

SECTION 59

ABRASIVE BLASTING

1. PURPOSE AND SCOPE

- 1.1. This Safety Policy provides the minimum procedures to be followed when abrasive blasting activities are conducted.
- 1.2. This Safety Policy applies to all employees and on-site contractors involved in operations covered by the MAPP HS Program.
- 1.3. The requirements of this procedure are intended to provide protection for worker health and safety and the environment.

2. RESPONSIBILITIES

- 2.1. Superintendents responsible for employees performing work covered by this Safety Policy must:
 - 2.1.1. Confirm that each job has been properly evaluated for work hazards and for regulatory agency requirements.
 - 2.1.2. Ensure that evaluated hazards have been properly eliminated or will be controlled.
 - 2.1.3. Ensure that worker breathing zone and area industrial hygiene sampling, as appropriate, are conducted to verify effectiveness of controls and compliance with regulatory agency exposure limits.
 - 2.1.4. Ensure that personnel receive appropriate training, including required instruction set forth by regulatory agencies.
 - 2.1.5. Continuously monitor the work to assure compliance with this safety policy and governmental regulations.

3. DEFINITIONS

Abrasive Blasting	The forcible application of an abrasive to a surface by pneumatic pressure, hydraulic pressure, or centrifugal force.
Abrasive Blasting Respirator	A continuous flow airline respirator designed to cover the wearer's head, neck, shoulders, and upper torso.
Deadman Switch	A control, such as a valve or switch, that automatically interrupts air flow or hydraulic pressure to the blast nozzle when the operator's actuating force is removed.
NIOSH	National Institute for Occupational Safety and Health

4. PROCEDURE

4.1. GENERAL

- 4.1.1. To prevent accidental disengagement, nozzles must be externally attached to the hose by a fitting.
- 4.1.2. A "**deadman**" or automatic shut-off control valve must be used.
- 4.1.3. Blast nozzle shall be bonded and grounded to prevent static charges.

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- 4.1.4. When not in use, the nozzle should be mounted on a support (stand).
- 4.1.5. Pressure vessels used in blasting operations must be manufactured in accordance with the current edition of the ASME Boiler and Pressure Vessel Code or local (international) equivalent.
- 4.1.6. A change shed, or similar facility should be available in a dust free area for blasters to take breaks, eat lunch, etc.
- 4.1.7. Blasting shall be conducted in a specified location. A blasting zone (where dust is visible) shall be established and designated with signs around the perimeter of the area such as:

CAUTION
ABRASIVE BLASTING AREA
APPROVED EYE AND EAR PROTECTION
AND RESPIRATORS
MUST BE WORN IN THIS AREA

- 4.1.8. To provide protection to an optimal number of personnel, blasting may be done on an "off shift" when few employees are working.
- 4.1.9. Blasting should not be done when wind direction and velocity carry visible dust beyond the designated work area to personnel unprotected by proper respirators.
- 4.1.10. In case of a hose failure, a safety device, such as an excess-flow check valve, should be installed at the source of air supply or the branch line.

4.2. PERSONAL PROTECTIVE EQUIPMENT

- 4.2.1. Approved eye, face, and respiratory protection must be supplied to all personnel working in the vicinity of abrasive blasting operations.
- 4.2.2. Precaution must be taken to protect personnel, including the blasting operator, in the blasting zone from excessive noise exposure by supplying ear-plugs or ear-muffs.
- 4.2.3. Operators must be equipped with heavy canvas or leather gloves and aprons. Approved hard toe footwear shall also be worn.

4.3. RESPIRATORY PROTECTION

- 4.3.1. NIOSH-approved (or international equivalent) disposable respirators should be worn by all persons in the blasting zone. All persons within twenty feet of blasting nozzles for more than five minutes per hour should wear an air-supplied hood/respirator.
- 4.3.2. Respirators must be cleaned and inspected regularly. Maintenance records must be maintained.
- 4.3.3. If possible, air should be supplied from a breathing air compressor or fresh air system that is separate from that provided in the facility.

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- 4.3.4. The compressed air supplied to blasting respirators shall be Grade D, or better as specified by the Compressed Gas Association (CGA).
- 4.3.5. If facility air or an oil-lubricated compressor is used:
- A pressure reducing diaphragm or valve shall be installed to reduce pressure.
 - An automatic control shall be provided to either sound an alarm or shut off the compressor in the even of overheating or excessive carbon monoxide in the air.
 - If the air compressor does not have a properly operating in-line continuous carbon monoxide (CO) monitor, the air from the compressor must be tested manually (twice daily) by a competent individual. Test results must be documented and maintained.
 - Verify that inert gas is not used as a back-up gas supply for plant/facility air systems.

Lines and fittings to supply breathing air shall not be interchangeable with other services.

4.4. EQUIPMENT INSPECTION

- 4.4.1. Machines and hoses must be inspected frequently.
- 4.4.2. When not in use, hoods should be maintained and hung in an upright position to prevent dust and sand from spilling inside.

4.5. TRAINING

- 4.5.1. All employees engaged in abrasive blasting operations must be properly trained in accordance with this HSEP.
- 4.5.2. Additional training requirements applicable to this HSEP can be found in the HSEP 13.0 series for Personal Protection, and specifically HSEP 13.9, Respiratory Protection Program.

4.6. WORKER EXPOSURE

- 4.6.1. Abrasives and 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 shall be considered in making an evaluation of the potential health hazards.
- 4.6.2. Whenever hazardous substances such as dusts, fumes, mists, vapors, or gases exist or are produced in the course of construction work, their concentrations shall not exceed the limits specified in the "Threshold Limit Values of Airborne Contaminants - 1970" of the American Conference of Governmental Industrial Hygienists.
- 4.6.3. An industrial hygiene assessment shall be made to determine the need for worker exposure monitoring.
- 4.6.4. As appropriate, worker breathing zone and area industrial hygiene sampling shall be conducted to verify effectiveness of controls and compliance with regulatory agency exposure limits.
- 4.6.5. Compressed air greater than 30 psi shall not be used for the cleaning of personnel.

4.7. ENVIRONMENTAL

- 4.7.1. A state agency or local air pollution control authority may have regulations that affect

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abrasive blasting operations at the job site.

- 4.7.2. Common regulatory requirements include the need to control dust so as not to exceed an opacity limit or violate nuisance rules and the use of certified materials.
- 4.7.3. Dust control can be performed by wetting down the surfaces before and during dry abrasive blasting or by using wet blasting methods.
- 4.7.4. Abrasives used for dry blasting should not contain more than 1 percent crystalline silica.
- 4.7.5. Abrasives should not contain more than 0.1 percent antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, nickel, or tin. Spent abrasives containing toxic metals may require management as hazardous waste.
- 4.7.6. Wet blasting operations should not use chromate, nitrate, or nitrite as an inhibitor. The use of chromate is prohibited and the use of other inhibitors may require containment and treatment of the run-off.
- 4.7.7. Structures and surfaces painted before the late 1970s should be tested for the presence lead-based paint. Workers certified for lead work must perform the abrasive blasting of such structures. The resulting waste may also require management as a hazardous waste.

4.8. REFERENCES

- 29 CFR 1926.62, Lead, (d) (2)
- 29 CFR 1910.94, Ventilation, (a) Abrasive Blasting
- 29 CFR 1910.169, Air Receivers
- 29 CFR 1926.302, Power Operated Hand Tools, (b) (10)
- Compressed Gas Association (CGA) G-7 1988, Compressed Air for Human Respiration
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