

TRACE METAL CONTAMINATION OF SOIL IN PATANCHERU INDUSTRIAL DEVELOPMENT AREA, ANDHRA PRADESH, INDIA

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Industrialization and urbanization are the two main causes for the increasing concentrations of heavy metals in soil and water. Patancheru industrial area is one such example where the soil and water in the entire area are contaminated due to industrial effluents. Environmental geochemical studies were carried out to find out the extent and distribution of trace elements in and around the industrial area. Soil samples were studied from different depths to delineate the source of elements as natural or anthropogenic. 350 soil and water samples were studied for their trace elements viz. As, Cd, Se, Ba, Cr, Ni, Cu, Co, Zn, Sr, V, Fe, Mo, Pb, Ti by using ICP Mass Spectrometer.

The studies reveal that arsenic concentration was abnormally high at some places and was found upto 25000 ng/ml in surface water. Some of the well water samples in residential area also indicate 700 ng/ml of arsenic though the permissible limit is only 50 ng/ml. Selenium, which is normally not present in water, was also found to be very high than the permissible limit prescribed by WHO. Soil samples in the study area were having high concentrations of As 77 mg/l, Ba 1350 mg/l, Cd 200 mg/l, V 376 mg/l, Cr 306 mg/l, Cu 570 mg/l, Mo 65 mg/l and Fe 6-9%. Such high concentrations of these heavy metals cannot be derived from the surrounding granite rocks and therefore, the source of these elements is anthropogenic only. Some of the trace elements such as As, Cd, Se, Ni and Pb are highly toxic in nature and need regular monitoring. Geochemical maps showing the distribution of heavy metals in soil and water are prepared for the study area. Remedial measures to protect the health of the residents in the area are also discussed in this paper.