Client: Large Midwestern Dairy

Services Requested:

- **Identify Cause of WWTP Failure**
- **Assign Liability**
- **Support Legal Team**

Type of Treatment in WWTP:

1. Physical – Flow Equalization
2. Chemical – Alkalinity addition
3. Biological – Anaerobic Lagoon followed by Activated Sludge Polishing Plant

Midwestern Dairy WWTP

A large Midwestern dairy retained a Professional Services company to supervise and operate their wastewater treatment plant. The dairy's wastewater flowed to a large multi-stage Anaerobic Lagoon followed by a small Activated Sludge treatment plant for polishing. After several years of successful operation a major plant upset occurred: the Anaerobic Lagoon performance suddenly cratered, with BOD removal falling from 85% to less than 30% over a two-week period. The Operations Group responded appropriately but was unable to halt the continued performance failure. The increasingly poor lagoon effluent imposed a gross organic overload on the polishing Activated Sludge plant, causing it to fail under the strain. Major effluent violations occurred and continued, due to the very slow recovery rate inherent with anaerobic treatment systems.

The Operations Group had no explanation for the failure, but finally managed to stabilize performance with a poor effluent quality. Recovery was extremely slow. Predictably, the continued violations soon brought the unfavorable attention of the state regulatory agency. The Dairy blamed the wastewater plant operating company for the failure, and insisted that the operators had failed to maintain adequate nutrient balance and alkalinity levels. They pointed to the

dramatic and sustained decrease in pH values as proof.

The Operation Services Company insisted that the dairy must have poured something toxic down the sewer – and the change in lagoon pH was the *result,* not the *cause.* However, after examining records of dairy plant operation they had no explanation or possible suspect agents.

The fines for Discharge Violations mounted, contract Operations costs went unpaid, and the vitriol increased. As usual, lawyers were summoned to resolve the classic *"He said, They said"* situation typical for such an occurrence. The lawyers for the Dairy hired ***Wastewater Experts*** for technical support and expert witness services, with a brief to immediately evaluate all data and identify cause and solutions.

Subsequent investigations by ***Wastewater Experts*** identified one particular CIP process (clean-in-place) which was completed within the factory prior to a holiday weekend. CIP's are done prior to production plant shut-downs in order to thoroughly clean the equipment. Ultimately, the ***Experts*** were able to identify a specific substance in one of the products used during the CIP process that is toxic and inhibitory to certain bacteria essential to the anaerobic destruction of organics. When the CIP was completed, this substance was discharged to the anaerobic wastewater treatment lagoon; the concentration was toxic to the very methane-formers that are critical to the Dairy's anaerobic treatment process. The die-off of these organisms in turn led to the ultimate plant failure.

Further, ***Wastewater Experts*** detailed examination of the Wastewater Plant Operations Records confirmed that the operators had immediately undertaken appropriate and extensive corrective actions, and in a timely fashion. They had also accomplished system recovery in a reasonable timeframe.

Wastewater Experts concluded that:

1. The Dairy itself had caused the plant failure by unknowingly discharging a substance that was toxic to their wastewater treatment lagoon process.
2. The contract operators had done nothing wrong in their daily responsibilities and had acted professionally to recover effective operation.
3. However, the contract operators were ultimately responsible for both the treatment plant failure and the consequent fines, because they had never informed the Dairy that the chemical identified by *Wastewater Experts* was in fact toxic and inhibitory to their wastewater treatment process. Nor had the contract operators established a program to pre-screen and approve the chemicals used in the Dairy, for the specific purpose of avoiding such treatment system failures.
4. *Wastewater Experts* further identified solutions to achieve more rapid recovery from the process failure.
5. Finally, wastewater experts supervised the deletion of troublesome chemicals for future plant operations protocols.

As a result of *Wastewater Experts'* findings, lawsuits were avoided and a final solution negotiated.