

CHAPTER VII

CONCLUSIONS

Based on the experimental results reported in this investigation, the following conclusions are made :

1. The removal efficiency of organic matters, measured in terms of soluble COD, was slightly affected by the presence of lead and zinc concentration. However, the difference in soluble COD removal efficiency was not significant.
2. Soluble COD removal efficiency for each of metal laden reactors increased as the ratio of the total influent metal to total reactor solids decreased.
3. No effect of soluble COD removal efficiency was observed at high operating mean cell residence time.
4. The combination of lead and zinc could affect the measured values of biokinetic coefficients used in describing wastewater treatment reactions. All of combined influent metal concentrations reactors decreased Y_{\max} and k_d when compared to a biological reactions calculated for the control reactor.
5. The effects of lead and zinc concentration in feed solution caused the increase of the specific utilization rate.
6. Total reactor suspended solids, observed yield and sludge production were affected by lead and zinc present in feed solution. The lower total reactor suspended solids, observed yield and sludge production than those for the

control reactor was observed.

7. The degree of nitrification for metal laden reactors at low mean cell residence time was greater than that for control reactor, but on the contrary had no effect on nitrification at high mean cell residence time.
8. The antagonistic effects occurred while increasing the concentrations of lead or zinc in feed solution.
9. Each metal was found increasingly accumulated in sludge at higher mean cell residence time.
10. The sludge wasting rates needed to maintain a mean cell residence time resulted in the removal of large quantity of metals that might upset the sludge treatment facility.
11. Lead and zinc removal efficiencies were obtained more than 54 percent and 66 percent, respectively.