

NYSP2I Performs Ethanol Waste Reduction and Facility Water Assessment for Personal Care Product Manufacturer

CHALLENGE

A personal care product manufacturer located in the Finger Lakes Region was interested in an evaluation of methods to reduce hazardous waste and potentially recover valuable solvent for reuse. The manufacturer was also interested in determining current water use and possible methods to reduce water consumption and wastewater generation.

This particular facility manufactures products that contain ethanol or other solvents. Ethanol is used in many personal care products and also for cleaning manufacturing equipment. These activities generate large quantities of hazardous waste which the manufacturer would like to reduce. Additionally, the personal care product manufacturer utilizes large quantities of water that is used for both equipment cleaning and in their product.

SOLUTION

The New York State Pollution Prevention Institute (NYSP2I) conducted an assessment of the personal care product manufacturer's current processes associated with generating hazardous waste and utilizing water. NYSP2I then identified reduction and reuse opportunities for the waste chemicals and process water.

To achieve this, NYSP2I utilized documentation including hazardous waste shipment logs, water utility invoices, quality records, site maps, the Hazardous Waste Reduction Plan, and a two-day on-site assessment to determine improvement opportunities. NYSP2I developed a baseline for waste and water use sources, evaluated solvent and water reduction, reuse and recovery options, and provided basic economic analyses for identified improvement options.

RESULTS

Solvent Waste Reduction:

NYSP2I identified two independent opportunities for ethanol use reduction and hazardous waste alternatives:

- Ethanol reuse in equipment cleaning operations
- Distillation of waste ethanol, either on-site or off-site at a solvent recovery facility

The ethanol reuse methodology would result in approximately 50% less virgin ethanol required for line flush operations and a 50% reduction in hazardous waste generation from these cleaning operations.

For on-site or off-site distillation, overall potential hazardous waste savings, per NYSP2I, is calculated at 67% of the baseline total, creating a cost avoidance for hazardous waste of over \$60,000. With on-site distillation, the personal care product manufacturer has the ability to use the distilled ethanol in their operations leading to a cost avoidance from not purchasing virgin ethanol of over

CHALLENGE

- A personal care product manufacture wanted to identify ways to reduce the large quantities of ethanol and water that was used in their process for cleaning manufacturing equipment

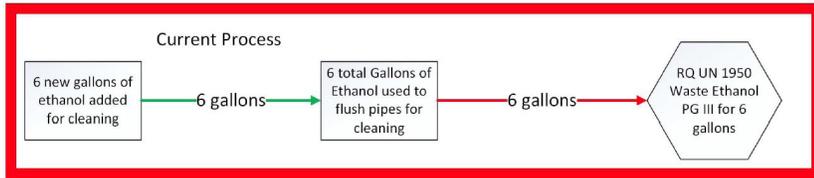
SOLUTION

- NYSP2I identified reduction and reuse opportunities for waste chemicals and process water
- NYSP2I utilized documentation in addition to conducting a two-day on-site assessment to determine improvement opportunities
- A baseline for waste and water use sources along with a basic economic analyses was developed by NYSP2I and used to identify improvement options

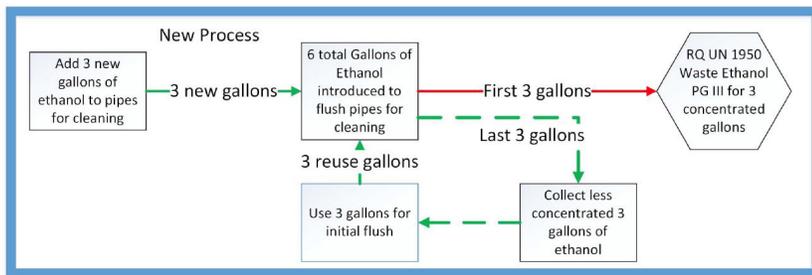
RESULTS

- NYSP2I identified two independent opportunities for ethanol use reduction and hazardous waste alternatives. (1) Ethanol reuse in equipment cleaning operations and (2) Distillation of waste ethanol, either on-site or off-site at a solvent recovery facility
- NYSP2I recognized opportunities to better control the water consumed in the higher water use area in the facility, the washout area, by utilizing specific technologies. High pressure and low spray nozzles were identified along with a spray cabinet and a higher efficiency spray ball wash system

\$50,000. NYSP2I identified suppliers and on-site distillation equipment for the ethanol. On-site distillation will provide a higher return on investment with the ability to recover up to 90% of the used ethanol. Off-site distillation provides another diversion method for the ethanol waste, however, there will be less economic savings.



Current Process vs. 50% savings in line flushing



Water Reduction:

NYSP2I identified opportunities to better control the water consumed in the highest water use area in the facility, the washout area, by utilizing the following technologies:

- High pressure, low flow spray nozzles for manual cleaning of 1 - 5 gallon pails with a potential 40% reduction in water use compared to the existing spray nozzles
- Spray cabinet to clean the small containers instead of hand spraying with a potential reduction in water use of 91%
- Improved and higher efficiency spray ball wash systems with timers for 55 gallon drums and portables



Low flow spray nozzles; SuperKlean Duraflow Mini (left) and Strahman M-70 Low Flow (right)



Jackson cabinet washer (left), Blakeslee (right)



NYSP2I PARTNERS



New York Manufacturing Extension Partnership

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