

Assessment of Heavy Metals in Ground Water of Angul-Talcher Industrial Zone of Odisha

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Ground water contamination by the heavy metals has become a striking problem for last 2 decades as a result of discharge of industrial effluent, untreated domestic waste and increasing use of agrochemicals. Determination of heavy metals, such as Cd, Cu, Pb, Fe, Zn and Ni in ground water sources from 6 locations of Angul-Talcher industrial zone was carried out. It is found that heavy metal concentration was higher in rainy season as most of the heavy metals have entered into the aquifer during rainy season. The values of Cd, Pb and Zn are within the desirable limit for the drinking water whereas concentration of Fe is found beyond the desirable limit throughout the investigation period. Though Cu concentration at times is higher than the desirable limit but all the values are within the permissible limit.

KEYWORD

Ground water, Water quality, Heavy metals.

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Participation and Dependency of Forest Dwellers in Forest Management- A Comparative Study of Bankadaha and Neora Valley Forest

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Forest is an important natural resource not only in respect of its' economic facilities but also biological, hydrological services of environment. Forest plays an important role in daily livelihood of forest villagers. They depend on the forest in various ways for their earnings, fuel, fodder, medicine. They work as forest protector or as eco developer in Joint Forest Management (JMF) programme under Forest Department. In this study the dependency of forest villagers on forest and their role in forest management is studied through socio-economic survey in respect of 2 different forests of West Bengal- Bankadaha forest of Bankura and Neora Forest of Darjeeling district. These 2 forests represent different biological and climatological scenario. But both of the forests are protected and managed through Forest Protection Committee (FPC) or Eco Development Community (EDC). The comparative study shows that Neora Valley forest is more resourceful than Bankadaha but the later is proved to be more beneficial to forest villagers than the earlier.

KEYWORD

Forest Protection Committee (FPC), Eco Development Committee (EDC), Dependency, Joint Forest Management (JFM).

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Electrically Heated Transition Metal Oxide Catalyst for Cold Start Emission Reduction From Gasoline Engine

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Cold-start emissions represent the greatest concentration of emissions from today's catalyst equipped vehicle. The existing catalytic converters are successful in reducing emissions after engine warm-up. The catalyst is not active during this warm-up period due to its low operating temperature. Emission reduction is possible by heating and changing the composition of catalyst used in automobile. This paper deals with the potential of catalytic systems with electrically heated metal oxide catalyst and the presentation of thermal analysis provides insight into the catalytic system. In this investigation, an attempt is being made to study the pollution from multi-cylinder SI engine, by developing improved catalysts. It is found that the electrically heated catalytic (EHC) converter with copper oxide catalyst when used with existing catalytic converter, the hydrocarbons (HC) and carbon monoxide (CO) emissions are reduced considerably.

KEYWORD

Cold-start, Electrically heated catalytic converter, Copper oxide catalyst.

A Study on Physico-Chemical Parameters of Thengapattanam Estuary, South West Coastal Zone, Kanyakumari District

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Thengapattanam estuary is located in the south west coast of India 10 km from Marthandam. It is one of the minor estuary in Kanyakumari district, Tamil Nadu formed by the confluence of Tampirabarani river (locally known as Kuzhithurai) with Arabian sea in between Thengapattanam and Eraiummanthurai (7°53' N latitude and 77°07' E longitude). The present study has been undertaken to enlighten the influence of domestic sewage, agricultural run off and coconut retting wastes on the water quality parameters of this estuary during October 2014 to August 2015. The study area recorded maximum rainfall during northeast monsoon and minimum during summer season. Air and surface temperature showed summer peaks and monsoonal troughs. Temperature variations were associated with the seasonal changes of other physico-chemical parameters. Salinity was high during summer season and low during monsoon season. But maximum salinity was recorded at mouth region (station 5). The pH remained alkaline throughout the study period in all the stations. DO concentration showed a wide range of variation. It reached its peak during the monsoon season BOD was high during summer season and low during monsoon. Concentration of nutrients nitrite, nitrate, phosphate, etc., showed significant spatial and temporal variations and high values were observed at the polluted stations.

KEYWORD

Physico-chemical parameters, nutrients, Thengapattanam estuary.

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Removal of Cationic Dye (Basic Green) Using Raw and Modified *Eichhorniacrassipes* : Adsorption Kinetics, Isotherms, Thermodynamics and Mechanism Studies

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This study deals with the adsorption potential of raw and NaOH modified *Eichhorniacrassipes* (water hyacinth) for the removal of basic green dye from aqueous solution. Batch experiments were conducted to investigate the effect of influencing parameters, such as pH, adsorbent dose, initial dye concentration, temperature and contact time on dye removal. The adsorbent was characterized using scanning electron microscopy and Fourier transform infrared spectroscopy. Maximum dye removal efficiency of 86.9 % and 91.9% were obtained for raw and NaOH modified adsorbents respectively for the removal of basic green dye with an adsorbent dosage of 3 g/L and 1.5 g/L, at initial dye concentration of 100 mg/L in an optimum time of 90 min at 40°C. Adsorption isotherm models including Langmuir, Freundlich and Temkin and adsorption kinetics models, namely Pseudo-first order, Pseudo-second order and Elovich were studied. The adsorption data well fitted with Langmuir and Freundlich isotherm for raw and modified adsorbents, respectively. Pseudo-second order kinetic model was identified as a suitable fit for both raw and modified adsorbents. The analysis of thermodynamic parameters (change in enthalpy, change in entropy and change in Gibb's free energy) indicated that the adsorption process is spontaneous and endothermic in nature.

KEYWORD

Adsorption, Basic green dye, *Eichhornia crassipes*, Kinetics, Isotherms, Mechanism.

Identification of Ground Water Potential Zones Using Remote Sensing, Geographical Information System Techniques : A Case Study in Pullampeta Mandal, Y.S.R. District

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An integrated survey based on satellite image interpretation corroborated with limited field checks was carried out with a view to evaluate groundwater conditions in the Pullampeta environment, through hydrogeomorphological studies using remote sensing data. A total of 3 thematic maps, such as geological, geomorphological and hydromorphological maps were prepared based on image interpretation studies with limited field checks and analysis of available database. The lithological map portrays distribution of several rock types and structural maps shows the structural frame work of the area. The geomorphology map depicts the various landforms evaluate through timely by geomorphic process and is a basic input to evaluate resource potential associated with the landforms. The hydromorphological map provides a basis for potential and non potential areas for groundwater development based on geomorphological, geological and structural information.

KEYWORD

Pullampeta, hydrogeomorphological, Cudd-apah super group.

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