Refocusing Dust Control Management in SAMI

Sibusiso Masanabo

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Biography

Sibusiso Masanabo is currently appointed as the Principal Adoption Specialist for Dust Team within the MOSH Learning Hub of the Minerals Council South Africa.

Sibusiso has a broad professional knowledge and background in mine ventilation engineering, Occupational hygiene and Environmental health. Sibusiso obtained his B-Tech in Environmental Health from the University of the Johannesburg and is also the holder of the Certificate in Mine Environmental Control, issued by the then Chamber of Mines, and now Minerals Council South Africa. Sibusiso has 22 years of work experience within the South African Mining industry, with 14 years spent in hard-rock underground & shaft sinking operations as a ventilation and occupational hygiene engineer/specialist.

In his current role, Sibusiso sees himself as a Health & Safety change agent, a catalyst towards elimination of occupational diseases, injuries and fatalities, through application of people centric behaviour change methodologies, facilitation of research and development of new technologies, and most importantly the identification, documenting and widespread adoption of leading practices.

His passion and mission amongst others is to contribute positively to the improvement of the health and safety of employees within the South African mining industry. His personal mantra is “Where there is a will, there is a way”

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MINE DUST CONFERENCE 2024

"Refocusing Dust Control in SAMI"

Sibusiso Masanabo, Principal Adoption Specialist: MOSH DUST, Minerals Council South Africa

21st of June 2024, Emperor's Palace

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Contents

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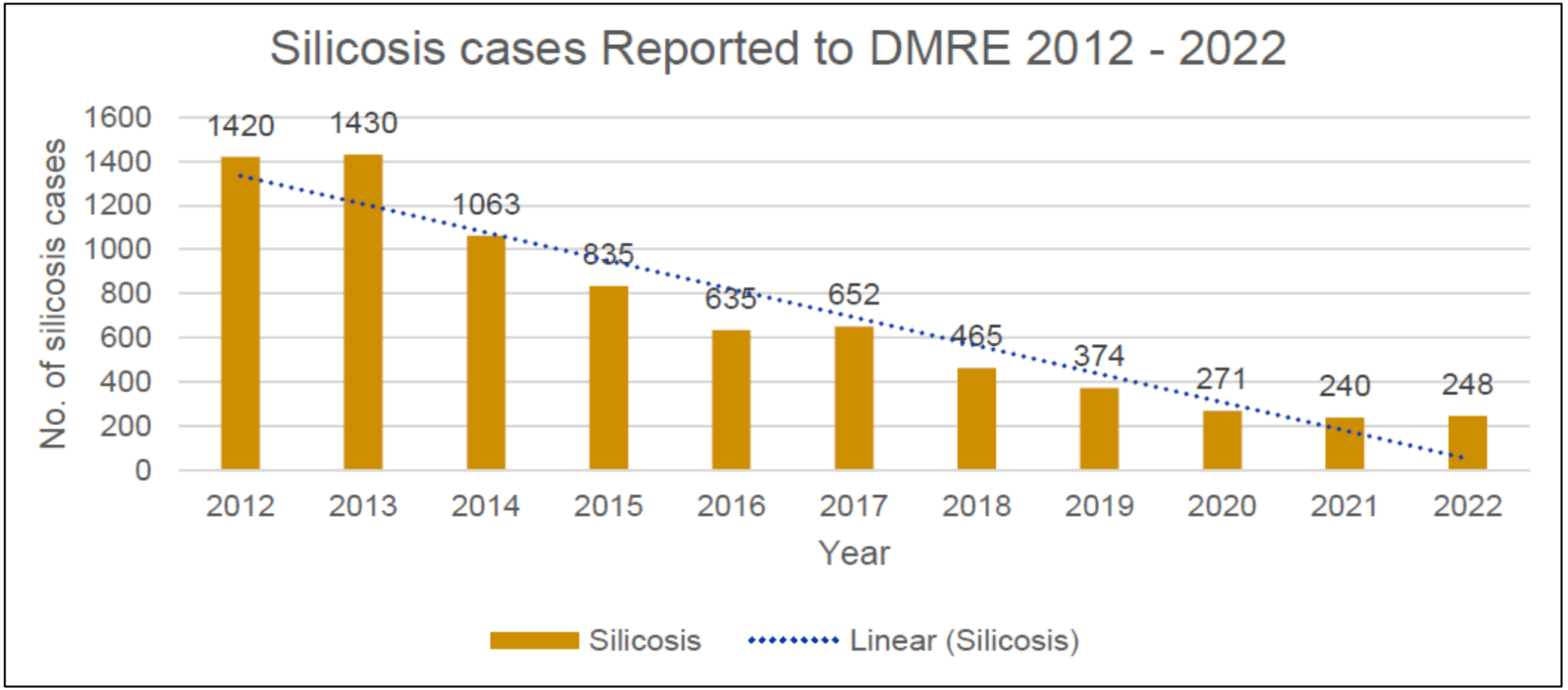
Historical Background

- Industrial mining in S.A. began in 1850's.
- Many mineworkers have suffered the burden of occupational lung diseases (Silicosis, Asbestosis and Coal Workers's Pneumoconiosis etc), some of it accounted (estimated 500 000) for by the industry and some not (mostly migrant workers from SADEC region)
- Poor or lack of occupational health legislative framework was one of the major contributors to the prevalence of these occupational respiratory diseases
- Mineworkers have and continue to lose their lives and livelihood due to historical occupational exposure to dust at mines.
- To date, hundrends of new cases of respiratory lung diseases amongst mineworkers are still reported annually

SILICOSIS CASES REPORTED TO THE DEPARTMENT OF MINERAL RESOURCES AND ENERGY [DMRE] FOR THE PERIOD 2021 TO 2022



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SA Mining Industry Commitment

2014 Occupational Health Milestones

Elimination of Occupational Lung Diseases	• **By December 2024, 95% of all exposure measurement results will be below the milestone level for respirable *crystalline silica* of 0.05 mg/m³ (these results are individual readings and not average results).**
	• **By December 2024, 95% of all exposure measurement results will be below the milestone level for *platinum dust respirable particulate* of 1.5 mg/m³ (<5% crystalline silica) (these results are individual readings and not average results).**
	• **By December 2024, 95% of all exposure measurement results will be below the milestone level for *coal dust respirable particulate* of 1.5 mg/m³ (<5% crystalline silica) (these results are individual readings and not average results).**
	• **Using present diagnostic techniques, no new cases of pneumoconiosis, silicosis, coal worker's pneumoconiosis will occur amongst previously unexposed individuals.** *("previously unexposed individual" are those unexposed to mining dust prior to December 2008 i.e. equivalent to a new persons who entered the industry in 2009*

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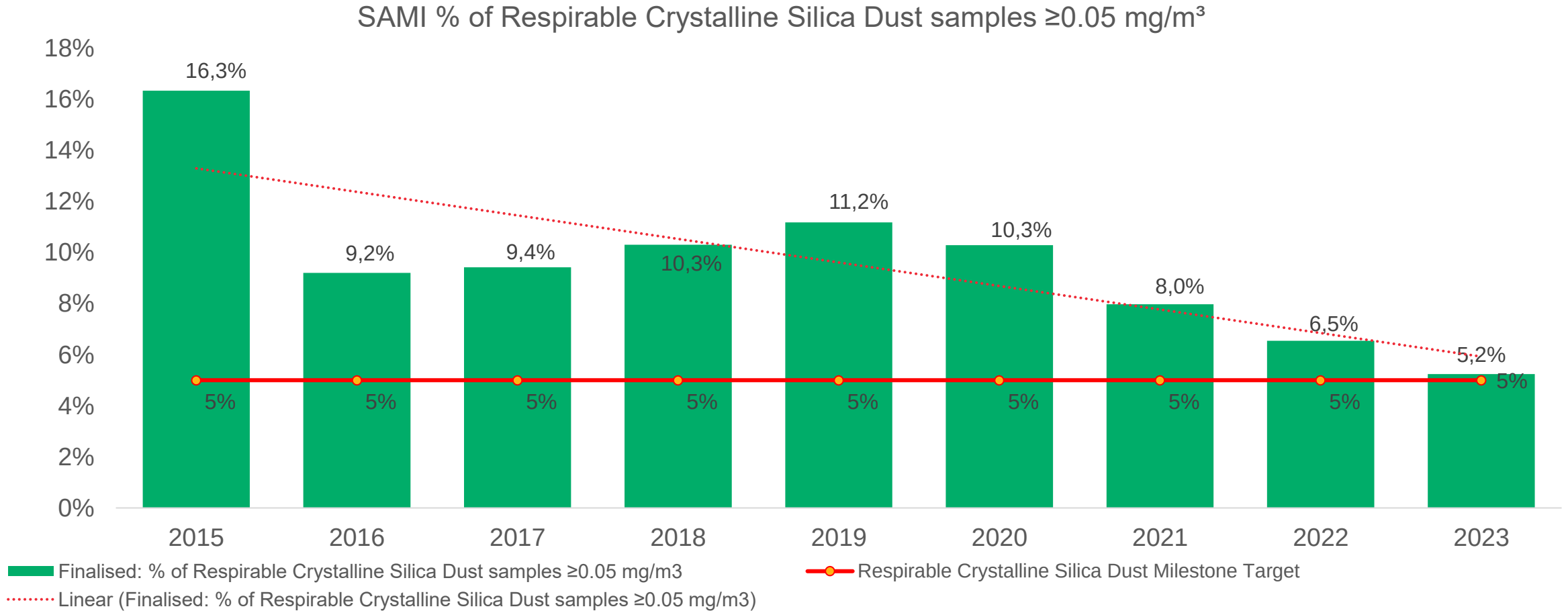
PERFORMANCE ON 2024 MILESTONES: SILICA

- Industry performance



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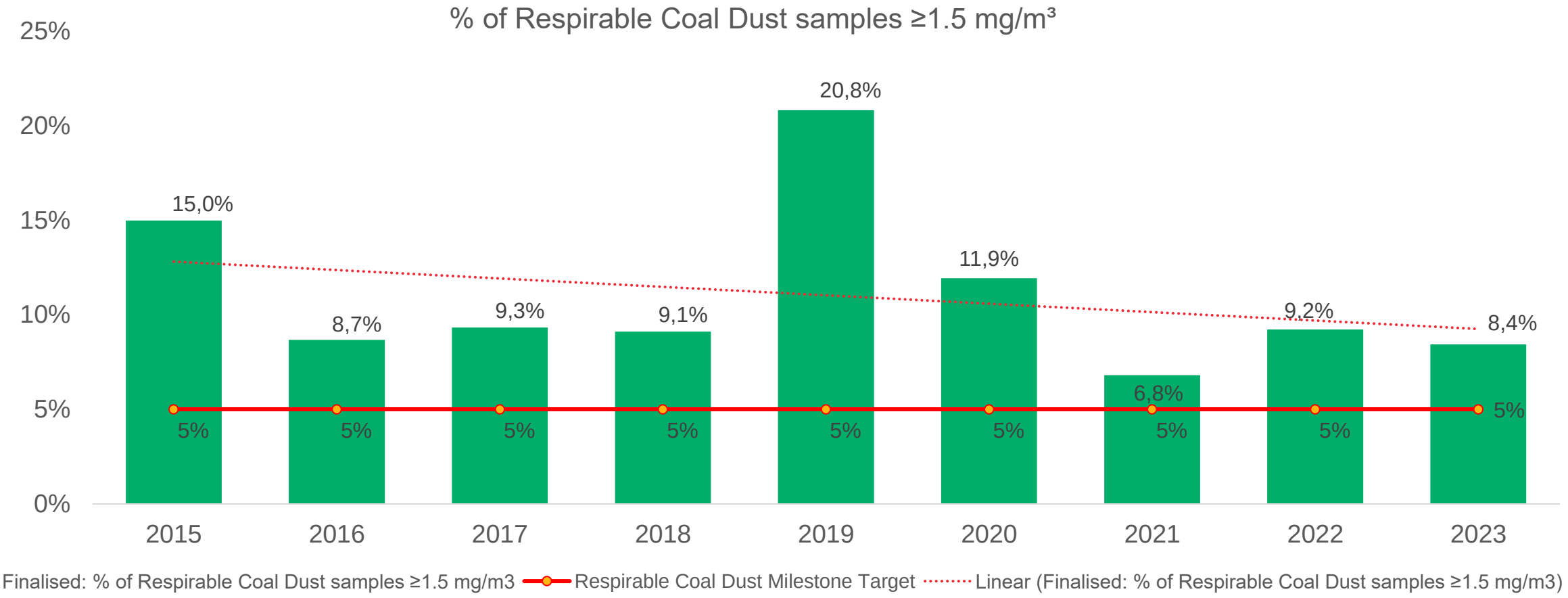
PERFORMANCE ON 2024 MILESTONES: COAL DUST

- Industry performance



South African Mining Industry

Efforts in Elimination of Occupational Lung Diseases

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SAMI Efforts

A considerable amount of work has been conducted in South Africa in terms of :

- **Legislative And Regulatory Framework,**
  - Mine Health and Safety Act 29 of 1996
  - Mandatory Code Of Practice for Management of Airborne Pollutants (OHP)
  - Risk Management
  - Reporting
- **Research**
  - Dust Risk Management (Risk Assessment & Analysis tool, Airborne Dust Measurement & Analysis Methodology)
  - and the Epidemiology And Pathology Of Silicosis (Research)
- **Identification of Leading Practices**
  - MOSH

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SAMI LEADING PRACTICE ADOPTION PERFORMANCE

MOSH - Industry CEO's Initiative

- The Chief Executive Officers of the major mining companies in the South African mining industry in 2008, the CEOs agreed to collaboratively work towards the achievement of "zero harm" in the mining industry.

CEOs who were party to the commitment made at the 2005 Employer Summit on Occupational Health and Safety

❑ The development of an **occupational health and safety culture framework** as a basis for improving Occupational Health and Safety Culture in the South African mining industry.

❑ The establishment of a **MOSH Learning Hub** to promote learning in the mining industry (2009). A strategic department within the Minerals Council South Africa and custodians of the MOSH LP Adoption System.

❑ Identification, documenting and widespread adoption of leading practices.

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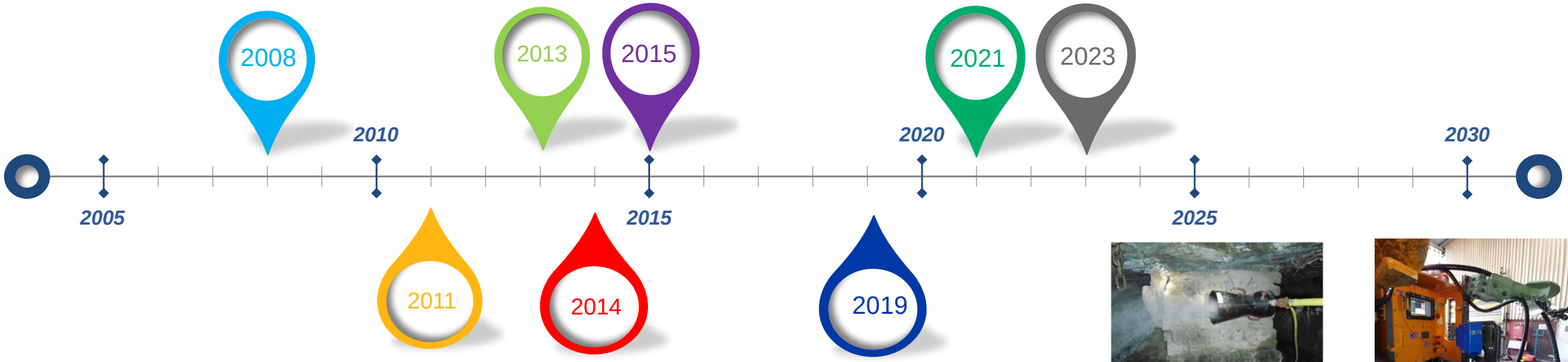
MOSH DUST LEADING PRACTICES



Fogger Dust Suppression System LP

Footwall & Sidewall Treatment

Scraper Winch Covers SLP

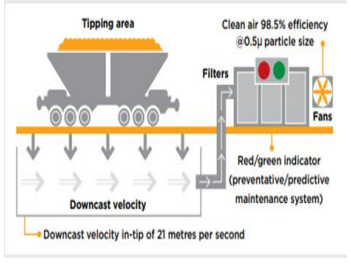
Multi-Stage Filtration System

CRTM of Airborne Pollutants Engineering Controls LP

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

In-Stope Atomization For Dust Suppression SLP

Continuous Real Time Dust Monitoring on CM



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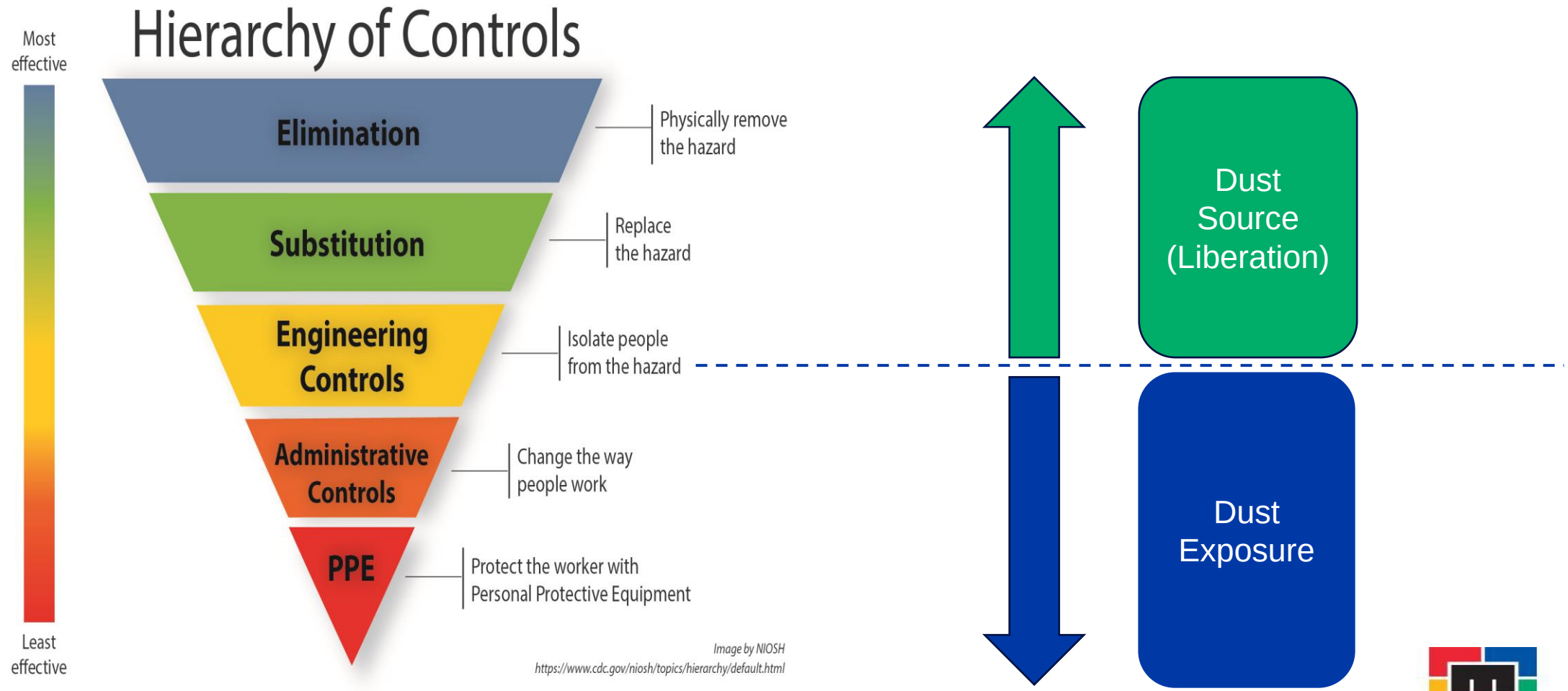

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Potential vs Actual Adopters

- Potential adopters are those mining operations which have been identified through MOSH Adoption process to have the capacity (resources and support systems) and potential to benefit significantly from adoption of these leading practices.

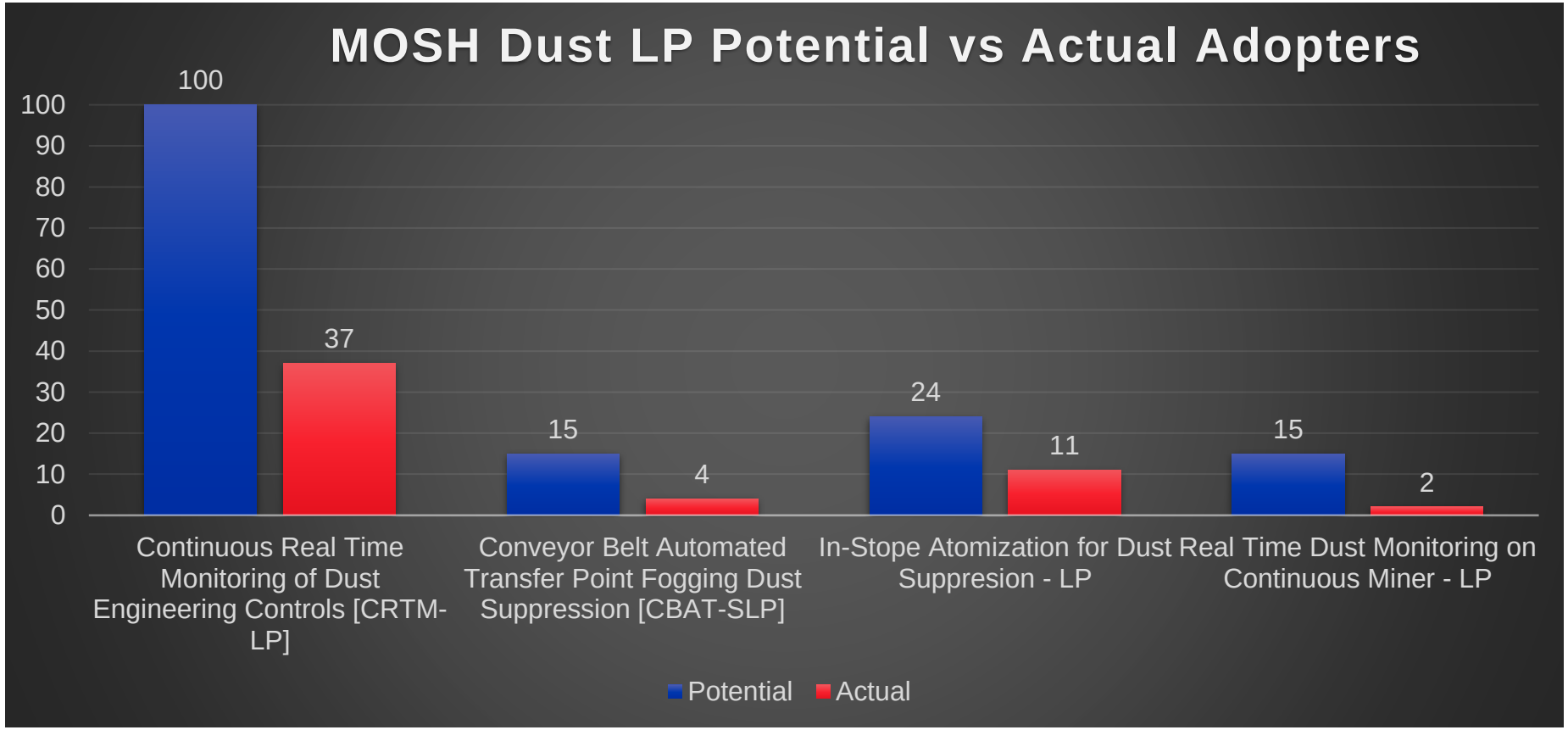

Figure 1. Potential vs Actual adopter mining operations of MOSH Dust Leading Practices

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PERFORMANCE ON OH MILESTONES VS ADOPTION OF LEADING PRACTICES

An exercise conducted to evaluate the impact of these leading practices on the achievement of Occupational Health (OH) milestones targets amongst all OH milestones reporting mines, indicated the following:

- Good performance and progress from mines that are adopting these leading practices and following the MOSH Leading Practice Adoption System diligently, thus achieving the targets.
- Mining operations that are either non-adopters, or inconsistent adopters of dust leading practices have struggled to make significant progress towards achieving OH Milestones.

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Adoption Challenges

The poor adoption of MOSH Dust leading practices has been attributed to, but not limited to, the following reasons:

- Lack of **mine management support** after the adoption decision has been secured.
- Lack of **resources (financial)** because of inadequate planning and situational analysis.
- Mine Adoption Team turnover (Staff turnover & transfers) affecting **stability, continuity and sustainability of the adoption process,**
- And at times the **lack of information** from decision makers on leading practices benefits (value case) against the other practices of the similar nature that are currently employed at those mining operations.

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HOW DO WE REFOCUS OUR EFFORTS?

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Critical Control Management

ICMM Guidance

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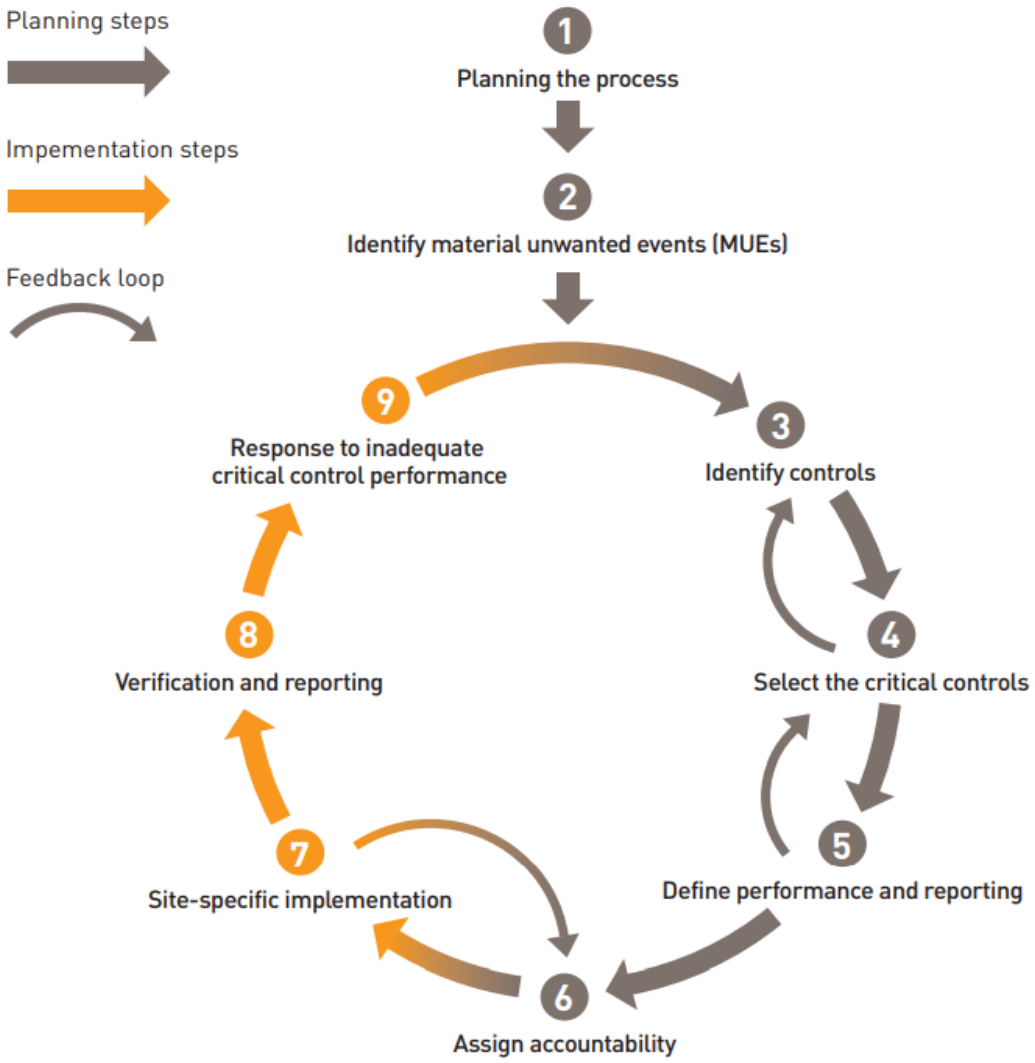
Critical Control Management Process



Key Definitions:

Critical control management (CCM) - A process of managing the risk of MUEs that involves a systematic approach to *ensure critical controls are in place and effective*

Material Unwanted Event - A description of a situation where the *hazard has or could possibly be released* in an unplanned way, including a description of the consequences.

Control - An act, object (engineered) or system (combination of act and object) intended to prevent or mitigate an unwanted event.

Critical control - A control that is crucial to preventing the event or mitigating the consequences of the event. The *absence or failure of a critical control would significantly increase the risk* despite the existence of the other controls.

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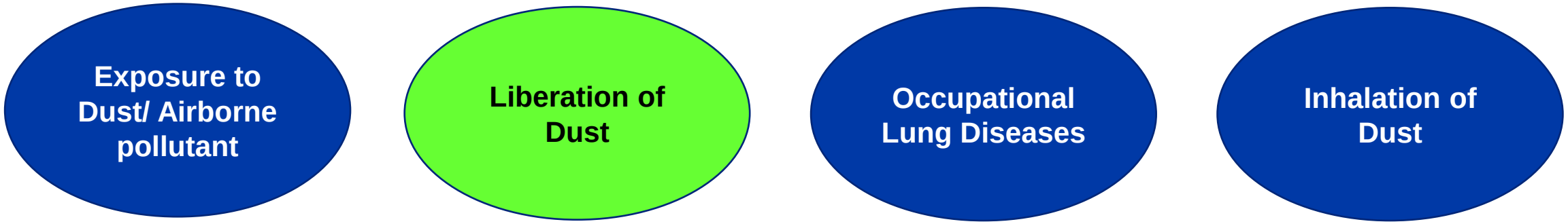
Identifying the MUE

- Initial observation was made on misalignment within industry on level at which dust risk is addressed



- After extensive engagements deliberations, it was agreed that the industry needs to address the dust risk at source.

- This will allow the industry to focus on controls which are higher in the hierarchy of controls, rather administrative, monitoring controls and PPE.

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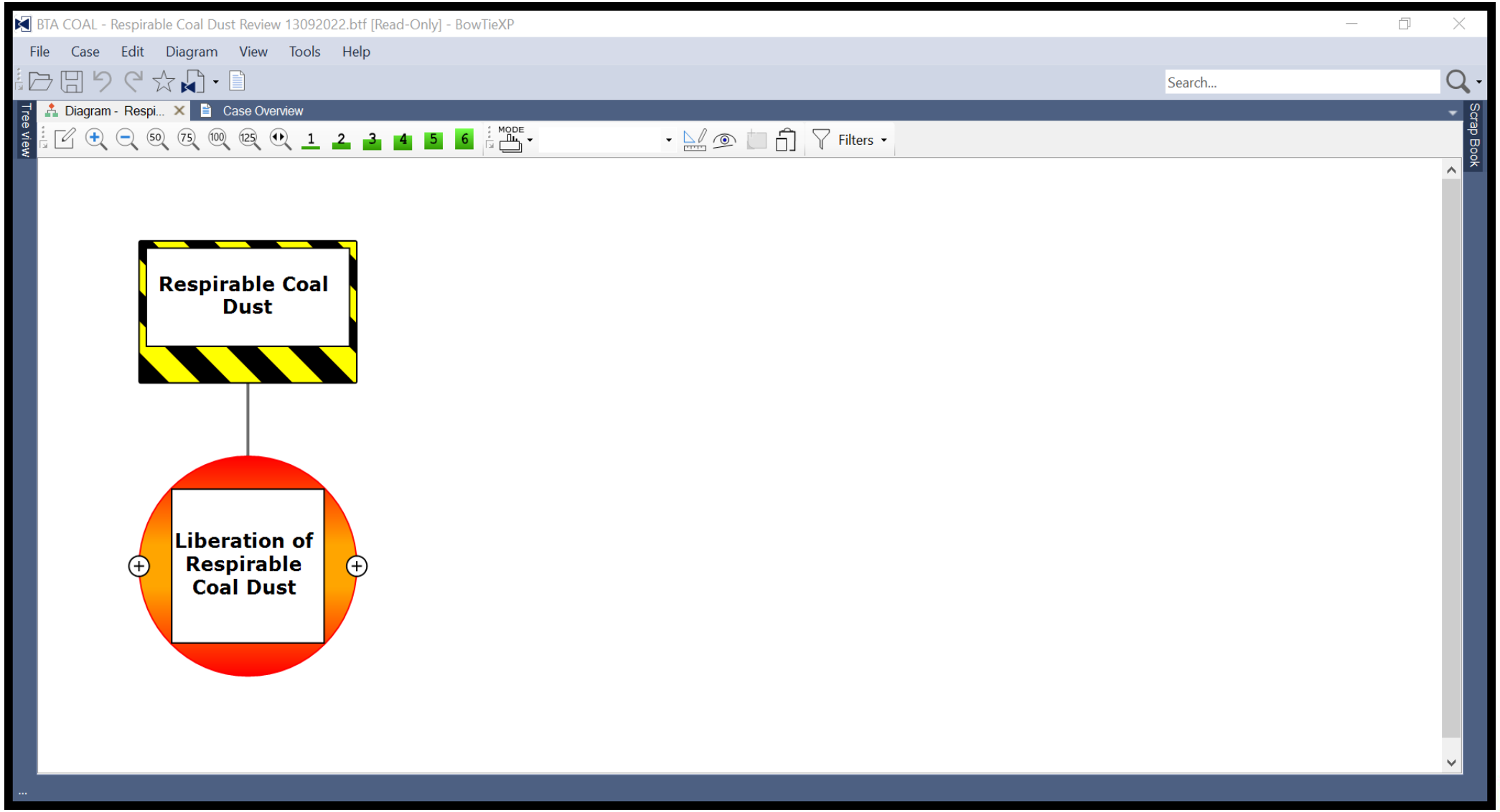
Identified MUE's



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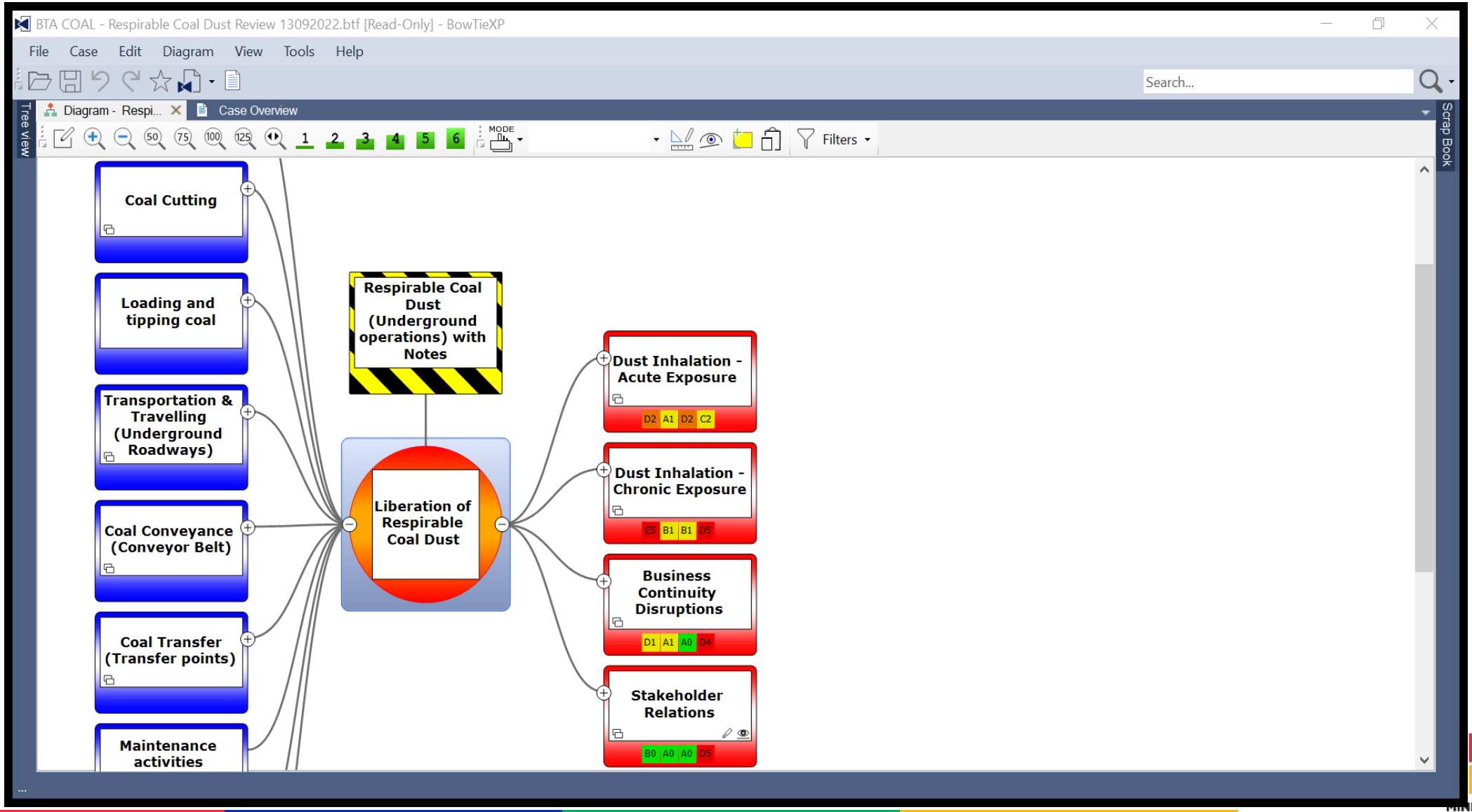
Identified Threats & Consequences of MUE



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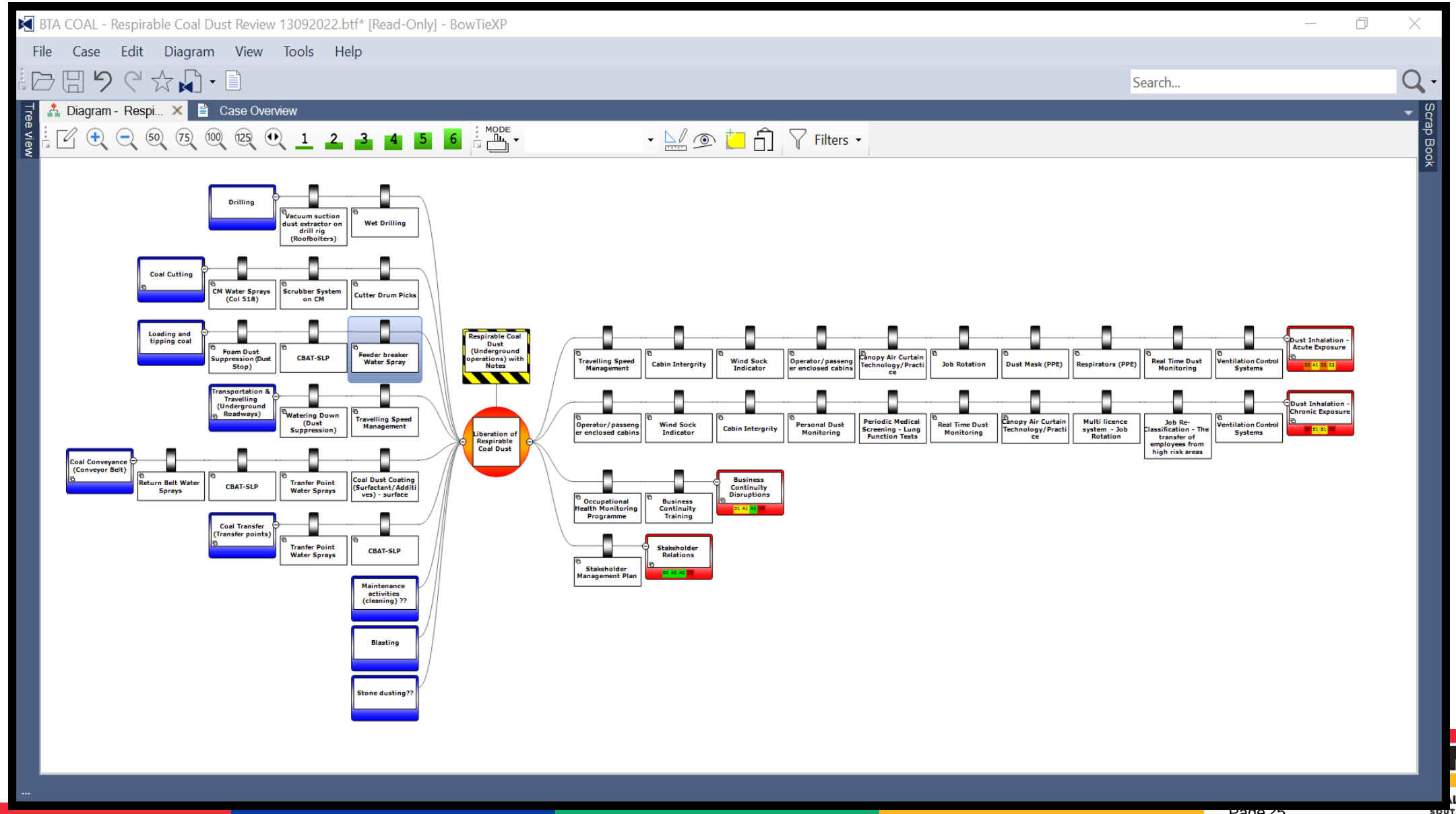
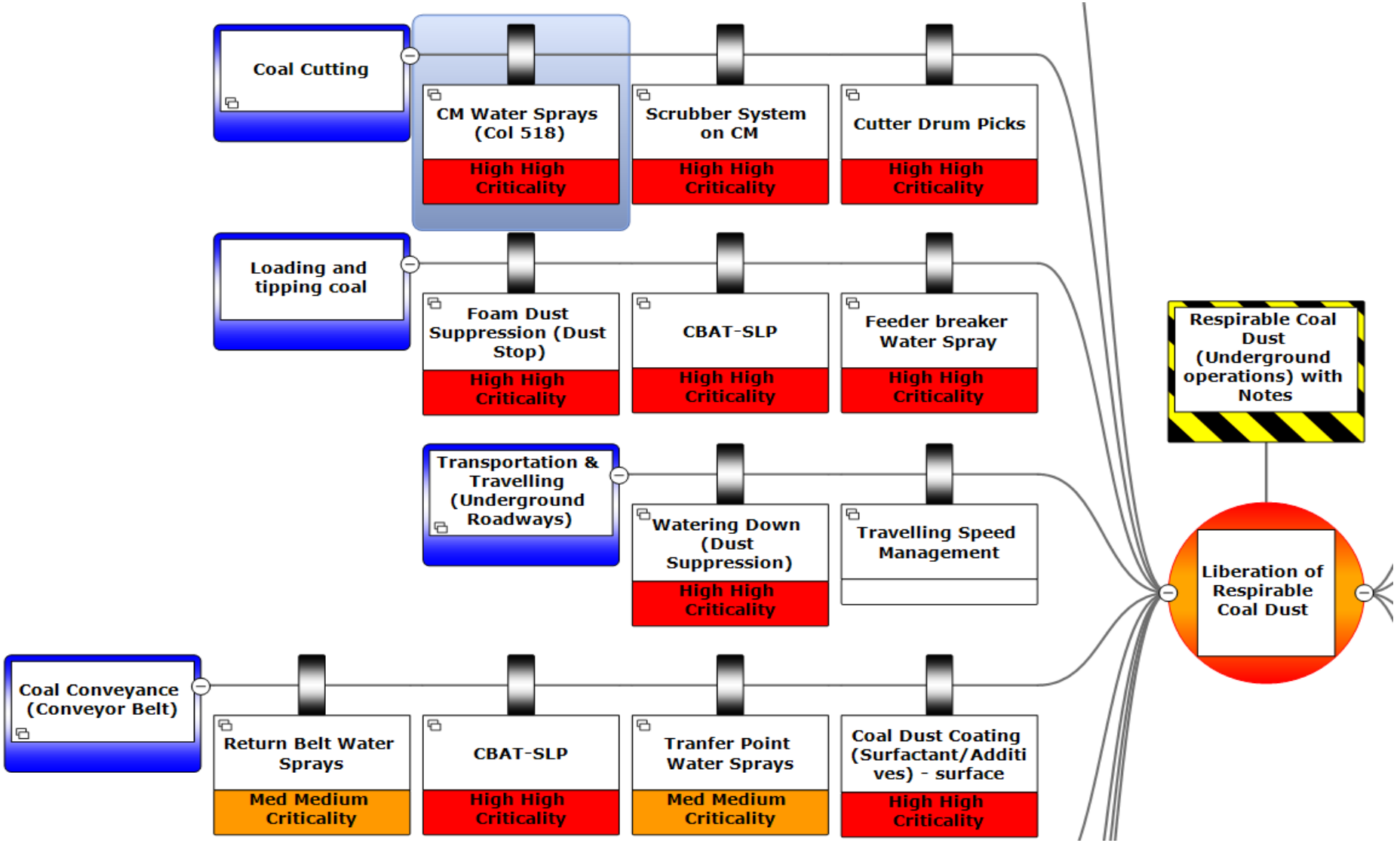
Identification of Controls



Selecting Critical Controls (Preventative & Mitigating)



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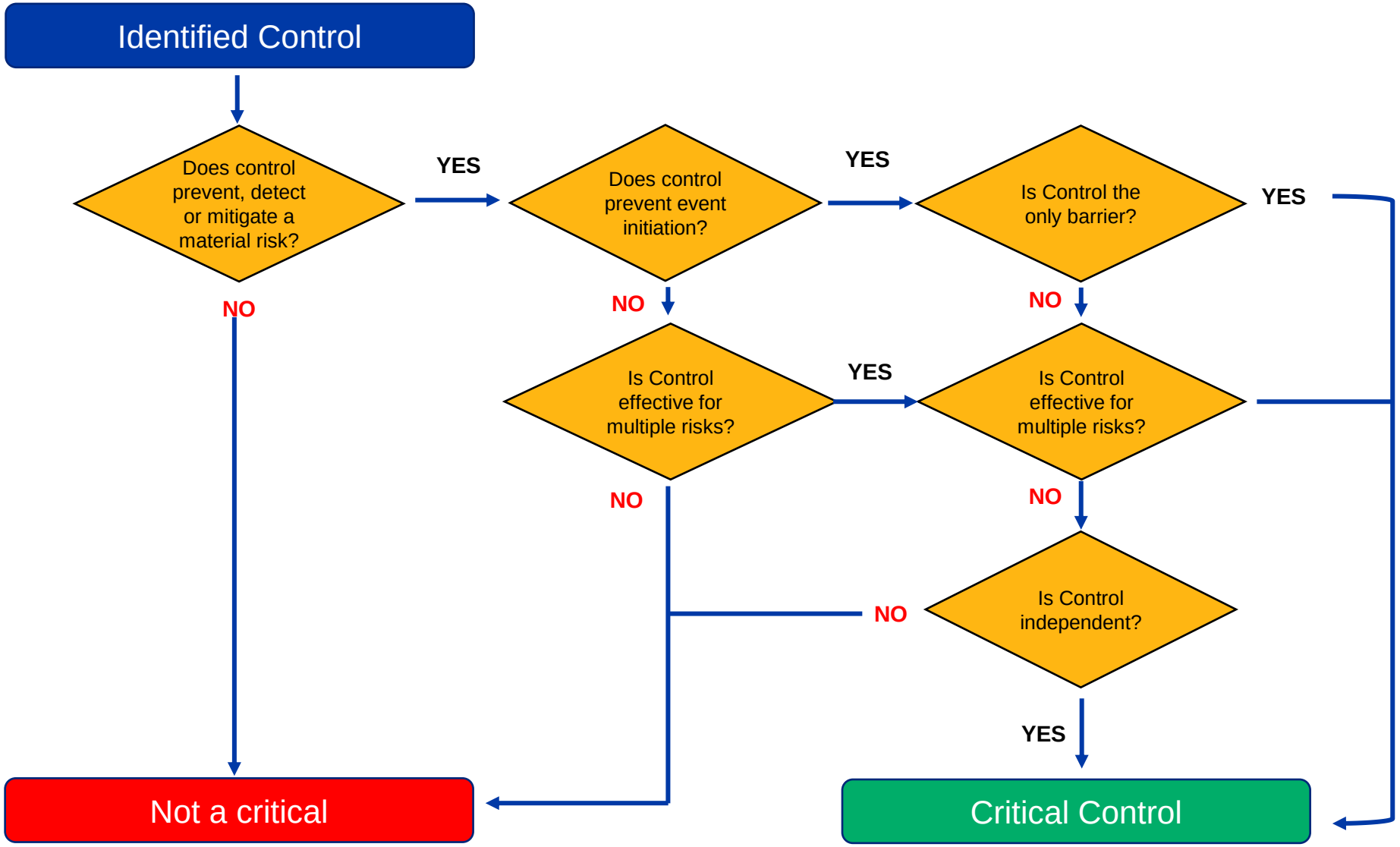
Critical Control Selection



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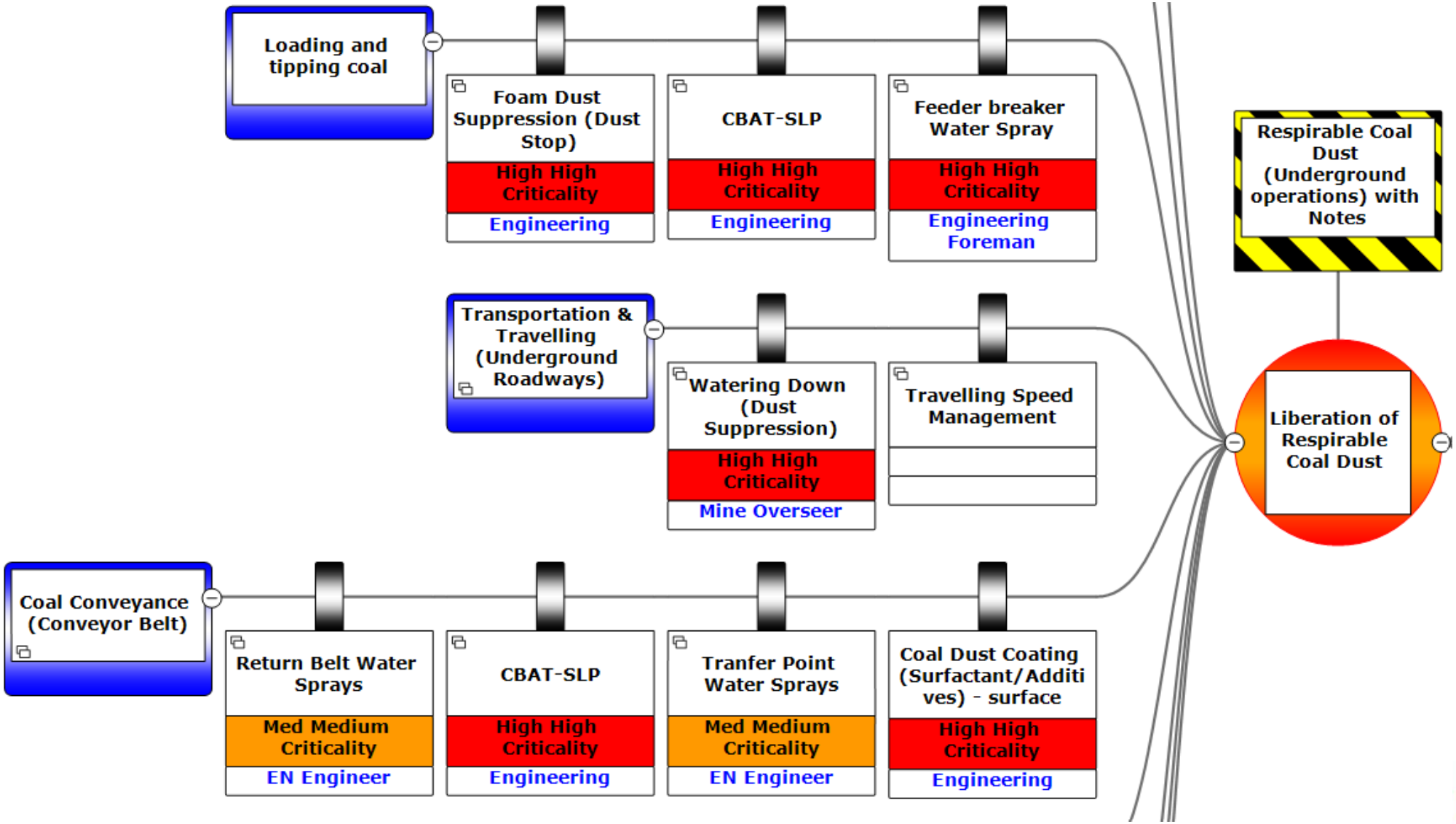
Assigning Accountability



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Accountability

5. MUE Owner
6. Risk Control Owner
7. Verification Activity Owner

MATERIAL UNWANTED EVENT (MUE) Diesel particulate overexposure	**CRITICAL CONTROL** Positive pressure cabin environment maintained	**VERIFICATION ACTIVITY** Review maintenance and calibration records
MUE owner Underground mine manager	**Critical control owner** Underground mine maintenance superintendent	**Verification activity owner** Maintenance supervisor who oversees the relevant equipment/task
Role of MUE owner: • Review reports monthly* from relevant critical control owners. • Decide on required action.	**Role of critical control owner:** • Review verification activity reports weekly*. • Report summary to the MUE owner.	**Role of verification activity owner:** • Gather and review information-based verification activity requirements and compare to expectations. • Initiate actions. • Submit weekly* verification summary report to the critical control owner.

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What Needs to be Done?

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Thank you

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