

# Proximity Warning Systems for Mining Equipment Workshop

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# Presentation Outline

- Introduction to NIOSH and NIOSH-OMSHR
- Mining research portfolio
- Purpose of workshop
- Agenda and housekeeping



# Who is NIOSH?

The National Institute for Occupational Safety and Health (NIOSH) is the federal agency responsible for **conducting research and making recommendations** for the prevention of work-related injury and illness



# Agency Hierarchy (DOL/DHHS)



- Department of Labor agencies are responsible for Regulation and Enforcement
- Department of Health and Human Services agencies
  - Conduct Research
  - Develop Training
  - Make Prevention Recommendations



# Agency Hierarchy: Where is Mining?

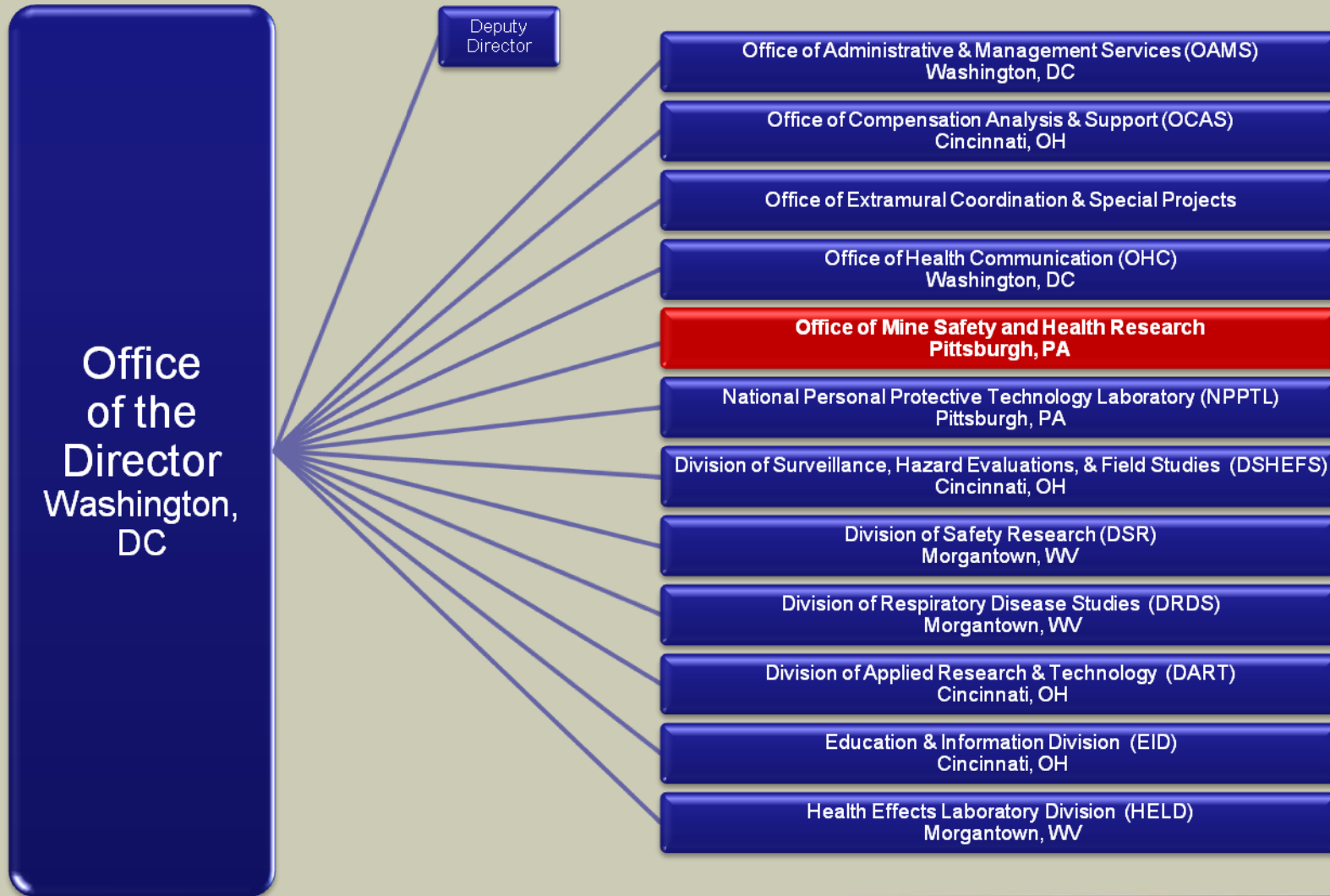


**Office of Mine Safety  
and Health Research**

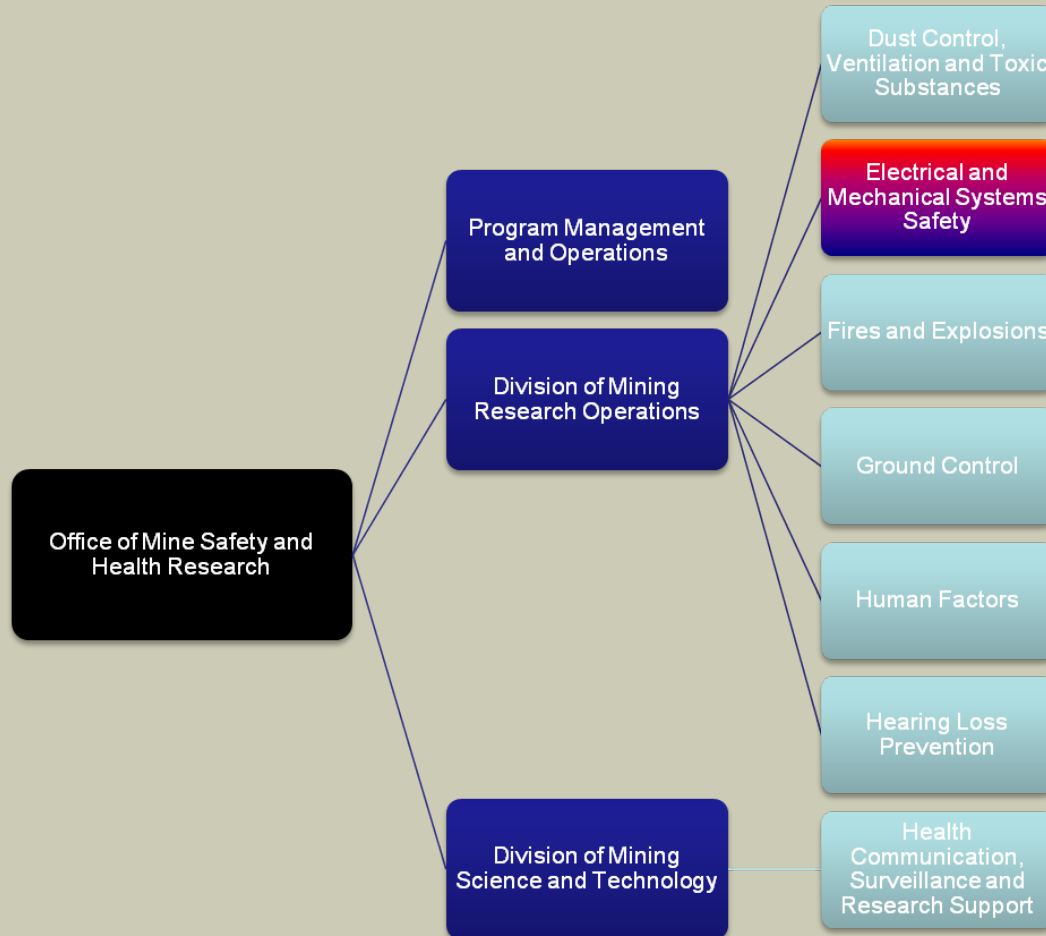
*improving the health and safety of mine workers*



# NIOSH Organization Chart



# OMSHR – Organization Chart



# Strategic Plan for Mining Research

## Goals:

- Respiratory Diseases
- Hearing Loss
- Cumulative Injuries
- **Traumatic Injuries-EMSSB**
- **Mine Disasters-EMSSB**
- Ground Control
- Surveillance and Training

Performance Measures for each strategic goal





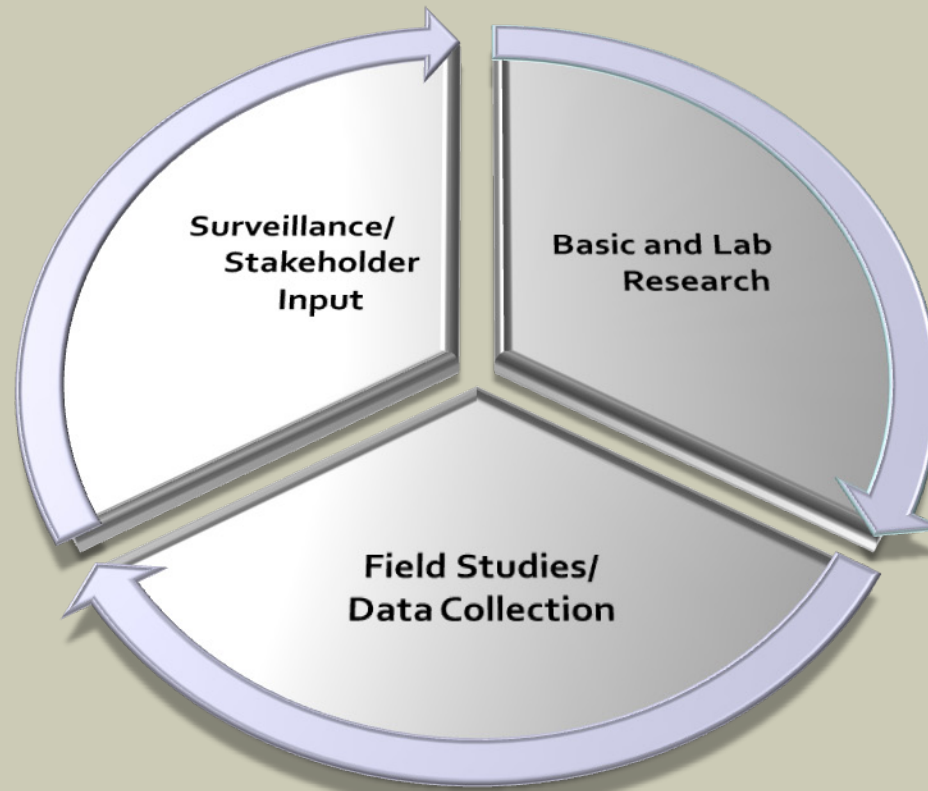
# Electrical & Mechanical Systems Safety Branch

## Current Research Activities

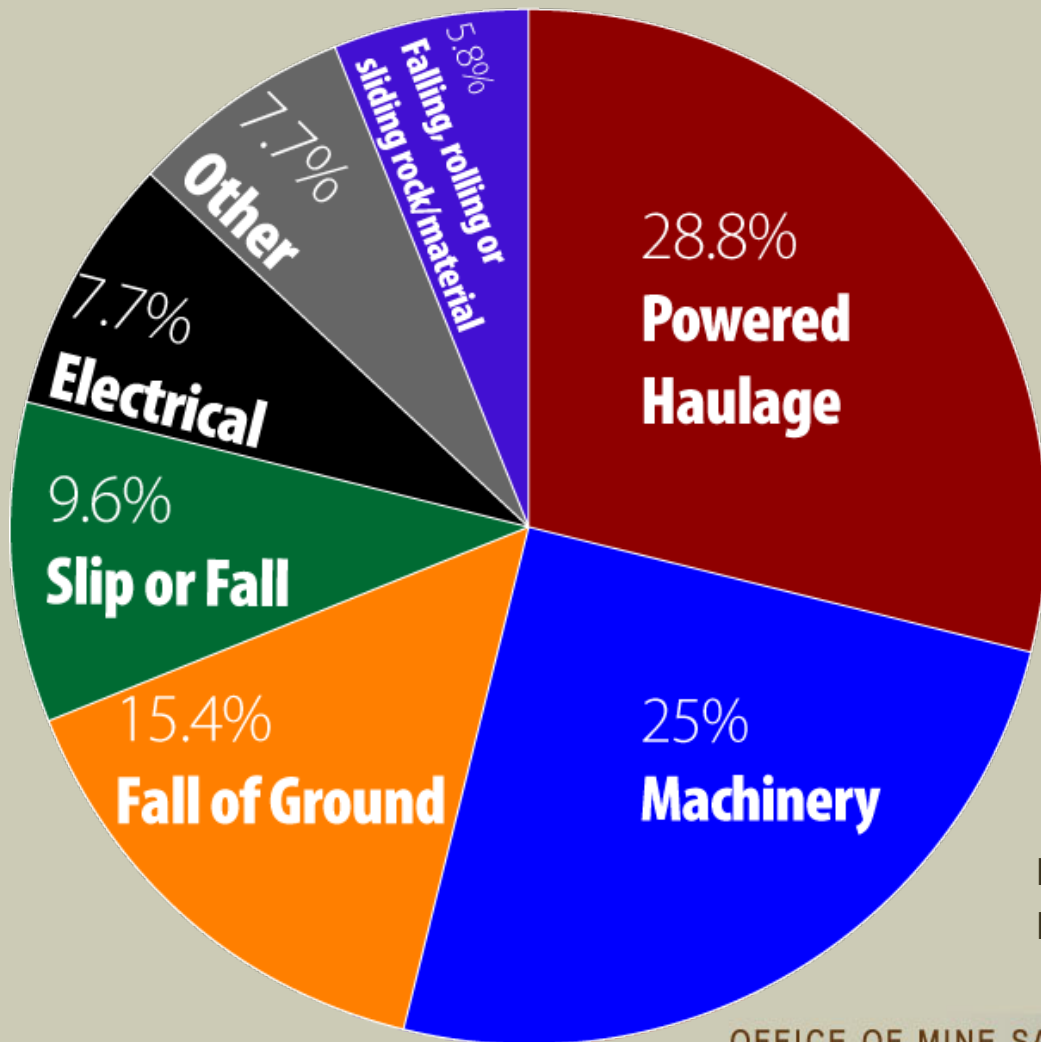
- Preventing injuries related to operating continuous mining machines
- Improving mine illumination systems
- Mine communication and tracking (MINER Act)



# Research Approach



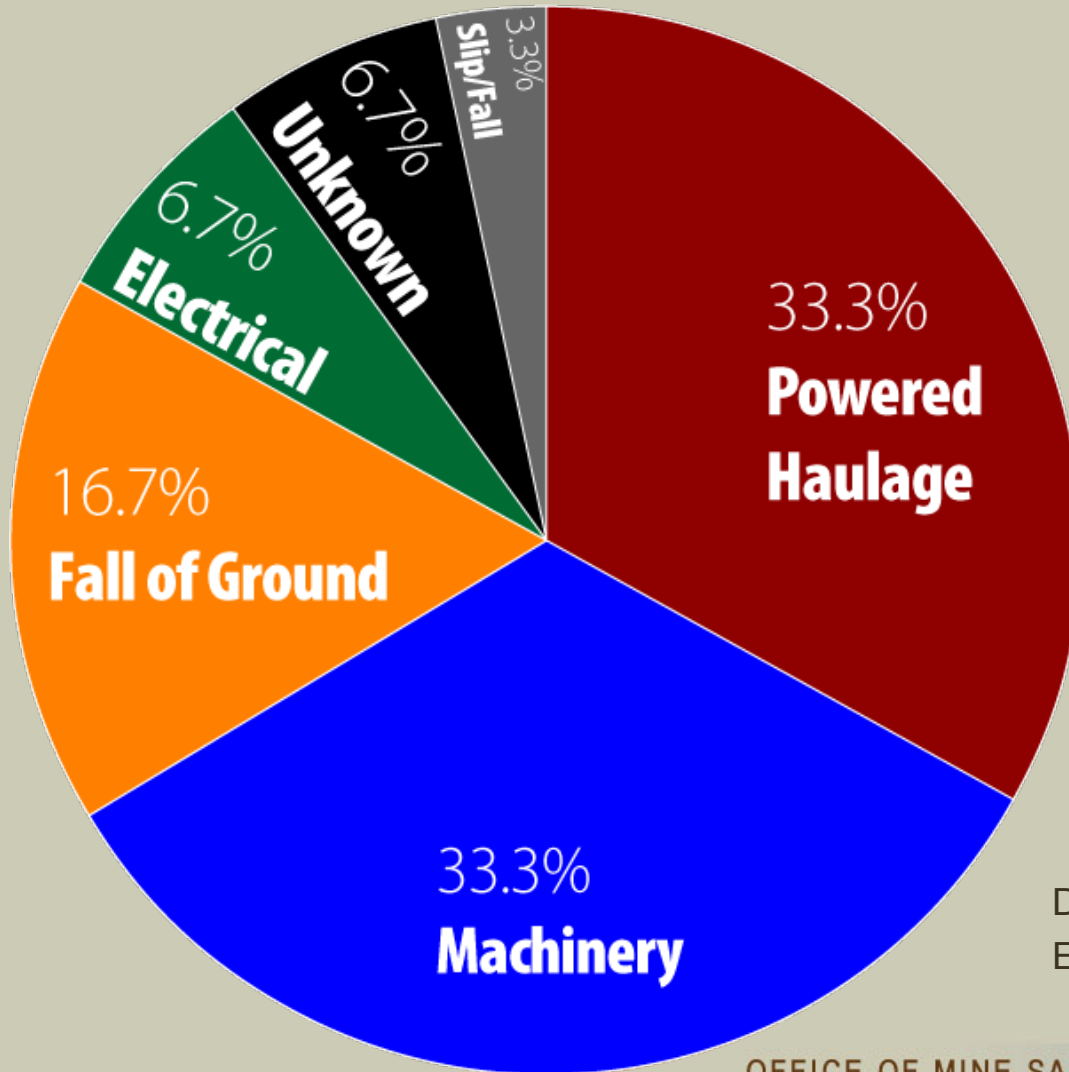
# Mining Occupational Fatalities by Accident Classification, 2008



Data source: MSHA  
Excludes office workers



# Coal Mining Occupational Fatalities by Accident Classification, 2008

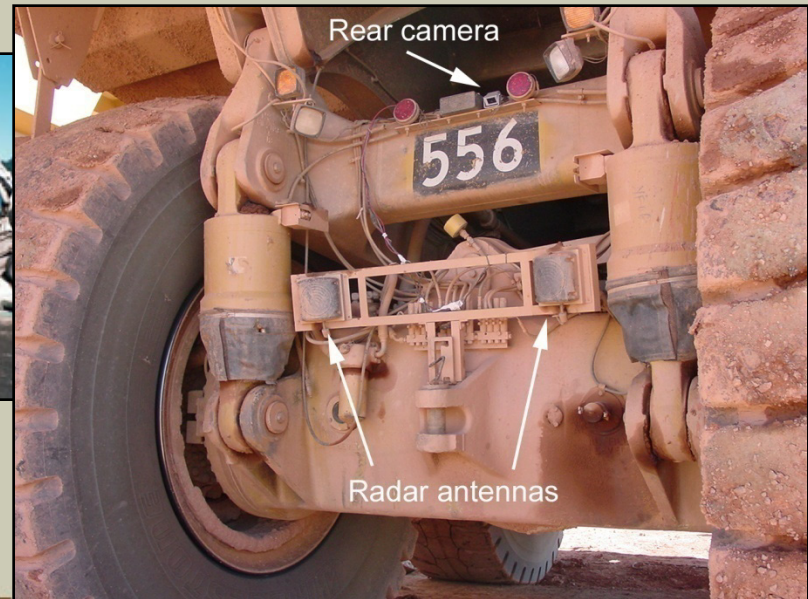
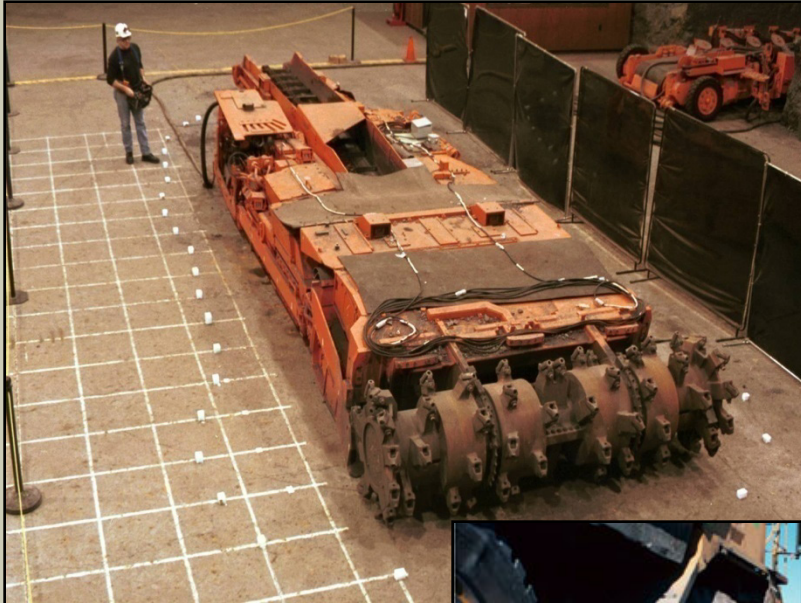


Data source: MSHA  
Excludes office workers



# Machine Safety Studies: Proximity Warning Systems

Systems alert workers to danger and automatically disable or shutdown equipment if necessary to prevent injury



Radar antennas and a camera mounted on the rear of a 240-ton capacity haulage truck →

# Research Sites



- **Pittsburgh**
  - 190 Researchers and Staff
  - Multi-acre Campus
  - Mines and Unique Facilities



- **Spokane**
  - 60 Researchers and Staff
  - 2 story office/lab building
  - Reardan Auxiliary Site



# On-site Mines: Pittsburgh

## Safety Research Coal Mine



## Experimental Coal Mine



- **Safety Research Coal Mine**
  - Working section of a room-and-pillar mine
  - Tours for new miner trainees, school children
- **Experimental Coal Mine**
  - 1910
  - Early ventilation testing for major US tunnels
  - Full scale explosion experiments
  - Nat'l Historic Place



# Lake Lynn Laboratory



- **50 miles southeast of Pittsburgh, PA.**
- **Surface quarry area**
- **Fire Gallery**
- **Fire Suppression Facility**
- **Explosives Testing Site**





# Reardan Auxiliary Facility



- Old Department of Defense missile launch location
- 20 miles west of Spokane, WA
- 20 acres of land and an underground and surface building complex.
- Dynamic Materials Testing Laboratory, developed to characterize the response of rock to explosive loading



# Agenda

Time	Presentation
8:30 AM – 8:45 AM	<b>Welcome</b> R.J. Matetic - NIOSH/OMSHR
8:45 AM – 10:00 AM	<b>Overview of Proximity Warning System Technology and Approaches</b> Todd Ruff - NIOSH/OMSHR
10:00 AM – 10:15 AM	<b>Break</b>
10:15 AM – 11:00 AM	<b>Status of the International Implementation of Proximity Warning Systems</b> Miguel Angel Reyes - NIOSH/OMSHR
11:00 AM – 11:45 AM	<b>Update on MSHA Proximity Detection Activities</b> Dave Chirdon - MSHA
11:45 AM – 1:00 PM	<b>Lunch</b>
1:00 PM – 1:45 PM	<b>Update on West Virginia Mine Safety Technology Task Force Efforts</b> James Dean - West Virginia Office of Miners Health Safety and Training
1:45 PM – 2:45 PM	<b>Development of an Intelligent Proximity Detection System for Continuous Mining Machines</b> Chris Jobes & Jacob Carr - NIOSH/OMSHR
2:45 PM – 3:00 PM	<b>Break</b>
3:00 PM – 3:30 PM	<b>Behavioral Considerations for Proximity Warning Implementation</b> Catherine Kingsley Westerman - NIOSH/OMSHR
3:30 PM – 4:00 PM	<b>Ergonomic Considerations for Proximity Warning Implementation</b> Patrick Dempsey - NIOSH/OMSHR
4:00 PM – 4:15 PM	<b>Closing</b> R.J. Matetic - NIOSH/OMSHR

