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POLLUTION PREVENTION

IN RHODE ISLAND

Case studies of the Rhode Island On-Site Technical Assistance Program

Electrical Connector Manufacturing 1,1,1-Trichloroethane

Electrical connector manufacturer replaces 1,1,1-trichloroethane with aqueous-based cleaner for degreasing purposes.

Industry \ Contact

SIC Code: 3678 Electrical Connector Manufacturer, Rhode Island

Contact: Company #12

Technology Description

The company is principally engaged in the manufacture of electrical connectors and terminals. The company employs 150 people at this location.

Originally, the company used 1,1,1-trichloroethane to remove heavy stamping oils from electrical connectors. These intricate parts require a high degree of cleanliness before shipping. After consulting with DEM's Pollution Prevention Section, the company began searching for aqueous-based cleaners to replace 1,1,1-trichloroethane. It was found that the aqueous-based degreaser ISC-108 achieves satisfactory cleaning results and could be easily recycled through use of an ultrafiltration system. The company installed a PUFs ultrafiltration system and switched to the aqueous degreaser ISC-108, effectively closed-looping its product cleaning process.

Feedstock Materials

1,430 gallons per year of 1,1,1-trichloroethane

Wastes

1,320 gallons per year of spent 1,1,1-trichloroethane sent off-site.

Costs

55 gallon per day (GPD)

PUFS ultrafiltration unit, manufactured by Sanborn Environmental Systems of Wrentham, MA \$4,000.

ISC-108 Aqueous Degreaser, manufactured by Environmental Specialties Corp. of Providence, RI: \$2,000

Total Capital Investment: \$6,000

Operation \ Maintenance

Electricity and labor costs: less than \$500 per year

Membrane replacement cost: \$200 biannually

Savings

Annual purchase savings of 1,430 gallons of 1,1,1-trichloroethane: \$7,325

Annual disposal savings of 1,320 gallons of spent 1,1,1-trichloroethane: \$5,000

Payback Period

2 to 3 months

Impact

The company no longer uses 1,430 gallons per year of 1,1,1-trichloroethane in its degreasing operations. The company has found that, by replacing the hazardous solvent with an aqueous degreaser, it was able to achieve an acceptable finish on its products. The company was also able to eliminate hazardous waste costs and liabilities, as well as reduce health risks to the employees. In addition, the company was able to realize added savings by implementing ultrafiltration technology to recycle and reuse the aqueous degreaser. The benefits of using ultrafiltration are that there are no hazardous treatment chemicals used and operating costs are low.