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## **A STUDY ON THE REMOVAL OF CONTAMINANTS FROM SECONDARY TREATED MUNICIPAL WASTEWATER BY SOLAR PHOTOCATALYSIS**

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### **Abstract**

The aim of this work was to study the effectiveness of photocatalysis in the removal of contaminants from secondary treated municipal wastewater, on a batch scale. The samples were collected from the outlet of the secondary clarifier in the municipal wastewater plant located at Al Khoudh, Muscat, Sultanate of Oman. The influences of TiO<sub>2</sub> catalyst loading and solar radiation exposure time were investigated for the removal of COD and total Coliforms. 60% removal of COD was achieved with a catalyst loading of 350 mg L<sup>-1</sup> after 4 hours of solar radiation exposure. 0 % survival of total Coliforms was reached at a catalyst loading of 150 mg L<sup>-1</sup> after four hours of solar radiation exposure. It was observed that there was an increase in the concentrations of SO<sub>4</sub><sup>2-</sup>, PO<sub>4</sub><sup>2-</sup>, NO<sub>3</sub><sup>2-</sup> and Cl<sup>-</sup> ions and this trend was observed with increasing photocatalyst concentration. Variation in sample pH was negligible. The data analyzed showed that this method is effective for the reduction of the organic load and total Coliforms in waste water, which is significant to note as it is based on the utilization of freely available solar energy throughout the calendar year in the region.

*Key words:* COD, photocatalyst, solar radiation, suspension, total Coliforms

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