



# WASTE REDUCTION SUCCESS STORY

## Solvent Recovery Fiber Production Plant

### Abstract

The fiber department of a large manufacturing plant reduced its air emissions by recovering a process solvent. A water scrubber was used for emission recovery, which was followed by purification in a distillation column.

### Background

E. I. DuPont de Nemours Company of Waynesboro, Virginia, manufactures synthetic fibers. One process used dimethylformamide (DMF) as a solvent in the fiber production. Before waste minimization process modifications were undertaken, the operation resulted in the release of 1,700 tons/year of DMF to the air from fiber dryers. This hazardous waste release posed problems concerning the potential for exceeding the Clean Air Act fenceline guidelines.

### Implementation

DuPont decided to recycle the DMF vapors by utilizing a water scrubber for recovery and distillation for purification. The company constructed two scrubbing columns, utilizing both a packed section and bubble cap trays. The water was recirculated at the rate of about 3,500 GPM, and the total air thruput was 150,000 CFM. The solution withdrawn was at a concentration of 5% DMF and was sent to a distillation column for purification.

### Results

The company was able to recover 1,400 tons/year DMF emissions as a result of installing a scrubber system. Overall plant air emissions were reduced by 70%, and purchases of virgin DMF decreased by almost 3 million pounds/year. The new system did not generate any new wastes for disposal. DuPont received emissions credits for future plant expansions as a result of implementation of this waste reduction technology.

This Waste Reduction Success Story is provided as a service of the Virginia Waste Minimization Program, a technical assistance program of the Virginia Department of Waste Management. For more information on opportunities to reduce waste, contact:

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