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"Bridging the gap between increasing knowledge and decreasing resources"

Life Cycle Assessment of Municipal Wastewater Systems: Applications and Limitations

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Abstract

The preocupation with environmental dimension of sustainability has gained increasing relevance, and environmental management tools, such as, the Life Cycle Assessment (LCA) have been increasingly used by both industries and government. The LCA allows the quantification of environmental emissions and the environmental impact analysis of products, system, or process, enabling the identification of opportunities for reducing environmental burdens, for example, by minimising the use of materials. The society has demanded that processes, products or services are analysed from an environmental point of view, including those related to the processing of waste, such as sewage treatment plants. However, studies that make assessment of municipal sewage treatment process at the design stage of the treatment system still has been incipient and restricted concerning the consideration of environmental variables in decision making. Thus, the present study aimed to obtain information on key advances, gaps and limitations in LCA of sewage treatment systems, and provide suggestions for future work in this area. To meet this target, a literature review related to the topic, published in articles in the period from 2008 to 2014 was performed. It was noted that many studies have focused on environmental aspects of nutrient recycling from wastewater, to reduce the need for fertilisers chemicals. Another very much studies topic was the use of biogas for power generation. However, more research and analysis are required to identify the most significant environmental issues, and to enable the knowledge gained can be used as a resource for decision-makers in evaluating alternatives technologies used in wastewater treatment.

Keywords: Applications, LCA, life cycle assessment, limitations, review, sewage, wastewater, wastewater treatment

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