OSHA ACTIVITIES ON SILICA, NOISE, AND HEXAVALENT CHROMIUM

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SILICA: Serious health hazard

Fatalities and disabling illnesses continue to occur.

200-300 silicosis deaths/year (1987-1996)

- Identified on death certificate as an underlying or contributing cause
- Many cases no doubt unascertained
- One study estimates actually 500+ deaths/yr.

3600-7300 silicosis cases/year
Serious health hazard

- IARC and NTP have classified silica as a known human carcinogen.
- Autoimmune disease: Scleroderma, rheumatoid arthritis, lupus, sarcoidosis
- Renal: end-stage renal disease, glomerulonephritis (autoimmune or toxic)
Risk assessment: silicosis mortality (t’Mannetje et al., 2002)

- Pooled analysis of six cohorts: US diatomaceous earth; Finnish, US granite; US industrial sand; US, Aus. gold mines
- 13/1000 for 100 µg/m$^3$ (current PEL)
- 6/1000 for 50 µg/m$^3$ (NIOSH REL)
Risk assessment: lung cancer
(Steenland et al., 2001)

- Pooled analysis of ten cohorts: as for silicosis plus Chinese pottery, tin mines, tungsten mines and South African gold mines
- 11-28/1000 for 100 µg/m³ (current PEL)
- 8/1000 for 50 µg/m³ (NIOSH REL)
Roadway Work Zone Operations Associated with High Exposures to Crystalline Silica
Sandblasting
Sandblasting in an Enclosure
Drilling Concrete Pavement
Concrete Saws

demo saw

walk-behind saw

5.1.1999
Concrete Milling

- Operator: 11.4 X PEL
- Ground laborer: 12.9 X PEL

5. 1. 1999
Jackhammer

3.8 X PEL
Jackhammer

6.9 X PEL

2.7 X PEL

5.1.1999
Compressed Air Cleaning

>100 mg/m³

5.1.1999
Compressed Air Cleaning

jackhammer crew

5.1.1999
Scabbling
Recent non-regulatory activity

Until recently, OSHA has addressed the silica problem through a variety of non-regulatory approaches:

- Silicosis Special Emphasis Program: enforcement targeting to “reduce and eliminate the workplace incidence of silicosis from exposure to crystalline silica”
- Dissemination of guidance material through publications and OSHA website
Draft proposed standards

Two have been developed—one for general industry/maritime, one for construction.

Each contains regulatory alternatives for the usual provisions found in an OSHA standard: PEL, methods of compliance, exposure assessment, respiratory protection, protective work clothing, hygiene facilities and practices, employee health screening, hazard communication, employee information and training, and recordkeeping.
Draft proposed standards

- Alternate draft PELS: 50, 75, 100 µg/m³

- Provisions also have alternatives, e.g.: exposure monitoring frequency:
  - Biannually above action level/quarterly above PEL
  - Performance based: periodic monitoring as needed to adequately characterize employee exposures and to ensure that engineering controls/work practices adequate or use resp.; supplement personal with other such as direct-reading particulate samplers
There are two different standards for general industry and construction.

Construction standard has an alternate approach: Specific controls can be implemented instead of doing exposure monitoring.
Small Business Regulatory Enforcement Fairness Act SBREFA

Determine if there are alternatives that reduce the burden to small business while achieving the goals of the OSH Act

Panel consists of members from OSHA, OMB, SBA

Panel chooses 15-25 Small Entity Representatives (SERs)

Panel discusses issues with SERs and solicits written comments from them

Panel summarizes SER comments and provides its own findings and recommendations in a report
SER Comments

On regulated areas in construction:

- Establishing outdoors is difficult-windy conditions turn entire site into reg. area
- How to restrict a highway when work zone could be miles long?
- May be possible to train employees about location of regulated areas rather than demarcating them.
- OSHA looking seriously at comments—wants to insure worker protection in most flexible way possible
All this and more can be found at…

www.osha.gov
Click on “Dockets & E-comments”
Click on “Easy search page”
Search for docket name “silica”
Current status of OSHA silica rulemaking

- Conducting technical and economic feasibility analyses
- Fully exploring all recommendations of the SBREFA Panel Report
- Will have risk assessment peer reviewed by February 2005.
- Pulling information together for our decision makers
Concern about jackhammer noise

Mellisa Williamson, 35, a Bullitt Avenue resident, worries about the effect on her unborn child from the sound of jackhammers.
Hearing Conservation: Background & History

- 1983 Comprehensive Hearing Conservation Program for General Industry
- No new rule was made for construction
- August, 2002 Advanced Notice of Public Rule Making (ANPR) initiated for Hearing Conservation Program for Construction Workers
Current OSHA Noise Regulations in Construction

OSHA’s construction rules (1926.52 & 1926.101):

- do not provide specifics on the “continuing, effective hearing conservation program”

- HCP required if workers are exposed at or above 8-hour 90 dBA PEL.
Why OSHA Is Concerned

- Construction involves loud intermittent noise sources
- 750,000 construction workers exposed above 85 dBA – 15% of the construction workforce
- Engineering or administrative controls are often not used, or do not bring noise levels below the PEL
- Use of hearing protectors is low
Hearing loss in construction is extraordinarily common—study: 11% workers (18-44 years old) had compensable hearing loss.

22% of work shifts exceed 85 dBA and 9% exceeded 90 dBA.

Hearing protectors used only 33% of the time when needed.

OSHA risk data: workers at 85 dBA-10% or greater risk of hearing loss in lifetime.
An Example from OSHA Inspection Data

Bobcat Operator Breaking Pavement

112 dBA (7 hour sample)
ANPR for Hearing Conservation for Construction Workers

- ANPR was published August 5, 2002
- Open 90 day for comments
- Received 47 comments
- Diverse groups responded to the ANPR
- OSHA has reviewed the docket and continues to gathering information to see if a rulemaking should be pursued
Stakeholder Meetings Continues the Process of Gathering Information

- Informal discussion
- Exchange of ideas
- OSHA staff can learn from people’s experience in implementing or not implementing programs
- Areas of stakeholder consensus identified
- Problem issues can be clarified
Stakeholder Meetings

Held March 2004 in Chicago, IL and July 2004 in Washington, DC

Broad representation of stakeholders

- Trade Associations
- Labor organizations
- Professional groups, insurance and safety reps
- Hearing protection and equipment manufacturers
OSHA Asked Stakeholders to Focus on Three Issues

- **Exposure Monitoring**
  - Most effective way to evaluate exposures

- **Audiometric Testing**
  - Practical approaches to provide tests to a largely transient workforce

- **Portability of Audiometric Records**
  - Creative approaches to maintain and transfer long term records
Stakeholders’ Perspectives:

- Keep any future regulation simple and clear

- Specification oriented regulations may be more effective in construction than performance requirements
Other Stakeholder Perspectives

Any new regulation needs to be supported by training materials and effective enforcement.

Implementing hearing conservation programs in construction will require a culture change which takes time.
Current status

- On Regulatory Agenda as active project
- Gathering additional information
- Much information needed if do a proposed rule
- Risk assessment and feasibility analyses needed before decision on future action
Hexavalent Chromium: Major Uses

- Pigments (dyes, paints, inks, glass, plastics)
- Metal plating
- Chemical synthesis (ingredients, catalysts)
- Produced during welding
- Impurity in Portland Cement as result of cement production process
Hexavalent Chromium: Major Health Effects

- Lung cancer
- Asthma
- Nasal septum ulcerations/perforations
- Skin ulcerations
- Allergic and irritant contact dermatitis
Cancer risk at current PEL

OSHA estimates that the lifetime occupational risk of lung cancer at the current OSHA PEL of 52 µg/m³ ranges from 105-351 excess lung cancers per 1000 exposed workers.
Hexavalent Chromium

On October 4, 2004, OSHA published
Three proposed standards: general
industry, construction, shipyards

New PEL: Lower the PEL from 52 µg/m³ to
1 µg/m³ for all industries

Ancillary provisions vary by the three
major industries
Ancillary Provisions for Construction

- If above PEL 30 days/yr, engineering and work practice controls are required
- Respiratory protection required above PEL
- Protective work clothing and equipment
- Change rooms and washing facilities
- Medical surveillance if signs or symptoms or emergency exposure
- Warning labels, employee training
- Medical/training records
Exclusion from coverage

- Exposures to Portland cement in construction
- Exposures occurring from application of pesticides in general industry
Benefits of proposed standard

- 1970-7500 total avoided lung cancers (44-161 avoided cancers/yr)
- 209-1045 avoided cases of dermatitis/yr
- 5387 avoided nasal septum ulcerations/perforations
Current Status

- Proposed rules available at [www.osha.gov](http://www.osha.gov)
- Comments by mail, fax, electronic by January 3, 2005-info available on website or Docket Office: 202-693-2350
- Electronic comments: [http://ecomments.osha.gov](http://ecomments.osha.gov)
- Informal public hearing in Washington, DC beginning February 1, 2005-notify of intention to appear by January 3, 2005