### 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



#### Workplace Safety & Health Topics

Overview

#### Workplace Safety and Health Topics

Industries & Occupations

Hazards & Exposures **Diseases & Injuries** 

Safety & Prevention

Direct Reading and Sensor Technologies

Chemicals

Emergency Preparedness & Response

**Related Topics** Aerosols

Nanotechnology

**NIOSH Homepage** NIOSH A-Z Workplace Safety & Health Topics Publications and Products Programs



The use of sensors has increased exponentially as countless remote wireless sensors are now employed for monitoring the environment, work 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 disperse sensors to produce comprehensive

and monitors and are exploring new ways to use these

technologies to improve occupational safety and health.

NIOSH > Workplace Safety and Health Topics > Safety & Prevention

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

#### http://www.cdc.gov/niosh/topics/drst/

Department of Health and Human Services **Centers for Disease Control and Prevention** National Institute for Occupational Safety and Health



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#### Contact Us:

National Institute for Occupational Safety and Health (NIOSH) Centers for Disease Control and Prevention 800-CDC-INFO

(800-232-463602) TTY: (888) 232-634802

New Hours of Operation 8am-8pm ET/Monday-Friday Closed Holidays

Contact CDC-INFO





### **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.





# 5<sup>th</sup> 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





«project=01972>«userid=bck2>«geo=USA>«keywords=asbestos, natural, population»

Printing Date: July 25, 2007; File: Conti\_Alaska\_bek3.mad



# **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







### Lyme Disease



1 dot placed randomly within county of residence for each reported case

Confirmed Cases in 2001 = 17,029



1 dot placed randomly within county of residence for each confirmed case

#### Confirmed Cases in 2011 = 24,364







# Chikungunya Virus Disease United States, 2014





## **Technology Example – Wind Farm**







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



## **Questions/Discussion**



