

This research composed of two parts, one was the use of filterability index for selecting the most suitable one from three types of cationic polyelectrolytes, another was the study of capability of a filter by using the selected polyelectrolyte. (from the previous part) as a coagulant. In the first part, three cationic polyelectrolytes were N 8103, S 581 and C 2830, which are available in the local markets and proper to be used in direct filtration. The experiments performed by using a column which consisted of 4 cm. thick silica sand with the size between 0.295-0.420 mm. The level of turbidity in this research were 10, 30 and 50 NTU, the amount of the polyelectrolytes were 0.5, 1.0, 2.0, 5.0 and 10.0 mg/l. Results showed that N 8103 could be the most suitable one because of it provided the lowest F-NUMBER. The second part, using filter column 42.0 mm. diameter, consisted of anthracite coal 45.5 cm. height (ES=1.30, UC=1.50) and silica sand 24.5 cm. height (ES=0.55, UC= 1.50), G value approximately 600 S^{-1} and contact time was about 2.5 S. The variable parameters were the level of turbidity at 10, 30 and 50 NTU, filtration rate at 5, 10 and 15 m/hr, the polyelectrolyte's dosing at 0.1, 0.5 and 1.0 mg/l.

Results showed that N 8103 could be used effectively with 10 NTU synthetic water at 0.1 mg/l dose and 15 m/hr filtration rate. The filter run time was 19 hrs. and was terminated due to excessing headloss. The results also tending to be concluded that the filter run time and the filtrate turbidity varied in proportion to the initial turbidity of raw water and the backwash water varied in proportion to the added coagulant.

Furthermore, many experiments used C 2830 at 0.1 mg/l and alum at 0.5, 1.0, 2.0, 5.0 and 10.0 mg/l with 10 NTU synthetic water. It was found that C 2830 could be effectively used but the length of filter run was only 9 hrs.

When experimented raw water from klong prapa with about 60 NTU turbidity and using N 8103 at 0.1, 0.25, 0.5 and 1.0 mg/l and then diluted them to 10 NTU using N 8103 at 0.1 and 1.0 mg/l. It was found that N 8103 could be effectively used by 0.1 mg/l when used with the diluted raw water from klong prapa and its run time was 19 hrs.