



# **Minimizing Paint Waste**

# Environmental & Health Concerns

- Hazardous waste
  - Mixed coatings and solvent
- Air emissions
  - Toxic constituents
    - Toluene, xylene, MEK
  - Smog forming VOCs

# Paint Waste Sources

- Mixing room
  - Overestimate
  - Overmix
- Overspray
  - Technique
  - Equipment
- Re-work jobs
  - Color not matched
  - Dust and dirt
  - Finish quality

# Manage Inventory

- Just-in-time ordering
- First-in, first-out
- Keep containers closed
- Mixing banks



# Color Matching

- Mix in small amounts
  - Start with 8 oz. or less
- Spray out on test panels
  - View and compare in natural light
- Colorimeter or spectrophotometer
- Expertise of other painters
- Color library of spray-outs
  - Record color mix information

# Paint Measurement

- Computerized mixing system
  - Tracks product use and VOCs
  - Reports for air district
- Automated paint dispenser
  - Minimizes over-pours
- Minimize paint transfers



# Track and Troubleshoot

- Record each step
  - Estimated amount
  - Actual amount mixed
  - Left over
- Compare estimated and actual paint used to refine estimating
- Compare paint orders with workload
- Work with painter to resolve

# Paint left over

- Mix into ground coat
  - Cover hard to hide colors
  - Under dark color coat
  - **Will it change regulated VOC content?**
    - Check with air district
- Door interiors, edging, jambing
- Save popular colors for later use

# Calibrated Liners





# Advantages

- Mix in cup liner
- Mix more than one batch at a time
- Increases application efficiency and reduces paint overspray
- Cover and save mixed paint for a limited time
- Reduces cleaning solvent and waste
  - Do not need to clean paint pot
  - Reduces labor
- Increased production



# Job Planning

- Primer and clear coat back-to-back
- Tintable primer systems
- Schedule waterborne primer application to allow drying time
- Remove part before
  - No masking needed
  - Reduces overspray
  - Streamlines process



# Painting

- Poor technique
  - Wastes paint
  - More clean-up
  - Painter labor
- Goal - Improve application efficiency
  - Finish quality
  - Transfer efficiency (TE)
  - Build efficiency (BE)
- Solutions
  - Paint technician training
  - Technology
    - Higher efficiency spray guns
    - Targeting device

# Painter Training

Painters learn to apply paint more efficiently

- Hands-on training
- Students practice proper technique
- Techniques for specific coatings
- I-CAR training centers
- Paint manufacturer training
- Community college automotive programs
  - IWRC STAR ® Program, Spray Technique Analysis and Research
    - <http://www.iwrc.org/programs/STAR.cfm>
  - LA Trade Technical College
- IWRC STAR training for defense
  - <http://www.star4d.org>
- ARB P2 web page- auto refinishing
  - <http://www.arb.ca.gov/coatings/p2/overview.htm>

# Technology

- LaserPaint™
  - Application technique and targeting tool
  - Allows painter to:
    - Maintain correct angle and distance for consistent coverage
    - Optimize overlap
    - Reduce overspray
  - Developed by Iowa Waste Reduction Center (IWRC)
  - <http://www.laserpaint.us>



Cost: \$300 includes mounting bracket and training CD

LaserPaint tool developed by IWRC  
<http://www.laserpaint.us>



# Environmental Technology Verification

- LaserPaint

- ARB certified performance claim
- 15% volume reduction average
- USEPA environmental technology verification (ETV)  
May 2000 <http://www.epa.gov/etv/verifications/vcenter6-5.html>

- High TE Spray Equipment

- ETV report <http://www.epa.gov/etv/verifications/vcenter6-16.html>

# Paint Spray Booths



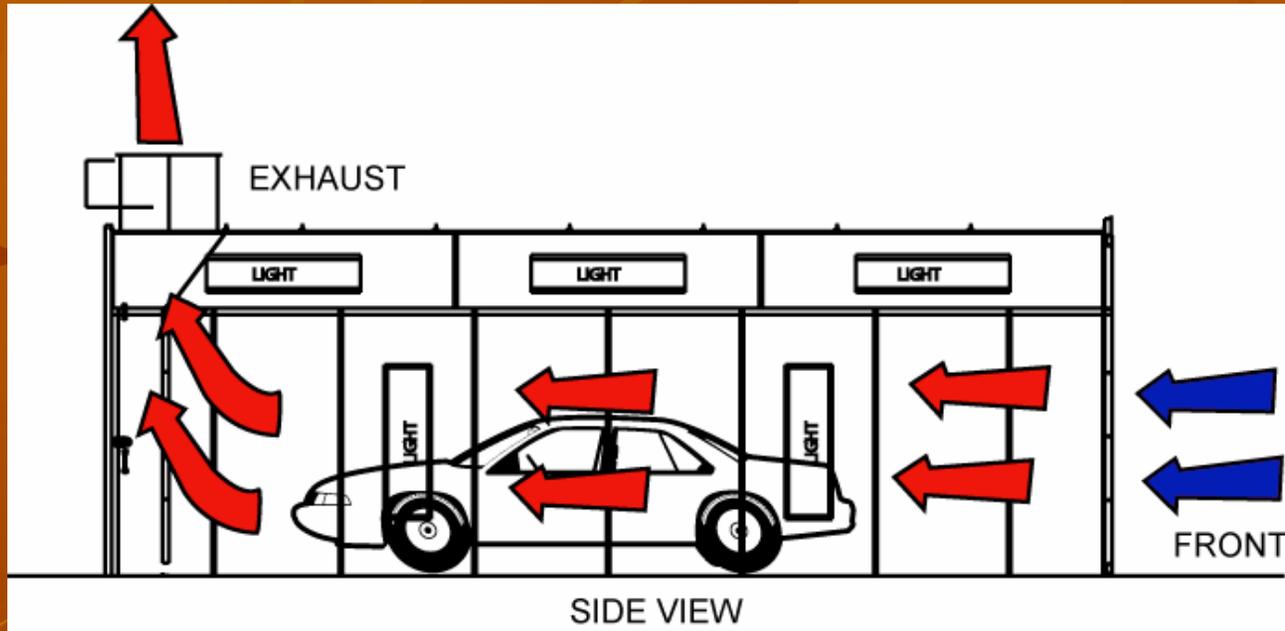
# Functions of Spray Booths

- Facilitates cleaner paint jobs
  - Contains overspray
  - Collects waste
  - Provides clean air during paint operations
  - Provides well lit area, devoid of dust
- Protects worker's health
  - Confines harmful emissions in one area
    - Prevents workers outside of booth from inhaling solvent emissions and paint particles
    - Workers painting within booth should wear personal protective equipment
- Monetary savings
  - Reduces operation costs
  - Lowers labor costs
  - Reduces material costs
- Filters paint particles from air before exhausting it into the atmosphere

# Types of Paint Spray Booths

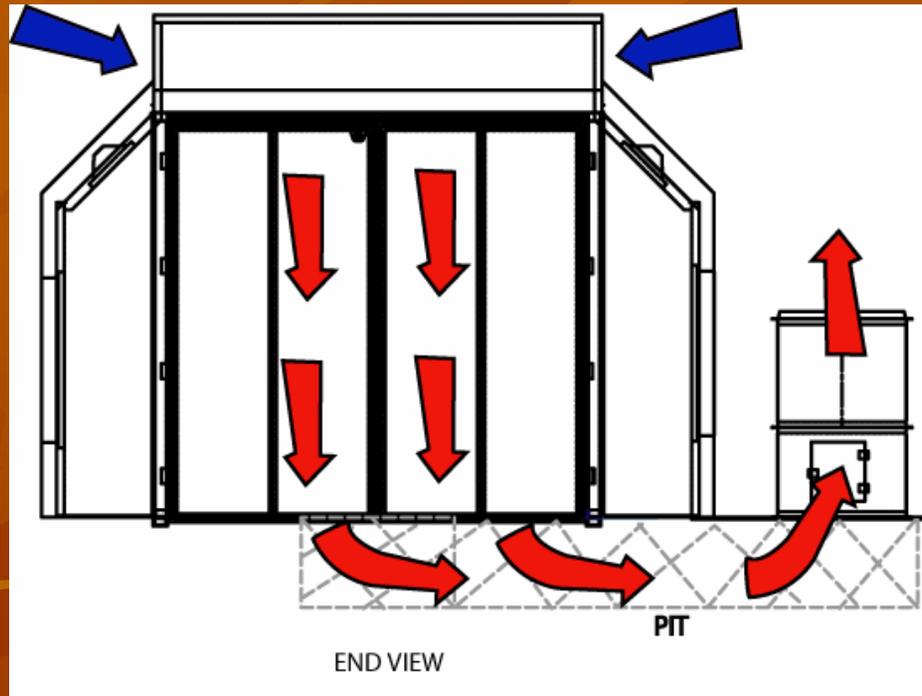
- Spray booths provide uniform airflow
- Two most common types of spray booths
  - (1) Cross draft spray booth
  - (2) Down draft spray booth

# Cross Draft Spray Booth



- Air is drawn in across filters on the front end of the room into filters located on the opposite end of the room.

# Down Draft Spray Booths



Air is pulled down through inlet filters on the ceiling into exhaust filters located on the floor.

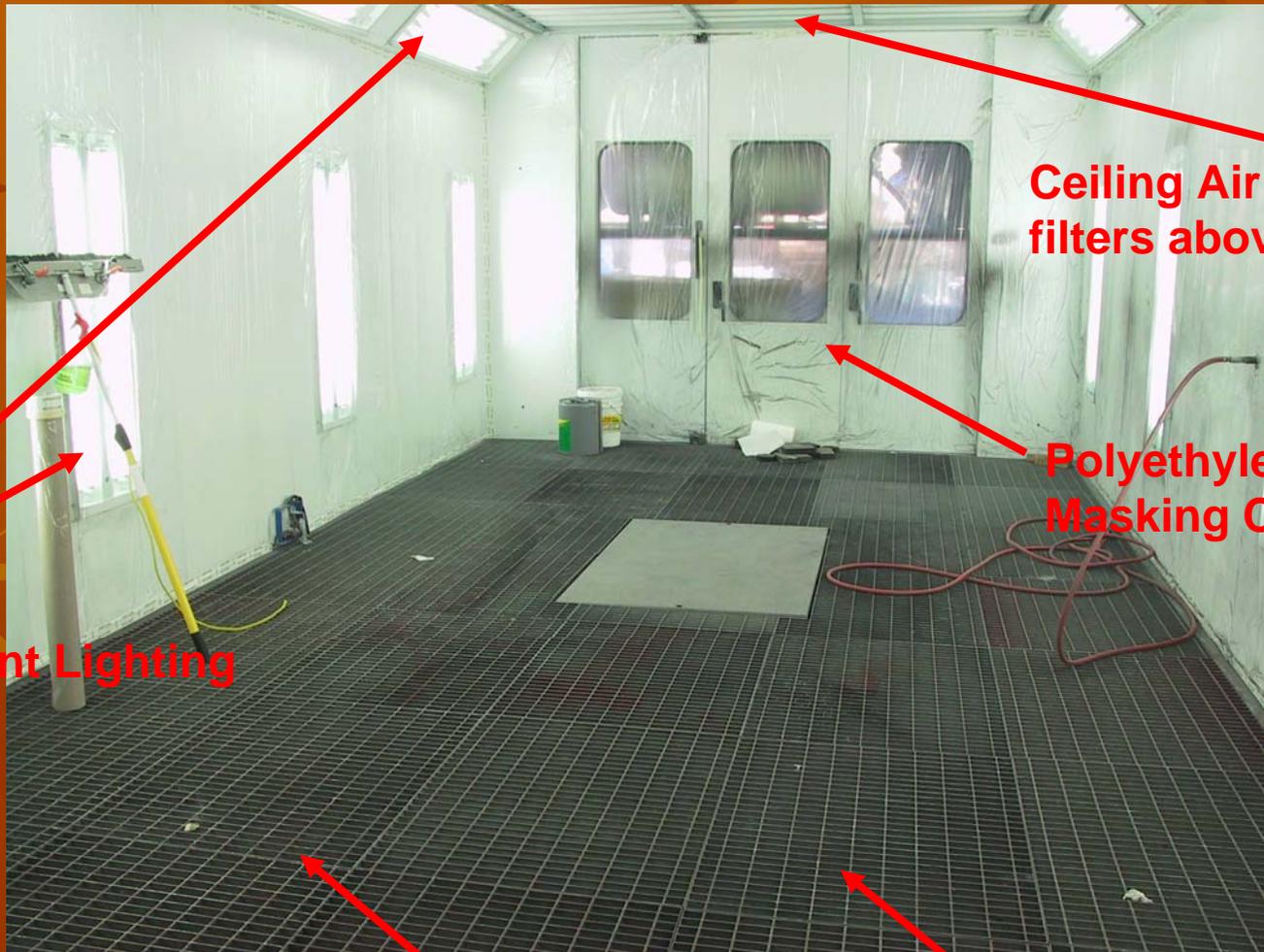
# Combination Drying Booths

- Two distinct operating cycles
  - (1) Painting
  - (2) Heated drying cycle
- Decreases curing time
  - High productivity due to fast processing time
- Allows for good finish quality and reduces re-working
- Conserves energy
  - Uses recirculating airflow
- More cost effective over lifespan of equipment
  - Reduces costs
    - Operation and maintenance
    - Labor

# Spray Booth Considerations

- **Serviceability**
  - Select from a vendor that offers maintenance, support, and warranty
  - Choose a vendor that is accessible to reduce downtime when replacement parts and/or repairs are needed
- **Lighting**
  - Fluorescent
    - Runs cooler
    - Consumes less energy
  - High-Intensity Discharge (HID)
    - Delivers more lighting per lamp
    - Requires longer warm-up time
- **Filter**
  - Most important component of a spray booth, must be capable of holding and capturing all dirt, overspray, and solvent
  - Prevents paint build-up on fans, exhaust, and release of paint particulates into the environment

# Paint Spray Booth Interior – Down Draft Spray Booth



Fluorescent Lighting

Ceiling Air Inlet,  
filters above inlets

Polyethylene Sheeting/  
Masking Cling Film

Grates

Filters beneath grates



**Air Intake and Filters**

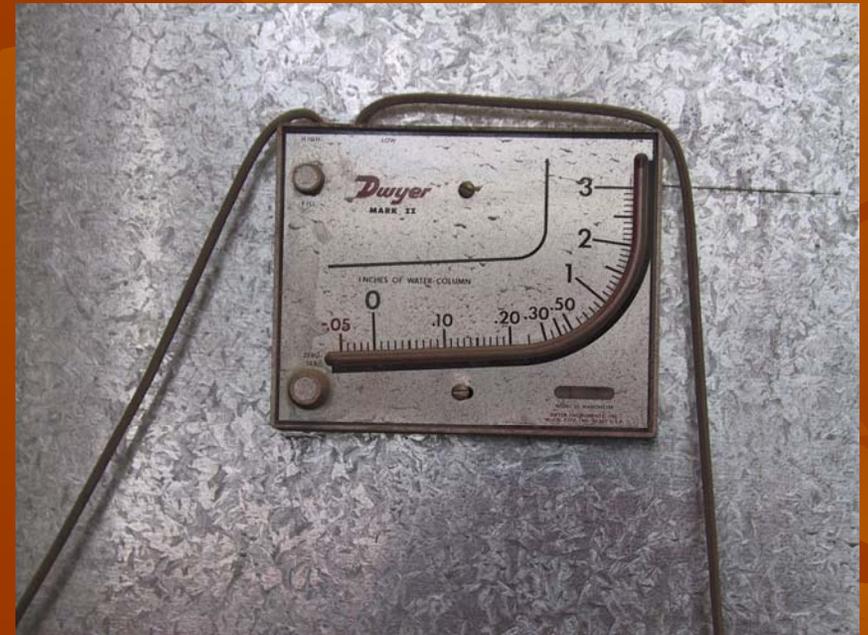
# Maintain Spray Booth and Components

- Produces cleaner paint jobs, reduces waste, and protects worker's health
- Results in lower labor costs, reduces operation costs, and reduces material costs
- Develop a routine maintenance schedule that includes:
  - Changing filters
  - Masking off booth surface and equipment
  - Checking paint buildup on fans
  - Overall good housekeeping

# Maintain Spray Booth



Manometer- check routinely for optimum air flow



Keep booth clean

Remove dust and debris

# Paint Waste Reduction

- Waste reduction equates to cost savings for shops
- Employee incentives
  - Ask for their ideas
  - Share cost savings of significant waste reduction with workers