Pollution Prevention for Furniture Manufacturers

This fact sheet outlines opportunities for furniture manufacturers to reduce their waste generation and toxic substance use in the following areas:

- Wood Furniture
- Metal Furniture
- Upholstery
- Coating and Finishing

Wood Furniture

- Lay out sheet stock efficiently to use as much raw material as possible.
- Maintain equipment regularly to prevent defects. When defects occur, identify them as early as possible to prevent additional waste of materials and labor.
- Investigate opportunities for dust to be reused in a secondary market. Promote reuse by segregating dust from soft and hard woods and avoid mixing dust with paint and varnish.
- Research alternatives to formaldehyde-based resins in plywood or particleboard panels. Look for no-added formaldehyde (NAF) or ultra-low emitting formaldehyde (ULEF) resins.

Upholstery

- Assess the toxicity of the flame retardants used in flexible polyurethane foam and substitute less toxic, less hazardous alternatives.
- Use hot melt, heat seal, or water-based adhesives which contain low or no solvent content. Use only as much adhesive as necessary.

Metal Furniture

- Research alternatives to hexavalent chromium for decorative chromium plating.
- **Independent Plating**, a metal finishing company, experienced improved product quality and faster processing times after implementing a tri-chrome plating process that reduced their hexavalent chromium use by 88%.Operating costs increased overall, but waste disposal costs were reduced and other costs are expected to drop over time.
- Reduce dragout of plating chemistry by lowering bath concentrations and improving drainage when withdrawing parts. Investigate opportunities to filter process wastewater and recover plating chemicals for reuse.
- **Columbia Manufacturing**, a school furniture manufacturer, saved $3,000,000 in water and sewer fees and $4,650,000 in chemical costs by modernizing its nickel-chrome plating line. It reclaims 98% of plating chemistry for reuse and no longer discharges industrial wastewater.
Coating and Finishing

- Research alternatives to traditional organic solvent-based coatings that can reduce VOC emissions and wasted material\(^7\).
  - High-solids coatings contain more solids and less solvent.
  - Waterborne coatings use water as the carrier instead of organic solvents.
  - Powder coatings contain only solids, no solvent, and require specialized equipment to apply.
  - Radiation cured coatings can cure more quickly than traditional coatings.
- Purchase and mix only as much coating as needed for each job. Reuse excess for touchups or as primer.
- Improve transfer efficiency with upgraded equipment\(^8\).
  - High-Volume/Low-Pressure (HVLP) spray guns can reduce overspray compared to conventional guns.
  - Electrostatic application systems reduce wasted coating material by making the coating electrically attracted to the part.
- Train employees in proper spray techniques that will maximize transfer efficiency\(^9\).
  - Keep a constant distance between the spray gun and the part.
  - Hold the gun perpendicular to the part.
  - Turn the spray gun off just before and after each pass.
  - Take the time to do it right the first time rather than waste time and material refinishing.
- Replace aerosol cans for touchups with refillable, non-aerosol spray bottles if possible.
- Use dedicated equipment for each coating or schedule coatings in batches to minimize clean-outs. When coatings do change, start with light colors and end with dark\(^10\).
- Clean equipment with dirty solvent first, then fresh solvent. Determine whether spent solvent can be reclaimed and reused on site\(^10\).
- Tightly close all containers of cleaning solvent when not in use.

References


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