

## **Eubio-NBS (WRT)** Wastewater Remediation Technology

#### **PRODUCT DESCRIPTION:**

**Eubio-NBS (WRT)** is a Natural Biological Stimulant. It is a "Next Generation" Wastewater Remediation Technology. It optimizes and stimulates the biological water medium, to help increase already existing natural processes that are essential to wastewater treatment systems. Eubio-NBS (WRT) will help reduce costs in a wide range of wastewater treatment processes.

Eubio-NBS (WRT) is designed to stimulate both anaerobic and aerobic wastewater treatment processes, reducing BOD, COD, TSS, FOG,  $H_2S$ , etc.

Eubio-NBS (WRT) is biodegradable, non-toxic, non-hazardous, non-corrosive, non-irritating and does not require PPE.

#### **GUARANTEED ANALYSIS:**

Biocatalyst liquid ..... 100%

#### **INGREDIENTS:**

All natural biodynamic liquid supernate.



#### **USAGE AND APPLICATION RATE:**

Usage is dependent upon system variables and targeted efficiencies. System enhancement can be achieved at daily dosage rates of 1 ppm to 10 ppm per daily inflow, applications for municipal & industrial wastewater treatment.

#### **STORAGE:**

Normal warehousing. Product is freeze/thaw stable. Shelf life three years.

#### **LIMITATION OF LIABILITY:**

Due to system variations and other additives that may be present, please discuss usage of Eubio-NBS (WRT) with our technical representative.

Eubio-NBS (WRT) has no known negative impact on natural biological processes.



**KEEP OUT OF REACH OF CHILDREN** 

Made in the U.S.A.



#### Next Generation Natural Biological Stimulant (NBS)

#### Industries:

- Municipal Wastewater Treatment Plants
- Slaughterhouses Beef, Pork & Chicken
- Agricultural Lagoons Beef, Pork & Dairy
- Aquaculture Fish Farms, Shrimp Farms (fresh & saltwater)
- Anaerobic Digesters

#### **Benefits:**

- Increased microbiological activity
- Increased removal of BOD, COD and FOG
- Increased biomass decomposition
- Reduction or Elimination of odor
- Reduction in H<sub>2</sub>S generation
- Reduction in turbidity
- Increased biogas production for biodigesters

#### **Applications:**

- Activated sludge
- Anaerobic/Aerobic reactors
- Anaerobic/Aerobic filters
- Anaerobic/Aerobic lagoons
- Facultative lagoons
- Maturation lagoons
- Clarifiers
- Biodigesters



#### **Eubio-NBS Wastewater Remediation Technology**

Eubio-NBS is an aqueous based propriety technology solution that functions as a biostimulator which increases microbiological activity in water. It contains no foreign active bacteria, enzymes, nutrients or other biological components in itself but instead relies on stimulating these biological elements found in the locations where Eubio-NBS is applied to deliver increased activity.

As a "next generation" biological stimulant, Eubio-NBS is designed to provide an increased capacity of existing wastewater treatment plants, delivering reduced operational costs and improved performance. This stimulation is applicable to a wide range of treatment systems, including both anaerobic and aerobic processes, reducing BOD, COD, TSS, FOG, H<sub>2</sub>S and etc.

Without the requirement of any PPE's for application, Eubio-NBS is non-hazardous, non-corrosive, non-irritating and ready to use, eliminating the need for mixing or diluting. This high-performance technology is applied proportional to daily flow rates, ranging from 1-10 ppm, depending on existing performance and effluent severity.

Eubio-NBS is used in both municipal and industrial wastewater facilities with easy application methods and no harmful by-products.





#### **Eubio-NBS Wastewater Remediation Technology**

Eubio

#### Next Generation Natural Biological Stimulant

## **Case Study**

Wastewater plant built in 2010 composed of anaerobic reactors, anaerobic filters with 12 drying beds and maturation lagoons and receives 2.4 MGPD of sewage. A performance demonstration of EubioTec began with a dosage of 2.4 Gal per day(1 ppm).

**Objective:** to demonstrate the increased performance of the wastewater treatment process and to show a reduction in already deposited biomass in the maturation lagoons, in order to avoid dredging. The lagoon was at 58.8% solid content at the beginning.

#### **Results at 22 days:**

- The green coloration of the final effluent "disappeared"
- Surface biomass appeared, released from the bottom of the lagoon, due to decreased density and the production of biogas inside the layers of deposit solids
- Off gassing across the entire surface of the maturation lagoons, including "Dead zones", where there is little to no flow due to accumulated biomass
- Hydraulic flow in previously considered "Dead zones" that form due to the sedimentation of biomass
- Reduction in odor generated at each stage of the system



### **Financial Impact**

- Costs of \$120,000 per year for drying bed usage and solids disposal was eliminated
- The \$800,000 dredging cost was deemed unnecessary and was also eliminated

#### **Results at 83 days:**

- The color of final effluent is very clear, without the presence of solids or odor
- · Hydraulic flow in previously considered "Dead zones"
- The island of biomass that was present in the lagoon reduced considerably in size
- Biomass from the lagoons continues to release from the bottom, now with a much lower density
- Reduction in biomass at the exit
- The surface biomass (FOG) in the anaerobic reactors was consumed, only inorganic materials remained, such as plastics and etc
- Drastic odor reduction in the entire plant, noted by plant operators, employees and the surrounding population
- An increased efficiency in the removal of BOD and COD, achieving levels previously achieved in early years of plant operation
- Reduction in excess biomass in the anaerobic reactors, led to the "elimination" of the use of drying beds
- Reduction of 21% in the deposited biomass in the maturation lagoons from an initial 58.8% down to 37.8%. Continued application of the product will see further ongoing reductions of the organic solids component of the biomass over time.

#### Performance Impact Typical findings after application:

- Reduction in odor / H<sub>2</sub>S 15-30 days
- Reduction in BOD & COD 30-60 days
- Reduction in excess solids and FOG 60 days+
- Reduction in TSS and turbidity 15-30 days
- Increased Biogas production 60-90 days

# **Eubio-NBS Digestion of FOG**

## (Fats, Oils & Grease)

## It took Eubio-NBS less than one week to clean up a manhole containing FOG.

#### **The Product:**

**Eubio-NBS** (Natural Biological Stimulant) optimizes and stimulates the biological water medium, to help increase already existing natural processes that are essential to wastewater treatment systems. **Eubio-NBS** is designed to stimulate both anaerobic and aerobic wastewater treatment processes, reducing BOD, COD, TSS, FOG,  $H_2S$  and etc. **Eubio-NBS** is biodegradable, non-toxic, non-hazardous, non-corrosive, non-irritating and does not require PPE.

#### The Problem:

We have a facultative lagoon consisting of 3 cells with 2 inlets and 1 outlet. There is a manhole for each inlet. The south manhole has severe FOG (Fat, Oil & Grease) issues. We couldn't even do a TSS (Total Suspended Solids) test, because the FOG was so thick. Our influent is about 0.1 MGD (Million Gallon/Day). We have tried numerous products, that obviously have not worked.

#### **The Demonstration:**

**The Hypothesis:** If we add **Eubio-NBS** to the manhole, it will stimulate the natural occurring processes to clean itself up.

To demonstrate if the product works or not, we are adding 1/2 gallon of **Eubio-NBS** to the manhole morning and night. Documenting the results with photographs.

#### Let's look at the manhole photographs...

#### Before the test - August 15, 2018 There is about a 50% cover

of fairly thick FOG (a few inches).



A close-up



After 1 Day - August 16, 2018 Spreading out a bit.



EB-28\_11-7-18

#### After 2 Days - August 17, 2018



Still some clumps. Seeing some change in color.



A close-up reveals a change in color to some parts of the scum.









After 6 Days - August 21, 2018



There is still a small film of FOG, but the clumps have dispersed or been consumed.

The demonstration is a success. Six days of using Eubio-NBS in a problem manhole stimulated the natural biological actions of wastewater enough to clear the manhole of problem FOG. **Additional Notes:** We are also adding 1 quart to each Cell 2 and 3. **Hypothesis:** Adding **Eubio-NBS** to our facultative lagoon will stimulate the natural occurring process of the lagoon.

Cell 3 August 15, 2018 A film of FOG is covering about 25% of Cell 3 and 10% of Cell 2.



*August 16, 2018* The film of FOG, duckweed and floating algae are on the south end of the lagoon.



 August 17, 2018

 No longer any film of FOG on the surface of either cell 2 or 3, only duckweed and floating algae.



August 18, 2018 The wind has pushed the floating mass to the north side of the lagoon.



#### August 19, 2018 (right)

The wind has pushed the floating mass back to the south side of the lagoon.



#### August 21, 2018 (below)

There is no longer any film of FOG noted on either Cell 2 or 3. The amount of duckweed and floating algae has significantly declined.



#### **Bubbles in the cells**

Before starting to use **Eubio-NBS**, I would occasionally note bubbles in parts of the lagoons. These were typically seen in the morning and lasted for a few hours. Morning bubbles usually indicate denitrification is occurring.

After 1 day of using **Eubio-NBS**, I noted more bubbles occurring over almost the entire surface of the 3 cells. They lasted all morning. They were not there in the afternoon.

After day 3 of using **Eubio-NBS**, I noted bubbles occurring over almost the entire surface of the 3 cells for the entire day.

This probably indicates our 1 foot or so of sludge is changing in some positive way and releasing trapped gasses into the atmosphere. NOTE: There is no smell.

#### **Conclusion:**

We have seen very positive results from adding **Eubio-NBS** to our lagoon.

I can recommend using **Eubio-NBS** because it stimulates the medium (water) allowing the natural processes which occur in a wastewater plant to work better.

Dave Akins

