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### Effect of Environmental Pollution on Susceptibility of Sesquioxide-Rich Soils to Water Erosion

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This work assessed the effect of environmental pollution on runoff erosivity and its contribution on susceptibility of sesquioxide-rich soils to water erosion within South-eastern Nigeria. Sources of pollutants which could possibly affect the chemical composition of runoff; hence its pH, were first determined by remote sensing and field observations. Rain and runoff water samples collected within the study area were analysed for their physicochemical compositions. Geotechnical and physical properties of the soil samples which were collected within the study area were determined following standard procedures, while geochemical composition of their fine fractions was ascertained using X-ray diffraction and X-ray fluorescence analytical techniques. An empirical method was then employed to determine the effect of change in chemical composition of runoff on the susceptibility of the studied soil to water erosion. This was achieved by subjecting soil aggregate samples to slaking, dispersion, and dissolution tests in aqueous solutions of varying hydrogen ion concentration which was prepared using dilute sulphuric and nitric acid, ammonium hydroxide, and deionised water. Results from the experiment shows that the fine particle fractions of the soils are chiefly composed of iron and aluminium sesquioxides. The slaking of these sesquioxide-cemented soils is not affected by the variations in chemical composition and hydrogen ion concentration of the aqueous solutions, but rather by the plasticity index of the soils. However, dispersion and dissolution of the soil aggregates were dependent on variations in chemical composition and hydrogen ion concentration of the aqueous solutions. It was therefore concluded that environmental pollution has a significant contribution to runoffs erosivity, thus its potential effect on susceptibility of soils to water erosion.

#### Biography:

Chukwuebuka Emeh is a research assistant in the department of geology of geology, university of Nigeria, Nsukka. He has his BSc. in geology and MSc. in engineering/environmental geology from the University of Nigeria, and is currently a doctoral candidate in the same department. He has about 5 years research experience in the field of engineering and environmental geology which has produced 2 projects and four international journal publications. He is currently working on causes and control of erosion within erosion prone sites in South-eastern Nigeria. He also assists in teaching of undergraduate students and in research works within the department.