

Reducing Environmental Impact of Olive Oil Production in Sakaka City Using Combined Chemical, Physical, and Biological Treatment

Authors : Abdullah Alhajoj, Bassam Alowaiesh

Abstract : This work aims to reduce the risks of discharging olive mill waste directly to the environment without treatment in Sakaka City, KSA. The organic loads expressed by chemical oxygen demand (COD) and biological oxygen demand (BOD) of the produced wastewater (OMWW) as well as the solid waste (OMW) were evaluated. The wastes emitted from the three-phase centrifuge decanters was found to be higher than that emitted from the two-phase centrifuge decanters. The olive mill wastewater (OMWW) was treated using advanced oxidation combined with filtration treatment. The results indicated that the concentration of COD, BOD, TSS, oil and grease and phenol was reduced by using complex sand filtration from 72150, 21660 10256, 36430, and 1470 mg/l to 980, 421, 58, 68, and 0.35 mg/l for three-phase OMWW and from 150562, 17955, 15325, 19658 and 2153 mg/l to 1050, 501, 29, 0.75, and 0.29 mg/l, respectively. While, by using modified trickling filter (packed with the neck of waste plastic bottles the concentration of the previously mentioned parameters was reduced to 1190, 570, 55, 0.85, and 0.3 mg/l, respectively. This work supports the application of such treatment technique for reducing the environmental threats of olive mill waste effluents in Saudi Arabia.

Keywords : two-phase, three-phase, olive mill, olive oil, waste treatment, filtration, advanced oxidation, waste plastic bottles

Conference Title : ICEPR 2018 : International Conference on Environmental Pollution and Remediation

Conference Location : Paris, France

Conference Dates : October 29-30, 2018