Jewelry Mfg.
1,1,1-trichloroethane

Jewelry manufacturer replaces 1,1,1-trichloroethane with an aqueous-based cleaning system.

Industry \ Contact
SIC Code: 3471 Electroplater, Rhode Island
Contact: Company #14

Technology Description
The company is a costume jewelry job shop that employs about 45 people. The primary operation of the company is electroplating.

Until 1993, the company used 1,1,1-trichloroethane to degrease all metal parts prior to plating. Due to increasing costs and liabilities associated with the use of 1,1,1-trichloroethane and other ozone depleting chemicals, the company decided to switch over to an aqueous cleaner. With help from DEM's Pollution Prevention Program, the company has successfully eliminated all 1,1,1-trichloroethane use and now utilizes an aqueous-based cleaning system to handle its degreasing needs.

Feedstock Materials
Approximately 2,400 gallons of 1,1,1-trichloroethane was purchased annually

Wastes
600 gallons/year of the 1,1,1-trichloroethane was shipped off site as hazardous waste.
1800 gallons/year evaporated into the atmosphere

Costs
The aqueous cleaning system cost approximately $3,000 to build in-house.
**Operation \ Maintenance**
Compared to the 1,1,1-trichloroethane cleaning process, the aqueous cleaning operation has caused an increase in labor costs due to the added steps that aqueous cleaning requires. Labor costs increased by $2,000/year.
Aqueous soap costs $400/year

**Savings**
The company's $10,000 annual expenditure for 1,1,1-trichloroethane has been totally eliminated.
The company had spent $300 annually to dispose of waste 1,1,1-trichloroethane.

**Payback Period**
Approximately 5 months

**Impact**
The company no longer purchases 1,1,1-trichloroethane, a substance with ozone-depleting properties. Chlorinated solvents have been under strict regulation and have undergone steep price increases; phase out of most of the chlorinated solvents is imminent. With the replacement of 1,1,1-trichloroethane, solvent air emissions have been eliminated, thus reducing health and safety risks to the employees.

Initiating a pollution prevention program has lead to improvements in the way the company handles chemicals, including more efficient labeling and storage of oils and cleaners.