THE ZONE PAGE

Determining Correct Ozone Dose In Sewage Wastewater

Ozone is becoming increasingly popular in Sewage treatment in India. To say more, in another 5-8 years, India could have more ozone treated sewage water than the rest of the world. Reasons are well known. More demand for water, both Industrial and Domestic, change in climatic conditions bringing in lesser rain and hence shortage of surface water, industrial growth, especially in the power and paper sector consuming lots of water. Where do we go for so much of water?

One most important aspect that can solve much of this problem would be to reuse water. The importance has been realized by industries. Chennai had India's first Industrial sector that utilized wastewater. Many companies are striving to be zero discharge and reuse water wherever they can. Power plants are now reusing treated sewage water for cooling tower makeup. Municipalities are contemplating to sell wastewater to industries. There is a revolution in the water reuse.

DO YOU KNOW?

- That two resonance structure of ozone exists and they are inter convertible and the inter convertibility is so fast that the ozone structure observed is a blend of the two resonance structure.
- Ozone is a powerful oxidant even when compared to oxygen. Though oxygen is an oxidant it does not have any disinfectant properties. Oxygen requires a catalyst to act on substrates.
- Ozone molecules are immediately converted to OH radicals by UV and this property is used in advanced oxidation process.
- Ozone exists in water in both the forms, molecular ozone as well as OH radicals.
- Ozone molecules provide the disinfectant properties and the OH radicals provide the oxidizing properties of ozone.

All this brings us to one important aspect. How can we ensure good clean water for reuse?

While conventional treatment has its limitation to provide consistently clean water for resuse, the use of ozone provides the insurance. Ozone is used for wastewater polishing for final disinfection, colour removal, odur removal that would provide clean water for reuse.

The final ozone dose for reuse will depend on the quality of water required. Landscaping require good quality water. Flushing would require water without color or odor. Qualities are determined based on end use.

The minimum ozone dose for wastewater will be between 3-7 ppm depending on the CFU count requirement. A CFU count less than 200 would require a dose of at least 7 ppm. The dose can increase upto 15 ppm depending on the TSS of the final input water. For WATER requirement of CFU counts more than 200 an ozone dose of 5 ppm would be a safer bet. To use a 3 ppm dose means you got to be pretty sure that the input water has consistent quality. For wastewater mixed with domestic and industrial waste, the doses are higher mostly between 10-15 ppm. This is because of the COD/BOD level of such wastewaters. While you consider ozone for wastewater, it is better that we specify the quality of wastewater we require. A sub minimal ozone dose in wastewater could do more damage than without ozone.

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