

ENVIRONMENTAL ENGINEERING PROJECT SUMMARIES

CLIENT: Commission Printer & Finisher of Woven Textile Fabrics
PROJECT: Wastewater Compliance

After substantial capital expenditures for wastewater treatment facilities, this Significant Industrial User (SIU) was facing the end of a year long Special Order by Consent (SOC) with the local POTW and was still unable to comply with its permit limits. Unable to consistently meet a number of pollutant parameters, including mercury, oil and grease, BOD, and flow, this client turned to LEAF for guidance.

After a detailed inspection of plant manufacturing operations by LEAF, it was obvious that significant opportunities were available to reduce wastewater pollutant parameters by process means. LEAF compiled a list of activities to improve wastewater quality and reduce water consumption. Savings on the water bill alone were estimated at \$50,000 annually.

LEAF completed a series of meetings with the local municipal pretreatment staff and successfully secured a new SOC covering 18 months that required little in the way of capital expenditures. Also eliminated, at LEAF's suggestion, were fines for exceeding SOC pollutant parameters while the agreement was in effect. Savings for this change are likely to exceed \$10,000 over the life of the new SOC.

CLIENT: Heavy Equipment Manufacturer
PROJECT: Technical Support for Form R Compliance

Our client had been preparing their Form R reports for a number of years, and was given a "Notice of Opportunity to Show Cause" by the USEPA under EPCRA for failing to submit a Form R for nitrate compounds. Under the National Nitrate Compliance Agreement, the penalty for the client would have been \$20,000.00. LEAF investigated the facility operations for the usage of nitric acid and its neutralization. LEAF was able to provide information to the USEPA that the client was in compliance with EPCRA, and the USEPA agreed the \$20,000.00 penalty did not apply. LEAF revised the Form R reports for nitric acid for prior years, which had been improperly completed, to avoid other potential noncompliance penalties and to properly correct the USEPA database.

CLIENT: Nonwovens Fabric Manufacturer
PROJECT: Environmental Audit

LEAF reviewed the manufacturing operations for the production of polyester staple and polyester nonwoven fabrics for compliance with state and federal environmental regulations. We developed a final report of findings in relation to air quality, stormwater, wastewater, SPCC planning, used oil management, asbestos management, hazardous and universal waste programs, chlorofluorocarbon handling, and emergency planning. Part of the report was a "Get Well Plan" specific to the findings, and LEAF assisted with the implementation of the Get Well Plan items. Once completed, the facility was in compliance with environmental regulations, and LEAF provided ongoing environmental engineering support to the daily operations.

CLIENT: Woven Synthetic Fabric Manufacturer
PROJECT: Fire Safety Analysis

Like many large textile facilities, back-up fuel for the finishing operation in this plant is provided by a bulk propane storage and vaporizer facility. The National Fire Protection Association (NFPA) LP-Gas Code 58, adopted by regulatory agencies throughout the country to ensure safe installation, transportation, and use of propane, requires fire protection for all storage containers with an aggregate water capacity of more than 4,000 gallons. To determine the type and extent of fire protection required, a competent Fire Safety Analysis (FSA) must be completed. LEAF, with the industrial experience of its staff, had the expertise to conduct the FSA.

For this manufacturer of woven synthetic fabrics, LEAF conducted the FSA to correct a deficiency documented by the State Fire Marshal's Office. LEAF noted several shortcomings with the bulk LP Gas installation that, once corrected, will provide for a system not considered a "serious hazard" and therefore, eliminate the requirement for fire protection under Section 3-10.2.3 of the Code. The client is then able to make improvements that provide for a much safer bulk propane installation for less cost than approved fire protection systems.

CLIENT: Welding and Cutting Systems Manufacturer
PROJECT: Air Toxics Compliance Assessment

Our engineers evaluated all production processes and determined the most economical solution for the client to meet air emission regulatory limits without modifying the manufacturing process for this metal fabricating systems manufacturer. We evaluated facility-wide emissions of air toxic compounds exceeding the state regulatory limits. Air dispersion model was done after extensive field data gathering was completed to demonstrate compliance with state air regulations. Our engineers also completed air permit renewal applications, SPCC Plans, and stormwater compliance programs for this facility.

CLIENT: Textile Manufacturer
PROJECT: Drinking Water Monitoring & Compliance

This client supplies drinking water for approximately 300 employees at its facility, using onsite groundwater supply wells as its source. Leaf Environmental & Engineering, P.C. has conducted all required drinking water quality monitoring and reporting for the facility for approximately five years. In addition, when problems arose with system water quality, causing failure of plumbing fixtures and other problems, LEAF reviewed the system design and water treatment procedures, ultimately recommending changes in the treatment system that returned water quality to acceptable levels and eliminated problems with the distribution system and fixtures. As existing supply wells became fouled or water demand increased, LEAF assisted with the site selection, installation, testing, and permitting of new water supply wells, as well as design of appropriate, cost-effective treatment systems. LEAF is also in the process of completing an application for use of surface water as an additional source of drinking water, requiring reclassification of the watershed and design and permitting of an appropriate surface water treatment system.

CLIENT: Specialty Nonwoven Fabric Manufacturer
PROJECT: Ongoing Compliance Planning & Assessment

Leaf Environmental & Engineering, P.C. provides ongoing environmental consulting services for all plants belonging to this manufacturer. Such services include acting as liaison between state and local regulatory agencies and individual facilities; preparing applications and acquiring permits, and maintaining compliance with imposed limits on air emissions and water discharges; providing testing and analyses for waste investigations; advising company officials of changes in regulations and environmental laws; and determining the effects on environmental permits and discharge limits of changes in design or operation at the plant level.

CLIENT: Specialty Textile Manufacturing Company
PROJECT: Ongoing Compliance

Leaf Environmental & Engineering, P.C. supplies ongoing environmental engineering support for this company which includes analysis, troubleshooting, and remediation for problems at wastewater treatment plants, air and pretreatment permitting, air toxics emission reports, UST tank removals, soil and groundwater remediation, SPCC Plans, Stormwater Pollution Prevention Plans (SPPP), regulatory agency negotiations, and long range planning.

CLIENT: Textile Manufacturer
PROJECT: Fly Ash Disposal

An ongoing services client was spending \$100,000 per year to dispose of fly ash generated by the coal-fired steam generating plant and waste activated sludge from the wastewater treatment plant. LEAF developed a recommendation and regulatory strategy for the plant to dispose of the fly ash by commingling the dry material with sludge stored in a 25,000,000-gallon lagoon. By modifying an existing closure plan for the lagoon that provided for sludge disposal by land application, the client can take advantage of the pozzolanic properties of dry fly ash and close the lagoon by a means that is environmentally preferable. The resultant mixture hardens to the point of allowing heavy equipment to operate on the medium as fill progresses. The abundant supply of fly ash will ensure uptake of available liquids and the cement-like properties will physically bond solids in the sludge minimizing the potential to leach contaminants.

An application to modify the existing lagoon closure plan was submitted by LEAF and approved by the state solid waste regulatory authority. This approval not only saved the company hundreds of thousands of dollars annually in solid waste disposal costs, but also provided an environmentally acceptable means of disposal for fly ash for at least ten years.

CLIENT: Cigarette Manufacturer
PROJECT: Ongoing Environmental Assessments

Leaf Environmental & Engineering, P.C. serves as consultant for all areas of this manufacturer's environmental needs, including air toxics regulatory compliance, UST removal and remediation, groundwater and soil testing, monitoring and remediation, PCB inspection programs, hazardous waste disposal and control programs, SPCC Plans, stormwater permit compliance and SPPP, and annual environmental audits to maintain compliance with city, state, and federal laws.

CLIENT: Woven Apparel Fabric Manufacturer
PROJECT: Wastewater Assessment

Leaf Environmental & Engineering, P.C. performs wastewater treatment studies, toxicity reduction evaluations, hazardous waste compliance programs, and permit limit negotiations as part of ongoing support for this textile manufacturer. We also work with engineers and management at individual plants on troubleshooting process problems, maintaining OSHA compliance programs and air permits and Title V compliance, and on updating SPPP and SPCC plans and addressing subsequent compliance issues.

CLIENT: Knit Fabric Dyeing and Finishing Facility
PROJECT: Wastewater Plant Improvements

A knit fabric finishing plant was experiencing high BOD and Suspended Solids concentrations in its effluent. The facility was spending thousands of dollars per month on polymer to aid in the flocculation of the mixed liquor and the disposal of the high water content sludge. Our engineers reviewed the operation of the facility and made recommendations to get the plant back on-line. Hydraulic loading, F/M ratio, SVI, organics clarifier loading, aeration basin loading, MLSS, nutrients, aeration capacity, digester and thickeners operation, and a microscopic examination led our personnel to modify the operations. Several recommendations were made and implemented which resulted in high removal efficiencies that eliminated the need for polymer additions.

CLIENT: Cigarette Manufacturer
PROJECT: Soil Contamination Evaluation

An onsite Level II Environmental Assessment for the client's petroleum and solvent above ground storage tank farm was recommended when the potential for soil and groundwater contamination was evidenced. Collection and analysis of soil samples collected from borings installed both inside and outside of the spill containment wall indicated that groundwater had not been impacted. Soil samples collected from the floor of the tank farm were shown to contain only petroleum product contamination. A site sensitivity evaluation was performed by our engineers to establish a cleanup level for the soils above the normally accepted levels. Contaminated soils were removed above the modified cleanup concentrations and the containment system modified to prevent reoccurrence.

CLIENT: Non-Woven Fabrics Manufacturer
PROJECT: Indoor Air Quality

Our engineers evaluated the haze that accumulated in the rafters of the facility during the manufacture of one of the company's products to determine if it contained harmful and irritating compounds. We prepared several personnel samplers and issued personnel badges to affected employees to determine the type of exposure the employees may be experiencing. Several samplers were stationed in the rafters of the manufacturing facility to determine the compounds present. After an investigation of possible chemicals used in the production process and known irritating compounds, employee exposure was monitored for acrylonitrile and sixteen different aldehydes and ketones, including acrolein, formaldehyde, acetaldehyde, and furfuraldehyde by using specially coated sorbent tubes, charcoal tubes, and badges using either NIOSH, SW-8315, or OSHA methods. None of the analyses turned up significant quantities of any of the tested target compounds, but the facility later modified the ventilation system to prevent additional haze from accumulating.

CLIENT: Agricultural Feed Producer
PROJECT: HazMat Manual

An ongoing services client enlisted LEAF to interpret State and Federal Department of Transportation (DOT) regulations for the shipment of some of its products and to create a shipping manual for hazardous products. LEAF initially screened six products to determine regulatory status and developed a Hazardous Materials Shipping Manual that included three of the six that were regulated. With one phone call, a new hazardous materials shipping guide can be created for any new product the client wishes to market. Should formulation changes to existing products become necessary, the tables can be used to determine the DOT regulatory impact.

Each product entry is also done to ensure that a formulation change will not create the need to modify the tables. The hazardous materials shipping manual was distributed to each of the company's plants for training and compliance purposes. The manual contains tables for each product that details shipping requirements regardless of package size, type, shipping method, destination, or regulated constituent(s) concentration.

CLIENT: Automotive Fabric Manufacturer
PROJECT: Environmental Audit

An Environmental Audit of an automotive fabric manufacturing facility was conducted as part of preparations for ISO 14001 certification. As part of this audit, manufacturing operations were reviewed to examine emissions to the air, discharges of wastewater, stormwater runoff, and management of solid and hazardous wastes. Environmental operations and activities were reviewed by a team of LEAF engineers and scientists to determine if the facility was being operated in compliance with Federal, State, and local regulations and permits. A final report was prepared with specific recommendations to resolve any non-compliance issues. The facility implemented our recommendations which led to successful ISO 14001 certification.

CLIENT: Adhesive Manufacturer
PROJECT: Environmental Audit

An Environmental Compliance Audit of the manufacturing facilities and property of a specialty adhesive manufacturer was conducted by LEAF as part of an internal evaluation in order to provide a baseline of environmental compliance. Prior to this audit, the Hazardous Waste Section, Division of Waste Management, NC Department of Environment and Natural Resources had conducted a Comprehensive Evaluation Inspection (CEI) and identified several noncompliance issues. Manufacturing operations were reviewed to examine emissions to the air, discharges of wastewater, stormwater management and disposal of solid and hazardous wastes. Environmental programs and activities were reviewed to determine if the facility was being operated in accordance with Federal, State, and local regulations and permits. LEAF provided recommendations to bring the facility into compliance. LEAF continues to assist the company with ongoing environmental compliance programs.

CLIENT: Private University
PROJECT: Sewer Release Remediation

A private university discovered a leaking sanitary drain line under a room in the first floor of an animal research facility and a site investigation was conducted by LEAF. Soils were remediated in place and groundwater downgradient from the building was investigated for volatile and semi-volatile compounds used at the site.

Only total and fecal coliforms were detected in two of three monitoring wells at levels above Groundwater Standards. Subsequent quarterly monitoring showed total coliform bacteria in all three wells, but no fecal coliform bacteria. The NCDEQ closed the investigation and the monitoring wells were properly abandoned.

CLIENT: Plastics Manufacturing
PROJECT: Site Demolition and Remediation

LEAF managed the demolition of a 95,000 sq. ft. plastics manufacturing facility in Jackson County, North Carolina. The property was located in a mixed-use area adjacent to an Outstanding Resource Water (ORW) and a Trout Water (TR). LEAF designed and installed erosion control measures for the 24 hour-25 year storm to protect surface waters of the State. Most building materials were recycled or reused on other sites. Soils and groundwater impacted with hydraulic oils were removed prior to LEAF recommendation for site closure. The NCDEQ closed the investigation allowing the property to be sold.

CLIENT: Private Developer
PROJECT: Initial Soil Sampling Report

The commercial property owner enlisted the services of LEAF to investigate a potential release of tetrachloroethene (PERC) at the dry cleaners on their site. LEAF conducted soil sampling both through the floor and outside the building, screened soils in the field and selected a minimum number of soil samples for laboratory analysis. PERC contamination was identified in soils and documented to the NCDEQ, which led the site to be added to the NC Dry Cleaners List for further investigation and remediation.

CLIENT: Roofing Contractor
PROJECT: Environmental Compliance Audit

An Environmental Compliance Audit of the subject property and facilities was conducted by Leaf Environmental & Engineering, P.C. Environmental, Inc. (LEAF). The audit was conducted as part of an internal evaluation in order to provide a baseline of environmental compliance.

As part of this audit, chemical warehousing, distribution and use practices were reviewed to examine emissions to the air, discharges to wastewater, stormwater runoff, and handling of solid and hazardous wastes. All site environmental operations and activities were documented and recommendations made to bring the facility into compliance with Federal, State, and local regulations and permits.