

**THE APPLICATION OF ENVIRONMENTAL RADIOACTIVE  
TRACER INVENTORIES IN SOIL TO STUDY WET DEPOSITION OF POLLUTANTS**

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The natural radionuclide <sup>210</sup>Pb and the anthropogenic one, <sup>137</sup>Cs, are present in particle form in the atmosphere attached to the same aerosols which contain the bulk of pollutant sulphur and nitrogen. When scavenged from the atmosphere by precipitation, they are readily filtered by the surface horizons of soil, and their inventories can be used to measure the spatial variation in aerosol and wet deposition within a region due to orography or land use averaged over decades (physical half-life of <sup>210</sup>Pb and <sup>137</sup>Cs are 22 and 30 years, respectively). Measurement of such variations by conventional methods is very difficult in many cases especially at remote sites. Application of the radioactive tracer technique to deposition studies in several sites in Scotland, Sweden and Northern Iran has lead to results which found to be consistent with deposition estimates obtained from long-term continuous record of cloud frequency and meteorological variables, and also in good agreement with model deposition estimates. The technique is operationally easier to carry out than the direct measurement by artificial collectors over extended period of time, and is particularly valuable in quantifying aerosol and wet deposition processes at sites where conventional methods are not applicable.