



# Abrasive Blasting and Spray Painting Safety



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# Abrasive Blasting and Spray Painting Safety



## TABLE OF CONTENTS

<b>1.</b>	<b>INTRODUCTION.....</b>	<b>3</b>
<b>2.</b>	<b>REFERENCE DOCUMENTS .....</b>	<b>3</b>
2.1	REGULATIONS AND CODES OF PRACTICE .....	3
2.2	CSBP STANDARDS AND GUIDES .....	3
2.3	NATIONAL OCCUPATIONAL HEALTH AND SAFETY COMMISSION PUBLICATIONS .....	4
2.4	AUSTRALIAN STANDARDS.....	4
<b>3.</b>	<b>GENERAL REQUIREMENTS .....</b>	<b>4</b>
3.1	EQUIPMENT .....	4
3.2	COMPRESSED AIR.....	4
3.3	JOB SAFETY ANALYSIS (JSA).....	4
3.4	WORK PERMITS .....	4
3.5	PERSONAL PROTECTIVE EQUIPMENT (PPE).....	5
3.6	PROTECTION OF PLANT AND EQUIPMENT .....	5
3.7	HIGH PRESSURE WATER BLASTING.....	5
<b>4.</b>	<b>ABRASIVE BLASTING.....</b>	<b>5</b>
4.1	ASBESTOS .....	5
4.2	DRY ICE BLASTING .....	5
4.3	LEAD-BASED PAINT .....	6
4.4	BLASTING TEAM .....	6
4.5	CONTROLS .....	6
<b>5.</b>	<b>SPRAY PAINTING .....</b>	<b>8</b>
5.1	MATERIAL SAFETY DATA SHEETS.....	8
5.2	WARNING SIGNS .....	8
5.3	OVERSPRAY .....	9
5.4	VENTILATION .....	9
5.5	CONTROLS .....	9



## 1. INTRODUCTION

Worksafe Codes of Practice for Abrasive Blasting and Spray Painting contain extensive safety information applicable to these tasks. Compliance with all the safety precautions described in these Codes of Practice is required for all spray painting and abrasive blasting carried out on CSBP facilities.

This guide manual describes the control measures and safe working requirement that are specific to CSBP's facilities and must be read in conjunction with the Worksafe Codes of Practice. In some cases, the requirements of this guide manual are more stringent than the Codes of Practice.

All personnel directly involved in the work of spray painting or abrasive blasting shall read and understand the applicable Worksafe Code of Practice and this guide manual before commencing spray painting or abrasive blasting work.

## 2. REFERENCE DOCUMENTS

### 2.1 REGULATIONS AND CODES OF PRACTICE

Occupational Safety and Health Regulations 1996: Part 3, Division 9, Subdivision 4, "Spray Painting".

Occupational Safety and Health Regulations 1996: Part 3, Division 9, Subdivision 5, "Abrasive Blasting".

Worksafe Code of Practice for Spray Painting

Worksafe Code of Practice for Abrasive Blasting

Worksafe Code of Practice for Manual Handling

### 2.2 CSBP STANDARDS AND GUIDES

[WCEF-PD-OHS-090-02](#) WesCEF Health Surveillance and Biological Monitoring

[CSBP-GM-10-020-04](#) Contractor's Site Instructions

[CSBP-GM-11-031-01](#) Personal Protective Equipment

[CSBP-GM-11-031-02](#) Working at Height

[CSBP-GM-11-031-18](#) Hydrojetting Safety

[CSBP-GM-11-031-23](#) STOP and Job Safety Analysis Risk Assessment

[CSBP-GM-11-031-39](#) High Pressure Water (Hydro) Jetting Systems

[CSBP-GM-11-031-51](#) Work Permit System

[CSBP-GM-11-031-52](#) Confined Spaces

[CSBP-GM-11-038-04](#) Elevated Work Platforms



- [CSBP-ES-14-102-13](#) Surface Treatment of Lead-based Coatings  
[CSBP-GM-11-031-22](#) Compressed Air Safety

## 2.3 NATIONAL OCCUPATIONAL HEALTH AND SAFETY COMMISSION PUBLICATIONS

- NOHSC 1012 National Standard for the Control of Inorganic Lead at Work  
NOHSC 2015 National Code of Practice for the Control and Safe Use of Inorganic Lead at Work

## 2.4 AUSTRALIAN STANDARDS

- AS4361 Guide to Lead Paint Management  
Pt 1 : Industrial Applications  
AS 1715 Selection, Use and Maintenance of Respiratory Protective Devices.

## 3. GENERAL REQUIREMENTS

The following general requirements apply to both abrasive blasting and spray painting work.

### 3.1 EQUIPMENT

All equipment including ladders, scaffold, compressors, electrical and pneumatic equipment shall be properly maintained, in good condition and used in strict accordance with any safety regulations applicable to that equipment.

### 3.2 COMPRESSED AIR

Particular care must be taken when working with compressed air and air compressor equipment. Refer to CSBP Guide Manual *Compressed Air Safety* ([CSBP-GM-11-031-22](#)).

### 3.3 JOB SAFETY ANALYSIS (JSA)

Prior to the commencement of any abrasive blasting or spray painting operations, the personnel directly involved shall complete a JSA. A copy of the JSA shall be provided to the Responsible Officer for review and approval prior to commencement of the task. Refer to CSBP Guide Manual for *STOP and Job Safety Analysis Risk Assessment* ([CSBP-GM-11-031-23](#)) for details.

For large abrasive blasting or spray painting jobs where there may be a higher level of hazards, a Team Based Risk Assessment may be required. Refer to CSBP Guide Manual *Team Based Risk Assessment* ([CSBP-GM-11-030-02](#)) for details.

### 3.4 WORK PERMITS

A CSBP Work Permit is required prior to the commencement of any abrasive blasting or spray painting work done on site. Work Permits will be issued in accordance with CSBP Procedure *Work Permit System* ([CSBP-GM-11-031-51](#)).

## 3.5 PERSONAL PROTECTIVE EQUIPMENT (PPE)

All PPE used shall be an approved and acceptable quality complying with CSBP Guide Manual *Personal Protective Equipment* ([CSBP-GM-11-031-01](#)) and appropriate for the task being performed.

As required, the following PPE shall be used in addition to normal site protective equipment.

- mono-goggles with elastic strap
- full face shield fitted to hat
- leather or rubber gauntlets
- suitable full body cover
- hearing protection
- blasting hood with breathing air supply
- canister or other respiratory protection

## 3.6 PROTECTION OF PLANT AND EQUIPMENT

Equipment such as electric motors, instruments, etc, shall be suitably protected to prevent possible damage caused by ingress of dust or overspray. All equipment labels, signs, instruction plates, etc that could be damaged by abrasive blasting or spray painting operations shall be covered while the work is in progress.

## 3.7 HIGH PRESSURE WATER BLASTING

High pressure water blasting shall be carried out in strict compliance with the safety and operational requirements specified in the CSBP Guide Manual *Hydrojetting Safety* ([CSBP-GM-11-031-18](#)) and *High Pressure Water (Hydro) Jetting Systems* ([CSBP-GM-11-031-39](#)).

# 4. ABRASIVE BLASTING

## 4.1 ASBESTOS

Abrasive blast cleaning shall not be used on surfaces containing asbestos.

Care must be taken to ensure that the blasting media stream from the blasting nozzle does not inadvertently hit any material containing asbestos which could release asbestos fibres. Where the risk of this has been identified, protective covers must be fitted over the asbestos material prior to work commencing.

## 4.2 DRY ICE BLASTING

Dry ice blasting (also known as CO<sub>2</sub> or carbon dioxide blasting) must not be used on vessels or surfaces that contain or have contained sodium cyanide. Carbon dioxide reacts with sodium cyanide to form hydrogen cyanide gas.



## 4.3 LEAD-BASED PAINT

Lead-based paint was commonly applied as a protective coating to steelwork in CSBP's facilities before about 1985. Removal of lead-based paint coatings requires special precautions to protect people and the environment.

Lead-based paint is defined as a paint film or component of a coating system containing lead or lead compounds, in which the lead content (calculated as lead metal) is in excess of 1.0% by weight of the dry film.

Where any existing paint coating is to be removed by abrasive blasting, the existing coating shall be subject to sampling, testing and analysis in accordance with AS 4361.1 for presence of lead. Refer to CSBP Engineering Standard *Surface Treatment of Lead-Based Coatings* ([CSBP-ES-14-102-13](#)) for further details.

Where the presence of lead in the coating is confirmed, all further work associated with removal of the coating shall be subject to detailed assessment of work method, safety precautions and environmental controls necessary before any work proceeds. A team based risk assessment shall be performed for all abrasive blasting operations involving removal of lead-based paint coatings.

Careful attention must be paid to health monitoring of personnel directly involved in the blasting operations. Refer *WesCEF Health Surveillance and Biological Monitoring* ([WCEF-PD-OHS-090-02](#)) for further details.

The method for controlling the collection of abrasive blasting residue containing lead must be well planned and carefully managed. In particular, water residue from wet blasting of lead based paint must not be allowed to run uncontrolled down drains.

## 4.4 BLASTING TEAM

All abrasive blasting activity shall be carried out by a team of at least two people.

The Blasting Operator is the person actually holding and directing the blasting nozzle or spray gun during the abrasive blasting or spray painting operation.

The Blasting Assistant is the person who supports the blasting operator while the abrasive blasting operation is in progress. The role of the Blasting Assistant is to :

- a. start up, maintain and shut down supply of compressed air or blasting media to the blasting operator as required,
- b. act as a safety observer for the blasting operator and to provide assistance in an emergency situation.

## 4.5 CONTROLS

The following general rules apply to the control of abrasive blasting:

- Wet blasting, using garnet, shall be used whenever possible.

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**Note:** Abrasive material containing Silica shall not be used.

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- Dry abrasive blasting shall only be carried out by an approved contractor, or by competent CSBP personnel for small, in-house operations.
- Dry abrasive blasting shall be done outside normal working hours, unless special arrangements are made and the area can be effectively isolated.
- An exclusion zone shall be established at least 50m around all dry abrasive blasting operations. The area shall be barricaded off and signs posted to exclude non-authorised personnel from entering the work area. If the 50m exclusion zone cannot be established, screening shall be erected around dry abrasive blasting to prevent dust escaping from the immediate work area.
- Long sleeved shirt and trousers or overalls and appropriate safety equipment, that is blasting hood and disposable overalls, gloves, safety footwear, hearing and respiratory protection shall be worn. Disposable overalls shall have elasticised or be taped at the ankles, cuffs and collar to exclude grit and dust. All personnel in the vicinity of the operations shall wear goggles for eye protection.
- Appropriate hearing protection and respiratory protection shall be worn by all personnel involved and anyone working nearby.



**THE NOISE FROM ABRASIVE BLASTING MAY PREVENT PERSONNEL FROM HEARING EMERGENCY ALARMS. AN ACTION PLAN, TO ALERT THOSE INVOLVED, SHALL BE FORMULATED BEFORE WORK STARTS.**

- Where respiratory protection is required, a dedicated supply of breathing air shall be provided for the operator.



**PLANT AIR SHALL NOT BE USED ON ANY PROCESS ASSOCIATED WITH ABRASIVE BLASTING OR INDUSTRIAL COATING (BREATHING, BLASTING OR PAINTING).**

- The blasting operator shall have direct control of the flow of abrasive material through the nozzle. A positive, fast acting emergency cut-off device (dead man control) shall be fitted at the nozzle end of the abrasive blasting hose to automatically cut off the flow of abrasive material from the blast pot if the person operating the nozzle becomes unable to control the flow of abrasive material through the nozzle.

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**Note:** Flow control using a manually operated ball valve or similar worn on the blasting operator's belt is not automatic and is not acceptable as an emergency cut-off device.

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## Abrasive Blasting and Spray Painting Safety



- All possible precautions shall be taken to limit the drift of dust. Wind direction and changes in wind direction shall be considered.
- Other personnel working in the area shall be notified.
- Short-term entry into the exclusion zone is acceptable if appropriate respiratory protection and hearing protection is worn.
- Abrasive blasting equipment (including the nozzle) shall be grounded to prevent static electricity build up.
- The hose shall not pass near hazardous areas, since sparks caused by static build up could ignite flammable vapours.
- The area shall be cleaned and damped down at the end of each work day to prevent the risk of:
  - dust contamination,
  - inhalation of respirable dusts,
  - eye injuries,
  - equipment damage, and
  - blocked drains.
- Washing facilities shall be provided.
- Abrasive blasting residue shall be cleaned up daily.

## 5. SPRAY PAINTING

### 5.1 MATERIAL SAFETY DATA SHEETS

Material Safety Data Sheets (MSDS) showing the health and safety precautions to be taken during application of coating materials shall be provided to CSBP's Safety and Hygiene Adviser for review prior to any spray painting work commencing. Copies of all relevant MSDS's shall be provided for all materials including cleaning and preparation solvents, thinners and coating materials.

### 5.2 WARNING SIGNS

At any time spray painting operations are planned, warning signs shall be erected around the work area and at the entrance to the site and to all car parking areas to clearly indicate that painting is in progress. The signs shall remain visible throughout the entire period that spray-painting operations are in progress. The signs shall be covered or removed when spray painting is not being carried out.





## 5.3 OVERSPRAY

During spray painting operations, every reasonable precaution shall be taken to eliminate the likelihood of paint overspray drifting outside the immediate area of work, which could cause damage to CSBP's and private property. Measures such as warning signs, weather and wind direction monitoring, encapsulation, etc, must be considered.

No spray application of paint coatings shall proceed if the wind speed and direction will carry overspray outside the site boundary fence or into designated car parking areas on or around the site. Wind speed and direction shall be frequently monitored at a number of locations around the work area using an appropriate measuring instrument to determine if it is safe to continue spray painting.

In windy conditions where overspray damage is likely to occur, coatings shall be applied by some other means such as by roller, subject to the approval of the Superintendent.

## 5.4 VENTILATION

All spray painting work shall be carried out with adequate ventilation or with appropriate protection so as to remove and disperse solvent vapours and dust particles, avoid fire and explosion, ensure safety of personnel and provide a safe working environment. Fans supplying fresh air shall be provided to all work areas where natural airflow is restricted.

## 5.5 CONTROLS

The following general rules apply to the control of spray painting:

- Before spray painting operations commence, an assessment of the work and the area in which the work is to be performed shall be conducted, to identify possible hazardous conditions that may arise. All personnel shall complete a Take 5 personal risk assessment before work starts.
- Other personnel in the working area shall be informed and a work permit obtained.
- An exclusion zone shall be established around the work area or the area shall be screened off.
- Hoses that are being used at height shall be securely fastened.
- Spray painting pressures shall not exceed the maximum specified by the manufacturer.
- The spray gun and the pressure source shall be connected to an earth bonding system to prevent the build-up of static electricity.
- Pressure paint containers shall be hydrostatically tested according to statutory requirements. Containers shall be equipped with a pressure gauge and relief valve. The relief valve shall be tested before the container is used.
- Paint shall not be applied near switchboards, transformers, electrical equipment, or in the vicinity of electric lights, due to the risk of ignition.
- Equipment identification plates, working pressure plates and safety signs shall be kept clean, readable and not obscured by paint.



## Abrasive Blasting and Spray Painting Safety



- Paint and solvent soaked rags shall be placed in fireproof metal containers to prevent the risk of spontaneous combustion.
- Thinners and solvents shall be stored on the work site in small quantities in approved containers. The quantity of paint shall not exceed one day's usage.
- Surfaces over 200°C shall not be painted, as the paint spray may ignite.
- Personnel involved in spray painting operations shall be provided with appropriate respiratory equipment in accordance with AS 1715, and trained in its use.
- Approved canister type masks or other appropriate respiratory protection devices shall be worn by trained operators and others in the vicinity.
- When working at height, an approved work platform shall be used and the area below marked with warning notices.
- Caution notices, warnings and precautions detailed on manufacturer's coating and material labels and data sheets shall be strictly observed.