Dust Control for New OSHA Regulations

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What is Respirable Crystalline Silica Dust?
**OSHA Silica Standard Outline**

- Reduces the personal exposure limit (PEL) of the employees from 0.1mg/m$^3$ to 0.05mg/m$^3$ 8 hr. time weighted average (TWA)
- Creates an action level (AL) of 0.025mg/m$^3$
- Requires engineering controls and written control plans
- Medical Surveillance of employees
- Requires training of employees on the hazards associated with respirable crystalline silica (RCS)
- Respirators may be required with, but not in place of engineering controls measures
Exposure Monitoring Requirements

RCS Testing of Employees

- **Test employees every three months for RCS**
- **Test employees every six months for RCS**
- **No RCS testing needed as long as engineering controls have not been changed**

Offer medical surveillance at no cost to the employee if exposure is above the AL for more than 30 days per year.
NIOSH Study of Hydraulic Fracturing Employees

- 6 Frac Sites Studied (5 different plays)
- 111 total samples taken
- High Risk Employees
  - Blender Operator
  - Sand Mover/T-Belt Operator

### TABLE VI. Samples Above ACGIH TLV, NIOSH REL, or OSHA PEL

<table>
<thead>
<tr>
<th>Site</th>
<th>ACGIH TLV</th>
<th>NIOSH REL</th>
<th>OSHA PEL</th>
<th>Total No. Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fayetteville, Ark</td>
<td>24 (92.3%)</td>
<td>19 (73.1%)</td>
<td>14 (53.9%)</td>
<td>26</td>
</tr>
<tr>
<td>DJ Basin 1, Colo.</td>
<td>16 (84.2%)</td>
<td>14 (73.7%)</td>
<td>12 (63.2%)</td>
<td>19</td>
</tr>
<tr>
<td>Eagle Ford, Texas</td>
<td>5 (62.5%)</td>
<td>5 (62.5%)</td>
<td>4 (50.0%)</td>
<td>8</td>
</tr>
<tr>
<td>DJ Basin 2, Colo.</td>
<td>19 (90.5%)</td>
<td>14 (66.7%)</td>
<td>9 (42.9%)</td>
<td>21</td>
</tr>
<tr>
<td>Marcellus, Pa.</td>
<td>25 (92.6%)</td>
<td>23 (85.2%)</td>
<td>18 (66.7%)</td>
<td>27</td>
</tr>
<tr>
<td>Bakken, N.D.</td>
<td>4 (40%)</td>
<td>1 (10%)</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>97 (83.8%)</strong></td>
<td><strong>76 (68.5%)</strong></td>
<td><strong>57 (51.4%)</strong></td>
<td><strong>111</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Limit</th>
<th>Below</th>
<th>0.025 mg/m³</th>
<th>0.05 mg/m³</th>
<th>0.1 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below ACGIH</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Below NIOSH</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Below OSHA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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Major Types Engineering Controls

Mechanical

Mini-Baghouse/ Isolation

Chemical
Personal Exposure Monitoring
Personal Exposure Monitoring

Personal Sample Results for Respirable Crystalline Silica

Time-Weighted Average (mg/m³)

Job Position
- BLENDER OPERATOR
- FLUID TECHNICIAN
- HYDRATION SPECIALIST
- SAND MASTER

New PEL
Action Level
Old PEL
Untreated
Treated
The Big Difference
Supply Chain Engineering Controls

Mechanical
Isolation
Chemical
**Conclusion**

- Measurements proven below the new action level
- Serves as an engineering control for the supply chain (mine to well)
- Transparent to your operations
- Long shelf life
Thank You!

Questions?