



ANNEXURE A: CONVEYOR BELT AUTOMATED TRANSFER POINT (CBAT) FOGGING DUST SUPPRESSION SYSTEM



Exxaro underground

LEADING PRACTICE CASE STUDY

FULL DESCRIPTION OF THE RISK ADDRESSED

Exxaro’s Matla 3 operation as a source mine, identified the CBAT Point Fogging Dust Suppression System as a primary engineering dust control system at ore transfer points underground. The mine was recording airborne total dust liberation of between 1.352mg/m³ and 0.461mg/m³ time-weighted average (TWA) in the immediate vicinity of the transfer point prior to the installation of the fogging system. A similar assessment was undertaken at various points underground by Matla 2 as a lead adopting mine for the practice. The following results were recorded prior to the installation and adoption of CBAT with higher readings of 4.36mg/m³ recorded in areas where conveyor belts meet:

Section measured	No fogging system (Dust in mg/m³)
Sub-incline feeders	0.64
Main west one split 10	0.28
Tripper split 57	4.36
Section drive	0.66
Main west two drive	0.19
Average dust	1.23

“CBAT Point Fogging Dust Suppression System identified as a primary engineering dust control system at ore transfer points underground.”

OVERVIEW

Mining company

Exxaro

Commodity

Coal

Operation/Mine

Matla 2

Health and safety case study

Conveyor Belt Automated Transfer Point (CBAT) Fogging Dust Suppression System Simple Leading Practice

Number of employees affected by the health and safety case study

421

Stakeholders consulted

Organised labour, engineering and production employees

Occupations affected/benefited

Mine overseers, section managers, employees in surrounding area of implementation and section engineers

FINDINGS AND LESSONS LEARNED FROM THE ADOPTION OF THE CBAT LEADING PRACTICE

Following the adoption of the CBAT simple leading practice, the following lessons were drawn by the mine:

- 1 System required modifications to suit specific areas. The mine realised that "One size does not fit all" including addressing issues related to visibility and airway velocities.
- 2 During the trial of the system, several challenges were experienced including the clogging of valves and water lines. Some of the reasons identified included the poor visibility that was created by the mist, and the system was at times used as a cooling mechanism.
- 3 The involvement of unions and associations facilitated a better communication process which resulted in positive behaviour change. The introduction of the system was included in the crew's pre-shift safety meetings.

The successful adoption of the CBAT practice at the mine resulted in reduction of the TWA dust exposure by over 88% as presented in the table below.

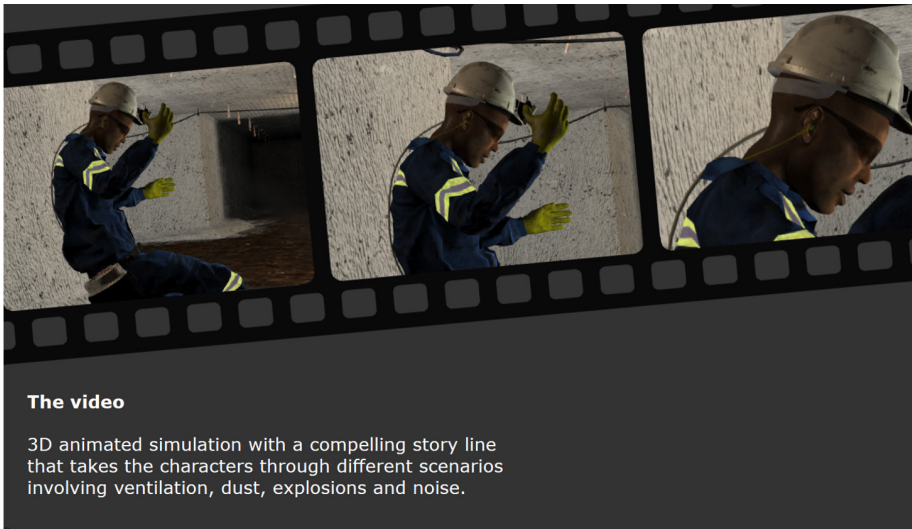
Section measured	No fogging system (Dust in mg/m ³)	Post installation of fogging system (Dust in mg/m ³)
Sub-incline feeders	0.64	0.08
Main west one split 10	0.28	0.18
Tripper split 57	4.36	0.35
Section drive	0.66	0.02
Main west two drive	0.19	0.11
Average dust	1.23	0.15

The involvement of unions and associations facilitated a better communication process which resulted in positive behaviour change

BENEFITS AND IMPROVEMENTS REPORTED BY THE AFFECTED STAKEHOLDERS

The following health and safety benefits were reported at Malta 2 operation as a result of adopting the leading practice:

- 1 Using the fogger system, the reduction of the respirable intake dust was significant and assisted in achieving the silicosis milestones as well as having a future potential financial benefit in reduced dust risk levies.
- 2 The project raised awareness on hazards and the controls related to dust in an underground mine.
- 3 Positive feedback was received from employees once the system was operational with others proposing that the CBAT principles be applied elsewhere within the mine to alleviate high dust exposure.
- 4 The leading practice adoption guiding principles assisted management with skills for the use of adopting and rolling out other best practices including communication, stakeholder involvement and employee buy-in.
- 5 As part of the continuous monitoring recommended by the MOSH adoption process, the mine continues to realise the benefit of the CBAT system as presented below. The average linear exposure continues to decline since the full adoption of the fogging system.

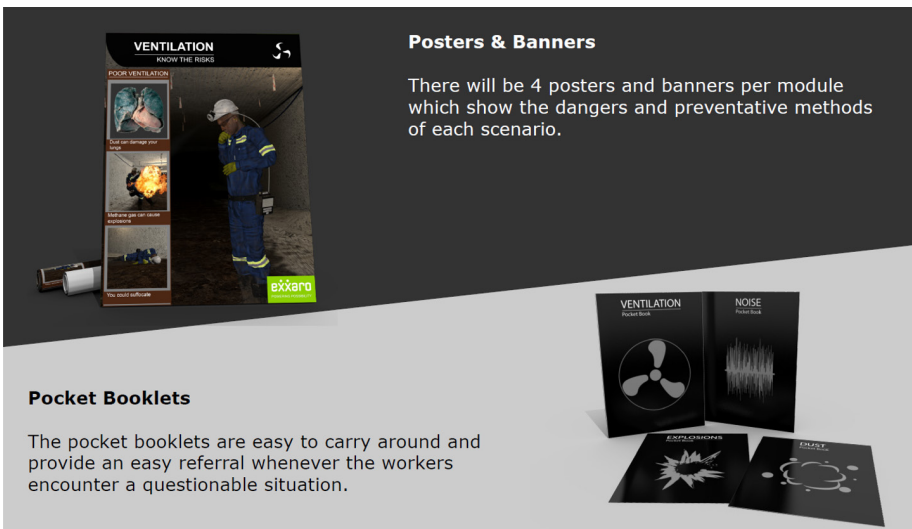


The video

3D animated simulation with a compelling story line that takes the characters through different scenarios involving ventilation, dust, explosions and noise.

The adoption of dust leading practices allowed the mine to have a dedicated focus on the communication of dust-related risk and controls. The Matla 2 operation embarked on four campaigns during 2018 relating to mine ventilation, flammable gas and coal dust explosion prevention, dust and noise. The campaigns focused on presentations to the workforce, booklets on the subject matter, posters and banners. During 2019, Matla 2 operation established a ventilation and occupational hygiene training centre.

Training is in the form of presentations and then actual demonstrations on smoke-filled ventilation models. There is a simulated explosion model as well as areas where airborne pollutants and noise is covered. The latest model is a scale model of an underground refuge bay, depicting escape procedures and the drilling of a rescue hole by the Colliery Teaching College.

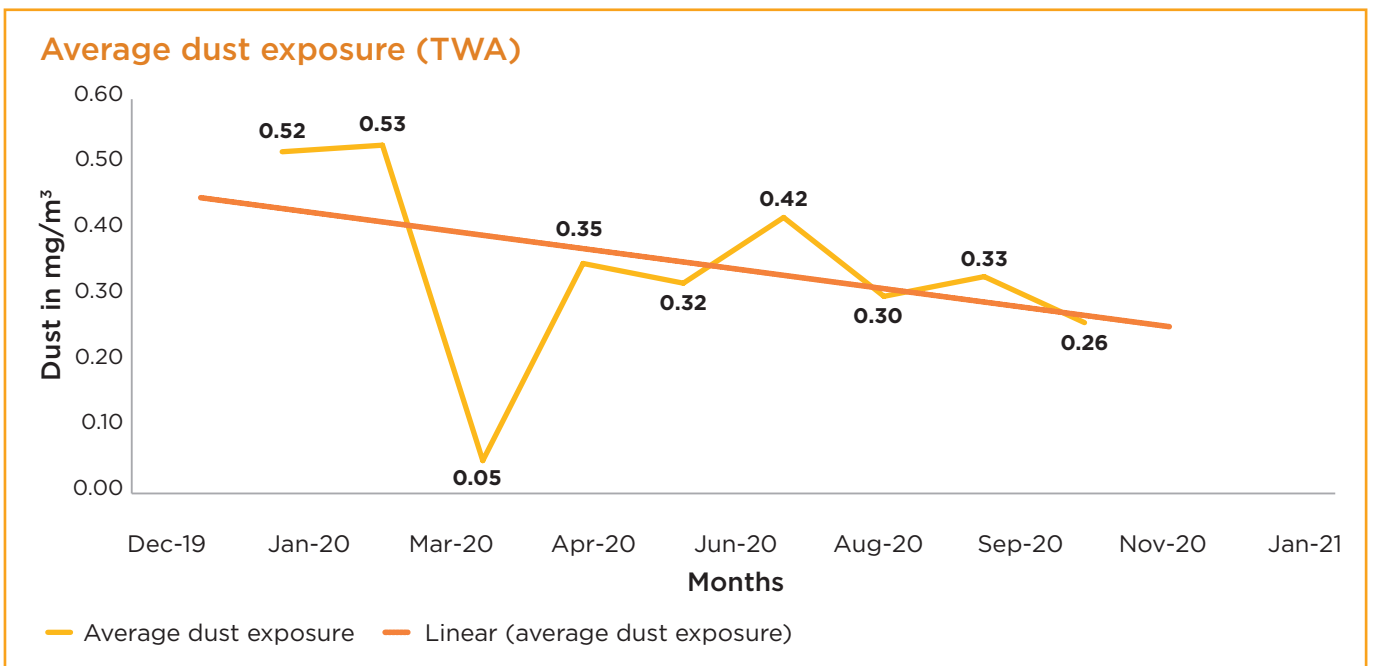


Posters & Banners

There will be 4 posters and banners per module which show the dangers and preventative methods of each scenario.

Pocket Booklets

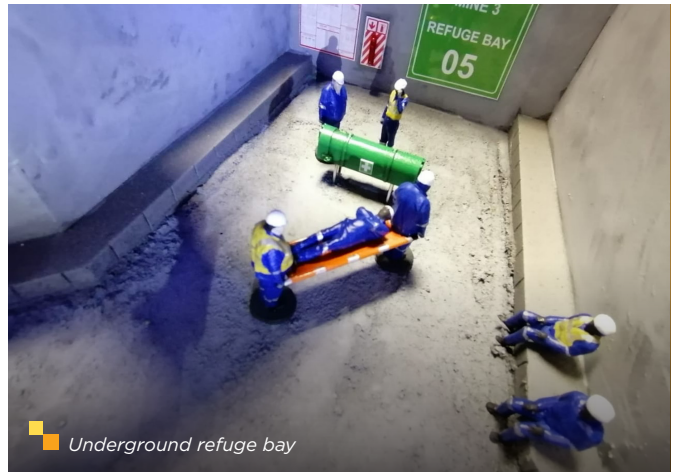
The pocket booklets are easy to carry around and provide an easy referral whenever the workers encounter a questionable situation.



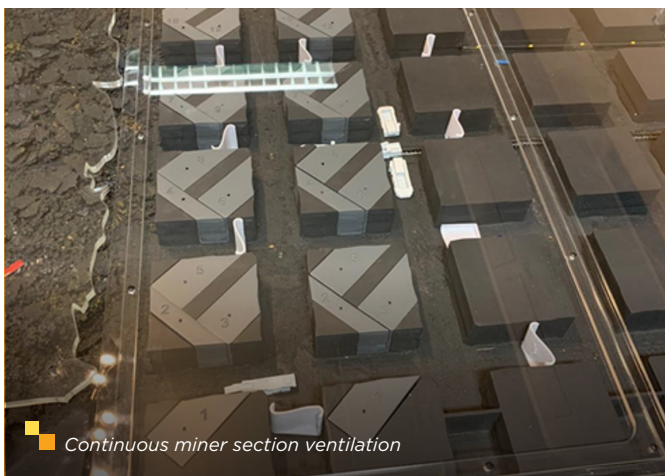
The benefits of the campaigns and the training centre were clear in 2020 with production-related downtime due to insufficient ventilation drastically decreasing and even eliminated in some areas.



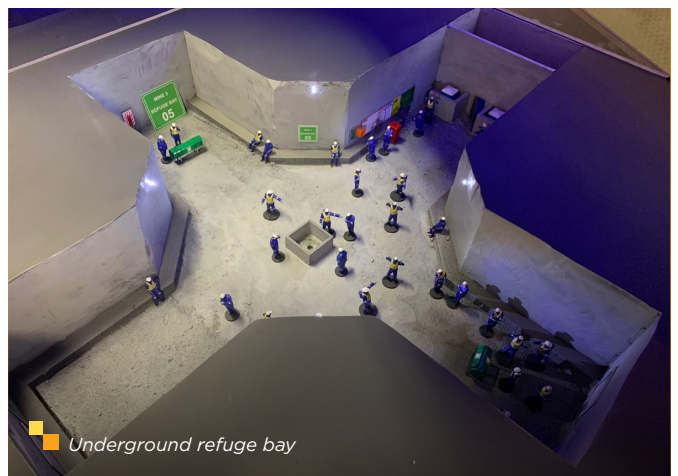
The Matla Training Centre



Underground refuge bay



Continuous miner section ventilation



Underground refuge bay

Continuous miner engineering dust results have also improved substantially, with the importance of a healthy and safe working environment becoming the operation's top priority.

FOGGING SYSTEM



Surface demonstration of fogging system

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MATLA 2 OPERATION MOSH ADOPTION TEAM:

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