

Geo-statistics and heavy metal indexing of surface water around Okaba coal mines, Kogi State, Nigeria

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SUMMARY : Because of the role of surface water and indeed water in our daily lives, this research was carried out to evaluate the impact of coal mining. Consequently, ten (10) dry season water samples were collected and analysed for major ions, physiochemical and heavy metals. The data acquired were subjected to factor /cluster analysis. The heavy metals were further evaluated using anthropogenic factor (AF), heavy metal pollution index (HPI) and metal index (MI). The factor/cluster analysis suggested significant heavy metal inputs into the water due to coal mining and related activities. The relatively enhanced level of these heavy metals was also due to the acidic nature of the environment. NO_3 and SO_4 were also high for the same reason, particularly SO_4 . AF result suggested higher input from mining with respect to all heavy metals, particularly Cd, Zn, Ni and Fe. The HPI though below the critical value of 100 was above the half mark while the MI implies water contamination. Geo-statistical and heavy metal indices key to data evaluation. Mining companies need to put in control measures to forestall surface water contamination. The communities and regulators also need to be sensible and responsible to what happens in their environment.

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