Worker Safety

Abrasive Blasting PPE: The Best Ways to Best Protect Your Workers

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What is abrasive blasting PPE? How do you use it properly, and what are the regulations that safeguard your workers? Here's what you need to know about this vital protective equipment.

When it comes to abrasive blasting, no two jobs are the same. Whether you're removing paint from a surface or preparing an object for repair, each blasting operation is unique, with different surfaces, coatings, blast materials and working conditions.

What remains constant, however, is the need for good personal protection. Whatever job you're tackling, you should always be protected with the appropriate personal protective equipment (PPE) for the job at hand.

Abrasive blasting should always be undertaken with caution. Sometimes referred to as sandblasting, it is a common feature in many industries and is a method for cleaning the surface of a material or to remove a hard-to-shift coating that's stuck to the base material.

The process works by using pressurized air to blast tiny particles of an abrasive material—commonly silica, but other materials used include sand, crushed glass, coal or nickel slag, or steel grit—on to an item to smooth or roughen its surface. It can be performed in a blasting chamber or cabinet, inside an enclosed outdoor space, or in an open-air site.

All abrasive blasting methods require the use of PPE, but how much is required varies depending on the type of blast media selected and the environmental controls around the work location.

Minimizing Exposure to Hazardous Materials

In its "*Protecting Workers from the Hazards of Abrasive Blasting Materials*" fact sheet, OSHA recommends a number of engineering and administrative controls to follow when abrasive blasting.

These controls can prevent or reduce exposure to airborne hazards during abrasive blasting operations. When using the controls isn't sufficient to keep exposure to hazardous materials below permissible limits, OSHA says respiratory protection must be used.

Engineering controls:

1. Substitution

- Use an abrasive blasting material that OSHA considers "less toxic" whenever possible.
- Use abrasives that can be delivered with water (slurry) to reduce dust.

2. Isolation and containment

- Use barriers and curtain walls to isolate the blasting operation from other workers.
- Use blast rooms or blast cabinets for smaller operations.
- Use restricted areas for non-enclosed blasting operations.
- Keep coworkers away from the blaster.

3. Ventilation

- Use exhaust ventilation systems in containment structures to capture dust.

Administrative controls:

- Perform routine cleanup using wet methods or HEPA-filtered vacuuming to minimize the accumulation of toxic dust.
- Do not use compressed air to clean as this will create dust in the air.
- Clean and decontaminate tarps and other equipment on the worksite.
- Schedule blasting when the least number of workers are at the site.
- Avoid blasting in windy conditions to prevent the spread of any hazardous materials.

Personal hygiene practices:

- Prohibit eating, drinking or using tobacco products in blasting areas.
- Provide wash stations so workers can wash their hands and face routinely and before eating, drinking, or smoking.
- Vacuum or remove contaminated work clothes before eating, drinking or smoking.
- Provide accommodations for end-of-shift showers and change areas with separate storage facilities for street clothes, protective clothing and

equipment.
- Keep contaminated clothing and equipment out of the clean change area.

In the end, employers play a significant role in protecting workers from the hazards of abrasive blasting. They do so by providing proper PPE, and by keeping facilities clean to avoid overexposure to the toxic metals that may be generated from both the blasting material and the underlying substrate and coatings that are blasted.

Read more: PPE Selection: Find the Right Type of Respirator

While abrasive blasting is very effective for removing paint and other materials, it can also be very hazardous. Potential dangers include slips, trips and falls from elevated locations, hearing damage, or injuries to eyes or feet.

Respiratory damage is also a major concern. Dusty environments can lead to lung damage, which can have a detrimental impact on a worker's health and may even prove fatal. When a surface material is blasted, the dust produced may aerosolize toxic materials, such as lead paint. The materials used for the blasting itself are also potentially hazardous. Inhaling silica, for example, can lead to silicosis, lung cancer and breathing problems for exposed workers.

Abrasive Blasting and Worker Safety

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The Occupational Safety and Health Administration (OSHA) sets ***PPE standards*** for dry abrasive blasting, which is when an abrasive material is applied to an object under dry, pressurized conditions.

Abrasive blasting PPE is designed to shield the user's respiratory system, vision and hearing, and includes eye, face and hearing protection, leather gloves and aprons (or coveralls), plus safety shoes or boots. Nylon blast suits are lightweight and durable, and they are designed to protect the wearer from any abrasive material that is forced back at the worker, while also keeping the worker cool in hot climates.

Read more: Reusable vs. Disposable PPE: Why Switching to Gear You Can Reuse Makes Good Financial Sense

When it comes to respiratory protection, OSHA says abrasive blasting operators should use respirators certified by the ***National Institute for Occupational Safety and Health*** to provide protection from the dust produced during the blasting process. An abrasive-blasting respirator must cover the wearer's head, neck and shoulders to provide protection from rebounding abrasive. These types of protective respirators are often supplied with clean air from a location far from the blast site to make sure the worker is not breathing in dust particles. OSHA also notes that support personnel involved in cleanup and other related activities may need respiratory protection, too.

Exposure to the high levels of noise produced by the blasting may result in permanent hearing loss in unprotected workers and others close to the blasting process. Other sources of noise are the supply air inside the operator's helmet, air compressors and exhaust ventilation systems. To protect workers'

hearing, employers must limit the frequency and duration of exposure and provide hearing protectors, as well as worker noise monitoring, audiometric testing, training and recordkeeping.

Hearing protection can come in the form of "in-ear" protection: typically a small piece of foam that is compressed and inserted into the ear, or earmuff-style "over-ear" protection that covers the entire ear to shield it. The one you use will depend on the decibel level of the noise environment. The Centers for Disease Control and Prevention (CDC) has ***a detailed resource page*** with information related to abrasive blasting, including ***a page on choosing hearing protection***.

OSHA requires that employers inspect each worksite prior to starting a job to determine what hazards exist and ***what PPE, if appropriate, is necessary***. Employers must also supply workers with the appropriate equipment and make sure those workers are trained appropriately so that they understand what type of PPE is necessary, how to properly don and doff it, how to adjust and wear the PPE, its limitations, and ***the proper care, maintenance, useful life and disposal of the PPE***. Employers should also "train all workers involved with abrasive blasting on health and safety hazards how to use engineering controls, personal hygiene practices, and safe work practices."

What steps are you taking to maximize worker safety when abrasive blasting? Share your thoughts in the comments below.