

Caustic Hydrogen Peroxide Treatment of Effluent from Cassava Processing Industry: Prospects and Limitations

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Abstract

Cassava has been described as a major part of diet in most African countries. Its processing usually requires the release of polluted effluent which has been found to be toxic, carcinogenic as well as mutagenic to some extent. In this study, the treatment process comprised of a combination of peroxide oxidation at caustic range and filtration which ensured that the key pollutant, Cyanide was converted to cyanate. Metal and other non-metal pollutants were filtered off with the aid of a graded sand filter after undergoing hydroxide formation and precipitation. Results from the study shows that an optimum dosage of 0.3mg/l was adequate for Cyanide destruction and hydroxide precipitation reactions. A comparison of the effluent from the treatment process with FEPA standards for waste water discharge shows that most of the pollutant parameters were within acceptable limits after the treatment with the exception of PO₄ and BOD₅. However when compared with Canadian Water Quality Guidelines for Irrigation the only parameter outstanding was the BOD₅. As a result of the inadequacy of the process in handling the phosphate and biological load content of the wastewater, It is proposed that an additional treatment method such as sorption using activated carbon or use of a combined baffle flocculation and aeration techniques will be appropriate if the water is to be discharged safely into water courses or even for irrigation purposes.

Keywords: Cyanate, peroxide, wastewater, effluent, cyanide destruction, cassava.

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