Vision Painting Inc
Safety Management System

Abrasive Blasting

1. PURPOSE

The purpose of this program is to provide training and qualification guidelines for the safe operation of Abrasive Blasting. The Safety Officer is responsible for facilitating this program.

2. SCOPE

This program applies to all employees and subcontractors working within our controlled worksites.

3. QUALIFICATION REQUIREMENTS

All Abrasive Blasting operators are required to be fully qualified and competent in the operation of each piece of equipment they are required to operate.

4. HAZARDOUS SUBSTANCES

Whenever hazardous substances such as dusts, fumes, mists, vapors, or gases exist or are produced in the course of construction work, their concentrations will not exceed the limits specified in 1926.55(a). When ventilation is used as an engineering control method, the system will be installed and operated according to the requirements of this section.

5. VENTILATION

Rules include:

5.1 Local exhaust ventilation when used it will be designed to prevent dispersion into the air of dusts, fumes, mists, vapors, and gases in concentrations causing harmful exposure. Such exhaust systems will be so designed that dusts, fumes, mists, vapors, or gases are not drawn through the work area of employees.

5.2 Exhaust fans, jets, ducts, hoods, separators, and all necessary appurtenances, including refuse receptacles, will be so designed, constructed, maintained and operated as to ensure the required protection by maintaining a volume and velocity of exhaust air sufficient to gather dusts, fumes, vapors, or gases from said equipment or process, and to convey them to suitable points of safe disposal, thereby preventing their dispersion in harmful quantities into the atmosphere where employees work.

5.3 The exhaust system will be in operation continually during all operations which it is designed to serve. If the employee remains in the contaminated zone, the system will continue to operate after the cessation of said operations, the length of time to depend upon the individual circumstances and effectiveness of the general ventilation system.

5.4 Since dust capable of causing disability is, according to the best medical opinion, of microscopic size, tending to remain for hours in suspension in still air, it is essential that the exhaust system be continued in operation for a time after the work process or equipment served by the same will have ceased, in order to ensure the removal of the harmful elements to the required extent. For the same reason, employees wearing respiratory equipment should not remove same immediately until the atmosphere seems clear.

5.5 The air outlet from every dust separator, and the dusts, fumes, mists, vapors, or gases collected by an exhaust or ventilating system will discharge to the outside atmosphere. Collecting systems which return air to work area may be used if concentrations which accumulate in the work area air do not result in harmful exposure to employees. Dust and refuse discharged from an exhaust system will be disposed of in such a manner that it will not result in harmful exposure to employees.

6. DUST HAZARDS FROM ABRASIVE BLASTING

Rules include:

6.1 Abrasives and the surface coatings on the materials blasted are shattered and pulverized during blasting operations and the dust formed will contain particles of respirable size. The composition and toxicity of the dust from these sources will be considered in making an evaluation of the potential health hazards.

6.2 The concentration of respirable dust or fume in the breathing zone of the abrasive blasting operator or any other worker will be kept below the levels specified in 1926.55 or other pertinent sections of this part.

6.3 Organic abrasives which are combustible will be used only in automatic systems. Where flammable or explosive dust mixtures may be present, the construction of the equipment, including the exhaust system and all electric wiring, will conform to the requirements of American National Standard Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying, Z33.1-1961 (NFPA 91-1961), and Subpart S of this part. The blast nozzle will be bonded and grounded to prevent the build-up of static charges. Where flammable or explosive dust mixtures may be present, the abrasive blasting enclosure, the ducts, and the dust collector will be constructed with loose panels or explosion venting areas, located on sides away from any occupied area, to provide for pressure relief in case of explosion, following the principles set forth in the National Fire Protection Association Explosion venting Guide. NFPA 68-1954.

7. BLAST-CLEANING ENCLOSURE

Rules include:

7.1 Blast-cleaning enclosures will be exhaust ventilated in such a way that a continuous inward flow of air will be maintained at all openings in the enclosure during the blasting operation.

7.2 All air inlets and access openings will be baffled or so arranged that by the combination of inward air flow and baffling the escape of abrasive or dust particles into an adjacent work area will be minimized and visible spurts of dust will not be observed.

7.3 The rate of exhaust will be sufficient to provide prompt clearance of the dust-laden air within the enclosure after the cessation of blasting.

7.4 Before the enclosure is opened, the blast will be turned off and the exhaust system will be run for a sufficient period of time to remove the dusty air within the enclosure.

7.5 Safety glass protected by screening will be used in observation windows, where hard deep-cutting abrasives are used.

7.6 Slit abrasive-resistant baffles will be installed in multiple sets at all small access openings where dust might escape, and will be inspected regularly and replaced when needed.

7.7 Doors will be flanged and tight when closed.

7.8 Door on blast-cleaning rooms will be operable from both inside and outside, except that where there is a small operator access door, the large work access door may be closed or opened from the outside only.

8. EXHAUST VENTILATION SYSTEM

Rules include:

8.1 The construction, installation, inspection, and maintenance of exhaust systems will conform to the principles and requirements set forth in American National Standard Fundamentals Governing the Design and

Operation of Local Exhaust Systems, Z9.2-1960, and ANSI Z33.1-1961.

8.2 When dust leaks are noted, repairs will be made as soon as possible.

8.3 The static pressure drop at the exhaust ducts leading from the equipment will be checked when the installation is completed and periodically thereafter to assure continued satisfactory operation. Whenever an appreciable change in the pressure drop indicates a partial blockage, the system will be cleaned and returned to normal operating condition.

8.4 In installation where the abrasive is recirculated, the exhaust ventilation system for the blasting enclosure will not be relied upon for the removal of fines from the spent abrasive instead of an abrasive separator. An abrasive separator will be provided for the purpose.

8.5 The air exhausted from blast-cleaning equipment will be discharged through dust collecting equipment. Dust collectors will be set up so that the accumulated dust can be emptied and removed without contaminating other working areas.

9. PERSONAL PROTECTIVE EQUIPMENT

Rules include:
9.1 Employers must use only respirators approved by NIOSH under 42 CFR part 84 for protecting employees from dusts produced during abrasive-blasting operations.

9.2 Abrasive-blasting respirators will be worn by all abrasive-blasting operators:

9.3 When working inside of blast-cleaning rooms, or

9.4 When using silica sand in manual blasting operations where the nozzle and blast are not physically separated from the operator in an exhaust ventilated enclosure, or

9.5 Where concentrations of toxic dust dispersed by the abrasive blasting may exceed the limits set in 1926.55 or other pertinent sections of this part and the nozzle and blast are not physically separated from the operator in an exhaust-ventilated enclosure.

9.6 Properly fitted particulate-filter respirators, commonly referred to as dust-filter respirators, may be used for short, intermittent, or occasional dust exposures such as cleanup, dumping of dust collectors, or unloading shipments of sand at a receiving point when it is not feasible to control the dust by enclosure, exhaust ventilation, or other means. The respirators used must be approved by NIOSH under 42 CFR part 84 for protection against the specific type of dust encountered.

9.7 A respiratory protection program as defined and described in Vision Painting Inc. Respiratory Protection Program, will be established wherever it is necessary to use respiratory protective equipment.

9.8 Operators will be equipped with heavy canvas or leather gloves and aprons or equivalent protection to protect them from the impact of abrasives. Safety shoes will be worn to protect against foot injury where heavy pieces of work are handled.

9.9 Safety shoes will conform to the requirements of American National Standard for Men's Safety-Toe Footwear, Z41.1-1967.

9.10 Equipment for protection of the eyes and face will be supplied to the operator when the respirator design does not provide such protection and to any other personnel working in the vicinity of abrasive blasting operations. This equipment will conform to the requirements of 1926.102.

9.11 Air for abrasive-blasting respirators must be free of harmful quantities of dusts, mists, or noxious gases, and must meet the requirements for supplied-air quality and use specified in 29 CFR 1910.134(i)

10. MISCELLANEOUS

Rules include:

10.1 Dust will not be permitted to accumulate on the floor or on ledges outside of an abrasive-blasting enclosure, and dust spills will be cleaned up promptly. Aisles and walkways will be kept clear of steel shot or similar abrasive which may create a slipping hazard.

10.2 The blast cleaning nozzles will be equipped with an operating valve which must be held open manually. A support will be provided on which the nozzle may be mounted when it is not in use.

10.3 Compressed air will not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.

11. DEFINITIONS

11.1 Abrasive-A solid substance used in an abrasive blasting operation.

11.2 Abrasive blasting -The forcible application of an abrasive to a surface by pneumatic pressure, hydraulic pressure, or centrifugal force.

11.3 Abrasive-blasting respirator A respirator constructed so that it covers the wearer's head, neck, and shoulders to protect the wearer from rebounding abrasive.

11.4 Blast cleaning barrel -A complete enclosure which rotates on an axis, or which has an internal moving tread to tumble the parts, in order to expose various surfaces of the parts to the action of an automatic blast spray.

11.5 Blast cleaning room -A complete enclosure in which blasting operations are performed and where the operator works inside of the room to operate the blasting nozzle and direct the flow of the abrasive material.

11.6 Blasting cabinet -An enclosure where the operator stands outside and operates the blasting nozzle through an opening or openings in the enclosure.

11.7 Clean air -Air of such purity that it will not cause harm or discomfort to an individual if it is inhaled for extended periods of time.

11.8 Dust Collector -A device or combination of devices for separating dust from the air handled by an exhaust ventilation system.

11.9 Exhaust ventilation system -A system for removing contaminated air from a space, comprising two or more of the following elements (A) enclosure or hood, (B) duct work, (C) dust collecting equipment, (D) exhauster, and (E) discharge stack.

11.10 Particulate-filter respirator -An air purifying respirator, commonly referred to as a dust or a fume respirator, which removes most of the dust or fume from the air passing through the device.

11.11 Respirable dust- Airborne dust in sizes capable of passing through the upper respiratory system to reach the lower lung passages.

11.12 Rotary blast cleaning table -An enclosure where the pieces to be cleaned are positioned on a rotating table and are passed automatically through a series of blast sprays.