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Hemlo DPM Management: Lessons Learned



NYSE : GOLD
TSX : ABX

World class mines.
World class people.

2020 Virtual MDEC

Hemlo - DPM Management History

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- Currently the Ontario Occupational Health and Safety Act specifies an exposure limit for total carbon (TC) of 0.4mg/m³.
- Hemlo was challenged from a corporate level to meet the Barrick and MSHA OEL for TC of 0.16mg/m³.
- From the end of 2014 through 2019 multiple steps were taken to decrease the DPM levels in the underground.
- Now that the system is generally in a “status quo” state of monitoring and observation we can look back and recognize “What we wish we knew then!”
- First step – figuring out where to begin....

This is not just “Hannah’s Problem”

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- Multidisciplinary team effort
 - Maintenance department at all levels: supervision, planners, mechanics – they work on the equipment
 - Operations: supervisors, operators – they run the equipment
 - Trades: use your in-house expertise on installation of any additional items onto a piece of equipment. They work with this equipment and know how it can be manipulated

 - Reach out to others!
 - Use your contacts, other sites within your company, subject matter experts etc. who have been dealing with DPM emissions at other sites

 - Research
 - Get your head wrapped around the issue, understand what DPM is, what it is composed of
 - Understand the mechanics of an exhaust system, the fuel and how it all works together
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This is not just “Hannah’s Problem”

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- Sampling – a lot of sampling will need to be done to establish a baseline of the current levels of DPM seen. Likely more than you think initially

 - With regards to diesel particulate filters (DPFs) and any other aftermarket installations – utilize the knowledge of the manufacturers – these are their products!
 - Bring them to site and underground, right to the equipment you will be working with, go through the set up with them
 - Initiate discussions regarding testing of their products, if they have any data from other customers that they can share
 - Have a list of items you want to discuss/request of them (such as wanting it to be “plug and play”, minimal installation times, user friendly interfaces, etc.) and ask them what they can do to meet those points
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- Training – SO MUCH TRAINING
 - Keep the operators in the loop through the process, include them in discussions with regards to what would be reasonable and logical to expect of them
 - Ensure they understand the role you need them to play and what they need to do – monitoring interfaces and knowing how to respond if/when warning lights start flashing (that DOES NOT include covering them with electrical tape)
 - Emissions testing
 - Testing at both the inlet and outlet of the filters – this will help you to understand what your filters are doing – or not.
 - Track these levels on a regular schedule, e.g. monthly, or on a PM schedule, watch for changes over time with each piece of equipment
 - More sampling!
 - Verification sampling after each step change
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Where are we now?

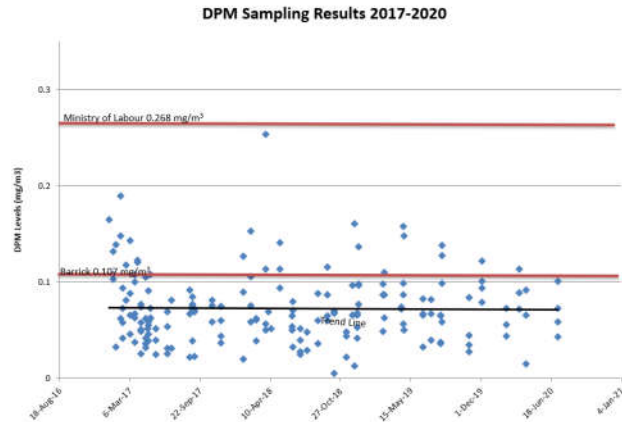
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- In the process of upgrading parts of the UG fleet to equipment with Tier 4 Final engines (scoops and trucks)
 - Purchase of battery powered equipment (Jumbos, bolters)
 - Ventilation upgrades to increase flows in the busiest areas of the mine
 - All new equipment coming with climate controlled cabs for operators
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Where are we now?

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- Continuing to monitor DPM levels UG



Previous Presentations

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- I have been in the position to present at MDEC on 2 other occasions in 2017 and 2019 please see the following links for additional information:
 - MDEC 2017 – Barrick Hemlo DPM Management Strategy and Results
 - https://mdec.ca/2017/S6P2_Demers.pdf
 - MDEC 2019 – Hemlo DPM Management Update
 - https://mdec.ca/2019/S8P3_Hannah_Demers.pdf