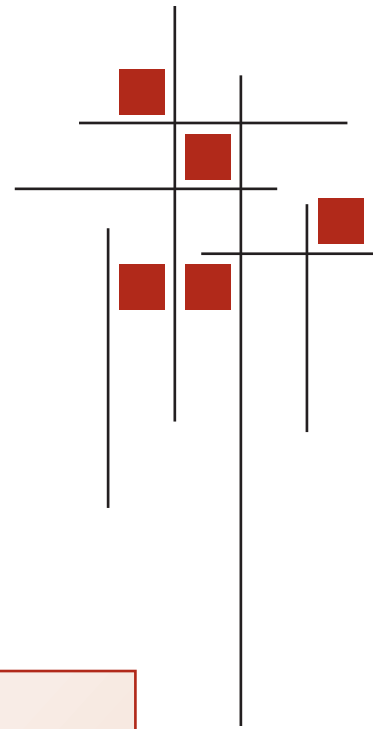


# BiNutrix®

wastewater treatment system



## Solutions for Meeting Wastewater Challenges

### Introduction

BiNutrix Wastewater Treatment System® is a patented, oleophilic biostimulator that provides key source nutrients to microbes in a form that accelerates their reproduction and enhances their performance. Its patented, encapsulated, oil-loving coating provides time-released feeding for the growth and health of microbes employed to remediate waste.

### The Problem

Microbes naturally present in wastewater are the most effective strains for degrading organic matter. However, rarely do these microbes exist in sufficient quantities to provide degradation at the rate needed to maximize treatment plant operation. The result is an extended time period for complete remediation of waste. Most sewage treatment plants are designed with a 300 percent excess capacity in order to provide for extreme load conditions.

Many of these conditions occur regularly and include chemical spills into the sewer system; excessive fat and grease discharge from restaurants, packaging plants and other commercial enterprises; as well as heavy rains and floods.

### The Solution

BiNutrix® provides the solution to optimize treatment plant processes. It is a granulated powder composed of perfectly-blended nutrients that are easily consumed to sustain microbial growth. A microbial cell is made up mostly of

carbon, but also of hydrogen, oxygen, nitrogen and phosphorus.

The general pathway for microbial attack on a molecule is by generation of an enzyme or multiple enzymes capable of breaking the chemical bonds of the contaminants. When a potential food source (organic waste) is introduced into a microbial environment, the organisms adapt their enzymes to optimize the breakdown of that potential food source.

Indigenous microbes already present in the waste treatment system have developed the enzyme system to degrade the target contaminants. It is the use of oleophilic nutrients such as BiNutrix® which support and sustain microbes until their enzymatic systems adapt to the load conditions of the treatment plant. Without the nutrient support, some microbes will actually die before they can adapt to decomposing the contaminant.

BiNutrix® can have a significant impact on waste treatment by providing a uniform effluent with a normal environmental aquatic flora, thereby meeting discharge permit requirements and effectively enhancing the capacity of in-place waste treatment facilities.

### BiNutrix® Treatment

- Enables compliance with new, more stringent discharge permit regulations.
- Reduces oil and grease buildup in lift stations.
- Improves digestion of sludge and grease.
- Lowers BOD/COD to meet regulatory permit levels.
- Increases dissolved oxygen levels.
- Reduces F. Coliform.
- Lowers TSS and reduces pin floc.
- Reduces foam.
- Ensures good settling and excellent water clarity.
- Reduces odors.

BIONUTRATeCH®

Clean and simple.™

Covered by one or more of the following:  
US Patents 5,443,845,  
5,725,885, 5,945,868;  
European Patent  
Publication 0 809 612

## Ohio Brass Company, a subsidiary of Hubbell Power Systems

Ohio Brass Co., a packaging plant with a primary wastewater treatment facility in Wadsworth, Ohio, had consistent problems keeping ammonia/nitrogen, BOD, DO, TSS and pH within acceptable levels.

The facility was unable to handle major fluctuations of chemicals due to high flows from storm water and malfunctions of plumbing in the main facility. In 1995, an entire new system was installed which nearly tripled the plant's capacity and imposed stricter EPA requirements.

From 1993 to 1997, the plant was unable to meet EPA regulations on a regular basis, even with the installation of the new system.

In an attempt to get control of the system, engineers used a variety of traditional and somewhat extreme additive products. Products included liquid nitrifiers, lime, powdered bugs

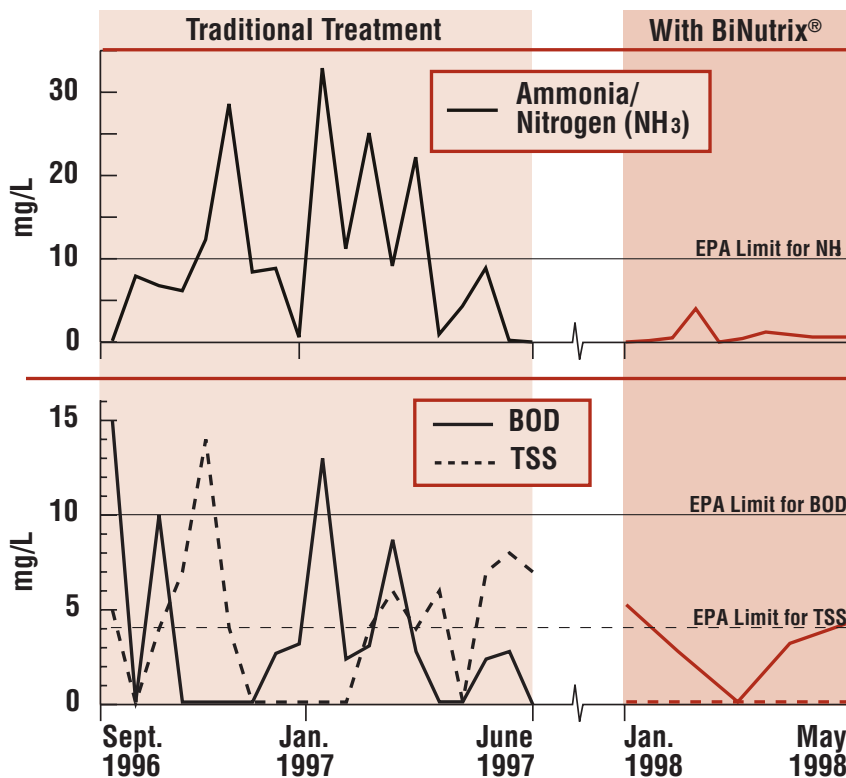
of summer and winter variety, oil and grease bugs, crushed dog food, milk and vinegar. These had no positive results on the plant.

In November 1997, Hubbell authorized the plant to start using BiNutrix®. By the fourth week of use, engineers had regained control.

- Since use of BiNutrix® began,
- TSS has been maintained at BDL;
  - DO stays in the 9-10 range;
  - BOD is no longer a problem;
  - ammonia/nitrogen has stayed well below EPA limits;
  - pH has remained near-perfect;
  - foam problems have disappeared;
  - the aeration tank has never needed pumping;
  - the plant has never been fined.

BiNutrix® accomplished in four weeks what could not be done in five years. Plant management is very satisfied.

**Traditional treatment vs. treatment with BiNutrix®**



Note: The aeration tank was pumped four times in 1997.

## Village of Sugarcreek, Ohio

These notes were taken while this secondary wastewater treatment plant began using BiNutrix® in 1998. The plant has a 500,000 GPD capacity.

**June 5** - 10 pounds of BiNutrix® was added to two pump stations close to the plant. There was very little microscopic activity at the onset of treatment.

**June 8** - 5 pounds of BiNutrix® was added to each pump station. There was a 30 min. set @ 84%.

**June 10** - Microscope: numerous water beats, scattered stalks, free swimmers and microtubellaiaans.

**June 11** - 30 min. @ 78% improved. Microscope: numerous water beats, worms, free swimmers. Effluent very clear and not much pin floc.

**June 18** - 30 min. set @ 71% much better. Microscope: abundance of activity with much more free swimmers, stalks, beats and worms.

**June 22** - Water clarity excellent.

**June 25** - 30 min. set @ 73%. Microscope: a lot of activity.

**June 26** - Settling very good and the water clarity excellent.

**June 30** - Settling good with water clarity excellent. Had over four inches of rain since June 26, and clarity was great all weekend.

**July 1** - Settling great with water clarity excellent. Microscope: activity is the best we have had in a very long time.

**July 7-9** - Microscope: stalks are increasing in numbers, beats and worms are decreasing. A lot of free swimmers.

**July 10** - Settling great. Microscope: some multiple head stalks and great activity.

**July 14** - Microscope activity excellent with a lot of multiple head stalks and a large number of free swimmers.

Using 25 pounds of BiNutrix® each month helps the plant maintain a balanced aquatic flora despite heavy rains and cold temperatures.