



Evaluation of the treatment efficiency of the central treatment unit (CTU) of the industrial area of Larisa(Greece)

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ABSTRACT

The aim of the present study was the evaluation of the treatment performance of the central treatment unit (CTU) of the industrial area of Larissa, located at central Greece (Thessaly region). The operation of CTU was monitored continuously during the period December 2008–February 2010 through periodic sampling from the inlet and the outlet of the treatment plant. The routine chemical analysis conducted in the inlet and outlet samples included pH, conductivity, chemical oxygen demand (COD), biological oxygen demand (BOD₅), total solids (TS), total suspended solids (TSS) and total dissolved solids (TDS) determinations. In selected samples several other measurements were conducted, such as oils and fats determination, color, chlorides content, total nitrogen (TN), ammonium nitrogen, nitrates, phosphorus content (as o-phosphates), SAR index and boron content. The evaluation of the treatment performance was conducted by comparing the characteristics of the outlet samples with the characteristics of the inlet samples and with the respective legislation limits regarding the disposal of treated wastewater in Larisa prefecture. From the results, it was revealed that significant improvement of all physicochemical properties of the wastewater occurs after the treatment. However, the treatment performance cannot be assigned as satisfactory. Several of the measured parameters were found higher than the respective legislation limits in the majority of the tested samples, including COD, BOD₅, Cl⁻, TSS, whereas conductivity was much higher than the respective limit in all the tested samples. The stricter supervision of the individual industries in order them to comply with the regulatory guidelines and the conduction of necessary modifications (upgrading) of selected sub-units in the facility of CTU are thought to be the key factors for the further improvement of CTU performance. It should be mentioned that most of the proposed changes, regarding the CTU facility, have been nowadays fulfilled and moreover, most of the individual industries have complied with the respective legislation limits after the continuous control of their wastewater characteristics, resulting in substantial improvement of the obtained results.

Keywords: Industrial wastewater treatment; Disposal; central treatment unit; Industrial areas; Treatment performance; Wastewater's quality monitoring

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