

1st ANNUAL POULTRY WORKER SAFETY ROUNDTABLE REPORT

January 21, 2021



**Sponsored by the Central States Center for Agricultural Safety and Health
at the University of Nebraska Medical Center.**



ROUNDTABLE PARTICIPANTS

Alex Farfalla	UNMC College of Public Health/CS-CASH
Alyssa Damke	UNMC College of Public Health/CS-CASH
Aaron Yoder	UNMC College of Public Health/CS-CASH
Andy Scholting	LPP producer and owner Nutrient Advisors (manure mang.)
Athena Ramos	UNMC College of Public Health/CS-CASH
Brian Miller	Sietsema Farms, Turkey production
Brian Nettrouer	MPS Egg Farms, Safety Trainer (450 training)
Cadrien Livingston	Gallagher Insurance
Chandran Achutan	UNMC College of Public Health/CS-CASH
Cheryl Beseler	UNMC College of Public Health/CS-CASH
Corrie Noir	Hillandale Farms, General Counsel and HR
Daniel Fields	Herbrucks Poultry Ranch Inc., compliance
Darin Sterup	LPP producer
Daryn Faber	Sietsema Farms, turkey production
Ellen Duysen	UNMC College of Public Health/CS-CASH
Jill Poole	Clinician UNMC Pulmonary/CS-CASH
Jill Vansickle	Gallagher Insurance
Joscelyn Camenzind	Stately Poultry, 5 th generation farmers, children on farm
Kellee Rasmussen	4&4 Farms/ Hendrix Genetics Breeder Grower
Linda Emanuel	AgriSafe Network, RN, Community Health Nurse
M.A. Shahzad	Hillandale Farms, Gettysburg PA
Matt Beacom	UNMC College of Public Health/CS-CASH
Mike Keenan	Gallagher Insurance
Natalie Roy	AgriSafe Network, Executive Director
Risto Rautiainen	UNMC College of Public Health/CS-CASH
Scott Wagner	Poultry Producer, 5 th generation farm, children on farm
Sue Mueller	Poultry Producer, Nurse
Tara Haskins	AgriSafe, RN, Total Worker Health Director

ROUNDTABLE AGENDA



**University of Nebraska
Medical Center**
BREAKTHROUGHS FOR LIFE™

Agenda

Time	Activity	Presenter
9:00	Welcome and Introductions	Willow Holoubek Dr. Matt Beacom
9:15	Stakeholder Roundtable Discussion: Poultry worker injury and illness concerns	All
9:45	Poultry Worker Injury and Illness Statistics	Dr. Risto Rautiainen
9:55	Break	
10:00	Immigrant Worker Health and Safety	Dr. Athena Ramos
10:15	Measuring Air Contaminants in Poultry Barns	Dr. Chandran Achutan
10:30	Fire Safety in Poultry Facilities	Mike Keenan
10:45	Respiratory Illness in Poultry Workers	Dr. Jill Poole
11:00	Grain Handling Safety: Opportunities for training	Dr. Aaron Yoder
11:15	Roundtable Discussion and Wrap-up	All
11:45	Adjourn	



RSVP – Ellen @ ellen.duysen@unmc.edu



Thank you to everyone who presented and contributed to the First Annual Poultry Worker Safety Roundtable. The meeting created strong partnerships, participants shared valuable knowledge, and provided great ideas for the next roundtable.

ROUNDTABLE PRESENTATIONS AND DISCUSSION

INTRODUCTION

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Poultry production in Nebraska has expanded greatly in recent years due to the construction of the new Costco poultry processing plant located in Fremont, Nebraska, which began operating in the fall of 2019.¹ Lincoln Premium Poultry serves as the company that manages the production process which ultimately provides the \$450 million processing plant with approximately two million chickens a week.¹ Broiler barns that can house around 42,000 birds at a time were built in order to keep up with this demand.¹ About 2000 acres of both corn and soybean are needed to sustain these birds every week.¹

The introduction of this new agricultural production system to the Nebraska region creates new health and safety challenges to protect the poultry workers employed by this new operation.

Dr. Matthew Beacom and a team of poultry producers, safety and health experts and health care professionals and stakeholders met for a virtual roundtable discussion about poultry worker health and safety. With the goal of collecting information on current best practices and safety concerns, experts were brought together for a meeting held via Zoom on January 21, 2021. Expert speakers presented topics including respiratory hazards, air contaminants present in poultry barns, equipment hazards, fire and electrical hazards, personal protective equipment, immigrant worker health and safety and opportunities for worker training.

The roundtable discussion focused on health and safety concerns brought forth by the poultry producers in attendance. A survey of participants was designed to provide a better understanding of the perception of risk and worker training needs. The following summary highlights the speaker presentations, roundtable discussion and the results of the participant survey.

¹Harris, T. (2018, Aug. 03). *Eastern Nebraska gears up for poultry production*. Nebraska Farmer. <https://www.farmprogress.com/livestock/eastern-nebraska-gears-poultry-production>

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Poultry Worker Injury and Illness Statistics

- Funding—Centers for Disease Control and Prevention/ NIOSH
 - One of ten regional agricultural safety and health centers
 - Seven state region (ND, SD, MN, NE, IA, KS, MS)

Current CS-CASH Projects

- Outreach program
- Agricultural dusts and airway injury
- Surveillance of ag injuries and illnesses (media monitoring)
- Personal protective equipment study
- Feedyard safety training project
- Immigrant (feedyard) worker safety
- Safety of range bison herd workers
- Pilot projects and Emerging issues projects

Planning for new projects 2021-2027

- Expanding current outreach and research work
- Potential new project: Poultry Worker Safety (roundtable meetings, producer needs and priorities, injury, illness, and exposure experience, and CS-CASH people and expertise areas)
- Extension/outreach/education training for producers and workers to promote health and safety

Poultry Industry

- Bureau of Labor Statistics (BLS) survey of occupational injuries and illnesses
 - Based on OSHA 300 logs from companies surveyed by BLS
 - About 3 out of 100 workers are injured every year

Questions and comments

- Dr. Beacom shared that clinically speaking, the injury rate can be skewed significantly because in his experience, most of the agricultural type patients he sees do not seek medical care unless it is a more serious type of injury (when compared to general industry)
- Address issues facing poultry operation—a lot of biosecurity measures makes it difficult to allow access (formulate plans)
- Suggestion to work on misconceptions about what poultry brings to the state of NE. A lot of misinformation when LPP came into the Fremont area. Bring information forward as a positive rather than negative.

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Immigrant Worker Health and Safety

- U.S. agriculture is dependent on an immigrant workforce
- Approximately 50% of all livestock production workers in U.S. agriculture were born outside the U.S.
- PUSH factors: conditions that force the individual to move voluntarily, and in many cases, they are forced because the individual [may] risk something if they stay
- PULL factors: conditions in the destination country that attract the individual or group to leave their home
- Agricultural has been moving towards a hired workforce
- Occupational health concerns: fatigue, musculoskeletal injuries, noise exposures, skin disorders, zoonotic infections, chemical and veterinary pharmaceutical exposures, heat/cold exposures
- General health concerns: access to healthcare, behavioral health, managing chronic conditions
- Barriers to care: cost of health care is too expensive, language barriers, not treated well because “undocumented” or “no papers” or “perceived to be”, lack of transportation, health care is too far away, needed services are not offered.

Vulnerable workers

- Latinos represent a significant portion of the agricultural labor force. Latinos and immigrants are considered a “vulnerable” worker population
- Hazardous work: dangerous conditions, high demands, long hours, inadequate rest, time pressure, and repetitive tasks
- Little or no safety training or PPE
- Low levels of literacy and formal education
- Discrimination and Immigration-related fear

Response to health & Safety concerns

- Understand the role of culture, language, and the impact of context
- Resource development
- U.S.Ag Center YouTube channel https://www.youtube.com/channel/UCRgk3ryTcY8Wcvvv_ulZgmA
- Spanish resources <https://www.unmc.edu/publichealth/cscash/news/spanish-resources.html>
- Industry Training Resources <https://www.uspoultry.org/training/>

Questions and comments

- COVID-19 vaccine help. National occupational research agenda putting together resources for farmworkers (priority group 1b) to receive vaccine.
 - Strategy that may be useful, bring people on-site to workplaces to vaccine workplaces—especially for large producers

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Measuring Air Contaminates in Poultry Barns

A producer (rural NE family owned and operated pullet production) reached out because he was concerned with the amount of dust was being generated in his barn. He also wanted to learn more about the proper PPE that should be used in order protect himself and his family on the farm.

Job site and work processes

- Pullet production farm: 40,000 pullets, 2.5 flocks/year, barn area cleaned in between flocks
 - Baby chicks who are raised for eggs
- Work Shifts: 90-120 minutes/day, 7 days a week
- Site/confinement: Barn area is 3.251 meters squared, biosecurity measures followed (shower in and shower out, wipe down equipment), Automated operations, computer-controlled systems

Contaminants found in poultry barns

- Gases
- Chemicals (VOCs, Ammonia)
- Microbes
- Insects and insect parts

Methods

- Went out three times throughout the entire cycle
- “worst case scenario” sampling
- Sept 2019: site visit & walkthrough, bird age: N/A
- October 2019: baseline visit, bird age: 3 weeks (first sampling)
- Nov 2019: Intermediate visit, bird age 9 weeks
- Dec 2019: Final Visit, Bird Age: 15 weeks
- First sampling when birds were 3 weeks, then 9 weeks, and finally 15 weeks old
 - Wanted to see how much the exposures increased/buildup of chemicals over time
 - Sampling equipment: Active Sampling for dust and ammonia (left for 2 hours to mimic amount of time producers spend in facility)
- Air sampling: Ammonia, Total Dust
 - Ammonia NIOSH method 6016, flow rate: 250 mL/min, Solid Sorbent Tube Media
 - Total Dust

MEASURING AIR CONTAMINATES CONTINUED Results

- Sampled during 3 different time periods
- Average concentration was 50 mg/m³ over a 2-hour period of sampling
- Ammonia, same trend observed
 - Low compared to industrial standards
 - Average of 30 ppm
- From three weeks of age to nine weeks of age concentrations of total dust increased from 1.1-1.2 mg/m³ to 16-18 mg/m³ and nine weeks of age to fifteen weeks of age, dust concentrations reached 43-50 mg/m³
- As chicks grew into hens, concentrations of dust and ammonia increased. It is probably that workers can develop adverse health symptoms working with pullet flocks
- Recommendations:
 - Ensure tunnel ventilation system is working as intended with regular cleaning of fans and shutters.
 - Minimize the amount of time young children spend inside the confinement



Air purifying, Face filtering respirators

- Two strap= Good
- Half/ full mask= Better
- **Powered= Best**
- When there are many different types of respiratory exposures, it is difficult to know what type of respirator to use.

Future Directions

- Look at systematically assessing health symptoms in a population of poultry workers. Also try to use technology alert system to alert farmers as to the levels of ammonia and other irritants in the barn, PPE that should be used, etc.

Questions and comments

- Would be interested in what the findings would be during summer months when tunnel ventilation is being used versus November- March when minimum ventilation is used.
- Suggestion to perform study sampling with both used litter (bedding) and clean litter (bedding)
- Difference in ammonia levels
- Important to look at industry individually as producers use different protocols. One producer may use breeder barn with a raised floor (different pullet operations)

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Fire Hazards and Prevention in Poultry Houses

Effects of Fire

- Many agricultural producers will put themselves at great risk trying to protect their animals, facilities, and equipment
- Consider the cost in terms of
 - Property loss
 - Business interruption
 - Lost opportunity costs
 - Livestock
 - Human life

Prevention is key

- Some facilities may be difficult to egress during a fire
- Fire victims may suffer from burns, smoke inhalation, inhalation of toxic gases, heat stress, as well as physical and emotional trauma. In many cases there has been almost 100% turnover in workforce the following year.



Fire Hazards in poultry facilities

- *Structural*
 - Most dangerous (moves fast)
 - Many hazards present
 - Construction materials
 - Design elements (production vs. safety)
 - Size of the structure
 - Lack of standards (not much in the way for standards for ag buildings)
- *Electrical*
 - Electricals panels are subject to a lot of dust and humidity--- difficult to keep clean
 - Thermal imaging to gauge hazard
 - Keep electrical panels in isolated area, closed at all times and away from hazardous atmospheres
- *Flammable gasses and fuels*
 - Flammable chemicals and fuels should be stored in a flammable storage cabinet
 - Fuel barrels and propane should be stored away from the building and protected
- *Combustible Materials*
 - Feed ingredients, poultry litter, and combustible dust

Fire Hazards and Prevention in Poultry Houses (cont)

- Hot work standard operating procedures must always be used when working around feed and litter
- Combustible dust needs to be removed regularly
- Smoking is NEVER allowed within 50 feet
- Ensure that equipment is well maintained to prevent overheated bearings or sparks

Fire Suppression and control

- The effects of a fire in a livestock and farm facilities are compounded by
 - Distance from fire service and EMS
 - Available water supply
 - Materials used in barn construction
 - Lack of containment measures
 - Arrangement of bards, storage, and production buildings may prevent access to the active fire scene

Fires and EMS

- Invite them to see your facilities
- Map the facility
 - Emergency exits and fuel shutoffs clearly marked – all employees are familiar with locations
 - Electrical disconnects
 - Available water supply
 - Emergency contacts

Fire Hazard Assessment

- Conduct a fire hazard assessment of your work area, looking for hazards that exist

Fire emergency Egress

- Must have at least two exits as far apart as possible
- Must be clear and accessible at all times
- Must be able to be opened from the occupied side without keys, tools, and special knowledge
- Must lead to the outside not into another building or inaccessible areas
- Must be labeled as an exit

Fire Exits

- Training for all employees
- Orientation for new staff
- Alarm system - pull stations, air horns, radios
- Designed meeting area and alternate

Resources

- National fire protection association
 - NFPA 150 Fire and Life safety in animal housing facilities code- renews every 3 years.
<https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=150>

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Respiratory Illness in Poultry Workers

Farm exposure effects are complex

- “Growing up on the farm protects against the development of allergic asthma” vs. “Growing up on the farm increased development of non-allergic asthma”
- Study from Iowa presented results that suggest higher prevalence of childhood non-allergic asthma on farms that raised swine that had antibiotics in the feed.

Poultry Bioaerosol Exposures

- Poultry dust originates from poultry residues, molds, and feathers containing microbes
- Gases: Ammonia, Carbon Dioxide
- Allergens: seeds (sunflower seed husks), storage mites, chicken specific protein

Respiratory Symptoms

- Nasal (~50-60%) and eye (~50-60%) irritation with dry cough (50%) are the most common
- Productive/ non-productive cough, wheeze, shortness of breath (~12-25%), decreased lung function
- Symptoms worsen in workers who are smokers, those with underlying asthma or allergies and symptoms generally improve when worker has time away from operation

Potential opportunities and research collaborations

- Capture respiratory illnesses with allergic diseases (skin, eye, nasal, sinus, food, GI tract, asthma, lung) pre-work (baseline) and periodically (every 6 months)
- Capture types of PPE use and whether beneficial or not and/or whether employee adherence/preference decisions
- Capture acute respiratory illnesses periodically (every 6 months). Sick days, COVID illness
- Capture arthritis, joint pain, fractures, and musculoskeletal
- Collect dust samples

Questions and comments

- Folks wearing cloth mask or surgical mask—worry that workers have a false sense of security or by using the wrong type of respirator “dust mask”
- Study of effectiveness and suitability of powered respirators

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Grain Handling Safety Opportunities for Training

Training Resources

- www.standup4grainsafety.org
 - Save the date March 30-April 2, 2021
 - 03/29 Standup kickoff event—featuring live streamed worker safety training, safety success stories and a surprise or two
 - 03/30 Near miss reporting
 - 03/31 Impact of quality on safety
 - 04/01 Bin Safety
 - 04/02 Emergency Action Plans
- www.grainsafety.org
 - Grain Handling Safety Coalition, resources for the trainer or the employee
- <https://extension.entm.purdue.edu/grainsafety/>
 - Works with the Grain handling safety coalition
 - Training materials
 - Tailgate training materials
- www.osha.gov/harwoodgrants/grantmaterials/bytopic/
 - Grant programs
 - Multiple bilingual resources
- <https://nasdonline.org/>
- <https://ag-safety.extension.org/>
 - Grain handling safety materials
 - Training videos
 - “Asking an expert” online courses
- <http://ashca.org/>
 - ASHCA—Agricultural Safety Health Council of America
 - Safety summit online sessions March 22-24, 2021
 - Human resource management—onboard training, etc.
- www.AgriSafe.org
 - Extension and outreach
 - Learning and training health and safety webinars on a number of different topics
- <https://www.unmc.edu/publichealth/feedyard/>
 - Feedyard15 through CS-CASH in collaboration with Gallagher and others – 15 biggest hazards (most expensive, most fatalities, etc., Near misses gives us the idea on training topics)
 - Implement similar in the poultry industry

ROUNDTABLE DISCUSSION WITH PRODUCERS

Respiratory safety training, PPE, and other resources

- Need for respirator fit testing
- Air quality exposure testing ---baseline values need to be established at each phase of the growing and handling cycle.
- What levels are safe and what levels are unsafe?
- What are best practices for the use of respirators? When are they needed and what types are needed?
- Suggestion: Baby shampoo for eye cleansing—shower in and shower out
 - Learn more about what can be done to protect workers and families during shower-out protocol
- Resource availability
 - Services through grant will be of no cost to producers
 - Lung function tests
 - Hearing tests
 - Trainings
 - Expert feedback
 - Worker data—get as early as possible and follow over time
- Wind row between flocks to compost litter
 - Have to use cab-less tractor—subjected to a lot of dust and ammonia
 - Would like more information on measurements and recommendations relating to air quality while performing this task and proper ways of managing and combating the hazards that this task generates

Fire hazards/ Safety Plans/ Fire Prevention

- Shocker lines necessary to prevent birds from ruining equipment and vital to get the layers into the nest however the shocker lines have caused small fires in one of the producer's barns
- Grower frustration at not having input on how poultry barns are built

Training Opportunities

- It was suggested that this work be a topic at the Nebraska Poultry Convention. Kellee is on the Convention Board.
 - Fire safety should be on the agenda

ROUNDTABLE PARTICIPANT SURVEY

Roundtable feedback

- **100%** of participants found the Roundtable discussion beneficial to their work
- **92%** would consider participating in the next Roundtable

Future directions

- Participants appreciated the health and safety topics discussed pertaining to respiratory and hearing exposures, fire prevention and protection plans, equipment and machinery safety, and personal protective equipment
- Topics for future discussion and follow up include:
 - Information on protecting workers from ammonia exposures during wind-rowing and litter compost
 - Appropriate respirator use for various job tasks
 - Brand preferences
 - Fit-testing
 - Cleaning and storing
 - Common incidents and injuries that occur in agriculture while working with animals
 - New disease challenges
 - Guidance for in-depth worker training to prevent injury and illness
 - Minimize complications before they happen
 - In-person training when safe

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Thank You for Your Dedication to Protecting the Health and Safety of Poultry Workers!
