ABRASIVE BLASTING

Applicable OSHA Standards: 29 CFR 1910.94

PURPOSE

To establish procedures outlining the safety requirements for abrasive blasting to protect our employees.

SCOPE

This procedure applies to all employees and subcontractors working within our controlled worksites. This Abrasive Blasting Procedure covers the minimum requirements to perform abrasive blasting.

INTRODUCTION

Abrasive blasting is primarily used for surface preparation of metal surfaces to prepare them to accept a coating or lining. This procedure covers the safety requirements pertaining to mechanical precautions, personal protective equipment, housekeeping and sanitation, administrative dust control methods, and respiratory protection.

PROGRAM

MECHANICAL PRECAUTIONS

• Machines and hoses should be inspected frequently and all parts showing excessive wear should be repaired or replaced.

• Nozzles should be externally attached to the hose by a fitting, which will prevent accidental disengagement.

• Lengths of hose should be joined by external metallic connectors. The connectors shall have pin-clips to prevent dis-engagement. Anti-whip arresters may be used between each connector.

• All Bull Hoses, from the compressor to the abrasive blast pot, shall have pin-clips and anti-whip arresters on each end.

• A remote control "deadman" valve must be provided. Electric deadmen shall be low voltage (12 volt DC) and have continuous wire or plug connections provided.
PERSONAL PROTECTIVE EQUIPMENT

- Operators should be equipped with heavy canvas or leather gloves and aprons. Safety shoes should also be worn.

- Eye, face, hearing and respiratory protection shall be supplied to all personnel working.

- Precautions shall be taken to protect personnel in the blasting zone including the blasting operator from excessive noise exposure by supplying and requiring the use of earplugs or muffs.

- Vortex tubes which cool the air supply to the blasters hood should be considered depending on season and exposure of the employee to heat sources.

HOUSEKEEPING AND SANITATION

- Good housekeeping practices should be followed in abrasive blasting operation to prevent slips, trips, and falls.

- A facility should be available for blasters to wash before eating and after blasting operations.

ADMINISTRATIVE DUST CONTROL METHODS

- Isolation
  1. As most of the blasting as possible should be done in a specified location. A blasting zone (where dust is visible) should be established and marked off with signs around the perimeter of the area such as:

   CAUTION

   Abrasive Blasting Area, Eye and Ear Protection and Respirators Must Be Worn In This Area.

  2. Blasting should not be done when wind direction and velocity carry visible dust to people unprotected by proper respirators.

- Enclosure
  1. Blasting of small objects should be done in an enclosure which is designed to specifically reduce the dust hazards.
RESPIRATORY PROTECTION

- Apron and dust collar, properly fitted and properly worn, shall be used by all persons blasting. In addition to the hood, blasters should also wear a disposable respirator when working in a high dust concentration. This would provide protection when the blasting operation has ceased and the blaster is removing the air supplied equipment or when merely taking a break.

- Abrasive-blasting hoods shall be worn by all abrasive-blasting operators -
  1. At all times,
  2. When working inside of blast-clean rooms,
  3. 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,

- Where concentrations of toxic dust dispersed by the abrasive blasting may exceed the limits set in paragraph 1919.93 OSHA and the nozzle and blast are not physically separated from the operator in an exhaust-ventilated enclosure.

- Particulate filter respirators, commonly referred to as dust-filter respirators, properly fitted, may be used for short, intermittent, or occasional dust exposure such as clean-up, 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. Respirators used shall be certified for protection against the specific type of dust.
  
  1. Dust-filter respirators may be used to protect the operator of outside abrasive-blasting operations where non-silica abrasives are used on materials having low toxicities.
  2. Dust-filter respirators shall not be used for continuous protection where silica sand is used as the blasting abrasive, or toxic materials are blasted.

- Maintenance
  
  1. Respirators should be cleaned daily. This can be accomplished by use of vacuum or water.
  2. Respirators should be kept in maximum operating condition at all times.
3. After their daily cleaning, respirators and hoods should be kept and hung in an upright position to prevent sand spilling inside.

- Air Supply and Air Compressors for Abrasive Blasting Hoods

1. Air supply shall be free of harmful quantities of dust, mists or noxious gases, and shall meet Grade D requirements.

2. The air from the regular compressed air line of a compressor unit may be used for the abrasive-blasting hood if:
   
   a. A trap and carbon filter is installed that will remove oil, water particulate and odor and is regularly maintained. A record of the maintenance of these filters should be kept.
   
   b. A pressure reducing diaphragm or valve is installed to reduce the pressure to requirements of the particular type of abrasive blasting respirator.
   
   c. An automatic control is provided to either sound an alarm or shut down the compressor in case of overheating.
   
   d. Periodic checks should be made to ensure low amounts of carbon monoxide, >10 ppm, are not being emitted to the worker.