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“CLEANER PRODUCTION INITIATIVES AND CHALLENGES FOR A SUSTAINABLE WORLD”

## Environmental Assessment of the Production of Sunflower Oil Epoxidized Esters Seeking Employment in the Machining

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### Abstract

This study aims to evaluate the production of sunflower oil epoxidized methyl order to their implementation in cutting fluids for machining process. The steps of epoxide ester producing were inventoried and the impacts were analyzed in an interaction Leopold matrix. The impact relationship were 170 and 48.8% were identified. 18% of the identified impacts were positive, corresponding to economic gains for the region and 82% were negative, corresponding to the use of solvent, solid waste generation, energy consumption for heating and accidental release of organic vapors into the atmosphere. The interaction of these impacts with the biotic and anthropic environment is temporary and reversible, and most are direct and scope local. The production of these epoxides, because they are by catalysis and allow the reuse of raw materials, may be a promising alternative and cleaner for the replacement of components in the formulation of cutting fluids in machining activities.

**Keywords:** *epoxides, cleaner production, metal cutting, sunflower, biocatalysis.*

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