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Fact sheet

Municipal Sewage Odor Lagoons

INTRODUCTION

Lagoon systems are one of the most common methods of water treatment around the world. By providing extended hydraulic retention time (HRT), lagoons rely on the native biology in raw sewage to degrade organic matter. However, relying on native biological action and natural settling as a form of treatment is typically only partially successful at achieving desired effluent quality. Lagoon systems provide low operational cost alternatives but face many challenges such as malodor generation, inefficient degradation capabilities, excessive sludge accumulation and ground and surface water contamination risks (among many others). Addressing these issues may require costly investments in the long term.

Lagoon effluent problems have a number of causes. The most common are: organic overloading and accompanying low dissolved oxygen conditions; short hydraulic detention time or short circuiting; algae or sulfur bacteria overgrowth; old sludge accumulation; and partial nitrification.

Ammonia----low oxygen concentration and low alkalinity. Nitrification requires 2.0 mg/l or greater dissolved oxygen concentration for optimum performance. Alkalinity (inorganic carbon) is required by the nitrifying bacteria and nitrification becomes limited at a total carbonate alkalinity of <60-80 mg/L. One sign of an alkalinity limitation for nitrification is the build- up of nitrite about 1-2 mg/L. Nitrification can be increased by raising the dissolved oxygen concentration and by supplementing alkalinity (usually lime), but nothing can be done about low temperature.

Odor----Odor in lagoons is always due t low oxygen conditions where the bacteria use alternate electron acceptors to oxidize BOD; sulfate, producing hydrogen sulfide, and true fermentation of organic materials, producing odorous organic acids. This condition occurs at organic overloading and low oxygen conditions, and when sludge accumulation becomes excessive. Odor is common in lagoon systems with wintertime ice cover, when the ice melts in the springtime and the backlog of winter stored BOD is oxidized.

Solution

Valens Company is a pioneer in the field of treating wastewater odor. In implementing its solutions, it relies on advanced, promising, fast, and well-established technology. It does not limit itself to mask odor but it completely eliminates it from its source. It builds in its solutions on emphasizing data, the human mind, the modernity of the machine, and alternatives to materials, and through the integration of processes, magnificent results and brilliant outputs are achieved.

Important data before treatment

- **Volume** – Volume of the lagoon, storage basin, holding cell, etc.
- **Daily Inflow** – The approximate measured or estimated daily inflow to the cell, including additions from precipitation or groundwater seepage.
- **Design** – The overall design of the lagoon system, including details such as the lining of the cell, mechanical mixing or aerating, flow-through to other cells, etc.
- **Wastewater Source** – The type of facility and characteristics of the wastewater effluent. Particularly the strength and Fat/Oil/Grease content.

Benefits

- Odor reduction.
- Solids/sludge reduction to increase system capacity and reduce sludge haulage and disposal costs.
- Reduced effluent loadings.

Contact

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