Procedure: Abrasive blasting

Purpose

This procedure describes how abrasive blasting activities at the University are to be managed. This procedure ensures the legal and other obligations of the *Work Health and Safety Act, 2011* (Cth) and *Work Health and Safety Regulations, 2011* (Cth) the *Safety, Rehabilitation and Compensation Act, 1988* (Cth) *(SRC Act)* are defined for managing the health and safety of workers at the University. This procedure is linked to the University's Work health and safety policy and is one of the Safe Work Procedures within the WHS Management System.

Definitions

Abrasive blasting means propelling a stream of abrasive material at high speed against a surface using compressed air, liquid, steam, centrifugal wheels or paddles to clean, abrade, etch or otherwise change the original appearance or condition of the surface.

Competent person means a person who has acquired, through training, qualifications, experience, or combination of these, the knowledge and skill enabling the person to inspect, operate, test or repair machinery/equipment or installations of plant.

Induction is a term used to describe a set of minimum training and information that when completed gives that person an authority to enter an area.

Personal Protective Equipment (PPE) refers to the lowest tier of safety protection in hazard management. Examples include protective footwear, gloves and clothing. PPE is selected on the basis of giving a measure of protection from a given hazard that is present to the worker.

Procedure

Scope

1. This procedure details the processes to be followed when undertaking all abrasive blasting activities at the University. Abrasive blasting is generally performed in enclosed environments like blasting chambers or cabinets, or on open sites, for example on buildings, bridges, tanks, boats or mobile plant.

General

2. Abrasive blasting uses compressed air or water to direct a high velocity stream of an abrasive material to clean an object or surface, remove burrs, apply a texture, or prepare a surface for the application of paint or other type of coating. Employers must protect workers from hazardous dust levels and toxic metals that may be generated from both the blasting material and the underlying substrate and coatings being blasted.

3. Abrasive blasting processes involve hazardous substances, dust, noise, particulate matter, abrasive blasting equipment and plant. General hazards associated with abrasive blasting processes include manual tasks, working in confined spaces, working at heights, slips, trips and falls, vibration and heat.

Responsibilities

4. College Deans, Research School and Service Division Directors, or their nominees, responsible for engaging staff or contractors to undertake abrasive blasting are responsible for ensuring:

- The provision of induction training to abrasive blasters and support staff on blasting health and safety hazards, how to use controls, personal hygiene practices, safe work practices and the use of PPE and respirators.
- Manufacturers provide appropriate health hazard information on the blasting materials on safety data sheets (SDS) as required under the WHS Hazard management procedure.
- A health surveillance program is implemented for staff where respirators are used in abrasive blasting activities.

5. Workers undertaking abrasive blasting activities are responsible for:

- ensuring that they obtain and read the manufacturer's SDS for health hazard information on the abrasive blasting material being used; and
- completing, reading and acknowledging the hazard assessments, applicable risk controls and any safe work method statements (SWMS) developed, before commencing abrasive blasting activities.

Hazards

6. The hazards associated with abrasive blasting involve the nature of the cleaning substance, the nature of the substances being removed and the circumstances in which cleaning takes place.

7. Hazards involving abrasive blasting are the similar to those presented with the use

of plant in addition to those related to the high speed propelled abrasive stream used with abrasive blasting. Potential health risks associated with abrasive blasting include, but are not limited to the following:

- Inhalation: Breathing in small particles of dust can scar lung tissue. Silica dust can cause silicosis (stiffening and scarring of lungs). This creates shortness of breath, coughing and chest pain. Lead dust can result in lead poisoning.
- Noise and vibration: Noise exposure can result in permanent hearing damage. With prolonged use of abrasive blasting equipment, vibration can cause persistent microscopic damage to nerves and blood capillaries. Refer to the Noise management procedure.
- Manual handling: Manual handling tasks can result in strains, sprains, fractures, dislocations, bruises and overuse injuries.
- Slips, trips and falls: Slips, trips and falls can cause injuries to arms, legs and the head.
- Confined spaces: Working in confined spaces can result in burns, crush injuries, electrocution, suffocation, poisoning, brain damage and death. Refer to the Confined space safety procedure.
- Heat stress: When a person is subjected to heat, it can result in heat stress, discomfort, irritability, dehydration, reduced concentration, heat-rash, reduced tolerance to chemicals and noise, heat cramps, heat exhaustion and heat stroke.
- Abrasion: Abrasion of body parts and/or eye damage.

Hazard assessment

8. Each abrasive blasting operation is unique, involving different surfaces, coatings, blast material, and working conditions. The person responsible for the workplace is required to undertake a hazard identification and assessment using a targeted process. This process needs to be considered from the moment of purchase through to disposal considering factors such as the hiring of abrasive blasting devices; installation and commissioning of abrasive blasting devices; instruction, training and supervision of workers; usage of abrasive blasting devices in the workplace; inspection and storage of abrasive blasting devices; and the decommissioning and dismantling of abrasive blasting devices.

9. The use of engineering and administrative controls, PPE, including respiratory protection, and training to protect workers involved in abrasive blasting activities is to be considered in mitigating identified risks.

Risk controls

10. Engineering controls, such as substitution, isolation, containment, and ventilation are the primary means of preventing or reducing exposures to hazards during abrasive blasting operations. Administrative controls, including the use of good work and personal hygiene practices, can also reduce exposure.

Engineering controls

11. Substitution controls includes:

- using a less toxic abrasive blasting material; and/or
- using abrasives that can be delivered with water (slurry) to reduce dust.

12. Isolation and containment controls includes:

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

13. Ventilation controls includes:

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

Administrative controls

14. Performing routine clean up using wet methods or high-efficiency particulate arrestance (HEPA), filtered vacuuming to minimize the accumulation of toxic dusts. Additional clean up considerations include:

- 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; and
- avoid blasting in windy conditions to prevent the spread of any hazardous materials.

Personal hygiene practices

15. The following personal hygiene controls should be implemented by workers:

- prohibit eating or drinking in blasting areas;
- provide wash stations so workers can wash their hands and face routinely and before eating or drinking;
- vacuum or remove contaminated work clothes before eating or drinking;

- provide accommodations for end-of-shift showers and change areas with separate storage facilities for street clothes, protective clothing and equipment; and
- keep contaminated clothing and equipment out of the clean change area.

Respiratory protection

16. When engineering and administrative controls cannot maintain exposure to hazardous materials below permissible exposure limits, respiratory protection is required.

17. An abrasive-blasting respirator must cover the wearer's head, neck, and shoulders to protect the wearer from rebounding abrasive. Workers must use only respirators that have been designed to meet the requirements of respiratory protection in abrasive blasting operations.

18. Staff, including contractors, involved in clean-up and other related activities may also need respiratory protection.

Personal Protective Equipment

19. Providing PPE for workers undertaking abrasive blasting activities is the responsibility of the College Dean, Research School or Service Division Director engaging the workers. PPE for abrasive blasting activities may include:

- hearing protection;
- eye and face protection;
- helmet;
- leather gloves that protect to full forearm and aprons (or coveralls); and
- safety shoes or boots.

Licencing requirements

20. Certain kinds of abrasive blasting devices may require a licence from Comcare to operate. Some high-risk devices must also be registered with Comcare and may require a separate high-risk work licence. Refer to the high risk work procedure for further information. Further information is also accessible on the Comcare web page.

Training

21. There are no training requirements for this procedure.

Sources

Legal and other requirements
Work Health and Safety Act, 2011 (Cth)
Work Health and Safety Regulations, 2011 (Cth)
Work Health and Safety (Abrasive Blasting) Code of Practice 2015

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