



THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF LABOR
DIVISION OF OCCUPATIONAL SAFETY
OCCUPATIONAL HYGIENE / INDOOR AIR QUALITY PROGRAM
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Dear Auto Body Instructor:

Thank you for participating in the health and safety survey of school auto body programs which we conducted during the past school year. Enclosed is a copy of the survey results, along with recommendations. Most shops reported that they follow recommended practices for training and information. However, many programs need improvement in health and safety procedures and controls.

The Massachusetts Division of Occupational Safety offers on-site consultations to public employers, including schools, on a wide variety of health and safety issues. We urge you to take advantage of our services, and at the end of the survey report is a form to request a consultation.

Thank you for your support and interest in the health and safety of your students and employees.

Sincerely,

Richard Rabin
Lead Registry Coordinator

REPORT OF SURVEY OF VOCATIONAL HIGH SCHOOL AUTO BODY PROGRAMS

Fall 2004

Most vocational/technical, and a few academic, high schools in Massachusetts have autobody repair programs. Older cars commonly have lead-containing paints, especially in the electrocoat, and many auto refinishing paints still are lead-based. Many other toxic components, such as chromium, isocyanates and solvents, are used as well. The Massachusetts Department of Education and Division of Occupational Safety conducted a survey of autobody programs to learn the extent to which lead- and chromium-based paints in particular are used, and to what extent recommended controls are implemented.

Survey questionnaires were mailed to 41 school systems thought to have autobody repair programs. Three school systems indicated that they no longer had such a program. Of the remaining 38, 37 returned a completed questionnaire. The questionnaire was divided into several sections: general background; equipment used; sanding, grinding and welding operations; paints, paint systems and surface preparation; and work practices.

Survey results, with recommendations, are summarized below.

GENERAL BACKGROUND

Thirty-one of 36 programs are approved by the National Automotive Technicians Education Foundation (NATEF), a national accrediting organization for automotive repair training programs.

All surveyed programs perform spray painting, sanding, grinding and welding. Thirteen of 36 also carry out frame correction work. The number of vehicles processed per week varies from 4 to 10.

EQUIPMENT

All shops use a spray painting booth or room. However, 7 of 36 have ventilation other than down-draft. Three of 37 shops have a 3-sided booth. Four shops do not have a make-up air system. One shop indicated that its spray booth does not have an explosion-proof exhaust fan.

The frequency of spray booth filter changes vary widely. Air intake filters are changed between 1 and 6 times per year; air exhaust filters are changed between 3 and 15 times per year. Six programs stated that they do some paint priming outside of a spray booth.

RECOMMENDATIONS

The spray painting booth/room should have down-draft ventilation, which results in the least amount of over-spray.

A 4-sided spray room is preferred.

Autobody shops should have a mechanical supply of tempered, outside air.

Many automotive spray paints are flammable, and must be used in an NFPA Class I, Division 1 location, including explosion-proof/intrinsically safe electrical equipment.

Air velocity in a spray booth should be maintained at 100 feet per minute, and filters should be changed when airflow is impeded such that they reduce air velocity to below this level. All booths should have a visible gauge or audible alarm to indicate or insure that this air velocity is maintained.

All spray painting should be performed away from any potential ignition source – such painting conducted outside a booth should be located at least 20 feet in all directions from any non-explosion-proof electrical source, including lighting.

SANDING, GRINDING, WELDING

Several (13 of 36) shops do not use sanders equipped with a vacuum attachment. Only 15 of 35 shops employ portable/local exhaust systems for welding. Fourteen of 36 shops use tarps or other kinds of enclosures during sanding or grinding operations.

RECOMMENDATIONS

To minimize exposure to toxic dusts (eg: lead, chromium) vacuum sanders with a HEPA attachment should be used.

Local exhaust ventilation – which captures fumes at the source - is recommended for reducing welding fumes.

Tarps or other kinds of enclosures are needed to protect other students and staff in the area.

PAINTS, PAINT SYSTEMS AND SURFACE PREPARATION

Very few (3 of 36) autobody shops use waterborne basecoats. Ten of 34 shops use chromate paints, and 5 of 34 use lead-containing paints. Two shops indicated that they use methylene chloride (a suspected carcinogen) for paint stripping and/or degreasing. A memorandum (May 12, 2004) from the Massachusetts Department of Education to schools with autobody programs strongly urged them to discontinue its use.

Waterborne paints are generally less toxic than solvent-based paints, and should be used when available. Because of their high toxicity (and carcinogenicity), lead- and chromate-based paints should be avoided when possible.

Methylene chloride should be avoided.

WORK PRACTICES

All schools reported having a respiratory protection program. All respondent schools reported having material safety data sheets (MSDSs) and container labeling for all paints and other chemicals. All indicated that they provide training to students on chemical hazards and how to read MSDSs. All of these procedures are required by OSHA's Hazard Communication Standard for exposed employees in private industry. All shop instructors have had training on the hazards of chemicals and proper precautions; however, 11 (of 36) have not had such training in over two years (5 instructors have not received such training in over 5 years).

About one-third (9 of 28) of those reporting the use of supplied air respirators employ an oil-lubricated compressor. Over one-third of the programs do not have their students wear air-purifying respirators during sanding or grinding operations.

Ten autobody shops have showers and a room for changing clothes, and only 8 of them require students to use them. Six of 34 shops use HEPA (high efficiency particulate air) vacuums for clean-up

A respiratory program should include: proper maintenance, cleaning and storage of respirators; initial and periodic fit-testing; medical screening prior to respirator use; and training on the use, selection and limitations of respirators.

Autobody instructors should receive annual training on chemical hazards, MSDSs, labeling and employee rights. The Massachusetts Right to Know Law requires such annual training for public employees who are exposed to toxic chemicals.

To avoid the danger of carbon monoxide poisoning, it is preferable to use a non-oil-lubricating unit. If an oil-lubricating compressor is to be used, it should have a carbon monoxide or high-temperature alarm.

Respiratory protection (with N100 filters) should be worn to protect against possible exposure to toxic dusts.

To avoid contaminating other areas of the school and students' cars and homes, students should shower and change into street clothes before leaving the shop. OSHA regulations require such a procedure in the private sector when there is exposure to lead, and it is good hygiene practice whenever there is exposure to toxic substances.

Where there is sanding or grinding on toxic paints, such as lead or chromium, or when the components of the paint are unknown, HEPA vacuums should be used for cleanup.