

 Newsletter

Providing superior service and quality analysis for engineering firms, municipalities, school districts, government agencies, industrial facilities and individuals in Southeast Texas since 1986.

**If you would like EEL to complete your DMR'S online, please contact Brian Sewell at 1-800-525-0508**



Check your results from anywhere, anytime with



Call Susan today to set up your account or email [eastexlab@eastex.net](mailto:eastexlab@eastex.net)

## Alkalinity and Chlorine Residual

Troubleshooting treatment plant problems can be a daunting task — it seems there are so many variables to look at when making a diagnosis.

One such problem is the inability to meet a minimum chlorine residual standard. There are several reasons why a treatment plant might not be able to maintain chlorine residual: excessive chlorine demand, improper effluent pH, disinfectant feed equipment malfunction, and interferences with the residual chlorine testing reagents.

But another possible cause is a lack of alkalinity, and alkalinity is one of the most overlooked process control tests. Alkalinity — the ability of water to buffer against a pH change or to neutralize acids — is measured in mg/l as calcium carbonate (CaCO<sub>3</sub>). Through a complex chain of events, alkalinity can affect the chlorine residual in plant effluent.

\*source Magnesia Specialties

### Properties of Magnesium Hydroxide vs. Caustic Soda Product Comparisons

	Magnesium Hydroxide	Sodium Hydroxide
Chemical Formula	Mg (OH) <sub>2</sub>	NaOH
Percent Solids	62	50
Lbs Dry Solid per Gallon	7,965	6,043
Alkalinity, lbs CaCO <sub>3</sub> per dry Pound	1.68	1.23
Alkalinity, lbs CaCO <sub>3</sub> per dry Ton	3361	2440
Alkalinity, lbs CaCO <sub>3</sub> per dry Gallon	13.38	7.55

## We Started this month with a new mystery Bug Of The Month



Can you guess what this is? Hint: This one is very common in digesters since it can tolerate low DO levels. It is often an indicator of high sludge age. *See answer on the back.*

## Is Your Lab Maintaining Its Accreditation?

Eastex Environmental has been continuously nelac/TNI accredited with the TCEQ since 2007. The TCEQ requires all drinking water and wastewater data reported to the state be performed by an accredited laboratory. While maintaining this accreditation we have grown our service area to include Jefferson, Chambers & Orange counties and have experienced technicians delivering bottles and collecting samples daily. The ongoing effort to stay in compliance can be overwhelming for some labs, but Eastex is dedicated and we want to work with you to help you continuously stay in compliance as well! Give us a call today and let's work together!



Continued on page 2

## Nitrification and Alkalinity

One of the primary pollutants in municipal and food processing wastewaters is ammonia. The nitrification process is used to convert the ammonia in the wastewater to nitrate. Nitrification is a two step biological process utilizing two species of nitrogen converting bacteria. These species of bacteria are most active in the pH range of 7 to 8. During the nitrification process, hydrogen ions are released and alkalinity is consumed as the acid is neutralized. For every 1.0 mg of ammonia converted to nitrate, 7–8 mg CaCO<sub>3</sub> equivalent are consumed. The generation of acid during ammonia conversion and the need to maintain the proper pH, is the reason why an alkali is added to the system. Nitrification of the wastewater is the single largest factor which leads to the consumption of alkalinity and the need to add alkali to the treatment system.

How much alkali is added to the system is dependent on a number of interrelated factors. The amount of alkali added is determined by the amount of pollutants in the incoming waste, the type of treatment that is used in the plant, the amount of natural alkalinity in the influent water, the pH of the influent waste stream, the permitted pH of the effluent discharged from the plant, the number of gallons of waste water processed

## Holding Times

Alkalinity	14 days
TSS	7 days
NH <sub>3</sub>	28 days
CBOD <sub>5</sub>	48 hours
BOD <sub>5</sub>	48 hours

NH<sub>3</sub> is prepared to less than 2 pH with sulfuric acid.

by the plant and whether the plant denitrifies the effluent prior to final treatment and discharge. For complete evaluation of the alkalinity in your facility call us.

## How can alkalinity contribute to wastewater treatment plant problems?

Normally having too much alkalinity is not the issue—it's having too little to complete biological and chemical treatment. Wastewater treatment processes that consume alkalinity include:

- Biological nitrification in aeration tanks, trickling filters and RBCs.
- Gas chlorination for effluent disinfection.
- The acid formation stage of anaerobic digestion.
- Biological nitrification in aerobic digesters.
- Chemical addition of aluminium or iron salts.

\*source Magnesia Specialties

## Field Supervisor

Chris Wirzberg 936-653-3249

## Field Techs Contact

Brian Sewell 936-827-3377

Wendy Willson 936-828-7209

Dale Landrum 936-828-7205

Christopher Guinn 936-827-3378

Shawn Arnold 936-828-7208

Mark Bourgeois 936-828-7206

Lulia Galusha 936-828-7203

Cassie Tarron 936-788-4193



“I attended the TWUA Regional School in Corpus Christi held Mar 3 to 5th 2014. It was wonderful to meet many clients and meet lots of new faces while there. Looking forward to seeing everyone at Beaumont Short School coming April 29 thru May 2 2014.” — Wendy Willson



Follow us on Twitter @eastexlabs

Answer: Nematode