

POLLUTION PREVENTION

IN RHODE ISLAND

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

Electroplater Vibratory Solution

Electroplater recycles vibratory solution with ultrafiltration system.

Industry \ Contact

SIC Code: 3471 Electroplater, Rhode Island.

Contact: Company #14

Technology Description

The primary operation of the company is electroplating. The company employs 45 people.

In a parts finishing process the company generates a waste tubing solution containing cadmium, lead, and zinc. Originally, the spent solution was processed in the company's waste treatment system. Once treated, the solution contributed to a mixed metal sludge which was sent off-site for disposal. The remaining spent process water was then discharged to the sewer. After consulting with DEM's Pollution Prevention Section, the company realized that a cost-effective, non-chemical means of cleaning and recycling the tubing solution could be integrated into the finishing process. The company built and installed an ultrafiltration system to recycle the tubing solution. As opposed to chemical treatment, ultrafiltration generates much less sludge. In addition, ultrafiltration allows for much of the tubing soap to be recycled.

Feedstock Materials

140 gallons per day (GPD) of process water

Tubing soap

Treatment chemicals

Wastes

140 (GPD) of metal bearing process water discharged to the sewer.

Mixed metal sludge periodically sent off-site for disposal.

Costs

150 GPD ultrafiltration system built in-house: \$5,000.

Operation \Maintenance

Energy and labor: less than \$1000 per year

Savings

Savings of 140 gallons of process water per day.

Treatment chemical usage significantly reduced.

Tubbing soap recycled

Treatment Disposal

Mixed metal sludge generation greatly reduced.

Payback Period

Approximately 12 to 18 months

Impact

As a result of the modification to the tubing operation, the company no longer discharges 140 gallons per day of spent process water to the sewer. In addition, the company has significantly reduced its tubing soap consumption. The company has found that, by utilizing an ultrafiltration system, a closed-loop operation could be achieved. As a result, no wastewater is discharged to the sewer from the tubing operation. Ultrafiltration allows for the recycling of the tubing solution, including the tubing soap, while generating small amounts of sludge for disposal. The advantages to ultrafiltration technologies are that operating costs are low and no hazardous treatment chemicals are involved.