What’s New at NIOSH

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Program

• NIOSH Activities Update
• Organizational Changes - 2014
• Questions

The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the National Institute for Occupational Safety and Health.
Selected NIOSH Activities

- Ebola
- Direct Reading and Sensor Technology
- NMAM Update
- Naturally Occurring Mineral Fibers
- Climate Change
- Oil and Gas
- Exposure Banding
NIOSH Mission

• To generate new knowledge in the field of occupational safety and health

• To transfer that knowledge into practice
Ebola: colorized transmission electron micrograph
NIOSH Activities - Ebola

• Numerous Documents and Products
  – Interim NIOSH Training for Emergency Responders: Reducing Risks Associated with Long Work Hours
  – NIOSH Factsheets: The Buddy System, Airport Workers, Fatigue
  – Wastewater Worker Guidance

• Deployments

• Research
  – Heat Stress
  – Personal Protective Equipment (PPE)

http://www.cdc.gov/niosh/topics/ebola/default.html
NIOSH Staff Deployments

- West Africa (CDC and Safety Officer)
- Quarantine-Stations
- Domestic Rapid Ebola Preparedness (REP) Teams
- CDC Emergency Operations Center
- NIOSH Emergency Preparedness and Response Office
- Numerous Workgroups
  - Transmission
  - PPE/Infection Control
  - Environmental Monitoring
PPE Research

- Heat stress and duration for wearing PPE
- Resistance to body fluids
- Glove degradation studies - bleach and alcohol-based sanitizers
- Donning and Doffing
- Fluid penetration
  - Respirators
  - Surgical masks
NIOSH Center for Direct-Reading and Sensor Technologies

- Coordinate a national research agenda for direct-reading methods and sensor technologies
- Develop guidance documents
  - Validation and performance criteria
- Develop training protocols
- Establish partnerships
Direct Reading and Sensor Technologies

Overview

Direct-reading methods and sensors are being used more frequently in many different settings ranging from personal monitoring of individual health to applications in research and in clinical practice. NIOSH began organized research in this area in 2006 with the creation of the DREAM initiative (Direct Reading Exposure Assessment Methods). NIOSH will build upon and expand the DREAM program to address lessons learned, advances in technology, and stakeholder contributions. NIOSH researchers have developed a number of direct-reading methods and monitors and are exploring new ways to use these technologies to improve occupational safety and health.

The use of sensors has increased exponentially as countless remote wireless sensors are now employed for monitoring the environment, worker sites, disaster response, “smart” buildings and facilities, and in agriculture and health. Wireless data transfer based on cell phone networks and smart phone technology is enhancing the adoption of these sensors, and allowing integration of geographically dispersed sensors to produce comprehensive exposure pictures. Wearable and even implantable sensors are being developed that could aid in exposure assessment and clinical practice.

NIOSH Center for Direct Reading and Sensor Technologies

The NIOSH Center for Direct Reading and Sensor Technologies (NCDRST) was established in May 2014 to coordinate research and to develop recommendations on the use of 21st century technologies in occupational safety and health. The NCDRST is a virtual center hosted by the NIOSH Division of Applied Research and Technology and the NIOSH Exposure Assessment Cross Sector Program.

NCDRST Goals

1. Coordinate a national research agenda for direct-reading methods and sensor technologies;
2. Develop guidance documents pertinent to direct-reading methods and sensors, including validation and performance characteristics;
3. Develop training protocols; and
4. Establish partnerships and collaborations in the Center with NIOSH.

http://www.cdc.gov/niosh/topics/drst/
Recent Research Activities

• **Direct Reading Real-Time Locations System**
  – Remote monitoring of a worker’s exposure and location in real-time
  – RF Triangulation for indoor use

• **Helmet Cam**
  – Enhanced Video Analysis of Dust Exposures (EVADE)

• **Personal Dust Monitor**
  – Exposure data for respirable coal mine dust at the end of a work shift and in real-time

• **The Coal Dust Explosibility Meter**
  – Handheld device to assess the explosibility of coal and rock dust mixtures in real time.
5th ed. NIOSH Manual of Analytical Methods

- Web-based with real-time posting of new approved methods
- Sampling guidance
- Topic areas
  - Diesel particulate (update)
  - Portable photoionization detectors (update)
  - LOD/LOQ (update)
  - Sampler wall deposits (update)
  - Direct-reading instruments
  - Biomonitoring
Occupational Exposure Sampling Strategies Manual

- Update 1997 NIOSH “Yellow Book”
- Exposure Measurement and Estimation
  - Spatial and temporal exposure variability
- Sampling Strategies and Study Design
  - Decision tools, interpretation
- Data Handling and Evaluation
Naturally Occurring Elongate Mineral Particles (EMP)

- Many areas of National Forest are located on geological formations permissive of asbestos
- Forest Service and other workers are concerned with exposures during forest maintenance activities and when fighting wildland fires
- Broad need for national guidance regarding Naturally Occurring EMP
Naturally Occurring Asbestos Locations in the Contiguous USA and Alaska and the 100 Fastest Growing U.S. Counties

Asbestos does not occur naturally in Hawaii.

- Prospect\(^1,2,3,4\)
- Past producer\(^1,2,3,4\)
- Former Processing Plant\(^4\)
- Occurrences of Asbestos\(^1,2,3,4\)
- Fibrous Amphiboles
- Top 100 fastest growing county\(^3\)

Projection: Lambert Conformal Conic, NAD 83 (preserves local directions)

Former Processing Plants are plants that once processed asbestos. Asbestos is no longer processed in the United States.

Prospect indicates that the asbestos deposit was prospected (evaluated) for possible commercial use, typically by trenching and (or) drilling, but the deposit was not further developed.

Occurrence indicates that asbestos was reported at this site. This category includes (1) sites where asbestos-bearing rock is described in a geologic map or report; and (2) asbestos noted as an accessory mineral or vein deposit within another type of mineral deposit.

Past Producer is an asbestos mine that once operated in the U.S. but is currently closed; the equipment or structures may have been removed or abandoned. There are no current producers in the United States.

Fibrous amphiboles indicates sites where minerals of the amphibole mineral group have been described as fibrous in the geologic literature. The reports on these locations do not mention asbestos but these sites indicate geologic settings with the potential to host asbestos.

**References**


**Printing Date:** July 21, 2007

**File:** Raster_100FastCountiesmekk3.png

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Department of Health and Human Services
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health
Fire line construction
Trail Maintenance
Climate Change and Workers

- Temperature Extremes
- Air Pollution
- UV Radiation
- Extreme Weather
- Wildland Fire
- Vector-borne and other Infectious Disease
- Changes in Built Environments
- Industrial Transitions

Image courtesy of AIRS Science Team, NASA/JPL

Photo Courtesy of USFS

Photo courtesy of USGS
Lyme Disease

Confirmed Cases in 2001 = 17,029
Confirmed Cases in 2011 = 24,364

Chikungunya Virus Disease
United States, 2014
How do we eliminate hazards and minimize risks in emerging industries and technologies?
NIOSH Oil & Gas Extraction Sector Program

The goal of the NIOSH Oil and Gas Extraction Safety and Health Program is to reduce the rate of injury and disease among workers in the oil and gas extraction industry.

www.cdc.gov/niosh/programs/oilgas/goals
Flowback Tank Gauging

- Flowback Tech
  - gauging/strapping flowback tanks
Peak Exposure: Factors

1.2 ppm Benzene at 54 inches above hatch

149 ppm Benzene at 18 inches above hatch
Flammable/Explosive Hazards

- Direct reading instruments found instances of short term excursions measuring > 40% of the Lower Explosive Limit (LEL) – measured near flowback tanks, separators, and tank batteries
Occupational Exposure Banding (OEB)

- Approximately 1,000 chemicals with authoritative Occupational Exposure Limits
  - NIOSH averages 2 RELs annually
- EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory contains over 84,000 chemicals
- Exposure Banding provides a mechanism to quickly and accurately assign chemicals into “categories” or “bands” based on their health outcomes and potency considerations
NIOSH needs volunteers!

If interested in Beta-testing the OEB process, please send Lauralynn Taylor-McKernan an email at:
LMcKernan@cdc.gov to volunteer.
NIOSH Programmatic Changes in 2014
Research Translation Office

• Coordinate and guide the transfer of NIOSH funded research to enhance the adoption and use of findings

• Develop novel approaches

• Facilitate interaction with those interested in research translation
Center for Productive Aging and the Workforce

• Bring together expertise and knowledge to develop resources for designing “age-friendly” workplaces by
  – Developing Institute-wide research goals
  – Building and expanding upon collaborations
  – Developing knowledge on interventions and best practices
  – Disseminating findings on the aging workforce

http://www.cdc.gov/niosh/topics/healthyagingatwork/
Economic Research and Support Office

- Economic research, analysis, and support for all of NIOSH
- Conduct economic research on the value of prevention and impact of economic factors on worker injury and illness
- Economic analysis of proposed regulations
- Evaluate the economic impact of NIOSH programs and recommendations
"I think you should be more explicit here in step two."