Coal Services

Standing Dust Committee Information Bulletin

Airborne Dust Control

Planning for Underground Spraying Activities

The Standing Dust Committee (SDC) has recently observed several dust exceedances for workers conducting ventilation control device (VCD) and strata stabilisation spraying activities. On investigation and review, most of these exposures could have been prevented if site setup and task ventilation standards had been more clearly communicated and followed.

When planning spraying activities, many NSW underground coal operations have developed what is commonly referred to as an 'Authority to Spray' or 'Permit to Spray'. These documents underpin good planning and set the standards that support a safe and healthy work environment when conducting these types of tasks.

Poor site setup has been identified as one of the leading contributing factors resulting in unacceptably high dust exposures. Site setup, ventilation requirements and housekeeping standards, as well as construction specifications, should all be considered when developing and/or reviewing your current arrangements.

A review of 2019 dust results showed that 12.5% of workers exceeded the inhalable dust workplace exposure standard when loading product into the hopper or operating the spray nozzle.

The SDC strongly believes all occupational lung disease is 100% preventable.

The intent of this bulletin is to share good practice dust exposure controls and standards currently in use across NSW underground coal mines. Attached information and examples should be considered in conjunction with other relevant hazard and control information identified through site risk assessments. The use of an 'Authority to Spray' or 'Permit to Spray' document is encouraged to ensure that required controls and standards are clearly communicated, validated, documented and reviewed as required.

The following attachments are included in this bulletin:

Attachment 1 – A "good practice considerations" check sheet that can be used to develop and/or review current spraying documentation and processes.

Attachment 2 - Examples of 'Authority to Spray' and 'Permit to Spray' currently in use at NSW coal mines

Attachment 1 – Good practice considerations for developing and/or reviewing product spraying standards

The following checks underpin good planning and set the standards that support a safe and healthy work environment when preparing and conducting product spraying. An accompanied site sketch, detailing ventilation requirements and equipment positioning should also form part of effective planning, communication and dust control.

Suggested documentation check / audit items		Items for consideration during development / review
Site Set Up and Preparation		
Documentation includes spraying product details and PPE requirements	☐	• Detail PPE requirements • Workers have been fit tested and trained in RPE use • Hazards identified i.e. Respirable Crystalline Silica and/or inhalable dust
Documentation includes site set up and product / equipment positioning requirements with pre-spraying sign off / confirmation	☐	• Product and pump positioned as per sketch. Is pump positioned in front of operator in relation to ventilation flow • Pump controls located up-wind • Bag bin such as empty bulk bag available and positioned for 'one touch' disposal of empty bags • Work area hosed down. Roof, ribs and existing structures within 2 metres either side of the installation site hosed down
Documentation includes pre-use pump servicing requirements detailed with pre-spraying sign off / confirmation	☐	• Pump has been serviced and cleaned before use to eliminate preventable dust leakage. • Post maintenance commissioning checks completed including performance testing of equipment • Pump pads checked and replaced if worn. • Spare pads delivered with pump

Suggested documentation check / audit items		Items for consideration during development / review
Site Set Up and Preparation		
Documentation includes operator positioning requirements	☐	• No-go area down-wind of pump established
Documentation includes operator competency requirements	☐	• Operators trained in pump operation • Operators trained in spray nozzle maintenance including how to identify and deal with erosion and wear, corrosion, clogging and caking. • Operators trained in identifying all potential dust sources from pump including leakage from seals, shrouds and hoods. • Operators fit tested and trained in P2 RPE use
Ventilation Documentation includes clear instruction detailing site setup ventilation standards	☐	• Brattice wings erected as per sketch – to direct fresh air over operators. • Is the ventilation setup effectively clearing dust generated from bag handling and at the pump, away from workers breathing zone? • Air on return side of nozzle operator set up to report directly into return
In-shift Validation of Controls Documentation includes measurable and observable lead indicators to verify ventilation setup is controlling any airborne dust as intended	☐	• Has area been inspected for adequate ventilation. Air velocity over pump is > 0.5m/s • Dust generated at nozzle reporting to return airway if possible • At start up, visually verify any dust generated at nozzle is adequately clearing – if not, stop and adjust wing. • At start up, visually verify any dust generated at pump is adequately clearing – if not, stop and adjust wing.

Attachment 2 – Examples of 'Authority to Spray' and 'Permit to Sprays' currently in use at NSW coal mines

Example A

Ventilation Control Device Work Permit

Date of Permit Issue: _____ Required Completion Date: _____

Panel : _____ Hdg(s) and CT(s): _____

1. TYPE OF WORK

- ☐ Installation
- ☐ Removal
- ☐ Repair
- ☐ Adjustment

2. TYPE OF VENTILATION CONTROL DEVICE

STOPPING
- ☐ Double
- ☐ Single
- ☐ Flexible Sheet
- ☐ Shotcrete
- ☐ Brick. Type:
- ☐ Fibreboard
- ☐ Generic Plan obtained from Undermanager's Office

SPECIAL
- ☐ Regulator
- ☐ Bulkhead Seal
- ☐ Crem Seal
- ☐ Overcast

MACHINE DOORS
- ☐ Double
- ☐ Single
- ☐ Standard
- ☐ Pneumatic
- ☐ Flexi Roller
- ☐ Bobcat

OTHER
- ☐ _____
- _____
- _____
- _____
- _____
- _____
- _____
- ☐ Specific plan obtained from Ventilation Officer.

3. MAN ACCESS
- ☐ Man door w/- Relief Slider
- ☐ Man door w/- Lever Latch
- ☐ Sliding Door
- ☐ Prefabricated Airlock
- ☐ Not Required

4. SEALING
- ☐ Sprayed Shotcrete (MasterRoc)
- ☐ Flexible TSL (MasterSeal)
- ☐ Plaster
- ☐ Packing
- ☐ Not Required

5. PRESSURE RATING
- ☐ 2 PSI
- ☐ 5 PSI
- ☐ 7m+ Water
- ☐ Other:
- ☐ Not Rated

6. PLAN OF SET-UP FOR SPRAYING

- ☐ Dust will report to return?
- ☐ Areas inbye of spraying will not be affected?
- ☐ Activity is on WMS? OR, Undermanager notified?

TO BE FILLED OUT PRIOR TO COMMENCING WORK

I understand the scope of work that is to be completed under my supervison:

Signature: _____ (Deputy / Leading Hand) **Date:** _____

Authority is hereby given to undertake the planned VCD work as per this Permit:

Signature: _____ (Ventilation Officer / Authorised Delgate) **Date:** _____

Ventilation Control Device Work Permit

Date of Permit Issue: _____ Required Completion Date: _____

Panel : _____ Hdg(s) and CT(s): _____

7. AUDIT OF INSTALLATION STANDARD

Depth gauges fitted to VCD: Y or N

Length	Number
☐ 2psi (100mm)	
☐ 5psi (150mm)	

Cross sectional area: _____ m (high)

_____ m (wide)

Details to include location of VCD, thickness of spray (if applicable), size of pipes (if any), condition of roof and ribs and any obvious signs of leakage or damage

PLAN OF THE VCD

TO BE FILLED OUT FOLLOWING THE COMPLETION OF WORK

The VCD work has been completed for this Permit and to site/specific standard:

Signature: _____ (Deputy / Leading Hand) Date: _____

PERMIT FORM TO BE RETURNED TO VENTILATION OFFICER

Signature: _____ (Ventilation Officer / Authorised Delgate) Date: _____

Comment: _____

Survey plans need to be updated in accordance with VCD changes:

ALL WORK IS TO BE CARRIED OUT AS PER SWP OR JSA FOR PARTICULAR JOB

Attachment 2 – Examples of 'Authority to Spray' and 'Permit to Sprays' currently in use at NSW coal mines

Example B

IF VENTILATION NOT AS PER PLAN STOP AND INVESTIGATE		
SPRAYING PRODUCTS AT:		
		SPRAYING INSTRUCTIONS:
		AFFECTED AREAS:

PLANNING CHECKLIST		
Is activity on daily plan?	**YES / NO**	If No requires UM approval
Will Ventilation be maintained to roadway after spraying?	**YES / NO**	
Will access to returns be maintained (sufficient distribution of airlocks)?	**YES / NO**	
Does this change require an update to the mine plan?	**YES / NO**	If Yes send completed form to Surveyors.

VENTILATION QUANTITIES – if not as per plan stop and investigate.		
Location	Planned (m^3/s)	Actual (m^3/s)

AUTHORITY TO SPRAY (Ventilation Officer / Under-Manager / Manager / Ventilation Specialist to sign authorisation)	
Name Signature	Position Date

UNDERGROUND CHECKLIST		
Control notified of spraying & affected areas	**YES / NO**	
Mining Supervisor Conducted inspection prior to spraying	**YES / NO**	
Site cleaned up at end of task	**YES / NO**	
Attached Audit sheet Complete	**YES / NO**	

AUTHORITY TO SPRAY (Mining Supervisor on shift)		
Name	Signature	Date

Attachment 2 – Examples of 'Authority to Spray' and 'Permit to Sprays' currently in use at NSW coal mines

Example C

Location:	**Date/Time:**		
Name:	**Signature:**		
Process	**Yes**	**No**	**Notes**
Pump Prestart Completed			
Has area been hosed down to minimize are dust			
Has area been inspected for adequate ventilation			
Is ancillary fan in operation and effecting ventilation flow to work area			
Is Pump out of Duckbill and positioned in front of operator in relation to ventilation flow			
Is product positioned to behind or beside operator in relation to the ventilation flow			
Is bag bin being used			
Has set up procedures and guidelines been followed			
Dust shroud and bag **MUST** be fitted on pump before commencing spraying.			
Set up Sketch:			

Attachment 2 – Examples of 'Authority to Spray' and 'Permit to Sprays' currently in use at NSW coal mines

Example D

Tool Box Talk	
Author:	
Position:	Ventilation Officer
Date:	
Tool Box Talk to be Delivered by:	Undermanager
Tool Box Talk to be Delivered to:	All Underground Persons
Topic:	Permit to Spray

All

Effective immediately a Permit to Spray process is being implemented for underground spraying works. This process is to ensure adequate provisions are being made for the management of dust produced from the spraying activities and the task is communicated appropriately. Moving forward no spraying works are to occur without a Permit

The process is as below:

Step 1: Process coordinator plans the task and how the dust will be managed

Step 2: The proposed works is reviewed by the VO or UM to ensure adequate provisions for ventilation and dust management

Step 3: Undermanager on shift informed of planned spraying works and authorises task to occur on shift

Step 4: Deputy inspects work group and confirms ventilation arrangements are in place (as per the permit) and verifies that dust produced will be adequately managed during spraying activities.

Step 5: Work group confirms appropriate documentation is reviewed/completed before undertaking the task

Step 6: Upon task completion, workgroup returns ventilation arrangements back to pre-spraying configuration

Step 7: Permit returned to VO

This document is available on Sharepoint and the process will be added to the Ventilation Arrangement Principal Control Plan in the coming days.

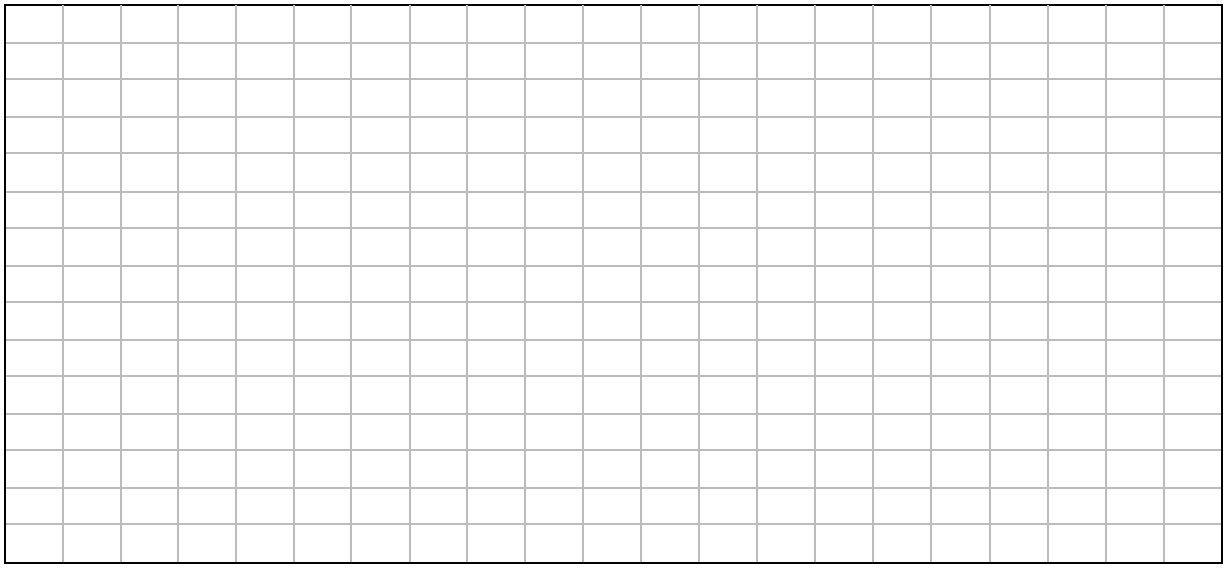
Permit to Spray

Location of Spraying Activities:_____

Proposed Date of Spraying Activities:_____

Product: □ **Plaster** □ **Other:** _____

Diagram of Location and Ventilation Arrangements:



Person Making Request (Person Completing this Form):

Name:_____Date_____Sign:_____

Approval of above Ventilation Arrangements (Ventilation Officer or Undermanager):

Name:_____Date_____Sign:_____

Comments:

_____

Permit reviewed and works approved to proceed on shift (Shift Undermanager):

Name:_____ Date_____Sign: _____

Ventilation arrangements verified as in place, confirmation that any dust produced by spraying activities will be adequately managed and spraying operations authorised to commence (Deputy):

Name:_____Date_____Sign:_____

□ Pump pre-use completed □ SWMS/Procedure Reviewed

Completion - Ventilation arrangements returned to normal status (post spraying):

Name:_____Date_____Sign:_____

Completed forms to be returned to the Ventilation Officer for Filing