

US EPA Design for the Environment Auto Refinish Project Best Practices Kit

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Project Information

- “Caring for the Environment in the Collision Repair Industry”, by Chet Elia, Director, Collision Division, *PA Automotive*, February 2001
- U.S. EPA’s Design for the Environment (DfE) Automotive Refinishing Partnership website: www.epa.gov/dfe/pubs/projects/auto
- The Coordinating Committee for Auto Repair (CCAR) - Greenlink Virtual Shop website: www.ccar-greenlink.org/cshops
- Small Business Environmental Homepage: www.smallbiz-enviroweb.org
- State and Environmental Agencies and Small Business Assistance Programs: www.smallbiz-enviroweb.org/sba/seasbapweb.html

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- Best Practices Checklist
- Vacuum Sander Manufacturers/Suppliers
- Control of Dusts from sanding in Autobody Repair Shops
www.cdc.gov/niosh/sanding.html

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THE DESIGN FOR THE ENVIRONMENT AUTO REFINISH PROJECT’S GOAL IS TO WORK WITH AUTO REFINISHERS TO IDENTIFY AND ADOPT SAFER, CLEANER, MORE EFFICIENT PRACTICES AND TECHNOLOGIES.

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- Best Practices for the Paint Mixing Room (EPA 744-F-00-003)
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- STAR: Improve Your Spray Application Techniques (Iowa Waste Reduction Center, University of Northern Iowa)
- Example of Cost Savings Using an HVLP Spray Gun
- State Regulations/Requirements for HVLP Spray Guns
- Best Practices for Auto Refinishers When Spray Painting (EPA 744-F-00-002)
- User Friendly Supplied-Air Respirators: Options for Auto Refinishers (EPA 744-F-00-006)
- Supplied-Air Respirators in Auto Shops: Get the Best Protection (EPA 744-F-00-007)
- HVLP Spray Guns: Cost-effective, environment-friendly technology (EPA 744-F-00-004)
- HVLP Spray Guns in the Auto Refinishing Shop: A Success Story (EPA 744-F-00-014)



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- Choosing the Right Gloves for Painting Cars (EPA 744-F-00-005)
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Health and Safety Management

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- Other Auto Refinishing Shop Management Practices
- Respiratory Protection for Auto Refinishers: Best Practices for a Successful Program (EPA 744-F-02-014)
- Managing Worker Health and Safety: An Auto Refinish Shop Success Story (EPA 744-F-00-017)
- Respiratory Protection Program for Auto Refinish Shops (EPA 744-F-02-010)
- Information on Auto Refinishing Training Programs and Workshops
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- Checklist for Waste Management Practices in Auto Refinish Shops
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Working with Isocyanates

- *Video: Working Safely with Polyurethane Paints* (Bayer Industrial Chemicals Division, 1996)
- *Safe Application of Polyurethane Automotive Finishes* (Bayer Industrial Chemicals Division, November 1998)
- *Isocyanates: Questions and Answers About Use and Handling* (Bayer Corporation, Product Safety and Regulatory Affairs Department, January 1999)
- *Desmodur® N: Hexamethylene Diisocyanate Based Polyisocyanates* (Bayer Corporation, January 1999)
- *Request for Assistance in Preventing Asthma and Death from Diisocyanate Exposure* (CDC NIOSH Alert, March 1996)



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Project Information

- U.S. EPA's Design for the Environment (DfE) Automotive Refinishing Partnership website: www.epa.gov/dfe/pubs/projects/auto

This website provides information on DfE's automotive refinishing project. EPA publications regarding the automotive refinishing project including factsheets and technical documents are available on the website. Information on best practices, health and safety, ventilation, and personal protective equipment for auto refinishing shops are also available at this website.

- The Coordinating Committee for Auto Repair (CCAR) - Greenlink Virtual Shop website: www.ccar-greenlink.org/cshops

This website is a joint product of DfE and CCAR. The website presents a virtual automotive refinishing shop. Helpful information about health and safety and best practices are provided for specific activities that take place in a automotive refinishing shop.

- Small Business Environmental Homepage: www.smallbiz-enviroweb.org

This website provides information on compliance assistance, funding assistance, and pollution prevention for small businesses. Contact information for small business assistance programs is provided for each state. Recent news and events related to small businesses and environmental issues are posted and publications, videos, and factsheets are made available on the website.

- State Environmental Agencies and Small Business Assistance Programs: www.smallbiz-enviroweb.org/sba/seasbapweb.html

This web page provides links to state environmental agencies, pollution prevention and compliance assistance, and small business assistance websites for each state.



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Best Practices Checklist Sanding

USE A VACUUM SANDER OR WET SANDING METHODS¹				
<ul style="list-style-type: none"> • Minimizes dusts in the shop and on cars • Reduces worker exposures to hazardous dusts 				
Existing sanding methods: <input type="checkbox"/> Vacuum sander <input type="checkbox"/> Dry sanding without a vacuum <input type="checkbox"/> Wet sanding Comments: _____				
OK	Needs Work	N/A	Element	Implementation Notes
			Consistently use vacuum or wet sanding methods	
			Keep vacuum system well maintained	
			When wet sanding, wear suitable gloves to protect hands from irritants in abrasive compounds (see a list of protective glove manufacturers and suppliers in the Health and Safety Management section of your kit)	
			If vacuum or wet sanding methods not used, perform sanding in a prep station (see a list of prep station manufacturers and suppliers in the Solvent Wipe Down section of your kit)	

¹Required element of the City of Philadelphia Department of Public Health, Air Management Regulation V.

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Best Practices Checklist Sanding (continued)

<i>USE APPROPRIATE RESPIRATOR WHEN DRY SANDING WITHOUT A VACUUM²</i>				
• Reduces worker exposures to hazardous dusts				
Type of respirator used: <input type="checkbox"/> ½ Mask APR <input type="checkbox"/> Full facepiece APR <input type="checkbox"/> None <input type="checkbox"/> Other: _____				
Type of cartridge used: <input type="checkbox"/> N95 particulate <input type="checkbox"/> N100 particulate <input type="checkbox"/> Dust Mask <input type="checkbox"/> Other: _____				
OK	Needs Work	N/A	Element	Implementation Notes
			Consistently use half-mask APR with N95 particulate filter or better when dry sanding without a vacuum (See guidance on respiratory protection programs and a list of respirator manufacturers and suppliers in the Health and Safety Management Section of your kit.)	

²Required element of OSHA where contaminant levels exceed the Permissible Exposure Limit (PEL).

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Vacuum Sander Manufacturers/Suppliers*

Dust Gone Systems Inc.

16-T Munson Street
Port Washington, NY 11050
Phone: (510) 883-9297
Website Address: <http://www.becca-usa.com>

Hutchins Manufacturing Co.

49 North Lotus Avenue
Pasadena, CA 91107
Phone: (626) 792-8211
Fax: (626) 792-8574
E-Mail Address: mail@hutchinsmfg.com
Website Address: <http://www.hutchinsmfg.com>

US Luch Vac Systems

534-T North Trooper Road
Norristown, PA 19403
Phone: (610) 539-7147
Fax: (610) 539-4914

Eurovac

116 Buttermill Avenue
Concord, Ontario, Canada L4K 3X7
Phone: (800) 265-3878
Fax: (905) 738-4603
E-Mail Address: info@eurovac.com
Website Address: <http://www.eurovac.com>

Makita

Phone: (800) 462-5482
Website Address: <http://www.makitatools.com>

*This list of companies is provided for informational purposes only and is not intended as an exhaustive list of all vacuum sander manufacturers/suppliers. The mention of any company in this list does not constitute a U.S. Environmental Protection Agency endorsement of the company or its products.



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Best Practices Checklist Solvent Wipe Down

<i>PERFORM SOLVENT WIPE DOWN IN A BOOTH OR PREP STATION¹</i>				
<ul style="list-style-type: none"> • Removes solvent vapors from the work area • Minimizes worker exposures to hazardous solvent vapors 				
Ventilation provided for wipe down: <input type="checkbox"/> Booth or prep station <input type="checkbox"/> None <input type="checkbox"/> Other: _____				
OK	Needs Work	N/A	Element	Implementation Notes
			Perform wipe down in a ventilated booth or prep station	
			Perform wipe down near other source of ventilation when booth or prep station is unavailable	
			Ensure ventilation systems are operating properly	

¹Required element of the City of Philadelphia Department of Public Health, Air Management Regulation V.

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Best Practices Checklist Solvent Wipe Down (continued)

USE PROPER RESPIRATORY PROTECTION WHEN PERFORMING WIPE DOWN OUTSIDE OF THE BOOTH OR PREP STATION²

- Reduces worker exposures to hazardous solvent vapors

Type of respirator used: ½ Mask APR Full facepiece APR None
 Other: _____

Type of cartridge used: Organic vapor Other: _____

OK	Needs Work	N/A	Element	Implementation Notes
			Consistently use half-mask APR with organic vapor filter or better when performing wipe down outside of the booth or prep station (See guidance on respiratory protection programs and a list of respirator manufacturers and suppliers in the Health and Safety Management Section of your kit.)	

²Required element of OSHA where contaminant levels exceed the Permissible Exposure Limit (PEL).

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Best Practices Checklist Solvent Wipe Down (continued)

WEAR CHEMICAL PROTECTIVE GLOVES¹				
• Reduces employee skin exposure to hazardous solvents				
Type of gloves worn: <input type="checkbox"/> Nitrile <input type="checkbox"/> Butyl rubber <input type="checkbox"/> PVA <input type="checkbox"/> Latex* <input type="checkbox"/> None <input type="checkbox"/> Other: _____				
How often are gloves changed? <input type="checkbox"/> After each task <input type="checkbox"/> Several times per day, but not after each task <input type="checkbox"/> Once or twice per day <input type="checkbox"/> Other: _____				
OK	Needs Work	N/A	Element	Implementation Notes
			Consistently wear appropriate gloves when working with paints and solvents (check with glove manufacturer for suggested glove types - see a list of protective glove manufacturers and suppliers in the Health and Safety section of your kit)	
			Use gloves that are in good condition and free of tears or punctures	

*Latex gloves do not provide protection against most solvents used in auto refinishing shops.

¹Required element of OSHA's Personal Protective Equipment (PPE) standard (29 CFR 1910.132).

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Prep Station Manufacturers/Suppliers*

Ameri-Cure, Inc.

2353 West Lincoln Street
Phoenix, AZ 85009
Phone: (800) 572-2873
Fax: (800) 495-1380
E-Mail Address: sales@ameri-cure.com
Website Address: <http://www.ameri-cure.com>

Future Cure

2 West Mountain Road
Ridgefield, CT 06877
Phone: (800) 673-2493
Fax: (203) 438-1585
E-Mail Address: solutions@futurecure.com
Website Address: <http://www.futurecure.com>

Spraybake, Inc.

89 Connie Crescent
Concord, Ontario, Canada L4K 1L3
Phone: (800) 387-3639
Fax: (905) 669-1171
E-Mail Address: spraybake@spraybake.com
Website Address: <http://www.spraybake.com>

Island Clean Air Inc.

8793 Cambie Street
Vancouver, B.C., V6P 3J9, Canada
Phone: (800) 661-6211
Fax: (604) 322-8674
E-Mail Address: Info@islandcleanair.com
Website Address: www.islandcleanair.com

Blowtherm USA, Inc.

Automotive Refinish Group
Phone: (800) 300-1546
E-Mail Address: boothsales@teamblowtherm.com
Website Address: <http://www.blowthermusa.com>

<http://satausa.com>**Garmat USA**

1401 West Stanford Avenue
Englewood, CO
Phone: (800) 442-7628
Fax: (303) 781-2683
E-Mail Address: marketing@garmat.com
Website Address: <http://www.garmat.com>

UniCure Spraybooths

Interstate Marketing Corp.
104 Spence Lane
Nashville, TN
Phone: (800) 868-3033
E-Mail Address: info.unicure@spraybooths.com
Website Address: <http://www.spraybooths.com>

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Best Practices Checklist Paint Mixing

<i>KEEP ALL CONTAINERS SHUT</i>				
<ul style="list-style-type: none"> • Reduces evaporative losses of coatings and solvents • Reduces painter inhalation exposures • Decreases the fire hazard • Reduces shop vapor emissions 				
Number of open containers observed: <input type="checkbox"/> None <input type="checkbox"/> 1 to 3 <input type="checkbox"/> 4 to 7 <input type="checkbox"/> 8 or more Organic vapor analyzer reading:				
OK	Needs Work	N/A	Element	Implementation Notes
			Keep all containers shut when not in use	
			Use gasket-sealed, spring-loaded covers (or equivalent) on solvent storage and waste drums ¹	

¹Required element of the City of Philadelphia Department of Public Health, Air Management Regulation V.

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Best Practices Checklist Paint Mixing (continued)

<i>INSTALL ADEQUATE VENTILATION</i>				
<ul style="list-style-type: none"> • Reduces painter inhalation exposures to coating and solvent vapors (e.g., isocyanates) • Decreases fire hazard 				
Ventilation type(s): <input type="checkbox"/> Prefab mixing room <input type="checkbox"/> Local exhaust <input type="checkbox"/> General/mechanical <input type="checkbox"/> None Comments: _____				
OK	Needs Work	N/A	Element	Implementation Notes
			Employ an adequate amount of ventilation in the paint mixing room	
			Install local exhaust vents near sources of emissions (e.g., mixing bench, gun cleaner)	
			Locate sources of emissions in the same general area to maximize ventilation effectiveness	
			Design system to draw vapors away from workers	
			Ensure electrical equipment (e.g., switches, ventilation fans, lights, telephones) is approved for Class I, Division 1 (explosive) environments	

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**Best Practices Checklist
Paint Mixing (continued)**

USE COMPUTER MIXING SYSTEM AND REUSE LEFT OVER COATINGS WHEN POSSIBLE

- Computer mixing systems allow for greater flexibility in determining amount of coating needed (allowing for smaller amounts to be mixed at a time)
- Computer mixing systems provide an easy means to label excess coating for later use
- Minimizes coating costs
- Minimizes coating wastes and waste disposal costs

Mixing system: Computer Microfiche
 Other: _____

OK	Needs Work	N/A	Element	Implementation Notes
			Use a computerized mixing system	
			Mix only the amount of coating needed for the job	
			Store and reuse remaining primers and base coats for later use	

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Prefabricated Mixing Room Manufacturers/Suppliers*

Ameri-Cure, Inc.

2353 West Lincoln Street
Phoenix, AZ 85009
Phone: (800) 572-2873
Fax: (800) 495-1380
E-Mail Address: sales@ameri-cure.com
Website Address: <http://www.ameri-cure.com>

Future Cure

2 West Mountain Road
Ridgefield, CT 06877
Phone: (800) 673-2493
Fax: (203) 438-1585
E-Mail Address: solutions@futurecure.com
Website Address: <http://www.futurecure.com>

Spraybake, Inc.

89 Connie Crescent
Concord, Ontario, Canada L4K 1L3
Phone: (800) 387-3639
Fax: (905) 669-1171
E-Mail Address: spraybake@spraybake.com
Website Address: <http://www.spraybake.com>

Blowtherm USA, Inc.

Automotive Refinish Group
Phone: (800) 300-1546
E-Mail Address: boothsales@teamblowtherm.com
Website Address: <http://www.blowthermusa.com>

<http://satausa.com> **Garmat USA**

1401 West Stanford Avenue
Englewood, CO
Phone: (800) 442-7628
Fax: (303) 781-2683
E-Mail Address: marketing@garmat.com
Website Address: <http://www.garmat.com>

<http://www.spraybooths.com>

*This list of companies is provided for informational purposes only and is not intended as an exhaustive list of all prefabricated mixing room manufacturers/suppliers. The mention of any company in this list does not constitute a U.S. Environmental Protection Agency endorsement of the company or its products.



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Best Practices Checklist Spray Painting

<i>USE A SPRAY BOOTH OR PREP STATION FOR ALL SPRAY PAINTING TASKS¹</i>				
<ul style="list-style-type: none"> • Reduces inhalation exposure (to painters and other shop workers) • Results in cleaner, more efficient paint jobs - less sanding and buffing 				
Spray booth type: <input type="checkbox"/> Downdraft <input type="checkbox"/> Semi-downdraft <input type="checkbox"/> Crossdraft <input type="checkbox"/> None Prep station type: <input type="checkbox"/> Downdraft <input type="checkbox"/> Semi-downdraft <input type="checkbox"/> Crossdraft <input type="checkbox"/> None				
OK	Needs Work	N/A	Element	Implementation Notes
			Schedule jobs to ensure all spraying is performed in a booth (where this is not possible, perform priming applications in vented prep station)	
			Ensure ventilation system(s) are operating properly	
			Change paint booth filters regularly ¹	
			Vent booth after curing cycle	

¹Required element of the City of Philadelphia Department of Public Health, Air Management Regulation V.

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Best Practices Checklist Spray Painting (continued)

<i>USE PROPER RESPIRATORY PROTECTION²</i>				
• Reduces employee inhalation exposures				
Type of respirator used: <input type="checkbox"/> ½ mask APR <input type="checkbox"/> Full facepiece APR <input type="checkbox"/> Full facepiece SAR <div style="margin-left: 100px;"><input type="checkbox"/> Loose-fitting SAR <input type="checkbox"/> Loose-fitting PAPR <input type="checkbox"/> None</div> <div style="margin-left: 100px;"><input type="checkbox"/> Other: _____</div>				
OK	Needs Work	N/A	Element	Implementation Notes
			Consistently use loose-fitting SAR or better (APF of at least 25) when spray painting (See guidance on respiratory protection programs and a list of respirator manufacturers and suppliers in the Health and Safety Management section of your kit.)	

²Required element of OSHA where contaminant levels exceed the Permissible Exposure Limit (PEL).

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Best Practices Checklist Spray Painting (continued)

OK	Needs Work	N/A	Element	Implementation Notes
<p>WEAR CHEMICAL PROTECTIVE GLOVES AND OTHER PROTECTIVE CLOTHING¹</p> <ul style="list-style-type: none"> • Reduces employee skin exposure to paint materials • Coveralls and headsocks help prevent painters from carrying contaminants into their homes 				
<p>Type of gloves worn: <input type="checkbox"/> Nitrile <input type="checkbox"/> Butyl rubber <input type="checkbox"/> PVA <input type="checkbox"/> Latex* <input type="checkbox"/> None <input type="checkbox"/> Other: _____</p>				
<p>How often are gloves changed? <input type="checkbox"/> After each task <input type="checkbox"/> Several times per day, but not after each task <input type="checkbox"/> Once or twice per day <input type="checkbox"/> Other _____</p>				
<p>Other protective equipment worn: <input type="checkbox"/> Eyewear <input type="checkbox"/> Coveralls <input type="checkbox"/> Other</p>				
			Consistently wear proper gloves when working with paints and solvents (check with glove manufacturer for suggested glove types - see a list of protective glove manufacturers and suppliers in the Health and Safety Management section of your kit)	
			Use gloves that are in good condition and free of tears or punctures	
			Wear coveralls	
			Wear headsock (unless hooded respirator is used)	
			Wear proper eye protection	

*Latex gloves do not provide protection against most solvents used in auto refinishing shops.

¹Required element of OSHA's Personal Protective Equipment (PPE) standard (29 CFR 1910.132).

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Best Practices Checklist HVLP Spray Guns

<i>USE HVLP SPRAY GUNS FOR ALL APPLICATIONS¹</i>																								
<ul style="list-style-type: none"> • Increases transfer efficiency and reduces overspray • Reduces worker exposures • Reduces coating volume needed for each job • Reduces coating costs (see the Example of Cost Savings Using an HVLP Spray Gun provided in this kit) • Reduces shop emissions 																								
<table style="width: 100%; border: none;"> <tr> <td style="width: 20%; border: none;">Spray Guns Used:</td> <td style="width: 30%; border: none; text-align: center;">HVLP (type)</td> <td style="width: 20%; border: none; text-align: center;">Conventional</td> <td style="width: 20%; border: none; text-align: center;">Both</td> <td style="width: 10%; border: none;"></td> </tr> <tr> <td style="border: none;">Primer:</td> <td style="border: none;"><input type="checkbox"/> (_____)</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">Base coat:</td> <td style="border: none;"><input type="checkbox"/> (_____)</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">Clear coat:</td> <td style="border: none;"><input type="checkbox"/> (_____)</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"></td> </tr> </table>					Spray Guns Used:	HVLP (type)	Conventional	Both		Primer:	<input type="checkbox"/> (_____)	<input type="checkbox"/>	<input type="checkbox"/>		Base coat:	<input type="checkbox"/> (_____)	<input type="checkbox"/>	<input type="checkbox"/>		Clear coat:	<input type="checkbox"/> (_____)	<input type="checkbox"/>	<input type="checkbox"/>	
Spray Guns Used:	HVLP (type)	Conventional	Both																					
Primer:	<input type="checkbox"/> (_____)	<input type="checkbox"/>	<input type="checkbox"/>																					
Base coat:	<input type="checkbox"/> (_____)	<input type="checkbox"/>	<input type="checkbox"/>																					
Clear coat:	<input type="checkbox"/> (_____)	<input type="checkbox"/>	<input type="checkbox"/>																					
OK	Needs Work	N/A	Element	Implementation Notes																				
			Consistently use HVLP spray guns for all applications																					
			Use a larger diameter air hose to ensure proper air volume is delivered to the gun																					
			Use the right gun tip for the job																					
			Ensure that the shop compressor is capable of delivering sufficient air to the spray gun and other shop equipment																					
			Set up each gun to ensure proper pressure at the gun tip																					

¹Required element of the City of Philadelphia Department of Public Health, Air Management Regulation V.

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Best Practices Checklist HVLP Spray Guns (continued)

<i>DEVELOP PROPER HVLP SPRAYING TECHNIQUES</i>				
<ul style="list-style-type: none"> • Further improves the transfer efficiency and reduces overspray • Reduces coating usage and costs (see the Example of Cost Savings Using an HVLP Spray Gun provided in this kit) • Reduces shop emissions and worker exposures 				
Painters observed demonstrated proper techniques <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Sometimes				
Comments: _____				
OK	Needs Work	N/A	Element	Implementation Notes
			Keep gun square to the target	
			Keep gun equidistant from the target throughout the stroke	
			Provide training	

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SPRAY WITH HVLP GUNS AND SAVE

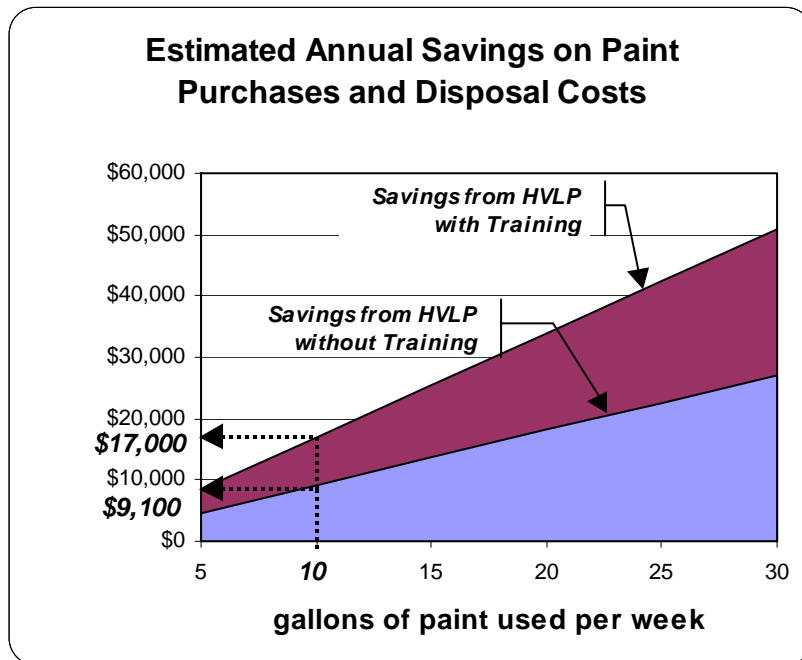
Spraying with HVLP guns is like holding a winning lottery ticket, worth thousands of dollars. The exact payoff depends on a number of factors--how you calibrated the gun, spray technique, and very importantly, remembering to mix less paint! But just by switching to HVLP guns you save—many thousands of dollars a year at a typical shop.

Improving transfer efficiency and cutting overspray with a HVLP gun also has other important benefits. You help keep your painter, technicians, and neighbors healthier by reducing their contact with the harmful chemicals in paints and coatings.

The chart on this page offers a handy guide for estimating how much you'll save with a HVLP gun. The Spray Technique and Analysis Research (STAR) Program at the Iowa Waste Reduction Center (University of Northern Iowa) has carefully studied the painting efficiencies of different spray guns. Their conclusion: On average, an HVLP gun will improve paint transfer from 40% to 49% over a conventional gun. And if you adopt recommended HVLP spraying techniques (the DfE site visit team has helpful pointers and advice), transfer efficiency will increase to 61%.

For a typical shop using 10 gallons of paint and coatings a week, savings would add up to \$17,000 a year! (\$15,500 in paint¹ and \$1,500 in filter replacement and disposal²)

See the back of this sheet for a detailed example of this cost savings.



¹Assuming an average coating cost of \$90/gallon (1998\$) (obtained through discussions with Philadelphia area auto refinishing shops) and 50 weeks/year.

²Assuming \$5/filter, \$350/drum of waste filters disposed, and \$15/hour labor rate (based on estimates obtained from the STAR program).



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Detailed Example of Cost Savings

In an example, XYZ Auto Body uses 10 gallons per week of coatings (primer, basecoats, and clearcoats) to spray cars using conventional spray guns (at 40% transfer efficiency)¹. The shop is spending approximately \$45,000 per year on coating purchases² and approximately \$4,300 annually on spray booth filter replacement and disposal³ for a total expense of \$49,000 per year.

By simply switching from conventional spray guns to HVLP spray guns (achieving 49% transfer efficiency)¹, XYZ Auto Body will use *ALMOST 2 GALLONS OF COATING LESS PER WEEK*: a switch that results in a savings of approximately \$8,300 per year in paint² and another \$800 per year in filter replacement and disposal costs³ for **a total savings of \$9,100 per year**.

If XYZ Auto Body takes the next step and trains their painters on the proper use of HVLP spray guns (achieving 61% transfer efficiency)¹, XYZ will save *ANOTHER 1.6 GALLONS OF PAINT PER WEEK* for an additional savings of \$7,200 per year in paint² and \$700 per year in filter replacement and disposal costs³ -- **a total additional savings of \$7,900 per year**.

So, by switching from conventional to HVLP spray guns and by training their painters on the proper use of HVLP spray guns, XYZ Auto Body cut paint usage from 10 gallons per week to 6.6 gallons per week and **saved approximately \$17,000 per year**^{2,3}.

Consult the chart on the front of this sheet to see how much *YOU* can save!!!

¹Transfer efficiency estimates provided by the Spray Technique and Analysis Research (STAR) program at the Iowa Waste Reduction Center (IWRC).

²Assuming an average coating cost of \$90/gallon (1998\$) (obtained through discussions with Philadelphia area auto refinishing shops) and 50 weeks/year.

³Assuming \$5/filter, \$350/drum of waste filters disposed, and \$15/hour labor rate (based on estimates obtained from the STAR program).



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State Regulations/Requirements for HVLP Spray Guns

State	Contact	Regulation/Requirements
Alabama	Kevin Fulmer KMF@adem.state.al.us (334)271-7861	No specific requirement. Jefferson County and the City of Huntsville may have more stringent rules
Alaska	Bill Smyth Smyth.Bill@dec.state.ak.us	Does not require the use of HVLP Guns, but does recommend them in this industry
Arizona	Ira Domsy-Deputy Director Air Quality Division (domsky.ira@ev.state.az.us) (602)771-2365	The state does not permit minor sources. The county program does. Ira forwarded this request to the county level.
Maricopa County, AZ	Jo Crumbaker - Jcrumbaker@mail.maricopa.gov	Maricopa County Air Pollution Control Rule 345: Vehicle & Mobile Equipment Coating states that any low pressure system can be used (mostly HVLP)
Arkansas	Ron Alexander - DEQ Alexander@adeq.state.ar.us	HVLP is not required
Colorado	Nick Melliadis - SBO Nick.Melliadis@state.co.us	HVLP has been required in Ozone nonattainment areas as part of the Reasonable Available Control Technology rules. Only nonattainment area is in the Denver area. RACT rules can vary depending on the permit application. HVLP is required in CO cause it's inexpensive, easy to use, and readily available.
Connecticut	Judith Prill - Office of Pollution Prevention (judith.prill@po.state.ct.us) 860-424-3694	No air emissions permit is required for auto refinishing operations if the operation uses HVLP guns, electrostatic applications, or any other method that has a transfer efficiency of at least 65%.
District Of Columbia	Sandra Handon shandon@dchealth.com	Does not have any regulations requiring the use of HVLP spray guns
Florida	Bruce Thomas - Division of Air Resource Management (bruce.x.thomas@dep.state.fl.us)	No such requirement, but strongly encourage the use of HVLP guns through the Pollution Prevention and Outreach Programs
Iowa	Wendy Walker-Small Business Air Quality Liaison (wendy.walker@ided.state.ia.us)	No required method. Many small refinishers have a permit by rule(1-3 gal. of paint/day) Larger businesses are not subject to specific technology either.
Maryland	Andrew Gosden - Coordinator Small Business Assistance Program (410)537-4158 agosden@mde.state.md.us	State requires the use of a control air spray system



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State Regulations/Requirements for HVLP Spray Guns (Continued)

State	Contact	Regulation/Requirements
Massachusetts	Robert Donaldson robert.donaldson@state.ma.us	DEP requires HVLP, electrostatic, or other application methods that have been approved
Missouri	Omer Roberts- Environmental Assistance Office (nrrobo@mail.dnr.state.mo.us)	Does not require the use of HVLP, even in the Ozone non attainment area. Has an on-site assessment team that looks for P2 opportunities. Have found many shops have switched to HVLP, but the majority still use conventional equipment.
Nebraska	Melissa Woolf- Air Quality Division - Melissa. Woolf@NDEQ.state.NE.US	At the time, Nebraska is not requiring the use of HVLP spray guns for the automobile refinishing sector.
New Hampshire	Rudy Cartier - NHDES Small Business Ombudsman rcartier@des.state.nh.us	no state requirement
New Jersey	Ky Asral - NJDEP ky.asral@dep.state.nj.us 609-292-0112	Recently adopted new rules that require the use of HVLP spray guns or their equivalent for painting vehicles. N.J.A.C.7:27-16.12 Will go into affect on June 29,2004
New Mexico	Steve Dubyk-SBAP Steve_dubyk@nmenv.state.nm.us (505)955-8025	Do not mandate the use of HVLP Spray guns. Most auto shops are exempt due to how small they are. Do recommend to clients, but most stay away due to the orange skin texture that these guns tend to produce.
North Dakota	Dana Mount-SBO dmount@state.nd.us	No rule that requires the use of HVLP guns or any other low emissions method, for auto refinishing
Pennsylvania	Jane Greber - DEP Bureau of Air Quality jgreber@state.pa.us 717-772-2328	Require the use of several methods of applications that meet certain standards. HVLP is included in this. Section 129.75 of The Pennsylvania Code
Rhode Island	Richard Enander renander@dem.state.ri.us	Requires any application method that achieves a transfer efficiency of at least 65% and has been approved by the director (HVLP and elcectrostatic are included)
South Carolina	Phyllis Copeland- copelapt@dhec.sc.gov	No Such Requirement.



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State Regulations/Requirements for HVLP Spray Guns (Continued)

State	Contact	Regulation/Requirements
Texas	Frank Salat fsalat@tceq.state.tx.us	Require the use of HVLP guns in non-attainment areas(4 total in TX). All other shops are "Permit by Rule". This means that all shops operate under the same requirements. Older shops, pre 1994, may still operate under the older rule if nothing has changed and are still in compliance with the older rule.
Utah	Ronald Reece rreece@utah.gov	In theory, any one getting a permit must go through a BACT analysis, which states that any type of high transfer paint gun is used.
Vermont	Judy Mirro judy.mirro@anr.state.vt.us	no state requirement
Virginia	Sharon Baxter - DEQ skbaxter@deq.state.va.us 804-698-4344	Do not require the use of HVLP spray guns, however require that the emissions unit or the facility meet emission standards
Washington	Bernard Brady bbra461@ecy.wa.gov	The air quality control agencies would require HVLP as Best Available Control Technology in permitting new or modified shops. HVLP is not specifically written into any regulation. Some shops have been approved to use other methods, but if they want to expand must submit new form.

Note: Information last updated on December 2003.



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Spray Booth Manufacturers/Suppliers*

Ameri-Cure, Inc.

2353 West Lincoln Street
Phoenix, AZ 85009
Phone: (800) 572-2873
Fax: (800) 495-1380
E-Mail Address: sales@ameri-cure.com
Website Address: <http://www.ameri-cure.com>

EnviroCure LLC

3309 Quail Hollow Drive
Lambertville, MI 48144
Phone: (877) 603-1288 - toll free, (734) 854-5553
Fax: (734) 854-7553
Website Address: <http://www.envirocure.com/index.htm>

Garmat USA

1401 West Stanford Avenue
Englewood, CO
Phone: (800) 442-7628
Fax: (303) 781-2683
E-Mail Address: marketing@garmat.com
Website Address: <http://www.garmat.com>

Spray-Tech

100 E. Main St.
Suite A
Ontario, CA 91761
Phone: (800) 535-8196
Fax: (909) 391-4281
E-Mail Address: clayrose@spraytech.com
Website Address: <http://www.spraytech.com>

Island Clean Air Inc.

8793 Cambie Street
Vancouver, B.C., V6P 3J9, Canada
Phone: (800) 661-6211
Fax: (604) 322-8674
E-Mail Address: Info@islandcleanair.com
Website Address: www.islandcleanair.com

Blowtherm USA, Inc.

Automotive Refinish Group
Phone: (800) 300-1546
E-Mail Address: boothsales@teamblowtherm.com
Website Address: <http://www.blowthermusa.com>

Future Cure

2 West Mountain Road
Ridgefield, CT 06877
Phone: (800) 673-2493
Fax: (203) 438-1585
E-Mail Address: solutions@futurecure.com
Website Address: <http://www.futurecure.com>

Spraybake, Inc.

89 Connie Crescent
Concord, Ontario, Canada L4K 1L3
Phone: (800) 387-3639
Fax: (905) 669-1171
E-Mail Address: spraybake@spraybake.com
Website Address: <http://www.spraybake.com>

UniCure Spraybooths

Interstate Marketing Corp.
104 Spence Lane
Nashville, TN
Phone: (800) 868-3033
E-Mail Address: info.unicure@spraybooths.com
Website Address: <http://www.spraybooths.com>

Tools USA

Standard Tools and Equipment
4810 Clover Road
Greensboro, NC 27405
Phone: (800) 451-2425
Fax: (800) 637-2543
Website Address: www.toolsusa.com

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Best Practices Checklist Spray Gun Cleaning

<i>INSTALL AND USE AN AUTOMATED GUN CLEANING UNIT¹</i>				
<ul style="list-style-type: none"> • Reduces employee exposure (skin contact and inhalation) to gun cleaning solvent and paint • Reduces solvent waste and saves money on waste disposal fees • Cuts down on solvent use and saves money on virgin solvent 				
Existing gun cleaning unit: <input type="checkbox"/> Enclosed basin <input type="checkbox"/> Parts sink <input type="checkbox"/> Ventilated <input type="checkbox"/> Other: _____				
OK	Needs Work	N/A	Element	Implementation Notes
			Enclose/cover gun cleaning unit when possible	
			Use automated cycle where possible	
			If vented, exhaust vapors out of work area	
			Preclean gun to remove gross contamination and extend service life	

¹Required element of the City of Philadelphia Department of Public Health, Air Management Regulation V.

<i>MAINTAIN GUN CLEANING UNIT</i>				
<ul style="list-style-type: none"> • Improves solvent performance • Reduces worker exposures • Prevents solvent loss from evaporation or leaks 				
Solvent replacement: <input type="checkbox"/> In-house <input type="checkbox"/> Outside service System in good condition: <input type="checkbox"/> Yes <input type="checkbox"/> No				
OK	Needs Work	N/A	Element	Implementation Notes
			Replace solvent routinely (at least once a month)	
			Ensure hoses and unit are intact	
			Ensure lid seats properly	

Shop:
Visit Date:



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Best Practices Checklist Spray Gun Cleaning (continued)

WEAR CHEMICAL PROTECTIVE GLOVES AND EYEWEAR¹				
• Reduces employee skin exposure to solvents				
Type of gloves worn: <input type="checkbox"/> Nitrile <input type="checkbox"/> Butyl rubber <input type="checkbox"/> PVA <input type="checkbox"/> Latex* <input type="checkbox"/> None <input type="checkbox"/> Other: _____				
How often are gloves changed? <input type="checkbox"/> After each task <input type="checkbox"/> Several times per day, but not after each task <input type="checkbox"/> Once or twice per day <input type="checkbox"/> Other: _____				
Protective eyewear used? <input type="checkbox"/> Yes <input type="checkbox"/> No				
OK	Needs Work	N/A	Element	Implementation Notes
			Consistently wear proper gloves when working with paints and solvents (check with glove manufacturer for suggested glove types - see a list of protective glove manufacturers and suppliers in the Health and Safety Management section of your kit)	
			Ensure gloves are in good condition and free of tears or punctures	
			Wear proper eye protection	

*Latex gloves do not provide protection against most solvents used in auto refinishing shops.

¹Required element of OSHA's Personal Protective Equipment (PPE) standard (29 CFR 1910.132).

Shop:

Visit Date:



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Automatic Gun Cleaner Manufacturers/Suppliers*

Becca USA

413 List Street
Frankenmuth, MI 48734
Phone: (800) 655-5649
Fax: (800) 655-5684
Website Address: <http://www.becca-usa.com>

Bonny Marlin Inc.

17700 Muncaster Road
Rockville, MD 20855
Phone: (301) 869-9830
Fax: (301) 869-9886
E-mail Address: info@bonnymarlin.com
Website Address: <http://www.bonnymarlin.com>

SATA

One Sata Drive
P.O. Box 46
Spring Valley, MN 55975
Phone: (800) 533-8016
Fax: (800) 633-SATA
E-Mail Address: satajet@satausa.com
Website Address: <http://www.satausa.com>

Binks

Phone: (888) 992-4657
Website Address: <http://www.binks.com>

Herkules Equipment Corp.

2760 Ridgeway Court
Walled Lake, MI 48390-1662
Phone: (800) 444-4351
Fax: (248) 960-7109
Website Address:
<http://www.thomasregister.com/olc/herkules>

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Best Practices Checklist Health and Safety Management

IMPLEMENT A RESPIRATORY PROTECTION PROGRAM¹

- Assures respirators are protecting workers from inhalation hazards
- Assures workers are physically capable of wearing a respirator
- Complies with OSHA standard

Has the shop implemented a respiratory protection program? Yes No

Comments: _____

OK	Needs Work	N/A	Element	Implementation Notes
			Develop a written program	
			Use NIOSH-certified respirators that provide an appropriate level of protection for each task	
			Provide medical surveillance to workers using respirators	
			Provide respirator training	
			Perform annual fit-testing (tight-fitting facepiece respirators only)	
			Ensure workers do not have facial hair that interferes with respirator seal (tight-fitting facepiece respirators only)	
			Implement an appropriate filter change-out schedule for all APRs worn at the shop	

¹Required element of OSHA's Respirator Protection Standard (29 CFR 1910.134).

Shop:

Visit Date:



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Best Practices Checklist Health and Safety Management (continued)

IMPLEMENT A HAZARD COMMUNICATION PROGRAM¹				
<ul style="list-style-type: none"> • Gives workers the information they need to protect themselves • Gives shops owners better control of their chemical inventories • Allows shops owners to make more informed decisions about the chemicals used in the shop • Complies with OSHA standard 				
Has the shop implemented a hazard communication program? <input type="checkbox"/> Yes <input type="checkbox"/> No Comments: _____				
OK	Needs Work	N/A	Element	Implementation Notes
			Develop a written program	
			Obtain copies of MSDSs for all hazardous chemicals in the shop	
			Make all MSDSs available to shop workers	
			Train workers on hazards of chemicals they use	
			Do not use solvents/thinners to wash hands	

¹Required element of OSHA's Hazard Communication standard (29 CFR 1910.1200).

DESIGNATE A SHOP HEALTH AND SAFETY MANAGER TO IMPLEMENT THE HEALTH AND SAFETY PROGRAM				
<ul style="list-style-type: none"> • Ensures health and safety considerations do not slip through the cracks • Helps identify hazards before someone gets hurt or becomes ill (see the list of common symptoms of overexposure provided in this package) • Helps ensure workers protect themselves from identified hazards 				
Does the shop have a designated health and safety manager? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes: Manager's name: _____ Manager's title: _____ Percent of time spent on health and safety duties: _____				
OK	Needs Work	N/A	Element	Implementation Notes
			Manager has time, resources and authority to implement program	
			Manager frequently walks through shop to ensure controls are in place and used	

Shop:
Visit Date:



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For more information on Auto Refinishing Best Practices, contact these sources:

Coordinating Committee for Automotive Repair (CCAR) - Greenlink

10901 Lowel Avenue
Suite 201
Overland Park, KS 66210
Phone: (888) GRN-LINK
Fax: (913) 498-1770
Website Address: <http://www.ccar-greenlink.org>

National Institute for Occupational Safety and Health (NIOSH)

Phone: (800) 35-NIOSH
Fax: (513) 533-8573
E-Mail Address: pubstaft@cdc.gov
Website Address: <http://www.cdc.gov/niosh>

Small Business Development Center (SBDC)

University of Pennsylvania
Phone: (215) 898-1219

Design for the Environment (DfE) Program

U.S. Environmental Protection Agency
Phone: David Difiore, (202) 260-3374 or
Mary Cushmac, (202) 260-4443
E-Mail Address: difiore.david@epa.gov or
cushmac.mary@epa.gov
Website Address: <http://www.epa.gov/opptintr/dfe>

Occupational Safety and Health Administration (OSHA)

Region 3 Office
The Curtis Center-Suite 740 West
170 S. Independence Mall West
Philadelphia, PA 19106-3309
Phone: (215) 861-4900
Fax: (215) 861-4904
Autobody Repair and Finishing Website Address:
<http://www.osha-slc.gov/SLTC/autobody>

Spray Technique Analysis and Research (STAR) Program

Iowa Waste Reduction Center
1005 Technology Parkway
Cedar Falls, IA 50613-6951
Phone: (800) 422-3109
Website Address: <http://www.iwrc.org/star.html>



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Other Auto Refinishing Shop Management Practices

- Install and Use a Solvent Recovery System

- Saves money by reducing solvent replacement and disposal costs

- Examples:

- One shop recycles more than 100 drums of thinner per year, saving almost \$26,000 in new thinner costs and almost \$6,800 in disposal costs annually.

- Rogers Body Shop, Inc., Bloomington, Minnesota, 1997

- Since installing their solvent recycling system, another shop has recycled over 73 percent of its thinner and will save more than \$400 in disposal costs by generating very little waste.

- Orsini Collision Service, Ardmore, Pennsylvania, 2000



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Information on Auto Refinishing Training Programs and Workshops*

Binks Spray Finishing Seminar

A 3-day course offering a comprehensive overview of the proper selection, operation, and maintenance of spray finishing equipment used in all types of paint markets/applications.

For more information, contact: Roseann Sror

Phone: (847) 671-3000

Fax: (847) 671-1471

The Spray Technique Analysis and Research (STAR) Training Program

“...a unique and revolutionary approach to improve efficiency of manual spray painting operations.”

University of Northern Iowa

Iowa Waste Reduction Center

1005 Technology Parkway

Cedar Falls, IA 50613-6951

Phone: (800) 422-3109

Website Address: <http://www.iwrc.org>

<http://www.dupontprotectiveapprl.com> Valspar/Sunbelt Refinisher Course

A 3-day course designed to be a 75% hands-on training experience on safety procedures; products and advanced applications; techniques; problem solving; basic color theory; and paint operation management.

Price: \$125

For more information, contact: Jeff Peevy or Susan Luc

Phone: (800) 845-2500

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Protective Glove Manufacturers/Suppliers*

Ansell Occupational Healthcare

1300 Walnut Street
Coshocton, OH 43812-6000
Phone: (740) 622-4311
Website Address: <http://www.ansell-edmont.com>

DuPont

E-Mail Address: tyvekinf@usa.dupont.com
Website Address: <http://www.dupontprotectiveapprl.com>

Lab Safety Supply

401 South Wright Road
P.O. Box 1368
Janesville, WI 53547-1368
Phone: (800) 356-0783
Fax: (800) 543-9910
E-Mail Address: custsvc@labsafety.com
Website Address:
<http://www.labsafety.com><http://www.lakeland.com>

Magid Glove & Safety Manufacturing Company

2060 North Kolmar Avenue
Chicago, IL 60639
Phone: (800) 444-8030
Fax: (773) 384-6677
E-Mail Address: mail@magidglove.com
Website Address: <http://www.magidglove.com>

Marigold Industrial

London International Group, Inc.
3585 Engineering Drive
P.O. Box 926090
Norcross, GA 30092-9214
Phone: (800) 733-0987
Fax: (800) 786-4564
Website Address: <http://www.marigoldindustrial.com>

QRP, Incorporated

P.O. Box 28802
Tucson, AZ 85726-8802
Phone: (800) 832-3882
Fax: (520) 790-3530
Website Address: <http://www.qrpgloves.com>

Best Manufacturing Company

Edison Street
Menlo, GA 30731
Phone: (800) 241-0323
Fax: (706) 862-6000 or (706) 862-2666
E-Mail Address: USA@bestglove.com
Website Address: <http://www.bestglove.com>

Kappler

P.O. Box 218
Guntersville, AL 35976
Phone: (256) 505-4000
Fax: (256) 582-2706
E-Mail Address: info@kappler.com
Website Address: <http://www.kappler.com>

Lakeland Industries

Hand/Arm Protection Division
711-2 Koehler Avenue
Ronkonkoma, NY 11779-7410
Phone: (800) 886-8010
Fax: (256) 353-9463
E-Mail Address: 74313.1743@compuserve.com
Website Address: <http://www.lakeland.com>

MAPA Professional

Industrial Glove Division
85 Innsbruck Drive
Buffalo, NY 14227
Phone: (800) 245-6837
Fax: (716) 668-3224
E-Mail Address: sales@mapaglove.com
Website Address: <http://www.mapaglove.com>

North Safety Products

2000 Plainfield Pike
Cranston, RI 02920
Phone: (800) 430-4110
Fax: (800) 572-6346
Website Address: <http://www.northsafety.com>

SAS Safety Corporation

2401 East Willow Street
Signal Hill, CA 90806
Phone: (562) 427-2775
Fax: (562) 427-4646
Website Address: <http://www.sassafety.com>

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Respirator Manufacturers/Suppliers*

3M

Occupational Health and Environmental Safety Division
3M Center, Building 275-6W-01
P.O. Box 33275
St. Paul, MN 35133-3275
Phone: (800) 896-4223
Fax: (800) 542-9373
E-Mail Address: occsafety@mmm.com
Website Address: <http://www.3m.com/occsafety>

Bullard

1898 Safety Way
Cynthiana, KY 41031
Phone: (859) 234-6616, ext. 153
Fax: (859) 234-8987
E-Mail Address: brian_shockley@bullard.com
Website Address: <http://www.bullard.com>

Magid Glove & Safety Manufacturing Company

2060 North Kolmar Avenue
Chicago, IL 60639
Phone: (800) 444-8030
Fax: (773) 384-6677
E-Mail Address: mail@magidglove.com
Website Address: <http://www.magidglove.com>

Mine Safety Appliances Co. (MSA)

P.O. Box 426
Pittsburgh, PA 15230
Phone: (800) 672-2222
Fax: (800) 967-0398
E-Mail Address: info@MSAnet.com
Website Address: <http://www.MSAnet.com>

North Safety Products

2000 Plainfield Pike
Cranston, RI 02920
Phone: (800) 430-4110
Fax: (800) 572-6346
Website Address: <http://www.northsafety.com>

SAS Safety Corporation

2401 East Willow Street
Signal Hill, CA 90806
Phone: (562) 427-2775
Fax: (562) 427-4646
Website Address: <http://www.sassafety.com>

Allegro Industries, Inc.

7221 Oranewood Avenue
Garden Grove, CA 92841
Phone: (800) 622-3530
Fax: (800) 362-7231
E-Mail Address: custsvc@allegrosafety.com
Website Address: <http://allegrosafety.com>

Lab Safety Supply

401 South Wright Road
P.O. Box 1368
Janesville, WI 53547-1368
Phone: (800) 356-0783
Fax: (800) 543-9910
E-Mail Address: custsvc@labsafety.com
Website Address: <http://www.labsafety.com>

Martech Services Company

P.O. Box 7079
Rochester, MN 55903
Phone: (800) 831-1525
Fax: (507) 843-4953

Moldex

10111 West Jefferson Boulevard
Culver City, CA 90232
Phone: (800) 421-0668
Fax: (310) 837-9563
E-mail Address: sales@moldex.com
Website Address: <http://www.moldex.com>

Racal Filter Technologies, Ltd.

1175 California Avenue
Brockville, Ontario, Canada K6V 5V8
Phone: (613) 345-0111
Fax: (613) 345-2639

SATA

One Sata Drive
P.O. Box 46
Spring Valley, MN 55975
Phone: (800) 533-8016
Fax: (800) 633-SATA
E-Mail Address: satajet@satausa.com
Website Address: <http://www.satausa.com>



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Respirator Manufacturers/Suppliers*

Scott Health & Safety

309 West Crowell Street

Monroe, NC 28112

Phone: (800) 633-3915

Fax: (704) 282-8423

E-Mail Address: hscustserv@scottaviation.com

Website Address: <http://www.scottaviation.com>

Survivair

3001 South Susan Street

Santa Ana, CA 92704

Phone: (800) 821-7236

E-Mail Address: marketing@survivair.com

Website Address: <http://www.survivair.com>

Willson/Daloz Safety

2nd & Washington Streets

P.O. Box 622

Reading, PA 19603-0622

Phone: (800) 345-4112

Fax: (610) 371-7874

E-mail Address: jwomer@ix.netcom.com

*This list of companies is provided for informational purposes only and is not intended as an exhaustive list of all respirator manufacturers/suppliers. The mention of any company in this list does not constitute a U.S. Environmental Protection Agency endorsement of the company or its products.



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Hazardous Waste Management Checklist for Primary Wastes in Auto Refinish Shops

Does your auto refinish shop generate the following types of wastes?*

Check all that apply:

<u>PRIMARY WASTES</u>				
Type of Waste	Yes	No	N/A	If Yes, Recommendations for Waste Management (Minimizing, Controlling, and Disposing Waste)
Body repair materials (e.g., fillers, dust from sanding)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Use a broom or vacuum with proper dust-collecting filters instead of using water and solvents for cleaning.</p> <p>Dispose of waste dust collected in vacuum sanders properly.¹</p> <p>After wet sanding, allow the wastes to dry. Sweep up and dispose of dry wastes properly.¹</p>
Used paint booth filters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Don't dispose of paint filters containing chromium, lead, or other heavy metals in the garbage.¹</p> <p>Dried, used filters, that are not hazardous, can be disposed of in the trash (if your local solid waste authority has approved such action).¹</p> <p>Replace your disposable paint booth filters with reusable ones. With proper paint selection and non-hazardous cleaning solvents, these filters can be readily cleaned and reused. Newer polystyrene filters can be repeatedly cleaned and reused. <i>Note: Before purchasing polystyrene filters, you should discuss their use with your solvent recycler if you have your solvent recycled off-site. The styrofoam may interfere with certain solvent recycling systems.</i></p>
Used paint cup liners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Empty remaining paint/coating from the cup at the end of the job (recycle, reuse, or dispose of remaining material as appropriate).</p> <p>Used paint cup liners may be managed as industrial solid waste. If the paint does not contain metals, liners containing dried paint are considered a non-hazardous waste stream.¹ Contact your local solid waste management authority for more details.</p>
Empty paint cans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Recycle empty paint cans. Contact a recycling company that accepts empty paint containers.</p> <p>Cans containing non-hazardous¹ dried paint can be disposed in the local trash with lids removed (check if your local solid waste authority has approved such action).</p>



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PRIMARY WASTES

Type of Waste	Yes	No	N/A	If Yes, Recommendations for Waste Management (Minimizing, Controlling, and Disposing Waste)
Used solvents and paints waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Segregate used solvents and paint wastes from other wastes in leak free and tightly closed containers. Closing containers properly prevents evaporation, spills, or contamination.</p> <p>Check used solvent and paint waste containers for leaks and spills regularly. Clean up any spills or leaks that are detected as soon as possible.</p> <p>Store used solvent and paint waste containers on a concrete pad with a recessed floor area or dike to contain spills.</p> <p>Label all containers of spent solvent and paint waste with the words "Hazardous Waste" in large readable letters and indicate the type of spent solvent present in the container. Additionally, place a National Fire Protection Association (NFPA) hazard label on the container.</p> <p>Contact a local hazardous waste disposal contractor for proper disposal of used solvent and paint waste.</p> <p>Never dispose of waste paint and solvents down storm drains, septic systems, or dry wells. This could lead to surface or groundwater contamination.</p>
Shop towels (including rags and wipes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Avoid using cleaning materials that contain chlorinated compounds or compounds with low flash points (check the Material Safety Data Sheet) to prevent your shop towels from becoming potential hazardous waste.</p> <p>Disposable towels that have been contaminated with hazardous materials like solvents must be disposed of as hazardous waste.</p> <p>Purchase reusable cloth shop towels to reduce your purchasing and waste disposal costs. Reusable towels can be washed by a commercial laundry facility and returned for reuse. Towels contaminated with solvents can also be laundered and reused.</p> <p>Store towels contaminated with solvents in closed containers to avoid creating a fire or explosion hazard. Such towels cannot be air dried before being put in the closed container.</p>



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PRIMARY WASTES

Type of Waste	Yes	No	N/A	If Yes, Recommendations for Waste Management (Minimizing, Controlling, and Disposing Waste)
Wastewater and sludge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Don't discharge wastewater or sludge into a storm sewer, sump, or drain that discharges directly to groundwater supplies or a septic system.</p> <p>Contact your local municipal wastewater treatment plant prior to discharging wastewater into the sanitary sewer. The treatment plant may require testing or pretreatment (such as the use of an oil/water separator) prior to accepting your waste.</p> <p>Prior to disposal, determine if the sludge is hazardous.¹ If the sludge is hazardous (e.g., contaminated with heavy metals, chlorinated solvents, or grease), it must be disposed of as such. If non-hazardous, allow the sludge to dry and dispose in a local solid waste management facility, such as a landfill, with its approval.</p> <p>Use an oil-water separator in your shop sump to avoid the release of oil into your wastewater stream. Once separated, the oil can be transferred to a used oil container for recycling.</p> <p>If feasible, make your shop a "dry shop" (i.e., no floor drains and use only dry floor cleaning methods such as sweeping and vacuuming).</p>



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OTHER WASTES

Type of Waste	Yes	No	N/A	If Yes, Recommendations for Waste Management (Minimizing, Controlling, and Disposing Waste)
Used filters (e.g., engine oil, fuel, transmission, antifreeze recycler unit, air conditioning unit (coolant recycler) filters.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Recycle used oil, transmission, fuel, antifreeze, and coolant filters. Contact your supplier, used oil or antifreeze recycler, or local salvage/recycling facility to determine if used filters are recyclable in your area.</p> <p>Terne-plated oil filters (from old and large equipment) contain an alloy of lead and tin and are considered hazardous waste.</p> <p>Non terne-plated used oil filters and other filters are usually considered non-hazardous as long as they have been "gravity hot-drained" to remove oil. Once drained, non terne-plated used oil filters can be recycled or disposed of as a solid waste (with your local solid waste authority's approval).</p> <p>Spent antifreeze recycler unit filters may be characterized as hazardous because they can pick up metals as they clean the antifreeze.¹</p>
Auto body solid waste (e.g., glass, metals, plastics, tires)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Most non-hazardous solid waste generated during automotive repair can be reused or recycled. Check with your local recycling business to determine what is recyclable in your area. Common recycled materials are metal parts, corrugated cardboard, newspapers, white paper, colored paper, computer paper, aluminum cans, and some plastics.</p> <p>Used tires are subject to different regulations and disposal fees across the country. Consult your local solid waste authority for local regulations and opportunities to recycle or legally dispose of tires.</p> <p>Most brake shoes contain asbestos. When disturbed, asbestos fibers can be released into the air and inhaled by workers. Lung cancer and other cancers can result from inhaling asbestos. Contact your local solid waste authority for help in disposing of asbestos-containing brake shoes.</p>
Used antifreeze	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Recycle used antifreeze, if possible.</p> <p>Don't pour used antifreeze down a sanitary sewer unless it is non-hazardous and the local wastewater treatment plant authority has approved such action.¹</p> <p>Don't pour used antifreeze down a septic system, storm sewer, or on the ground.</p> <p>Used, non-recycled antifreeze is subject to full regulation as a hazardous waste unless the generator can demonstrate that the antifreeze is not hazardous.</p>



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OTHER WASTES

Type of Waste	Yes	No	N/A	If Yes, Recommendations for Waste Management (Minimizing, Controlling, and Disposing Waste)
Used oils (e.g., engine, transmission fluids)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Reuse or recycle used oil. Reuse your used oil in a shop heater, if you have one.</p> <p>Don't dispose of used oil in a storm drain, septic tank, dry well, sewer or dumpster.</p> <p>Don't pour used oil on the ground, even for dust suppression.</p> <p>Used oils that are not contaminated with other hazardous materials are exempt from federal and some state hazardous waste regulations. Non-hazardous used oil may be disposed of in an industrial or a municipal solid waste landfill. Each State may have additional, more stringent requirements. Contact your local solid waste management facility for assistance with disposing used oils.</p>
Refrigerants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Technicians repairing or servicing air conditioning systems must be trained and certified by an EPA-approved organization.</p> <p>Recover and recycle used refrigerant. There are EPA-approved recovery and recycling (removes and recycles) and recovery-only (removes and stores) equipment available.</p>
Used batteries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Store wet-cell (lead acid) batteries upright in a secured, covered location designed to contain leaks and temperature extremes.</p> <p>Do not stack wet-cell batteries -- they may crack.</p> <p>Reduce your liability by getting wet-cell batteries off your site as soon as possible.</p> <p>Recondition used wet-cell batteries with intact casings.</p> <p>Recycle used wet-cell batteries. Contact your dealer/distributor, a licensed/permitted secondary lead smelter, or your local recycling center for recycling options.</p> <p>Dispose used wet cell batteries that cannot be recycled as hazardous waste.</p> <p>Store dry cell batteries (alkaline, mercuric-oxide, zinc-air) in containers designed to contain leaks.</p> <p>Used dry cell batteries that are not considered a hazardous waste² can typically be disposed of in a licensed municipal solid waste management landfill with the permission of your local solid waste authority.</p>

*For definition of the term "waste", determination of generator status, and related information see, Auto Body Shops Pollution Prevention Guide, Defining Waste. Peaks to Prairies, Pollution Prevention Information Center. Available at: <http://peakstoprairies.org/p2bande/autobody/abguide/fs3.cfm>

1. Before disposal of waste, determine whether the waste is hazardous. Contact a commercial lab that uses the Toxicity Characteristic Leaching Procedure (TCLP) test for waste hazard determination. Waste determined to be hazardous must be disposed of properly as regulated hazardous waste.
2. Newer alkaline and zinc-carbon batteries are non-hazardous waste. In general, nickel-cadmium (Ni-Cd), silver-oxide, mercury-oxide, lithium ion, nickel metal hydride (Ni-MH), zinc-air, sealed lead-acid batteries and older zinc-carbon and alkaline batteries contain heavy metals and/or corrosive solutions and are considered hazardous wastes. Contact your local solid waste authority for more information.



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Additional information on waste management in auto body repair and refinish shops is available from the following State-based resources:

1. *Managing Paint-Related Wastes from Coating Operations*. Minnesota Pollution Control Agency, August 1997. Available at: http://www.pca.state.mn.us/waste/pubs/4_39.pdf
2. *Managing Hazardous Waste – A Guide for Auto Body Shops*. Washington State Department of Ecology Hazardous Waste and Toxics Reduction Program, Revised February, 1999. Available at: <http://www.ecy.wa.gov/pubs/92br16.pdf>
3. *Waste Reduction Methods for Production Painting Operations*, Washington State Department of Ecology, Revised December, 2002. Available at: <http://www.ecy.wa.gov/pubs/96405.pdf>
4. *Autobody shops – A Primer on Environmental Regulation and Pollution Prevention*. Kansas Small Business Environmental Assistance Program, May 1996. Available at: <http://www.sbeap.org/ppi/publications/autobody.pdf>
5. *Regulatory Compliance and Pollution Prevention Tips for Automotive Repair and Autobody Shops*. Illinois Environmental Protection Agency, 2004. Available at: <http://www.epa.state.il.us/small-business/automotive-repair-shops/index.html>
6. *Handling Paint Waste from Your Business Fact Sheet* (addresses paint booth filters) (PDF, 5 pages); Ohio EPA Small Business Assistance Office, August 2000. AVAILABLE AT: <HTTP://WWW.EPA.STATE.OH.US/OCAPP/SB/PUBLICATIONS/PAINTWASTE.PDF>
7. *POLLUTION PREVENTION IN PAINTING AND COATING OPERATIONS*. OHIO ENVIRONMENTAL PROTECTION AGENCY. OFFICE OF COMPLIANCE ASSISTANCE AND POLLUTION PREVENTION, DECEMBER 2004. AVAILABLE AT: <HTTP://WWW.EPA.STATE.OH.US/OPP/FACT23.PDF>
8. *Managing Automotive Repair Shop Wastes: A Guide for Automotive Repair Shop Operators*. Kentucky Natural Resources and Environmental Protection Cabinet. Department for Environmental Protection. Division of waste Management. January 1995. Available at: <http://www.waste.ky.gov/NR/rdonlyres/F21A3B4F-3D14-478F-A736-DB3356F46536/0/autorep.pdf>
9. *A Guide on Hazardous Waste Management in Florida's Paint and Body Shops*. Florida Department of Environmental Protection, Hazardous Waste Compliance Assistance Program, June 1996. Available at: http://www.dep.state.fl.us/waste/quick_topics/publications/shw/hazardous/business/autorpair02.pdf
10. *Environmental Compliance Checklist for Auto body Repair Shops*. Montana State University Extension Service, Montana Pollution Prevention Program, October 1998. Available at: <http://www.p2pays.org/ref/06/05082.pdf>



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11. *Vehicle Maintenance Pollution Prevention*. University of Iowa, Small Business Pollution Prevention Center, 1995. Available at: <http://www.iwrc.org/pubs/vmm.pdf>



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