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Effects of Upgrading at Khirbet Assamra
on Water Quality of Effluent and Environment

By

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Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Environmental Sciences, Faculty of Science, Yarmouk University- Jordan.

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2002
Abstract

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An upgrading project, which started in 1994 and was completed in April 1997 aimed to improve the quality of the effluent discharged from (KTP).

The following main goals of this study are to determine the effect of upgrading on the quality of effluent and whether the current effluent quality can be used in agriculture.

Forty-eight samples were collected during the period of (January 2001 to April 2001) from effluent and influent as well as from second train. These data together with the reported data of seven year reported by WAJ were subjected to statistical analysis.

The obtained results indicate that the values of $\text{BOD}_5$, COD, TSS, $\text{NH}_4^+$ and Cl$^-$ exceeded the values for the Jordanian standard to be discharged into stream and water bodies, while the concentrations
of the heavy metals are within the limits given by the Jordanian standard. Therefore, the effluent is just suitable for irrigation of fodder and pastures.

Canonical analysis results indicate that the atmospheric factor such as temperature, atmospheric pressure, sunshine and rainfall contribute significantly for the canonical correlation between the variables of the effluent and influent.

Multiple regression (Stepwise selection) has been introduced for the selected dependent variables (BOD₅, COD, NH₄⁺, PO₄³⁻, Cl and H₂S). The obtained models stress the great influence of certain chemicals that arise from organic origin such as (NH₄⁺, PO₄³⁻, total nitrogen, COD and ABS/surfactant) as well as the influence of meteorological condition. Hence the meteorological condition beyond control, the decreasing of organic load and increasing retention time would improve the quality of water.

The H₂S odor which still arise from Assamra WSPs with other air pollutants from industrial activities in the area may contribute to certain symptoms related to respiratory system such as fatigue, shortness of breath, cough and, throat irritation.