Session 4: 14:55-16:00

Life cycle assessment of hospital wastewater treatment Process

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Abstract
The Wastewater Treatment Plant (WWTP) serves to reduce pollutants contained in hospital wastewater. The problem in this study is that WWTP operations use energy and materials that can contribute to other potential environmental impacts, so an environmental impact assessment of the hospital's WWTP is needed. The purpose of the study is to determine the scenario of developing a wastewater treatment process based on the concept of a life cycle that can be applied to manage the environmental impact category of the wastewater treatment process at RSUP Persahabatan. The methods used are Life Cycle Assessment (LCA) and Analytical Hierarchy Process (AHP). The results showed that the potential environmental impact resulting from the life cycle of the cradle-to-gate scope of hospital wastewater treatment is freshwater eutrophication (53.36%) and global warming potential (25.58%) caused by the use of national electricity of 99.7% with an economic valuation of the impact cost generated by Rp 270,028.15 per 1 m3 processed wastewater. The chosen alternative scenario for the development of hospital WWTP is to replace energy sources with solar power which can reduce 5 out of 8 environmental impacts with an economic valuation of impact costs of Rp 218,782 per 1 m3 of processed wastewater. The conclusion of this study is that the use of solar power can reduce the potential environmental impact of existing WWTP based on the concept of life cycle.

Keywords: wastewater, hospital, WWTP, LCA, AHP