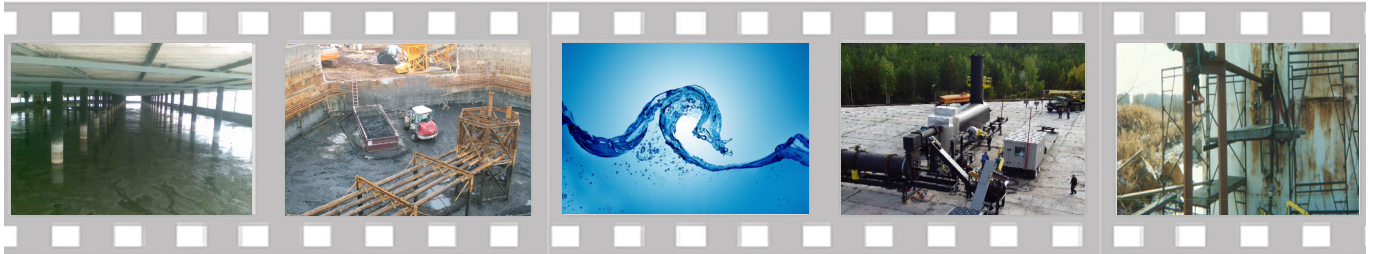


Sludge Remediation



Specific Enzyme Bacterial Systems, hereafter referred to as SEBS, is the key to many successful examples of non-mechanical, cost effective reduction to elimination of sludge from municipal waste systems as well as agricultural lagoons and deep pits. SEBS does not require mechanical aeration to function, however such systems may enhance the speed of sludge reduction.

By Biological Resolutions LLC

What Is SEBS?

SEBS is a proprietary bacteria complex compounded from more than 30 different non-pathogenic Bacillus, Pseudomonas, aerobic, anaerobic, and facultative bacteria, micro-encapsulated and concentrated at the strength of more than five (5) billion micro-organisms per milliliter. SEBS is specifically blended to remedy the most difficult organic pollution situations, from oil spills to highly concentrated animal or human waste.

SEBS is not harmful for humans, animals, fish, fowl or plant life. It is designed to eliminate: odors, sulfur dioxide; reduce nitrate, nitrite, phosphate and hydrogen sulfide; Ecoli, Fecal Coliform, ammonia, pathogenic organisms and VOC without creating any by-products, from wastewater and sludge. The SEBS culture does not interfere with bacteria present in the wastewater system. It functions in a broad range of pH, from 4 to 10 and works well in a range of various HRT situations. This consortium of bacteria/enzymes reduces TSS, COD, and BOD. Only those organisms that are known to be safe and non-pathogenic are selected. Up to 100% of the organic component of the sludge can be digested, the process greatly accelerated due to the specific nano-SEBS bacteria.

With the introduction of NANO technology, the cultures of SEBS and their effectiveness are greatly enhanced. The

approach is based on a proprietary micro encapsulation process which embeds a catalyst and a surfactant on the molecule to aid the fusion and suspension of specific NANO particles into the formula. Communities with septic municipal waste systems have been put back on line within days of initial treatment.

Holding/settling cells that have gone solid with sludge have been reactivated within weeks of the introduction of SEBS with NANO. SEBS is especially effective for assisting rural communities with limited budgets to remediate many of their municipal waste problems and bring them back into regulatory compliance due to cost effective results delivered by SEBS. Even in mechanical waste systems, SEBS has been proven to be an excellent addition to the waste management programs.

Depending on the waste to be treated, SEBS may contain bacteria to:

- Help reduce fats, oils, starch, protein, grease and cellulose to include paper products.
- Facilitate anaerobic (low oxygen) degradation and consumption of septic solids.
- Kill odors by consuming phenolic compounds, as well as several strains of bacteria to eliminate noxious odors by degrading and consuming sulfides.

- Degrade and consume hydrocarbons and waxes from petroleum based compounds.
- Control duck weed and algae

Toxic Algae Blooms

Due to increasing temperatures worldwide, high levels of Microcystins has been noted. Microcystins in concentrations of 20/ppb are believed to be a cancer causing agent. The blue-green algae are a combination of various strains of bacteria that release the toxin. It has been determined that levels of 20/ppb presents a high risk to people who may want to enjoy water recreations such as: boating, fishing, camping and other outdoor activities. Accidental ingestion of water contaminated with blue-green algae can cause serious health risks.

Water treated with SEBS has shown very positive results in just ten days of SEBS introduction. Microcystins levels dropped from 20/ppb to less than 8/ppb (parts per billion). A continued maintenance schedule of SEBS treatment can control and may destroy the blue-green algae bloom by eliminating the nutrient source in the body of water. In an actual application at a Nebraska lake, influent S.S. Mg/L was 240 while after treatment it dropped to 22 S.S. Mg/L; influent B.O.D. was at 302 Mg/L, while after treatment it was lowered to 19.6 Mg/L; ammonia pre-treatment was at 2.0, while after reading was at >1. Fecal Coliform CFU/100 ML was at 14,000 while after treatment it was at 198 CFU/100 ML.

Case Studies

In Nova Scotia, a 5 million gallon contaminated pond had 95% of the odor eliminated and 60% of the surface solids digested within eight days. Within nineteen days, the SEBS's micro-organisms eliminated 100% of the odor and 90% of the surface solids.

In Alabama, a poultry processing plant had a containment pond that was comprised of poultry fats, with a hard crust around the edges and a soft center in the middle. Malodor was quite evident. After the introduction of SEBS, the pond was able to take on water again and at eight and one-half weeks, the

floating grease was completely gone and 80% of the solids at the bottom of the pond had been removed.

Waste Deep Pits And Lagoons

Within the past several years in the Midwest, a phenomenon referred to as pit foam has created a very serious and dangerous challenge for the swine industry. While the jury may still be out as to the specific cause of the problem of foam, the fact remains that it is a very costly and deadly problem. The combination of NANO-SEBS and the De-Foamer 4000 has demonstrated a very positive control means of keeping the pit foam in check.

As with municipal and industrial waste systems, SEBS work very well in the elimination and control of the same issues which confront agriculture's urban counterparts. Significant reduction in odor, crusting and bottom solids will be realized as well as a uniform column of nutrient rich manure from the bottom of the lagoon to the top will be realized; be it a dairy, beef or swine operation.

Through the use of the NANO technology, the SEBS can be specifically designed to break down specific, unrelated forms of organic waste without depleting the fertilizer values of the end product to be disposed of, rather the "waste" becomes a strong soil conditioner as the NANO continues to interact with the elements in the soils to increase the ability of the plant life to absorb more of the existing soil nutrients.

About The Article

This article has been contributed by Biological Resources LLC (marketing). Working in concert with Biological Resources LLC, the chemist and chemical engineers of Enviro Science Technologies (EST) undertake turnkey projects for the remediation of waste lagoons, ponds, rivers and lakes. EST is a specialty chemical/microbial manufacturer. The company has developed over 500 specialty products and is a leading company in biological enzyme based product lines for sewage and waste treatment industries. They can be reached at rgmarah@yahoo.com.