Crystalline Silica and Diesel Particulate Matter

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Crystalline Silica

- Current Regulatory Status
- Recent Developments
- Ongoing Research

Current Regulatory Status

- Occupational Safety and Health Administration (OSHA) and Mine Safety and Health Administration (MSHA)

- Current Permissible Exposure Limit is

  PEL = 10mg/(% Silica + 2)

- OSHA lists silica as a priority for promulgating a comprehensive standard

Recent Developments

- **American Conference of Governmental Industrial Hygienists (ACGIH) lawsuit.**
  - **ACGIH prevailed but much was learned on how ACGIH develops its TLVs. Those involved with the litigation report:**
    - **Closed and secretive committees**
    - **Conflict of interests of TLV committee members**
    - **Too much influence from DOL members on committees**
    - **Failure to fairly address all the science available on a substance**

Ongoing Research

- American Chemistry Council's Crystalline Silica Panel
  - Updated mortality study of Vermont granite shed workers
    - Will be the most definitive study regarding silica and disease
    - Incorporates newly found dust exposure data from the 40's, 50's and 60's
    - Expected to be completed late in 2009
  - Currently evaluating an impinger/cyclone conversion factor study to complement the mortality study

Diesel Particulate Matter

- Current Regulatory Status
- Recent Developments
- Ongoing Research

Regulatory Status

- **MSHA is enforcing a 160 µg/M^3 exposure limit for worker exposure in non-coal underground mines.**
- **Analytical method reliability for DPM is questionable at these low levels.**
- **Expect citations of the lower DPM standard to be challenged in court**

Recent Developments

- A new NSSGA/MSHA sampling workshop for DPM was initiated this month at a Roger's Group UG mine
- The aggregates industry has not embraced the use of exhaust particulate filters
- Focus has been on ventilation, newer engines and Biodiesel

Ongoing Research

- National Institute for Occupational Safety and Health and the National Cancer Institute DPM mortality study is nearly complete
- Real Time analyzer for DPM
- Smoking and DPM

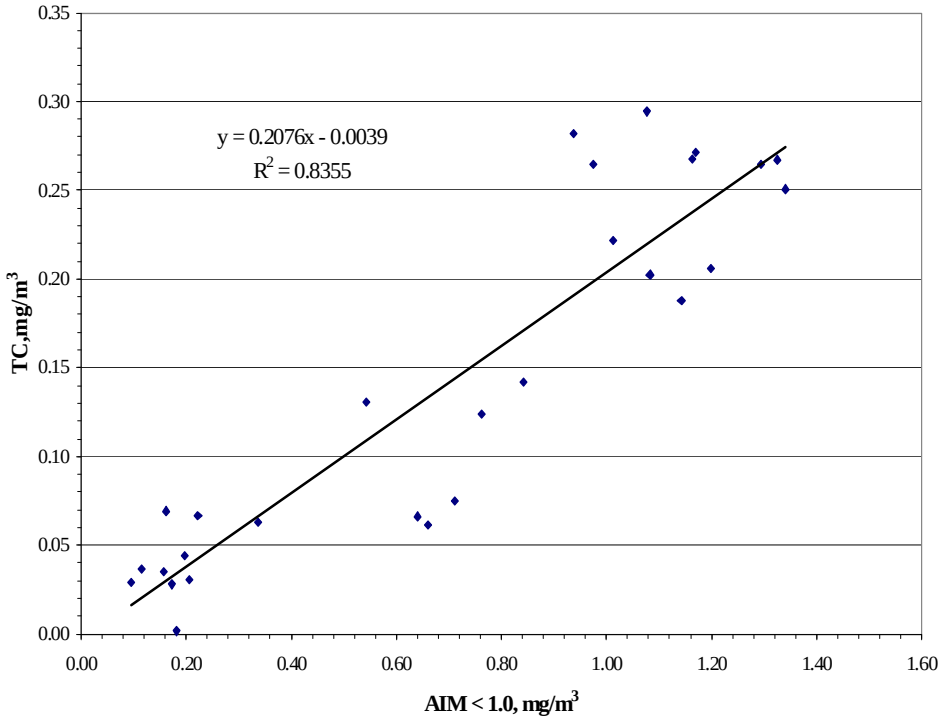
Vulcan, Univ. Minn and NIOSH DPM Real Time Analyzer Project

- **Purpose**
  - **Need for quicker turnaround on measuring DPM control effectiveness**
- **Objective**
  - **Determine the correlation between NIOSH 5040 DPM method and TSI real time analyzer**

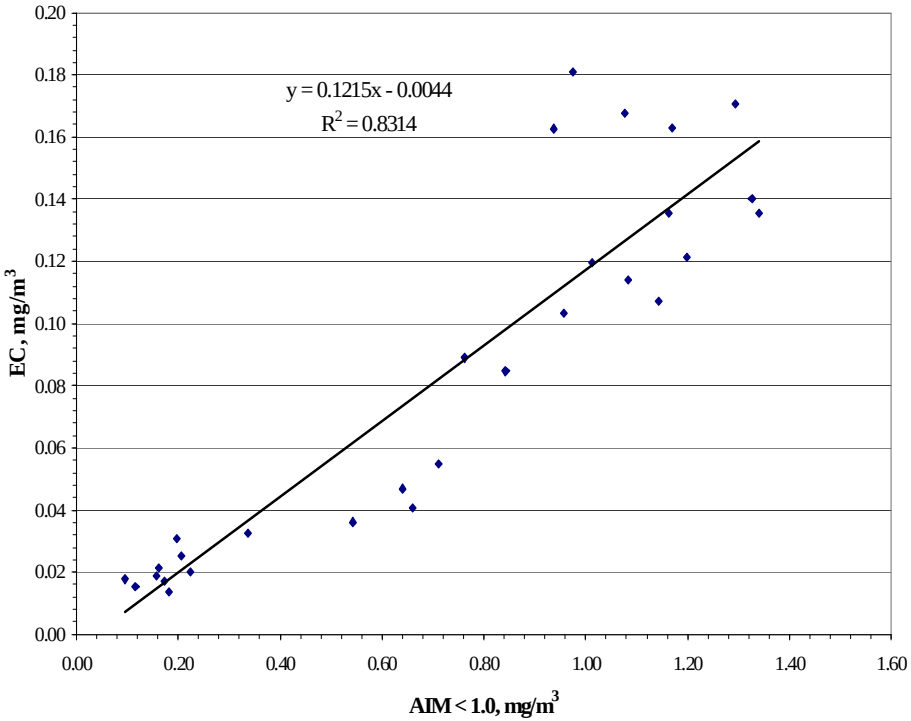
Instrumentation

3 AIM 510 photometers with impactors
3 SKC cassettes with impactors; 1 cassette with 3 filters others with 2
1 MSA cassette with impactor
MSA ELF pumps used with MSA and EC/OC samples

Regression Analysis



TC



EC

Total Carbon and Smoking

Units in Severity Ratio (exposure/PEL)

JOB	Smokers	Non-smokers
Blasters	1.35 (12)	0.97 (9)
Bolters	3.64 (6)	1.19 (6)
Drillers	1.78 (7)	0.89 (13)
Truck Drivers	2.05 (7)	0.54 (15)
Loader Oprs.	1.36 (5)	0.59 (11)
Scalers	1.76 (8)	1.27 (9)

Total Carbon and Smoking

Conclusion

Smoking cessation for underground miners is good for their health and good for your compliance!