

## CHAPTER 5

### CONCLUSIONS

The major objective of this research was to investigate trihalomethane concentration and trihalomethane formation potential (THMFP) in raw water and water supply from two small waterworks in Aung-Keaw and Mae-Hia case study. Base on experiment results, the following conclusion can be drawn.

1. TOC, DOC and UV-254 were considerably used as surrogates for NOMs in raw water. The average values of TOC were 2.61 mg/L and 2.05 mg/L, whereas DOC were 0.48 mg/L and 0.41 mg/L and UV-254 were 0.1277 and 0.1447 for Aung-Keaw and Mae-Hia reservoirs, respectively.

2. THMs was not detected in both Aung-Keaw and Mae-Hia reservoirs, this may be due to the fact that available chlorine and halogen compounds may not contain in raw water leads to no reaction with NOMs to form THMs, but THMFP were found due to it was determined under the conditions of 7 days reaction time with excess chlorine demand about 3-5 mg/L. Therefore, THMFP of average 253.32  $\mu\text{g/L}$  and 251.52  $\mu\text{g/L}$  were measured in Aung-Keaw and Mae-Hia untreated water, respectively.

3. TOC, DOC and UV-254 were also determined in the produced water supply, the relatively low value of NOMs surrogate parameters were obtained comparing to those obtained in raw water as above-mentioned. The result corresponded to that of THMs which could be explained by the reason that treatment process by PACl coagulation could reduced NOMs satisfactorily.

4. THMs in the produced water supply of average at 60.0  $\mu\text{g/L}$  and 62.5  $\mu\text{g/L}$  while THMFP of 40.2  $\mu\text{g/L}$  and 46.4  $\mu\text{g/L}$ , was investigated from Aung-Keaw and Mae-Hia waterworks, respectively. The results showed that average THMs in actual plant waterworks were lower than such THMs standard (80 $\mu\text{g/L}$ ). It could be indicated that coagulation and filtration process in the selected small waterworks

could produce water supply which was considerably safe for drinking from problematic THMs. In addition, based on the results discussion in the characteristics of raw water and the performances of water treatment process of Aung-Keaw and Mae-Hia case study were not significant differently.

5. Nearly all of PACl dosages of Aung-Keaw water, it was appeared that the best conditions of PACl coagulation for THMFP reduction were at the pH values of 7. Similarly, the proper pH values of most PACl dosages for Mae-Hia, were also at the pH values of 7. Hence, PACl dosages for Aung-Keaw and Mae-Hia water it could be conclusively stated that coagulation by using PACl as coagulant aimed at to THMFP reduction would be recommended to operate under the condition of proper pH value of 7.

6. THMFP and TOC has the good correlation represented by the equation of  $\text{THMFP} = 248.42 \text{ TOC} - 62.077$ , with  $R^2$  of 0.9331. The correlation between THMFP and DOC as well as DOC and TOC was considerably categorized as good level with  $R^2 = 0.9257$  and  $0.9865$ , respectively. UV-254 was not a proper parameter used to represent the quantity of NOM because very low values of  $R^2$  were obtained.