

Application of Hydro-Biodigesters

Information on Application and Use

Hydro Engineering, Inc., Hydro-Biodigesters are living organisms (naturally occurring bacteria) supplied as a culture. They require; air, food, water, and a suitable climate (environmental conditions) to grow and multiply, as we humans do. These conditions will dictate the efficiency of the treatment and dosage rates required.

Prior To Application:

Wastewater systems with odor problems should be disinfected (killed) prior to dosing with Hydro-Biodigesters. Chlorine bleach added to the system at a rate of 1 gallon per 500 gallons of wastewater is the recommended method to accomplish this disinfection. It is necessary to wait 48 hours for the bleach to dissipate before "seed dosing" as outline to follow. All presence of disinfectants; ozone, chlorine, hydrogen peroxide, etc., must be eliminated from the system prior to Hydro-Biodigester use.

Initial "Seed Dosage" Rate:

Using dry formula Hydro-Biodigesters; mix (1) 16 oz. package of Hydro-Biodigesters for each 1000 gallons of water to be treated in warm water (not hot).

Dry Formula Application:

Hydro-Biodigesters require activation with warm water. First, open each 16 oz. package of Hydro-Biodigesters and mix it thoroughly into 2 gallons of warm (not hot) water per package. Allow the solution to remain in the mixing container for 1-2 hours. This time is required to allow the bacteria to multiply before introduction of product to the system. Then pour the entire contents into all major water holding bodies (tanks) within the system to be treated. Starting growing and multiplying Hydro-Biodigesters equally in all parts of the system will significantly improve their efficiency.

Liquid Formula Maintenance Dosage Rate:

For normal operation, it is necessary to use our Hydro-Ultradoser system and Hydro-Biodigester liquid formula. This system provides programmable and automatic dosing introduction. In a closed-loop system, begin operation by programming a rate of (1) minute dose for every 500-gallons of wastewater storage in the system, every day, seven days per week. Depending upon specific operating parameters, higher rates may be required. Likewise, open discharge system (not closed-loop) may require higher dosage rates.

Note:

Hydro-Biodigesters will remain active in the system until; environmental conditions change and/or their food source is depleted. The effectiveness of the Hydro-Biodigesters

will degrade through population progression. Through successive multiplication, each generation of cells is less effective than the last making introduction of new cultures crucial to effective ongoing system management.

Expectations:

- 2-4 days: Reduction in nitrogen and phosphorus levels
- 3-4 days: Reduction in odors
- 2-weeks: Organics, dissolved solids and hydrocarbons will reduce, there should be a visible improvement in clarity and water quality
- 1-month: Noticeable reduction in accumulation of tank bottom sludge will be found

The following physical and chemical parameters have been proven best for accelerated growth:

Dissolved Oxygen (DO):

Levels of at least 3 ppm (mg/l) are recommended. If an aeration system is used this will normally fulfill this requirement. Hydro Engineering, Inc. formulas contain facultative bacterial strains, which will function with, or without oxygen but will metabolize or biodegrade the targeted substance 5 to 7 times faster in the presence of oxygen.

pH Levels:

Optimum growth rates will occur from 6.6 to 7.4. However, a range of 5.5 to 9.5 is allowable.

Temperature:

A temperatures of 70° to 90° (F) will provide the optimum conditions for growth. A full range of 45° to 150° (F) will allow the product to remain active. Sustained temperatures above 150° (F) will cause cell death. Below 45° (F) cell growth will slow and eventually stop but not kill the cells.

Nitrogen:

Hydro Engineering's cultures require at least 5ppm nitrogen. Doubling time (reproduction rates) will be shortened with a nitrogen content higher than 20 ppm.

Salinity:

Hydro Engineering's cultures have been proven effective in both marine and fresh water applications.

Toxic shock:

Hydro-Biodigester treatments has been proven quite resistant to toxic chemical shock, including sudden influx of petroleum based hydrocarbons, chlorinated compounds, cyanides, and heavy metals.

When chemicals of known bactericidal concentrations are present in the wastewater, please contact Hydro Engineering for consultation before treatment.