

# SOLAR PHOTOCATALYTIC OLIVE MILLS WASTEWATER TREATMENT

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Around 30 million m<sup>3</sup> of OMW are produced annually in the Mediterranean countries, causing significant negative environmental impact on the whole ecosystem because of its special chemical characteristics such as low pH and high organic and phenolic compounds contents combined by seasonal localized production.

Considering the minimum use of energy and chemicals, solar photocatalysis which use solar irradiation along with a semiconductor photocatalyst to produce highly oxidative species, appears to be a promising approach to treat olive mills wastewater (OMWW) in situations where efficiency and cost of paramount importance.

The degradation of organic and phenolic compounds in OMWW was investigated under solar or artificial UV source and by using suspended or immobilized TiO<sub>2</sub> as photocatalyst. The degradation efficiency was determined by measuring the reduction in both total carbon and phenolic content.

The degradation efficiency was found to be highly dependent on the catalyst loading, the combination of TiO<sub>2</sub> usage with other chemicals (ozone and hydrogen peroxide) and the light intensity.

In all experiments, the degradation of phenolic compounds was found to be much higher than the reduction in carbon content which implies the transforming of complex organic compounds to shorter chain organics rather than complete degradation.