

## CASE STUDY # 026

# MUNICIPAL WWTP RECEIVING INDUSTRIAL WASTEWATER REDUCES PHENOL USING BIOAUGMENTATION

### SUBJECT:

Enhancement of phenol removal to be in compliance with NPDES permit limits.

**PRODUCT APPLIED:** MICROCAT-HX Hydrocarbon Degrading Bioformula



### TREATMENT SYSTEM:

1. Wastewater
  - a. Flow: 18.925 m<sup>3</sup>/day
  - b. Influent phenol concentration: 0.09 - 0.2 mg/L
  - c. Effluent NPDES permit limit for phenol: 0.0246 mg/L
2. System Type: Oxidation Ditch. Surface Mechanical Aerators
  - a. Sludge age = 31 day
  - b. Average mixed liquor suspended solids: 2800 mg/L
  - c. Average influent BOD = 203 mg/L
  - d. Average effluent BOD = 3.81 mg/L
  - e. Typical pre-bioaugmentation phenol removal: 75%  
(therefore usually out of compliance)

### OBJECTIVE:

To prevent phenol permit excursions. The municipal plant had been exceeding permit limits for several months prior to bioaugmentation.

**PROGRAM:**

A **MICROCAT-HX** start-up dosage was used to seed the oxidation ditch. Once a population of specialized microbes was established, a preventive maintenance dosage of five pounds is added on a daily basis.

**RESULTS: (See following chart)**

Mixed liquor evaluations are performed and plant operating and analytical data are analyzed on a monthly basis. After the second month of bioaugmentation with **MICROCAT-HX**, significant improvement in phenol removal was attained (up to 90% removal efficiency). This improved efficiency continued, despite trends of increased phenol influent loadings. The plant continues to meet permit requirements due to enhanced removal efficiencies.

Other wastes (such as septage waste) are dumped directly into the aeration basin without monitoring or screening for phenolic contribution. Occasional fluctuations in the reported percent removals occur because this additional source of phenolics is not considered.

