

Treatment of olive mill wastewater using advanced oxidation processes

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30 million m³ of olive mill wastewater (OMW) are produced annually in the Mediterranean countries as by-product of olive oil extraction processes [1]. This huge amount of OMW contains high concentrations of organic and phenolic compounds that represent a significant environmental problem and requires practical management and treatment solution [2]. In this work, the degradation of organic and phenolic compounds in OMW using different chemicals (O₃, H₂O₂ and TiO₂) with solar irradiation under controlled conditions using solar photoreactor (image 1) were studied. The degradation degree was represented by the reduction in total carbon (TC) content and phenolic compounds concentration. Regardless the type of the used chemical, the results showed that solar irradiation improves the degradation degree and the reduction in phenolic compounds concentration was much higher than the reduction in carbon content. The optimum results was 14% reduction in TC, 70% reduction in phenolic compounds concentration and complete color removal using 1g/hr ozone and 7% H₂O₂ combined with solar irradiation during the experiment time of 3 hours.

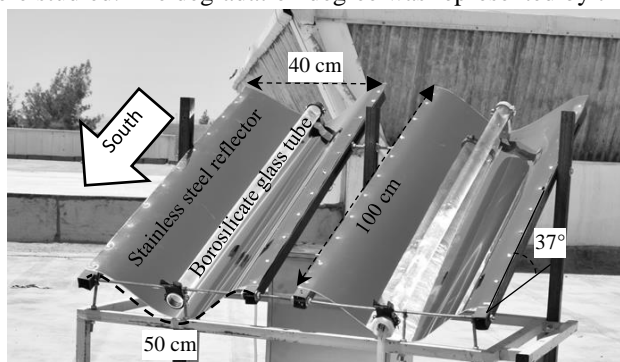


Image 1: The solar photoreactor used in the study

Keywords: Olive mills, Wastewater, Photocatalysis, AOP

References

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