

CHAPTER 4

CONCLUSION

This investigation of Chromium (VI) in wastewater samples in feedmill manufactory located in Banpru sub-district, Hat Yai city municipality, Songkhla province was carried out by using iron oxide coated - sand (IOCS) and graphite furnace atomic absorption spectrometry (GFAAS).

The optimum conditions of GFAAS for the determination of chromium (VI) as follows: pyrolysis temperature was 1500 °C. The atomization temperature was 2300 °C. The detection limit of chromium (VI) was obtained at 0.48 $\mu\text{g L}^{-1}$. In addition, the linear dynamic range of chromium (VI) was 1.0 to 100.0 $\mu\text{g L}^{-1}$.

Columns packed with iron oxide coated-sand (IOCS) able to sorb soluble chromium (VI) (HCrO_4^- and CrO_4^{2-}) with significantly greater than non coated sand. The presence of anions such as NO_3^- , SO_4^{2-} , and PO_4^{3-} no effect on chromium (VI) removal. The optimal conditions of iron oxide coated-sand (IOCS) packed column were size of sand, 0.330-0.425 mm of diameter; pH 7 ; concentration of FeCl_3 , 1.00 M; flow rate, 1.0 mL min^{-1} ; time for coating FeCl_3 on sand, 1 hour; and weight of sand, 30 g. This method is simple and chromium (VI) spiked to feedmill wastewater could be removed efficiently. It can be an effective treatment technology for wastewater containing high concentration of chromium.

Future investigation on the characterizing the chromium adsorption sites on iron oxide coated-sand and adsorption / desorption phenomena may be a lot of interest.