



EXXARO MATLA COAL

MOSH FOGGER DUST SUPPRESSION SYSTEM PROJECT

Chris Silver – Manager Mining



MATLA | COAL

“Safety Always, All the way!”



Overview

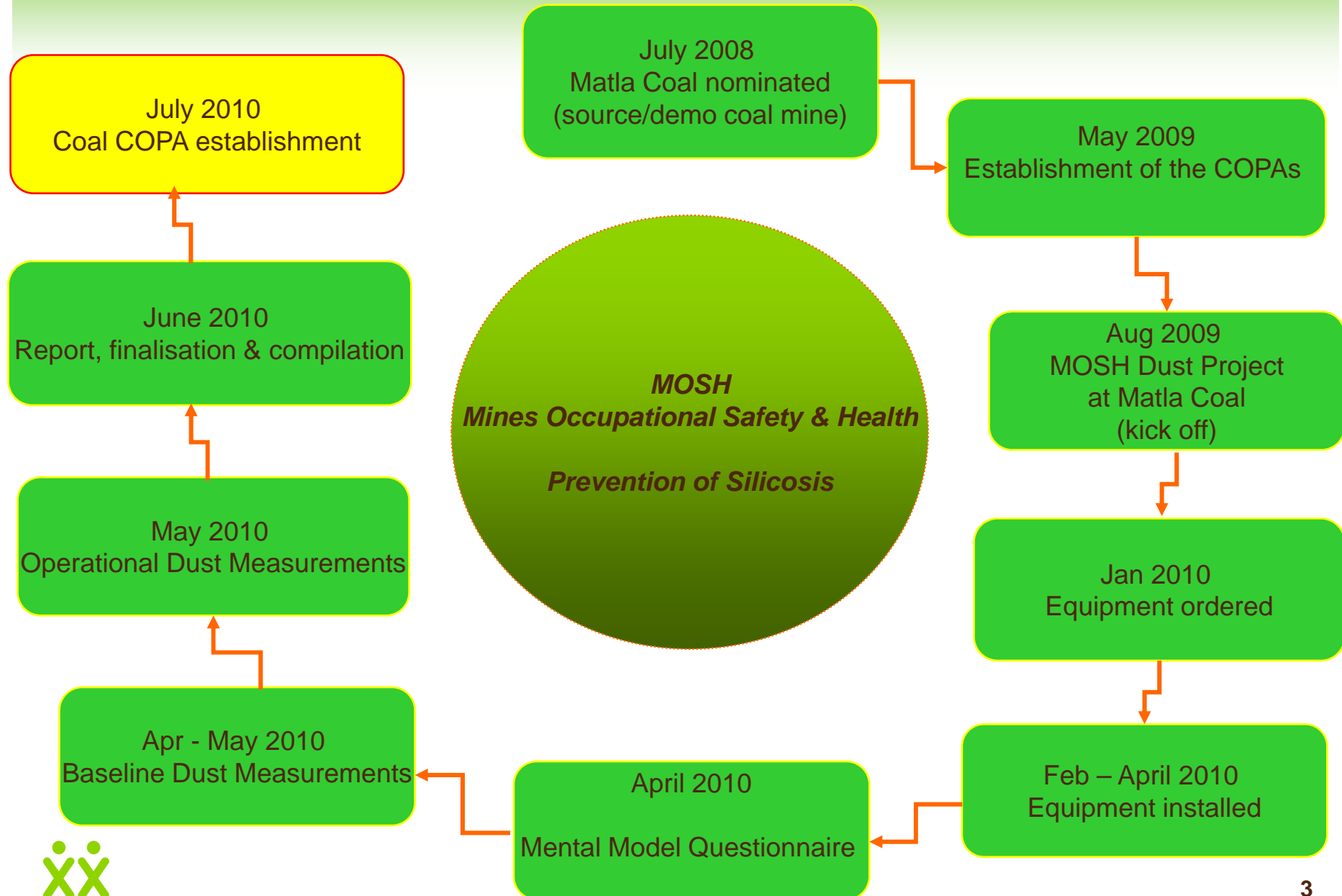
- MOSH Background
 - Road Map to MOSH Dust Project at Matla Coal
 - Scope of MOSH Dust Leading Practice
- Project Principles and Strategies
 - Leadership involvement
 - Strategy followed in terms of Communication
 - Method of identifying test area and selection of equipment for dust allaying
 - Principle of operation of the fogger unit
 - Sampling methodology
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- Conclusion



MOSH Background



Road Map to MOSH Dust Project at Matla



Scope of MOSH Dust Leading Practice

People

- Leadership Behaviour
- Behavioural Communications
- Current dust control strategies

Technology

- Fogger unit
- Dust suppression agents
- Automation with sensors
- Reduction in RD & TD

Demonstration/Adoption



Project Principles and Strategies



Leadership Involvement

- **Project Sponsor**
 - **Chris Silver, Manager Mining**
- **Project Manager**
 - **Andries Mabona, Head VOHE**
- **Unions & Associations**
 - **James Magagula, NUM Representative**
 - **Geoff Sanders, Solidarity Representative**
- **Mine Team**
 - **Petros Khumalo, Communications Officer**
 - **Molefi Tshabalala, Mine 2 Occupational Hygienist**
 - **Grace Mathebula, Mine 2 Safety Superintendent**
 - **Mervyn Geduldt, S&SD Manager**
 - **Lucky Dzondzi, NUM Full Time Health & Safety Representative**
- **Other Members**
 - **CECS, MOSH Representatives and Suppliers**



Strategy Followed in terms of Communication

- **Awareness on the MOSH Dust Project was communicated to mine employees:**
 - **Mass NUM meetings by the Full Time Health & Safety Rep**
 - **Mass Safety meetings by Safety Supts**
- **MOSH Representative conducted one on one interviews with team members**
- **The MOSH Leading Practice Adoption Guide was used to formulate relevant questionnaires for interviews.**
- **One on one interviews with the following personnel were conducted by the MOSH Communications Officer 35 needed (39 interviewed):**
 - **Management**
 - **Supervisors**
 - **Employees working at the testing site**
 - **Services employees**



Behaviour Communication Feedback

Q1: Most frequent causes of the hazard.

- No reasons given. (17) !!!!!
- Dry material at Belts and Tipping points. (12)

Q2: Most frequent outcome of exposure.

- Effect on health/ Lung diseases. (22)
- Causes TB. (13) !!!!!

Q3: Opportunities to better protect people.

- Water sprays / Water down. (12)
- PPE. (11)



Leadership Behaviour Feedback

Q1: What Should Be Done.

- Improve communication / Feedback. (11)
- Improve Training. (11)

Q2: What Should Not be Done.

- Hide information. (11)
- Poor Maintenance. (7)
- Turn a blind Eye. (7)

Q3: Communication-How and Frequency.

- Safety Meetings - Weekly. (21)
- Notice boards. (11)



Method Of Identifying Test Area And Selection Of Equipment For Dust Allaying

- **Selection of testing area underground at Matla**
 - **Previous measurements at Matla indicated high dust levels in Intake airways at Mine 2**
 - Incline,
 - Sub Incline,
 - Main West 1 conveyor (split 10)
- **Selection of Equipment for Dust Allaying (Fogger System)**
 - **Utilized same supplier as at source and demonstration mines**
 - Anglo Gold Ashanti – Great Nolegwa Mine
 - Gold Fields South Deep Mine



The Principle Of Vapour Fogging

The smarter way of dust suppression is to create mist/vapour curtains applied at the source of the dust emissions.

The finer the droplet size of the mist vapour spray employed, the greater the absorption and attraction forces water molecules to dust, smoke or gasses.







Sampling Methodology

(MOSH Fogger Dust Suppression System – OEM Envidroclear)

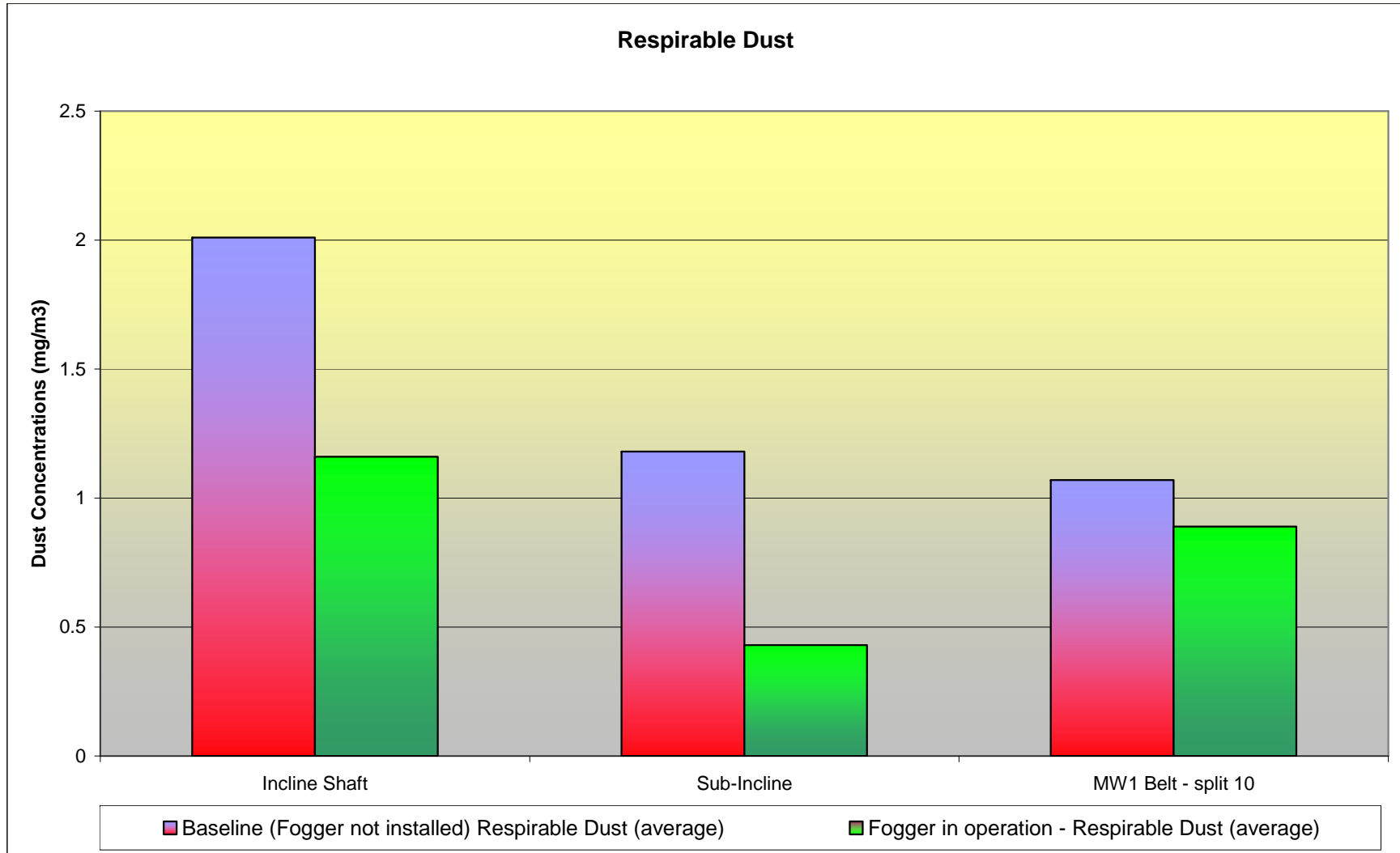
- **Baseline dust measurements (system not operating) completed on the 16th of April 2010**
 - **12 x sampling days**
- **Installation of Equipment completed on the 4th of May 2010**
- **Commissioning of Equipment completed on the 10th of May 2010**
- **Actual Sampling (system in operation) started on the 10th of May 2010**
 - **15 x sampling days (completion date 28 May 2010)**



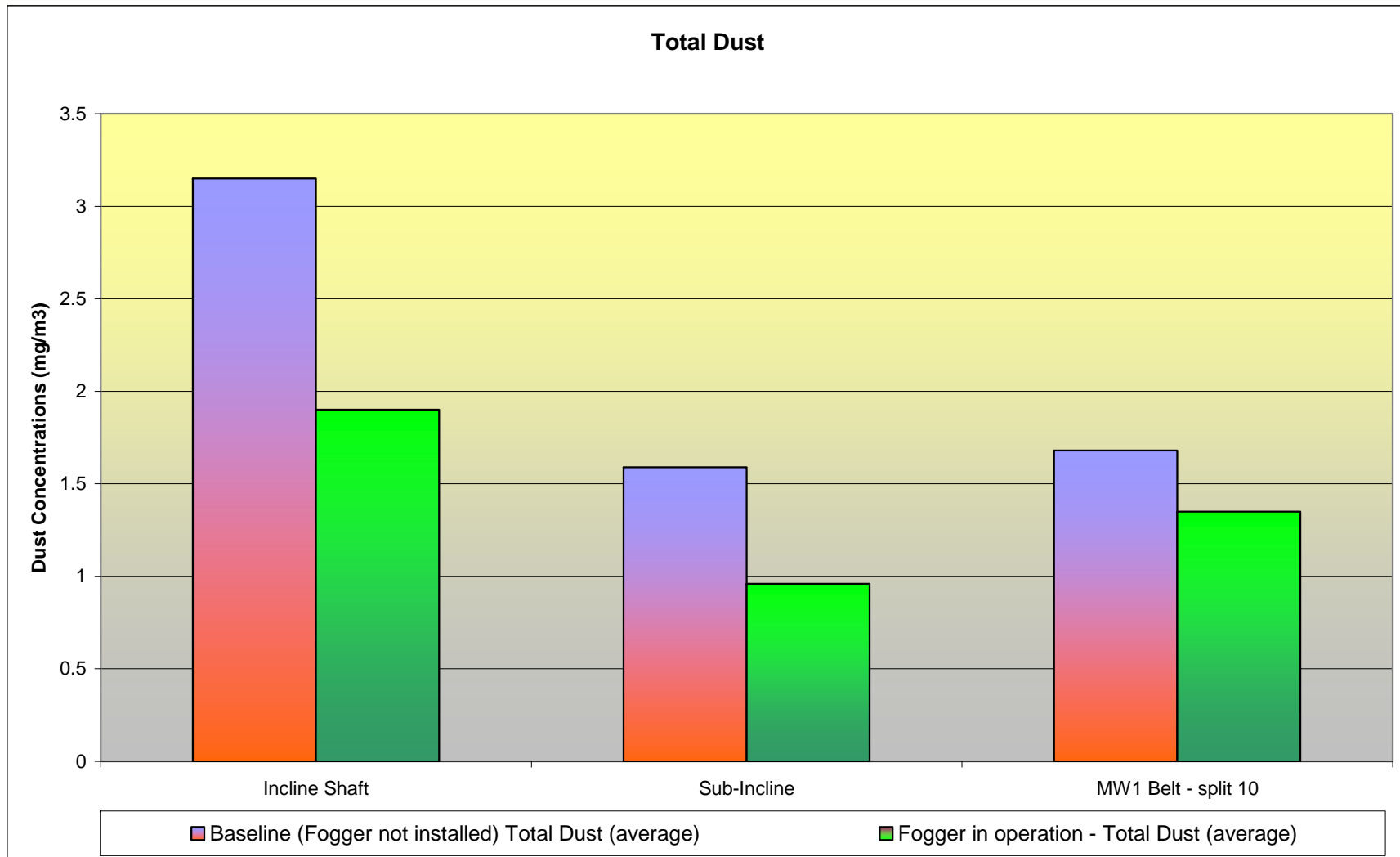
Findings



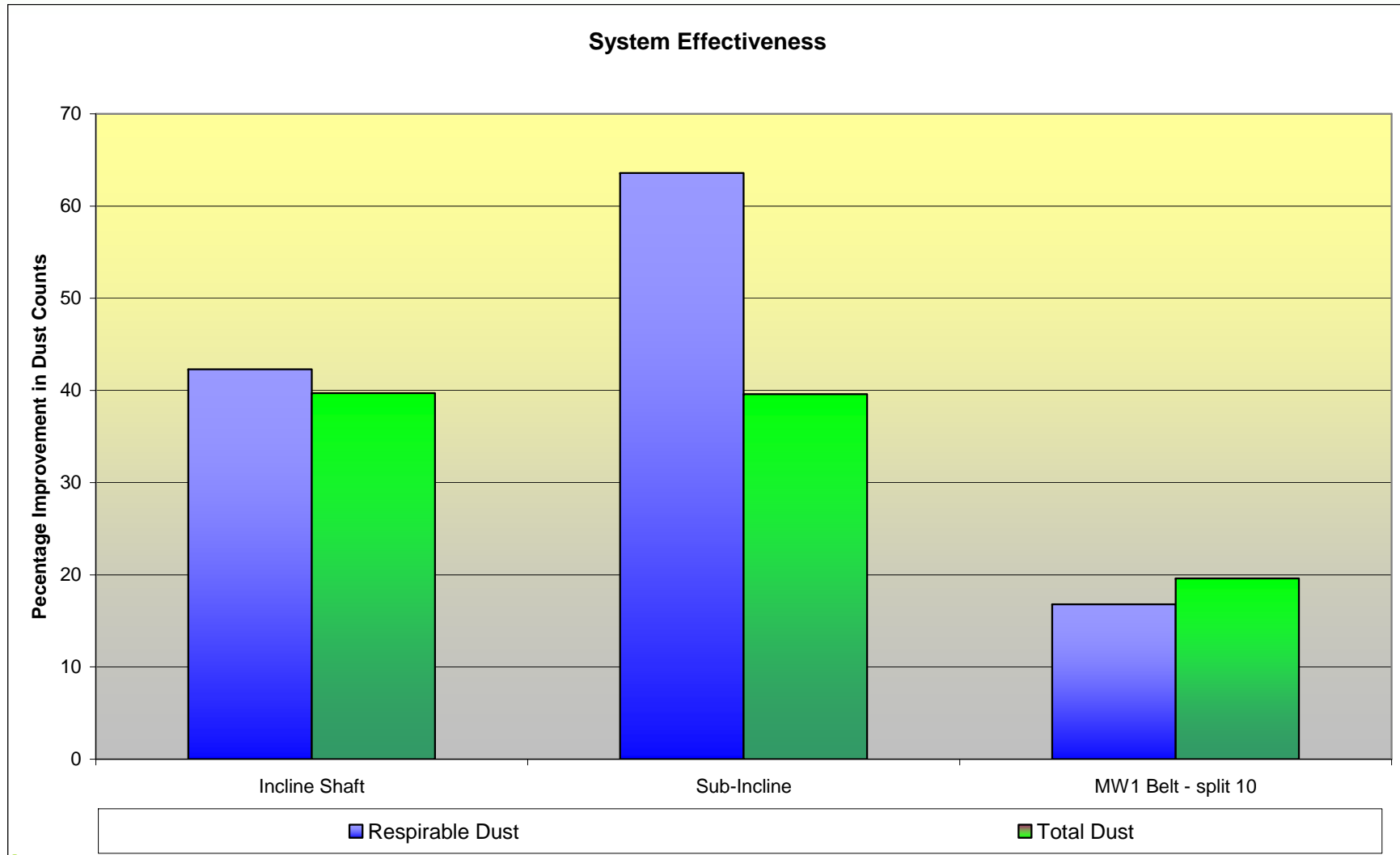
Sampling Results – Respirable Dust



Sampling Results – Total Dust



System Effectiveness



Lessons Learnt



Lessons Learnt

- **The composition of the project team**
 - **Include the engineering department as per the MOSH leading practice adoption guide**
 - **Include operators to facilitate better “buy in”**
- **Practical issues of installation and operation of system not identified in the risk assessment**
- **OEMs competencies questionable**
- **System required modifications to suit specific areas. “One size does not fit all”**
 - **Visibility issues need to be addressed**
- **The involvement of unions and associations facilitated a better behaviour communication process**



Lessons Learnt (Cont.)

- **Positive feedback received once system was operational.**
 - **Some employees questioned if the same principle can be applied elsewhere within the mine to alleviate high dust counts**
- **The leading practice adoption guiding principles has assisted management in attaining skills for the use of adopting and rolling out other best practices**
 - **Communication, stakeholder involvement and employee “buy in”**
- **The project has raised the awareness on the hazards and controlling of dust in an underground mine.**



Conclusion



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The MOSH process is a comprehensive system which will yield positive results if implemented as described in the Leading Practice Adoption Guide.

Through the use of the fogger system, the reduction of the respirable intake dust (+40%) is significant and will assist in achieving the silicosis milestones as well as having a future potential financial benefit in reduced dust risk levies.

Although the reduction is significant, the system will be refined to reduce the levels even further.



Thank you

