

## CASE STUDY # 034

### CHEMICAL PLANT IMPROVES COD REMOVAL

**SUBJECT:**

Improved activated sludge chemical oxygen demand (COD) removal and process stability.

**PRODUCT APPLIED:** MICROCAT®-HX Hydrocarbon Degradar



**TREATMENT SYSTEM:**

An activated sludge system receiving 3600 m<sup>3</sup>/day of wastewater flow at 1,000 to 3,000 mg/l COD. Wastewater contains amines, phenols, aniline, nitrobenzene, solvents, chlorinated organics, organic sulfur compounds and colorants. Two 7000 m<sup>3</sup> equalization basins are followed by two neutralization tanks and then two primary clarifiers. Two diffused air aeration basins of 2998 m<sup>3</sup> are followed by two secondary clarifiers.

**OBJECTIVE:**

To demonstrate reduced effluent COD and enhance process stability.

**PILOT SCALE:**

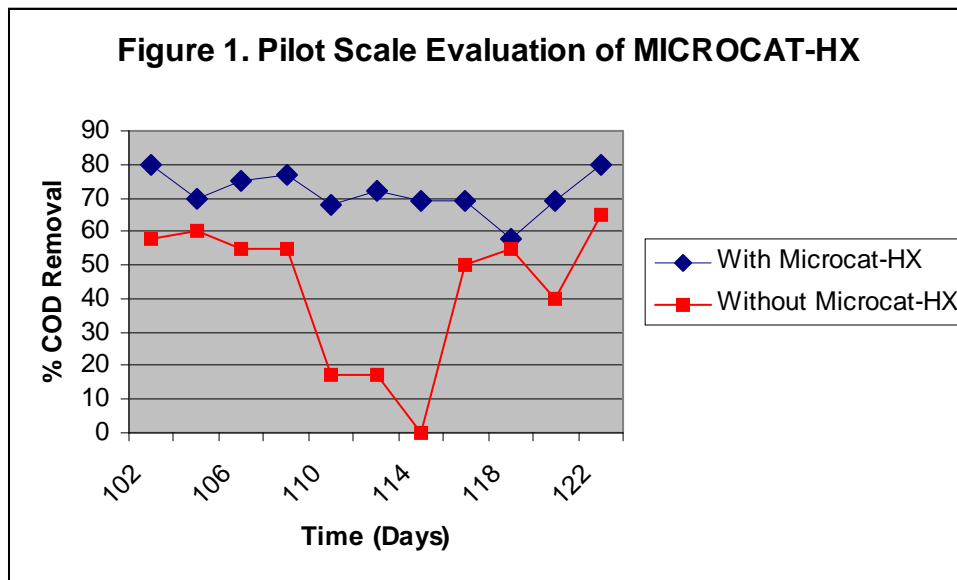
Two identical pilot reactors were set up to simulate the full-scale system. To one reactor **MICROCAT-HX** was added, to the other nothing. Both reactors were run in the same mode as the full-scale plant.

**MONITORING:**

Influent and effluent COD, influent flow rate, dissolved oxygen and sludge volume was measured for each unit on a regular, but not daily, basis.

**RESULTS:**

The results are summarized in Figure 1. The **MICROCAT-HX**-treated reactor consistently yielded higher COD removals, particularly from August 16 to October 27, when the unit was operated at essentially the same hydraulic residence time (HRT) as the control reactor (for a significant period, the **HX**-treated reactor was operated at a HRT  $\frac{1}{2}$  to  $\frac{3}{4}$  that of the control reactor). The **HX**-treated reactor produced a much more stable process operation (as indicated by the lower standard deviation of the COD removal data) than the control. And, finally, the **HX**-treated system improved the upset recovery speed of the system as indicated in Figure 1.



**CONCLUSIONS:**

**MICROCAT-HX** improved COD removal, process stability and upset recovery speed in this activated sludge pilot unit treating a complex industrial organic chemical wastewater.