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Lowering Miners' Exposure to Respirable Crystalline Silica and Improving Respiratory Protection

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Lowering Miners' Exposure: Respirable Crystalline Silica and Improving Respiratory Protection

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Comment from Conspec Controls

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General Comment

Conspec team group of questions

1) What kind of measurement units are you looking for ? (e.g.: µg/m³ is the official unit for dust particles)
2) What particle sizes are you mostly concerned about ? (e.g: standard definition for particles that get into the respiratory systems range from: PM1.0, PM2.5, and PM10)
3) What is the minimum detectable range needed? (e.g.: PM1.0 is the standard smallest particle size, lower would be difficult to attain at this time)
4) What is the maximum expected range that would need to be detected ? (e.g.: must be able measure PM1.0. PM2.5, or PM10 up to a maximum range of Alarm4 = 500 µg/m³)
5) What are the alarm levels you're looking for each particle size (PM1.0, PM2.5, and PM10) ? (e.g. Alarm1= PM1.0> , 10 µg/m³, Alarm2= PM2.5> 50 µg/m³, Alarm3= PM10>100 µg/m³)
6) Do we need IS approvals on Dust Sensors ? I already talked about this in a previous email. Dust sensors have fans (to pull in dust) and a laser sensor (to measure dust size), and both are not IS friendly. Will MSHA make it easier to approve these Dust sensors ?
7) Will MSHA require periodic calibration for Dust sensors ? How about periodic maintenance ?
8) Will MSHA require any certifications associated with using Dust sensors ?
9) Is MSHA interested in research looking into having a multi-gas unit that measures:
a. Coal Dust particles (Dust sensor)
b. Smoke or Soot Dust particles (PM1.0 soot)
c. CO PPM
d. Combination of Smoke (#b) and CO (#c) to detect fires with higher confidence levels.
e. NO PPM (Diesel Discriminator when used with CO)

What does MSHA want to measure exactly, in a perfect scenario?

Are these going to be fixed air quality stations tied to a system? (if they are measuring movable/portable units the conditions are always changing and there would never be a trend to track what they could be walking into a plume of Dust)
Is this going to be tied into the existing AMS system? (if so, how would you want this to communicate with the immediate area and to the surface? Will it all need to be trackable)
Can MSHA explain how to reduce or lower the dust particulate during actual operation (ie if they turn inlet and/or exhaust fans up will that create a worsening of the dust in the air or reduce it?)
Will the dust particulate system need to report the conditions to a centralized system? Would that system need to be able to send out individual alarms to individuals or to a region in the mine that conditions are not favorable?
Would MSHA be looking for a system that would have pre-determined setpoints of levels or also being able to conduct a TWA for 8 hrs? or BOTH?
What if slowing an inlet or exhaust fan helps the dust condition in the mine but the gas readings increase/build up. Which system will supersede the other?

1) Anything special or in particular you would like to see our equipment control? (Ex. Fans, doors, levers, etc.)
2) Any certain color strobes or alarms that notify specifically for air quality/respirable dust warnings?
3) Will this equipment be required to operate in IS areas?
4) What are the distance requirements on how often to monitor the air quality? (Ex. 1000’ or 5000’ requirements)