

Life Cycle Analysis of the Antibacterial Gel Product Using Iso 14040 and Recipe 2016 Method

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Abstract : Sustainable practices have received increasing attention from academics and companies in recent decades due to, among many factors, the market advantages they generate, global commitments, and policies aimed at reducing greenhouse gas emissions, addressing resource scarcity, and rethinking waste management. The search for ways to promote sustainability leads industries to abandon classical methods and resort to the use of innovative strategies, which in turn are based on quantitative analysis methods and tools such as life cycle analysis (LCA), which is the basis for sustainable production and consumption, since it is a method that analyzes objectively, methodically, systematically, and scientifically the environmental impact caused by a process/product during its entire life cycle. The objective of this study is to develop an LCA of the antibacterial gel product throughout its entire supply chain (SC) under the methodology of ISO 14044 with the help of Gabi software and the Recipe 2016 method. The selection of the case study product was made based on its relevance in the current context of the COVID-19 pandemic and its exponential increase in production. For the development of the LCA, data from a Mexican company are used, and 3 scenarios are defined to obtain the midpoint and endpoint environmental impacts both by phases and globally. As part of the results, the most outstanding environmental impact categories are climate change, fossil fuel depletion, and terrestrial ecotoxicity, and the stage that generates the most pollution in the entire SC is the extraction of raw materials. The study serves as a basis for the development of different sustainability strategies, demonstrates the usefulness of an LCA, and agrees with different authors on the role and importance of this methodology in sustainable development.

Keywords : sustainability, sustainable development, life cycle analysis, environmental impact, antibacterial gel

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