Silica Protection at LANL

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Crystalline Silica at LANL

- 1978 soil study-Bandelier tuff is principle parent material for 95% of soils in Los Alamos County.
- 1995 Geological Survey at TA-21 concluded the major mineral constituents in volcanic tuff were:
  - Alkali feldspar
  - Quartz
  - Cristobalite
  - Tridymite
  - Glass
  - Up to 65%
- Total crystalline silica as high as 40% found in composite personal air samples.
OSHA on PEL limitations

- OSHA “considers the level of risk remaining at the revised PEL to be significant,” but that the new PEL will “substantially reduce” risk compared to the current PEL, and the new PEL is “appropriate because it is the lowest level feasible.”—See preamble p. 16755.

- OSHA’s Silica webpage states the new rule “will save over 600 lives and prevent more than 900 new cases of silicosis each year.”

- The NIOSH NORMS (National Occupational Respiratory Mortality System) database indicates the last year there were over 500 deaths in the US with silicosis listed as an underlying cause was 1970.

- CDC indicates a 93% decline in the overall silica-related illness mortality rate between 1968 and 2002.
LANL OSH-Plan 001 “Silica Hazard Control Guidance” issued in February 2015 based on proposed standard.

- Includes an expanded version of Table 1
- Enhanced PPE requirements based on LANL sampling results
- Includes additional job tasks based on LANL sampling.

### Table 1: Control Measures for Construction and Maintenance Activities

<table>
<thead>
<tr>
<th>Operation</th>
<th>Engineering and Work Practice Control Methods</th>
<th>Required Air-Purifying Respirator (Match to applicable engineering and work practice control method)</th>
<th>Source of Controls</th>
<th>Notes on Implementation Considerations and Challenges</th>
</tr>
</thead>
</table>
| Using stationary masonry saws (i.e., not hand-held) Cutting tile, masonry units, brick, stone, concrete backer board, or other concrete products | Use saw equipped with integrated water-delivery system. Additional considerations:  
- Change water frequently to avoid silt buildup in water.  
- Prevent wet slurry from accumulating and drying.  
- Operate equipment such that no visible dust is emitted from the process.  
- When working indoors, provide sufficient ventilation to prevent buildup of visible airborne dust. Performing these tasks indoors increases the likelihood that silica concentrations will exceed the OEL. Consult a Qualified IHSP to determine if additional controls are required if working indoors or within a confined space.  
- Ensure saw blade is not excessively worn. | None  
Time limit must be strictly imposed | OSHA Proposed Standard, Backed by National Institute of Occupational Safety and Health (NIOSH) and industry research, ASTM E1132-13 | -Common activity maintenance and construction.  
- Most existing equipment is equipped with integrated water-delivery system.  
- Current practice adequate.  
- Sampling needed. |
| Road Line Eraser Operation (Tranter 20H with wet method) accompanied by leaf blower debris clearing. | Wet Method | None | LANL Sampling Data | -Periodic activity maintenance and construction.  
- Additional sampling needed. |
| OSIA Filtering Face Piece (Dust Mask) Or Half-Mask (10). | OSIA Filtering Face Piece (Dust Mask) Or Half-Mask (10). | OSIA Filtering Face Piece (Dust Mask) Or Half-Mask (10). | OSIA Filtering Face Piece (Dust Mask) Or Half-Mask (10). | -Periodic activity maintenance and construction.  
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### Example

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<tr>
<td>Using stationary masonry saws (i.e., not hand-held)</td>
<td>Use saw equipped with integrated water-delivery system.</td>
<td>None</td>
<td>N95 Filtering Face Piece (Dust Mask) Or Half-Mask (10).</td>
<td>-Common activity maintenance and construction.</td>
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<td>Cutting tile, masonry units, brick, stone, concrete backer board, or other concrete products</td>
<td>Additional considerations:</td>
<td>Time limit must be strictly imposed</td>
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<td>None</td>
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