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REVIEW OF ETHANOL PRODUCTION BASED ON PAPER SLUDGE: PROCESSES AND PROSPECTS

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Abstract

With population growth and increasing industrialization, enormous amounts of agro-industrial wastes are being produced. Without proper use, these keep piling up leading to tremendous pressure on environmental safety. There is also considerable economic interest not only in the proper utilization of these wastes, but also in developing appropriate processes for this purpose. Sludge generated in pulp and paper mills is one of such solid wastes. Although several studies have investigated its reuse, it is still disposed mostly in landfills, leading to environmental pollution. Utilization of this waste could economically benefit for the pulp and paper sector. An innovative and potentially valuable solution seems to be converting it into ethanol, on which a considerable number of reports have published diverse reviews, even though improvements in the technology are still needed. Hence, this study attempts to provide an overview of all studies carried out so far, highlighting key scientific and technological barriers for scaling up and implementing the conversion process. Some suggestions for future research are given, while perspectives and projections point out that adoption of this process could be especially interesting for regions such as Europe and Asia, where the generation of sludge is high and the ethanol production capacity is still low.

Key words: enzymes, ethanol, fermentation, hydrolysis, paper sludge

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