
CASE STUDY: Hoechst Celanese Corporation

Location:	Salisbury, NC (Rowan County)
Industry:	Textiles - Human-made Organic Fibers (SIC: 2824)
Pollution Prevention Application:	Solvent Substitution, Leak Detection/Repair, Process Modifications, Recycling
Annual Savings:	\$240,000 (in revenues from solid waste management program)
Payback Period:	Not applicable
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Background

Hoechst Celanese produces polyester fibers at its Salisbury facility. In 1991, the Hoechst Celanese Corporation implemented a corporate-wide program designed to reduce chemical and solid waste emissions at all its facilities throughout the US. This Waste and Release Reduction program (WARR) specifically targeted solid waste and SARA chemicals.

Waste Reduction Activities

- Over 15,000 solvent spray cans containing 1,1,1-trichloroethane were consumed annually at the facility for degreasing. By replacing the ozone-depleting chemical with a water-based detergent soap degreaser, the company eliminated emissions from this source.
- Fugitive emissions from plant piping systems were determined to be the largest source of ethylene glycol and biphenyl emissions. To address these sources, a leak detection and repair (LDAR) program was adopted, and selective replacement of valves, pumps, and flanges with leakless equipment was undertaken.
- Hoechst Celanese also implemented a solid waste management program with the closure of on-site landfills. Under the program, all solid waste was considered marketable, and buyers for all major waste categories were sought. Materials recycled from the facility include office paper, cardboard, mixed wood, pallets, construction debris, scrap metal, used oil, and plastic.
- Numerous gaseous emissions occur during the polymerization process. The SARA chemicals of principal concern were 1,4-dioxane and acetaldehyde. Emissions were previously collected in a wastewater stream and diverted to an on-site treatment facility. The company modified the treatment processes to eliminate any potential release of toxic compounds and to reduce the loading to the wastewater treatment facility. The gaseous emissions are now diverted to a single collection point where they are then passed through a distillation column. The targeted SARA chemicals are separated and diverted to a waste heat boiler, which generates low-pressure steam for reuse in the plant.

Waste Reduced

The leak detection and repair program, the use of the non-hazardous degreasing solution, and the collection of process gases reduced emissions of the five targeted SARA chemicals by 306 tons per year. The solid waste management program diverts 4,601 tons of material from the landfill annually.

Annual Savings

No net savings were realized from the projects addressing the release of SARA chemicals. However, the solid waste management program generates almost \$240,000 each year in recycling revenues and avoidance of landfill fees.