

CASE STUDY # 027

AMMONIA-NITROGEN REDUCTION DURING COLD WEATHER IN A MUNICIPAL/INDUSTRIAL WWTP

SUBJECT:

Reduction of ammonia-nitrogen during cold weather in a municipal wastewater treatment plant with a high percentage of industrial flow from food processing and electronics manufacturing.

PRODUCT APPLIED: **MICROCAT-XNL/XNC Ammonia Oxidizing Bioformula**



TREATMENT SYSTEM:

1. Wastewater flow: 11,363 m³/day
2. Bar Screen/Grit Chamber
3. (2) 56,818 m³ aerated lagoons in series.
4. (2) Quiescent cells for secondary settling.

OBJECTIVE:

The treatment objective was to reduce ammonia-nitrogen in the lagoon system during cold weather to below 3 mg/L permit limits.

PROGRAM:

It was determined that **MICROCAT-XNL** was to be added to the second aerated lagoon to avoid the possible toxic effects of the high BOD loading from industrial discharges in the first lagoon. An insulated shed (to protect the system from extreme winter conditions) was constructed to accommodate the liquid feed system for the **MICROCAT-XNL**. **MICROCAT-XNL** was added continuously to the second aerated lagoon via a chemical pump system. Alkalinity and pH of the system was controlled to optimal conditions for nitrification using soda ash. Lagoon temperatures ranged from 10 to 14 degrees Celsius during the inoculation program.

RESULTS: (See following chart)

Ammonia-nitrogen removal was 83% during **MICROCAT-XNL** addition with an average influent of 17.41 mg/L and average effluent of 2.85 mg/l. As depicted in the attached graph, this was significantly better than the two previous years removal rates of 51% and 43% respectively (all above the current 3 mg/l permit limits). Bioaugmentation with **MICROCAT-XNL** accomplished the objectives of the program to maintain ammonia- nitrogen removal rates below permit limits.

