SGIA
Environment Canada Environnement Canada

CASE STUDY #2 Improving Health and Safety at Technograph Improves Environmental Performance

When Peeter Leppik, president of Technograph, decided to substitute a less hazardous adhesive for one considered to be a probable human carcinogen, he made the workplace a much safer environment for his employees. Long-time users of methylene chloride (dichloromethane) screen adhesives, the company, in 2003, switched to an acetone-based system. They are pleased with the results, both from a health, safety and environmental, as well as an efficiency and productivity perspective.

History

Technograph is a prepress house, located in Toronto, Ontario, specializing in screen making for industrial applications. Since the time Mr. Leppik's father began the business in 1963, Technograph had been using a methylene chloride adhesive system to attach the mesh to customers' screen printing frames. The plant had only general ventilation and the employees did not wear respirators. At one point, Technograph had tried using acetone-based adhesive, but the employees found the odor of the acetone objectionable. On the production side, the performance of the acetone adhesive was inferior. So the company continued to use methylene chloride.

In 2000, during a random workplace inspection by the Ontario Ministry of Labour, Mr. Leppik was told that the company would have to implement controls to reduce the occupational exposures of methylene chloride. This chemical is considered as probably carcinogenic to humans by many governmental agencies. Methylene chloride is also on the Toxic Substances List of the Canadian Environmental Protection Act (CEPA).

Technograph's first attempt at control was to provide their employees with masks supplied with outside air. The workers found the air very drying to their eyes and the masks generally uncomfortable to wear. The next approach was to retrofit the large stretching table with an air evacuation system. The evacuation system, which is located under the table that holds the mesh and screen printing frame, sucks the adhesive vapors downward, away from the worker, and vents them to the outside. Indoor air testing confirmed that the air evacuation system was a success, as the methylene chloride vapor levels at the stretching table were well below the occupational exposure limits.

While the air evacuation system was installed for health and safety reasons, there were two production benefits, as well: the vacuum caused an increased air flow that reduced the drying time of the adhesive and the downward pull on the fabric toward the frame, provided better adhesion. Technograph installed an overhead local ventilation hood over a second stretching table.

Impact of the Environmental Performance Agreement

In 2003, Technograph became a signatory to the Environmental Performance Agreement (described in the box on the back page) between the Specialty Graphic Imaging Association and Environment Canada. Appendix 1 of the agreement lists substances (chemicals) of concern that are targeted for reduction by participating screenprinters and digital imagers. Methylene chloride is on that list. When he began to develop his environmental management system, a requirement for participating in the agreement, Mr. Leppik quickly identified the

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Peeter Leppik, president of Technograph

reduction of methylene chloride use as a potential area for minimizing the company's environmental impact. (Note: Due to negligible photochemical reactivity, neither methylene chloride nor acetone is considered to be a volatile organic compound.) In fact, he set an objective-target-timeline for eliminating the use of methylene chloride by December 2003.

Once again, Technograph turned to acetone-based adhesive technology. The performance of the material had increased significantly since the previous time they had tried to use it, and with the air evacuation system in place, odour was no longer an issue for the employees. In 2003, Technograph completely eliminated the use of methylene chloride, removing a probable human carcinogen from the workplace.

Recognizing that acetone is slightly more flammable than methylene chloride, Mr. Leppik once again had air sampling performed around and under the stretching table. In all tests, acetone vapors were not detectable.

New Technology

In searching for better ways to produce screens, Technograph has tried UV-curable adhesive technology. Because the curing process relies on ultraviolet light, rather than evaporation, UV technology should minimize workplace odors. According to Mr. Leppik, however, UV adhesives aren't quite up to performance standards, and given the diverse size of screens made at Technograph, there's no single exposure system configuration that will work well for the company. The wide range of screen sizes has also kept the company from implementing direct digital to screen technology. Mr. Leppik has been investigating the use of inkjet for industrial applications.

Local ventilation installed over stretching table at Technograph

Summary

What started out as an effort to control occupational exposure resulted in health and safety benefits, as well as environmental gains. By installing an efficient air evacuation system, Technograph improved the indoor air quality of the workplace and realized production gains in reduced drying times and better screen adhesion. By substituting acetone and eliminating the use of methylene chloride altogether, Technograph has removed a probable human carcinogen from the workplace, and minimized the risk to employee health and safety. Participating in the Environmental Performance Agreement has helped Mr. Leppik to look at his operation overall, and identify areas where they can reduce their environmental impact as well as their health and safety risks. ■

Technograph, an ISO 9002 registered company, produces screens for industrial customers that screenprint as part of their manufacturing process. Technograph also distributes industrial UV ink, curing equipment and some incidental products. In the 1980s, Technograph was the first to introduce UV ink technology to Canada. Mr. Peeter Leppik is the company's second president. In 2003, Technograph was one of five companies that signed an Environmental Performance Agreement (EPA) with SGIA and Environment Canada. Technograph is located in Toronto, Ontario, Canada.

THE SGIA/ENVIRONMENT CANADA ENVIRONMENTAL PERFORMANCE AGREEMENT

An Environmental Performance Agreement is one of the tools Environment Canada uses to seek voluntary reductions of volatile organic compounds. In the case of this Agreement, SGIA has committed to assist screen and digital printers in implementing an environmental management system (EMS) in order to produce verifiable reductions of volatile organic compounds (VOCs) by 20 percent by 2008. This represents an aggregate reduction amongst all participating companies. For its part, Environment Canada has agreed to provide resources for training participants, tracking reductions and recruiting additional screen and digital printing partners. The full text of the agreement is available on the Internet at http://www.ec.gc.ca/epa-epe/en/agr.cfm.

One of the most interesting aspects of Environment Canada's Environmental Performance Agreements is that they are used as a complement, a precursor or an alternative to new regulations. In fact, while there is currently no regulation restricting the use of VOCs by screen and digital printers, Canada's commitment to meeting its ozone standards will necessitate VOC regulations. By participating in this Environmental Performance Agreement, screen and digital printing facilities are staying ahead of the regulatory agenda. The Environmental Performance Agreement between Environment Canada and SGIA helps support the Clean Environment business line. EPAs are voluntary agreements negotiated among industry, government agencies and non-government organizations to achieve specified results.

Environment Canada's vision is to see a Canada where people make responsible decisions about the environment and where the environment is thereby sustained for the benefit of present and future generations.

The Ontario Region of Environment Canada delivers national programs tailored to respond to regional and local issues; implements Great Lakes 2000 and the Canada-Ontario Agreement (COA) Respecting Great Lakes; and represents Environment Canada corporately, in binational, national, regional and local partnerships.