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“CLEANER PRODUCTION INITIATIVES AND CHALLENGES FOR A SUSTAINABLE WORLD”

Life Cycle Analysis for Cow Beef in Sonora: Slaughtering Stage

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Abstract

By using a life cycle analysis, impacts to the environment were identified and assessed during the slaughtering stage of the production system of beef from Mexico Supreme Quality official brand in a Federally Inspected Type (TIF by Spanish acronym) Slaughterhouse within the state of Sonora, Mexico. The weight of two channels was the functional unit considered. To this end, the slaughter process characterization was carried out on the slaughterhouse, where qualitative and quantitative data was obtained as inputs into production processes and cleaning, and emissions to water, air, solid waste, etc.

The following environmental impacts were identified and analyzed using software GaBi Education: global warming potential, eutrophication of water, air acidification, photochemical ozone creation and human toxicity. The results showed that the main environmental impacts include the potential for water eutrophication and global warming due to pollution of wastewater, which contained organic matter and chemicals during the production process, and due to emissions of CH₄ and CO₂ from livestock enteric fermentation, manure management, and use of fossil fuels.

Opportunities were proposed to improve the environmental aspects on the slaughterhouse such as improving sewage treatment, optimizing water use, introducing the use of renewable energy, among others. The results of this study are useful in efforts to improve environmental issues and to prevent pollution at this stage of the production chain of beef.

Keywords: *Life cycle analysis (LCA), Global Warming Potential, Eutrophication Potential, beef, Greenhouse Gases (GHG) emissions.*

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