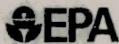


Waste Minimization in the

Electroplating Industry

**A
Technology
Transfer
Primer**



Presented by
U.S. Environmental Protection Agency
Office of Exploratory Research

Great Lakes and Mid-Atlantic
Hazardous Substance Research Center

Educational Design Team of the
University of Michigan
School of Natural Resources

RCRA

In 1976 Congress passed the Resource Conservation and Recovery Act (RCRA) to ensure that hazardous waste is managed safely in our society. Regulations under RCRA require the identification and tracking of hazardous waste from its generation to its disposal.

In recent years, the US Environmental Protection Agency (EPA) has initiated a policy of waste minimization which redirects the focus of hazardous waste management from controlling the waste after it is generated to not generating it in the first place. Waste minimization, then, is defined as source reduction or recycling that decreases the volume or toxicity of waste. It does not include recycling by means of energy recovery.



The EPA is strongly committed to waste minimization and to assisting industry in adopting waste reduction techniques.

Accordingly, it recommends a comprehensive training program to ensure an understanding of waste minimization policies. To increase available training, the EPA Office of Exploratory Research administers a national program of research and technology

transfer which supports five university-based Hazardous Substance Research Centers (HSRCs).

Each of these HSRCs addresses hazardous substance issues that are national in scope, however, each center also directs its efforts in specialized areas.

Assistance in choosing and monitoring projects is provided to the centers' directors by separate scientific and technology transfer advisory committees. These committees consist of members from:

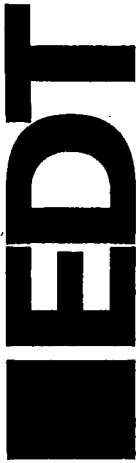
- industry,
- academia,
- environmental organizations and
- government.

HSRC

The Great Lakes and Mid-Atlantic HSRC serves federal region pair three and five, which are home to one fifth of the nation's population but contain a much larger share of its contamination problems. This HSRC is headed by Dr. Walt Weber of the University of Michigan in partnership with Michigan State University and Howard University. The center focuses its activities on bioremediation research and technology transfer.

To achieve these missions, the Center provides a climate of cooperation and excellence that is:

- **Multidisciplinary in scope**
- **State-of-the-Art in character and quality**
- **Problem-focused in selection of topics**
- **Solution-oriented in approach**



Specializing in the technology transfer charge of this HSRC is the Educational Design Team (EDT) of the University of Michigan. Headed by Dr. Paul Nowak and based in the School of Natural Resources, EDT has developed a number of training programs for the EPA and associated state regulatory agencies. These programs, which focus on RCRA regulations, include:

- RCRA Orientation Training
- RCRA Permit Writers Training
- RCRA Inspector Training

The training program design consists of a combination of manuals and videotapes. Basic information on the subject is included in the manual with the corresponding videotapes adding the visual component to the training program. This pamphlet and its available videotape were produced by EDT to demonstrate how this training design can be used to transfer information on waste minimization.

Waste minimization programs can be developed for a variety of industries and situations. The electroplating industry is used here as an example of where this type of program can be implemented. There are abundant opportunities for reducing waste, and many methods are easy to implement in this situation. For example, the following techniques have been successfully incorporated into dragout management by many facilities in the electroplating business:

- **Increasing the drainage time of the waste;**
- **Using pack ports to maximize the drainage;**
- **Using drainboards between the tanks;**
- **Using recovery tanks; and**
- **Spray rinsing over the plating tank.**

The available videotape demonstrates the last two of these techniques listed to illustrate two important advantages of waste minimization:

■ **First**, effective waste minimization techniques can help production facilities achieve mandatory compliance of government regulations.

■ **Second**, effective waste minimization techniques can save the facility money on production costs and the subsequent costs of treatment storage and disposal of the wastes it generates.

This pamphlet and available videotape serve as an introduction to the training design of the Educational Design Team. We have experience in developing waste minimization programs and can work with you to develop a program for your specific needs—for your industry—or your facility. For more information about EDT or waste management training programs, contact:

Dr. Paul F. Nowak
Educational Design Team
The University of Michigan
2028 Dana Building
Ann Arbor, Michigan
48109-1115

Phone (313) 763-1312
FAX (313) 936-2195

Karen E. Vigmostad
Training and Tech. Transfer Program Mgr.
GLMA HSRC
C-231 Holden Hall
East Lansing, Michigan
48824-1206

Phone (517) 353-9718
FAX (517) 355-4603