

## **Abstract**

### **Treatment of Water-Based Paint Process Wastewater**

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This project examines the treatment of the wastewater generated during the manufacturing process of paint at a local paint manufacturing plant. The aim of the project is to identify feasible options for the treatment of the wastewater in order to achieve compliance with the discharge standards as specified by the Environmental Management Authority (EMA).

Analysis of the wastewater showed that the concentration of zinc (Zn), chromium (Cr) and lead (Pb) is below the EMA's standards. The total solids (TS) content is very high (approximately 1700 mg/l) and this and the biological oxygen demand (BOD) and the chemical oxygen demand (COD) have exceeded the EMA's standards. The BOD/COD ratio of the wastewater is just around 0.3 indicating that the wastewater may contain toxic or slowly biodegradable compounds and may require an acclimated population of microorganisms for its stabilisation. Based on these characteristics, a suitable wastewater treatment system for the plant should include coagulation and biological treatment/advanced oxidation.

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Observation of the work practices in the plant indicates that a waste minimisation audit may significantly improve the quality of wastewater being generated. The project also looks at various waste minimization options that could be used to improve the quality of the wastewater. An audit should be carried out prior to designing the system as it can possibly impact on the cost of the wastewater treatment system, the type of processes to be used in the design and the capacity of the system.

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