



# 10<sup>th</sup> INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

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## Life Cycle Assessment of Wastewater Treatment Systems including Constructed Wetlands

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### Abstract

Decentralized wastewater treatment systems, although having some advantages in relation to centralized systems, also cause environmental impacts. This characteristic, must be taken into account in the selection of an alternative technology to treat wastewater or in propose improvements to existing systems. One of the tools that can be used to assess the environmental performance of wastewater treatment systems is the Life Cycle Assessment (LCA). In this study, LCA was used in order to analyze and compare the potential environmental impacts of two configurations of decentralized wastewater treatment systems involving constructed wetlands. The constructed wetlands studied were built using two distinct materials: fiberglass and brick masonry. The modeling of systems and calculations involved in the assessing of the life cycle impacts were realized through the use of openLCA software. The impact assessment method used for the categories of terrestrial acidification, climate change, eutrophication of fresh water, formation of photochemical oxidants, formation of particulate matter and freshwater depletion was the ReCiPe method. The results showed that the potential impacts related to the use of masonry with bricks for the construction of the systems are greater than the potential impacts related to the use of fiber of glass for all impact categories studied.

**Keywords:** *LCA, Life Cycle Assessment, constructed wetlands, ReCiPe, OpenLCA*

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