Medical Surveillance and the New Cr(VI) Standard

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Medical surveillance is the administration of medical tests for the purpose of detecting organ dysfunction or disease before they become symptomatic. It is a clinical focus.
Biologic monitoring is the measurement and assessment of workplace agents or their metabolites in biologic specimens (e.g., blood, urine, or hair) to evaluate the effective dose received of a toxic substance.
Medical surveillance (to include biological monitoring) is a form of **secondary** prevention (early intervention to prevent overt illness)

Engineering and administrative controls and PPE are **primary** prevention strategies.
Medical surveillance

- Is not a method of process control.
- The worker is not a guinea pig.
- Medical surveillance requires a partnership with IH to achieve the objectives of prevention, detection and intervention of occupational disease.
Industrial hygiene monitoring

- Determines need and assures the adequacy of engineering controls
- Identifies the need for personal protective equipment
- Determines the need for medical surveillance
- Driven by regulatory compliance (most of the time?)
Medical Surveillance Mandates

- Section 5(a)(1) requires employers to “furnish to each of his workers employment and a place of employment which are free from recognized hazards that are causing or likely to cause death of serious physical harm to his workers.” (General Duty Clause)
- Section 5(a)(2) requires employers to “comply with occupational safety and health standards promulgated under this [OSH] Act”
- Section 6(b)(7) provides for OSHA to adopt standards requiring medical surveillance.
Standard Setting Methodology

- Calculated to protect 97.5% of the working population over a working lifetime
- Usually applies a 10 fold protection factor
- May apply a 10 fold uncertainty factor
- ALARA or ALATEF for carcinogens or extremely toxic substances
Hazards Requiring Medical Surveillance by OSHA Standards

- 2-acetylaminofluorene
- acrylonitrile
- 4-amiondiphenyl
- inorganic arsenic
- asbestos
- benzene
- benzidine
- bischloromethyl ether
- cadmium
- coal tar pitch volatiles
- coke oven emissions
- cotton dust
- dibromochloropropane
- 4-dimethylaminoazobenzene
- ethylene oxide
- ethylenimine
- formaldehyde
- hazardous waste
- lead
- methylchloromethyl ether
- alpha-naphthylamine
- beta-naphthylamine
- 3,3’–dichlorobenzidine
- 4-nitrobiphenyl
- n-nitrosodimethylamine
- noise
- beta-propiolactone
New Standard Requiring Medical Surveillance

Hexavalent Chromium

Cr(VI)

Effective May 20, 2006
Cr(VI) Standard Setting History

- 1974—adopted by reference from 1943 ANSI standard based on 1924 and 1928 non-CA criteria.
- 1993—Public Citizen’s Health Research Group (HRG) and OCAW Union (now PACE) petitioned OSHA to lower PEL to 0.5 ug/m3 based on CA concerns. Petition denied, 1995 standard promised.
- 1995—No action by OSHA.
Cr(VI) Standard Setting History

- 1999—Still no standard.
- 2002—HRG again sued OSHA for standard. Court ordered mediation to no avail.
- 2006—Jan 18 deadline continued to Feb 28 due to “Katrina.”
- Published Feb 28 to become effective May 30, 2006.
Cr(VI) Health Effects

- Lung cancer (1st reported in 1890)
- Dermatosis and skin ulcers
- Irritation of mucus membranes (eye, nose, and throat)
- Eye damage
- Nasal ulceration
- Sensitization
Routes of Exposure

- Inhalation (dust, fumes, mists)
- Ingestion (hand to mouth)
- Dermal contact
- Mucous membranes
Is Lower PEL Medically Indicated?

- Early level based on non-CA criteria
- OSHA estimates that 1M workers exposed to Cr(VI)
- OSHA has determined that workers face a significant risk to material impairment of health
- Cr(VI) is a know human carcinogen
- OSHA estimates that up to 34% of workers exposed at current PEL for 45 years would die of lung CA

YES!
Standard Requirements

- Covers all Cr(VI) exposures except pesticides, cement and inert substances
- PEL 5.0 ug /m3 air 8-hr TWA
- Action Level 2.5 ug/m3 8-hr TWA
- Exposure monitoring schedule established
- Regulated areas established
- Compliance methods specified
- PPE prescription
- Medical surveillance specified
- Hazard communication requirement
- Recordkeeping
Medical Surveillance

- All workers exposed above the action level >30 days/year
- Any worker experiencing signs or symptoms associated with Cr(VI) exposure
- All workers exposed in an emergency situation (exposure levels unknown but considered to be above PEL)
- Performed by or under the supervision of a PLHCP
Physician or other Licensed Health Care Professional (PLHCP) Definition

An individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular health care services [required by the Standard.]
Medical Examination Frequency

- Within 30 days of initial assignment
- Annually
- Within 30 days of a PLHCP’s written recommendation
- With signs or symptoms of exposure
- Within 30 days of an uncontrolled release
- Exit examination
Contents of the Medical Exam

- A medical and work history with emphasis on
  - Respiratory system (asthma, SOB)
  - Skin (ulcers, contact dermatitis)
  - Nasal septum perforation
  - Smoking status and history
- Physician examination of skin and respiratory tract
- Any other medical tests deemed appropriate by the PLHCP
Information Provided to the PLHCP

- A copy of the Cr(VI) Standard
- A job and exposure history for the employee
- Future anticipated exposure history for the employee
- PPE to be used and under what circumstances
- The results of previous examination (if controlled by the employer).
PLHCP’s Written Medical Opinion

- Submitted to employer within 30 days of the exam
- A statement as to whether the employee is at increased risk of material impairment to health from continued exposure to Cr(VI)
- Clearance to use PPE including a respirator (IAW 29 CFR 1910.134)
- Statement that the PLHCP has discussed the results of the exam with the employee
- Additional testing recommendations
- Employer has responsibility to provide a copy of the PLHCP’s written opinion letter to the employee within 14 days after receiving it
Recordkeeping

- Air monitoring data
- Historical monitoring data
- Objective monitoring data
- Medical surveillance
  - Name and social security number of the employee
  - Copies of the PLHCP’s written opinions
  - A copy of the information provided to the PLHCP
- All recordkeeping must be maintained and available IAW 29 CFR 1910.120