

## **Gradations in Concentration of Heavy and Mineral Elements with Distance and Depth of Soil in the Vicinity of Auto Mechanic Workshops in Sabon Gari, Kaduna State, Nigeria**

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**Abstract :** The concentration levels of six heavy metals (Cd, Cr, Fe, Ni, Pb, and Zn) and two mineral elements (Ca and Mg) were determined in soil samples collected from the vicinity of two auto mechanic workshops in Sabon-Gari, Kaduna state, Nigeria, using Atomic Absorption Spectrometry (AAS), in order to compare the gradation of their concentrations with distance and depth of soil from the workshop sites. At site 1, concentrations of lead, chromium, iron, and zinc were generally found to be above the World Health Organization limits, while those of Nickel and Cadmium fell within the limits. Iron had the highest concentration with a range of 176.274 ppm to 489.127 ppm at depths of 5 cm to 15 cm and a distance range of 5 m to 15 m, while the concentration of cadmium was least with a range of 0.001 ppm to 0.008 ppm at similar depth and distance ranges. In addition, there was more of calcium (11.521 ppm to 121.709 ppm), in all the samples, than magnesium (11.293 ppm to 21.635 ppm). Similar results were obtained for site II. The concentrations of all the metals analyzed showed a downward gradient with an increase in depth and distance from both workshop sites except for iron and zinc at site 2. The immediate and remote implications of these findings on the biota are discussed.

**Keywords :** AAS, heavy metals, mechanic workshops, soil, variation

**Conference Title :** ICCEMS 2015 : International Conference on Chemical, Environment and Medical Sciences

**Conference Location :** Miami, United States

**Conference Dates :** March 09-10, 2015