



CHAPTER 5

CONCLUSION AND SUGGESTIONS FOR FUTURE WORK

5.1 Conclusion

The main purpose of this study is to accelerate the rate of anaerobic dechlorination of HCB by various types of substrate as well as sludge to sediment quantity. Unacclimated sludge seed from UASB granular sludge was used as dechlorinating bacteria. The results showed that:

1. Unacclimated sludge is capable to dechlorinate HCB in the presence of carbon source.
2. Glucose supplementation provides the highest dechlorination rate, which was 5.18 times increasing in dechlorination rate compared with no carbon source addition condition.
3. The amount of sludge to sediment quantity affect to dechlorination efficiency as the more sludge addition, the higher rate of dechlorination occurs. It was 2.16 times increasing in dechlorination rate when performing the experiment at higher sludge quantity.

5.2 Suggestions for future work

The results from this research can be used as data for developing other dechlorinated demonstration. Further study is needed to achieve the most suitable condition and apply to the real contaminated site. The dechlorination products should be analyzed to confirm the dechlorination process. Moreover, even it was found that using less amount of sludge cause less dechlorination rate. But, for remediation aspect, using such a high quantity of sludge is very high cost. If there is no time limitation, using less sludge but larger time will be more cost effective. At 20:80 sludge to sediment ratio still provide the decreasing of HCB, so less sludge to sediment ratio is recommended to achieve the best-cost effectiveness and best condition.

Surveying of HCB contaminated site in Thailand should be done in order to conduct laboratory-scale treatability study. Other types of c-source such as pyruvate, isopropanol, and citrate should be examined to see the dechlorination activity of providing more or less HCB dechlorination rate comparing to the results from this study. In addition, using sludge seed or sediment that exposed to chlorinated compounds such as microorganisms from waste water treatment plant of pulp and paper industry or sediment where wastewater discharged from solvent and pesticide manufacturing was anticipated to provide good dechlorination activity.