

Impacts of Produced water discharges on Bonny Estuary: Informing Policy and Public awareness

OLUWASEUN UZOMA OYESANYA

University of Nigeria, Nsukka, Nigeria.

Presenting Author: oluwaseun.oyesanya@unn.edu.ng

The study assesses the impact of discharged produced water on the river and sediment of Bonny Estuary, Niger Delta, with a significant focus on informing the public and influencing policy decisions. Seasonal analyses were conducted on twenty-two (22) water and thirty-four (34) sediment samples from the Bonny Estuary. The physicochemical properties, including hydrocarbon content and heavy metals were examined in the water samples, while sediments were inspected for heavy metals and organic hydrocarbon constituents originating from the discharged produced water. Utilizing principal component and cluster analyses, index of geoaccumulation, and pollution load index plots, the degree of pollution, source and distribution of contaminants were determined. Results indicate that the Bonny water is contaminated with nitrates, phosphate, nickel, ammonia, and phenols during the dry season, while nitrate, sulphate, phosphate, total nitrogen, total petroleum hydrocarbon (TPH), and heavy metals such as zinc, and lead are prevalent in the rainy (wet) season. Similarly, sediments exhibit contamination with benzene, toluene, ethyl benzene, xylene (BTEX), Polycyclic aromatic hydrocarbon (PAH), TPH, phenols, and heavy metals in both seasons. These findings underscore the significant influence of produced water discharges on the composition and quality of water and sediment of the Bonny Estuary, emphasizing the urgency for informed public awareness and policy interventions. Researches such as this can help regulatory bodies make adjustments to maximum permissible limits/concentration of some of these produced water constituents.