

**STATISTICAL APPROACH TO INVESTIGATE BASELINE
CONCENTRATION OF MAJOR/TRACE ELEMENTS IN
SOILS IN AND AROUND MEDAK AND SANGAREDDY,
MEDAK DISTRICT, ANDHRA PRADESH**

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Abstract

A study was carried out in and around Medak and Sangareddy to determine the baseline levels of ten major (Si, Al, Ca, Fe, K, Mn, Mg, Na, P and Ti) and fourteen trace elements (As, Ba, Co, Cr, Cu, Mo, Ni, Pb, Rb, Sr, V, Y, Zn and Zr) on ninety-five representative soil samples comprising of topsoil (0-25 cms) and subsoil (90-115 cms). The reference or the baseline values for different elements in the study area were calculated following two procedures (1) as the expected range (ER) = $GM/GD^2 - GM \times GD^2$, where GM is the geometric mean and GD is the geometric deviation, and (2) probability plots taking the concentrations between 5th and 95th percentiles. The data sets were studied by means of histograms in order to verify the general assumption, which states that trace element distribution in soils follows the lognormal law. Results reveal that the concentrations of Mo and K show normal distribution while the concentrations of Co, Zn, Zr and Na show lognormal distribution, the concentrations of Ca, Cu, Sr, Ti and V show neither normal nor lognormal distribution in both the cases of topsoil and subsoil. Logarithmic transformation was found to have over transformed most of the data sets, changing their skewness from positive to negative values.

Keywords: Baseline concentrations, Major/trace elements, Histogram, Probability plots, Medak, Sangareddy.