

Toxicity / Inhibition by Respirometry



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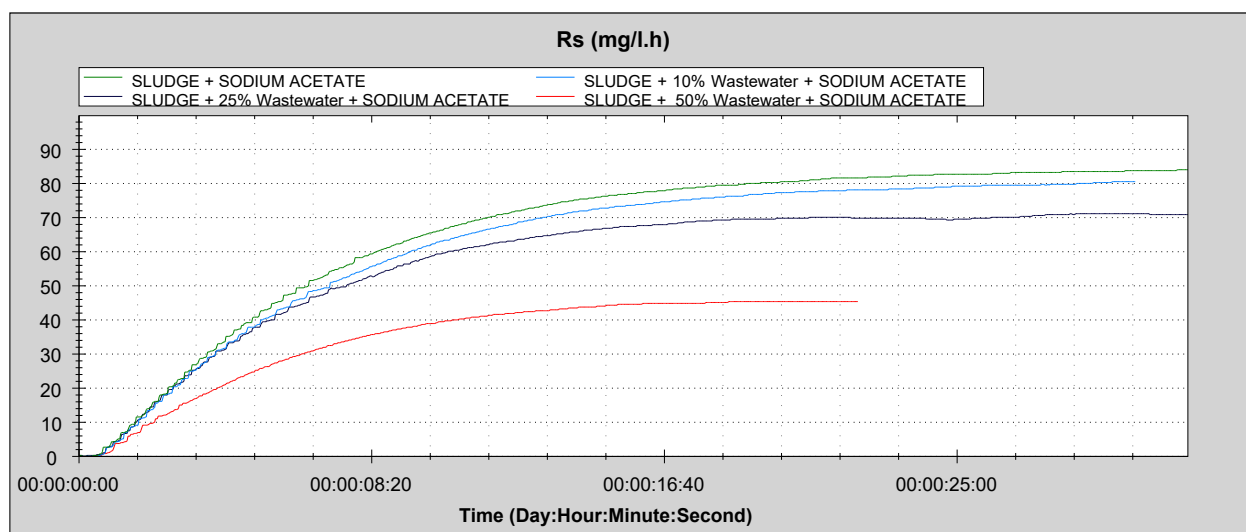
Toxicity (Inhibition) by Respirometry

Toxicity (Inhibition) of the Wastewater sample to a municipal WWTP Activated Sludge was determined using BM-Respirometry. Two experiments were conducted:

1. Global toxicity analysis to heterotrophic organisms by comparison of mixed liquor activity obtained from mixing 2 parts of RAS with 1 part of simulated influent containing 10%, 25% and 50% of Wastewater sample with a reference mixed liquor.
2. Global toxicity analysis to nitrifying organisms by comparison of mixed liquor activity obtained from mixing 2 parts of RAS with 1 part of simulated influent containing 10%, 25% and 50% of Wastewater sample with a reference mixed liquor.

Global toxicity analysis to heterotrophic organisms by comparison of mixed liquors activity with a reference

The analysis was conducted by aerating aliquots of activated sludge with different concentration of Wastewater sample. After overnight conditioning time, maximum respiration rate was generated by addition of the same amount of Sodium Acetate to each mixed liquor. Corresponding respirograms were overlayed and compared (see the chart and the table below).

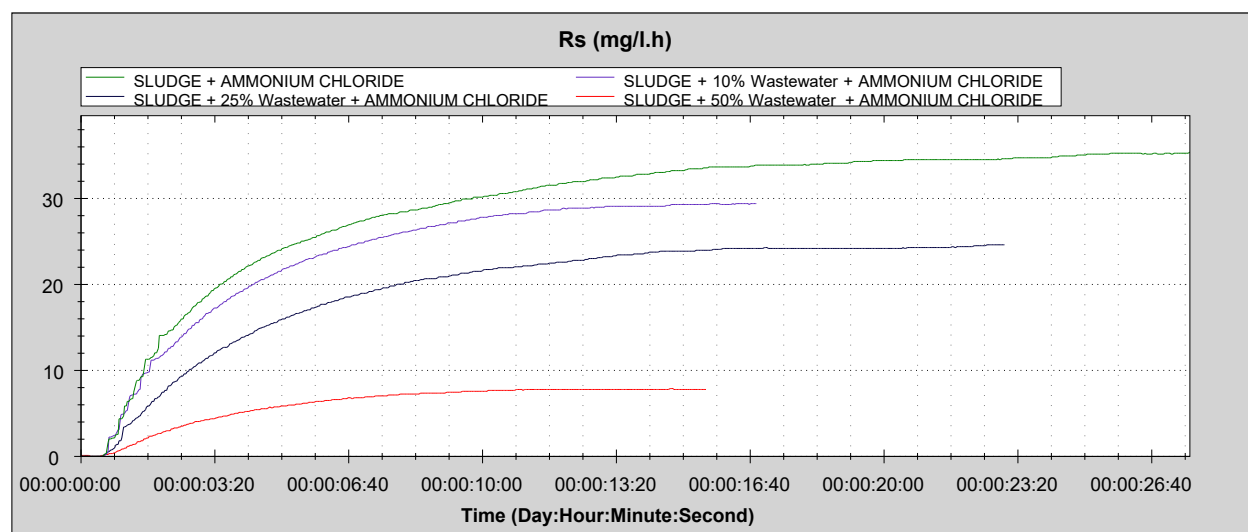


	Maximum Respiration Rate	Toxicity / Inhibition
Reference	83.8	-
2 parts of RAS to 1 part of simulated influent containing 10% of Wastewater sample	80.4	<10%
2 parts of RAS to 1 part of simulated influent containing 25% of Wastewater sample	71.0	15%
2 parts of RAS to 1 part of simulated influent containing 50% of Wastewater sample	45.2	46%

Adverse effect to heterotrophic organisms was observed at concentrations of 25% and 50% of the Wastewater sample in the simulated influent.

Global toxicity analysis to nitrifying organisms by comparison of mixed liquors activity with a reference

The analysis was conducted by aerating aliquots of activated sludge with different concentration of Wastewater sample. After overnight conditioning time, maximum respiration rate was generated by addition of the same amount of Ammonium Chloride to each mixed liquor. Corresponding respirograms were overlayed and compared (see the chart and the table below).



	Maximum Respiration Rate	Toxicity / Inhibition
Reference	35.2	-
2 parts of RAS to 1 part of simulated influent containing 10% of Wastewater sample	29.4	16%
2 parts of RAS to 1 part of simulated influent containing 25% of Wastewater sample	24.6	30%
2 parts of RAS to 1 part of simulated influent containing 50% of Wastewater sample	7.76	78%

Adverse effect to nitrifying organisms was observed at concentrations of 10%, 25% and 50% of the Wastewater sample in the simulated influent.