

ABSTRACT**The Characterization of Environmental Contaminants in Brewery Effluents****Erouscilla Patricia Joseph**

Environmental standards play an important role in maintaining the quality of our natural environment. This is even more significant when dealing with industrial effluent discharges. This investigation is geared towards the analysis of the type, source and path of contaminants and their effects with regards to brewery effluents. This work was necessary to provide an independent and unbiased assessment of the state of the environmental quality for this particular industry, thereby enabling the assessment of effluent compliance with local environmental standards. The major effluent streams examined were the Brewhouse, Packaging Plant, and the combined effluent leaving the brewery. The parameters investigated included pH, temperature, biological oxygen demand (BOD), total suspended solids (TSS), hexane extractable material (HEM), ammoniacal nitrogen, phosphorus, chemical oxygen demand (COD), chloride, and the heavy metals chromium, copper, lead, zinc, and nickel. Results have indicated that none of the parameters investigated for the combined discharge are compliant with the proposed standards, with the exception of the heavy metal concentrations. These results are significant because they indicate that with an average BOD values over 700 mg/L and COD values of over 3000 mg/L the organic content of the effluent discharged is present in such high concentrations that

its decomposition may severely decrease the amount of oxygen available to aquatic organisms inhabiting the discharge site. High phosphorus levels of over 15 mg/L and nitrogen levels over 10 mg/L also contribute to algal blooms and eutrophication. In addition, excessive HEM concentrations of over 12000 mg/L in the brewery effluent may lead to problems in wastewater treatment and result in the corrosion of concrete. The high temperatures, of over 35°C, in the effluent discharged may also negatively affect the metabolic activities of the organisms at the discharge site and may have significant ecological impact. Some of the recommendations offered to assist in the remediation of the problem include improved recycling techniques, effluent pre-treatment, and the adoption of in-plant quality criteria standards.

KEY WORDS: industrial waste; environmental pollution; wastewater analysis.