

**Western States Occupational Network (WestON)
Seventh Annual Meeting
NIOSH/CSTE/MAPERC
September 11-12, 2014
Table Mountain Inn, Golden, Colorado
Arapaho Room**

Thursday - September 11, 2014

- 7:30 am Registration**
- 8:00 am Welcome**
Margaret Kitt, NIOSH Deputy Director for Programs
- 8:30 am Introductions – All Attendees**
Moderator – Yvonne Boudreau, NIOSH Western States Office
- 9:00 am Updates from NIOSH**
Moderator – Kris Carter, Idaho Dept of Health and Welfare
- Climate Change Initiative**
Max Kiefer, Jennifer Lincoln - NIOSH
- Wildland Fire Fighter Activities**
Corey Butler, Aaron Sussell, Joshua Scott - NIOSH
- 10:00 am Q/A and Discussion**
- 10:15 am Break**
- 10:30 am What’s New in Other Nations**
Moderator – Joe McLaughlin, Alaska State Epidemiologist
- Navajo Nation**
Shawnevan Dale – Navajo Nation OSHA
- Occupational Safety and Health in Alberta [Canada]**
Lewinda Knowles, Alberta Ministry of Job, Skills, Training and Labour
- 11:30 am Q/A and Discussion**
- 11:45 am Lunch (on your own)**
- 1:15 pm Teamwork in the West**
Moderator – Heidi Bojes, Texas Dept of State Health Services
- Meatpacking – Here’s the Beef**
Derry Stover - Nebraska Dept of Health & Human Services, Ketki Patel - University of Nebraska Medical Center, Karen Mulloy – Case Western Reserve University
- All-terrain Vehicle Hazards – From Data to Action**
Dave Gilkey - MAPERC, Dave Elenbaas - Montana Dept of Labor and Industry
- 2:45 am Q/A and Discussion**
- 3:00 Break**

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Margaret Kitt

Welcome & Introductions

Note: WestON is the only meeting that brings together OSH professionals from the Western States. All 19 states have had representatives at the meeting.

What's new at NIOSH?

- Organizational updates – Established Total Worker Health (TWH) office (<http://www.cdc.gov/niosh/twh/>) and continuing to build this office to be a more prominent fixture within the institute
- 1st of October, NIOSH Communication Research and Translation Office (CRTO) will be split into two offices (the Communications Office and the Research Translation Office), as we are expanding efforts in health communication.
- NIOSH is developing memes--short messages that can be electronically shared among people.
- Alaska, Denver and Spokane will be creating a new division sometime in the next fiscal year. Won't change the work the WSO office is doing at WestON.
- New MSHA regulations are now in effect and surface miners are covered, doubling the number of covered miners from 50K to 100K
- Expansion of Coal Workers Health Surveillance Program (CWHSP) more than doubles the covered miner population
 - *Does this affect all minors?*
 - *Yes it affects all minors across the state and we will be recruiting to help with this.*
- NORA: Approaching the end of the 2nd decade of NORA and are in the process of evaluating where we go from here. Internal process of sector-based approach as well as a web-based survey to external stakeholders. Hoping to get a lot of input from the outside community to help inform where we go for the 3rd decade. Stay tuned for more information.
- Research integration – looking at better ways to integrate intramural and extramural research to ensure we are all working toward a common direction.
 - *Will these research integration efforts change things in terms of RO1 applications and research efforts?*
 - *It is changing a little bit already, we have a lot of new efforts. Trying to preserve efforts so we don't lose much but are learning how to make the balance.*
- The "Buy Quiet" initiative encourages companies to buy equipment that is less noisy to prevent worker hearing loss. Website: www.cdc.gov/niosh/topics/buyquiet/
- Quiet Initiative – new information on the way and how information is located on websites.
- Hazardous drugs- 8 million workers who are exposed to drugs. There is a new format that lists 3 categories of drugs. The list of hazardous drugs has been updated. Drugs have been added and removed as appropriate.
- Ladder APP for smart phones – really proud of this, it was a big challenge and learning process, but is a great feature and is useful for people who are in the workplace and individuals who use ladders on a non-work basis (downloaded 24,000 times since 2014 and won an honorable mention award)
 - *What was involved in creating the Ladder App?*
 - *Ladder falls are still a very high occurrence rate in workplaces and we have been working on ladder safety for many years. We thought this might be a great tool for people who use their smart phones and use ladders frequently. The hope is that it will help them make the right call*
 - *What were the resources? Was it easy?*
 - *Not easy at all, there were a lot of resources that were needed and a whole IT system. We are in the process of working on some other apps, but we hope they will flow much easier because of all we learned from this app.*

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- *Do we partner the ladder app and relate it to places like Home Depot, etc. to help get the word out?*
 - *DSR has been working on getting the word out and partnering, just not sure who exactly.*
- NIOSH Center for Direct-Reading and Sensor Technologies– need in NIOSH to help evaluate technologies that exist throughout the country as well.
 - Exposure assessment – lots of things that are changing, in order to meet the demands we were driven to create the center.
- Emergency Response: Actively working to implement Emergency Responder Health Monitoring and Surveillance (ERMS), but looking at the next steps for Emergency response, looking at Disaster Science Research, -- felt NIOSH should take the step as well.
- DSRI – what’s next?
 - Workgroup has been established
 - Town hall meeting is being developed
- Other News at NIOSH
 - An economic research office will be opened.
 - Ebola is an emerging emergency response issue. Focus will need to be on worker/responder safety.
- Next steps
 - NIOSH will develop a listserv.
 - NIOSH has a town hall meeting scheduled.
 - There is a total worker health conference scheduled.
 - There is a NORS conference scheduled.
- Upcoming conferences – TWH in October, NOIRS in May 2015

UPDATES FROM NIOSH

Climate Change Initiative - Max Kiefer

Climate change is an apparent threat. We’ve moved quickly with climate change but don’t have a lot evidence for Occupational health effects, so that is what we are working towards.

- Climate change is a real threat now causing health issues for workers due to:
 - Increased temperatures
 - Heavy rains
 - Ecosystem shifts
 - Air pollution (ozone, allergens, particulate matter)
 - Extreme weather (increasing severity and frequency)
 - Wildland fires (fire season increased to 80 days in CO, is now year-round in CA. Fires influence climate change and climate change influences fire.)
 - UV (increased sunburn and skin cancer)
 - Vector borne disease (wide variety of workers affected, especially outdoor workers. Lyme disease areas are expanding. More pesticides are used to battle insects.
- NIOSH has a climate change and worker health workgroup that is developing a research agenda focused on identifying the areas of biggest changes with workers most at risk. There is a website and on-line reference library being developed. The workgroup has partnered with NOAA, NIH, EPA and others.
- Climate Change can introduce new or unanticipated hazards – there are a lot of direct & indirect hazards that need to be looked at.

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Climate Change & Workers - workers can be affected in a number of ways.

- **Heat waves** will increase, be more frequent, have longer durations and be more intense as we continue to the future about 300 workers have died of heat waves in the past 10 years. Heat seasons are now longer.
- **Air pollution** – we are getting dryer and dustier which impacts both indoor and outdoor workers so there is a large number of disciplines who are effected.
- **UV radiation** – very aware of this, but will increase with the impact from climate change which leads to a variety of health effects.
- **Extreme weather events** – occur more often and will increase in severity which will provide issues to emergency response workers – looking at how we address these issues and figure out how to help the ER workers while still learning to manage the stress.
- **Wildland Fire** – Increasing by average of 80 across the west and now CA has a year-long fire season, continues to increase and fire seasons are extending – it is hard to know what is going to happen so research is working in this area.
- **Vector-Borne Hazards**- vector ranges are increasing and we are seeing new diseases that aren't usually seen in the U.S. are coming here now so these are big concerns especially for outdoor workers who are 5x more at risk of getting Lyme disease than other workers. Don't know how climate change is related to this, but we are looking into this.

New developments in Arctic region – presents a lot of unique challenges in this region especially around Emergency Preparedness.

Industrial Transitions & Emerging Industries

- Solar panel manufacturing – many hazardous materials in the production that we have to think about when the panels get sent into the environment
- Installation also presents hazards

Wind Farms

- Confined spaces present hazards – how do you get people out of these spaces if there is an emergency
- Climbing up ladders
- Breaking systems fail which lead to catastrophic results that can affect workers on site and the responders
- Manufacturing fatalities, large towers that can crush people – a lot of traditional hazards to apply traditional methods

Possible Solutions

- Integrating sustainable safety and health with green design and construction practices

NIOSH Workgroup formation

- Collaborating with the Alaska office and EID to develop a strategic plan to address occupational safety and health along with climate change.

NIOSH Activities

- Multidisciplinary workgroup to focus on climate change as a OH area: CCOSH
- Work together to address gaps and primarily focused on creating a research agenda
 - Find out what we know already and move forward from there
 - Draft of Strategic plan to look at links between climate change and OH, indicators on workers, control methods, how do we address the adaptive needs of workers to reduce or eliminate impact?
 - Come up with new risk assessment methods that may be needed – because there is not a lot of evidence-based data available to NIOSH, so these will have to be developed.
- Updating a topic page on the NIOSH page on website to include a reference database that will be maintained.

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Geospatial Approach

- Looking at areas where this a climate induced event that impacts workers who are exposed in these areas.

Many Key Partners

- Directive from White House
- NOAA
- Center for Atmospheric research has virtual model to help with research

Climate and Health Special Report which includes integration of Climate Change and occupational health. (always trying to get OHS higher on the radar)

Summary: We know climate change is occurring and that there are unknown hazards. We need to do research in order to identify priority areas and learn how to address them.

Questions

Note: SouthON states working on excessive heat indicator that is being submitted as a new indicator.

- *Is climate change making its way into the NORA 2016?*
 - *It's too early to tell what the framework will include, but certainly climate change is on the NIOSH radar and is a priority for John Howard (director).*
 - *We will take a look at specific sectors that this will be most pertinent to.*
- *Has NIOSH looked at partnering with certain polar countries or other countries who have similar initiatives?*
 - *There is an international workgroup that we participate on, but don't know many of the details.*
 - *We did have a meeting in Montreal, ISRRT, org that does research similar to NIOSH and they are very interested in climate change, cold stress, etc. and are participating in an MOU with them.*
- *"Climate Balance" – book recommendation which is a very good text that goes over the ramifications of climate change.*

Wildland Fire Fighter Activities – Corey Butler, Aaron Sussell, Joshua Scott

Background Information

- 72,000 communities are in the Wildland Urban Interface area, CA Texas and Florida have hundreds of homes in the WUI
- Increasing trend in acreage burned, a lot more catastrophic fires burning in the US
- Varying jurisdictions can make policies and regulations tricky.
- OSH challenges – limited data and publications, just not a lot of data to go through.
 - Some of the regulations for "regular" firefighters are put in place for wildland fires and that doesn't work well all the time
 - Cowboy life mentality – tough folks who don't report injuries often
- Fatalities = 20 firefighters a year on average
- Largest portion of fire fighters are volunteers
- Incident type of fatalities – highest is aviation (but decreasing), vehicle incident, heart attacks (increasing) most occur among volunteers.
- CA has most wildfires in the U.S., Idaho has leading fatality rate from 10,000 fires.
- Males have largest proportion of death
- Firefighting is a high risk occupation, there are roughly 20 wildland firefighter deaths each year
- Three types of forest fires
 - Wildfire
 - Wildland fire
 - Prescribed burn

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- Multiple agencies are involved in firefighting leading to “firefighter soup”. Each group with their own set of procedures, and cultures, which is challenging.
- Most wildland firefighters are volunteers, male, young, and have varying levels of experience.
- Physical fitness and training requirements vary by employer.

Wildland Fire Exposures

- Systematic review of literature looked at what’s been done in occupational exposures
 - Most looked at characteristics of exposures (CO), few were looking at specific health effects and acute health effects – but there are many barriers to doing this
- Key findings from SCOT analysis for wearing a respirator in the wildland environment
 - We don’t know enough about the use of a respirator in the field so manufactures aren’t going to produce one until there is a high demand
 - Use of respirator decreases work capacity – due to long shifts and duration of wildfires. Fit issues with wearing a respirator, hard to be clean shaven in the field. Hard to know when to use a respirator or not
 - Definitely need to know a lot more before we can officially recommend its use
 - Systemic implementation of administrative controls needs to occur
 - We need to know more about health exposures and effects in order to better understand how a respirator can work in the field.
 - Looking at personal breathing zones and ambient air samples for CO, PM4, and SiO₂ in the USFS data profile (using the MOU)
 - Data analysis plan
 - Hoping to characterize exposure variability – we know this is an inherently confusing environment so this will be difficult
 - Looking at relationship between subjective exposure and objective measures.
- Data challenges
 - There is not a lot of data available
 - Wildland firefighters are sometimes transient with multiple high risk seasonal jobs and difficult to track
 - Cowboy mentality, injuries are not always reported
 - Trips, slips, and falls are the leading cause of injury
 - Injuries occur more often in the later part of the fire season
 - More experienced workers have a lower rate of injury
 - Other health concerns include:
 - heat related illness
 - respiratory illness
 - hearing loss
 - exposure to natural asbestos and valley fever
 - Other long term health effects.
- Progress in 2012
 - NORA goals for wildland firefighters have been developed.
 - NIOSH is working with the Forest Service through an MOU.
 - The Forest Service is using NIOSH materials for firefighter education

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Wildland Firefighter Exposures-Josh Scott

- There is currently not a respirator approved for wildland firefighters. Without a standard the respirator companies will not produce a respirator because there will be no sales.
- Respirator challenges
 - Respirators may decrease work ability
 - Most of the men on the fire crew are not clean shaven after a few days of firefighting.
 - It is difficult for firefighters to know when to put on and take off respirators.
- Currently looking at USFS wildland firefighter data from 2009-2012 to:
 - Analyze exposure variability
 - Identify exposure groups
 - Examine relationship between subjective smoke exposure assessment and measured CO and particulate matter.

Aaron Sussell

- Corey's experience as wildland firefighter has been helpful for NIOSH to gain the trust and data of USFS.
- Finding from analysis of the dataset could change regulations.
- Questions
 - Q. What percentage of structural firefighters are also wildland firefighters?
 - A. 65% of fire departments have wildfire responsibilities.
 - Q. Why are wild fires getting larger?
 - A. Many reasons-including forest management which has resulted in increased fuel load.
 - Q. What factors make the job high risk for fatalities?
 - A. The dataset has 212 variables; hopefully, analysis will find answers to many interesting questions such as this one.

Questions

- *Structural firefighters are estimated to have 70,000 workers nationwide are volunteers - Is the number similar to wildland fires? Do these volunteers receive benefits?*
 - *26,000 departments throughout the US, roughly 65% of those departments have wildland fire responsibilities*
 - *Yes the volunteers receive benefits and are listed in the database.*
- *Graph indicating the number of fires is remaining stable or decreasing, but the extent is increasing, is this due to climate change or other factors?*
 - *The way we managed fires in the past have increased or may have put us more at risk. We have an increased risk of wildland fire due to not having natural fires be allowed to occur. Roughly 5% of all fires turn into a large fire, 95% stay at 5 acres.*
- *Some variable and factors put the workers at increased risk while at the job. Are there more than what was presented?*
 - *Yes there are over 200 variables – these are all in the comprehensive database that would give us a more data for more extensive analysis, this just hasn't occurred yet.*

WHAT'S NEW IN OTHER NATIONS?

Occupational Safety & Health in Alberta – Lewinda Knowles

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Background:

- Alberta is booming in the oil & gas industry, so much so that they are recruiting workers from other countries
- Largest industry is retail, followed by health care
- Alberta is the size of Texas
- 182K employers
- There is a current oil and gas boom
- The labor force is 24M workers
- OH&S is part of provincial government the Worker's Compensation Board differs by being an independent organization and runs own insurance program, funded by employer contributions
- Work Right Campaign → promote awareness of occupational safety hazards
- Wellness of Workers (WOW) – Looking at relationships between exposures and health outcomes (heart & lung diseases and other chronic disease – prospective cohort)
- What –ME and What-Men → looking at exposure in welding trade and exposures on children (unborn)
- Working on improving access to data with WCB Data
- Work in progress:
 - Create a population profile of people coming into emergency departments by asking about occupation and industry and job duties.
 - Heat and cold studies.
 - Worker fecundity study to explore reasons for child loss.
 - Nano materials study.
 - Chemical elimination, substitution, and reduction program

Questions:

- *How unionized is the Alberta workforce? And do you work much with the other provinces?*
 - *Alberta is heavily unionized and a larger blue-collar workforce, we work with unions on best practices.*
 - *As a newer unit within Alberta, other provinces are a starting point for surveillance. We are not well connected yet, but there is discussion on gathering everyone in one location similar to WestON to find out what is happening across provinces.*
- *Is marijuana cultivation & sales legal in Canada? And if so, are there any resources*
 - *Not that legal yet, so no*
- *How much OH research is funded at a provincial level?*
 - *Not a national level for funding so funding has to come from the provincial level.*
 - *The Alberta funding program is the first*
- *Are there metrics for the work right videos?*
 - *Yes we are and formally have an evaluation plan set –up so we capture web hits along with the other promotional materials*

Navajo Nation – Liz Dalsey, on behalf of Shawnevan Dale

Note: New initiative to start partnering with NA/IN tribes since 2013

Background:

- Arizona, New Mexico and Nevada approximately 25,000 square miles, workforce 43% of unemployment.
- 566 recognized tribes throughout the states
- Labor investigative task-force was developed from issues identified through NIOSH

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- 14 divisions under executive branch
- Under Division of Human Resources NOSHA Resides
- Under Division of Health the Navajo Epi center is located (In total there are 12 epi centers. One for each region.) → NIOSH works closely with this Center
- Trying to have a more formalized federal plan
- Working with them more on their surveillance needs
- NIOSH has been working in conjunction with with the Navajo OSHA.
- The Navajo Nation covers 29,000 square miles
- There are 180,000 people, 50,000 employed.
- Navajo Nation is a sovereign nation with specific laws and regulations.
- The nation developed a safety committee in 1999 and passed The Safety and Health Act which created The OSHA in 2000.
- OSHA is building capacity and recently had its 3rd annual occupational safety and health conference that was well attended by employers and workers.

Questions:

- *Can you talk about their tobacco policies?*
 - *They do not have a lot of tobacco policies, they still have ceremonial tobacco and they still allow smoking in a lot of their casinos. The newest casino had restrictions on the hotel side, but casino was not restricted. Not a big push at this time, but on the patron side this is something they would like to see removed.*
 - *Occupational side, the workers are not allowed to smoke in trucks, etc. there is a ban on company side.*
- *What is the budget?*
 - *We will have to ask NOSHA*
- *Mining was not on the list of occupations, do they do mining?*
 - *Yes, Navajo has their own MSHA and just retained their own mine*
 - *Getting safety and health on the agenda is a challenged because there are many other health problems (diabetes, mental health, etc.)*
- *What are some challenges or unique opportunities for OS&H*
 - *Funding and small staff to run everything*
 - *Opportunity is that they are building their structure from the bottom up and they are working well with the community*
- *How many tribal epi centers are there?*
 - *12 epi centers – one in each tribal region*
 - *they meet on a regular basis – we would like to further our relationship with them and show them our support*
 - *CSTE has a subcommittee on Tribes – reach out to Amy for questions on this.*

TEAMWORK IN THE WEST

Meatpacking-Here's the Beef – Karen Mulloy (slides have a lot of info on them, so not many extra notes)

Background

- Meatpacking was very small scale before the civil war, but after that was when the plant became consolidated. By 1916, all the large animals were butchered in large meatpacking plants in major cities at

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railheads. The farmers and ranchers were intimidated by the Big 5 companies who were very efficient and hired unskilled workers.

- In December of 2006, ICE raided the Swift meat plants in Greeley, CO and 5 other plants in 5 states and arrested 1300 workers claiming the workers were using stolen identity credentials. 207 had falsified SSNs. Most were not using false identities but deported anyway
- All were deported and families were broken up
- In 2010, the EEOC sued JBS (formerly Swift) for maintaining a hostile workplace. 200 Muslim workers were fired for practicing prayers during their work break.
- Before 1950 meatpacking was:
 - Done in urban areas close to regulators
 - Done by a stable unionized workforce that was aware of worker rights
- After 1950 meatpacking:
 - Moved to rural settings away from regulators
 - Workforce became non-unionized, workers unaware of rights
 - Workers non-native to U.S.
 - Unstable workforce with 40-100% annual turnover of workers
- New workers mostly from East Africa and South East Asia
- Karen and Ken, with James Chiu, worked with the Global Refugee Center who did a worker training on worker's compensation and OSHA rules for workers.
- History, religion, and culture have impacts on health and safety.
- It is impossible to separate safety and health issues from worker and human rights.
- Global politics make union politics complex. A knowledge and understanding of history and culture is required by all involved parties.
- Health and safety training can be combined with other types of training.

Questions:

- *Is everybody in the "Company" a bad guy or are there dynamics within the company that are different? Are things homogeneous?*
 - *It varied by supervisor, but they operate on a narrow margin of profit (400 cattle slaughtered a day) – trainings were all in English, which made trainings hard, etc.*
 - *The big meat packing plants may differ from smaller plants, but the answer is unknown.*
- *Is productivity better?*
 - *Not sure, there is a high turnover rate, but they just replace the workers, so it will be hard to tell if there is an increase in productivity.*
- *Have you looked at the poultry industry and immigrants?*
 - *Other people have done studies on that, but there is data missing regarding the beef meat packing plants, and hard for OSHA to get in this area.*

Part 2 – Derry Stover

- Occupational health hazards in meatpacking plants
 - Nebraska is a little higher than the US in the industry for injuries
 - Slaughtering and processing is higher than the US
 - Declined in 2003-2005, but have had slight increases in the last few years
- Nebraska is the top beef producing state in the nation.

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- Nebraska non-fatal injury rate is roughly equal to the national rate but in the animal processing industry the Nebraska rate is double the national rate.
- The injury rate has been increasing the last few years.
- Injury factors include:
 - Repetitive motion
 - Work with sharp tools
 - Tools dull and require more pressure to work properly. Sharpening takes time.
- Types of injuries include:
 - MSDs
 - CTS
 - Strains/sprains
 - Lacerations
 - Slips, trips, falls
- Worker chemical exposures:
 - Bleach
 - Ammonia
 - Other disinfectants
- Workers are exposed to cold which can make MSDs worse.
- Workers are exposed to infected tissues and pathogens.
- 5 cows are processed per minute
- Line speeds are positively correlated with injury rates and contamination.
- 1990 Nebraska started a beef worker's bill of rights which allows for unions and safety materials in multiple languages.
- 62% of workers reported an injury.
- 73% reported that the line had speed up over time.
- 47% have knowledge of the workers bill of rights.
- Why are the rates so high?
 - Actual job tasks of workers, are relatively simple but in a stationary position and a lot of repetitive motions.
 - Use sharp tools, and have multiple cuts a day, the tools dull quickly which means you have to work harder to get the job done. When you have to sharpen your blade, you have to take time out of the day and then have to work quickly to catch up, so lacerations can occur more frequently
- Repetitive motion, slips trips and falls, cut injuries are top three.
- Majority of industries happen in larger employers, these workers are at higher risk for sustaining severe injuries
- Work experience of 2-10 years had 1.2 increase risk for injury, and was stable for workers who had been there >10 years.
- Most severe injuries occurred on Saturday or Sunday (2-3x increased risk)

Questions

- *Based on the demographics presented, might some be proxies for occupation or type of work that people are doing? In the dataset that you have would you be able to get more specific information on the type of occupation or work?*

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- *One concern is transportation workers who are associated with the, but we did not see it in the extent of transportation related industries that were coded, so we know that at least that job was not over represented. We aren't sure about the other jobs/tasks.*
- *The proportion of males vs. females, how applicable is it in the field? The proportion of all works in the shift?*
 - *Higher proportion of males vs. females are employed. Because of cultural reasons, men work first and later the women join them, so that could explain the difference from the proportions.*
- *Were there a lot of amputations? And is there a recorded number of claims?*
 - *Yes, there were amputations, but not many were logged <2%, so a relatively low number. Which is why we focus on the preventable non-fatal injuries to reduce the injury rate*
 - *For number of persons injured per year, the data was duplicated to show number of injuries, self-reported injuries*
- *With ergonomic tool redesign, is there any sense that over time, that research is implemented and in place in the factories? Has it created an impact at reducing injuries?*
 - *It's difficult to see from the data set if these are implemented or not, but some of the larger corporations are implementing the new designs but things like vibration tools are hard to reduce the injuries.*

Kati (Ketki) Patel

- Looked at worker's compensation data for meatpacking workers from 2008-2012.
- Created variables including:
 - Injury severity
 - Job experience
 - Employer size
- Found:
 - Most workers were on the job for less than 2 years at time of injury.
 - Most injuries occurred on the first shift.
 - Most severe injuries occurred on weekends.
 - Finger injuries make up 20% of upper extremity injuries.
 - Injury rate is 7.3 per 100 workers.
 - Strain most common cause of injury, followed by laceration and contusion.
- Risk factors include:
 - Gender (males 1.3X more likely to be injured)
 - Age (older workers had less severe injuries)
 - Time on job (workers with less than 2 years on job 1.2 times more likely to be injured)
 - Weekend work (2-3X greater risk of injury on weekends)
 - Commuters (1.7 times more likely to have a severe injury)
- Rates derived from worker's compensation are lower than SOII rates.
- Next steps
 - Work with OSHA2000 logs to utilize narrative text for analysis.
 - Determine costs related to injuries.
 - Make workers aware of worker's compensation rights.
 - Translate health and safety materials into languages other than English and Spanish.

All-Terrain Vehicle Hazards – Dave Gilkey & Dave Elenbaas

- 800 people die per year on ATVs.

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- 209 deaths so far in 2014.
- 86% of fatalities involve males.
- Only 3% of fatalities were wearing a helmet.
- Agricultural use of ATVs makes up 20% of all fatalities.
- 65% of vehicle related deaths in agriculture involve ATVs, 25% of these involve young drivers.
- Worker's compensation data showed that the cost of ATV accidents is \$1B annually.
- Dave has developed a 4 hour training and certification course focusing on safety and he is looking to expand with more trainers including female trainers.
- Are developing a website for ATV training and safety awareness.
- Will use baseline data to evaluate effectiveness of the program.
- No one in the community had had safety training on ATVs, they are less hassle than a horse and easier than a pickup truck, so we had to go in and figure out how to work with everyone to develop messages on safety.
- 80% of users are not occupational, but in occupation alone the majority of the ATV fatalities occur.
 - Developed prototypes for ATV tip sheets
- ASI Training – 5 hour training program that is hands-on – rider interactive
- Developed training through Ag producers to help Montana ranchers learn about safety. The majority of the participants had an increase in knowledge and were more aware of safety issues
- 100 million dollar bill that goes with ATV accidents.
- Ag community makes up a small proportion of the community but still hold largest portion of injuries and fatalities
- Young drivers make up a quarter of the drivers of ATVs which is a problem.
- New women in Ag training for ATV safety
- The baseline data will help us determine if the trainings have an affect on the participants and will help us see if there is a decrease in injuries and fatalities in the Ag industry
- Trends
 - New designs for ATVs with roll bars, etc.
 - Interlocking devices to reduce speeds if you are not locked in (new models go 80mph)—also creating speed limits
 - Communities are trying to request access to public roads, which will pose a challenge in the future

Questions

- *Consumer product safety commission is the agency who has paid most attention, and they do investigations (they investigate every fatality) 3,000 case studies. Using these investigations to determine how many are occupational hazards.*
- *Does the Ag center include landscape workers?*
 - *I don't believe so*
- *Is there recent data of what has happened in the last 7 years about fatalities?*
 - *800 deaths per year is reflective of recent path, but we are afraid that we will go back on course with the economic swing going upward because of the cost and convenience, we will see them used in other occupations*
- *As a point of comparison, a course for motorcycles is 24 hours and is subsidized by the state, so it is very easy to participate in the course. You get a lot of instruction for \$25. Maybe in the courses that are subsidized and provided, they want you to take them before you buy a motorcycle to make people more aware, so maybe this could be brought into the ATV trainings to see how well it works.*

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USING THE NIOSH INDUSTRY AND OCCUPATION COMPUTERIZED CODING SYSTEM (NIOCCS)

What is NIOCCS? – Sue Nowlin

- NIOCCS is an autocoding system that will code industry and occupation from a text field.
- NIOCCS also has a user interface that allows users to pick codes.
- Autocoding increases conformity of industry and occupation coding.
- System was launched in 2012.
- 7 million records have been submitted.
- Codes to census codes and SOC and NAICS.
- User can select a coding accuracy level of high or medium.
- The system is “learning” and the percentage of autocoded cases is increasing each year.

Questions

- *You can't get correct data for cancer records no matter how perfect a database is in, there is a lot of missing data, etc.*
- *Data encryption and protection – do you protect data that is identifiable?*
 - *We don't encrypt it, but the system is run on CDC secure servers. What we recommend is not to send things that are identifiable, it's up to the employer to send the data, and send data they feel is comfortable*
- *The system will give multiple codes if it is not exactly sure which industry or occupation it should assign, I'm wondering if you can do this in the system before you extract the data*
 - *All we can do is give you the SOC or NIOCCS codes but typically you should only get one code*
- *Once something is coded, will the system remember it? Has NIOSH been able to get a master census or nioccs coding into the US.*
 - *The system does not remember automatically, but we add multiple requests to the knowledge base (things that come up a lot) to make the system more efficient*
 - *When we were building the system we wanted to have national codes, but we either had to buy a database but we had to drop it at the time, it will be a future enhancement that we'd like to do.*

Violent deaths and occupation in Colorado – Meredith Towle

- Suicide around the country – west is overrepresented, the rates are higher here. There are a lot of theories and discussion about why this is (rural isolation, gun laws, etc.)
- Colorado ranks within top 10 for highest rates
- In 2013 >1,000 killed themselves in Colorado (19% increase)
- The life lost is a cost and mental health for the family along with investigative expenses is estimated to be over \$1 billion annually
- Occurs most commonly in middle-age white males (working class population)
- Not a lot of information about suicide by occupation out there, but there are some. Some studies show that farmers have highest rates
- Not any one conclusion about occupation and the role it plays on suicide
- Males have highest rate in younger age group, but seeing a trend for females to have higher rates in the other age groups
- Among transportation occupations, some of the highest circumstances for suicide are mental health problems, financial problems and job problems
- Data by industry – highest deaths are in the construction industry (600 suicide deaths in 5 year period)

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- Need to be thinking about targeted outreach and intervention, include industry and occupation as a factor that we are looking at while looking at all public health issues – be aware of resources within the state to share with colleagues, etc.
- Checkout ManTherapy.org – used to get middle aged men to be thinking about mental health issues.
- Looked at suicide rates by industry and occupation.
- States with greatest rate of suicide are:
 - Alaska
 - Wyoming
 - Montana
- Gun laws and guns in the house are factors.
- Suicide is most common among middle aged males.
- The rate for suicide deaths in CO is 19/100,000 people.
- CFI data shows that suicide at the workplace is most common in the management and sales occupations.
- Submitted 3,900 suicide cases to NIOCCS.
- Cases were ascertained from the Colorado violent death reporting database.
- 44% of industries were autocoded.
- 44% occupations were autocoded.
- The American Community Survey data was used as a denominator.
- Transportation occupations had the highest rate of suicide.
- Construction industry rate = 60/100,000 workers.
- Management industry rate = 65/100,000 workers
- Most suicides involve firearms
- Alcohol present in 40% of cases
- What can be done?
 - Targeted outreach and intervention
 - Mantherapy.org
 - CO suicide hotline 844.493.8255

Questions:

- *In regard to gases and vapors listed on the slides, does that relate to gases from vehicles? That would pose a risk for first responders as well.*
 - *Yes it includes those types of deaths as well as helium (put in plastic bags) there is quite a variety of gases used as methods*
- *Have you looked at military soldiers & their rate compared to construction workers?*
 - *Not yet, this has been our preliminary work and that is a great place for us to move forward, there is a lot more that can be done*
- *You mentioned mental illness, were you able to cross match the suicide with mental illness? Did they have a diagnosis before their suicide and if they were on medication?*
 - *Yes, this information comes from what we know about medical treatment about the deceased and interviews with families or friends. We feel confident in the circumstances that surround the suicides because of all the information that is obtained. Based on what their families and friends and associates know about their health status and history*
- *Have you drilled down in the transportation industry to find how who has higher rates and is there a sense in this industry and construction workers if it is related to the economic plummet?*

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- *Don't know trends for sure or if there is an decrease since 2008 since the recession, and no we have not drilled yet since we just started with the data, but we will in the future*
- *Do you know if they were employed at the time of death?*
 - *The national violent death reporting does record if they are employed at time of death*

Coding Occupation of Carpal Tunnel Syndrome in California – Rebecca Jackson

- Manufacturing sector has higher rates of carpal tunnel syndrome (includes textile, animal slaughtering, sugar and confectionary, etc.)
- 10 highest carpal tunnel syndrome rates, animal slaughtering and processing (over 63% of workers are butchers or other animal processors)
- Motor vehicle operators are also at risk for this syndrome.
- Still thousands of cases among office workers despite the ergonomic changes
- Co-reference – using words that mean lots of things, can be an issue for describing occupational injuries and coding.
- How does NIOCCS identify risk factors? It's hard to know what types of tools are being used, small occupational groups, and whether office workers have ergo equipment or psycho-social factors, etc. that will lead us to know if interventions we have are already working or if we need to expand these interventions to more workers.
- NIOCCS is still a valuable tool and everyone should be able to use the data.
- Major causes of CTS:
 - Repetitive force
 - Repetitive motion
 - Posture
- Collected cases from worker's compensation information system data includes:
 - Industry
 - Occupation
 - Nature and cause of injury
 - Part of body
- Developed a case definition and compared cases with medical records and SOII to confirm that the case definition was accurate.
- 90,000 CTS cases from 2006-2011
- Overall rate is 106.8/100,000 workers
- Coded occupation for the 10 industries with the highest rates. Top 3 industries:
 - Textile manufacturing
 - Animal slaughtering
 - Sugar confectionary manufacturing.
- Attempted to code occupation for 15,000 cases:
 - 66% of claims were autocoded
 - Bus service and telecommunication industries had the best rate of autocoding.
 - Autocoding was determined to be 83% correct.
- Office workers still have the highest rates of CTS at 1,000/100,000 workers.
- Findings:
 - Identified occupations at risk for CTS.
 - Autocoding was useful after industry was coded.

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- Coding mostly accurate.
- The categories of industry are broad but still useful.

Questions:

- *If you use the NIOCCS system, we would love feedback because we are always trying to improve the system and want to hear about it.*
- *How much time and effort did it take to do this project?*
 - *I was a fellow, so I had more time, but it took a lot of weeks. We spent a lot of time getting to industry and without occupation it was meaningless. I probably spent a couple hundred hours doing this. Finding that we could aggregate occupations really helped, and we got better at it as we did it. So it took longer at first, but in the end we were doing things more quickly and could strip unnecessary numbers, etc.*
- *Potential biases of non-matches – is it just that we are decreasing power?*
 - *We coded everything that didn't auto-code. We have our own bias, but we have someone in our office who also had training that we consulted with. If you just looked at auto-code records, where there a difference in records between codes and non-codes?*
- *Is there something in the system or would there be that we don't have to code at the fine level but code one-up where we could just code for a project – thinking in terms of electronic medical records? There is a higher level of coding, would it be possible to code to that at a more aggregate level because the health care is not necessarily interested in the higher level of coding*
 - *Nothing in place right now, but a feature we are trying to add in the future.*
- *When you were looking at coding, did you look at manual class codes for insurance purposes?*
 - *We didn't look at using these as codes to use for reporting back. In workers comp there are class codes that are managed by class code a combination of industry and occupation – we submitted these in with job duty and looked at it when we computer assist coded things, but we aren't reporting it back out. There are more of these codes than the occupation codes so there is a greater level of detail and might be worth looking at in the future.*

OUT IN THE FIELD

Investigating Fatalities in the Oil and Gas Industry – Mike Todd

- A 32 year old male with wife and child was killed in the oil field.
 - Victim was on the job for 4 weeks.
 - Working on a family owned drill rig being operated by the owner's son.
 - Rig had no service or operator's manual.
 - Rig had a cellar basin and workers decided to clean the basin during a break in drilling when the brakes on the rig overheated.
 - The brakes slipped and the 4000 pound blocks fell 30 feet onto the victim.
- Investigation findings:
 - Rig brakes were in serviceable condition.
 - Brakes were not inspected on a regular basis.
 - The rig was not serviced per the factory guide.
 - Brake pads were within acceptable tolerance.
 - The deck was not secured together.
 - An earlier incident of brake slippage was reported by workers. In this earlier case the brakeman was close enough to the brake handle to stop the slip before the blocks fell.

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- Causes:
 - Brake operator left his post and couldn't stop the blocks from falling.
 - Operator left a suspended load over the worker.
 - Operator did nothing after the first brake slippage incident.
- This accident was predictable and preventable.

Questions:

- *Are there reports that are sent out about these fatalities so we can learn from these injuries and deaths?*
 - Yes, we send out a fatal report to everyone
- *Is the mentoring program the biggest success for reaching small companies and are these companies insured? Can insurance be used to reach the smaller companies?*
 - There is a consultation program through OSHA that we use, and companies will get a discount if they use the consultation program

Exposure Hazards in Oil and Gas Extraction Workers – Bradley King

- Trying to get a better handle of health related impacts on the industry
- The latest field efforts have focused on flow-back operations in hydraulic fracturing
- Assessed exposures using IH Methods to look at VOCs, PAHs, Alcohols, etc.
- 2005 NIOSH stated a field effort to assess exposures experienced by oil and gas industry workers.
- NIOSH is interested in understanding the health impacts post exposure.
- Study focused on flow back process workers. Flow back is process of retrieving the chemicals, water, and sand used for fracking.
- NIOSH visited 6 sites in Wyoming and Colorado in 2013 to:
 - Identify worker activities that may pose exposure risks.
 - Identify sources of exposure.
 - Assess exposures using quantitative measures.
- Study focused on:
 - Flow back technicians who do gauging of flow back tanks to determine the levels of material in the flow back tanks.
 - Flow back lead men who monitor and operate the separator which is located near the flow back tanks.
 - Production watch workers who do gauging of production tanks.
- NIOSH did:
 - Full shift and short term sampling for VOCs, PAH, alcohol, glutaraldehyde, silica, and dust.
 - Spot measurements for VOCs for real time data.
 - Looked at lower explosion limits.
- Results
 - Flow back tech spot measurements showed:
 - 10-2000 ppm VOC
 - 0-250 ppm benzene
 - With emission controls on the tanks the levels drop to:
 - 10-400 ppm VOC
 - 0-30 ppm benzene

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- Full shift sampling showed:
 - 0-0.65ppm benzene overall
 - Samples from workers gauging tanks showed 0.25ppm benzene.
 - Samples from workers not gauging tanks showed 0.04 ppm benzene.
- Other compounds sampled for:
 - Glutaraldehyde levels were low.
 - Alcohol levels were low.
 - Methanol levels were low.
 - PAH levels were low.
 - Silica levels were below exposure limits for all but one worker who reported that he fell to the ground during sampling.
 - Flammable explosive hazards were as high as 40% of the lower explosion limit.
- Conclusion:
 - Tank gauging workers have the highest exposure.
 - The potential for exposure is dependent on worker's proximity to the source.
 - The tanks with emission controls reduce exposure possibilities.

Questions:

- *When you go to industry partners to request assistance, do you get a difference in cooperation between workers? And what are the barriers to automating gauging jobs?*
 - *It varies from company to company with our industry partners, we have generally found that the results of this study have been well-received within industry, however, the oil and gas industry – being what it is – can be a difficult place to develop new partners. WE have a meeting every 6 months to bring together all of our key partners, so they are really receptive to working with us, but it has been a long process and looks different now than what it was in the beginning – we had to develop a level of trust to create good relationships with the industry.*
 - *Our highest priority area is to look at the gauging position – looking at engineering controls, etc. and look at the types of exposures that they have and how we can reduce them. There are some state and federal regulations for this. We are really trying to find if there are ways to engineer this practice out so workers aren't exposed.*
- *What types of data would or wouldn't you share with the industry? How do you discuss things with the company and when you approach them about measuring their workers?*
 - *We created a final report that was sent back to the industry partner where we provided aggregate information based on the sampling results we collected but we tried to automate it as much as possible. The report was larger scale along with the report in the journal article that was presented as well. Most of the time we were with IHers [Industrial Hygienists] so that they would know sort of what they could expect to find when we reported back to them.*
- *Are workers aware of exposures from odors etc?*
 - *Workers are aware due to the odors, but we don't know to what extent they know if that translated to an exposure hazard. Could they identify Benzene, etc? They do receive a training and should be aware of the hazards, but it's hard to say if they know that the types of their activities provided exposures to high levels of exposure compounds*

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FUTURE DIRECTIONS & WRAP-UP

Things learned:

- The fire season is 80 days longer than it ever used to be – such a big figure! A reflection of the climate change that we are experiencing and NIOSH is reinvigorating their efforts on protection of fire fighters (with higher levels of respiratory protection)
- Navajo nation has an OSHA
- Really excited to know that we have the cross-border interaction with Canada- great to have the international connection
- Nebraska is the largest beef producer in the country – the rate of MSDs in meat packing is really high (still) – this is important news because it hasn't gotten any better and we still have a lot of work to do here.
- Didn't know there was a syndrome of respiratory disease in Iraqi Vets - exposure to burn pits that could have respiratory effects – quite alarming
- MSHA is going to expand to surface miners – using the great van that they now have
- Amazed at social advancement that they've seen in future years with mapping, and how well we are disseminating and presenting information
- Didn't know that suicides could be related to occupational data – intrigued by transportation occupations
- Hearing about individual cases about fatalities – really important to hear and remember - can inform our future directions – thinking about what to do with old equipment
- Didn't know that ATVs kill – that thousands of workers that use ATVs
- Use of direct real time instrumentation – new program – want to learn more about this – can be applied in the field (e.g. benzene exposure) – definitely didn't have this technology 30 years ago – this is impressive

Meeting feedback:

- Quick takes were wonderful!! They were really awesome
- This is a great conference partly because there is so much interaction – similar to west coast epi – really fun and engaging
- Really appreciate the conference – every presentation could be associated to current work (especially in Alberta, CA)
- CSTE has a number of workgroups and an occupational subcommittee – encourage people to participate in these groups – we really need whatever help we can get
- For any CSTE members, and those who aren't we encourage you to become a member (annual meeting in June – Boston 2015)- almost as good as WestON meeting
- What makes this meeting so great is that we get people that come for the first time who get to network with people who have been doing this stuff for years – it is a place for people who are new in careers can network and gain a lot of knowledge and insights
- Enlightening experience about how things work in the real world. Inviting public health students or medical students to present – it would be a great learning opportunity for students
- People really like the rapid fire style. Very useful at the very end when everyone was starting to fade (quick takes) helpful for getting more ideas out
- Have more time for networking during breaks
- Be careful with how you group quick takes – really helpful to break them up so that you don't have too much information coming back to back

sources: https://cdn.ymaws.com/www.cste.org/resource/resmgr/OccupationalHealth/WestON_2014_Final_Agenda.pdf (pages 1-2) and https://cdn.ymaws.com/www.cste.org/resource/resmgr/OccupationalHealth/WestON2014_Notes_final.pdf (pages 3-21)