Coal Miners’ Health Update
Mine Safety & Health Administration

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U.S. DOL Mine Safety and Health Administration
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Coal Miners’ Health Update

- Mine Safety and Health Administration
- Respirable Coal Mine Dust
- Coal Workers’ Pneumoconiosis (CWP)
- Diesel Particulate Matter
- Noise
- Substance Abuse in Mining
Mine Safety and Health Administration
Mission and Vision for MSHA

**MISSION**
- An Organization dedicated to sending EACH miner home safe and healthy at the end of every shift

**VISION**
- A Partner with the mining community In leading the way to
  - ZERO Fatalities
  - The END of Occupational Illness
Coal Fatalities 1900-2002

COAL FATALITIES 1900 - 2004

Bureau of Mines 1910

Federal Coal Mine Safety and Health Act of 1952

Coal Mine Safety and Health Act of 1969

Federal Mine Safety and Health Act of 1977
Coal Health Issues
Respirable Dust Samples in Underground Coal Mines, 1970 – 2005

Concentration of Valid Designated Occupation (DO) Samples and Reported MMU Tonnage by Calendar Year

Respirable Coal Mine Dust

Calendar Year

Sample Concentration (mg/m3)

Tonnage

Sample Concentration

Calendar Year

Reported Tonnage (tons/shift)

Conc. (mg/m3), Mine Operator Samples

Tons, Mine Operator Samples

Conc. (mg/m3), MSHA Samples

Tons, MSHA Samples
Based on Operator DO Samples
- Applicable Standard – respirable dust concentration adjusted for presence of quartz > 5%
MSHA’s approach to reduce miners’ exposure to respirable dust

Address the root causes of overexposures through Respirable Dust Emphasis Program

• Improve interim compliance with:
  – Respirable dust control portions of mine ventilation plans, and
  – Operator sampling requirements

• Improve plan evaluation

• Improve dust controls to consider quartz and dust generation events
Respirable Coal Dust Program

- Respirable Dust Emphasis Program
- Review of mines with unusually high and low respirable dust generation
- Longwall “Designated Occupation” Sampling
- Ventilation Plan Parameter Assessment
- Deep-cut Mining & Scrubber Best Practices
- Part 90 Miner Program
- Monitoring Reduced Standards for Quartz
- Personal Dust Monitors (PDMs)
Personal Dust Monitor
Personal Dust Monitor

- May provide accurate real-time measurement of respirable coal mine dust and exposure data at the end of shift;
- Currently under development and testing by the Coal PDM partnership
  - NIOSH, MSHA, UMWA, BCOA and NMA (Government, industry and labor)
- If successful, will be an important tool in evaluating the effectiveness of dust controls and protecting coal miners’ health
Targeted Coal Workers’ Health Surveillance


April 18, 2003 / 52(15);336-340

Reported by: MRL Pon, MPH, RA Roper, MS, Div of Health, Coal Mine Safety and Health, Mine Safety and Health Administration, US Dept of Labor. EL Petsonk, MD, ML Wang, MD, RM Castellan, MD, MD Attfield, PhD, GR Wagner, MD, Div of Respiratory Disease Studies, National Institute for Occupational Safety and Health, CDC.
CWP Prevalence

- CWP prevalence among miners examined is trending downward:
  - 1970 - 11%
  - 2002 - 2.8%
    - 3.45% Underground (712/20,647)
    - 2.0% Surface (209/10,466)
Targeted Coal Workers’ Health Surveillance

TABLE 1. Prevalence of coal workers’ pneumoconiosis (CWP) and progressive massive fibrosis (PMF) among examined noncontract miners*; estimated number of employees, and participation rates, by state — U.S. National Coal Workers’ X-ray Surveillance Program and Miners’ Choice Program, fiscal years 1996–2002

<table>
<thead>
<tr>
<th>State</th>
<th>Underground miners</th>
<th>Surface miners</th>
<th>Average employment and estimated participation†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. miners examined</td>
<td>No. (%)</td>
<td>No. (%)</td>
</tr>
<tr>
<td>Alabama</td>
<td>2,308</td>
<td>25 (1.1)</td>
<td>3 (0.1)</td>
</tr>
<tr>
<td>Arizona</td>
<td>0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Arkansas</td>
<td>0</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Colorado</td>
<td>1,655</td>
<td>24 (1.5)</td>
<td>3 (0.2)</td>
</tr>
<tr>
<td>Illinois</td>
<td>2,883</td>
<td>31 (1.1)</td>
<td>1 (0.0)</td>
</tr>
<tr>
<td>Indiana</td>
<td>816</td>
<td>5 (0.6)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Kentucky</td>
<td>3,073</td>
<td>106 (3.5)</td>
<td>9 (0.3)</td>
</tr>
<tr>
<td>Louisiana</td>
<td>0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Maryland</td>
<td>249</td>
<td>24 (9.6)</td>
<td>—</td>
</tr>
<tr>
<td>Montana</td>
<td>0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>New Mexico</td>
<td>123</td>
<td>1 (0.8)</td>
<td>—</td>
</tr>
<tr>
<td>North Dakota</td>
<td>0</td>
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<td>—</td>
</tr>
<tr>
<td>Ohio</td>
<td>530</td>
<td>9 (1.7)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>21</td>
<td>0 (0)</td>
<td>0 (0)</td>
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<tr>
<td>Pennsylvania</td>
<td>2,468</td>
<td>44 (1.8)</td>
<td>3 (0.1)</td>
</tr>
<tr>
<td>Tennessee</td>
<td>192</td>
<td>5 (4.9)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Texas</td>
<td>0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Utah</td>
<td>1,586</td>
<td>8 (0.5)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>Virginia</td>
<td>1,749</td>
<td>156 (8.6)</td>
<td>11 (0.6)</td>
</tr>
<tr>
<td>Washington</td>
<td>0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>West Virginia</td>
<td>3,059</td>
<td>232 (7.6)</td>
<td>17 (0.6)</td>
</tr>
<tr>
<td>Wyoming</td>
<td>26</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Others§</td>
<td>0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>20,647</td>
<td>664 (3.2)</td>
<td>48 (0.2)</td>
</tr>
</tbody>
</table>

* Among 56 examined contract miners from nine states (Alabama, Indiana, Kentucky, Michigan, Pennsylvania, Tennessee, Utah, Virginia, and West Virginia), 75 were determined to have CWP and one was determined to have PMF.
† Participation by contract miners was based on an estimated 47,662 contract miners working at surface or underground coal mines, of which 5,582 (11.8%) were examined in the federal programs.
§ Alaska, California, Kansas, Mississippi, and Missouri.
The Southern Appalachian area is also known as the Central Appalachian coal basin, the southern highlands, and the Appalachian piedmont region. This relatively small area (approximately 250 miles by 50 - 75 miles) has been the location of 57% of the nation’s coal mine fatalities over the past 5 years, 71% of 2004 fatalities and the area with the highest prevalence of Coal Workers’ Pneumoconiosis.
CWP Prevention and Surveillance

- Identify underlying factors contributing to CWP prevalence and progression
- Ensure mine ventilation plan parameters are adequate and complied with on each production shift
- Increase awareness of regional CWP
- Overcome barriers to CWP prevention
- Ensure Part 90 program effectiveness
- Increase miners’ participation in the NIOSH x-ray program
Diesel Particulate Matter (DPM)

Coal Diesel Rule is Technology Forcing

- Final phase of DPM standard took effect January 19, 2005, reducing allowable emissions to 2.5 g/hr.

Ceramic

HTDPF

DST or Scrubber
Diesel Particulate Matter (DPM)

Recommended options for non-permissible diesel equipment

- Cool Exhaust
- Cool Exhaust for Hi-Temp Disposable Particulate Filters (HTDPF)
  - 650F Max (for compliance with 72.501)
  - to err on conservative side: 500F (safety factor)
- Hi-Temperature Shut Down
- Ceramic Filters / DST / Water Scrubbers
- Engine Maintenance
Diesel Particulate Matters (DPM)

- 2nd Program Information Bulletin
  - Specific temperature guidelines for HTDPFs
  - Emphasize exhaust cooling & hi-temp. shutdown
  - Maintenance best practices
  - Ceramic filters / DST / Water Scrubbers

- Training for Mine Operators
  - CMS&H and Tech Support
  - Focus in District 9
  - Advance development of exhaust cooling
  - Address maintenance issues
  - Limitations of aftertreatment devices
Noise
Noise

- Health Standards for Occupational Noise Exposure
- Performance-based Standard
- Occupational exposure based
- Engineering and/or administrative controls
- Hearing protection part of Hearing Conservation Program
- Technology-forcing – technologically achievable, administratively achievable, conditional and promising noise controls
Feasibility of Noise Controls

- **Feasibility** = Technically Achievable + Economic Achievable

- Feasibility is considered on a case-by-case basis, based on the conditions at the mine.

- An engineering or administrative control is technically achievable if it can reduce noise exposures to the PEL or a 3 dBA equivalent reduction in exposure used either singly or in combination with other engineering or administrative controls.
Exposure Source Miners with Noise Overexposure Under Active Citation (Underground 62.130)

- Continuous Mining Machine: 63%
- Roof Bolting Machine: 16%
- Longwall: 15%
- Other: 6%

Data Taken From Noise Database Feb 3, 2005
Exposure Source Miners with Noise Overexposure Under Active Citation (Surface 62.130)

Data Taken From Noise Database Feb 3, 2005
Noise - MSHA Actions Related to Part 62

1. Health Standards for Occupational Noise Exposure - September 13, 1999, effective date of September 13, 2000
2. Fact Sheet “Health Standards to Protect Miners from Hearing Loss” - Sept. 1999
Noise


6. Q&A Noise Enforcement Policy (Program Policy Letter P04-IV-1 / P04-V-1) - reissued

7. Part 62 training

8. “Basis for Assigning a P-Code For Noise Overexposure” PIB No. P04-5 - January 27, 2004

   □ Surface Mining
   □ Underground Mining
   □ Mills and Preparation Plants
11. Determining the Feasibility of Noise Controls
13. Guidance on Noise Control Costs
14. Coal Enforcement Training
15. Noise Workshops – Charleston, WV
    June 21-22, 2005 and Grand Junction (tbd)
Substance Abuse in Mining

**Outcome:** Reduce and eliminate substance abuse in the mining community to help create a drug free workforce.

**Outreach to:** Mine operators, miners and their families, Local community special interest groups, contractors
Substance Abuse in Mining

Current and Future MSHA Initiatives

- Posted Summit materials on www.msha.gov
- Incorporate drug-free workplace messages into MSHA outreach activities
- Participate in KY, VA, WV and MSHA Substance Abuse Task Force
- Produce Substance Abuse Video
- Develop Substance Abuse Resource Kit and other materials for mine operators
MSHA Collaboration

- Coal Diesel Partnership
- Coal Noise Partnership
- Personal Dust Monitor Partnership
- National Institute of Occupational Safety and Health
- MSHA Alliance with National Mining Association and Bituminous Coal Operators Association
- United Mine Workers of America
- Mine operators, miners and miners’ rep
- States
- Department of Labor
Conclusion

- Much progress has been made, more needs to be done
- Multiple strategies are most effective
- “Can do” attitude and good-faith efforts go a long way
- Collaboration in partnerships and alliances have been beneficial for the health of miners
- Need pro-active leadership NOW!!
Thank You!!

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