

POLLUTION PREVENTION

IN RHODE ISLAND

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

Pump Manufacturing Mineral Spirits

Pump manufacturer minimizes dependence on mineral spirits by using aqueous-based cleaning system.

Industry \ Contact

SIC Code: 3561 Pump Manufacturer, Rhode Island.

Contact: Company #36

Technology Description

The company is engaged in the manufacture of reciprocating, centrifugal screw and rotary pumps. The company employs 75 people at this location.

Prior to 1991, the company used mineral spirits to clean all of its machined parts and tools. After consultation with the DEM's Pollution Prevention Section, the company switched to an aqueous-based cleaner for a majority of its degreasing operations. Very small intricate parts still require the use of mineral spirits for proper cleaning. The recovery and recycling of the aqueous-based cleaner is easily carried out with an ultrafiltration system. However, pilot testing carried out at the University of Rhode Island's Chemical Engineering Laboratory facilities showed microfiltration to be the most efficient system for the recycle and reuse of the cleaner.

Feedstock Materials

7,000 gallons of mineral spirits per year

Wastes

6,000 gallons-per-year of spent mineral spirits sent off-site for treatment and reclamation.

Costs

PUFS Microfiltration System manufactured by Sanborn Environmental System of Wrentham, MA: \$0 (system already in-house)

Operation \ Maintenance

Annual cost of Microfilters: \$400

Annual labor costs: less than \$500

Savings

Mineral spirits purchase reduced by \$500 per year

Annual cost savings for mineral spirits transportation and disposal: \$1,000

Payback Period

Approximately 1 year

Impact

The company no longer depends on mineral spirits as a predominant cleaner. The company has found that, by using an aqueous-based cleaner in most of its degreasing applications, it was able to produce an acceptable finish on its products, while lessening hazardous waste costs and liabilities. In addition, by utilizing microfiltration in conjunction with the aqueous cleaning system, the company found that it could recycle 98% of the aqueous-based cleaner for reuse, while generating only small amounts of concentrated sludge. The advantages of membrane filtration are that operating costs are low and no hazardous chemicals are used.