



Bionetix Newsletter

November, 2011

Bionetix International Expands into European Market

Bionetix International; headquartered in Montreal, Canada, is now a wholly owned subsidiary of Cortec® Corporation in the business of manufacturing microbial based bio-products. With more than 30 years of Cortec's experience as a world leader in environmentally-safe materials protection technologies, Bionetix's product range is a natural extension of the Cortec® product offerings. Our integrated resources will provide our customers with unique benefits of remediation, and bioaugmentation. We will continue to expand our portfolio of products and service capabilities, creating additional value for our clients worldwide.

Bionetix International is comprised of solid, proprietary technologies to produce biological waste treatment products that are used in thousands of applications and various industries throughout the world. The purpose of Bionetix products is to degrade target substances in waste systems by using natural methods and develop environmentally safe manufacturing and disposal processes.

Capability of microorganisms to transform pollutants and synthetic chemicals into sources of energy and raw materials for their own growth, proves that expensive chemicals can be replaced with biological processes that are lower in cost, more efficient and acceptable for the environment. Bacteria used in the Bionetix line of products degrade more complex chemicals along with higher volumes of waste materials.



Bionetix has a wide range of products for numerous applications that can be divided in five major fields:

- Agricultural Treatment
- Concentrates and Additives
- Industrial Waste Treatment
- Institutional and Household Market
- Municipal Waste Treatment



The Science and Art of Composting with Bionetix Stimulus

Bionetix's environmentally safe Stimulus Bio-stimulant and Odor controller effectively controls odors emitted from the decomposition of grass, landscape products, and other compostable materials. Stimulus is derived from natural plant extracts and contains no chemicals, dyes, or fragrances. Treatment with Stimulus inhibits the formation of odors before, during, and after processing. The major components control foul odors by restraining the activity of the enzyme urease that converts naturally occurring nitrogen and urea into ammonia.

Stimulus will prevent the development of strong musty odors from yeast and molds that form inside a compost pile; and as a natural surfactant it allows water and oxygen to penetrate deeper helping to stabilize the pile to normal conditions.

Please contact Bionetix for more information on Stimulus or any of our other biological waste treatment technologies.



Cortec's Bionetix BCP12

Increases Methane Production in Anaerobic Digestion Systems

Anaerobic Digestion (AD) is the process by which organic materials are broken down in the absence of oxygen, producing biogas. This biogas can then be used to run boilers or cleaned and used as a natural gas substitute. In certain systems, the surplus energy is also routed back into the central power grid to provide cheaper power. The issue facing any AD system, whether it is a farm-based, food processing, or centralized system, is whether the amount of gas will be sufficient enough to justify the energy invested. To increase the amount of methane produced, many facilities turn to bioaugmentation. Bionetix BCP12 increases the methane production and overall efficiency using selected strains of bacteria to assist in digestion. BCP12 can also be used after a toxic event to shorten the facility's recovery period eliminating periods of inactivity due to toxic contamination.

Keep the Men's Room Fresh and Clean

Urinal blocks (also called cakes or pucks) have become commonplace in restrooms today. Original formulations contained naphthalene and later paradichlorobenzene (pDCB) which are now considered hazardous to health by inhalation. More modern formulations are water-soluble and sometimes contain strains of bacteria to completely eradicate odors and blockages. Bionetix urinal blocks (UR Blocks) are made of non-pDCB ingredients and employ bacteria. The unique formula targets and cleans scaling build-up while deodorizing, maintaining clear and odor-free urinal traps and lines. The formula is made up of surfactants, non-pathogenic bacteria, additional cleaning and water-softening agents, and odor-blocking fragrances. UR Blocks are designed for all types of urinals, stainless steel, porcelain, and ceramic troughs. UR Blocks are ready for direct introduction into systems to prevent odor and blockages.



Bionetix Desludging

The Bionetix Desludging process is specifically designed to combat sediment buildup in crude oil storage tanks. Conventional labor intensive cleaning is time consuming, hazardous, and costly. The Bionetix Desludging process reduces the need for conventional methods while making the removed sludge useful to the refinery.

Sediment buildup harms the storage tanks by:

- Reducing tank storage capacity
- Contaminating stored oil with water, heavy wax, and inorganics
- Blocked water drain lines leading to additional corrosion
- Obstruction of tank roof systems

The Bionetix Desludging process is customized to suit every refinery's specific needs. By analyzing the sludge in the tank, the cleanup is able to accurately remove and separate the sludge and the water for proper removal. Once removed the water and sludge can be processed on site by the refinery rather than sent off for costly disposal. The Bionetix Desludging process works to offer a thorough cleaning of crude oil storage tanks with a fraction of the hazard, cost or time of conventional cleaning.

Conventional Tank Cleaning vs Bionetix Tank Cleaning

5,000 Barrel Tank	Conventional	Bionetix
Gross Cost of Refinery	\$150,000	\$200,000
Value of Recovered Crude	0	90,000
Net Cost of Refinery	\$150,000	\$110,000

10,000 Barrel Tank	Conventional	Bionetix
Gross Cost of Refinery	\$180,000	\$220,000
Value of Recovered Crude	0	200,000
Net Cost of Refinery	\$180,000	\$20,000

20,000 Barrel Tank	Conventional	Bionetix
Gross Cost of Refinery	\$200,000	\$240,000
Value of Recovered Crude	0	400,000
Net Cost of Refinery	\$200,000	(\$160,000) PROFIT

“Good Bacteria” Help to Clean Up Water Treatment Plants

After an earthquake and resulting tsunami damaged the Hualpencillo Wastewater Treatment Plant, actions were needed to remedy the contamination caused. Residents complained of unpleasant odors coming from a local canal that had been contaminated with wastewater. Local sanitary services used a combination of BCP 80 and a biocatalyst to degrade the sludge and suppress the unpleasant odors. After the success of the “friendly bacteria,” the same method will be used in conjunction with plant repairs on another local plant and canal with the same problem. Authorities were expecting positive results in as little as 48 hours.



THE USE OF BCP12 IN A PROCESS SUMMARY SMALL DIGESTER TRIAL

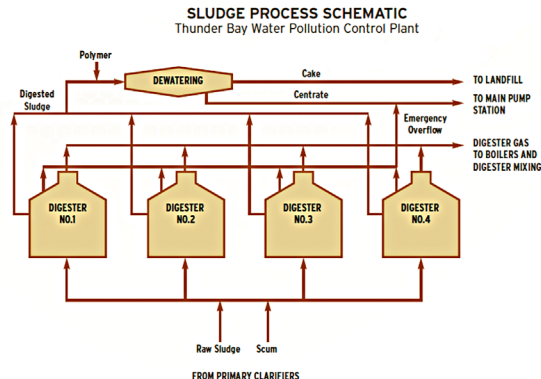
A city in Northern Ontario owns and operates a Water Pollution Control Plant (WPCP) providing primary treatment, phosphorus removal, and anaerobic sludge digestion for the entire serviced area of the city. Disinfection of the effluent occurs on a seasonal basis, from April to October. The treatment facility has a design capacity of 109 million litres per day. The population of the city was 109,016 as recorded by Statistics Canada in March 2002 and the population served by the Water Pollution Control Plant is approximately 100,000.

The digesters retain the sludge for approximately 30 days during which the temperature in the digesters is maintained at approximately 35 °C and the digester contents are mixed and heated to support the breakdown of the sludge by anaerobic bacteria. Methane gas is produced during the anaerobic digestion process and is pumped back into the digesters to provide mixing. Excess methane gas is piped to the four plant boilers for fuel, supplying heat for the digestion process and plant buildings.

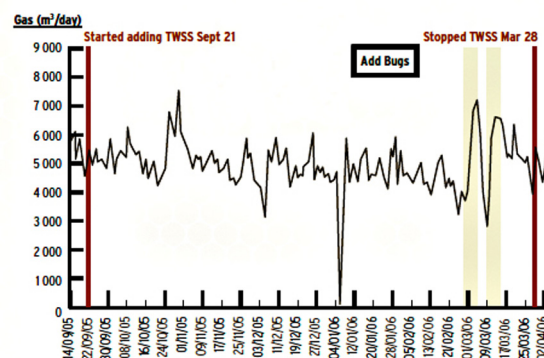
Digester gas production since the introduction of TWSS is presented below. Generally, reduction of the sludge's volatile components has been good while production of methane gas has been poor.

During March a small trial was performed using a digester additive (bugs) to boost conversion to methane formers. The additive was added to digester 1 & 2 exclusively. During the period when bugs were added (boxed sections of the figure above) there was an increase in gas production.

The cost of the additive used in all four digesters would be \$25 per day and the reduction in natural gas use would save the plant conservatively \$200 per day. The calculation is based on using the difference between the two peaks "with bugs" and "TWSS off" with the secondary shut down. Therefore, at this point during heating season the plant should begin daily dosing of digester enhancement BCP12 by Bionetix.



DIGESTER GAS PRODUCTION



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