An Investigation of Water Resource Management in the Beverage Industry

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According to studies, industrial water use comprises production processes, auxiliary processes, kitchen use, and outdoor use. Reducing industrial water use is dependent on the implementation of administrative, engineering, mechanical, and human controls. The objectives of this research were to assess the water use of a Soft Drink Plant; determine the water use ratio for a two-year period; and determine the plant's compliance with local and international regulations for wastewater discharge. We also determined the level of success of implementing a water minimisation plan, whether there was an improvement in the Water Use Ratio, and the compliance of the industry with local and international discharge regulations. The sequential transformative strategy was used to collect and analyse data so as to ascertain water usage and disposal, and a semi-structured interview was conducted to validate the non-existence of heavy metals in the wastewater discharged from the soft drink plant. The Banks DIH Water Minimisation Plan 2013-2016 achieved a high level of success overall, with 74.42% of the activities implemented by the assigned completion dates. However, three of the five measures implemented recorded low levels of success. Paired sample t-tests revealed statistically significant differences in the water use ratio obtained for the periods 2013-2014, 2014-2015, and 2013-2015, although the differences were relatively small (t (df)=2.242, p=0.047; t (df)=2.592, p=0.025; and t (df)=6.250, p=0.000) for the respective periods. Six of the eleven tested parameters were statistically different when compared to the Coca-Cola Operating Requirements and Environmental Protection Agency standards, indicating a high variation in effluent discharge.

Keywords: Water use; effluent; compliance