

## Tanker Cleaning » Pollution Prevention Case Study

# Prokleen Washing Services

### Company Overview

Prokleen Washing Services is a 20-person tanker truck and bulk tank cleaning facility located in Oakville, Ontario in the Regional Municipality of Halton. The facility features an eight-bay automated wash rack and provides cleaning services for a number of industries transporting a variety of materials. In operation since 1996, Prokleen has become an innovative leader in food grade and chemical cleaning systems for all classes and sizes of trucks.

The Region of Halton had on a number of occasions in the past expressed concern over the amount of pollution being released by Prokleen's wash facility. Some key areas of concern were sewer-use bylaw parameters, including biological oxygen demand (BOD) and volatile organic compound (VOC) levels, as well as hazardous waste. To address these concerns, Prokleen's management retained the services of Enviro-Stewards Inc. to conduct a pollution prevention (P2) assessment through participation in the Toronto Region Sustainability Program (TRSP). Other key drivers for Prokleen management were the P2 planning requirements under the *Canadian Environmental Protection Act (CEPA)* regarding methylene chloride and a commitment to improve their environmental performance.

### P2 Assessment Process

The objective of the P2 assessment was to assist Prokleen in complying with applicable environmental regulations and improve their environmental performance by applying multimedia pollution prevention principles to reduce pollutants and waste streams at the source. This process would also help the company enhance its financial bottom line through more efficient operational procedures. There were three primary components of the assessment process including a P2 training session for Prokleen staff, in-plant study work, and an engineering assessment.

Based on intensive in-plant study work with Prokleen management and staff in November and December of 2005, Enviro-Stewards identified the largest sources of pollution and recommended process modifications to address these. Processes targeted for pollution prevention were food bay cleaning, chemical bay cleaning and wastewater treatment.

### Summary of Findings

A number of P2 opportunities were identified at Prokleen's Oakville facility. In the food-grade wash bay, the largest and most expensive form of Prokleen's sewer surcharge came from BOD overload. An estimated 11,650 kg of BOD waste was cleaned from tankers every month, the majority of which was soluble, and would therefore not be captured in the existing filtration system but ultimately end up in the sanitary sewer. Focusing on BOD reduction in the food-grade bay would ensure the most significant reduction in organic pollution to the sewers. Furthermore, the majority of BOD coming from the food bay was coming from a few large, concentrated sources, namely sugars and syrups. Suspended solids and oil & grease also contributed to waste effluent from the food bay.

The majority of VOCs in Prokleen's wastewater came from the chemical wash bay. Halton Region's sewer-use bylaw prohibits elevated levels for a number of VOCs. Of these, there were a few that stood out in the Prokleen assessment, including trichloroethylene and toluene, which need to be washed with extreme precaution. In addition to these hazardous materials, asphalt and resin heels contain VOCs that can leach into the water inside the interceptor. VOCs from cleaning chemicals such as methylene chloride and suspended solids such as those from plastic pellet trailers also contributed to pollution of wastewater.



**Diversion and reuse of final rinses reduces clay consumption and solid waste generation in the wastewater treatment plant by 118 tonnes/yr. An alternate dewatering process can reduce solid waste by an additional 190 tonnes/yr.**

*"At Prokleen Washing Services, we believe in providing top-of-the-line service to our customers at the best possible value with minimal impact to the environment. OCETA and Enviro-Stewards helped us identify and seize opportunities to go beyond environmental regulatory compliance through available technologies and process optimization. These internal changes now enhance our bottom line."*

*John Corrigan, General Manager, Prokleen Washing Services*

# P2 Solutions, Environmental Results and Related Cost Savings

The table below summarizes P2 projects being undertaken at Prokleen's Oakville facility from the list of P2 recommendations outlined in the assessment report. When implementation is complete, these measures are projected to eliminate annually:

- 5.2 tonnes toxics
- 5 tonnes VOCs
- 30 tonnes hazardous wastes
- 551 tonnes process wastes
- 5,000 tonnes water
- 361 tonnes GHGs
- 174,482 m<sup>3</sup> natural gas
- 525 MWh electricity

With annual savings of **\$327,000** with an overall payback of **1 year**.

Process	P2 Solutions	Environmental Reductions	Cost Savings & Payback
Food Bay Cleaning Targeted Pollutants/Waste: <b>Organic waste (BOD), Suspended Solids, Oil and Grease</b>	Diversion and reuse of food bay heels	This option will reduce 138 tonnes/yr of BOD (sugar and food oil) which contributed towards process wastes generated at Prokleen	Annual savings of \$82 K with payback of 1 month through reduction of wastewater treatment costs
Chemical Bay Cleaning Targeted Pollutants/Waste: <b>VOCs, Methylene Chloride, food oil, chemical oil, asphalt</b>	Diversion and reuse of chemical bay heels	Annual reductions of 12 tonnes of food oil, 10 tonnes of chemical oil, 14 tonnes of asphalt, and 5 tonnes of VOCs	Contribute to savings from diversion and reuse of final rinses due to reduced burden on wastewater treatment system
	Use of an alternative cleanser and installation of a solvent reuse sink	Elimination of 5 tonnes/yr of methylene chloride (CEPA toxic)	Annual savings of \$4 K Payback of 1 month
Wastewater Treatment Targeted Pollutants: <b>Process Wastes</b>	Diversion and reuse of final rinses	Solid waste (clay) reduction of 118 tonnes/yr and water consumption reduction of 5000 tonnes/yr	Annual savings of \$97 K Payback of 1 month
	Direct heel recovery	Reduction of sludge load on interceptor and reduction of sludge (waste class 251L) of 94 tonnes/yr	Contribute to savings from diversion and reuse of final rinses due to reduced burden on wastewater treatment system
	Clay dewatering	Solid waste reduction of 190 tonnes/yr	Annual savings of \$15 K Payback of 3.5 years
Building Services <b>Energy Efficiency</b>	Lighting, Compressor, Boiler, Wastewater Heat Recovery measures	Annual reductions of energy consumption (174,482 m <sup>3</sup> natural gas and 525 MWh electricity), and 361 tonnes GHGs	Annual savings of \$129 K Payback of 2.1 years

## Since completion of the assessment...

Prokleen's P2 implementation has significantly reduced the company's sewer-use surcharges to the Region of Halton and has provided opportunities for green marketing. Prokleen was able to acquire a new client who saw the facility's dedication to pollution prevention as a major selling point, meeting the client's high standard for environmental and social responsibility. Impressed with the results of the P2 assessment, Prokleen management requested further services from Enviro-Stewards to perform an energy efficiency (E2) audit for the Oakville facility. The assessment was conducted from April to August of 2006 and identified opportunities with the potential to reduce electricity consumption by 27 to 41%, thermal energy consumption by 30% and greenhouse gases by 361 tonnes/yr (24%).

## Funding and Program Support:



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