
ADOP²T for the Metal Finishing Industry

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The Illinois Sustainable Technology Center (ISTC) has developed a technical assistance program to improve adoption of pollution prevention technologies in the metal finishing industry. The Accelerated Diffusion of Pollution Prevention Technologies Program (ADOP²T) is a process of identifying best practices and executing brief demonstrations and extended pilot trials of pollution prevention practices and technologies in actual metal finishing facilities. These pilot trials will provide the site specific information required to influence companies decisions to adopt these technologies where economically and technically feasible.

The Chicago Metal Finishers Institute (CMFI) and Scientific Control Laboratory, Inc. will work in cooperation with ISTC to conduct over thirty individual projects at eleven volunteer metal finishing shops in the Chicago area. Project engineers will develop and execute projects including demonstrations and pilot trials of innovative pollution prevention processes and technologies at these "mentor" sites. Results of this effort will be used to promote the adoption of the technologies and practices at other metal finishers in the region.

With the help of local metal finishers and technical consultants, a list of pollution prevention practices was developed and prioritized by the metal finishers and developed into project opportunities for technology demonstrations, pilot trials and basic research. Below is a summary of the eight selected ADOP²T projects.

Cyanide Management Trial

This project will take a two phased approach to reducing the utilization and treatment of cyanide. The project will include:

1. evaluating alternative chemistries such as non-cyanide copper and non-cyanide silver in a job shop environment.
2. evaluation of nanofiltration and evaporation technologies to remove cyanide from rinse waters and replace the filtered cyanide into the plating bath while reusing the rinse water.

Aqueous Cleaners Recycling Trial

This project will evaluate ultrafiltration technologies and lipophilic filtration for their capabilities to remove contaminants from the cleaners and extend their useful life.

Acid Recycling Trial

This project will evaluate diffusion dialysis and acid sorption technologies for recycling acids within metal finishing operations.

Conductivity Control Trial

This project will involve installation of conductivity controls on plating lines to assess water usage before and after utilization of this technology while determining an acceptable upper

conductivity limit in the rinses.

Evaluation of Barrel Design

This project will evaluate different design characteristics of plating barrels and the effect on drag-out, plating quality and barrel toughness in an actual job shop environment.

Electroless Nickel Trial

This project will evaluate two alternatives for reducing the waste that usually accompanies this process, including:

1. evaluation of alternative chemistries
2. evaluation of dialysis technology for contaminant removal

Reuse of Treated Waster Trial

Most metal finishers go to great lengths to treat wastewater prior to discharge. A few shops have had success reusing some of this water in the process and others speculate that it might be possible. In this project, wastewater will be analyzed to determine suitability of reuse within the operation and to determine what additional treatment might be required to facilitate reuse of the water.

Bath Filtration Trial

This project will evaluate which plating processes benefit most from filtration and which types of filters best perform this function.

The ADOP²T pilot trials will be conducted at the volunteer metal finishing shops over a two-year period. Evaluation of the various technologies advantages and compatibility will be addressed during the projects. Particular emphasis will be placed on the technical and economical feasibility of the technologies evaluated. ISTC and CMFI will coordinate demonstrations of the technologies that are adopted, as well as existing innovative practices in the industry. Metal finishers that are favorably impressed by the demonstrations will be encouraged to pursue a pilot trial of the technology at their own shop.

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