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Ensemble Bio-Bridge

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Abstract

Water pollution is the major issue in the today's world and mainly in few states in India. Water pollution leads to sever health hazards and loss in crop/soil productivity. According to NASA report on 15th of August 2015, the ground water level is reduced day by day in Punjab & Haryana region and the present amount of ground water is contaminated by using excess of fertilizers and polluted water for the irrigation purpose in Punjab. Selected site Kala Sanghian drain, which is originates from Bullandpur village in Jalandhar and goes to ChitiBein drain. The Kala Sanghian drain is proving "cancerous" for scores of villages located along its banks. The situation has turned alarming in the past 10 years. GIS and GPS mapping is to be done for pollution monitoring & awareness campaign. A tributary of the satluj, the drain is wreaking havoc with the human and livestock. The drain carrying toxic effluents, discharged by industrial units in the Jalandhar industrial area, the drain joins Chitti Bein which subsequently merges with the satluj. In the study area, the major issue for the stern concern is that, untreated sewage water is used for the irrigation purpose by the most of the farmers. Another point is the working efficiency of the settled advanced sewage treatment plant is near to zero, where the treated sewage water is dump into the same drain streamlet. Consumption of polluted groundwater has left a large number of people suffering from various diseases, including cancer. Results shows the land irrigated by the polluted sewage water contain 535 ppm (Sulphur), 153ppm (iron) and also few amount of heavy metal above the permissible limit. By the use of Phytoremediation and bio-filtration concept, we proposed the bio-bridge which is made up of floating grass sandwich between the two corn cob block. This method is cost effective, user friendly, novel and sustainable approach for the sewage water treatment. Results show 80%-90% reduction in nitrate level, 60% reduction in BOD and COD level, calculated by bio concentrate factor and translocation factor. Project deals with the social and health aspects by checking the pollution level in the vicinity of the drain. Awareness is done regarding the methods and present status of study area by using community capsule.

Keywords: Cancerous; Phytoremediation; BOD; COD