

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Summary of experimental results

5.1.1 Physical and chemical characteristic of shrimp farm effluents

- Salinity of shrimp farm effluents ranged from 0.3 – 14.5 ppt
- Conductivity of shrimp farm effluents ranged from 680 – 31,700 μ s/cm
- Turbidity of shrimp farm effluents ranged from 15.7 – 163.3 NTU
- Chloride concentration ranged from 93 – 3,927 mg/L
- Bromide concentration ranged from 0.03 – 14 mg/L

5.1.2 Factors influencing THMFP

- At high salinity, brominated THMs rapidly became the dominant species whereas low salinity, chloroform species were the dominant species.
- Bromide, when present, tended to increase the concentration of THMs.
- THMFP/TOC increased with an increase in conductivity.
- Bromide ion has was more active than chloride ion in forming THMs.

5.1.3 Trihalomethane formation potential

Trihalomethane formation potential in shrimp farm effluents ranged from 864 – 3346 μ g/L. This was very high when compared with the standards of about 80-100 μ g/L.

5.1.4 Functional group reactive to chlorine in the formation of Trihalomethanes.

A total of five major functional groups were found to involve with THMFP from shrimp farm effluents. They are (i) phenols (O-H), (ii) amines (N-H), (iii) aromatic compounds (C=C), (iv) Aliphatic bromo compounds (C-Br), and (v) Aliphatic chloro compounds (C-Cl).

5.2. Contributions

This work provided an analysis of the potential of risk involved in the use of effluent from shrimp farms in Chachoengsao province. It has to be admitted that this pioneer research was conducted over a large area and there might still be uncertainty in the results obtained from the analysis. However, several new findings should be of great benefits for this research area, particularly the identification of functional groups involved with the formation of THMs. This opens a room for further investigation on the mechanism of the reaction which will facilitate the future management of the shrimp farm effluents, and to control the consequence that might follow.

5.3 Recommendations

Although this work indicated that there was a potential that shrimp farm effluents formed THMs in large quantity and this might pose serious health effect to the people who made use of this water downstream, there were still high level of uncertainty as the results were obtained from uncontrolled environment. A more detail experiment should therefore be conducted, preferably in a closed environment to investigate the effects of various parameters on the formation of each THM species.