

POLLUTION PREVENTION

IN RHODE ISLAND

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

Jeweler's Materials Manufacturing Methylene Chloride

Manufacturer of jeweler's materials reduces use of methylene chloride for degreasing.

Industry \ Contact

SIC Code: 3415 Jeweler Materials Manufacturer, Rhode Island.

Contact: Company #18

Technology Description

The company is engaged in the manufacture of jeweler's materials such as jewelry finds and other special stampings. The company employs 50 people at this location.

Prior to September 1990, the company used methylene chloride to remove oil and grease from the surfaces of tool dies. A 50% loss of the methylene chloride was observed due to evaporation. In an effort to deal with the increasing purchase and disposal costs of the halogenated solvent, and to reduce health hazards, the company contacted the DEM's Pollution Prevention Section. After consulting with DEM's Pollution Prevention Section, representatives of the company began investigating aqueous-based cleaners to replace methylene chloride. The company found that, in 75% of its degreasing applications, the aqueous-based cleaner Simple Green was an acceptable substitute for methylene chloride and could be easily recycled through use of an ultrafiltration system. The company installed a PUFs ultrafiltration system and switched to the aqueous degreaser Simple Green and effectively "closed-looped" its product-cleaning process.

Feedstock Materials

220 gallons per year of methylene chloride

Wastes

Approximately 100 gallons per year of methylene chloride sent off-site

Costs

55 gallon-per-day PUFs Ultrafiltration unit manufactured by Sanborn Environmental Systems of Wrentham, MA: \$4,000

Operation \ Maintenance

1/2 drum/year of aqueous-based cleaner, Simple Green, manufactured by Sunshine Makers of Huntington Harbor, CA: \$190

Savings

Annual savings in methylene chloride: \$480

Annual savings in methylene chloride disposal charges: \$500

Payback Period

Approximately 4 years

Impact

The company has found that, by replacing methylene chloride with an aqueous-based cleaner, it was able to reduce its dependence on methylene chloride by 75%. A simple change in the cleaner used for degreasing led to a significant decrease in the amount of the hazardous solvent used, and as a result the company saved on disposal costs of the solvent while improving the air quality of the plant. 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.