

The efficiency of sewage treatment plant: A case study at the main campus of Universiti Malaysia Sabah (UMS)

ABSTRACT

The aquatic nature, including streams, rivers, marine, and groundwater, becomes susceptible to most contaminants' effects through various pathways known as point and nonpoint sources. Point source pollution from inefficient sewage treatment plants (STP) will likely produce effluents that could deteriorate the environment. Therefore, this study assesses the efficiency of STP at Universiti Malaysia Sabah (UMS) based on the Malaysian Sewerage Industry Guidelines (MSIG). The design parameters of the STP and its influent and effluent physicochemical parameters are evaluated and compared between usage peak time (lectureweek) and non-peak (semester-break) conditions. The measurement was based on the Standard Methods of Examination of Water and Wastewater. The permissible limits of influent and effluent from Malaysia Sewerage Industry Guidelines (MSIG) are referred. In contrast, the efficiency of the STP is calculated as the percentage reduction of pollutants. The findings revealed that the current STP's design parameters complied with the MSIG standard. The suspended solids (TSS), biochemical oxygen demand (BOD), chemical oxygen demand (COD), oil and grease (O&G) at influent during peak time is typically higher than during the non-peak time, albeit a timely sudden increase can be observed. The effluent quality is inconsistent but is still within permissible limits, except for O&G, which occasionally exceeds the allowable value. As for the BOD, a consistent 80% removal efficiency is observed. Hence the effluent reuse for agricultural purposed and landscape irrigation is proposed due to the environmental quality potential and reduction to direct released toward the receiving water streams.