Case Study

Trickle Down Waste Water Reuse

Pilot Transport, Brighton, Michigan

Pilot Transport, Inc. (Pilot Transport) is a trucking company that hauls prototype cars and trucks for testing and exhibiting all across the country. It has facilities in Brighton, Michigan and Tempe, Arizona.

The equipment at Pilot Transport consists of open and closed trailers. For protection, and to prevent the public from getting an early peek, the vehicles are hauled in a 53 foot enclosed trailer. The older trailers carry up to six cars and the newer trailers carry up to seven cars. At the Brighton facility, returning trailers and tractors are cleaned and serviced by mechanics in preparation for the next load. This work requires the use of a heavy-duty power washer to clean the inside of the trailers and to remove dirt and grease accumulated during the repair and maintenance of the hydraulic systems, axles and brakes. The cleaning operation generates oily waste water.

WASTE WATER MANAGEMENT

In 1992, the company began planning for an expansion of its Brighton facility to accommodate its growing business. Environmentally safe management of waste water had to be addressed along with the expansion. No sewer hookup was available, so pretreatment and discharge to a Publicly Owned Treatment Works facility was not an option. Allowing the waste water to simply run onto the ground was not permitted by the Michigan Department of Environmental Quality because of the potential for groundwater contamination. After visiting a few truck maintenance facilities in the area, the company decided that the best option from a cost, as well as from an environmental standpoint, was to capture, clean and reuse the waste water.

To capture, clean and reuse the waste water, a 12 inch wide, 8 inch deep, 120 foot long trench was installed in the middle of the service area floor during the construction of the building addition. The floor was sloped four degrees to direct water to the trench. The trench was also sloped four degrees to allow the waste water to flow to one end. At the deep end of the trench, a weir was installed. As waste water flows over the weir and into a sump, heavy solids, tools and any other heavy objects that

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fall into the trench accumulate behind the weir (the trench is cleaned out every 12 months). Waste water from the sump is then pumped to a skid mounted machine that removes impurities such as oils and solids. The heavy-duty power washer then reuses the clean water exiting the skid mounted machine, thereby completing the recycling loop.

PURIFICATION SYSTEM

The machine that purifies the water is manufactured by RFG Environmental Systems, located in West Palm Beach, Florida. This machine, like some others on the market, contains a series of mini treatment units, each integral in the water purification process. In this particular model, waste water first enters a hydrocyclone. In the hydrocyclone, centrifugal forces pull particles heavier than water out toward the walls of the unit and into a collection pit while allowing the water to rise up through the center vortex. Next, an inclined tube coalescer consolidates droplets of oil and provides further separation of solids from the water. The floating oil, grease and some water are skimmed off and drained into an oil accumulator. After further separation, water in the oil accumulator is bled back to the trench. This prevents water stagnation, which could occur in the system when the power washing equipment is idle. The oil accumulator is drained when it becomes full. From the coalescer, the water travels through a multi-media filtration bed, which removes organics, metals and solids. Just before entering a 500 gallon storage tank, the water flows through a one micron polishing filter.

Brian Findling, shop foreman at Pilot Transport, has been very satisfied with the performance of the system, which began operating in March 1993.

According to Mr. Findling, some of the valuable features of the system are:

- *totally automated, requires very little attention;*
- *all equipment, including storage tank, occupies only 36 square feet of floor space;*
- *the only chemical added is a small amount of chlorine to kill algae and bacteria.*

Mr. Findling has yet to accumulate enough waste oil to require disposal. When he does, it will go to a recycler with the rest of the company's used motor oil. Periodic maintenance on the system is required. According to the manufacturer, the filter components need to be washed and rinsed every six months. The company has also purchased a floor cleaning machine, which vacuums up mop water. The mop water is drained into the sump and is also purified by the waste water recycling system.

QUALITY CONTROL

Dave Reidling, Safety Director of Pilot Transport, says the key to the company's success has been maintaining an extremely clean environment for the prototype vehicles. Important customers, such as General Motors, are concerned about the cleanliness of the trailers as well as the methods Pilot Transport uses to manage the wastes generated from its cleaning operations.

In the fall of 1992, Mr. Reidling attended the Automotive Supplier Pollution Prevention Forum in Dearborn, Michigan. The forum was one of many activities of the Auto Industry Pollution Prevention Project (Auto Project), a partnership between the State of Michigan and Chrysler, Ford and General Motors to focus pollution prevention efforts on persistent toxic substances. The message Mr. Reidling received from the forum was very clear--the auto companies, as well as their suppliers, need to advance pollution prevention efforts within their organizations. In turn, Pilot Transport is delivering this same message to its suppliers. Pilot Transport is working with a supplier to find less toxic cleaners to replace the petroleum solvents currently used to degrease parts. The theory of trickle down waste reduction seems to be working.