Spray Booth Safety

Spray booths, commonly found in manufacturing facilities and auto body shops, are intended to reduce atmospheric and fire hazards associated with painting and finishing operations. Properly designed and operated, spray booths provide an efficient way to control ventilation, minimize exposure to hazardous materials and contain aerosolized flammables. In order to maximize safety, several precautions should be taken when designing and operating spray paint booths.

Construction
Spray booths should be constructed of fire-resistant materials, such as steel (#18 gauge or heavier), concrete, masonry or other substantial noncombustible material. Other important considerations in spray booth construction include ventilation, fire protection and electrical precautions.

Ventilation—Spray booths should be adequately ventilated to ensure the removal of harmful vapors and the control of combustible residues. All spray booths should be provided with mechanical ventilation capable of moving at least 100 linear feet of air per minute. The exhaust and ventilation systems should be designed to direct airflow toward an exhaust outlet installed within 18 inches of the floor and vented to the outside. Visual gauges, audible alarms and pressure-activated devices are recommended to maintain the required air velocity in the booth. Spray guns should be interlocked with the ventilation system to prevent any spray operation while the ventilation system is inactive.

Fire Protection—Spray booths should be protected by an automatic sprinkler system (one sprinkler head for every 90 square feet of booth area). Sprinklers protecting spray areas should be protected against overspray residue with cellophane or a thin paper bag. Coverings should be replaced frequently so overspray does not accumulate. Identify the appropriate fire extinguishers for the hazards present in the spray booth. Place the extinguishers in readily accessible areas (typical minimum of 30 feet) and inspect monthly. Maintain at least a 3-foot separation on all sides from combustible materials and other production operations.

Maintain the appropriate safety protocols with the spray finishes and cleaning chemicals, to ensure the safe handling and storage of material in and around the booth area. All Material Safety Data Sheets (MSDS) should be checked for reactivity and compatibility of substances. Flammable and combustible liquids should be properly stored in accordance with OSHA 1910.106.

Electrical Precautions—All electrical wiring and equipment in and around the spray paint booth should be installed to meet the requirements of the National Electric Code for Class 1 locations. Open flames and spark-producing devices shall not be located within 20 feet of booths. Portable lamps should not be used in any spraying area. Portable lamps used in a booth during cleaning or repair work should be approved for Class I hazardous operations. All metal surfaces and ventilation ductwork of the spray booths should be grounded.

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**Maintenance and Housekeeping**
A standard operating procedure and maintenance schedule should be developed to ensure routine cleaning and regular filter changes. Monitor ventilation system in order to maintain the proper airflow through the booth.

All materials used during spray operations should be properly labeled, and MSDS should be reviewed to determine proper storage practices. Spilled materials should be cleaned up immediately, with all hazardous waste properly disposed of according to local, state and federal regulations.

**Personal Protective Equipment**
Complete a hazard assessment of the materials used in the spray booth in order to identify the proper personal protective equipment (PPE) needed for employee protection. Depending on the hazards associated with the product being used, certain PPE may be necessary (i.e., gloves, aprons, face shield, work suits, etc.). If PPE is necessary, employees must be trained on the proper use, care and limitations of each item available for use.

Air monitoring during spray operations will be necessary to establish employee exposure levels inside the spray booth. If exposure levels exceed the OSHA Permissible Exposure Limit (PEL) for hazardous chemicals, the employees will need to use respiratory protection. Airborne concentrations of chemicals at or above the PEL will require the employer to develop and implement a Respiratory Protection Program (OSHA 1910.134 Respiratory Protection).

**For Additional Information**
**Occupational Safety & Health Administration:**
www.osha.gov
- Safety and Health Topics – Spray Operations

**National Fire Protection Association:**
www.nfpa.org
- Spray Booth Operations

**EMC Insurance Companies:**
www.emcins.com
- Loss Prevention Information Manual
- Tech Sheets