CASE STUDY
Odor Control in Animal Processing Facilities

INTRODUCTION

Hydritreat WT2216 is a novel odor control technology developed by Hydrite to replace the typical multi-component, hazardous material systems that generate chlorine dioxide for use in packed bed scrubbers. Hydrite's single component product is added to packed bed scrubbers to control odor at animal processing facilities. The benefits (dependent upon the site's priorities) from the Hydritreat WT2216 replacing generated chlorine dioxide as an odor control additive have been:

- Decreased treatment costs
- Reduced odor
- Better equipment reliability
- Reduced safety

As an added benefit, one site eliminated the need for a costly, weekly caustic CIP (clean-in-place) that was necessary to remove protein and inorganic scale that accumulated in the scrubber that reduced scrubber efficiencies.

Hydritreat WT2216 is a powerful liquid oxidizer that converts unwanted, odorous air (containing H_2S and other nuisance gases) into water soluble, non-odorous compounds. It also contains an ingredient that removes inorganic scale that creates deposits which foul processing equipment. Hydritreat WT2216 is a fast acting chemistry, effective in cold to ambient temperatures, that decomposes into harmless byproducts → acetic acid (an ingredient in table vinegar) and water.

CHALLENGE

Animal processing facilities use chlorine dioxide gas to reduce odor. Chlorine dioxide gas is generated on site using multiple chemicals and introduced into a hard water stream that feeds a packed scrubber. The purpose of the packed scrubber (Figure 1) is to remove odor in the incoming air then emit "odor-free" clean air to the atmosphere. The many challenges of chlorine dioxide are:

- **Performance** - Effectiveness regarding odor removal
- **Scale inhibition/removal** - The ability to inhibit or remove organic/inorganic scale build up in the scrubbers over preferred time periods
- **Cost** – Due to the various chemicals required to make chlorine dioxide, it is expensive to produce chlorine dioxide
- **Equipment** - Over time, the equipment used to generate chlorine dioxide can leak and create an "unsafe" environment for plant personal tasked with maintaining the generation equipment

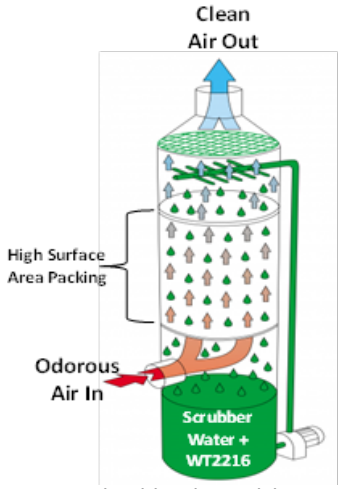

Figure 1: Packed bed scrubber. Odorous air is pulled through high surface area packing where odorous compounds become soluble when exposed to WT2216.

VALUE CREATED	RESULTS
Better Performance	**Before:** • Odor complaints from the surrounding community. • Packed scrubbers would pressurize and force odor to escape through portals indicating the packing was severely fouled.
	After: • Odor complaints were decreased by over 85% and in some cases eliminated (verified via sniff tubes). • Using Hydritreat WT2216 removed calcium carbonate scale and de-pressurized the scrubbers (Figure 2) which allowed increased surface area to treat the odorous air. • Sample (Figure 3) taken from the scrubbers during chlorine dioxide operation and verified to be calcium carbonate brought on by continuous use of hard water. • The slightly acidic environment created using Hydritreat WT2216 accelerates the solubilization of aldehydes, ammonium (NH_4^+) and amines improving odor control effectiveness compared to chlorine dioxide.
Lower Cost	**Before:** • Three chemicals were required to generate chlorine dioxide. • Given that chlorine dioxide is a soluble gas added to a shower/spray system, it can readily escape through the top of the scrubber in turbulent zones (much like CO_2 escapes from a pop-bottle when shook) thus more product must be applied offsetting these losses.
	After: • Over 30% reduction in odor treatment costs. • Hydritreat WT2216 is the single product required to combat odor. • Elimination of caustic CIP for protein removal. • Hydritreat WT2216 can be utilized through the existing chlorine dioxide generation equipment or a single feed pump therefore reducing the need for continuous equipment maintenance.
Safer Work Environment	**Before:** • Some of the multiple chemicals used in chlorine dioxide generation can crystalize and become dangerous in crystalline form. • Chlorine dioxide gas would escape through pipe fittings potentially exposing plant personnel to an unsafe environment.
	After: • Hydritreat WT2216 decomposes to acetic acid and water. This product is the only component required to improve odor control. • Hydritreat WT2216 is a heavy liquid that readily disperses in water and stays inside pipes and systems.
Improved Equipment Maintenance	Hydritreat WT2216 is compatible for use in the existing sodium chlorite generation equipment and no additional equipment was necessary for the conversion. Since Hydritreat WT2216 only uses 1/3 of the generator – equipment maintenance was simplified.

Figure 2: Scrubber depressurized allowing for more treated air volume

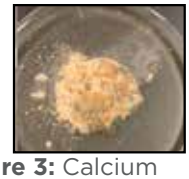

Figure 3: Calcium Carbonate scale removed from scrubbers

HYDRITE CHEMICAL CO.

FOR MORE INFORMATION:

HYDRITE CHEMICAL CO.
300 N PATRICK BLVD.
BROOKFIELD, WI. 53045

WWW.HYDRITE.COM
262-792-1450
MARKETING@HYDRITE.COM