

# THIOGUARD® TST

EFFECTIVE, ENVIRONMENTALLY SAFE TOTAL SYSTEM TECHNOLOGY FOR MUNICIPAL WASTEWATER



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THIOGUARD® Newsletter Series



## RESOURCES

Website links and information  
related to THIOGUARD®



THIOGUARD® TST is a non-hazardous  
application with no required  
reportable quantities (RQ = None)

**THIOGUARD.COM**



OWNED, MINED  
AND PRODUCED  
IN THE USA

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## THIOGUARD VS. NITRATES

### Do Nitrates Do More Harm Than Good?



**REQUEST INFO OR  
SCHEDULE A CALL**

Calcium Nitrate products are commonly used in many of the nation's wastewater collection systems, and they supposedly do one thing – prevent H<sub>2</sub>S odors. Unfortunately, there are multiple costly and problematic unintended consequences of the use of nitrate products. In addition, while nitrate use may temporarily address H<sub>2</sub>S odor problems, nitrate products are of little or no use in combatting corrosion, which is a tremendous problem both in-plant and throughout every segment of wastewater treatment infrastructure.



Premier Magnesia, LLC is a global market leader in magnesia-based products and solutions.

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## NITRATE USE ENCOURAGES UNWANTED BIOCHEMICAL REACTIONS... where you don't want them to occur.

Think denitrification...which consumes organics, and produces nitrogen gas  $N_2$  and carbon dioxide  $CO_2$ , all seemingly innocuous by-products of Calcium Nitrate's intended use as an odor control technology...but let's take a closer look...

### 1. Nitrates contribute to the formation of F.O.G.

The addition of nitrates contributes to the accumulation of an odorous film, often referred to as a F.O.G. (Fats, Oils and Grease) mat in pumping stations and at your plant. Blockages associated with F.O.G. have been shown to be the greatest contributors to O&M costs including energy consumption, maintenance costs, and Sanitary Sewer Overflows (SSOs).

### 2. Nitrates contribute to Gas Binding in the Collection System

The transfer of wastewater can result in the release of gases such as  $O_2$  – Oxygen,  $CO_2$  – Carbon Dioxide,  $N_2$  – Nitrogen Gas,  $H_2S$  – Hydrogen Sulfide,  $CH_4$  – Methane, VOCs – Volatile Organic Compounds, and VOSCs – Volatile Organic Sulfur Compounds, among others. Some of these gases are drawn into the system through pumping and ventilation, while others are generated within the system either chemically or biologically. These gases can result in the development of gas binding in the system, and are dramatically exacerbated with the utilization of calcium nitrate.

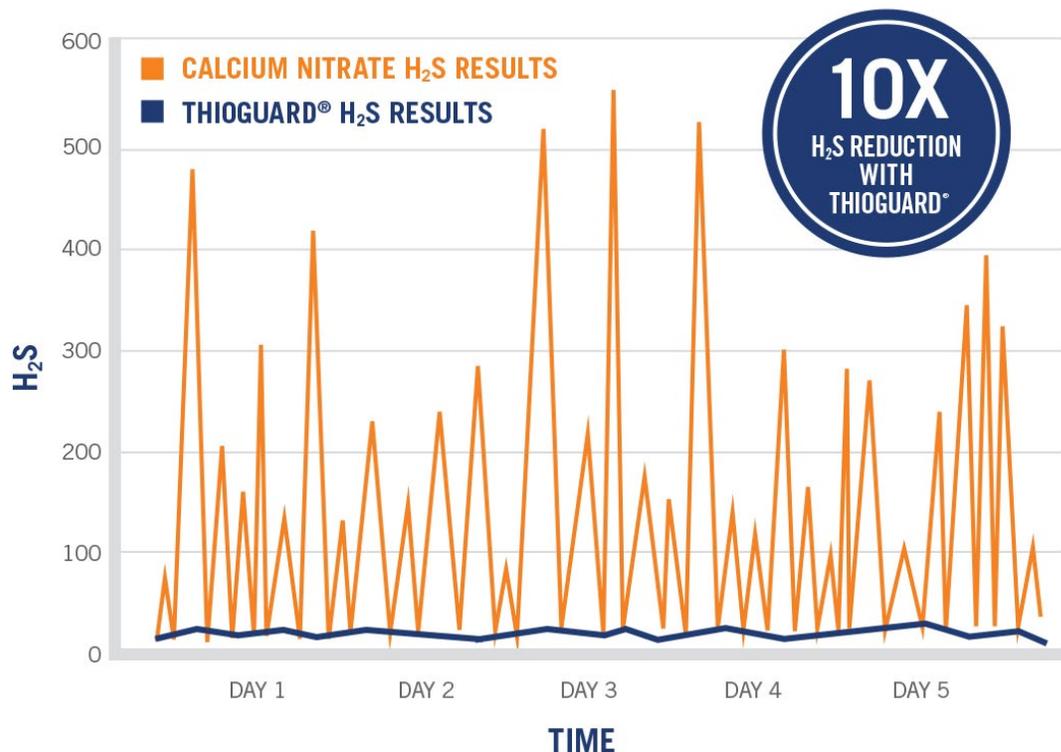
## SOLUTION

**THIOGUARD** can overcome these issues by reducing or eliminating gas emissions from wastewater, dissolving F.O.G. blankets, and reducing corrosion to pumps and infrastructure. No other product can match **THIOGUARD's** ability to neutralize both collection system surface acid and wastewater acid over short and long distances to and through the wastewater treatment plant.

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## HYDROGEN SULFIDE (H<sub>2</sub>S) MEASUREMENTS



### 3. Nitrates upset the Bio-P process at your plant

The addition of nitrates contribThe use of nitrates in the collection system alter the chemical and biological conditions of the collection system, which would otherwise facilitate the formation and transport of VFAs to the treatment plant, where they can be used by PAOs in Bio-P processes.

As VFAs (Volatile Fatty Acids) are eliminated with calcium nitrate addition, VFAs are therefore not available for PAOs (phosphorus accumulating organisms) for phosphate removal at the wastewater treatment plant.

### 4. Nitrates negatively impact Primary and Secondary Clarification

The addition of nitrates is not an exact science, and unfortunately, every step along the way there are costly unintended consequences. Add too little, and you're facing odor problems. Add too much, and you're faced with the formation of unwanted bubble-forming gases (N<sub>2</sub> and CO<sub>2</sub> from denitrification) in your settling tank, exactly where you DON'T WANT IT, continuing the formation of F.O.G. mat, (as well as creating an environment unfavorable to your biological processes). This often results in increased metal salts usage or increased polymer usage and associated increases in costs.

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## SOLUTION

**THIOGUARD** added at the plant and/or collection system is the only odor control strategy that can have positive influence on your BNR process and improve clarifier performance.

### NITRATE ADDITION REQUIRES MULTIPLE FEED LOCATIONS, THIOGUARD ONLY REQUIRES ONE

Calcium Nitrate has a short half-life in sewers, and therefore many addition locations are required to achieve adequate system-wide control. This requires several addition locations, and corresponding higher costs and operational oversight. In contrast, a single **THIOGUARD** Feed Unit can often replace several nitrate feed stations, and maintain a relatively constant pH level throughout.

### THIOGUARD HELPS PREVENT CORROSION

Maintaining a constant surface pH of 6-8 can reduce the rate of corrosion by as much as 100X. The cost of simply ignoring this problem is monumental and **THIOGUARD** is the only commonly used product that has a direct mechanism to increase surface pH and prevent corrosion.

### CHOOSING THIOGUARD OVER CALCIUM NITRATE WILL:

- Decrease maintenance costs
- Decrease operating power costs
- Decrease F.O.G. related SSOs and ARV malfunction
- Improve efficiency due to reduced discharge pressure in manifolded force mains
- Improve Biosolids
- Save money and improve plant performance ACROSS THE BOARD!

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IS TECHNICAL GRADE MAGNESIUM HYDROXIDE  $Mg(OH)_2$ , THE  
NON-HAZARDOUS, EARTH-FRIENDLY ALTERNATIVE FOR PREVENTING ODOR AND  
CORROSION, WHILE PROVIDING POSITIVE PLANT BENEFITS.

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THIOGUARD® HEADQUARTERS: 1275 Drummers Lane, Suite 102 | Wayne, PA 19087