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Unlined drains and deterioration of groundwater resources affecting public health

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In Delhi most of the drains carrying sewage waste are unlined and heavily overloaded. Additionally, indiscriminate disposal of domestic and municipal solid waste to the open spaces and improper management of landfill sites result in leaching of the residual nitrate, organic pollutants, many heavy metals and pathogenic microbes. Consumption of polluted groundwater causes diarrhea, eye irritation, nausea, vomiting, stomach irritation and other severe health effects like methemoglobinemia to the infants due to excess nitrate in the drinking water. Prolong consumption of groundwater contaminated with heavy metals and some organic pollutants in the body can lead to cancer, kidney damage, bone disease, hair loss and reproductive abnormalities. Lysimetric studies have been conducted in the soil and sewage samples of the Shahadra drain to examine the leachability of the sewage pollutants from a point source. Shahadra drain is a major unlined drain of Delhi that carries 436MLD of loads with the stretch of 5.943km from the catchment area of 6099.00 hectares to the Yamuna River. In the study, leachate samples show high amount of electrical conductivity, nitrate, calcium hardness, total hardness and also certain coliform bacteria, as compare to WHO standard permissible limits. The occurrence of coliform bacteria in the leachate indicates the possibility of percolating the pathogenic microbes into the groundwater. The pathogenic microbes in the drinking water may cause intestinal illness like giardiasis and cryptosporidiosis. Presence of such contaminants in the leachate reveals that harmful pollutants are infiltrated to the groundwater aquifers and alters the groundwater chemistry.

Biography

Tanu Jindal has completed Ph.D. in Ecotoxicology from the Department of Zoology, Delhi University. She is the director of Amity Institute for Environmental Toxicology, Safety and Management and Advisor and Mentor of Amity Institute of Environmental Science, Amity University Noida, Uttar pradesh, India. She has published more than 15 papers in reputed journals and has written a book on Persistence of an Organophosphate Coumaphos- Development of procedures to stabilize coumaphos in vats and methods for its waste disposal. She has presented nineteen research papers in National conferences and eighteen research papers in international conferences.

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