

# Halltech Inc.

### Company Overview

Halltech Inc. is an innovative chemical specialty manufacturer of a wide variety of high quality polymer emulsions and adhesives. Company management is committed to reducing hazardous waste, as well as pursuing ISO 14001 certification and Responsible Care verification.

### P2 Assessment Process

To meet the objectives of the Toronto Region Sustainability Program, Halltech underwent a pollution prevention assessment by a consulting firm, Cotter Associates.



Closed-system Product Filtration that reduces product loss and sewer use bylaw pollutants, resulting in significant cost savings.

This review mapped all processes in the Halltech facility and identified five main processes: loading, mixing, reacting, packaging, and washing. From this assessment, many pollution prevention (P2) opportunities were identified.

### Summary of Findings

The manufacturing of adhesives and polymer emulsions involve a number of process steps. The initial procedure involves the addition of different solid and liquid material into a vessel, where they are heated and mixed over a controlled period of time.

Once the process is complete, the product is cooled and filtered either by gravity into drums or pails, or it is pumped into a storage tank. Both methods utilize an open "bag filter" filtration process to remove solids from the product. This involves pumping liquid product from a vessel through a filter bag, allowing the filtered product to flow into a drum. When the filter bag becomes full, the contents of the filter bag get washed away into a floor trench that is fitted with a mesh/screen to capture gross solids. The open system allows the product to contact air, which contributes to the formation of skins and thereby increases the product loss and associated loading to the sewer.

The final process involves post-production, when the floors and kettle are washed with city water.

Halltech received multiple P2 recommendations from the consultant, most with short paybacks and large cost savings, addressing product losses occurring during: adhesives and product filtration; bulk tanker loading; tank sampling; and steam condensate recovery.

The most significant recommendation was to install a closed-system product filtration system. A closed filtration system would pump or suck the tank contents through an inline cartridge or bag filter, directly to the destination vessel. By moving to a closed filtration system, it is estimated that the bag change could be reduced to once per batch (as opposed to up to 5 previously), for a product loss of 10 kg per batch, which represents an 80% reduction. This equates to 40 tonnes of product per year. It also reduces the discharge of zinc by 7.4 kg/yr and alkylphenol ethoxylates by 1.8 kg/yr, which are both sewer use bylaw subject pollutants. The overall cost savings adds up to \$142,000 and an additional \$10,000 annual savings in sewer surcharge, making the payback for this recommendation an estimated 0.4 years.

Another option that yields considerable savings by preventing product losses, involves installing check valves in the flexible transfer lines. The current design set-up for loading of bulk tankers using flexible hoses results in a significant loss of product during each filling operation. During the disconnect process, product losses flow to the floor and then to the sanitary sewer. A check valve on the lines would eliminate the connection losses. In addition, lines are cleaned out by flushing. If permanent transfer lines were installed, lines would not have to be cleaned after each use. This option would

save between 37-74 tonnes of product loss per year, and save approximately \$12,000 in product losses and sewer surcharges. The payback on this option is estimated to be 4 to 5 months.

**"It is our philosophy that providing our employees with the tools to work in a safe and environmentally friendly manner will lead to improved morale and have a positive effect on production and quality, which translates to customer satisfaction. To this end, we have found that our involvement in this program has provided us with further insight that not only meets our commitment to our employees, community and customers, but it also makes financial sense."**

*Al Deli, Plant Manager, Halltech Inc.*

# P2 Solutions, Environmental Results and Related Cost Savings

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

• 7.4 kg metals

• 1.8 kg toxics

• 127 tonnes hazardous wastes

With annual savings of **\$200,000** and an overall payback of **6 months**.

Process	P2 Solutions	Environmental Reductions	Cost Savings & Payback
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## Adhesives and Polymer Product Filtration

Targeted Pollutants:  
Zinc, Alkylphenol Ethoxylates, Suspended Solids

Closed-System Product Filtration

80% reduction in product losses (hazardous waste) (40 tonnes/yr) and 50% reduction in discharge of Zinc (7.4 kg/yr) and Alkylphenol Ethoxylates (1.8 kg/yr)

Compliance with Sewer Use Bylaw

\$142 K annual savings in product losses

\$10K annual savings in sewer surcharge avoidance

Payback of 5 months

## Bulk Tanker Loading

Targeted Pollutants:  
Polymer Hazardous Waste (product loss)

Installation of check valves in flexible transfer lines to prevent losses

Reduction of 37 – 74 tonnes/yr product losses (hazardous waste)

Annual savings of \$9.6 - 12 K

Payback of 4-5 months

## Tank Sampling Quality Assurance

Targeted Pollutants:  
Process Wastewater and Hazardous Waste (product loss)

Installation of plunger system to prevent product losses during sampling

Reduction of 10L of product/day  
13.1 tonnes/year process losses (20% wastewater, 80% hazardous waste)

Annual savings of \$37.5 K

Payback of 1 year

## Steam Condensate

Targeted Pollutants:  
Process Wastewater and Waste (product losses)

Capture steam condensate from process vessel heating and return boilers

Improvement of manufacturing process efficiency and reduction of wastes to sewer

Cost savings unknown

Funding and Program Support:



Delivered by:



For more information, please contact:

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