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An Assessment of the effects of oil and gas activities on the bottom sediments of Nun River

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This is an assessment of the effects of oil and gas activities on the Bottom sediment of Nun River, Niger Delta. It involved seasonal analyses of seventeen (17) sediment samples from the Nun river and two control sediment samples.

The sediments were inspected for heavy metals and organic hydrocarbon constituents that may have been sourced from the oil and gas activities around the area. Total organic carbon (TOC) in the Nun River's bottom sediment matrix ranged between 0.05% -0.25% and 0.07% - 0.43% during the wet and dry season respectively. Oil and grease values were of the mean concentration value of 6.39mg/kg in the wet season and 5.25mg/kg for the dry season. Also, total hydrocarbon contents (THC) varied from 1.80 – 3.90mg/kg (mean value of 2.92mg/kg) in the wet season and 1.00mg/kg – 2.40mg/kg (mean value = 1.72mg/kg) in the dry season. The mean concentrations of TPH in sediment in both seasons were markedly lower than the target value of 50.0mg/kg. Zinc contents ranged from 29.12 -45.09mg/kg with a mean value of 38.68mg/kg in the wet season and 22.26 – 51.83mg/kg (mean = 35.69 mg/kg) in the dry season. Lead levels varied from 1.57-7.59 mg/kg (mean = 3.88mg/kg) and from 5.28mg/kg – 8.79mg/kg (mean 35.69mg/kg) in the wet and dry season respectively. Nickel levels in the wet and dry seasons were insignificantly different and averaged 4.66mg/kg and 5.00mg/kg respectively. Also, Chromium levels in the sediment were relatively low with concentration ranging from 0.09mg/kg - 1.490mg/kg and 0.07 - 0.21mg/kg during the wet and dry season respectively. Cadmium concentrations were found varying from 0.41 to 0.98 mg/kg (mean = 0.71mg/kg) and from 0.45 to 0.73mg/kg (mean = 0.57mg/kg) during the wet and dry seasons respectively. Cd levels were found exceeding its Target values of 0.80mg/kg at points SD4, SD5, SD9, SD11 and SD14 in the wet season. However, its observed concentrations at all points in the wet season were found below Cd target value.