MADISON METROPOLITAN SEWERAGE DISTRICT FOAM STUDIES UPDATE

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MMSD sponsoring joint research effort by Dr. Noguera and Dr. Long (both of UW-Madison)

- Primarily evaluating impact of PAX-14 added to aeration basins on digester foaming, digester microbiological classification, and biological phosphorus removal efficiency
- Concurrent with this study we are evaluating digester loading impact on foaming potential
PAX-14 TRIAL (1/4 SCALE)

- PAX-14 is poly-aluminum chloride
- Known to alleviate aeration tank foaming
- Impact on anaerobic digesters uncertain
- Study plan will feed bench digesters
  1. WAS and primary sludge similar to the rest of Nine Springs WWTF to one bench digester;
  2. PAX-14 dosed WAS and primary sludge will be fed to the other bench digester.
- 15 day SRT on both bench digesters
- Foaming observations and measurements plus DNA observations will be recorded
Concurrent with PAX-14 trial, using 2 more bench-scale reactors

- 3rd reactor is “high loading” at 10 day SRT
- 4th reactor is “low loading” at 25 day SRT
- The “non-PAX” reactor is also the 15 day SRT reactor for this study
- Hoping to obtain a “rough cut” on relative impact of loading rate to see if worthy of further study
Looking at the genetic cross-section of foam to determine what micro-organisms are present and to what extent PAX-14 impacts (if at all)

Testing foam from bench scale digesters as well as full-scale digesters and the secondary treatment process

Seeking to confirm if *Microthrix* is indeed the primary organism of concern
RESULTS SO FAR:

- Early indications seem to confirm that higher loading increases foaming potential, but maybe not to degree expected.
- Some early hints that Microthrix may correlate to foaming but may not necessarily be causative...
- PAX-14 trial start has been delayed primarily due to delay in start of our normal winter foam, plan to kick off approximately Feb 20.
Digester foaming did not cease completely this past summer, unlike previous years.

Starting late summer we have been more “aggressive” in digester operation:
- Maximized liquid levels late summer, have held as high as we can
- Maximized mixing to extent possible

Onset of “seasonal foam” has also been delayed, unsure why.

Basically, has been atypical behavior since last CSWEA Foaming Workshop...
QUESTIONS?

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