WSTA 15th Gulf Water Conference
Water in the GCC, The Role of Technology in Effective Water Management
28–30 April 2024, Doha, Qatar

Wastewater industrial database for total nitrogen in Shuaiba area in Kuwait

A. Al-Haddad*, M.E. Ahmed, H. Abdullah, A. Al-Matouq, A. Abusam

Kuwait Institute for Scientific Research, Safat, Kuwait, email: ahadad@kisr.edu.kw

A B S T R A C T

A research study was carried out to collect data on the quality and quantity of 17 petroleum industrial wastewater from different sources in Kuwait over a period of one year as well as developing a database of such characteristics and attributes using the geographic information system (GIS) technique. During the field visits, specially designed field surveys were submitted to the owners of industrial facilities in Shuaiba industrial areas in Kuwait. In this study, Wastewater samples were collected and analysed on a monthly and biweekly basis from 17 petroleum factories in Shuaiba industrial areas. This paper targeted assessment of total nitrogen in the raw wastewater for factories of the Shuaiba industrial area. The field wastewater data indicated the presence of slightly acid to slightly alkaline (5.7–12.9), reduced to oxidized environment (–410 mv–538 mv) and freshwater to brackish water (333 µS/cm–33,090 µS/cm). The laboratory results revealed that total nitrogen concentrations for wastewater of 17 factories ranged between 0.003 mg/l and 150 mg/l. The mean values of total nitrogen concentrations for wastewater of 17 factories except Kuwait Lube Oil Company meet the maximum limit (65 mg/l) set by KEPA for irrigation water purposes. The mean value of quantities of wastewater generated from 17 factories was found 62,280 m³/week. The large quantities of raw wastewater generated from these factories can be used safely as irrigation water with respect to total nitrogen concentrations.

Keywords: Wastewater; Field survey; Laboratory results; Petroleum and nitrogen; Sample collection

* Corresponding author.