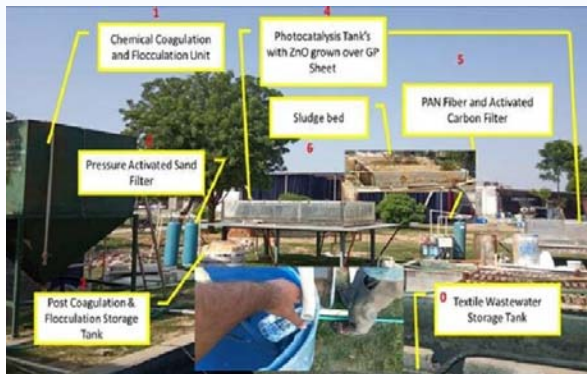


Better Indian water management system to treat toxic textile effluents



Pic: PIB / Dr. Shantanu Bhattacharya, IIT Kanpur

Researchers from the Indian Institute of Technology (IIT) Kanpur, Malaviya National Institute of Technology in Jaipur and MBM College in Jodhpur have developed an improved wastewater treatment solution that can completely reuse industrial dye wastewater from textile industry, eliminating its toxicity and making it suitable for domestic and industrial usage.

The technology can reduce water treatment costs and facilitate the reuse of the water in dry regions.

The current three-stage treatment process for wastewater—comprising primary, secondary and tertiary treatment—is unable to treat toxic industrial wastewater. The stand-alone advanced

oxidation process (AOP) treatment technique for colour and odour properties in industrial effluents (dye-based) may be insufficient to meet set government standards and is also limited due to the high cost of AOPs involving continuous supply of chemical reagents.

This is because it cannot remove the synthetic industrial dyes and the effervescent colour and odour, which have a long-lasting carcinogenic and toxic effect on the ecological and especially aquatic life. To remove this toxicity, an upgraded solution with the AOP technology is the need of the day.

The group of research has developed a modified the AOP solution. It consists of the primary dosing step, followed by the sand filtration step, another AOP and subsequent carbon filtration step. It eliminates the need for the conventional primary, secondary and tertiary processes resulting in maximum colour removal and meets the inland water discharge standards.

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The department of science and technology's (DST) Water Technology Initiative (WTI) and the Indian National Academy of Engineering (INAE) supported the development of this technology at a pilot level at the at Textile Industrial Park in Jaipur in collaboration with Laxmi Textile Prints based in the city, an Indian government press release said.

It is a direct replacement of the existing treatment plant processes and consists of a low-cost solution of dye adsorption on acid-modified soil followed by a photochemical reaction step within a photocatalytic visible light filter and a unique carbon and PAN nano-mat fibre filtration process. Having been set up on a pilot basis, it remediates industrial wastewater.

The technology has resulted in the recuperation of 50 per cent of the treatment cost incurred from conventional processes for water treatment (especially due to the high cost of sludge disposability) in the water-scarce regions of Rajasthan. Further, scaling up of this plant to 100 kilolitres /day capacity to meet the current industrial requirement is underway with automated plant operations.

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