TECHNICAL ARTICLE SERIES

Eliminating Underground Waste Lines

ARTICLE # TL-131

INDUSTRY: Chemical

ENTITY: Nalco Chemical Co.

SOLUTION(S) PUMPED: Wastewater

PUMP TYPE(S): Nonmetallic Tank Pump Systems

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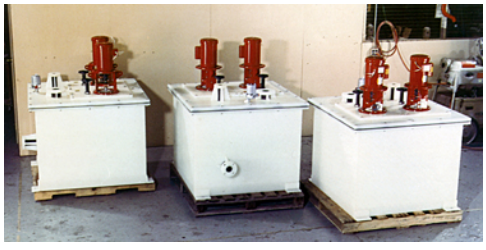
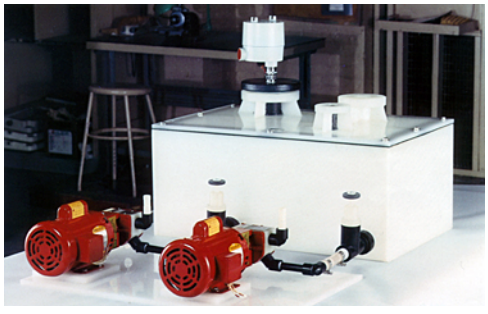
Vertical sump pumps move laboratory wastes from building corner tanks to a collection tank. Lab wastes are blended with other plant process wastes before treatment and discharge.



Two Vanton polypropylene vertical centrifugal sump pumps move laboratory wastes from building corner tanks to a collection tank. Lab wastes are blended with other plant process wastes before treatment and discharge. Each sump tank is equipped with a multi-point level controller in a NEMA 4X enclosure (epoxy coated), with 4 control points that are field adjustable. Leak detector probes sense any liquid between the double walls and energize an audible alarm and warning light.



Polypropylene tank, 32" x 20" x 14" high equipped with Vanton close coupled, self-priming sealless, duplex flexible liner pumps which move wastes via overhead line from center island sinks to outside wall, where they combine with other lab wastes. Pump bodies are polypropylene; flexible liners are made of Dupont Nordel.

Eliminating Underground Waste Lines

Reprinted from Chemical Processing
Les Owens, Facilities Engineer, Nalco Chemical Co., Garyville, LA
John McCallion, Senior Technical Editor

Non-metallic collection system ends underground waste lines

Corrosion rebuffed, environment protected

To eliminate any possibility of soil or groundwater contamination, Nalco Chemical Co. moved all waste handling lines aboveground at its Garyville, LA, plant in 1993. A new, all-plastic drain system for the 5,000-sq ft, on-site laboratory was an important element of the change. Since installation, the corrosion-resistant tank and pumping lab-waste handling system has operated trouble-free.

Chemical compatibility

Nalco is the world's largest marketer of specialty chemicals for water, process and wastewater treatment. Most of the products made at the Garyville plant are organic chemicals.

The plant's on-site lab deals with fluids such as acids, bases, standard oxidizing and reducing chemicals and organic liquids. It also analyzes and disposes of small amounts of some 200 different raw materials and 120 products made at the plant.

An all-plastic tank and pumping system was chosen to handle the lab wastes. Each wall of the lab has two large sinks, and there is an island with two sinks in the center of the lab. Polypropylene was used throughout the system, due to its ability to withstand all of the chemicals encountered at the plant.

To accumulate and handle the wastewater, four 200-gal, aboveground polypropylene tanks were installed outside the building, one at each comer. The tanks are of double-wall construction, with a 2-in gap between the walls for leak detection.

A detection probe located between the side walls reaches into the bottom tank area. If any liquid should enter the gap between the walls, the probe senses it and triggers audible and visible alarms, permitting corrective action to be taken before the outside tank wall leaks.

Each of the outside tanks is equipped with two vertical, solid polypropylene pumps, sized to handle either 4 gpm or 10 gpm at 20 ft of head, depending on the requirements of the particular tank. Pump casing and impeller, pipe fittings and all wetted parts are made of polypropylene; and the pump shaft is plastic sleeved to prevent corrosion.

The sinks at the center island drain into a 39-gal polypropylene tank, which is 14-in high, enabling it to fit under the sinks. Two flexible-liner, peristaltic pumps move wastes from the center tank via an overhead

line to one of the outside tanks.

The flexible-liner pumps are self-priming, so there is no concern about developing an airlock in the center-sink system. Casings are polypropylene and the flexible liners are made of Nordel®, a chemical-resistant synthetic rubber made by DuPont Co.

All five of the building's waste tanks are equipped with capacitance probes that provide multipoint level control in each tank. The control system is set up so that pumps operate alternately to provide even service and wear. If the tank level rises above a certain level, both pumps operate.

Waste from the corner tanks is pumped to a plant collection tank, where it is blended with process wastes and treated in an advanced bio-oxidation plant located on-site. The lab-waste handling system has performed trouble-free since it was installed in 1993.