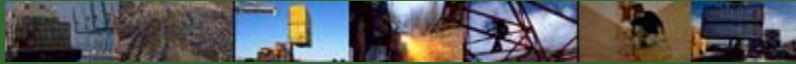




Supervisors' Safety Update

Ideas and Strategies for Leaders



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PAINTING HAZARDS

By SeaBright Insurance Loss Control

Although painting is a reasonably safe occupation, it is far from risk free. Whether brushed on, rolled on or sprayed, painters are exposed to a variety of chemicals in the paint and solvents they use. The right combination of chemicals produces a film that flows, dries and sets in a specific manner to create a durable surface. Some of these chemicals are very toxic and can result in health problems if inhaled or absorbed through the skin. In addition, many paints or solvents have the potential to catch fire, explode, or react violently if mixed with other chemicals.

It is the first duty of employers to provide a safe and healthful workplace; this is also required by the General Duty Clause of the Occupational Safety and Health Act (OSHA). Working with paints can be done safely if the hazards associated with the painting process are kept in mind, and if precautions are taken to protect individuals from exposure to harm.

Hazards to Watch For

Some of the hazardous materials in paints are solvents of various types and hazardous metals including lead, cadmium, hexavalent chromium, zinc, chrome, and silica. Exposures to these metals during surface preparation and coating work can be harmful. For example, painters may suffer eye irritation, a skin rash, nausea, or dizziness if they inhale too much of the metal dust or vapors. Most often, the acute or short-term health effects caused by these exposures stop as soon as the exposure stops. However, certain chemicals and metals are capable of causing chronic, or long term, health effects. This can include damage to the liver, cardiovascular system, lungs and the nervous system. Some people may also become sensitized to one of the paint system components such as the isocyanates in polyurethanes. Once sensitized, these workers develop allergic respiratory or skin reactions and may not be able to work with this material again.

Minimizing Worker Exposure

Both engineering controls and personal protective equipment should be used to reduce the potential for adverse health effects. Employers should make every effort to keep chemical concentrations below the OSHA permissible exposure limits. Education programs should inform employees about the hazards of exposure to paints, solvents or metals, and instruction should be provided on safe handling practices. Periodic industrial hygiene surveys should be made to determine worker exposure levels, the suitability of protective equipment being used, and to ensure that the controls in place are operational and effective.

The Value and Dangers of Spray Booths

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Ideally, all painting would be done in spray booths where ventilation can be controlled to minimize employee exposure to hazardous materials. However, since painting is done both inside and outside of buildings, and can be done almost anywhere, it is not always possible to utilize spray booths. Any firm that operates a spray booth should check local regulations. This useful process can also be a potential powder keg, so several precautionary measures should be followed:

- Maintain separation from other operations by three feet or more, and keep a clear three-foot area around the booth to reduce the chance of fire. Be sure to install visible gauges or alarms, showing that the required exhaust air velocity is being maintained.
- Be cautious about changing the type of material being sprayed. Some materials are not compatible and can cause spontaneous combustion.
- Electrical wiring and equipment in spray booths, including ventilation equipment, should be fully enclosed and explosion proof. This means that portable electric lighting fixtures, frequently used in booths, should not be used. All metal parts of spray booths should be grounded to prevent static charges from building up.
- Flammable or combustible materials should be stored in UL approved safety cans, and stored outside the booth, other than what will be used in one day. To prevent spontaneous ignition, rags and waste material that are contaminated with over-spray should be stored in self-closing metal containers. Most local ordinances require fire sprinklers in spray booths and a method of removing contaminants from the exhaust air.

Personal Protective Equipment

Direct skin contact with hazardous materials can be prevented through the proper use of gloves, aprons, boots, face shields, or entire work suits, depending upon the nature and extent of the chemical hazard. Any clothing that becomes contaminated should be removed and discarded or properly cleaned before re-use. Areas of the body that are exposed to solvents should be thoroughly washed with soap and water to prevent skin absorption or dermatitis.

Respiratory Protection

Large amounts of solvents are used in the painting industry and many of these products contain more than one chemical. Paint solvents are particularly hazardous to the lungs, with inhalation the primary means of painter exposure. Ideally, engineering methods such as ventilation should be used to control this problem. Since this is not always possible, respirators may be the only feasible means of providing employee protection from airborne contaminants.

THE OSHA STANDARD

The OSHA respiratory protection standard (1910.139) for general industry, construction, long shoring, shipyards, and marine terminals went into effect April 8, 1998. When respirators must be worn by employees, a *written* respiratory protection program must be developed, with work site-specific procedures tailored to each establishment. The final rule replaces 1910.134 and 1926.103, standards that were adopted by OSHA in 1971. The company's program should be evaluated regularly to assure that protection is adequate and that proper procedures are being followed. Highlights of the required basic program elements are as follows:

- 1) **Hazard Evaluation and Respirator Selection:** An evaluation of work conditions should determine which respirator(s) to use. Choice depends on the type and concentration of contaminant. Selection of a specific respirator should be based on the required reduction in solvent concentration, special use conditions, and the worker's proven ability through fit testing to wear the respirator. Equipment should be NIOSH approved. Keep in mind that air-purifying cartridge respirators cannot be used for solvent concentrations that exceed 1,000 ppm and full-face pieces are recommended when eye irritation occurs.
- 2) **Medical Evaluation:** A physician or licensed health care professional must determine an individual's ability to wear a selected respirator, based upon their physical condition and the contaminants to which they will be exposed.
- 3) **Fit Testing:** Initial and annual fit tests for the make, model, size and style of respirator that will be worn are required. Fit tests must be repeated whenever a different make or size respirator is used, or when the employee's facial characteristics change.
- 4) **Worker Education:** Effective training for employees who are required to wear respirators includes demonstrated knowledge of why the respirator is necessary; how to properly fit, inspect, use, maintain and store the respirator; and how to deal with emergencies involving use of the equipment. The OSHA Hazard Communication Standard also requires employees be instructed on how to understand chemical container label warnings and how to use and interpret the information on Material Safety Data Sheets.
- 5) **Maintenance and Cleaning of Equipment:** In order to function properly and provide adequate protection, respirators must be properly maintained. They should be cleaned and washed after each use and stored in a sealed plastic bag or box away from direct

sunlight and extreme temperatures. The face piece of the respirator should be checked to be sure it has not deteriorated. It should be soft and comfortable in order to maintain a good face seal.

6) Program Evaluation: Procedures must be defined for evaluating the effectiveness of the respirator program and for eliminating any problems, which may exist. An individual must be designated to monitor conditions in the workplace on a regular basis, ensuring that the provisions of the written program are being properly implemented.

Summary:

Painting can be performed safely if workers are educated about how to protect themselves from the hazards, and if employers furnish and require the use of proper protective equipment to prevent harmful exposure. The following *Supervisor's Checklist for Painting Operations* may be a helpful tool for conducting jobsite safety surveys or for guiding discussions during crew meetings.

The more potentially harmful painting operations require a formal program, as defined in OSHA's respiratory protection standard, and the effectiveness of this program must also be periodically evaluated by designated and knowledgeable personnel.

SUPERVISOR'S CHECKLIST FOR PAINTING OPERATIONS

GENERAL:

- Water-based coatings are used rather than oil-based paint if possible.
- Workers wash skin thoroughly with soap and water after exposure.
- Solvents or thinners are not used to remove paint from skin.
- Employees use required Personal Protective Equipment to keep paint off the skin.
- Contaminated protective clothing is properly stored and disposed of.
- Respirators, when required, are fit-tested and properly used.
- Paint from unlabeled containers is not used.
- Painting is permitted only in well-ventilated areas.
- Labels and MSDSs are checked to identify hazards and protective information before using products.

SPRAY BOOTHS:

- Portable lamps or trash that could cause fires are kept out of spray booths.
- Only as much paint as is needed for the job is kept in the spray booth.
- "No Smoking" signs are posted and obeyed around a spray booth.
- Fire extinguishers are available and sprinklers are installed in spray booths.
- Clothing or rags used during spraying are kept in a covered metal container.
- The MSDS is checked for reactivity, to avoid mixing substances that could create a dangerous reaction.
- No open flames or spark-producing equipment are permitted in spray booths.
- Exhaust ventilation systems are functional and adequate, with explosion proof motors.
- All electrical wiring and equipment is of the explosion proof variety.
- Flammable & combustible liquids are properly stored.

EMPLOYEE TRAINING:

- Do employees recognize symptoms of over exposure to chemicals?
- Do employees know how to recognize when respirator filter "break through" occurs?
- Are employees aware that sensitization can occur to some materials being used?
- Do employees know that fire can occur from ignition sources?
- Do employees know that hazardous reactions can occur when mixing some types of materials?
- Do workers know how to prevent health and safety problems?
- Do workers know how to check labels and MSDSs to identify hazards and preventive procedures?
- Do employees know how to use required personal protective equipment?
- Do workers know proper first aid procedures to follow if over exposure occurs?