



BioCord™ Reactors for Waste Water Treatment

August 11, 2011

What is BioCord™?

BioCord™ is a man-made bio-reactor, developed and manufactured in Japan for wastewater management using microbe activity. In appearance, BioCord™ is a simple cord covered with countless rings of thread, made of polymers. Its unique properties provide a symbiotic culture bed for a wide spectrum of microbes.

When BioCord™ is manufactured, it leaves the factory with a slightly positive charge. Placed in water, it attracts microbes, which by nature have a slightly negative charge. The structure of the BioCord™ also attracts the microbes. Because of this, BioCord™ is an ideal media for microorganisms to live and grow on. The microbes adhere to the threads and perform biodegradation. This is done in a three-step process including an anaerobic step for optimum solids removal.

For years BioCord™ Reactors have been used successfully around the globe to reduce Biological Oxygen Demand (BOD) Chemical Oxygen Demand (COD), Total Suspended Solids (TSS), Phosphorous and Nitrogen levels in waste water. Beginning in the summer of 2011, Bishop Water Technologies, in partnership with Bonnechere Valley Township undertook a Pilot Project using BioCord™ Reactors with the intention to evaluate the effectiveness of the material at treating several waste streams.

Results from Eganville BioCord™ Pilot Project Treating MLSS

Parameter	Units	MLSS July 25, 2011	BioCord™ Tank 1 July 25, 2011	BioCord™ Tank 3 July 25, 2011	Eganville STP Discharge Criteria
Total Suspended Solids	mg/L	5620	2510	5	25
BOD	mg/L	600	199	5	25
COD	mg/L	4600	2350	39	—
Total Kjeldahl Nitrogen	mg/L	438	109	6.56	—
Total Phosphorous	mg/L	157	69.7	0.24	1



Solid material collected by the Biocord material contained in tank one as it works to biodegrade the sludge

Bonnechere Valley Township Project

BioCord™ Reactors are being used in a three stage Pilot Project at the Eganville STP, with the goal of producing effluent which will meet the criteria set forth by the Ministry of the Environment and be suitable for discharge to the environment.

Stage one of the project is currently underway and involves utilizing BioCord™ Reactors to treat Mixed Liquor Suspended Solids (MLSS) produced at the

Eganville STP. The MLSS are pumped directly from the towns MLSS basin to one of three tanks containing BioCord™ material. The first tank is aerated maintaining a minimum dissolved oxygen level of 2mg/L, the second and third tanks are connected in series, simulating a retention lagoon. The tanks have been deployed in a staggered fashion so that the material is gravity fed from one to the other. The MLSS is retained in each tank for a minimum retention time, allowing the microbes collected on the BioCord™ material to breakdown the sludge. Filtrate produced through the treatment process is discharged to the plants digester, with samples being periodically collected for analysis.

Results to date have been impressive. The effluent produced by the BioCord™ Reactors has easily met the MOE criteria for TSS, BOD and Total Phosphorous. Further testing is slated to be done later in the summer of 2011 to ensure the filtrate is meeting NH3 and E.Coli criteria as well. Stage 2 and 3 of the Pilot Project, which will treat raw sewage and filtrate produced through Geotube® dewatering are slated for later this fall. The initial results are encouraging and give merit to the use of BioCord™ for the treatment of wastewater in Ontario and across the Country.