Treatment of Effluent of Pulp & Paper Mill © 2009

ECOPROBIOTICS®, of the Bacta-Pur® System, are beneficial communities of natural bacteria, which have been on earth for millions of years and have been selected for their synergistic ability to biodegrade pollutants and to improve water quality. ECOPROBIOTICS® increase biodiversity. Just as people take probiotic yogurt for its' ability to assure the presence of the optimal community for digestion and immunity, ECOPROBIOTICS® improve ecosystem health. EVERY PRODUCTION of Bacta-Pur® products is analyzed and cleared for shipment ONLY after passing all performance tests and being CERTIFIED PATHOGEN FREE using techniques from the food industry. ECOPROBIOTICS® are purely natural and beneficial; they NEVER contain added chemicals such as surfactants, emulsifiers or enzymes…, nor do they contain genetically modified (GMO) or deliberately mutated organisms. ECOPROBIOTICS® are safe and beneficial. Disease causing organisms are never used, as others do or permit. All bacterial cultures in the Bacta-Pur® product are listed on the Canadian DSL.

Background

The untreated effluent of a paper recycling plant in JingJiang City, Hubei Province, Peoples Republic of China flows through a a very slow moving canal/river (± 2.5 km long) before entering Miao Lake. The canal also receives effluent from other industries as well as some residences, but the pulp and paper mill is the primary source of the water, in the canal.

Miao Lake has a surface area of several hundred thousand square meters and is badly polluted from the canal. The water in the lake near the effluent of the canal has become stagnant, ripe with foul odors, opaque, and has lost the ability to support aquatic life. The local authorities have reported that people living near the lake have been experiencing an increase in disease and other health problems.

The greatest levels of pollution are found in an area of approximately 7 ha near the effluent of the canal; this area has an average depth of 2 meters. A program to treat this area was planned and began in March 2006. The initial phase to calibrate the technologies is being conducted in a 6,000 m^3 pond (±150 m X 20 m X 2 m deep) at the mouth of the canal. The pond was filled with the polluted water from the canal and then isolated from both the canal and the lake

Treatment

The initial treatment program consisted of weekly seeding, for four months, of the pond with 2 ppm of Bacta-Pur® XLG and Bacta-Pur® N3000. This was done by first activating the Bacta-Pur® XLG and then spraying it together with Bacta-Pur® N3000 onto the surface of the water. No other treatment was applied, and there was NO aeration.

Results (preliminary – ongoing project)

The project is ongoing but six weeks of treatment have achieved the following results:

Date	COD (ppm)	NH3-N (ppm)	Total P (ppm)	Transparency (cm)	DO (mg/L)
3/19/2006	164.05	2.32	0.221	15	0.11
3/26/2006	133.7	2.07	0.222	30	0.24
4/2/2006	82.4	1.63	0.156	60	2.02
4/9/2006	54.2	0.93	0.045	70	3.2
4/12/2006	39.4	0.7	0.087		
4/28/2006	26.5	0.54	0.037	110	8.2
5/8/2006	33.5	0.6	0.035	100	7.5

Dissolved oxygen readings are taken at one meter in depth of the water being treated.

Furthermore, the color of the water has changed from a deep gray/black color to a more transparent hue of blue. Odors from the water were noted to be strong in March even though the ambient air temperature was in the mid-teens Celsius; these odors have now completely disappeared even as the ambient temperature is rising into the mid-twenties Celsius.

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