

The Preliminary Characterisation of Flyash From Jamadoba Thermal Power Station (JTPS), Jharia Coalfields, Jharkhand

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The demand for power generation in India has increased rapidly in recent time. It means more power grade coal will be utilised in the thermal power generation to meet the increasing energy demand. Indian coal being high in ash content of about 35%-45%. In the process of thermal power generation the country is producing high amount of flyash. Due to high amount of flyash generation in the coal-fired power plant, it creates a serious problem of disposal in relation to environmental problems. This paper deals with utilization of flyash to vegetation programmed in abandoned open cast mines of Jharia coalfields, Dhanbad, Jharkhand. Its physical properties are beneficial in vegetation purposes in abandoned opencast mines of Jharia Coalfields.

Particulate Matter Exposure in Hospitals of Urban City Located in Northern Central India

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Particulate matter is one of the most important indoor air pollutants involved in a number of adverse health effects, such as premature deaths and increased mortality of infants and other parts of sensitive population. The health effects caused by air pollutants may range from biochemical and physiological changes to difficulty in breathing, wheezing, coughing and aggravation of respiratory and cardiac conditions. Particulate mass concentrations were measured using Grimm aerosol spectrometer, model no. 1.109 inside the hospital, located at roadside areas. The main objectives of the study were to measure the indoor air quality in hospital with special emphasis on particulate matter (PM₁₀, PM_{2.5} and PM_{1.0}). Carbon dioxide concentration and air exchange rate were also measured. The indoor average concentration recorded in 5 hospitals for PM₁₀, PM_{2.5}, and PM_{1.0} were 298.38 µg/m³, 94.52 µg/m³ and 45.98 µg/m³ in general ward where as 174.28 µg/m³, 71.68 µg/m³ and 41.49 µg/m³ in doctors cabin and 99.59 µg/m³, 52.81 µg/m³ and 41.49 µg/m³ in private ward, respectively. PM₁₀, and PM_{2.5} average concentrations were found 2.15 and 1.17 times higher from the NAAQS whereas 4.31 and 3.54 times higher from the WHO standards. On analyzing maximum particulate concentrations in different ward of each hospital, higher

percentage was found ranging between general ward – private ward > general ward- Doctor cabin > Doctor cabin and private ward. Such results are the alarming signals for patients coming to the hospitals in emergent need and checkup. Therefore, proper intervention and policies should be developed to control the indoor air pollution especially in hospitals.

Environmental Dose Analysis From Background Radiation in the Environmental Gamma Monitoring Stations at Kalpakkam

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Continuous dose rate recorded by the network of environmental monitoring stations at Kalpakkam is analysed for estimating the site dose profile with respect to the local climatology. The gamma dose rate recorded comprises of the natural background as well as the dose due to the designed release of Ar-41 gaseous activity from Madras Atomic Power Station. The annual dose rate data at various stations, its seasonal and daily variation, the wind sectorwise distribution and the summary of the measured data are described in this paper. Contributions from ^{41}Ar is differentiated from the dose record and annual dose due to the plume is tabulated for each station. Correlation with the wind direction is presented so that the data set can serve as a bench mark for plume dispersion model validation.

Status of Soil Microbial Biomass in Reclaimed Mine Degraded Land and Non-Mining Areas- A Review

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Soil microbial biomass is the living and active part of soil organic matter, which is re-established after disturbance of the land. Study of recovery time of microbial biomass is important for the development of self-sustaining ecosystem in mine degraded land. Increase in soil microbial biomass and organic carbon contents increases the functional diversity and stability of ecosystem. Several methods have been proposed for the estimation of microbial biomass carbon, however, chloroform fumigation and extraction with 0.5 M potassium sulphate is still most popular. Several researchers emphasized that ratio of microbial biomass carbon/ soil organic carbon should be used as indicator of reclamation successes and higher the ratio, better is the quality of restored ecosystem. Microbial biomass varies with depth, season, altitude, type of tree species, vegetation cover, soil quality and management practices.

Application of Photocatalysis for the Degradation of Endocrine disrupting Chemicals: Endosulphan and Lindane

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Photocatalytic degradation is a promising technology for the degradation of endosulphan and lindane. The presence of acetone in the reaction mixture retards the reaction because of the competition for hydroxyl radicals between pesticide and acetone. The pH 7 was chosen as optimum with degradation efficiency of 95% (endosulphan) and 98% (lindane) which coincides with the zero point charge of the catalyst used (pH 6.5-7.5). Second order reaction kinetics was observed for both endosulphan and lindane (5, 7.5 and 10 ppm). Calculated rate constant values (k_{obs}') for initial endosulphan concentration of 5, 7.5 and 10 ppm were 0.0465, 0.0467 and 0.0934/ppm/min, respectively. While for kinetics performed at 5, 7.5 and 10 ppm initial lindane concentrations rate constant values (k_{obs}') were 0.0264, 0.0626 and 0.05/ppm/min, respectively.

Study on Leaching Effect of Ash With Reference to Jindal Super Thermal Power Plant in Tamnar, District, Raigarh, Chhattisgarh

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Thermal power plant industries produce million tonne flyash (after burning of coal) each year which consists of fine particles of unburnt raw materials and some trace elements. Generally, most common practice regarding management of this ash is making slurry of it with water and disposing in ash dyke. Although it is a temporary process, due to leaching of metals, surrounding ground water and soil may get contaminated. So, proper maintenance and regular examination of the ground water and soil quality is necessary. This paper is based on the examination of leaching effect of ash with reference to Jindal Power Ltd., which has a well planned ash dyke to receive the ash slurry from the plant premises. Two villages, namely Regaon and Saliabhantha surrounds the ash dyke and parameters have been tested with reference to these 2 locations.

Mitigation of Earthquake Induced Environmental Hazards

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Earthquakes are natural hazards, which almost always strike without warning and can topple cities in seconds, leaving rubble and tragedy in their wakes. Though, we are helpless to stop the occurrence of earthquakes and even to predict them exactly, we can definitely reduce the extent of loss of human life, particularly after the earthquake, by protecting the survivors from environmental hazards. Due to non-existent sanitation and water supply systems, an outbreak of diarrhea, cholera, typhoid, gastroenteritis, hepatitis, etc., is always suspected after a major earthquake. It could be double-blow, which the survivors of the worst earthquake may find difficult to tide over. Therefore, there is a strong need to generate public awareness about post- disaster health issues. The paper briefly describes the various issues related to post-quake environmental hazards and essential ingredients of emergency health care.

Theri-Soil Reclamation Using Tank Silt In Tuticorin District

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Red sandy dunal soils of Tamil Nadu is called Theri soils. They occupy about 20,000 ha. Tuticorin district has the largest area 11,200 ha. Different interpretative systems have indicated that these are not suitable for agriculture. The main drawback of the soil is its high permeability. However, no attempt has been undertaken on this soil to suggest the various amendments so as to make the soil cultivable to farmers. In this study, tank silt is used to amend the soil and the different physical parameters which make the soil better for cultivation are estimated and their interrelationships are presented.

Comparison of Technologies on Economical Aspects for Municipal Solid Waste Processing

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The main objective of the present study was to evaluate the anaerobic digestion and composting process for disposal of municipal solid waste (MSW) on economical aspects.

Economic evaluation includes 3 major costs : (i) Capital cost, (ii) operation and maintenance cost and (iii) reinvestment cost. The calculation was based on cost and quantity of materials required for each technology. These materials are civil works, mechanical equipment, labours, etc. Comparison of technologies was based on benefit cost ratio (BCR). The change in BCR was based on the benefits and expenditure from different technologies. The results showed that capital investment was 4.4 times higher in anaerobic digestion compared to composting process but reinvestment cost was 6.95 times higher in composting process. Composting process was better than anaerobic process because BCR was 4.74 as compare to 2.48 in anaerobic digestion.

Environmental Impact of Coal Beneficiation and its Mitigation Measures

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India's coal demand is expected to increase with the setting up of more and more coal based power projects and to meet the demand from metallurgical and other industries. Indian coals being of drift origin contain as high as 40% ash in some cases. The coal is, therefore, required to be washed in coal washing plants so that the ash content is brought to an acceptable level, before being utilised by the industries. However, coal washing processes, unless properly handled, has the potential of generating large quantities of pollutants and may cause pollution of air, water and soil. Coal washing, therefore, has become an important area of concern from the economic and environment point of view. In the present paper, a review of the environmental impacts of coal washeries and the possible mitigation measures has been presented.
