# DEVELOPMENT OF INTEGRATED ELECTROCOAGULATION-ELECTRODISINFECTION (EC-ED) SYSTEM FOR TREATMENT OF SWIMMING POOL WATER

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ABSTRAK

The hygienic quality of water is the major concern in the treatment of swimming pool. Hence, it is necessary to disinfect swimmingpool water to protect swimmer against infection by microbiological pathogens. Chlorinated compounds are known as the most often used for disinfection of swimming pool water. However, it also produces byproducts (DBPs) resulting from unavoidable reactions between disinfectants and organic/inorganic matter in water. Some of DBPs were found to be carcinogenic and mutagenic which represent threat to human health. Therefore, this study develops the alternative swimming pool water treatment using integrated electrocoagulation-electrodisinfection (EC-ED) process. This study aims to improvement quality swimming pool water by electrocoagulation process. The condition electrocoagulation are find to make good process and determine the quality of the water pool based on the parameters of Ca2+ concentration, pH, and TDS, after electrocoagulation process is carried out according to Indonesian Ministry of Health Regulation No. 416 / Menkes / Per / IX / 1990. The object of this research was the optimum condition electrocoagulation efficiency to remove of Ca2+ metal ions, pH and TDS in the FIK's swimming pool water, Yogyakarta State University. Optimization of the electrical voltage was done on variation 2, 4, 6, 8, 10 and 12 volts and optimization of the time electrocoagulation process was done on variations of 2, 4, 8, 16 and 24 hours. Parameters used are concentration of Ca2+ in the water, TDS and pH. Effectiveness of the electro-coagulation based on the graph, the separation efficiency of Ca2+ metal ion, TDS and pH values. The samples were analyzed using Atomic Absorption Spectroscopy (AAS), TDS meter and pH meters. The results showed the optimum potential is 10 volt and the optimum time of electrocoagulation process is 24 hours. The quality of the water pool based on the pH parameter after electrocoagulation process according to Indonesian Ministry of Health Regulation No. 416 / Menkes / Per / IX / 1990 is well as water quality standard swimming pool is pH 6.7 and TDS 231,3.

*Kata kunci:* swimming pool, water treatment, electrocoagulation