We Solve Odor!

Take Back Control Of Odors At Your Facility
Increase Plant Capacity / Reduce Operating Costs

INDUSTRIAL WASTEWATER TREATMENT

Food/Dairy Processing

BONGARDS CREAMERIES
(Cheese, Whey, Cream, Butter)

The Challenge/Problem

A recent increase in cheese production was overwhelming the capacity of the wastewater treatment system.

- Pungent odors from the WWTP aerated lagoons were disrupting the entire town
- The MN EPA was threatening to shut down production if the odor was not solved immediately

Treatment Plan and Execution

Bongards wastewater operators found SciCorp on the web and asked for guidance for an immediate solution. SciCorp engineers responded immediately and working with the Bongards wastewater treatment operators, assessed the Bongards WWTP facility and developed a treatment approach that involved the following:

- **Immediate application of a shock dose by spraying BIOLOGIC™ SR2 over the surface of the lagoons**
- **Implementation of a continuous dose of BIOLOGIC™ SR2 to the influent of the lagoons using a weather protected metering pump**

Success achieved by Bongards

WITHIN HOURS of Bongards operators implementing the shock dose, **LAGOON ODORS WERE ELIMINATED** and with ongoing treatment the odors stayed away.

All odors in the town were eliminated and the MN EPA was satisfied and required no further action.

Other long-term benefits included:

D.O. in the lagoons rose from 0.5 ppm to 3 – 4 ppm	Aerator power consumption was reduced by 35% after 3 months of operation	Lagoon sludge depth was reduced from 3 feet to 6 inches after 12 Months of operation

+ Significant reduction in carbon footprint and environmental impact

As a result of their partnership with SciCorp, Bongards was able to avoid:

- Shutdown of their manufacturing facility
- A multimillion dollar spend on WWTP infrastructure
- Government fines
- Damage to their Brand in the community
- Future lagoon dredging costs

Dorian Dickinson, LLC

Contact Us:

+1 312 399 9578
dorian@doriandickinson.com

SciCorp™ BIOLOGIC™

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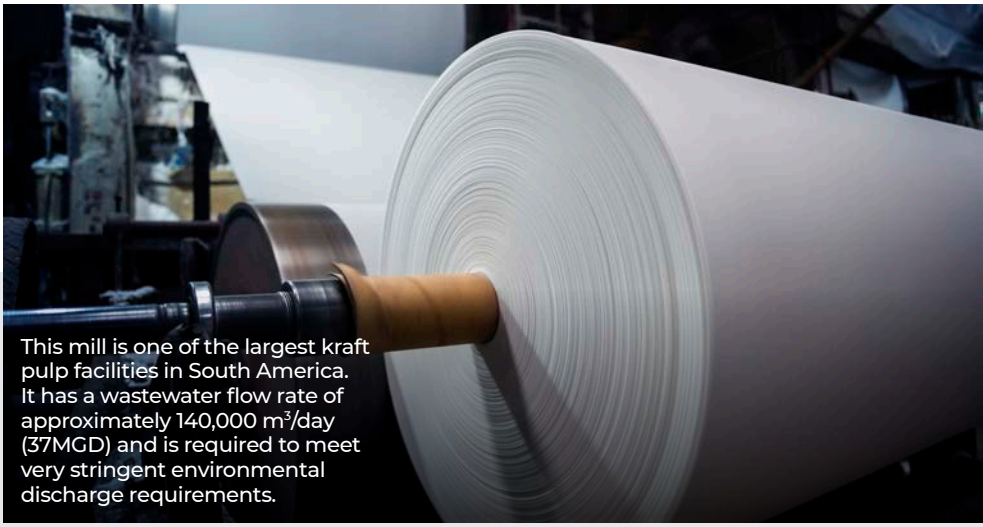
ECOLOGO

INDUSTRIAL WASTEWATER TREATMENT

Pulp & Paper

LARGE PULP MILL
IN SOUTH AMERICA
(Kraft Pulp)



This mill is one of the largest kraft pulp facilities in South America. It has a wastewater flow rate of approximately 140,000 m^3/day (37MGD) and is required to meet very stringent environmental discharge requirements.

The Challenge/Problem

Recent requirements to increase production were stressing the capacity of the existing wastewater treatment system.

- Odors from the WWTP were causing complaints from neighbors
- Effluent concentrations of P and COD were causing challenges
- Biological treatment reactors were not performing at optimal efficiency

Treatment Plan and Execution

An engineer from the WWTP met with SciCorp engineers at a Tradeshow and requested assistance in addressing the challenges the WWTP was facing. The wastewater treatment plant elected to conduct an initial full-scale three-month treatment trial to evaluate the effectiveness of BIOLOGIC SR2.

SciCorp wastewater engineers assisted the WWTP engineers in setting up the trial and recommended two separate product addition points in the WWTP. The product dosing locations were equipped with continuous metering pumps at both locations. During the trial SciCorp engineers met with WWTP engineers on a weekly basis to assess the treatment performance data.

Success achieved by the WWTP

Shortly after implementation, the WWTP achieved very SIGNIFICANT REDUCTION IN ODOR COMPLAINTS and in H_2S and mercaptan odors throughout the plant, specifically in the areas of the secondary clarifiers and belt presses.

In addition, the WWTP was able to achieve the following additional significant benefits as a result of the use of BIOLOGIC SR2:

- 25% — Increase in WWTP load treatment capacity while maintaining effluent discharge standards without increasing aeration (Increase in organic load from 120 t/day to up to 150 t/day)
- 36% — Increase in P removal efficiency
- 10% — Increase in reactor efficiencies
- 10% — Increase in COD removal efficiency
- 23% — Decrease in biosolids wasted (dry basis)

Based on the results achieved in three-month trial, the plant decided to implement full-scale long term continuous treatment with BIOLOGIC SR2 at their facility and also decided to utilize the product at a second pulp mill also owned by the company.

+ Significant reduction in carbon footprint

Issues Avoided

By working with SciCorp, the plant operators were able to help the facility avoid:

- Lost revenue due to decreases in pulp production capacity
- Regulatory enforcement associated with odor complaints and effluent discharge concentrations
- Increased operating costs associated with sludge disposal and aeration
- Damage to the company brand in the community

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INDUSTRIAL WASTEWATER TREATMENT

Poultry Processing

Maple Lodge Farms is the largest poultry processing plant in Canada. Recent growth in plant operations had led to an increase in load to their wastewater process which was causing regular WWTP upsets and overloads.

The Challenge/Problem

Increased chicken production was causing overloading of the wastewater plant, excessive sludge buildup, and odor problems.

- Plant upsets/overloading under various loading conditions (95% weekday load v.s. 5% weekend load were a regular occurrence).
- Pungent odors from the wastewater treatment system and lagoons were disrupting the neighboring community.
- Increased aeration requirements were causing higher operating costs.
- Sludge build-up in the settling lagoons was unsustainable and required frequent dredging which resulted in high operating costs.

SciCorp Treatment Plan and Execution

Maple Lodge connected with SciCorp seeking guidance for a sustainable solution. SciCorp engineers responded immediately and worked with Maple Lodge to assess the overall operations and to develop a treatment approach that involved the following:

- **Application of a shock dose spraying BIOLOGIC™ SR2 over the surface of the aerated and settling lagoons**
- **Ongoing dosing of BIOLOGIC™ SR2 using a small metering pump based on the average hydraulic flow rate and the average BOD wastewater loading**

Success

Working with SciCorp, Maple Lodge operators were able to optimize their wastewater treatment facility resulting in the elimination of odors, elimination of WWTP upset occurrences and a measurable reduction in operating costs.

Long-term benefits included:

- 24% — Increased treatment plant capacity without plant upset while maintaining final effluent quality
- 22% — Reduction in aeration energy costs
- 26% — Reduction in sludge generation
- 25% — Reduction in polymer used for sludge dewatering

Elimination of malodors and significantly improved removal rates of BOD, COD, TSS, and Ptot.

Problems Avoided

As a result of their partnership with SciCorp, Maple Lodge was able to avoid:

- Wastewater capacity overload and limitations on chicken processing rates
- Odor complaints from neighbors
- High aeration and sludge disposal costs

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INDUSTRIAL WASTEWATER TREATMENT

Food Processing

OREGON CHERRY GROWERS
(Cherries, Pears, and Hazelnuts)

Oregon Cherry Growers is one of the largest cherry farms in Oregon's Willamette Valley. As Oregon Cherry Growers continued to expand production and increase output, they began to exceed capacity with both of their storage lagoons resulting in major issues.

The Challenge/Problem

Excessive sludge build-up and neighboring odor complaints threatened to force the facility to shutdown.

- Pungent odors from their lagoons were disrupting neighbors and the community.
- Oregon Cherry land applied the sludge and spray irrigated the wastewater onto farmlands. This resulted in excessive odor and neighbor complains which caused the OR EPA to threaten to shut down operations.
- Sludge build-up in the lagoons required frequent dredging/operating costs.

Treatment Plan and Execution

Oregon Cherry found SciCorp on the web and asked for guidance for an immediate solution. SciCorp engineers responded immediately and worked with the Oregon Cherry to assess the overall operations and developed a treatment approach that involved the following:

- **Immediate application of a shock dose by spraying BIOLOGIC™ SR2 over the surface of the lagoons**
- **Addition of BIOLOGIC™ SR2 when performing land application of the sludge and spray irrigation of the wastewater onto farmlands**

Success achieved by Oregon Cherry

The shock dose of BIOLOGIC™ SR2 resulted in **IMMEDIATE ELIMINATION OF LAGOON ODORS**. Oregon Cherry was also able to eliminate the excessive odors caused when land applying sludge and spray applying the wastewater to farmlands. As a result, the OR EPA was satisfied and complaints from neighbors stopped.

Long-term benefits included:

- **90%** Odor reduction in storage lagoons
- **95%** Odor reduction when spreading both land applied sludge and spray applied wastewater
- **30%** Reduction in sludge depth in storage lagoons

+ Significant reduction in carbon footprint and environmental impact

With help from SciCorp, Oregon Cherry was able to avoid:

- Shutdown of their manufacturing facility
- Complaints from neighbors
- Government fines
- Damage to their brand in the community
- Future lagoon dredging costs

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HOG MANURE TREATMENT

Hog Waste Lagoon Storage

1.2 MILLION GALLONS PRIMARY LAGOON
STEINBACK, MANITOBA

The Challenge/Problem

A hog farm operation was attempting to remediate an old, overloaded lagoon with a large layer of solids built up on the bottom of the lagoon that had significantly reduced its functionality. Pumping of the solids was restricted because they had become "cemented" on the bottom of the lagoon. Lagoon odors were also causing issues for neighbors.

Treatment Plan and Execution

- Dosage: 50ppm
- Method of Application: BIOLOGIC™ SR2 mixed with water at a rate of 100 parts water to 1 part product and was sprayed over the surface of the lagoon six weeks prior to pump out.

Success

Six weeks following application of the product, the primary cell was emptied and the bottom layer of "cemented" sludge was found to have broken up. An additional 250,000 gallons of pumpable sludge was found to be recoverable compared to the previous pump-outs.

Other benefits that were found included:

- Significant odor reduction in lagoon and manure
- Surface cake layer of solids disappeared

Observations from the hog operation manager:

"My name is Steve Gallop, I have worked in the hog industry in Manitoba for 19 years in the nutrient management side, moving up to 150 million gallons/year. I have probably tested out 5 different products a year for the past 19 years. When I was approached by SciCorp to test their product "SR2", we decided to put it in one of our oldest and worst lagoons for solids.

Even though we applied it later in the year than we should have, and it was a colder than normal year, after just 6 weeks of being in the primary cell there was an amazing difference when we emptied the lagoon. Instead of finding the hog manure bottom solids that we expected to be like cement after many years of sitting in the lagoon, there were now huge craters where the solids had been digested; some were 6 feet across and up to 2 feet deep. I estimate that 1 application of SR2 probably recovered up to 250,000 gallons of storage out of a 1.2 million gallon primary cell. In addition, I can say after pumping, ***it does an amazing job at reducing odor in hog manure!****"*

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