

The image features the OSHA logo prominently in the center. The logo consists of a stylized 'O' with a blue outer ring and a grey inner ring, followed by the letters 'S', 'H', and 'A' in a white, serif font with a slight shadow. The background is a close-up, slightly blurred view of the American flag, showing the stars and stripes in shades of red, white, and blue.

OSHA

adds value to business,
work and life.

OSHA Update:
Hexavalent Chromium Standard
Medical Surveillance Compliance Issues
Globally Harmonized System (GHS)

Christine A. Corrigan, CIH

2007 NASA Occupational Health Conference

“Moving Toward the Summit: Occupational Health Challenges”

July 26, 2007

What is Hexavalent Chromium?

- Toxic form of chromium metal that is generally man-made
- Used in many industrial applications primarily for its anti-corrosive properties
- Created during certain “hot” work processes where the original form of chromium was not hexavalent



How Can Occupational Exposures to Hexavalent Chromium Occur?

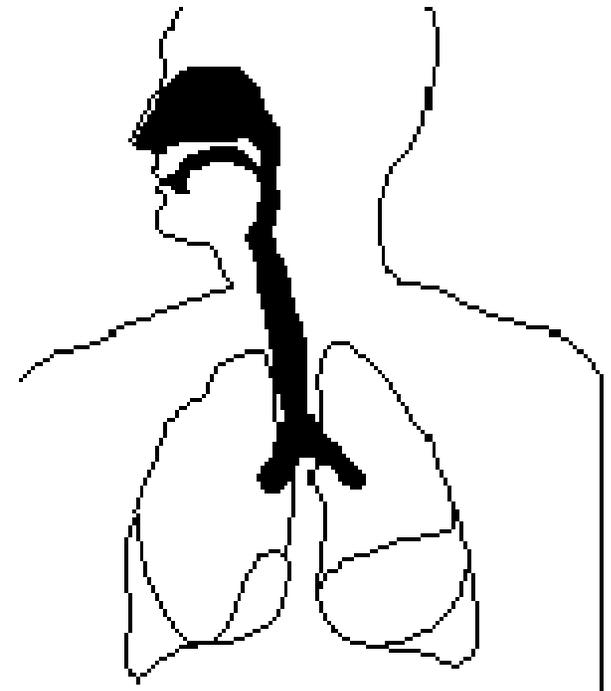
- Inhalation of mists, dusts or fumes created during processes involving the use of Cr(VI) compounds or hot processes that cause the formation of Cr(VI)
- Eye or skin contact with powders, dusts or liquids containing Cr(VI)

Some major types of Cr(VI) compounds and their uses

- Chromic acid
 - Electroplating
 - Wood preservatives
- Potassium dichromate
 - Catalysts
- Sodium dichromate
 - Pigments, dyes
 - Glass and plastic colorants
- Strontium chromate
 - Anticorrosive coatings

Major Health Effects

- Lung cancer
- Nasal septum ulcerations and perforations
- Asthma
- Skin ulcers
- Allergic and irritant contact dermatitis



Three Cr(VI) Standards

- 1910.1026 General Industry
- 1926.1126 Construction
- 1915.1026 Shipyards

Major Provisions of the Standards

- Scope
- Permissible Exposure Limit (PEL)
- Exposure Determination
- Regulated areas **
- Methods of Compliance
- Respiratory Protection
- Protective Work Clothing and Equipment
- Hygiene Areas and Practices
- Housekeeping **
- Medical Surveillance
- Communication of Hazards
- Recordkeeping
- Dates

** General industry only

Scope: Who is Covered by the Standard?

All occupational exposures to Cr(VI) compounds **except**:

- Exposures that occur in the application of pesticides
- Exposures to portland cement
- Where employers have objective data demonstrating that a material containing chromium or a process involving chromium cannot release Cr(VI) in concentrations at or above $0.5 \mu\text{g}/\text{m}^3$ as an 8-hour time-weighted average (TWA) under any condition of use

Permissible Exposure Limit (PEL) and Action Level (AL)

- PEL: 5 $\mu\text{g}/\text{m}^3$ – TWA
- AL: 2.5 $\mu\text{g}/\text{m}^3$ - TWA

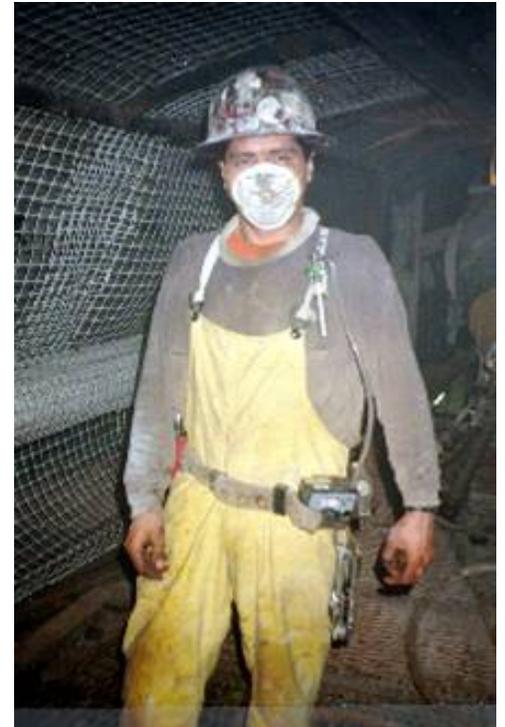
Exposure Determination

Two options allowed for determining employee exposures:

- Scheduled monitoring option
- Performance-oriented option

Scheduled Monitoring Option

- Prescribes a schedule for performing initial and periodic personal monitoring
- If initial monitoring indicates exposures are:
 - Below the AL: monitoring can be discontinued
 - At or above the AL: monitor every 6 months
 - Above the PEL: monitor every 3 months



Performance-Oriented Option

- Exposures characterized using any combination of air monitoring data, historical monitoring data or objective data
- No fixed schedule for performing periodic monitoring

General Requirements for Exposure Determination

- Affected employees must be notified where exposures exceed the PEL
- Methods used for air monitoring and analysis must be sufficiently accurate
- Employees or their representatives must be allowed to observe Cr(VI) monitoring

Regulated Areas

- For general industry employers only
- Areas where exposures exceed or can be reasonably expected to exceed the PEL
 - Must be demarcated from other areas
 - Must limit access to employees who have a need to be there

Methods of Compliance: What methods must employers use to achieve the PEL?

- Establishes engineering and work practice controls as the primary means of achieving the PEL
- Exceptions:
 - Painting aircraft or large aircraft parts
 - Processes or tasks that do not result in exposures above the PEL for 30 or more days per year
- Prohibits job rotation to achieve compliance with the PEL

Respiratory Protection

Respirators and a program per 29 CFR 1910.134 required during:



- Periods necessary to install or implement feasible engineering and work practice controls
- Maintenance or repair operations where engineering and work practice controls are infeasible
- Operations where all feasible controls have been used and exposures are still above the PEL
- Operations where exposures do not exceed the PEL for 30 or more days per year
- Emergencies

Protective Work Clothing and Equipment

- Required where a hazard is present or is likely to be present from skin or eye contact with Cr(VI)
- Not linked to the PEL
- Provided and paid for by the employer
- Cr(VI)-contaminated clothing and equipment must be removed when work shift or task is completed
- Special provisions for cleaning, storage and labeling of Cr(VI)-contaminated clothing and equipment



Hygiene Areas and Practices

- Must provide change rooms and washing facilities per 29 CFR 1910.141
- Employees must wash their hands and face at the end of a work shift and prior to eating, drinking, smoking, etc.
- Employer-provided eating areas must be kept as free as practicable of Cr(VI)
- No eating, drinking, smoking etc. in regulated areas



Housekeeping

- For general industry employers only
- Keep all surfaces as free as practicable of accumulations of Cr(VI)
- Use HEPA vacuums or other methods that minimize exposure to Cr(VI)
- Use of compressed air prohibited unless:
 - Used in conjunction with a ventilation system to capture the dust cloud created by the compressed air, or
 - No alternative method is feasible
- Dispose of Cr(VI)-contaminated waste in labeled, impermeable bags/containers



Medical Surveillance

- Provisions for conducting baseline and periodic health assessments of exposed employees
- Performed by or under the supervision of a physician or other licensed health care professional (PLHCP)
- Provided at no cost to employee and at a reasonable place and time

Which Employees Must Be Provided Medical Surveillance?

- Exposed at or above the action level ($2.5 \mu\text{g}/\text{m}^3$) for 30 or more days per year
- Experiencing signs or symptoms of Cr(VI) exposure
- Exposed in an emergency



What Must the Medical Examination Include?

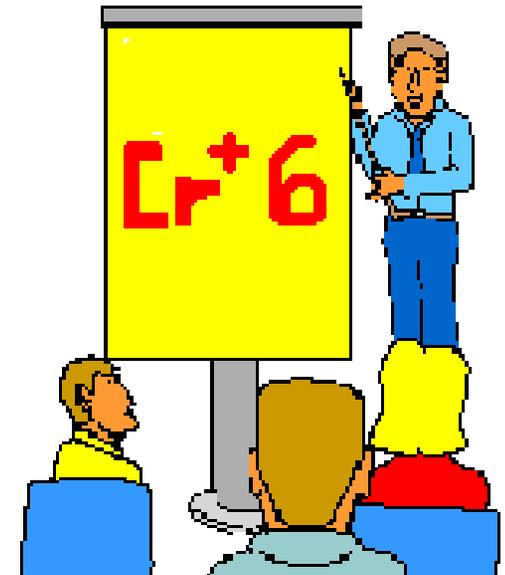
- Medical and work history, with emphasis on:
 - Cr(VI) exposure (past, present, future)
 - History of respiratory system dysfunction
 - History of asthma, dermatitis, skin ulceration or nasal septum perforation
 - Smoking status and history
- Physical examination, with emphasis on the respiratory tract and skin
- Any additional tests deemed appropriate by the PLHCP

When Must Medical Examinations Be Offered?

- Within 30 days after initial assignment and annually thereafter
- Within 30 days after a PLCHP recommends additional examinations
- When employees shows signs or symptoms of Cr(VI) exposure
- Within 30 days after exposure during an emergency
- At the termination of employment

Communication of Hazards

- Provide employee training in accordance with OSHA's Hazard Communication standard (29 CFR 1910.1200)
- Additional training on the contents of the Cr(VI) standard and the purpose and description of the medical surveillance program required by the standard



Recordkeeping

- Must maintain records per 29 CFR 1910.1020 for:
 - Air monitoring data
 - Historical monitoring data
 - Objective data
 - Medical surveillance information, including:
 - PLHCP's written opinions
 - Information provided to the PLHCP
- No requirement to maintain training records



When Must Employers Comply with Provisions of the Standards?

Start-up dates:

- All provisions except engineering controls: Now
- Engineering Controls: May 31, 2010

Major Industries/Operations Covered by the Cr(VI) Standard

- Electroplating
- Welding on stainless steel or Cr(VI) painted surfaces
- Painting
 - Aerospace
 - Auto body repair
- Chromate pigment and chemical production
- Chromium dye and catalyst production
- Glass manufacturing
- Plastic colorant production
- Construction
 - Traffic painting
 - Refractory brick restoration
 - Paint removal from bridges

Top Three Industries/Operations Covered

- Welding - 269,380 (48%)* employees
- Painting - 81,893 (15%)* employees
- Electroplating - 66,857 (12%)* employees

* % of total employees (558,451) covered by the standard

Guidance and Outreach

- Small Entity Compliance Guide – available at http://www.osha.gov/Publications/OSHA_small_entity_comp.pdf
- Compliance Directive
- Other guidance products

Litigation Update

Settlement agreements reached with:

- Surface Finishing Industry Council
- Building and Construction Trades Department – AFL-CIO, Laborers’ International Union of North America, and International Brotherhood of Teamsters
- National Association of Manufacturers and Specialty Steel Industry of North America

Litigation Update (cont.)

Petitions pending in U.S. Court of Appeals for the Third Circuit:

- Public Citizen Health Research Group and the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union
- Edison Electric Institute

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Some of the Most Frequently Cited Standards – *Medical Surveillance related only*

- January 01, 2002 – July 20, 2007 1910.1000 – 1910.1450
- 1910.1030(f) – Hepatitis B vaccination and post-exposure evaluation and follow-up
- 1910.1030(h) – Recordkeeping
- 1910.1020(g) – Employee Information
- 1910.1052(h) – Protective Work Clothing and Equipment
- 1910.1048(d) – Exposure Monitoring
- 1910.1052(i) – Hygiene Facilities
- 1910.1025(e) – Methods of compliance, Engineering and work practice controls
- 1910.1027(d) – Exposure Monitoring

In Region VIII

Overexposures in last two years include:

- 1910.1052 - Methylene Chloride
- 1910.1025 - Lead
- 1910.1026 – Chromium VI
- 1910.95 – Occupational Noise Exposure (including engineering controls)

-
- Respirable Crystalline Silica
 - MDI (Methylene bisphenyl isocyanate)
 - Total Dust
 - Carbon Monoxide

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GHS

OSHA Implementation of the Globally Harmonized System (GHS) for Hazard Classification and Labeling

The GHS Journey Continues...

What is the GHS?

- A common and coherent approach to defining and classifying hazards, and communicating information on labels and safety data sheets.
- Target audiences include workers, consumers, transport workers, and emergency responders.
- Provides the underlying infrastructure for establishment of national, comprehensive chemical safety programs.

Why is the GHS needed?

- No country has the ability to identify and specifically regulate every hazardous chemical product
- For example, in the United States, there are an estimated 945,000 such products
- Adoption of requirements for information to accompany the product helps address protection needs

Why? (cont.)

- Countries with systems that address these needs have adopted different requirements for hazard definitions as well as information to be included on a label or material safety data sheet.
- This impacts both protection and trade.

Why does the US need it?

- The US has regulatory requirements that address concerns in different sectors
- They are not domestically harmonized—each Agency has pursued independent regulations that differ from each other
- Domestic producers have to classify and label multiple times for the same product

Why does OSHA need it?

- OSHA's Hazard Communication Standard (HCS) has performance-oriented requirements for labels and safety data sheets
- Hazard communication is often inconsistent as a result
- Users of labels and safety data sheets would prefer a standardized approach
- Adoption of the GHS would address this domestic concern

Global Benefits of Harmonization

- Countries, international organizations, chemical producers and users of chemicals all benefit.
 - Enhance protection of humans and environment.
 - Facilitate international trade in chemicals.
 - Reduce need for testing and evaluation.
 - Assist countries and international organizations to ensure the sound management of chemicals.

How We Got Here

- Commitment in the preamble to the final standard in 1983.
- Years of bilateral trade negotiations.
- International mandate adopted in 1992.
- Negotiations to complete the GHS in several international organizations for the next 10 years.
- System now available for adoption.

International Activities

- The European Union has developed a detailed proposal and impact analysis. It is available on the web. Public comments were accepted until October 21, 2006.
- http://ec.europa.eu/enterprise/reach/ghs_consultation_en.htm

International Activities, cont.

- Australia also made proposed requirements available for comment until 15 March 2007.
- <http://www.ascc.gov.au/ascc/AboutUs/PublicComment/OpenComment/WorkplaceHazardousChemicalsPublicComment.htm>

International Activities, cont.

- Japan recently completed a comment period on proposed requirements for workplace chemicals.
- Canada has made a sector analysis available that indicates how the GHS will be applied:

http://www.hc-sc.gc.ca/ahc-asc/pubs/ghs-sgh/index_e.html

International Activities, cont.

- A number of countries have undertaken pilot projects on implementation of the GHS. These are in various stages of completion, and include Zambia, South Africa, Senegal, Indonesia, Thailand, the Philippines, Cambodia, and Laos.
- Mexico, Brazil, Argentina, and other Western hemisphere countries are actively pursuing implementation as well.

Development of the GHS

- US supported the process and actively participated.
- Multiple international organizations involved.
- Stakeholders (industry and labor) represented in both the negotiation and implementation processes.

The Scope of the GHS

- Covers all hazardous chemical substances, dilute solutions, and mixtures.
- Pharmaceuticals, food additives, cosmetics and pesticide residues in food will not be covered at the point of intentional intake, but will be covered where workers may be exposed, and in transport.

The GHS Elements

Hazard Classification Criteria

- Health and Environmental Hazards
- Physical Hazards
- Mixtures

Hazard Communication

- Labels
- Safety Data Sheets

Comprehensibility

Guiding principles:

- Information should be conveyed in more than one way.
- The comprehensibility of the components of the system should take account of existing studies and evidence gained from testing.
- The phrases used to indicate the degree (severity) of hazard should be consistent across different hazard types.

Labels

- The Working Group identified about 35 different types of information that are currently required on labels by different systems.
- To harmonize, key information elements needed to be identified.
- Additional harmonization may occur on other elements in time, in particular for precautionary statements.

Pictogram Shape and Colour

- For transport, pictograms will have the background and symbol colours currently used.
- For other sectors, pictograms will have a black symbol on a white background with a red diamond frame. A black frame may be used for shipments within one country.
- Where a transport pictogram appears, the GHS pictogram for the same hazard should not appear.

Transport Pictograms



GHS Pictograms



Allocation of Label Elements

CARCINOGENICITY				
Category 1A	Category 1B	Category 2	-	-
				
Danger	Danger	Warning		
<p>May cause cancer <i>(state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)</i></p>	<p>May cause cancer <i>(state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)</i></p>	<p>Suspected of causing cancer <i>(state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)</i></p>		
<p>Not required under the <i>UN Recommendations on the Transport of Dangerous Goods, Model Regulations.</i></p>				

Signal Words

“Danger” or “Warning”

- Used to emphasize hazard and discriminate between levels of hazard.

Precautionary Information

- GHS label should include appropriate precautionary information.
- The GHS document includes examples of precautionary statements which can be used.
- The intent is to harmonize precautionary statements in the future.

Role of the SDS in the GHS

- The SDS should provide comprehensive information about a chemical substance or mixture.
- Primary Use: The Workplace
- Employers and workers use the SDS as a source of information about hazards and to obtain advice on safety precautions.

US Agencies Affected by GHS

- Environmental Protection Agency (EPA)
 - Pesticides Program
- Department of Transportation
 - Hazardous Materials Regulations
- Consumer Product Safety Commission (CPSC)
- Occupational Safety and Health Administration (OSHA)

Activities of Other Agencies

- EPA—White Paper on Implementation; situational analysis; stakeholder workshop October 18-19, 2006.
- DOT—Plan to adopt regulatory changes in 2007, implement by 2008.
- CPSC—Beginning work on situational analysis.

OSHA's Current Activities

- Represent US in the UN Subcommittee of Experts on the GHS.
- Awareness raising.
 - Presentations at meetings of trade associations, consensus standards committees, and professional societies.
 - Web page on the GHS.

Current Activities, cont.

- Situational analysis:
 - OSHA has had a detailed comparison completed of the HCS to the GHS.
 - The comparison is available on our web page.
- Coordination with other agencies:
 - We continue to participate in interagency discussions about implementation.

Current Activities, cont.

- International coordination:
 - OSHA and Health Canada conducted a workshop on the GHS in Mexico City as part of NAFTA discussions regarding handling of hazardous substances in the workplace.
 - OSHA and the European Commission discussed GHS implementation at a joint conference on occupational safety and health in September 2005 and completed a pilot project related to the GHS.

Regulatory Agenda

- In the May 16, 2005, semi-annual regulatory agenda, OSHA indicated that it was adding modification of the Hazard Communication Standard to adopt the GHS.
- On September 12, 2006, OSHA completed the first step by publishing an advance notice of proposed rulemaking (ANPR).

GHS Journey

- After many years of negotiations to develop the GHS, the ANPR is the first step in the process to adopt it and make it mandatory in US workplaces.
- The US regulatory process includes a number of required activities, as well as analyses to support the process.

The GHS Isn't...

- A model regulation or a standard that can simply be adopted. It has criteria or provisions and explanatory text. Countries and authorities will choose those parts of the system that apply to their sphere of regulation, and prepare implementing text consistent with their own requirements.

Impact on OSHA Requirements

- Hazard Communication Standard includes the primary affected requirements.
- OSHA has more requirements affected by the GHS than other US agencies:
 - Cover all acute and chronic hazards.
 - Have requirements for labels and safety data sheets.
 - Cover over 7 million workplaces and 945,000 hazardous chemical products.

Technical Issues

- Do the GHS criteria adequately cover the hazards currently addressed by HCS? Are there other hazards that should be added? (e.g., combustible dust)
- Should OSHA include references to any lists of hazardous chemicals besides those with OSHA PELs? What exposure limits should be included on the SDS?

Technical Issues, cont

- Are there any hazard categories within classes that should not be adopted?
- Should OSHA change other standards to be consistent with changes to physical hazard criteria (e.g., flammable liquids)
- Any other technical issues that should be addressed?

Guide to the GHS

- A substantive guide to the GHS has been made available on OSHA's web page.
- The guide describes the GHS in some detail to give people a better understanding of its provisions, and thus help them provide better input.

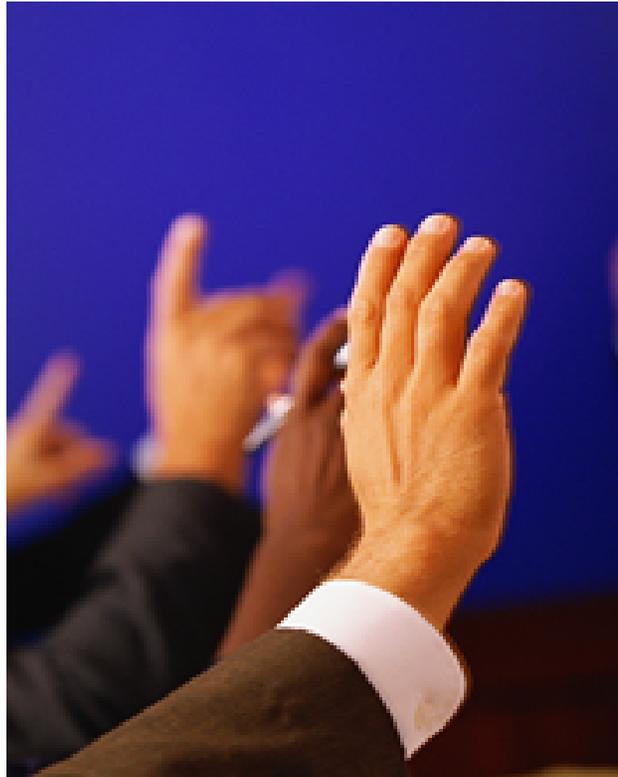
Conclusion

- The ANPR and the Guide can be accessed from OSHA's web page:

<http://www.osha.gov>

Click on “Hazard Communication” button on right side. ANPR and Guide links are on the portal page for that topic.

Questions?



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