Silica Dust: Fracking
It will take your breath away

Enform’s Exposure Control Plan (ECP)
Outline

• What is silica?
• Why should I care?
• Exposure risk
• Exposure control
• Enform’s approach
• Questions?
What is silica

• Silica is naturally occurring and can be found everywhere (SiO$_2$)
• Silica can be crystalline (quartz) or non-crystalline (amorphous)
• Crystalline silica can be found in:
  – Rock
  – Sand
  – Products like cement, etc.

Why should I care?

• Silica is a hazard (primarily chronic) when it is breathed deep into the lungs (respirable)
• Silica causes the following illnesses:
  – Silicosis - lung scar tissue
  – Lung cancer
  – Bronchitis
  – Kidney disease
• Irreversible and progressive

[link to video: silica-win.wmv]
Exposure risk

- Silica’s OEL
  - 8-hour TWA
  - What does that mean?
  - 2X lower than lead (0.05 mg/m$^3$)
  - 400X lower than nuisance dust (10 mg/m$^3$)

- If it’s silica and it’s visible, overexposure is just a matter of time!
Exposure risk

• How do we re-think our perceptions of risk?
Exposure risk

• You may be thinking that I am exposed for only a few days, weeks or months, I will be ok, right?

• A worker at 100X the Silica OEL
  – With no respirator they get a working lifetime in 90 days
    • Even at 100X, acute health effects may not provide adequate warning
    • After 100X, risks are likely not linear
      – i.e. high exposures for even short periods have more risk
Fracking - Exposure Sources

• Proppant (sand: 30-99% quartz)
  – The high percentage of quartz and amount of energy imparted into the sand makes this hazard unique
  – Any transfer points
    • Rail to truck
    • Truck to sand tent or site sand storage (vertical or horizontal)
    • Site sand storage to hopper
    • Pneumatic in-loading on site
  – Working in visible frack dust?
Controls - Engineering

- The answer to many silica exposures is engineering and administrative controls
  - This does not have to be expensive/difficult
    - Wet materials
    - Distance/time etc.

- Look for opportunities to make a difference!
  - Take some action (action = caring)
Controls - PPE

• Different dust levels = different protection levels
  – Respirator protection factors
    • Half-face - 10
    • Full-face - 50 and 100
    • PAPR or Supply Air - 1,000
  – Why? Leakage, where the respirator meets the face
  – Coveralls
So what do I need to do?

• Fracking
  – Depends on the presence of engineering controls and where you are working
  – What is needed?
    • Consistently applied engineering controls
So what do I need to do?

- Fracking
  - Some workers need a $\frac{1}{2}$ mask
    - Not in dust on an on-going basis
    - At least 3 meters from source
  - Some workers need full-face or better
    - On-going and close to source
    - Handling frack dust (powders)
  - Adjacent workers may be at risk
    - If you are breathing visible frack dust you need a respirator (micro-seismic, flow back, medics etc.)
Enform’s Approach

- Silica ECP template
  - Modular approach
- Guidance Sheets
  - Sources
  - Controls
  - Hazard Assessment
Summary

• Silica is not nuisance dust!
• Silica is everywhere
• What you don’t know will still hurt you
• Enform’s approach has the answers you need
• Solutions by industry - for industry
Is your worker’s future clear?

Healthy Lung

Silicosis Lung

Questions

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