

## Investigation for the possibility of nitrogen removal from industrial effluent of bone glue industry using a batch electrocoagulation unit with monopolar horizontal electrodes

A.H. El-Shazly

*Chemical Engineering Department, Faculty of Engineering, Alexandria University, Egypt  
Tel. +20 102598756; Fax +20 3/4200150; email: Elshazly\_a@yahoo.com*

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### ABSTRACT

The aim of the present work is to investigate the possibility of using the electrocoagulation technique (EC) for the treatment of wastewater generated from bone glue industry especially for the removal of nitrogen as pollutant. A batch electrochemical reactor with monopolar horizontally oriented aluminum electrodes was used. Variables studied were initial nitrogen concentration measured as total Kjeldahl nitrogen (TKN), applied current density, distance between the electrodes, sodium chloride concentration, electrode area ratio (cathode/anode) and time of electrolysis. The results show that up to 90% of TKN of a synthetic waste can be removed within 60 min. In addition, a real wastewater sample from a bone glue factory located in Alexandria, Egypt, was investigated under different current densities. The results show that 60–80% of TKN can be removed within 120 min depending on the operating conditions. At the same time, a reduction in BOD, COD, and TSS of about 68%, 61% and 85% respectively can be achieved within 120 min.

*Keywords:* Electrocoagulation; Nitrogen removal; Monopolar electrode; Wastewater treatment; Bone glue industry

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