive matrix factorization (PMF) to identify the source contribution. The major sources seem to be the same for both sites, ie: vehicular emissions, soil, sulphate and sea salt contribution.

Back trajectories with HYSPLIT- 4 Dispersion modeling were used to identify the transport pathways of observed sharp spikes in the time series of Sulphate concentration. Multiple methods (CPF and NPR) are available to combine the compositional data with meteorological data to explore the directionality of specific sources or source areas that are contributing to the particulate matter (PM) Concentration observed at the sampling site.