

عنوان مقاله:

Physicochemical Profile and Evaluation of Microbial Load in Soil Around Open Waste Dumpsites in Owerri, Southeastern Nigeria Service Unavailable

محل انتشار:

فصلنامه روشهای تصفیه محیط، دوره 10، شماره 4 (سال: 1401)

تعداد صفحات اصل مقاله: 7

نویسندگان:

J.N. Iheanacho - Lagos Outstation laboratory, National Veterinary Research Institute, Vom, Plateau State, Nigeria

N.M. Bala - Department of Microbiology, Kaduna State University, Kaduna, Nigeria

S.A. Idowu - Department of Microbiology, Federal University Of Technology, Akure, Nigeria

C. Ejike-Okongwu - Lagos Outstation laboratory, National Veterinary Research Institute, Vom, Plateau State, Nigeria

A.A. Amaechi - Tropical Disease Research Unit Department of Zoology, Imo State University, Owerri, Imo State, Nigeria

خلاصه مقاله:

The indiscriminate dumping of solid waste and the lack of proper waste management systems have been an issue threatening environmental and health conditions in most developing countries. This study assessed the physicochemical parameters and microbial load of selected open dumpsite soils in Owerri Imo State. The physicochemical and microbiological qualities were determined using established methods. Results obtained showed that EC values ranged from 103.10 ± 5.48 to $128.88 \pm 19.09 \mu\text{S/cm}$. The pH value ranged from 5.45 ± 2.10 to 6.78 ± 1.00 . At Nekede dumpsite, the phosphate value varied from 33.10 ± 11.01 - $46.50 \pm 6.09 \text{ mg/kg}$, Nitrate, 8.30 ± 4.01 - $10.70 \pm 5.09 \text{ mg/kg}$ and Sulphate, 12.10 ± 6.03 - $20.70 \pm 13.10 \text{ mg/kg}$, compared to Chukwuma Nwaoha dump site with Phosphate 44.00 ± 11.70 - $90.01 \pm 9.44 \text{ mg/kg}$, Nitrate, 10.80 ± 5.50 - $20.00 \pm 8.03 \text{ mg/kg}$ and Sulphate, 17.00 ± 5.81 - $40.55 \pm 10.33 \text{ mg/kg}$. In both dumpsites, the Phosphate, Nitrate, and Sulphate levels were significantly ($P < 0.05$) higher in the soils from the different sampled locations compared to the control sites. The exchangeable cations: calcium, sodium, magnesium, and potassium across the sample areas also varied from 35.160 ± 11.2 - $37.620 \pm 11.9 \text{ mg/kg}$; 8.720 ± 3.91 - $12.770 \pm 8.22 \text{ mg/kg}$; 10.340 ± 5.01 - $17.860 \pm 6.10 \text{ mg/kg}$ and 0.660 ± 0.01 - $1.940 \pm 0.88 \text{ mg/kg}$ for Nekede while Chukwuma Nwaoha recorded 40.90 ± 17.08 - $44.560 \pm 19.02 \text{ mg/kg}$; 10.500 ± 5.02 - $13.018 \pm 6.91 \text{ mg/kg}$; 12.140 ± 4.99 - $16.040 \pm 3.09 \text{ mg/kg}$ and 32.600 ± 11.59 - $43.640 \pm 14.80 \text{ mg/kg}$ respectively. The most dominant microbial isolate was Staphylococcus sp., (14%) while the least isolate was Acinetobacter sp. (3%). For the THB and THF, the average was 3.77 ± 1.48 and 2.61 ± 2.06 ; 4.97 ± 2.174 and $2.13 \pm 0.914 \text{ CFU/mL}$ for Nekede Area. The THB and THF average value for Chukwuma Nwaoha Area was 3.01 ± 1.17 and 3.85 ± 2.81 ; 2.55 ± 1.814 and $1.79 \pm 1.884 \text{ CFU/mL}$ respectively. The presence of potentially pathogenic microorganisms identified in the dumpsite soils is a major source of public health risk. The study underscores the need for proper waste management systems to forestall environmental pollution. The indiscriminate dumping of solid waste and the lack of proper waste management systems have been an issue threatening environmental and health conditions in most developing countries. This study assessed the physicochemical parameters and microbial load of selected open dumpsite soils in Owerri Imo State. The physicochemical and microbiological qualities were determined using established methods. ... Results obtained showed that EC values ranged from 103.10 ± 5.48 to $128.88 \pm 19.09 \mu\text{S/cm}$. The pH value ranged from 5.45 ± 2.10 to 6

کلمات کلیدی:

Dumpsites, Physicochemical properties, Microbial load, Imo State

لینک ثابت مقاله در پایگاه سیویلیکا:

