

# POLLUTION PREVENTION

## IN RHODE ISLAND

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

### Metal Parts Manufacturing Vibratory Solution

**Metal parts manufacturer utilizes ultrafiltration to recycle vibratory finishing water.**

#### **Industry \ Contact**

SIC Codes: 3599 Marine Job Shop, Rhode Island.

Contact: Company #63

#### **Technology Description**

The company was a machine job shop engaged in the machining, milling, and turning of metal parts. The company employed 3 people at its original location.

The company used a vibratory finishing process for various metal parts resulting in the generation of several hundred gallons of wastewater and sludge, both of which were shipped off-site annually for disposal. In 1991, the company was bought by a large manufacturer and relocated to a neighboring town. Prior to relocating, the company called DEM for advice on process design and equipment layout. As a result, the company (at its new location) installed an ultrafiltration system to recycle the vibratory wastewater at a rate of 50 gallons per day. The membrane system recirculates and concentrates the spent solution while producing a clean water and soap solution. The clean soapy water solution is reused in a closed-loop vibratory operation.

#### **Feedstock Materials**

50 gallons per day of process water

Soap additives

#### **Wastes**

50 gallons per day (GPD) of spent vibratory solution

#### **Costs**

150 GPD Splitter ultrafiltration system, manufactured by Infnitex of Clarence,

NY: \$5000

**Operation \ Maintenance**

Annual maintenance and electricity costs: less than \$1000

**Savings**

50 gallons per day of soapy process water recycled

**Payback Period**

Approximately 2 years

**Impact**

The company installed an ultrafiltration system to recycle vibratory wastewater at the rate of 50 gallons per day. By utilizing ultrafiltration, this facility no longer uses or disposes of 12,500 gallons of water per year. The new facility was purposely built without a sewer line in order to eliminate the opportunity for sewer discharge. By using ultrafiltration, the company has found that the soapy water solution can be recycled, thereby "close-looping their vibratory process. The advantages to ultrafiltration are that there are no hazardous chemicals involved and operation is inexpensive.