CHAPTER V

CONCLUSIONS

Based on the obtained results from the study of DOM surrogate parameters (DOC, UV-254, and SUVA) removal, DOM characterization and DOM removal by FEEM, THMFP removal, and correlation between THMFP and DOM surrogate parameters from raw water and filtrate water by In-line coagulation combined with ceramic membrane of Ping River water and Ang Keaw Reservoir water, the following conclusions could be drawn.

1. The suitable DOM surrogate parameter that could be used to predict the quantity of THMFP in Ping River water and Ang Keaw Reservoir water were DOC and UV-254.

2. In-line coagulation with PACl dose of 2.5 mg/lAl combined with UF was the most achievable condition for DOM removal in Ping River water. For Ang Keaw reservoir water, In-line coagulation with PACl dose of 3.0 mg/lAl combined with UF was the most achievable condition for DOM removal. However, the keys to select the appropriate membrane pore size for practical operation were the filtrate quality and filtrate quantity that depend up on the utilizable purpose. Therefore, In-line coagulation combined with MF was the suitable alternatives to UF in order to produce high flow rate filtration.

3. Three fluorescent peaks were detected at (A) 270 nmEx/ 450-470 nmEm, (B) 290 nmEx/400-415 nmEm, and (C) 330 nmEx/400-415 nmEm from both of two raw waters sources. In-line coagulation with PACl dose of 2.5 mg/lAl combined with 1.0μm, MF, and UF could reduce FEEM peaks from Ping River water 26.6, 28.1, and 46.8%, respectively. For Ang Keaw reservoir water, In-line coagulation with PACl dose of 3.0 mg/lAl combined with 1.0μm, MF, and UF could reduce FEEM peaks 32.1, 45.8, and 55.1%, respectively.

4. THMFP removal by Jar Test, Inline coagulation combined with 1.0μm, MF, and UF for Ping River water were 41.0, 45.2, 60.4, and 71.0%, respectively and for Ang Keaw reservoir water were 45.9, 44.8, 66.5, and 72.3%, respectively.

5. Total coliform and *E.coli* were used as indicators for determining the fecal pollution reduction in this experiment. Total coliform and *E.coli* was found from Ping River water in amount of 75 CFU/ml and 4 CFU/ml, respectively and from Ang Keaw Reservoir water in amount of 500 CFU/ml and 40 CFU/ml, respectively. From the results obtained from both of two raw water sources, 1.0μm ceramic membrane and In-line coagulation combined with 1.0μm ceramic membrane could fairly remove total coliform while MF/UF ceramic membrane and In-line coagulation combined with MF/UF ceramic membrane could remove total coliform and *E.coli* completely.

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1. The suitable DOM surrogate parameter that could be used to predict the quantity of THMFP in Ping River water and Ang Keaw Reservoir water were DOC and UV-254.

2. In-line coagulation with PACl dose of 2.5 mg/lAl combined with UF was the optimal condition for DOM removal in Ping River water. For Ang Keaw reservoir water, In-line coagulation with PACl dose of 3.0 mg/lAl combined with UF was the most achievable condition for DOM removal. However, the keys to select the appropriate membrane pore size for practical operation were the filtrate quality and filtrate quantity that depend up on the utilizable purpose. Therefore, In-line coagulation combined with MF was the suitable alternatives to UF in order to produce high flow rate filtration.

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