



## Topic Hub: Fiberglass Fabrication    Subsection : Reasons for Change

### Why should fiberglass manufacturers implement pollution prevention (P2)?

Pollution prevention helps to reduce toxic and hazardous emissions; to reduce/prevent environmental and employee exposure to these emissions; and in turn reduces compliance efforts; and to saves money.

Fiberglass manufacturers regularly use products that are hazardous or dangerous to workers and the environment. One of major concern is styrene, used in some resins, gel coats, and rinse solutions. Styrene has recently been classified as a “reasonably anticipated human carcinogen”.

Other potential chemicals examples include the following:

- Many flammable materials and cleaning solvents
- Toluene in some mold release agents
- Dimethyl phthalate in some catalysts
- Isocyanate in some foaming agents
- Brominated fire retardant additives
- Other volatiles and hazardous air pollutants in solvents, adhesives, resins, gel coats, catalysts, paints and coatings, thinners, foams, and other raw material inputs

### Environmental Regulations

Complying with regulations, protecting worker health and safety, and effective facility management need to be considered when making a decision to use a traditionally toxic material versus finding a less toxic, less regulated process material.

As a rule of thumb, a facility that uses more than one 55-gallon drum per day of conventional, styrene-based resin in open molding operations, likely means that they are exceeding federal air emission permitting thresholds, due to the styrene and hazardous air pollutant (HAP) contents.

Listed below are some general regulations that may apply to the raw materials and processes used at a typical fiberglass facility:

#### **Worker Health and Safety**

The Occupational Safety and Health Administration (OSHA) and other state level worker protection authorities set permissible exposure levels (PELs) for certain chemicals and hazardous exposures.

Potential toxics include: styrene (a human carcinogen), acetone, volatile organic compounds (VOC) in resin, isocyanates, gel coat and aesthetic finishing materials, some cleaning solvents, toluene in some mold release agents, and dimethyl phthalate in some catalysts.

#### **Facilities Management**

Local fire codes regulate flammable products, like acetone. These codes define how much raw material can be stored on site. They also define how products should be stored and/or "processed" the facility. For example, peroxide catalysts must be stored in an explosion-proof cabinet.

#### **Air Quality**

Federal, state and local air authorities are all concerned about the impact of this industry on the quality of air. Styrene is a listed Hazardous Air Pollutant (HAP), and a suspected carcinogen, an experimental poison by ingestion and inhalation, and an eye and skin irritant.

The National Emission Standards for Hazardous Air Pollutants (NESHAP) [Subparts VVVV](#) and [Subpart WWW](#) and is applicable to fiberglass resin and gel coat operations, carpet and fabric adhesive operations. The rules require all major sources to meet HAP emission standards reflecting the application of the maximum achievable control technology (MACT).



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Potential materials or chemicals of concern are: styrene, acetone, VOCs in resin and gel coats, toluene in some mold release agents, dimethyl phthalate in some catalysts, aesthetic finishing materials, equipment cleaning solvents

### Water Quality

Spent solvents or other wastes should never drain onto the ground or into a septic system, storm drain, surface water or any other drain not connected to a sanitary sewer. Improper disposal or releases can have an adverse affect on groundwater, surface water and sediments. State agencies administer the National Pollution Discharge Elimination System (NPDES) outlining the manner in which wastewater can be discharged to a Wastewater Treatment Plant (WWTP).

### Hazardous Waste

Businesses and organizations that generate solid waste must test to determine if that waste contains any number of toxic constituents. Hazardous wastes are determined by their physical properties (flammable, reactive, corrosive and toxic) or by laboratory test of the particular toxicity. The Resource Conservation and Recovery Act (RCRA) sets general guidelines for hazardous waste management. The EPA translates these guidelines into requirements for any facility that generates, transports, treats, stores, or disposes hazardous waste. These facilities can be large or small quantity generators.

### Solid Waste

Overspray solids, unused products, solidified resins, trim-ends and cutouts typically are not regulated. However, some landfills do impose restrictions on pick-up and disposal. Contact your local landfill to determine if restrictions apply.

### Community Right-to-Know

The Superfund Amendments and Reauthorization Act (SARA) promulgated the "Community Right-to-Know" law, requiring businesses to report use and releases of hazardous chemicals. This federal law affects facilities that use over 10,000 lbs of any solvent and/or over 50,000 lbs of resin per year. Acetone was recently removed from SARA's regulated list, but other solvents like toluene and xylene remain listed and are regulated.

## Cost Savings and Avoidance

Many businesses only account for waste disposal costs, without considering all of the additional costs associated with using raw materials that may be toxic and pollute the environment, processes that are energy- or water-consuming, and otherwise inefficient. Total cost accounting ensures that certain management, engineering, and overhead costs are tagged as cost considerations for environmental operations.

Examples of potential cost savings opportunities associated with improving environmental performance can include:

### Raw Materials Reduction in Quantity or Toxicity

- Storage and inventory
- Spill prevention
- Secondary containment
- Container labels

Cost savings associated with the reduction in raw material quantity would mean that there is less material to store, which saves space, workers spend less time conducting the inventory, and it prevents chemicals/materials from becoming expired or out-dated because you only store what you use.

### Water Use Reduction

- Water use
- Sewer and discharge fees
- Wastewater treatment
- Sludge handling and disposal



## **Topic Hub: Fiberglass Fabrication    Subsection : Reasons for Change**

Companies often underestimate the cost of water use. Many companies pay for the initial use of water, then pay again to treat water before it enters a process, and again afterwards to dispose of waste. Simple inexpensive methods of cost savings includes monitoring and cutting off water use when optimum levels have been reached for a particular process.

### **Solid and Hazardous Waste Reduction**

- Waste collection and containers
- Labels and labeling
- Onsite management
- Recycling and reuse opportunities (and avoided purchase of new; waste is raw material)
- Disposal
- Transportation

Careful monitoring of materials such as resin, paints, and thinners can reduce waste due to overspray and excessive use, and in turn reduce the cost of these materials. Proper and compact storage, proper labeling, and reuse of waste can decrease transportation and disposal costs.

### **Air Pollution Reduction**

- Inspection and monitoring
- Ventilation and filtration
- Pollution control equipment
- Sampling, monitoring, and testing
- Discharge fees

Proper inspection, monitoring and changing of filters can optimize the quality of emissions and the quantity of filters used to keep costs at a minimum.

### **Management and Overhead Costs to Consider**

- Permit preparation and maintenance
- Regulatory impact analysis
- Hazard analysis and communication
- Product/vendor research
- Emergency planning
- Spill response procedures and equipment
- Right-to-know, emergency, and other safety and health training for staff
- Sampling and testing
- Inspections and audits
- Information and tracking systems
- Regulatory reporting
- Insurance and legal fees
- Penalties and fines for non-compliance
- Future liability

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