HEALTHY AIR
A COMMUNITY AND BUSINESS LEADERS GUIDE

Reducing Air Pollution from: Fiberglass Fabrication Operations

Why should my fiberglass fabrication operation reduce air pollution?

People who are exposed to toxic air pollutants at sufficient concentrations, for sufficient durations, may increase their chances of getting cancer or experiencing other serious health effects, such as reproductive problems, birth defects, and aggravated asthma.

Pollution prevention safeguards the health of your employees, customers, and families by using materials, processes, or practices that reduce or eliminate air pollution at the source. For example, covering solvent containers prevents vapors from impacting your employees.

Pollution prevention practices also save money on waste disposal, materials usage, and the cost of air pollution controls.

You may already be regulated by federal, state, local, or Tribal agencies and may already voluntarily implement pollution prevention practices. However, increasing pollution prevention efforts can further minimize impacts on human health and the environment.

Why should I be concerned about air pollution from my fiberglass fabrication operation?

- Fiberglass fabrication operations can produce emissions of toxic air pollutants, including styrene.
- The primary pollutant at most operations is styrene, which is present in resins and gel coats. A portion of the styrene evaporates during the curing process.
- Paints, thinners, solvents, and adhesives can release some toxic air pollutants and volatile organic compounds (VOC). Chemicals in these substances can also react in the air to form ground-level ozone (smog), which has been linked to a number of respiratory effects.

How can I reduce air pollution from my fiberglass fabrication operation?

Improve Production System Design

- Switch from open to closed molds.
- Reduce time and waste by installing impregnator systems that combine resin and fiber application.
- Install resin rollers to eliminate waste and excessive resin use.
- Install vacuum-mold or infusion systems to eliminate air bubbles and improve product quality.
- Switch from manual operation to robotics. Robotic systems reduce production time and result in greater accuracy.
- Use computerized application technology to increase process efficiency.
- Switching production systems and investing in hardware and software for robotics and computer applications involves initial costs, but the payback period is generally less than 3 years.

Change Raw Materials

- Switch to resins and gel coats containing less styrene.
- Use ultraviolet-cured or vapor-suppressed resin. These resins have the potential to emit less styrene.

Could your family be affected?

Low-pressure spray techniques reduce misting and materials waste and can reduce emissions by 45%.

— Minnesota Office of Environmental Assistance

Coordinate Equipment Design, Operation, and Use

- Implement a controlled spray program that includes non-atomizing equipment such as flow coaters, pressure-fed rollers, and fluid impingement spray guns.
- Use wider mold flanges to reduce overspray.
- Calibrate the spray gun pressure to operate at the lowest effective level.
- Train operators to hold spray guns perpendicular to the surface. Training may result in savings in raw materials and labor costs.

Change Spray Technologies

- Change spray technologies from high-pressure to low-pressure sprays.
- Use non-atomized spray guns instead of atomized spray guns. This reduces both overspray and emissions.

Reduce Exposure to Resin

- Use efficient resin application methods, including non-atomized flow delivery. That saves time, uses up to 10% less materials and can reduce emissions up to 35%.
- Use low-cost closed molding technologies such as vacuum infusion or resin transfer molding. This eliminates the exposure of liquid resin to the environment during the manufacturing process.

Reduce Exposure to Solvent

- Reduce air emissions and prevent contamination by covering solvent containers.
- Separate wastes to simplify the recycling of solvents.

How can preventing air pollution in my fiberglass fabrication operation save money?

Preventing pollution saves money by using raw materials more efficiently, decreasing the risk of fires, and reducing the costs of spent solvent disposal.

Preventing pollution at a fiberglass fabrication operation could result in less time and money spent on:

- Ventilating work areas and filtration of air and solvents.
- Pollution control equipment.
- Sampling, monitoring and testing of materials found in the work place.
- Disposal of wastes and used solvents that may be hazardous or toxic.
- Purchase of raw materials.

What else can I do to reduce air pollution?

Your community may already have groups working for cleaner air. Your expertise and knowledge can be very helpful to these groups.

Many pollution prevention offices offer free on-site assessments for interested businesses. A list of these small business assistance programs can be found at *www.epa.gov/smallbusiness*. This site provides information about assistance and technical help, environmental experts, environmental regulations and laws, funding, and cost-saving opportunities.

Sponsor employee awards for good ideas, great efforts, and dedication to pollution prevention. For example, you could provide a cash award for workers who implement a work practice that reduces both costs and pollution.

A boat manufacturer switched to more efficient spray guns (HVLP) and direct roller application of resins and reported a reduction in styrene levels of 85% and an annual cost savings of $11,000.

— Pacific Northwest Pollution Prevention Center

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Could your family be affected?

Reducing the amount of styrene in a resin by 35% to 45% can result in an air emissions reduction of 20% to 50%.

— Minnesota Technical Assistance Program

Resources

- American Composites Manufacturers Association: *www.acmanet.org*, (703) 525-0511
- Community-Based Projects: www.epa.gov/air/toxicair/community.html
- EPA Air Toxics Web Site: *www.epa.gov/ttn/atw/*
- National Emission Standards for Hazardous Air Pollutants: Flexible Polyurethane Foam Production: *www.epa.gov/ttn/atw/foam/foampg.html*
- National Emission Standards for Hazardous Air Pollutants: Flexible Polyurethane Foam Operations: *www.epa.gov/ttn/atw/foam2/foam2pg.html*
- Pollution prevention suggestions: *www.outreach.missouri.edu/polsol/fbrgls.htm#process*
- Technology transfer: *www.ecn.purdue.edu/CMTI/Technology_Transfer/*
- Fiberglass industry profile: *www.pprc.org/pprc/sbap/fiber/profile.cfm*

Pollution Prevention

- Overviews: *www.mntap.umn.edu/fiber/75-FRPemissions.htm*, *www.moea.state.mn.us/publications/SIC3088.pdf*
- Fact sheet: *www.eq.state.ut.us/EQSHW/ADOBE/p2factsheets/Fiberglassfct.pdf*

Topic Hubs

- Pollution Prevention Resource Center: www.pprc.org/hubs/toc.cfm?hub=10&subsec=7&nav=7
- Pollution Prevention Regional Information Center: www.p2ric.org/topichubs/toc.cfm?hub=10&subsec=7&nav=7&CFID=12373&CFTOKEN=99449821

Guides

- Fiberglass operations: *www.ecy.wa.gov/programs/hwtr/P2/sectors/FRPGuide1.html*
- Pollution prevention: *www.-2pays.org/ref/02/01058.pdf*

Toxicity of Solvents

- Integrated Risk Information Systems (IRIS): *www.epa.gov/iris*
- Air Toxics Health Effects Notebooks *www.epa.gov/ttn/atw/hapindex.html*

A study in Minnesota showed a potential emission reduction of approximately 30% from implementing pollution prevention techniques at fiberglass fabrication facilities.

— Minnesota Office of Environmental Assistance