

 <p>Pollution Prevention Case Study</p>	<p align="center">Farnam Sealing Systems Division, Coltec Industries</p> <p align="center">Substituting methylene chloride with a less toxic substance</p>
<p><i>Standard Industrial Classification (SIC)</i></p>	<p>Gaskets, packing and sealing devices/3053</p>
<p><i>Type of Waste</i></p>	<p>Methylene chloride</p>
<p><i>Strategy</i></p>	<p>Process Modification Material Substitution</p>
<p><i>Company Background</i></p>	<p>Farnam Sealing Systems Division, Coltec Industries, is located in Necedah, Wisconsin. Today Farnam manufactures sealing systems for engines and drive trains, transmissions, fuel systems, lubrications systems, cooling systems and exhaust manifolds, in virtually all vehicles and engine-driven heavy equipment built by domestically owned manufacturers in North America and for many markets worldwide. The firm employs about 320 people at its facility.</p>
<p><i>Original Process</i></p>	<p>Ninety percent of the methylene chloride used at Farnam was used as a drying agent in a fluoropolymer coating. The coating was applied to gaskets destined for shipping to keep them from sticking together. Methylene chloride is known for its quick drying properties as it evaporates.</p>
<p><i>Motivation</i></p>	<p>To stay ahead of every-increasing regulation and reduce employee exposure to chemicals.</p>
<p><i>Pollution Prevention Process</i></p>	<p>On one of its production lines, Farnam now applies a water-based fluoropolymer coating in combination with drying ovens to compensate for the quick drying time of methylene chloride. This has reduced the emissions of this solvent by nearly 50% or 142,000 pounds per year and resulted in a 3,000 pounds/year reduction in hazardous waste. The firm plans to completely eliminate the use of methylene chloride by the end of 1994. This will result in an additional reduction of 6,000 pounds of hazardous waste/year.</p>
<p><i>Material/Energy Balance</i></p>	<p><i>Original Process</i></p> <p>Feedstock 292,000 pounds methylene chloride/year used as a reducer for original coating</p> <p>Waste methylene chloride/year 283,000 pounds in air emissions, 9,000 pounds in hazardous waste</p> <p>Disposal air emissions and hazardous waste</p>

	<p><i>Pollution Prevention Process</i>*</p> <p>Feedstock 71,000 pounds water reducible fluoropolymer coating/year</p> <p>Waste less than 500 pounds/year solid waste**, 800 pounds/year to wastewater treatment</p> <p>Disposal non-hazardous waste and wastewater treatment</p> <p>*Please note that this process is for one production line only. The company is in the process of switching its other line to using the new feedstock, as well.</p> <p>**The generator is responsible for determining whether or not this solid waste is hazardous</p>
<i>Economics</i>	<p>Capital Costs Capital equipment costs for new dryers equals \$50,000</p> <p>Operational/Maintenance Costs New raw material costs are lower but usage is up, resulting in insignificant cost change. Energy costs for dryers are insignificant, as well.</p> <p>Payback Period Less than 4 years</p>
<i>Benefits</i>	Emissions were reduced by more than 50%, and employee exposure to solvents also was reduced.
<i>Obstacles</i>	A portion of the customers did not allow Farnam to use the new process and chemical on their product immediately.
<i>Technology Transfer</i>	The process may have many other applications when coatings are applied to release rubber or plastic parts from their original molds.
<i>Company Address</i>	Farnam Sealing Systems Division 900 Farnam Drive PO Box 327 Necedah, Wisconsin 54646
<i>Contact Person</i>	Barry Brodt, Environmental Engineer 608/565-4253
<i>Pollution Prevention Resources</i>	<p>Free, On-site Technical Assistance University of Wisconsin Extension Solid and Hazardous Waste Education Center Milwaukee area: 414/475-2845 Remainder of state: 608/262-0385</p> <p>Pollution Prevention Information Clearinghouse</p>

Wisconsin Department of Natural Resources
Cooperative Environmental Assistance
608/267-9700 or e-mail: cea@dnr.state.wi.us



**Bureau of Cooperative Environmental Assistance
Wisconsin Department of Natural Resources
P.O. Box 7921
Madison, WI 53707
608/267-9700**

TS-014 95