



Case Histories: Food Processing

Making Compliance Pay: *How One Snack Food Maker Turned a Wastewater Challenge Into a Business Opportunity*

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The challenge of effectively managing process wastewater seems to cross geographical boundaries and individual food product classifications with equal ease. With discharge standards tightening and haul-out costs escalating by the year, many food processors have found an attractive alternative in treatment systems that can be installed and operated on-site to produce clear, sewerable water and a residual sludge that in most cases is locally landfillable.

In the food processing industry, where the most typical contaminants monitored by municipal regulatory agencies include TSS (Total Suspended Solids), BOD (Biological Oxygen Demand), and FOG (Fats, Oils and Grease), wastewater treatment can be a simple and straightforward matter. Ordinarily, the waste stream is subjected to pH adjustment and chemical/physical processes that cause the pollutants to agglomerate or form a floc for subsequent removal. With the advent of PLCs (Programmable Logic Controllers), today's technology can not only relieve plant personnel of much of the treatment system's operation by making all chemical and engineering decisions, but it can also communicate directly with the system's manufacturer by modem hook-up for troubleshooting and diagnostics purposes.

Grippe Potato Chip Co., Inc., of Cincinnati, Ohio, is a good example of a company that five years ago made an environmentally proactive investment and dramatically lowered operating costs at the same time. The family-owned firm, founded in 1919, is a manufacturer of potato chips under its own brand name for the regional retail market, as well as a distributor of snack foods produced by other companies. By electing to treat its wastewater on-site, savings from the reduction in disposal costs have gone straight to the bottom line.

Grippe installed an 80 gallon-per-minute continuous flotation system manufactured by Beckart Environmental, Inc., of Kenosha, Wisconsin, whose experience in treating food industry wastewater ranges from manufacturers of salad dressings and vegetable oils to fish processors and meat renderers.

For the Grippe installation, Beckart's sales representative Pete Paicer initiated work on the system by evaluating the daily volume and characteristics of the waste stream, arranging laboratory treatability studies, and preparing a long-range cost/benefit analysis. It was found that wastewater from the chipmaking operations could be effectively treated by Induced Air Flotation (IAF), a process that involves the introduction of micro-bubbles to chemically treated wastewater.

Specifically, wastewater from the process lines where potatoes are skinned, sliced, washed and fried is transferred to a pair of equalization tanks equipped with air spargers in another area of the plant. The equalization stage promotes a uniform stream, which is transferred to a reaction and mix tank. There, coagulants and coagulant aids are introduced to break emulsions, adjust pH, and promote floc formation.

Next, during transfer to a flotation clarifier, a chemical flocculant is added. Micro-bubbles are introduced which, by principles of van der Waals force, attach to the floc and cause it to rise to the surface in the clarifier, where skimmer boards remove it to a sludge holding section. Clear water is allowed to drain off at the opposite end for discharge to the sewer.

Grippe's wastewater treatment system includes a Hy-Pack recessed plate filter press, designed to dewater and compact the sludge through a series of polypropylene plates under hydraulic pressure. After a drying period, the press can be opened and the sludge, now in the form of a dry "cake," scraped off the plates for landfill disposal.

Grippe's president Ralph Pagel estimates that the wastewater treatment system paid for itself within approximately three years. "None of us wanted to



Skimmer boards remove sludge from the surface of the clarifier for transfer to the filter press.



Clear treated water drains off from the clarifier for discharge to the sewer.



Comparison of Data for 1995 and 1996				
Parameters	POTW Limits	Before	After	Change
TSS	300 ppm	4533 ppm	195 ppm	-96%
BOD	240 ppm	1682 ppm	319 ppm	-81%
TKN	25 ppm	59 ppm	49 ppm	nil
Surcharge Factor per CCF		\$5.69/CCF	\$0.106/CCF	-98%
Surcharge per 1000 gallons		\$7.61	\$0.14	\$7.47 SAVINGS per 1000 gal

become wastewater experts," he says, "and with this system, you really don't have to be. As with any new piece of equipment, there's a short learning curve, but when the system was first installed, we received excellent support whenever we had questions. Now, I'd have to say that in addition to some pretty compelling cost benefits, we've found that the system pretty much runs itself."

According to Dan Fedrigo, Beckart's sales and marketing manager, the industrial wastewater treatment industry is increasingly attempting to address the specific needs of food processors with tailored chemical formulations and a strong service component after the sale.

"Many of the chemicals we use in our processes are commodity-type chemicals that are widely available at competitive prices," he says, "and they'll do the job efficiently for most food industry waste. But we also have dedicated research facilities for the development of affordable formulations designed to minimize sludge production, and thereby lower total treatment cost. In conjunction with a strong service program for the performance of system audits and preventive maintenance, the typical food processor does not need to be especially knowledgeable about pollution control, and the focus can be kept on the company's core business."