



Centralized Treatment & Recovery

Case Studies



PROGRAM DESCRIPTION

On July 1, 1988, one of the first centralized treatment and recovery facilities (CTRFs) in the country began operation in Roseville, Minnesota. The CTRF is called U.S. Filter Recovery Services, Inc. (USFRS), formerly Metro Recovery Systems (MRS). The CTRF receives, treats, and recycles inorganic wastes from metal finishing, electroplating, and printed circuit board manufacturing industries. Much of this waste is typically discharged as wastewater to POTWs. USFRS uses several waste recovery and treatment technologies that minimize sludge output at a significant cost savings relative to in-house treatment.

USFRS was originally built as a joint venture partnership by the Metropolitan Recovery Corporation (MRC), a company comprised of over 20 metal finishing firms, and Lancy Recovery Inc., a subsidiary of Lancy International, which has commissioned thousands of industrial waste treatment and recovery systems all over the world. The \$11 million project was funded primarily by equity contributions from Lancy and Metropolitan Recovery Corp. as well as a taxable industrial revenue bond issued by the St. Paul Municipal Bond Fund. A small portion of the project was funded by government grants and through penalty money collected by the Metropolitan Waste Control Commission (MWCC). On July 1, 1992, U.S. Filter Corporation completed its year-long process of acquiring MRS. Established in 1953, U.S. Filter Corporation designs and manufactures complete lines of equipment for water filtration, water treatment, and wastewater treatment for industrial and municipal customers. With technical and manufacturing support from other U.S. Filter Corporation subsidiaries, USFRS intends to introduce new technologies for metals recovery, effluent polishing, waste treatment, and hazardous sludge stabilization.

PROGRAM OBJECTIVE

Requirements to remove wastes, especially metals, from wastewater prior to its release into municipal sewers results in facilities using in-plant recovery operations. Although individual in-plant treatment systems are effective, their operating costs are potentially high due to costs associated with

sludge disposal. Sludge, which typically consists of metals and other materials from the process, must be disposed as a hazardous waste. The objectives of a CTRF are to comply with wastewater pretreatment requirements, lower compliance costs, and minimize sludge generation and disposal by recovering and selling metals.

USFRS collects wastewaters from individual firms, recovers metals, and treats the remaining wastes to meet all local, state, and federal standards. The principal goal at USFRS is recovery of heavy metals including zinc, copper, nickel, cadmium, chromium, and lead. Other wastes being treated include acids, alkalies, chromates, cyanide solutions, and metal hydroxide sludges. Industrial organic wastes are accepted for transfer to other disposal or treatment facilities. USFRS recovers materials for further use and offers local industries an alternative to building and operating their own pretreatment facilities.

PROGRAM ACCOMPLISHMENTS

The key to USFRS's recovery and recycling service is waste segregation at the source. Segregating wastes at the source allows USFRS to treat rinsewaters as well as concentrated wastes while maximizing the opportunity for recovery. Once wastes from different processes, with different contaminants, are mixed together, the energy required for recovery is often greater than the value of the recovered material itself. A CTRF can help industrial firms identify the best way to segregate their waste streams to achieve lower operating costs, acceptable effluent quality, and a high recovery potential; which, in turn, makes it easier for the POTW to comply with its discharge permit through more predictable influent loading rates and less load on the treatment works.

Analyses undertaken during the planning stages, as well as experience from operations to date, indicate that centralized treatment and recovery of liquid industrial waste can be cost effective for most of the area's surface finishing and electronics manufacturing plants. In the past four years, USFRS has grown from serving 23 firms to well over 300 and from operating one shift to operating around-the-clock.



According to their representatives, USFRS has reduced the amount of sludge produced to nearly a sixth of what would result from conventional pretreatment technologies. In a recent study by MWCC of loadings from USFRS and USFRS's full service users (i.e., those users for which USFRS supplies ion exchange canisters, retrieval of spent canisters, and treatment of batch discharges), USFRS has reduced the total loading of metals to MWCC's plants by 89 percent from 1987 to 1991, while total waste loads increased by 10 percent. Major reductions for individual metals were achieved: zinc (93 percent), cadmium (91 percent), copper (91 percent), chromium (77 percent), nickel (75 percent), and lead (71 percent). The facility was one of 14 hazardous waste facilities nationwide to win the 1991 Environmental Compliance Award granted by Environmental Information Ltd. for full compliance with EPA regulations.

With the help of USFRS, MWCC has made great strides and reduced the amount of metals in their influent by more than 100,000 lbs. per year.

FOR MORE INFORMATION

To receive an update on USFRS, contact Earl E. Finder at (612) 633-0079. For information on MWCC's role in central treatment and recovery contact Jeff Syme at (612) 229-2109 or write to:

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For additional information about the MWPP Program, contact the U.S. EPA Office of Wastewater Enforcement and Compliance, (202) 260-5856.