19

POLLUTION PREVENTION

IN RHODE ISLAND

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

Sailboat Manufacturing
Tubbing Solution

Sailboat manufacturer uses ultrafiltration technology to recycle spent tubbing solution.

Industry \ Contact
SIC Code: 3732 Sailboat Manufacturer, Rhode Island.
Contact: Company #31

Technology Description
The company manufactures sailboat masts and booms, as well as sailboat rigging. The company employs 23 people.

In a small tubbing operation for finishing aluminum metal parts, 100 gallons per week of metal-contaminated waste solution was originally generated and discharged to the sewer. The company was having trouble meeting sewer discharge limits and as a result consulted with the DEM's Pollution Prevention Section. A pollution prevention assessment resulted in the company finding a cost-effective, non-chemical means of cleaning and recycling the tubbing solution. The company bought and installed a used PUFS ultrafiltration system to recycle the tubbing fluid. Much less sludge is created by this process than would be produced by chemical treatment. In addition, much of the tubbing soap is recycled.

Feedstock Materials
100 gallons per week of process water
Clovalene 277 tubbing soap, manufactured by Clover Chemical Co. of Woonsocket, RI

Wastes
100 gallons per week of metal-bearing process water discharged to sewer.

Costs
PUFS Ultrafiltration system, manufactured by Sanborn Environmental Systems of Wrentham, MA: $1,000 purchased used
Three 55-gallon tanks with fittings and two tank stands: $1,500
Transfer pump: $200
Tubing, bag filters, and other accessories: $300
Total Capital Costs: $3,000

Operation \ Maintenance
Annual energy and labor costs: less that $500

Savings
Process water reduced from 5,000 gallons per year to approximately 100 gallons per year.
Tubbing soap usage significantly reduced
100 gallons per week of spent tubbing solution no longer discharged to sewer.

Payback Period
Less than 5 years

Impact
The company no longer uses 5,000 gallons of process water per year in a tubbing operation. In addition, the company has significantly reduced its tubbing soap consumption. The company has found that, by utilizing ultrafiltration, a "closed-loop" tubbing process could be implemented. As a result, no wastewater is being generated or discharged to the sewer. Ultrafiltration allows for the recycling of the tubbing solution, including the tubbing soap, while generating small amounts of sludge. Other advantages to ultrafiltration technology are that no hazardous chemicals are involved and operating costs are low.