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Commentary

Waste Generation by using Tracers of Water Contamination and Leachate Percolation

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DESCRIPTION

Municipal Solid Waste (MSW) generation has been rising significantly over the past 30 years, and will continue overall due to population expansion, urbanization, and industrialization processes. To investigate the potential effects of leachate percolation on groundwater quality, samples of groundwater and leachate were taken from the landfill site and its surrounding area. Cl^{-}, NO^{-3}, SO_2^{-3}, NH^{4+}, phenol, Fe, Zn, and COD levels that are relatively high in groundwater are likely signs that leachate percolation has had a major impact on groundwater quality.

They proved to be tracers for the groundwater contamination. At present, the overall safely disposed ratio of the collected MSW is reported at approximately 78% in 2010, and there are mainly three types of MSW disposal methods including landfill, composting and incineration. The characteristics of air pollutants and greenhouse gases discharge substantially among different municipal solid waste disposal methods. The analysis of existing air pollution problems are associated with municipal solid waste collection, separation, and disposal processes.

The effect of depth and distance of well from pollution source was also investigated. The presence of TC and FC in groundwater warns for groundwater quality and thus renders the association which aquifer the unreliable for domestic water supply and other uses. Although some of the remedial measures are suggested to reduce further groundwater contamination via leachate percolation, the present study demands for the proper management of waste.

The groundwater and leachate samples were analyzed to evaluate the concentration of different physico-chemical parameters, such as heavy metals (Cd, Cr, Cu, Fe, Ni, Pb, and Zn), and microbiological parameters (Total Coliform (TC) and Faecal Coliform (FC)). Currently, more number of air pollutants (such as greenhouse gases, odorous gases, PCDD/Fs, heavy metals, PM, etc.) are been discharged from waste disposal and treatment processes have become one of the new significant emerging air pollution sources, raising great concerns about their detrimental effects on surrounding ambient air quality and public health. This is because global warming warrants particular attention throughout the world.

The utilizing of particular compounds that includes chelating agents, hydroxides, sulphides, silicates, carbonates, and phosphates. In the end, the solid matrix's structure keeps the stabilized contaminants bonded inside of it. This technique uses the processes of precipitation, adsorption, microencapsulation, and detoxification. The microencapsulation enables the microscopic entrapment of contaminants inside the structure of the solidified matrix, whilst hazardous components such as hydroxides, sulphides, and phosphates may precipitate and form more stable compounds.

This includes municipal waste collection, transfer and transportation, treatment and disposal, material recovery, legislation, enforcement and control. SPM, CO, CO_2, and CH_4 levels near landfill fires exceed regulatory limits. Landfill fires in the study area can endanger everyone's health. Landfill workers, who are regularly exposed to dense smoke and may be linked to climate change, are particularly at risk. Better practices need to be developed regarding the operation and discharge management of open landfills for municipal solid waste.

CONCLUSION

The municipal solid waste is frequently dumped in the open in developing nations, causing pollution from landfill leachate discharge and gaseous emissions. Municipal solid waste is converted into a value-added product known as biochar, which can be utilized for resource recovery, pollution reduction, and the production of biochar from any biomass. In order to prevent additional contamination of surface water, groundwater, and soil, the government should do sanitary landfill.

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