Safety Bulletin Index - Abrasive Blasting

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INTRODUCTION

The following addresses the use of abrasive blast equipment for cleaning parts or surfaces. Safe use of abrasive blast equipment is based, in part, on knowing the composition of the material being removed. Many surface coverings contain hazardous levels of heavy metals, most notably lead. When the composition of material is unknown, the highest level of personal protective equipment shall be used.

Refer to Department Safety Bulletins on 'COMPRESSED BREATHING AIR' and 'LEAD' for additional information.

EQUIPMENT

Abrasive blast equipment shall be inspected before use. All fittings and hoses shall be in good condition and tightly attached.

Compressors shall deliver the volume and pressure of air required to perform work effectively and safely. Oil-lubricated compressors shall have an overheat sensor or carbon monoxide sensor if a respirator (other than air-supplied) is used in poorly ventilated areas. A regulator valve shall be used at the compressor, set to manufacturer specifications, to provide adequate air pressure to abrasive blast equipment.

The abrasive blast cleaning nozzle shall be equipped with an operating valve which must be held open manually.

The air intake shall be remotely located from all vehicle/equipment exhaust systems to ensure harmful emissions are not taken into the work area.

Contamination of inlet air to the compressor can adversely affect purifier performance. The compressor intake shall be located to avoid intake of contaminated air and to ensure air with adequate oxygen content.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Blasters shall be equipped with heavy canvas or leather gloves, and aprons or equivalent protection against impact of abrasives.

Abrasive blasting hoods shall be inspected for defects and in good condition before use.

Foot protection shall be worn where heavy pieces of work are handled.

Respiratory Protection

Composition of abrasive blast material can contribute to the hazards the blaster or other employees are exposed to:

Sand - silica quartz sand. Respiratory protection shall be used with sand.

Black Beauty - carbonized slag. Trace amounts of heavy metals are found in this product, and respiratory protection shall be worn.

Steel shot - Although not contributory to respiratory hazard by itself, field operations may involve exposure to hazardous materials (such as lead), and therefore require respiratory protection.

Hose length shall not exceed 300 ft. unless steps are taken to ensure that the respirator input pressure and volume are maintained at the specified value for the respirator used. Larger diameter supply hose from the compressor to the respirator hose manifold can provide higher volume. The simplest method to add length to the low pressure supply line is to provide output pressure higher than the pressure required by the respirator(s), and to provide a regulator at the respirator manifold to control and maintain correct respirator pressure to the respirator. An accurate pressure gauge should be located at the inlet to the respirator hose.

Electric compressors tend to have marginal capacity. Use of airline coolers and heaters (Vortex tubes) are to be avoided, because they cause airline pressure to drop below 6.0 Standard Cubic Feet Per Minute (SCFM). At or near 4.0 SCFM, the wearer can aspirate contaminants into the respirator through the face-to-respirator shield. This is especially true during periods of heavy physical activity.

Where helpers are used to assist the blaster, and/or other employees are working downwind or in close proximity to a blasting operation, PPE requirements shall be considered and implemented for all in the affected area if appropriate.

An air supplied respirator shall be used where hazardous materials are present in the work place (lead, silica). See Safety Bulletin SB-94-5 --- Compressed Breathing Air.

Properly fitting particulate filter respirators may be used for short, intermittent, or occasional dust exposures during clean-up, dumping of dust collectors, or unloading shipments of abrasives.

Eye and face protection shall be supplied to the blaster when respirator design does not provide such protection, and to any other personnel working nearby. Eye and face protection equipment shall conform to OSHA 1910.133.

Hearing protection shall be used by employees in close proximity to abrasive blasting operations. Hearing protection selected shall be compatible with other personal protective equipment worn.

Abrasive blasting in containments (confined spaces) shall require air-supplied respirators. Refer to SB-91-4 -- Confined Space Entry Policy & Procedures.

HOUSEKEEPING

For surface coatings that contain hazardous materials (heavy metals), blast material and debris shall be cleaned up by using dust-free methods. Wet clean-up methods and vacuum cleaners with High Efficiency Particulate Air (HEPA) filters are recommended.

When abrasive blasting is performed indoors, surfaces become contaminated with dust that may contain hazardous materials. Contaminated surfaces shall be cleaned to remove as much of this contamination as possible after each abrasive blasting operation.

Whenever possible, all surface coatings should be removed in a shotblast booth or outside, as it is difficult to completely capture and remove airborne dust within a building.

PERSONAL HYGIENE

Eating, drinking, and smoking shall be prohibited in areas where blasting is performed. Employees shall wash their face and hands before eating, drinking or smoking.

Dust accumulates in the eyebrows. Care should be taken to remove debris to prevent contaminants from entering the eyes.