

CASE STUDY # 025

ETHYLENE GLYCOL REMOVAL UTILIZING BIOAUGMENTATION

SUBJECT:

Reduction of ethylene glycol from a municipal wastewater treatment plant receiving deicing solution from an international airport.

PRODUCT APPLIED: MICROCAT-XR Microbial Hydrocarbon Degradere



TREATMENT SYSTEM:

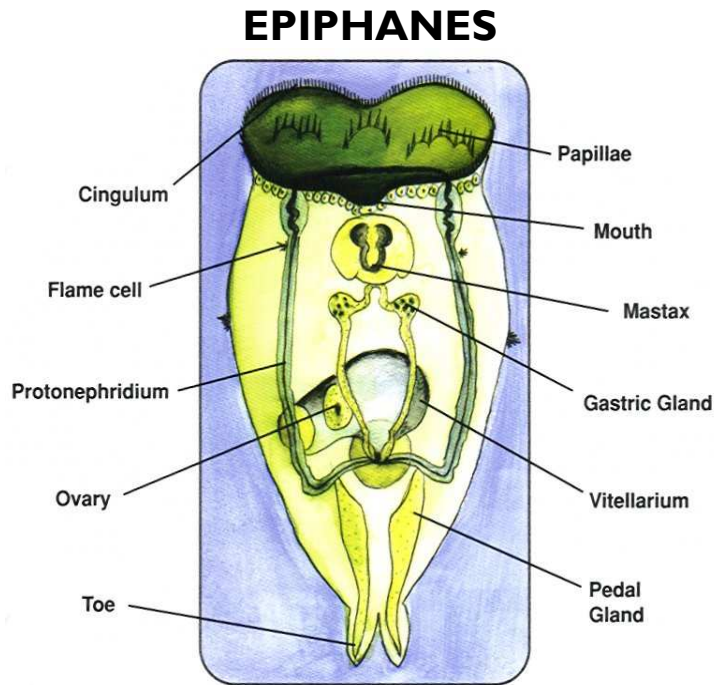
1. Primary Clarification
2. Activated Sludge
 - a. Flow = 23,467 m³/day
 - b. (8) aeration tanks
3. Final Settling

OBJECTIVE:

To biodegrade the ethylene glycol solution (used for de-icing planes in the winter) from airport storage tanks received by the municipal wastewater treatment plant.

PROGRAM:

The quantity of ethylene glycol solution to be discharged from the airport storage tanks to the municipal system was calculated. **MICROCAT-XR** was added to the aeration basins of the municipal wastewater treatment plant in a start-up do sage mode to overcome toxic effects of the increased BOD loading. Microscopic examination of the biomass was undertaken to determine biomass characteristics. The dosage schedule was decreased to a maintenance dosage rate once the biomass displayed visible improvement (ie. higher lifeforms and increased microbial activity) and ethylene glycol concentrations were reduced.



RESULTS:

The increased biochemical oxygen demand (BOD) due to the ethylene glycol discharge to the municipal plant previously caused toxicity to plant biomass. Microscopic examination of the mixed liquor in the activated sludge basins was performed on a weekly basis. The ethylene glycol wastestream from the airport added approximately 1500 lbs. of BOD per day to the municipal wastewater treatment plant loading. Following **MICROCAT-XR** addition, BOD in the plant effluent was consistently below 0.5 mg/L allowing the municipality to meet permit limits. Monthly microscopic examinations of the system's mixed liquor continue to show a stable population of higher lifeforms (stalked ciliates and rotifers) that indicate a healthy biomass.

CONCLUSIONS

The **MICROCAT-XR** bioaugmentation program was successful in achieving the treatment objectives of reducing BOD and toxic shocks associated with the ethylene glycol solution entering the municipal wastewater treatment system.

A daily maintenance schedule of **MICROCAT-XR** addition has been followed to reduce the impact of toxic shocks to the municipal wastewater treatment system.