

## CASE STUDY # 030

# PHENOL REDUCTION IN A MUNICIPAL WWTP RECEIVING INDUSTRIAL WASTEWATER, SEPTAGE AND LANDFILL LEACHATE

### **SUBJECT:**

Enhancement of phenol removal to within expected NPDES limits.

**PRODUCT APPLIED:** MICROCAT-XR, Microbial Hydrocarbon Degradar



### **TREATMENT SYSTEM:**

Wastewater flow: 52,272 m<sup>3</sup>/day

The municipal wastewater treatment plant (WWTP) system utilizes a two-stage carousel-type activated sludge system for carbonaceous removal and nitrogen removal.

### **OBJECTIVE:**

Combined influent of municipal sewerage, landfill leachate, septage and industrial effluents to the treatment plant contains phenols at levels up to 740 ug/L. Current effluent permit limits for phenols are required to be below 350 ug/L. Phenol removal through the secondary activated sludge process treatment process is currently adequate during warm weather operation, but not in cold weather. The goal of bioaugmentation was to maintain a consistent year-round phenol removal level (consistent with summertime removal rates). As future permit limits will be tightened, the wastewater plant wanted to be in a position to guarantee phenol removal to below the current requirements.

**PROGRAM:**

The treatment system was carefully studied to determine the proper microorganisms and dosage rate to be applied to the system. Following a system evaluation, the use of **MICROCAT-XR** was recommended, Microbial Hydrocarbon Degradar, to degrade the phenols in the treatment system. A substantial initial product dosage was added directly to the front of the secondary activated sludge system to build up a phenol-degrading biomass. **MICROCAT-XR** addition was then tapered down to a preventive maintenance level to provide a continuous supply of phenol-degrading microorganisms to the system.

**RESULTS:**

Phenol removal with the bioaugmentation program has been consistently below the detection limit of 20 ug/L (with one unexplained excursion to 27 ug/L). This program was successful even when the phenol loadings increased to levels higher than previously encountered. **MICROCAT-XR** product addition was particularly successful in overcoming the effects of low temperature on the phenol degradation capacity of the biomass (as low as 6 degrees Celsius).

