



# UMASH

Upper Midwest  
Agricultural Safety  
and Health Center

---

*A collaboration of the University of Minnesota School of Public Health and College of Veterinary Medicine, the National Farm Medicine Center of the Marshfield Clinic with the Migrant's Clinicians Network, and the Minnesota Department of Health.*

Summary Annual Report

2016

NIOSH Center of Excellence in Agricultural  
Disease and Injury Research, Education, and Prevention  
1U54OH010170

Submitted by:  
Bruce H. Alexander, Ph.D.  
Center Director  
University of Minnesota  
Minneapolis, MN 55455

September 30, 2016

## SECTION I

### Center Summary:

The Upper Midwest Agricultural Safety and Health Center (UMASH) is a Center of Excellence in Agricultural Disease and Injury Research, Education, and Prevention funded by the National Institute for Occupational Safety and Health (NIOSH). The center is a collaboration of the **University of Minnesota School of Public Health** and **College of Veterinary Medicine**, the **National Farm Medicine Center of the Marshfield Clinic** with the **Migrant Clinicians Network**, and the **Minnesota Department of Health**. This collaboration brings together unique and complimentary expertise to address existing and emerging occupational health and safety issues in agriculture.

A central theme for UMASH is **the interrelationship between the production practices and the farm workplace health and safety conditions**. Production practices are primarily driven by social, economic and animal health considerations. In the agriculture, workplace health and safety conditions are strongly influenced by these production practices.



The UMASH emphasizes the concept of **One Health** which focuses on the interdependence between animal health, human health, and the health of the environment. The UMASH also emphasizes the importance of maintaining vigilance over how changes in agriculture production can influence the health and well-being of agricultural populations.

The current five-year grant cycle (2011-2016) includes seven **funded projects**: health and safety in the pork production industry, methicillin-resistant *Staphylococcus aureus* (MRSA) colonization and infection in swine veterinarians, surveillance of disease and injury in dairy farmers, surveillance of zoonotic diseases in agriculture workers, immigrant dairy worker health and safety, facilitating return to work of ill and injured workers, and establishing a multidisciplinary network to address agriculture worker health and safety issues. The center also has an **outreach** component to disseminate and collect information from stakeholders; a **pilot projects program** to foster new partnerships, explore new opportunities and address emerging issues in the field of agricultural safety and health; and an **evaluation** program to monitor and assess the performance and outcomes of the center.

### Relevance:

The agriculture industry is challenged with responding to an increasing global demand for a safe and plentiful food supply that is both affordable and produced in a sustainable manner. To meet this demand the industry will develop novel approaches to producing food. The changes accompanying food production will also impact the people who produce the food. The complex and varied nature of the agricultural workplace contributes to agriculture being one of the most hazardous occupations. As agriculture evolves to meet increasing global food demand, the occupational health risks encountered by the agricultural work



force will evolve with some hazards being eliminated and others emerging. The changing face of agriculture will also change who is producing food. Small farms may give way to larger enterprises that hire the majority of their labor force; including many who have no background in agriculture. Understanding and managing these changes is essential to protecting the health of agriculture workers and their families.

The Upper Midwest Agricultural Safety and Health Center (UMASH) conducts research, education and prevention activities aimed at improving the health and safety of workers and their families. The UMASH investigates how this evolving industry is changing the risks agricultural populations face. It develops improved methods to identify and reduce risks and it explores how best to interact with producers, agricultural workers and their families, and the broader agricultural community.

**Key Personnel:**

Name	Role	Phone	email
Bruce H Alexander, PhD University of Minnesota School of Public Health	Center Director and Project PI	612-625-7934	balex@umn.edu
Jeffrey B Bender, DVM, MS, DACVPM University of Minnesota College of Veterinary Medicine	Center Co-Director and Project PI	612-625-6203	bende002@umn.edu
Matthew C Keifer, MD, MPH National Farm Medicine Center, Marshfield Clinic	Center Co-Director (through 6/2016) and Project PI	715-389-3794	Keifer.matthew@mcrf.mfldclin.edu
Diane Kampa University of Minnesota School of Public Health	Coordinator, Administration & Evaluation	612-626-4826	dkampa@umn.edu
Ruth Rasmussen, RN, MS, MPH University of Minnesota School of Public Health	Coordinator Outreach	612-625-8836	rasmu048@umn.edu
Peter Davies, BVSc, PhD University of Minnesota College of Veterinary Medicine	Project PI	612-625-8290	davie001@umn.edu
Kirk Smith, DVM, PhD Minnesota Department of Health	Project PI	651-201-5240	kirk.smith@state.mn.us
Amy K. Liebman, MPA, MA Migrant Clinicians Network	Project Co-PI	443-944-0507	aliebman@migrantclinician.org

**Ag Center web link:** [umash.umn.edu](http://umash.umn.edu)

## SECTION II

### Program highlights

### Research Projects:

#### [Surveillance for Zoonotic Diseases in Agricultural Workers in Minnesota](#)

Agriculture is a large part of Minnesota's economy, supporting more than 340,000 people through food animal production and processing support services. Zoonotic diseases (diseases that can be passed between animals and people) are a risk to agricultural workers, their families, and others exposed to food animals. However, little information is available describing specific risk factors on the farm for developing a zoonotic disease or how frequently agricultural workers and their families get sick from food animals. The UMASH project at the Minnesota Department of Health (MDH) focuses on describing the size of this problem in agricultural populations, which can be used to develop more effective prevention measures to minimize the occurrence of zoonotic diseases.

Diarrheal illnesses caused by *Cryptosporidium*, *E. coli* O157:H7, *Campylobacter*, and *Salmonella* infections are reportable to MDH, and all ill people are interviewed with a routine questionnaire that includes agricultural exposures (living, working, or visiting a farm, petting zoo, fair, or other venue with animals). Since January 2012, patients with a food animal agriculture exposure have been re-interviewed with a more detailed questionnaire about the farm and their interactions with the animals. Based on these interviews, 52% of patients with a *Cryptosporidium parvum* infection, and 32% of patients with an *E. coli* O157:H7 infection, 27% of patients with a *Campylobacter* infection, and 14% of patients with a *Salmonella* infection had a food animal exposure before their illness. These percentages are much higher than previously estimated, for all but *Salmonella*; (*Cryptosporidium* 16%, *E. coli* O157:H7 6%, *Campylobacter* 17%, and *Salmonella* 11%). MDH offers educational materials to these patients, and 49% of them were interested in receiving the materials.

This past spring the MDH investigated a large outbreak of *Cryptosporidium* associated with an agritourism venue that has hosted school field trips for over 25 years. More than 2,000 students and adults from 24 schools visited the farm in a 2 week time frame. Seventy people became ill. MDH has been working closely with the farm owners and have provided an onsite consultation in order to prevent future outbreaks. This is one example of the type of outreach MDH does with farmers and agritourism operators. In addition to one-on-one consultation, MDH has offered five, full-day workshops to people associated with county fairs and two free evening workshops to people with agritourism operations (apple orchards, pumpkin patches, corn mazes, etc.) on how to have safe human-animal interactions. Two more agritourism workshops are currently being



planned for this fall. These workshops are well-attended and will be offered on an annual basis. For people who are involved in county fairs or agritourism but are unable to attend an in-person workshop MDH has nearly completed an on-line, voluntary certification program for public animal contact venue operators. This training program is based on national best practices and can be completed at a person's convenience. Venue operators who finish the program are certified by MDH as having received training in reducing illness and injury in their visitors.

This year at the Minnesota State Fair, which attracts nearly two million people over 12 days, MDH UMASH staff conducted a knowledge, attitudes, and beliefs survey about agritourism and zoonotic diseases among fairgoers. We enrolled 1,141 people into our study and will be using the results from this survey to inform future educational efforts.

### **MRSA Colonization and Infection in Swine Veterinarians**

Public health concern about the emergence of methicillin resistant *Staphylococcal aureus* (MRSA) in livestock, particularly pigs, is increasing. However, there is limited scientific information on the importance of livestock associated MRSA in human populations. The overall objective of this study is to analyze long-term patterns of *S. aureus* colonization (both methicillin resistant (MRSA) and methicillin susceptible (MSSA) strains) and infection of swine veterinarians. Concurrently, a survey of occupational hazards for US swine veterinarians and current practices for risk reduction is being conducted to assess current practices in relation to existing recommendations and guide educational efforts to promote better practices for veterinarians and other groups who are occupationally exposed to animals. Data collection for this project ended in September 2014, and the final stages of analysis and reporting are underway.

A study cohort of 68 swine veterinarians across 15 states participated in a longitudinal study to determine the incidence and prevalence of nasal colonization of MRSA and MSSA. Compliance with sampling was outstanding (over 98%) yielding 1768 *S. aureus* isolates (including 207 MRSA. Monthly prevalence of *S. aureus* (58.3% to 82.4%) and MRSA (5.9% to 15.2%) exceeded US population estimates, and the predominant variants (MLST sequence type/spa type) detected were ST398/t034, ST5/t002 and ST9/t337 which similarly predominate among US pigs, suggesting that they are commonly contaminated with *S. aureus* from the swine population. The prevalence of MRSA was much lower than an estimate of 44% reported in a similar Dutch study, and remained relatively stable throughout the study. Most veterinarians are intermittently and transiently colonized, but a substantial minority (about 20%) appear to be persistently colonized. Furthermore, the data indicate that the nasal staphylococcal flora of swine veterinarians are predominantly of animal origin. A broader online survey of occupational health in swine veterinarians to determine the occurrence of occupationally related health events yielded 180 responses which are currently being analyzed to assess the personal protection practices of US swine veterinarians. This will include analysis of associations between risks of colonization/infection of swine veterinarians with MRSA/MSSA, exposure to pigs and the use of personal protective equipment.

## Occupational Hazards in Pork Production Associated with Production Practices

The management practices for raising pigs continue to evolve with the growing global demand for pork and the need to meet animal health, economic, and societal concerns. These changes also affect the work environment. This project has evaluated exposure to airborne contaminants, including hydrogen sulfide, ammonia, endotoxin, and particulate matter, and injuries in relation to some of these changing practices, specifically those related to high density production farms.



The project has compared air contaminant concentrations across seasons comparing facilities with house sows in gestation stalls and open gestation pens, and finishing barns that delivered feed in wet and dry formulations. We characterized the exposures to ammonia, hydrogen sulfide, carbon dioxide, heat, endotoxin and respirable dust. The greatest influences on worker exposure are season and location within the facility. In the cooler months concentrations of all contaminants rise and may be ten-fold higher than in the summer months when the ventilation requirements needed to keep sows and finishing pigs cool reduce air contaminant levels. Concentrations of measured air contaminants were greater in the gestation room with pens than in the room with gestation crates,

An important aspect of raising healthy pigs in these facilities is biosecurity. One practice that can potentially lead to high exposures is power-washing of stalls. We evaluated concentrations of air contaminants during power washing and compared them to control concentrations. The power washing resulted in a 2.4, 2.0, and 9.4 fold increase in the concentration of hydrogen sulfide, respirable dust, and endotoxin respectively in comparison to the control measurements, but the ammonia concentration was not elevated. The observed concentrations may result in workers exceeding occupational exposure limits when doing a substantial amount of power washing.

Working in close proximity to any animals, including pigs, presents a potential injury risk. Although injury risk is a problem recognized by people raising pigs, there is limited systematically evaluated data to characterize the injury occurrence to direct prevention efforts. Additionally, the burden of the injuries, both cost and impact on workers is not well described. This project has engaged four large swine production companies and partnered with the National Pork Board to gather data on work related injury and develop methods to characterize injuries across the industry. Data from three companies were obtained and the occurrence of injury and accompanying costs were summarized. Of the 1,787 injuries evaluated, over half (1,018) were report only, 570 resulted in medical care beyond first aid, but did not result in time loss, and 199 resulted in work time lost. The most common source of time-loss injury was due to animal interactions (24.6%) and the most commonly injured body part was the knee (28.6%). The total cost for those injuries was over 4.5 million dollars, with a majority of those costs coming from the 199 injuries that resulted in time lost. Specific analyses are being conducted to further explore and evaluate injury burden using three types of injury; animal interactions, knee injuries and needlestick injuries.

### **Surveillance of Disease and Injury in Wisconsin Dairy Farmers and Workers**

The main objective of this project is to establish and maintain a working disease and injury surveillance system among farmers and farmworkers in Wisconsin. Data was collected in the first survey from April-August 2014. Data was collected in the second survey from April-August 2016. The survey gathered farm and personal sociodemographic data from dairy producers in a 20-county region of north-central Wisconsin. The response rate on the second survey was considerably higher at 72% (compared to 12% on the first survey), which was primarily a result of using more evidence-based survey outreach efforts. Data linkage to electronic health records (EHRs) will be conducted in September 2016 to examine how farm and farmer characteristics may predict injuries in Wisconsin dairy producers.

### **Natural Language Processing (NLP)**

This tool is designed to extract data from electronic health records (EHRs) of Marshfield Clinic patients to identify farmers and possibly contribute to ongoing surveillance efforts. The objective of this project is to electronically identify individuals with farm occupations, which can then be used in follow-up studies to identify injury and illness risks. After initially defining the search parameters, we continue to explore more fully the use and efficacy of the NLP tool. Specifically, we compared the rate of disease and injury in two parts of the Marshfield Clinic service area. One area includes many dairy farms and the comparison area is known to contain very few dairy farms. Additionally, the sensitivity of the NLP tool to correctly identify farmers is being tested on a set of confirmed farmers and non-farmers. These may be useful to further refine the NLP tool to identify dairy farmworkers in the EHRs and track rates of injury and illness in the population.

## **Education and Translation Projects:**

### **Facilitating Return to Work for Injured and Ill Animal Agriculture Workers**

The Return to Work project team has developed an electronic system available at [www.SafeReturnToWork.org](http://www.SafeReturnToWork.org) that not only characterizes the duties of agricultural workers but also facilitates the creation of applicable light duty job assemblies (LDJA) for farmers and farm workers by physicians and other healthcare providers. Through conversations with physicians, farmers, and farm workers, a prototype has been developed for use with workplace injuries. Work was completed with assistance from the Interactive Clinical Design Institute within the Marshfield Clinic Research Foundation. Physicians from the Marshfield Clinic Health System were interviewed to assess the need for ergonomic information regarding agricultural-related tasks, identify drawbacks in the current Workers' Compensation/Return to Work forms, and refine prototype LDJA forms. These interviews produced significant design changes in the prototype which shifted to a design that closely resembles the current Workers' Compensation form used throughout the Marshfield Clinic Health System.

Physicians are key members involved in the diagnosis, treatment, and rehabilitation of workers injured on the job. Unfortunately, many healthcare providers lack training in occupational medicine and are uncomfortable assigning light duty job activities (LDJA) to injured agricultural workers even though primary care physicians may be the first providers to treat an injured worker. Physicians that treat injured workers are required to fill out complex forms that are difficult to interpret for the injured worker and his/her employer and may not be appropriate for all industries especially agriculture.

In addition to the Assessment Tool, other materials and guidance on workers' compensation and the return-to-work process are available online at [www.SafeReturnToWork.org](http://www.SafeReturnToWork.org).

This work has been presented at different professional conferences throughout the five-year project. Three manuscripts are also in draft – 1) Project overview and an ergonomics dataset of agricultural tasks, 2) workers compensation calculators in the Upper Midwest, and 3) usability testing with clinicians.

The team anticipates the next iteration of the project will include more structured testing through a clinical implementation of the system, eventually linking to the electronic health record.

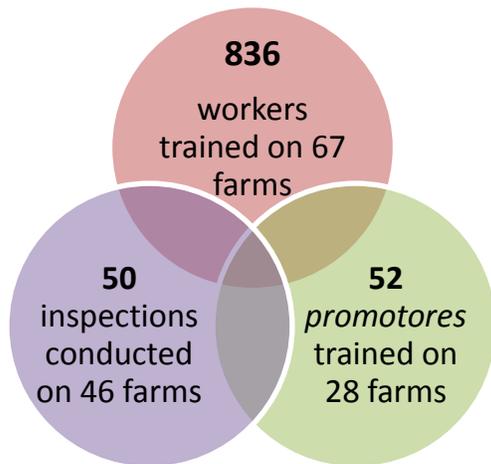
### [Seguridad en las Lecherías: Immigrant Dairy Worker Health and Safety](#)

The steady increase in consumer demand for dairy products has led to the increase in size and concentration of dairy operations. These large farms bring new occupational risk factors and changes in the diversity of the workforce. It is now estimated that 79% of the milk supply in the US is produced with assistance from immigrant labor, most of which are Hispanic and makes up half of the dairy workforce. These immigrant workers tend to have limited formal education, no training in handling large animals and speak only Spanish.

The ***Seguridad en las Lecherías (Safety in Dairies)*** project addresses the needs of this vulnerable workforce by designing and implementing a bilingual health and safety training curriculum that is based on Significant Learning and Adult Learning theories and is culturally appropriate for Hispanic workers. The Occupational Safety and Health Administration (OSHA) has approved the curriculum which consists of five 1-hour lessons in Spanish. A 'train-the-trainer' approach is utilized with selected Hispanic workers to become *promotores de seguridad* (community health workers) to allow for ongoing support and reinforcement of safety messages after the training is completed. On-site farm inspections were also conducted by safety professionals to assist farmers in identifying and remediating workplace hazards.



From 2012 to 2016, the *Seguridad* project has trained 836 workers in 67 farms, providing 3,464 worker training hours. Fifty-two *promotores de seguridad* were trained on 28 farms. Fifty



walkthrough inspections on 46 farms identified an average of 21.6 hazards per farm. The training curriculum materials have been provided by request to over 40 organizations across the Americas to train workers outside of this project. Trained workers show significant overall increase of 25% in their health and safety knowledge. Farmers and workers provided overwhelmingly positive responses regarding the programs. Specifically, 83% of the farmers and 97% of the *promotores* felt that the intervention activities helped reduce farm

hazards. Analyses of project data are ongoing and expected to be completed by the end of 2016.

### [Multidisciplinary Network to Address Agriculture Worker Health and Safety Issues](#)

UMASH Network Project continues to listen, engage and respond to our stakeholders interested in agricultural safety and health. From Fall of 2015 through the Summer of 2016, our group has continued to work in the areas of livestock worker health, immigrant worker health, agriculture safety and health education, agritourism, horizon scanning for emerging issues, and agricultural worker injury and compensation data.

Our Project staff has been actively involved in livestock worker health and prevention programs. Some highlights:

- A marketing and educational campaign on [dairy stockmanship](#) was initiated in early 2016 after completion of our bi-lingual (Spanish and English) posters and videos (Fall 2015). These products were featured at various agriculture trade shows as well as staff development conferences for veterinarians and the dairy industry. These events included: Farmfest, Dakotafest, Dairy Health Conference, Successful Dairy Field Days, Women in Agriculture 2016 Conference – ActivateHer, ISASH, World Dairy Expo, Farm Progress Show, UMASH Annual Forum, UMASH website, Facebook page and Twitter
- In collaboration with the Minnesota Department of Health we designed, developed, and produced an educational brochure on [agritourism](#) and the potential for zoonotic disease transmission in these settings. A practical field-based, handwashing video has been produced. Two additional videos are planned regarding 1) awareness of health regulations and 2) guidelines for preventing illness among visitors to agritourism venues. This project was leveraged from other additional funds.



- Exploring different horizon scanning techniques to identify timely and emerging events in agriculture safety and health. We summarized agricultural injuries in the 5 state upper Midwest (MN, WI, ND, SD and IA). The source for this information is [AgInjuryNews.org](http://AgInjuryNews.org) which is a news clipping database of injuries and fatalities associated with agriculture run by the National Children's Center for Rural and Agricultural Health and Safety (NCCRAHS).
- Continued work with the Minnesota Department of Labor and Industry to characterize the past 10 years of **worker's compensation claims**. The project is nearly completion summarizing agricultural injuries in swine, cattle and poultry production in Minnesota. These data will be used to provide insights and opportunities for education and outreach as well as a better understanding of the total costs associated with agricultural injuries and where to target prevention funds.
- With completion of our bi-lingual [needlestick prevention](#) videos we held several media (i.e. Country Living) and Industry supported (AgriSafe, National Pork Board) educational events. Some companies have incorporated these training videos into their employee training programs. Also, our staff is working in conjunction with colleagues at South Dakota State University to provide practical recommendations on **sharps disposal**.
- Continue to refine a **biologics database** related to swine and dairy as a resource to farmers, veterinarians and others who handle veterinary drugs and biologics to reduce hazardous exposure. Our goal is to facilitate an expert panel meeting to provide National Guidance on how to respond to exposures.
- A **swine stockmanship** survey has been developed and will be implemented Fall 2016. This is a collaborative project between UMASH and the National Pork Board in an effort to evaluate the reach, use and impact of stockmanship training materials developed by the National Pork Board. The goal is to determine if swine stockmanship educational materials are needed for swine producers.

## Outreach and Engagement

UMASH has supported a strong personal commitment on the part of Center personnel to connect with our stakeholders. This has resulted in a deeper and broader reach to producers, processors, agri-businesses, public health and health care practitioners and researchers, veterinarians, farm family members, agricultural media outlets, and many others. Each project team has developed relationships with individuals and organizations that join our growing community of stakeholders that receive and disseminate UMASH information and products via our [email messaging, Facebook, Twitter](#) channels and through face to face networking at conferences, presentations and task force meetings.

UMASH publishes a quarterly electronic newsletter "[The UMASH Connection: Farms and People](#)" that is sent to over 1,000 individuals. Newsletters are archived on the UMASH website. Also on the website are project updates, educational fact sheets and information about meetings, presentations, and upcoming events. Throughout the year, UMASH investigators present UMASH and other related research at scientific and industry conferences and meetings. UMASH also engages with stakeholders through social media channels on Facebook, Twitter

and YouTube. Over the past year, UMASH has nearly doubled the number of Facebook page likes over the past year (from 141 to 277) and is increasing reach and engagement with the agricultural community by promoting selected postings to a broader farming audience in the Upper Midwest region (MN, WI, IA, ND, SD).

The UMASH [website](#) provides easy access to information about the center's research, education and prevention projects, as well as, [training and educational resources](#), event announcements and summaries, contact info for researchers and staff, and other information. The website migrated to a new platform in late 2015 and has a clean and easy to navigate format with easy to understand functionality.

During 2016 our Center has leveraged the outcomes of our 2015 forum "[Growing Agricultural Education: Embracing Health and Safety](#)" that has resulted in a publication, a scientific poster and task force working group participation from UMASH staff in September 2016 in with researchers at the Great Plains Center for Agricultural Health (GPCAH) in Iowa.

Farm safety resources disseminated through outreach activities over the past year included an array of print and video materials produced by the Network Project that can be used for bilingual training and workforce education on [Stockmanship](#) (5 videos in both English and Spanish, 2 barn posters/fact sheets in both English and Spanish) and [Needlestick Prevention](#) (2 videos in both English and Spanish, 2 fact sheets in both English and Spanish). These resources are posted on our UMASH website, on our [UMASH YouTube](#) channel and on the [US Ag Centers YouTube](#) channel as well. New [agritourism](#) resources were also launched this year and include an instructional handwashing video and accompanying brochure "Farms, Fairs, and Fun" are available for farmers and others hosting agritourism events.

To increase awareness of UMASH and safety resources available through the center, we produced a video informing website visitors of our mission and farm safety resources entitled, "[We're UMASH](#)".

UMASH outreach staff have had a greater presence in regional producer focused events collaborating with both the Great Plains Center for Agricultural Health and the Central States Center for Agricultural Safety and Health including Minnesota's FarmFest, South Dakota's DakotaFest and Iowa's Farm Progress Show all in August 2016. Outreach staff also shared research information and resources in May at the Dakota Conference on Rural and Public Health in Grand Forks, North Dakota.

Outreach staff with the National Farm Medicine Center have promoted UMASH research outcomes and products at the Agricultural Media Summit, International Society for Agricultural Safety and Health conference, National Farmers Union annual convention, National Association of Farm Broadcasters meeting and the Midwest Organic and Sustainable Education Service meeting. In addition, the NFMC hosted an appreciation event to honor dairy producers and workers who participated in the five-year *Seguridad en las Lecherias* (Safety in Dairies) project. The event prompted a Seguridad blog post at <https://farmmedicine.wordpress.com/>.

UMASH is participating in a Minnesota-based farm safety working group with the Minnesota Department of Agriculture, Minnesota Department of Health, the Minnesota Safety Council and other state agencies and agribusiness companies. As part of this initiative UMASH is helping to promote the recently funded Minnesota Rollover Protection System (ROPS) Rebate Program through our outreach activities.

## **Evaluation:**

Understanding the impact of the UMASH center continues to be important to ensuring effective and impactful use of the Center's resources. The UMASH partners with the Minnesota Evaluation Studies Institute at the University of Minnesota to implement the evaluation program for the UMASH center. During the past year, evaluation efforts were focused in three areas:

- **Monitoring Outreach** – As part of UMASH's commitment to assessing its impact through outreach efforts, the evaluation team has implemented an Outreach Reporting Tool for use by UMASH personnel across the center to report their outreach activities which are entered in to a database. Evaluation staff periodically review and further code the outreach activities for reporting and analysis. This information is being used for strategic planning, to measure impact, and to inform future outreach priorities.
- **Pilot Project Program** - Evaluation staff continue to follow-up with pilot project grantees to capture information about project outcomes, such as, publications, presentations, application of results, new partnerships, and/or new funding that resulted after the project ended. This information is used to better understand the impact of the pilot project program.

## **Other Center Activities**

### [UMASH Annual Forum: "Promoting Health and Wellbeing in the Immigrant Workforce in Agriculture"](#)

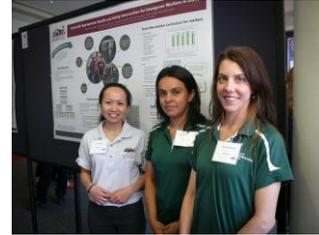
The 2016 UMASH Annual Forum entitled "*Promoting Health and Wellbeing in the Immigrant Workforce in Agriculture*" was held at the Cargill Building on the University of Minnesota Saint Paul Campus on September 29, 2016.

The Forum included keynote presentations from Lillian McDonald, ECHO Founder and Managing Director of TPT/ECHO on "*Cross Cultural Communications Best Practices*" and Amy Liebman, Director of Environmental and Occupational Health, Migrant Clinicians Network who shared some of her research on "*Immigrants workers in dairy – Lessons learned from producers and workers to improve health and safety on the farm.*" Following the presentations, the speakers were joined by Gerardo Guerrero, Consulado de México, Saint Paul Consulate, and Deb Reinhart, a Wisconsin dairy farmer and Executive Director of the Professional Dairy Producers Foundation, for a panel discussion moderated by UMASH co-director, Jeff Bender.

## [2016 National Occupational Research Agenda \(NORA\) Symposium: “Critical Challenges Facing Occupational Health and Safety – Today and Tomorrow”](#)

The 2016 National Occupational Research Agenda (NORA) Symposium was held Wednesday, May 4 at Mayo Memorial Auditorium at the University of Minnesota School of Public Health. The NORA symposium was co-sponsored by the Upper Midwest Agricultural Safety and Health Center (UMASH) and Midwest Center for Occupational Health and Safety (MCOHS).

The keynote speaker was Dr. John Howard, Director of the National Institute for Occupational Safety and Health (NIOSH). The presentation by Dr. Howard was followed by a Q&A discussion, research poster session, and reception. Attendees from diverse backgrounds including healthcare, occupational health and safety, education, research, government, communications, labor relations, and human resources attended. Students and researchers from MCOHS and UMASH Pilot Projects took part in a poster presentation session. Thirty-three poster/abstracts were presented, including twelve UMASH posters.



### Cross-center collaboration on Awareness Campaigns

Over the past year, UMASH collaborated with the other NIOSH-funded Ag Centers to share resources and conduct outreach focused two safety awareness campaigns: [National Ag Day](#) and [National Farm Safety and Health Week](#). UMASH continued to lead the efforts of the US Ag Centers Awareness work group to coordinate and launch a agricultural safety awareness campaigns in conjunction with these nationally recognized events. Primary goals of the awareness campaigns are to raise awareness about agricultural safety and health and increase the awareness of, and access to, the Ag Centers' expertise and resources, including the joint YouTube Channel, a peer-reviewed video channel for AFF produced educational videos. These campaigns have been successful in engaging ag media and others to increase social media and other communication efforts to promote farm safety in the region and across the nation.

### **Pilot Projects Program**

The UMASH pilot project program provides grant funding to explore new areas and build new partnerships in agricultural safety and health. The pilot project program emphasizes projects that address National Occupational Research Agenda (NORA) objectives for agriculture and approach One Health problems in agriculture. It is anticipated that the pilot projects will foster additional work in these areas.

The 2016 UMASH pilot project program funded five new projects:

- **Predictors of Best Practices in Farm Air Quality Sampling among Young Producers**  
AgriSafe Network

This project will develop, test, and instruct a new educational module to demonstrate and train students in using low-cost industrial hygiene air sampling equipment. The module will be delivered at colleges currently partnering in Invest in Your Health programs, and it will provide hands-on demonstration at college farms as part of overall management and employee health.

- **Describing the Impact of Daily Exposure to Tetracycline by Dairy Cattle Hoof Trimmers of the Upper Midwest on the Prevalence of Multidrug Resistant *Staphylococcus aureus***

Dairy Production Medicine, Veterinary Population Medicine,  
College of Veterinary Medicine, University of Minnesota

Hoof trimmers work on a variety of farms and are exposed daily to topical antibiotics. This project proposes to describe the colonization prevalence of HT with MRSA or other drug-resistant MSSA strains. The knowledge from this project will guide both physicians and public health officials in treating and tracing SA infections in agricultural communities. In addition, the dairy industry will benefit from the development of health and safety protocols for workers.

- **The Impact of Highly Pathogenic Avian Influenza (HPAI) on Worker Health and Family Well-being: Implications for Building Resilience**

Environmental Health Sciences, University of Minnesota School of Public Health

The study will examine the experience of turkey growers, farm workers and their families from the MN county hardest hit by 2015 Highly Pathogenic Avian Influenza (HPAI) outbreak—Kandiyohi County. Using the One Health perspective and a case study approach the research team will investigate the impact of the outbreak on individuals' physical and mental health, coping and resilience and any ripple effects on family and community.

- **Tick-borne Disease Risk for Agricultural Workers and their Families in the Midwest**  
Epidemiology and Community Health, School of Public Health, University of Minnesota  
Marshfield Clinic Research Foundation, Marshfield WI

A new interdisciplinary research group is being created with experts from University of Minnesota Marshfield Clinic Research Foundation (MCRF), National Farm Medicine Center (NFMC), and Minnesota Department of Health with the long-term goal of advancing the knowledge of the ecology, epidemiology, and social determinants of TBD as well as identifying effective strategies for infection prevention and clinical case management.

- **Livestock Associated Staphylococcus aureus Infections in Residents of a High Swine Production Area**

Foodborne, Vectorborne, and Zoonotic Disease Unit  
Minnesota Department of Health  
Veterinary Population Medicine College of Veterinary Medicine, University of Minnesota

This pilot study would work with the Fairmont Hospital of Martin County to acquire and type SA isolates from clinically infected patients at the hospital and associated out-patient facilities for 9-months (budgeting for 120 isolates). With Martin County being in the largest swine producing county of the state, this study will help better indicate whether human LA-SA infections are occurring in a population with direct or indirect exposure to swine.