Label Manufacturer Identifies Cost-saving Options to Reduce Solvent Waste

Challenge
A leading label manufacturer in Western NY, with products seen throughout many markets, purchases 120,000 gallons of solvent annually. While most evaporates, 16,500 gallons of the waste solvent mixture are shipped off-site as hazardous waste. The manufacturer sought assistance in finding options to decrease the amount of hazardous waste generated and the amount of new solvent purchased.

Solutions
The New York State Pollution Prevention Institute (NYSP2I) performed various tasks to identify cost-effective opportunities to decrease the amount of solvent used and the amount of waste generated by the label manufacturer. A baseline was established to fully understand chemical use and waste characteristics, information from which was used to evaluate the best options for recovery and reuse of the solvent. NYSP2I evaluated bag filtration, on-site distillation, and off-site reclamation. Where applicable, an economic analysis was performed to highlight potential savings and payback.

Results
The work performed by NYSP2I led to the following results:

- While solvents are used for both production and cleaning, separation for reuse in production was deemed impractical due to stringent quality requirements. However, the recovered solvent mixture could be used for cleaning. The maximum amount of potentially recoverable solvent is also similar to what would be needed for cleaning.

- Filtration tests using a 1-micron bag filter to remove the ink from the waste solvent indicated that the ink could not be sufficiently separated out to warrant reuse of the solvent.

- Commercially available single-stage distillation was determined to be a viable option for recovering the solvent.

- Off-site reclamation would provide immediate economic benefit and reduce the amount of waste being disposed of, but would not reduce the amount of reportable hazardous waste.
on-site option to recover solvent. Two distillation systems were identified and analyzed for the label manufacturer’s application. Each system provides approximately 80-90% recovery, reducing the waste from 16,500 gallons/year to around 2,500 gallons/year.

• Off-site reclamation was also evaluated as an option with potentially immediate economic benefit. Approximately a 50% reduction in current disposal costs could be expected without any capital investment, along with additional savings if the reclaimed solvent is purchased at a reduced cost. However, based on current state environmental regulations, reportable hazardous waste amounts would not change with off-site reclamation.

• From an economic perspective, off-site reclamation provides immediate savings of around $120,000 over 5 years, and if the solvent were repurchased for a discounted price, the savings would increase to nearly $400,000 over 5 years. For on-site recovery and resulting reductions in reportable hazardous waste, implementation of a Maratek system would incur a payback period of 7 to 9 months, with the potential to save more than $500,000 over the first five years.

Results continued

• Economic analysis showed that distillation was the best choice due to relatively short payback and high savings threshold, while off-site reclamation would provide immediate savings with no capital investment.