

## CORRUGATING FACILITY

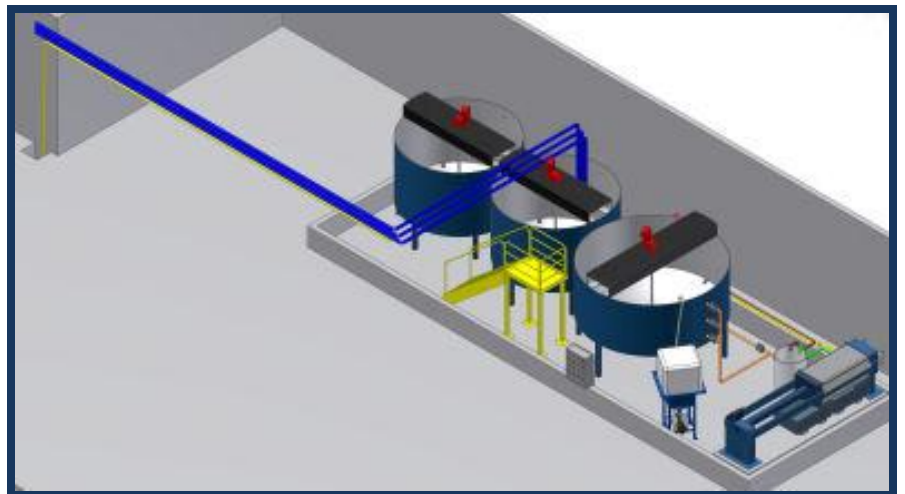
This corrugating company did not have an existing pretreatment system. Wastewater from their converting and corrugating operations was sent directly to the city's three stage clarifier for discharge. Sludge generated from this process within the city's three stage clarifier, along with the water discharge without any pretreatment, resulted in high contaminants; such as various metals, BOD, TSS, resulting in discharge violations, multiple surcharge fees, and an additional annual cost of \$50,000.00 for sludge haul off and excessive surcharge fees to the city.

This company contacted Integrated Engineers, Inc. for a wastewater treatment system that would accommodate their facility and solve their current issues. Our engineering department completed an onsite visit to detail the process that was to be recommended to the customer. A treatability study was also conducted with wastewater that was generated daily from their treatment process for the company's review.



Integrated Engineers, Inc. proposed a manual batch system sized for a facility that generates 5,000 gallons of wastewater per day. Our Floccin 1119 product was also included as this produced the most favorable results during testing. (Reference picture to the right.) Floccin 1119 is a non-hazardous granular product that has replaced traditional chemistry (coagulants, caustic, polymer), over the years.

The layout of the facility required two Equalization tanks to hold the influent wastewater, one reaction tank for the pretreatment process, access platform was measured to make access to the treatment tank, a Filter Press was sized for sludge dewatering, and a Floccin Feeder was included for dispensing our granular product. Mixers were also integrated with the system based on tank design and capacity.



The Filter Press generated drier filter cakes with a 45-50% solids consistency making it possible to dispose the dewatered sludge to a local landfill without paying hazardous disposal fees. (Drier filter cakes also make cleaning the filter press less time consuming which can result in reduced labor costs.)

After Integrated Engineers, Inc. completed the installation/start-up and training, a sample of the treated water was sent to a lab for analysis to determine if this facility is now in compliance with city discharge requirements.



Before



After

Lab Analysis confirmed they were in compliance and this facility continues to operate their system properly without experiencing any mechanical issues, they have been maintaining compliance, and are relieved to not have to deal with their previous issues.

Contaminant	Treated Water	TTLC/CAM-17 Requirements	TTLC/CAM-17 Results (mg/kg)
Antimony	ND	50	ND
Arsenic	ND	50	ND
Barium	130	1,000	320
Beryllium	ND	7.5	0.093
Cadmium	ND	10	0.047
Chromium	150	50	1.7
Cobalt	ND	800	ND
Copper	ND	250	1200-STLC 1.0 (mg/L)
Lead	290	100	3.6
Mercury	ND	2.0	0.26
Molybdenum	330	350	520-STLC 37 (mg/L)
Nickel	23	200	0.15
Selenium	ND	10	ND
Silver	ND	50	ND
Thallium	50	70	2.5
Vanadium	ND	240	0.32
Zinc	110	500	48

The Total Threshold Limit Concentration (TTLC) and the California Soluble Threshold Limit Concentration (STLC) is used when determining the hazardous waste characterized under California State regulations as outlined in Title 26 of the California Code of Regulations (CCR). The intent of the leachate procedures are to simulate the conditions that may be present in a landfill where water may pass through the landfilled waste and travel on into the groundwater carrying the soluble materials with it. The first test conducted is the TTLC analysis, if a contaminant does not pass then an STLC test is performed to see if the contaminants are within the state's discharge requirements.

Copper was a contaminant that consistently created issues between this facility and the city where at this time the effluent water has successfully passed the CAM 17 Metals test.