

BURKE MILLS, INC.
VALDESE, NORTH CAROLINA

SIC 2280

*Minimization of Waste Solvent and Recycling of Solid Waste in
the Textile Industry Through Recovery and Reuse*

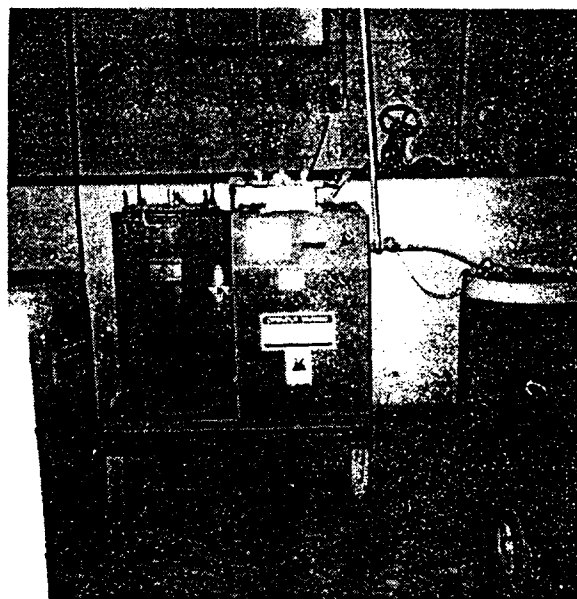
Burke Mills, Inc. - Frank Gaddy Yarn Division, located in Valdese, North Carolina, is a yarn plant that employs approximately 325 people. The plant produces high twist filament yarn for the neckwear emblem and sewing thread industries. The company is also involved in texturing of polyesters and has a dyehouse for spun yarn, filament yarn and stretch nylon.

The plant uses the solvent 1,1,1-trichloroethane (1,1,1-TCA) for removing greases and oils from yarn cleaning machinery parts. In the spring of 1985, the company determined that they were contaminating approximately 450 gallons of 1,1,1-TCA with either the oils and greases, or dyes and chemicals from cleaning the finished product. Proper disposal of the spent solvent cost \$650 per 55 gallon drum.

Through bulk purchasing of the 1,1,1-TCA in 3,000 gallon shipments versus 55 gallon drums, the company saved approximately \$11,330 annually. Improved management practices (e.g., establishment of a central distribution area) implemented by the company, coupled with the purchase of a distillation unit, has resulted in better than 90% reclamation of 1,1,1-TCA solvent. As a result, the amount of hazardous waste being disposed has decreased from 5,400 gallons annually to approximately 55 gallons annually, with an associated cost reduction from \$63,168 annually to \$650 annually. Total annual savings was reported to be \$99,964, which resulted in a payback period of less than one month.

The company joined the South East Waste Exchange in May of 1985 and became aware of the solvent distilling unit at a seminar. The company purchased the LS-15 Little Still (manufactured by Finish Engineering Co., Inc. of PA) for \$6,800 after visiting other industries that used the apparatus for recycling other chemicals.

Even prior to purchase of the distiller, Burke Mills made a significant change in the purchasing of the solvent. By utilizing an existing 6,000 gallon, stainless steel tank, the company was able to acquire solvent in 3,000 gallon shipments. By eliminating drum storage and handling, a central distribution area was established which improved control over the chemical and led to safer conditions.



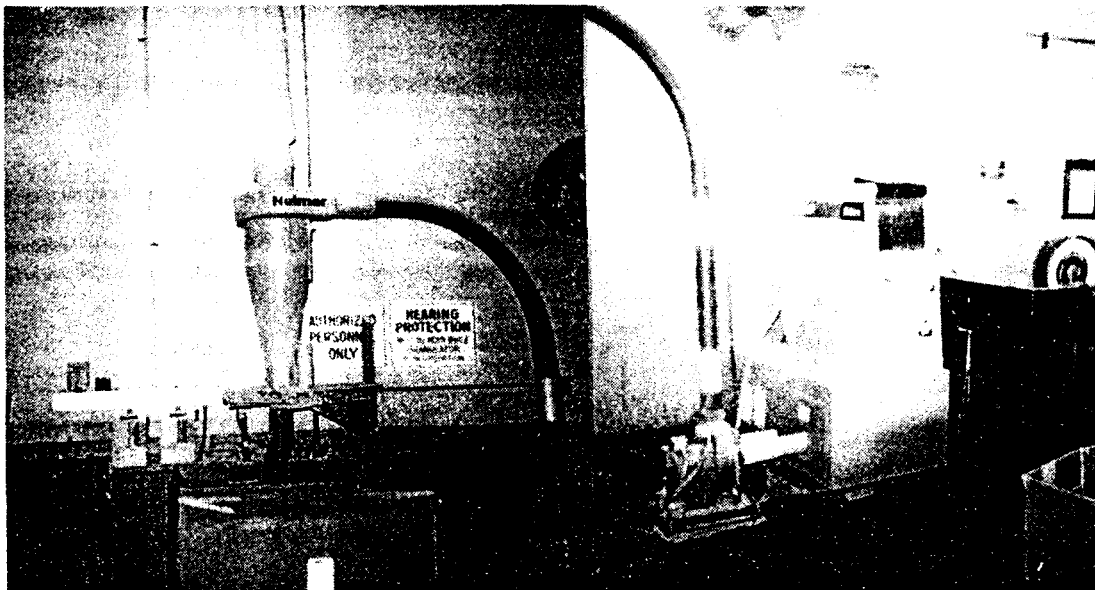
The distilling unit (shown at right) operates at a low pressure and has a 15 gallon capacity per cycle run. The spent solvent is sent through the recovery process. After completion of the cycle, the reclaimed solvent is collected into designated containers and is tested by a certified operator before being issued for use.

In addition to this solvent reclamation project, the Burke Mills plant is also involved in the recycling of plastic cylindrical tubes that are the base of the yarn, dirty and excess waste yarn and cardboard. As a

result they have significantly reduced the solid waste that would go to the Burke County landfill.

The non reusable plastic tubes are sold back to the supplier, are melted and reformed into new yarn tubes. The dirty and excess yarn is separated, baled and sold to a company in Fairmont, N.C. that chops up the yarn and uses it for stuffing material (e.g., upholstered furniture, shipping, etc.). According to company personnel, Burke Mills is one of the very few textile companies that granulates the yarn tubes, which allows for their reprocessing. The recycling of yarn was initiated approximately two years ago. The company places approximately 26,000 pounds of waste yarn in dumpsters every 5 to 6 weeks, which is then sold for reuse. The photographs below and on the next page show the granulated plastic grinder that processes the plastic to be recycled and the baled waste yarn.

Due to the trend in environmental regulations on halogenated solvents, Burke Mills has decided to switch to an alternate cleaner that is non-toxic. Currently, the firm is experimenting with a number of products that could replace the 1,1,1-TCA. By early 1992 the company foresees total elimination of 1,1,1-TCA use. Their current inventory of the solvent is 860 gallons, which should preclude any further purchase of the chemical. They continue to use the distilling unit to restill all dirty and used cleaning fluids for reuse in cleaning operations. This process has a recovery rate of 85-90%. This process generates one drum per year to year and a half of still bottoms. These drums are sent to a hazardous waste facility for disposal.



The photograph mosaic above shows the granulated plastic grinder system that processes the plastic for recycling.

The photograph below shows the consolidated waste yarn that is reused for other applications.



NOTES:

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References:

- Entrant Form information submitted
to the State of North Carolina
Governor's Waste Management
Board.
- Burke Mills, Inc.

Other:

Winner of 1988 Governor's Award
of Excellence for Outstanding
Achievement in Hazardous Waste
Management - Small Industry
Category.