

DEVELOPMENT OF ELECTRODISINFECTION (ED) SYSTEM FOR TREATMENT OF SWIMMING POOL WATER

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ABSTRAK

ABSTRACT (SUMMARY)

The hygienic quality of water is the major concern in the treatment of swimming pool. Hence, it is necessary to disinfect swimming pool 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 electrodisinfection (ED) process.

This study is based on electrolytic process to accumulate pollutants and produce hydrogen peroxide as disinfection species. Some advantages of this method in comparison to other chemical methods include simplicity of the equipment, easy operation, and without additional chemicals. Integrated ED process is developed to be simultaneous processes which lead to reduces operation cost and efficiency water treatment. The long-term goal of this study is to obtain the effective and efficient prototype device for swimming pool water treatment.

This study is designed into three stages (years). In the first stage, the optimum condition of ED process is investigated through measurement of reduction of pollutant and microorganisms. The optimum conditions depend on the operational parameters such as current density, time, initial pH, and oxygen volumes. In the second stage, effectiveness and efficiency of ED processes is observed to be achieved the water quality by the regulation. And the third stage, the design and implementation of ED system in the real swimming pool is observed. The effectiveness and efficiency of ED device is studied thoroughly so the device can be used for the treatment of swimming pool.

Kata kunci: swimming pool, water treatment, electrodisinfection