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LEAD DISTRIBUTION IN SOIL OF OKAHANDJA AREA IN CENTRAL NAMIBIA

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The Regional Geochemical Sampling Survey of the Okahandja Map Sheet (1: 250 000) area was conducted from 2003 to 2004, where a total of 2717 soil and stream sediment samples were collected. The aim of the project is to establish a National Baseline Geochemical Database of elements in the anthropogenically undisturbed geosphere, within the Okahandja map sheet. The baseline data is utilised in several fields, such as mineral exploration, land use planning, agriculture, medical geology, and others. This study analysed a total of 763 soil samples, collected at a density of 1 sample/10 km, with a composite sample obtained from a minimum of five sample pits at a depth of 25 cm and screened through a coarse fraction of mesh size (< 2 mm) while a fine fraction was obtained through (<180 µm) mesh. Wooden and plastic digging tools were utilized to avoid contamination during the surveying process. A homogenized portion of each 180 µm fine fraction sample was milled to < 64 µm size before analysis, and QAQC duplicates and standards routinely inserted into batches at every 20^{th} interval. Concentrations of elements including lead (Pb) were determined using a Niton Energy Dispersive X-Ray Fluorescence Spectrometer, for a duration of 150 seconds at the Geological Survey of Namibia laboratory in 2018.

Spatial distribution patterns of lead were generated using ESRI ArcGIS software and interpreted in conjunction with geological maps and sample site description data. Natural and anthropogenic activities such as rock weathering; soil erosion and agrochemical usage contributes to the concentration of lead in the area, which was found to range from 5.89 ppm to 34.49 ppm.