

3736078 PHES/M : MAJOR : ENVIRONMENTAL SANITATION ;

M.Sc.(ENVIRONMENTAL SANITATION)

KEY WORD : TOXICITY / ZINC-PLATING WASTEWATER / HYDROXIDES /
POLYELECTROLYTES / *MOINA MACROCOPA STRAUS*

SANGNAPA CHAIROMPANIT : TOXICITY OF ZINC-PLATING WASTE -
WATER, TREATED WITH HYDROXIDES AND POLYELECTROLYTES, TO *MOINA*
MACROCOPA STRAUS. THESIS ADVISORS : SUTHEP SILPANUNTAKUL, Ph.D.,
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This research was conducted to study and compare the acute toxicity of synthetic zinc-plating wastewater treated with different hydroxides and polyelectrolytes, to water flea (*Moina macrocopa Straus*). Chemicals in the study were two hydroxides which were Sodium hydroxide, Calcium hydroxide and three polyelectrolytes, namely Nalco LS128 (anionic), Nalco 9901 (non-ionic) and Optimer AA184 (cationic). The characteristics of eight effluents were examined and the acute toxicological test of these effluents was then carried out. Three polyelectrolytes were also separated to test the acute toxicity. The cumulative mortality rate of water flea was observed and recorded in 48 hr. Probit analysis was used to obtain the Median Lethal Concentration (LC_{50}). All mortality data were analyzed by ANOVA and LSD.

Results indicated that $Ca(OH)_2$ was found to be more effective in the removal of Zinc in synthetic Zinc-plating wastewater than the NaOH. Using anionic and nonionic polyelectrolytes achieved better removal of Zinc-hydroxide floc than the cationic one. The group which used $Ca(OH)_2$ had less toxicity to water flea than the NaOH group. There was no significant difference between LC_{50} values of groups treated with the NaOH and $Ca(OH)_2$ ($P > 0.05$). The significant LC_{50} values of water flea between effluent treated with polyelectrolytes and not treated with polyelectrolytes were also observed and noted ($P < 0.05$). In addition, there was no significant difference between LC_{50} values of the effluent treated with Nalco LS128 or Nalco 9901. However, both polyelectrolytes demonstrate the significant toxicity value over Optimer AA184. In this study, the LC_{50} values to water flea of Nalco LS128, Nalco 9901 and Optimer AA184 were 80.44, 303.24 and 2.15 mg/L, respectively.