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KULTIDA AREESAWANGKIT : MASS BALANCE OF SOLIDS IN THE UPFLOW PELLETIZATION PROCESS USING THE MWWA'S RAW WATER AS FEED AND THE ALUM AS COAGULANT . THESIS ADVISOR : PROF.THONGCHAI PANSWAD,Ph.D. 311 pp. ISBN 974-637-171-1

From the study of an upflow pelletization process treating raw water from the Chao Phraya river under 2 conditions, i.e. a) during a rainy season, in September and November, 1996, the turbidity of 100 to 240 NTU, upflow velocity of 6 and 9.6 m/hr, alum as coagulant at 18.73, 21.13, 23.44 and 25.79 mg/l coupled with nonionic polymer of 0.3 mg/l as coagulant aid, and nonionic polymer of 0.1, 0.2 and 0.3 mg/l as coagulant and b) during a dry season, from January to February, 1997, the turbidity of 30 to 60 NTU, upflow velocity of 9.6 and 15 m/hr, alum as coagulant at 3, 5, 7 and 10 mg/l coupled with nonionic polymer of 0.3 mg/l as coagulant aid, and nonionic polymer of 0.1, 0.2 and 0.3 mg/l as coagulant, it was found that, after 84 hours of continuous operation in each run,

1. When alum was used as coagulant, the effluent turbidity was less than 5 NTU standard, while it was higher than 5 NTU in the case of using nonionic polymer as coagulant.
2. Pellet mass in the reactor accumulated from start up to steady state. Solids input to the process was more than its output until the process ran to steady state; then solids input was nearly equal to the output, and accumulation of pellets decreased until the difference between solids input and output was near to zero.
3. The accumulation of pellets was due to several factors such as turbidity of raw water, turbidity of effluent water and pellet mass from start-up process. If we have more pellet mass from start-up, it could catch more turbidity particles.
4. Pellet size in both case of using alum and nonionic polymer as coagulant was 0.18 to 0.28 mm.
5. Aluminium in effluent water does not exceed the standard of 200 µg/l in any experiment.

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