Alum Aging Effects Research

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Alum Aging Effects

Introduction

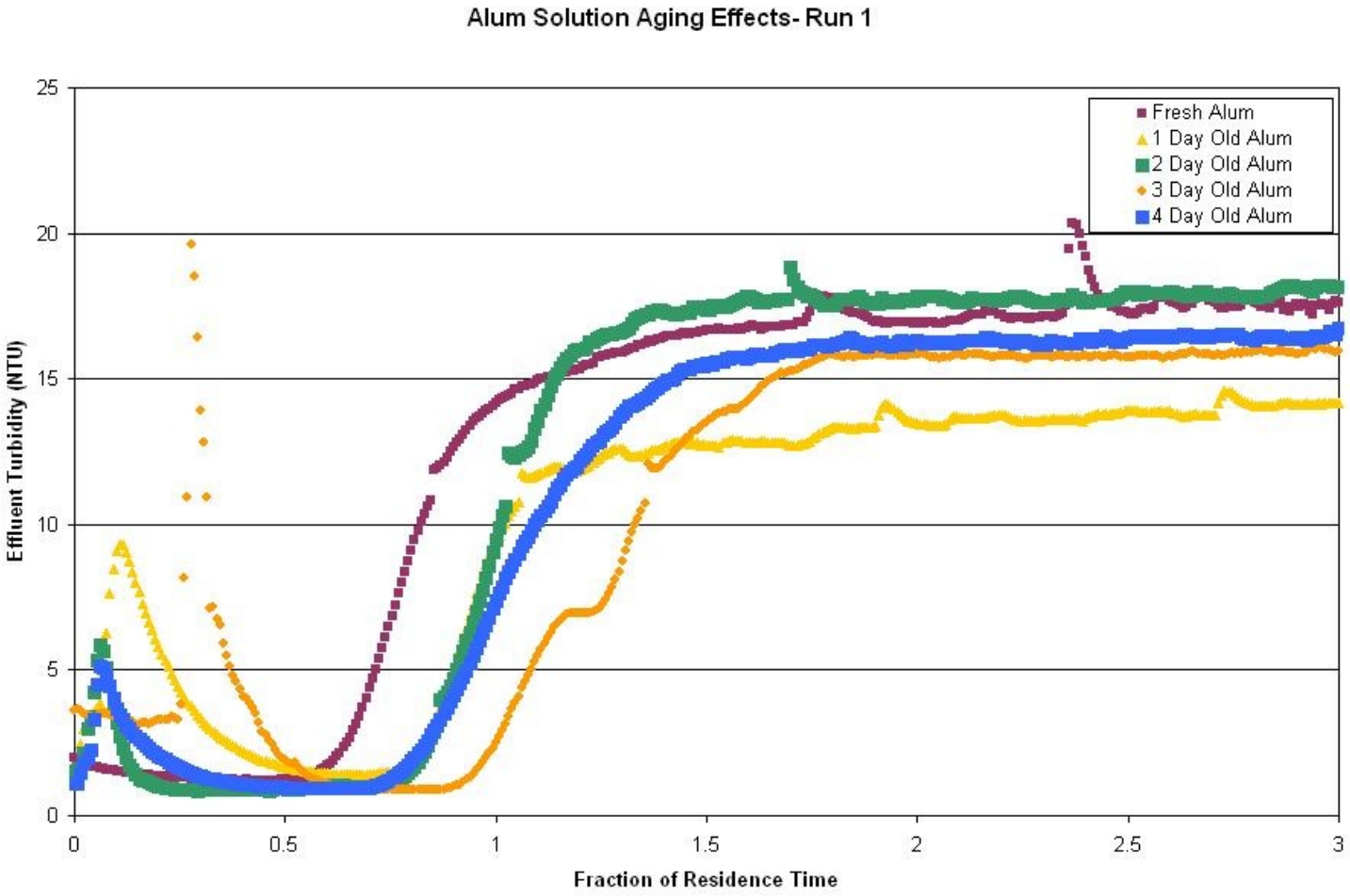
To ease plant preparation for use, it may be beneficial to create stock solutions of required chemicals days in advance of actual operation. Because certain chemical solutions equilibrate with air, they may perform better or worse with age. Using this set of experiments, it was to be determined whether an aluminum sulfate solution produces lower levels of effluent turbidity due to its age.

Procedure

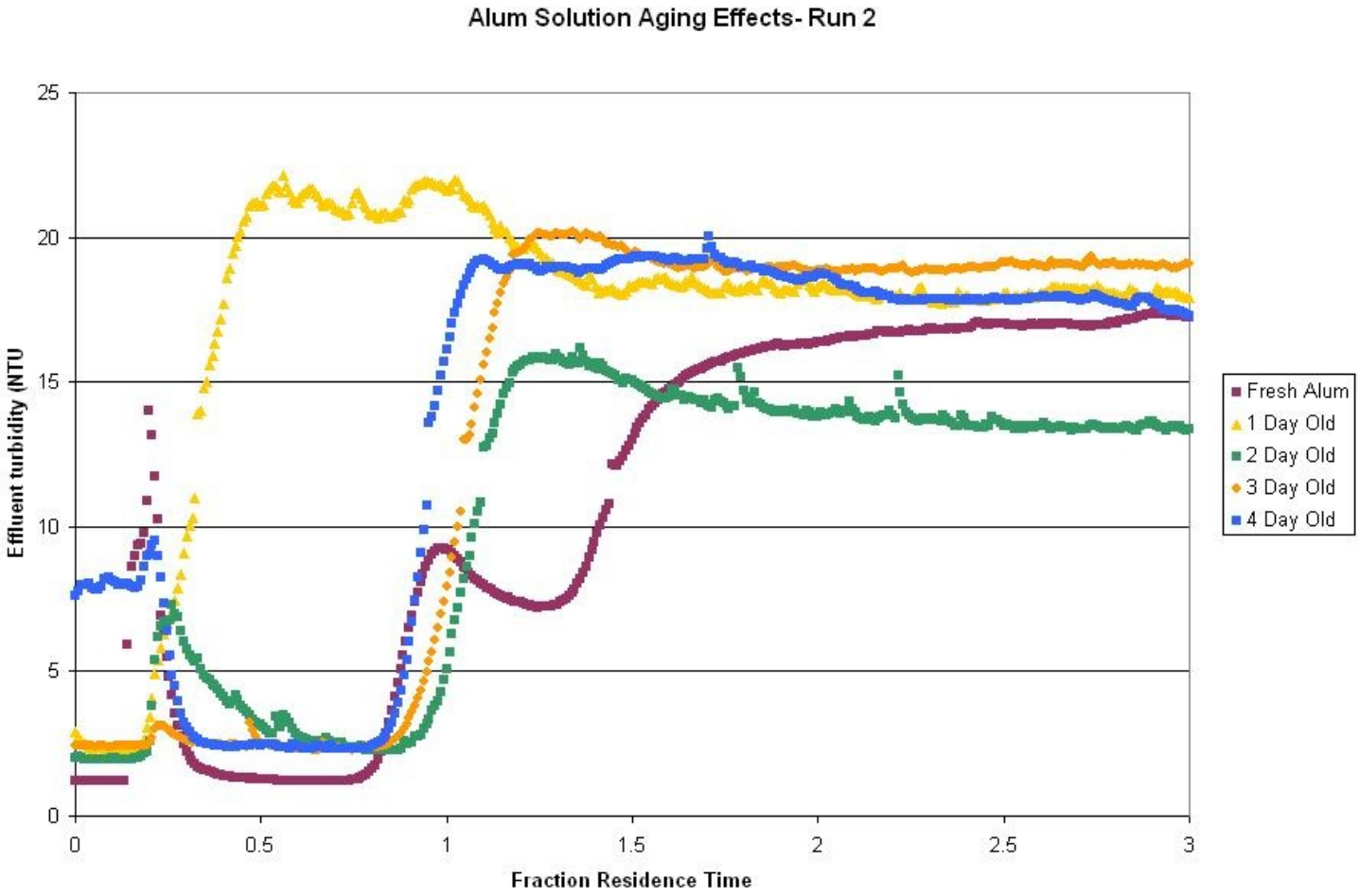
The experimental set up consists of the stock clay solution at .5 g/mL and the stock alum solution at 1 g/mL. Two peristaltic pumps controlled by the process controller control the flow of both solutions into the flocculator (the same flocculator is used in each of the three setups). The solution with the flocs then flow into the sedimentation tank and the effluent is moved to a turbidimeter by a third peristaltic pump. The Demo Plant was run at a flow rate of 100mL/min with fresh, one, two, three, and four day old alum solution while recording the turbidity with respect to time for each run.

Results

Trial One:


Alum Solution Aging Effects- Run 1
Effluent Turbidity (NTU)
Fraction of Residence Time
Fresh Alum
1 Day Old Alum
2 Day Old Alum
3 Day Old Alum
4 Day Old Alum
0
5
10
15
20
25
0
0.5
1
1.5
2
2.5
3

Trial Two:



Conclusion

The results suggest that there is no conclusive evidence showing that allowing alum solution to age effects its ability to coagulate particles.

No labels