



Minnesota Pollution Control Agency

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Pollution Prevention Evaluations Work at Crystal Cabinets

Regardless of the regulatory program a company is covered by, pollution prevention (P2) evaluations can open doors to chemical reductions, reductions in regulatory requirements, and even cost savings and efficiency increases.

There are many reasons a company may want to reduce the hazardous chemicals they use. Some companies are challenged under the Resource Conservation and Recovery Act (RCRA) to have a hazardous waste reduction program in place. P2 plans are also required for companies that must file toxic chemical release forms under the Minnesota Toxic Pollution Prevention Act (TPPA). Under some circumstances, they may also be integrated into permits, response action plans addressing threatened or known releases, and into enforcement actions such as stipulation agreements. P2 evaluations have been applied as phosphorus management plans as part of NPDES permits. Other companies perform an evaluation simply to lessen the risk, or the cost, associated with dealing with hazardous chemicals. Worker health and safety may also be a factor. With a little creativity, reductions can be achieved at most facilities.

P2 evaluations usually have two parts:

1. A review of
 - existing emissions and sources,
 - production processes and parameters,
 - material handling and usage,
 - equipment repair and maintenance schedules and procedures,
 - personnel training procedures,
 - emergency spill procedures, and
 - abatement procedures.

2. A report summarizing existing processes, procedures, and emissions, with recommendations to reduce waste and pollutant emission and generation.

The case study below shows how this process was applied successfully for a Minnesota manufacturer of cabinetry and millwork.

Crystal Cabinet Works

In response to additional restrictions on methylene chloride (a potential carcinogen and hazardous air pollutant) exposure set by OSHA, Crystal replaced their methylene chloride based adhesive with a neoprene rubber water-based adhesive. The water-based adhesive costs more per gallon, but money is still saved since much less of

the adhesive is needed per production unit, due to its higher solids content. The water-based adhesive performs better and has a higher bond strength than the methylene chloride based glue, and few problems have been encountered in its use.

To speed the drying of the glue, halogen infrared curing ovens were installed which decreased drying time from 15-45 minutes to just a few minutes. The infrared curing ovens have performed so well that eventually, Crystal plans to replace all of their conventional curing ovens with the infrared ovens. This action is expected to reduce the amount of combustion pollutants used by the company.

To reduce overspray, which wastes paint and increases a plant's emissions, Crystal converted their conventional air spray gun process to high-transfer efficiency spray guns on all of their finishing lines. This reduced the amount of finishes needed per year by 16,500 gallons, saving \$200,000 per year.

Overall, total toxic chemical releases were reduced by 32%, and total VOC (volatile organic compound) emissions were reduced by 48%.

By eliminating the use of methylene chloride based adhesive, Crystal avoided a new OSHA standard for methylene chloride; compliance costs would have amounted to approximately \$100,000. Similarly, emissions reductions allowed Crystal to avoid compliance with the EPA's Wood Furniture NESHAP.

The full text of the case study performed by the Minnesota Technical Assistance Program (MnTAP) may be found at their website at <http://www.mntap.umn.edu>. From their home page, click on "Resource List"; the case study may be found under "General Pollution Prevention Information", entitled Eliminating Methylene Chloride Adhesives Increases Production. You may also contact MnTAP at (612) 624-1300.

Project Description	<ul style="list-style-type: none"> • Replaced methylene chloride-based adhesive with a neoprene rubber water-based adhesive. • Converted to HVLP spray guns.
Cost Savings	\$32,000/yr
Partnerships	MnTAP
Regulatory Benefits	Avoided new OSHA standard for methylene chloride.
Environmental Benefits	Eliminated use of methylene chloride-based products, a U-list hazardous waste.



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