

# Treatment of Vehicle Wash Wastewater by Fenton Process and its Recycling †

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**Abstract:** Many vehicle wash centers are functioning in the state of Kerala, India, and a huge quantity of wastewater is generated at these service stations. Though various treatment methods are available to treat such wastewater, the majority of the service stations do not have any treatment facility, and the untreated wastewater is ultimately discharged off. This causes serious pollution problems. This study aims to treat vehicle wash wastewater and make it reusable using the Fenton process, an advanced oxidation process. Fenton process involves a catalytic reaction between ferrous ion ( $\text{Fe}^{2+}$ ) and hydrogen peroxide ( $\text{H}_2\text{O}_2$ ) to produce hydroxyl radicals. Wastewater samples were collected from a vehicle wash station in Kochi, Kerala, and characterization was done for various parameters. Factors affecting the Fenton Process were identified and optimized using Response Surface Methodology (RSM) for the percentage removal of turbidity, chemical oxygen demand (COD), and oil & grease. The results show that the Fenton process effectively removes contaminants from vehicle wash wastewater, making it fit for recycling.

**Keywords:** vehicle wash wastewater; Fenton process; response surface methodology article.

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## Conflicts of Interest

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