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T.O.C.S. : Hydrogen Sulfide Remission System

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T.O.C.S. - HYDROGEN SULFIDE REMISSION SYSTEM

THE NEED

In Sanitary wastewater collection, conveyance, and treatment system, the existence of hydrogen sulfide (H₂S) can develop serious problems. These include corrosion, toxicity, and noxious odors. In normal course, corrosion control, corrosion repair, and odor control can cost billions of dollars per year. Hydrogen sulfide can be treated in vapor phase or in the liquid phase using several methods, such as addition of caustic, hydrogen peroxide, chlorine, ferrous sulfate and ferric chloride, or nitrate. Yet the capital investment for such methods are estimated to be more than \$50,000 per treatment site.

THE TECHNOLOGY

BioEnviroTech, Inc., (BET) developed Toxicity Odor Corrosion Sulfides (T.O.C.S.) Remission System for hydrogen sulfide reduction in municipal and industrial wastewater sewer, lift stations and force mains. This safe and cost effective biotreatment technology uses safe and natural bacteria to interrupt sulfide generation. The interruption of sulfide generation can be done by the addition of natural and safe facultative bacteria into the wastestream. Therefore, the biomass in the wastestream can be dominated while interrupting the metabolism of the indigenous sulfur-reducing bacteria living in the slime layer below the sewer flow line. The interdiction of sulfur-reducing bacterial metabolism terminates or greatly reduces the anaerobic bacterial generation of hydrogen sulfide. Three to four pounds of facultative bacterial compound is required to terminate approximately 85% of hydrogen sulfide generation in one million gallons of sanitary wastewater. The calculation of the required dosage is necessary to determine required selected bacteria count for the domination of biomass. Cost of treatment does not increase with the potential for increased generation of hydrogen sulfide since no stoichiometric chemical is required. Capital cost are not required; the system includes equipment, maintenance, service and monitoring of hydrogen sulfide levels. The bacteria used in the inoculant are not pathogenic, mutagenic, teratogenic, carcinogenic, toxic, or corrosive. While solving hydrogen sulfide problems, the bacteria did not create problems in the wastewater collection system, in the wastewater treatment processes, in nature, or in the community.



THE BENEFITS

- Cost effective remission of hydrogen sulfide.
- Reduces corrosion, odors, and toxicity.
- Uses all natural cultured bacteria.
- Requires no upfront capital outlay for program.
- Decreases costs for line maintenance.
- Works 50% better than most chemicals.

STATUS

BET has been researched and tested this technology extensively. A research pilot project held in December 1995, at Trinity River Authority of Texas, was a success with the reduction of more than 81% hydrogen sulfide. Another successful project was held in a residential neighborhood in Jefferson Parish, Louisiana, in mid November 1996. After eighty one days of biotreatment, a level of 83% reduction of hydrogen sulfide was achieved.

BARRIERS

Since the technology deals with bacterial additive, some considerations and assurance need to be addressed in designing the remission program, such as the characteristic of the bacteria, to insure safety in the environment and for human exposure.

POINT OF CONTACT

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REFERENCES

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REVIEWERS

Peer reviewed as an emerging construction technology

DISCLAIMER

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