

US EPA ARCHIVE DOCUMENT



Could your family be affected?

One shop installed a vacuum sanding system for \$9,000. Since installation, the shop has saved over \$7,000 a year because of reductions in cleanup costs.

— Peaks to Prairies Pollution Prevention Information Center

Switching from conventional to HVLP spray guns and using proper spray techniques can save up to \$13,000 per year at a shop spraying 15 cars a week.

— U.S. EPA Design for the Environment



Reducing Air Pollution from: Auto Body Shops

Why should my auto body shop 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 can reduce or eliminate air pollution at the source. For example, using a professional laundry service to wash work clothes can reduce the chance of workers bringing potentially toxic particle pollution (dust) home to their families.

Pollution prevention practices also save money on waste disposal, paint and solvent 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 auto body shop?

- Auto body shop operations can produce emissions of toxic air pollutants, including metals and diisocyanates.

- Paints, cleaners, and paint strippers can release some toxic air pollutants and volatile organic compounds (VOC). Chemicals in these substances can react in the air to form ground-level ozone (smog), which has been linked to a number of respiratory effects.
- Lead, chromium, and cadmium are metals that form particle pollution during sanding and welding. Breathing particle pollution can cause respiratory problems and other harmful health effects.
- Diisocyanates are toxic air pollutants emitted during painting operations. These compounds are a leading cause of occupational asthma.

How can I reduce air pollution from my auto body shop?

Reduce the Use of Solvent Cleaners

- Use an enclosed solvent gun washing system to reduce evaporation when cleaning equipment. It can decrease costs by cutting the amount of solvent used for cleaning by more than 50%, the labor time by 60%, and air pollution by 70% to 90%.
- Turn off the parts cleaner when not in use. This reduces solvent evaporation.

Average conventional spray gun cost: \$30 to \$40

Average HVLP gun cost: \$500

Average conventional gun transfer efficiency: 30% to 60%

Average HVLP gun transfer efficiency: 70%

Material savings when using HVLP gun: At least 30%

— University of Nebraska Cooperative Extension

- Instead of cleaning with solvents, use a water-based cleaning system such as hot soap washers. These systems eliminate the costly purchase of chlorinated solvents. This can save up to 95% in operation costs. Make sure your local water system can treat the wastewater from this type of cleaning system.
- Recycle old solvent by using an on-site distillation unit. Reclaiming spent solvents on-site reduces the amount of solvent you send off-site for treatment and the amount of fresh solvent you have to buy.

Reduce Paint Use

- Use high-volume low-pressure (HVLP) spray guns instead of conventional spray guns. These guns cost more than conventional spray guns, but using HVLP spray guns reduces labor time and product costs as well as pollution.
- Train technicians to use good spray application techniques to improve transfer efficiency. A higher transfer efficiency saves paint, leads to reduced application time, and decreases worker exposure to toxic air pollutants.
- Minimize waste and spills when mixing paint.
- Reduce vapors and waste by using air-tight containers. Open containers only when adding or pouring liquid.

Use Less-Toxic Paints and Solvents

- If possible, use less-toxic, water-borne, or higher-solids paints. Switching to water-borne paints may require more preparation and drying time, but it minimizes the need for cleaning solvents.
- Choose solvents with low toxic air pollutant and VOC content. Use water-based, alkaline, or microbial cleaners.

Minimize Dust From Sanding Operations

- Use a vacuum sander to collect dust during sanding operations. Vacuum sanders reduce exposure to toxic air pollutants and particle pollution; they also minimize dust settling onto freshly painted surfaces. For example, one Minnesota shop that installed a vacuum sander reduced the frequency of air filter changes and decreased the amount of sandpaper used.
- Leave work clothes and shoes at the shop. Have clothes cleaned by a professional laundering service.
- It's best not to eat or drink food left in the work area because particle pollution can contaminate these items. Also, do not smoke in the work area because

you may swallow dust through hand-to-mouth contact.

Upgrade Your Shop's Equipment

- Several tools are available to assist you in determining whether you can upgrade the equipment in your shop. The Web site for one cost calculator is www.iwrc.org/programs/calcs.cfm. This calculator enables you to determine whether it would be beneficial to upgrade to a HVLP spray gun, on-site distillation unit, or automatic gunwash system.
- If you decide to upgrade your shop's equipment, check with your state or local pollution prevention office for funding possibilities.

Are HVLP spray guns really better?

Yes. HVLP guns are better if technicians are trained properly. Toxic air pollutant and VOC emissions released during a painting operation relate directly to the skill of the spray gun operator.

Properly used, HVLP spray guns often result in a higher transfer efficiency, reducing costs and worker exposure to toxic air pollutants.

Where can I find out about training?

For training information, contact the Iowa Waste Reduction Center about their Spray Techniques and Analysis Research (STAR[®]) program, your local, state, or Tribal pollution prevention office, auto body trade associations, or spray equipment suppliers.

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.

Also, 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.



OWNER/OPERATOR INFORMATION SHEET

Auto Body Shops



Could your family be affected?

By requiring employees to use an enclosed gun wash system and by monitoring the amount of lacquer thinner used, a shop in Colorado reduced the amount of solvent waste generated and saved \$3,600 per year in material and waste disposal costs.

— Colorado Department of Public Health and Environment Pollution Prevention Program

By switching from conventional to high volume low-pressure spray guns, one body shop reduced its paint usage by 30% per car.

— U.S. EPA Design for the Environment



Resources

- Automotive Service Association: www.asashop.org, (800) 272-7467
- National Automobile Dealers Association, www.nada.org, (800) 252-6232
- Automotive Aftermarket Industry Association: www.aftermarket.org, (301) 654-6664
- EPA Air Toxics Web Site: www.epa.gov/ttn/atw/
- Community-Based Projects: www.epa.gov/air/toxicair/community.html
- Information specific to auto body shops: Best Practices and Outreach Kit, “Virtual auto body shop” for cost calculations, equipment, technology & training information, access to sources of funding, and other assistance: www.epa.gov/dfe/projects/auto
- Small Businesses: www.epa.gov/smallbusiness
- Calculator: www.iwrc.org/programs/calcs.cfm
- Iowa Waste Reduction Center STAR® Program: www.iwrc.org/programs/STAR.cfm, (800) 422-3109
- Pollution Prevention Opportunities for Autobody Shops : www.peakstoprairies.org/topic/toc.cfm?hub=58&subsec=78&nav=7
- Autobody Shop Waste Reduction and Management: www.mntap.umn.edu/VEHICLE/28-CollRepair.htm
- Pollution Prevention Opportunities for Automotive Repair Shops: www.pprc.org/pprc/sbap/autorep/regfact.html

Toxicity of Paints and Solvents

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

The EPA Design for Environment (DfE) conducted a pilot project with partner shops in the Philadelphia area to identify best practices and technologies, costs, and benefits. Recently, DfE tested the effectiveness of its hands-on approach in 40 Pennsylvania shops that volunteered to host a confidential site visit. As a direct result of these visits, more than 75% of the shops made environmentally beneficial changes.

—U.S. EPA Design for the Environment