

109 D. (6) Pharmaceutical industrial effluent treatment through Plasma process for improved recycling

Preamble:

To upgrade the existing wastewater treatment plant in the Pharmaceutical Industry by improving the Activated Sludge Process (ASP) using process modeling and implementing a high throughput plasma-based advanced oxidation system to generate high-quality treated water to reuse the treated water for all secondary purposes which consumes nearly 50 KLD of freshwater.

Objectives:

The project will involve a lab-scale demonstration (5 KLD) with the following broad

- To improve the existing ASP through BioWin® process modelling to generate reusable quality treated water.
- To quantify the degradation of pharma pollutants in wastewater using a high throughput cold atmospheric plasma discharge-based advanced oxidation system.
- To evolve a treated water reuse plan.

Progress: April – November 2024

- The KSCST and IISc team visited KAPL in August 2024 to discuss the interim analysis results with KAPL officials.
- Three sets of ETP water sampling have been done and analyzed for 18+ parameters. The analysis showed that existing treatment facilities couldn't treat nitrogen and organic matter properly.
- Using the analyzed water quality data, flow data, and ETP dimensions, Modelling is initiated using "Bio-win" software.
- LCMS analysis of ETP inlet and outlet was conducted to identify pharmaceutical compounds. Analysis results detected the Antibiotics both in the inlet and outlet of the ETP.



Water samples collected from ETP

Executive Committee: For Information