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## Animal Agriculture and the One Health Approach

David I Douphrate, PhD, MPT, MBA, CPE, CSP

UTHealth School of Public Health in San Antonio

According to the Centers for Disease Control and Prevention, One Health is the integrative effort of multiple disciplines to attain optimal health for people, animals, and the environment.<sup>1</sup> The One Health concept recognizes that human health is connected to the health of both animals and the environment. Within the One Health framework, livestock operation productivity and efficiency involve a triad of interactions between the animal, equipment and environment, and worker.

A One Health approach has been recommended to facilitate communication and collaboration across research disciplines in responding to challenges in human, animal, and environmental health. While One Health may have generated a great deal of research interest in the infectious disease disciplines, the One Health model has yet to fully overcome the research silos and barriers which can prevent cross-discipline collaboration.<sup>2</sup> To date, research emphasis has been placed on the animal health or production practices, with very little research attention placed on the worker, and his/her interaction with the animal or environment. A thematic session was dedicated to the One Health approach in animal agriculture at the 2019 Western Regional Agricultural Safety and Health Conference in Seattle, WA. In this session, presenters addressed how worker health and safety research is implemented within a One Health framework across different animal production practices.

### A One Health model for dairy farming-feasible and scalable?

Peter Rabinowitz, MD, PNASH, University of Washington

The One Health approach challenges us to simultaneously consider, in a given setting, the health and wellbeing of humans, animals, and the surrounding environment. As animal agriculture develops to meet the food supply needs of a growing global human population, intensification of production and other pressures such as land scarcity and proximity of farms and nearby communities raises questions about whether the One Health model for animal agriculture is both feasible and scalable. In other words, is it possible to raise an ever-increasing number of food animals while protecting the health of workers, consumers, and nearby communities as well as the welfare and health of the animals and the integrity of the local and global ecosystem? While such a goal may seem daunting, it is evident that finding ways for animal agriculture to address these simultaneous concerns will continue to grow in importance. Would some sort of One Health certification or labeling process be a helpful incentive? A possible model for such efforts is the Leadership in Energy and Environmental

Design (LEED) certification approach for buildings. The LEED audit checklist considers a wide number of sustainability aspects of the building, including energy conservation, use of renewable materials, and human health of the built environment. LEED has demonstrated that large buildings as well as small ones can attain platinum LEED status through an economy of scale and other means. In the same way, could large animal farms demonstrate positive impacts on human, animal, and environmental health and wellbeing through their greater infrastructure and efficiency? Voluntary certification in animal agriculture such as the FARM Standards indicates that producers are moving towards consideration of workforce issues as well as animal production. Future extension of these approaches may lead to metrics that allow for the application of the holistic One Health approach to both small and large animal agricultural settings.

## **The One Health paradigm: challenges and opportunities for developing successful interventions to improve poultry and human health**

Matthew W. Nonnenmann, PhD, CIH, Great Plains Center for Agricultural Health, University of Iowa

Dr. Nonnenmann presented information about dust, microorganisms, and contaminant gases present in poultry production that result in inhalation exposures to the animals and the people who care for them. There are many opportunities for implementing the One Health approach in poultry production through work organization and engineering solutions. Dr. Nonnenmann presented some unique bioaerosol data that highlight potential poultry pathogens present in the air and administrative solutions to reduced inhalation exposure among people working in poultry production. Furthermore, a continued need was identified to build strategic partnerships with the stakeholder in the poultry industry to design, test, and evaluate engineering solutions to air quality challenges in poultry production. Improving air quality in poultry production will decrease inhalation exposures among the birds and the people who care for them and likely improve animal and human health. Using engineering solutions is more effective than relying on administrative controls or use of personal protective equipment to reduce exposure to hazards according to the National Institute for Occupational Safety and Health hierarchy of controls. Future research should work closely with industry stakeholders to design and test engineering solutions to improve air quality is an effective One Health approach.

## **One Health: why We Care® in the swine industry**

Heather Fowler, VMD, PhD, Director of Producer and Public Health at the National Pork Board (NPB)

Dr. Fowler presented how the National Pork Board is a producer-led organization with the threefold mission of conducting research, promoting pork, and improving knowledge and practices through education and outreach. This organization in partnership with its sister organization, the National Pork Producers Council, and state associations has demonstrated an unwavering commitment to the industry and its consumers by upholding six key ethical principles created as part of the We Care<sup>SM</sup> initiative. Of these six principles “Employee

Care”, recently renamed to “Our People”, encourages members of the swine industry to provide an environment that protects the health and safety of their workforce. These teachings are put to practice in programs like the longstanding Pork Quality Assurance® Plus and Transport Quality Assurance®. In addition, dedicated NPB staff are tasked with creating the resources necessary to improve workplace safety on the farm. Through the We Care<sup>SM</sup> initiative, the National Pork Board and its partner organizations continue to demonstrate their commitment to doing what’s right for people, pigs, and planet.

## Worker and livestock safety during livestock handling activities

Robert Hagevoort, PhD, SW Center for Ag Health, Injury Prevention and Education, New Mexico State University

As Dairy Extension Specialist for the State of New Mexico, Robert Hagevoort, PhD presented how livestock handling activities in the dairy industry are represented in the One Health model, and how effective livestock handling training is instrumental to the health and safety of both the cow and worker. Dr. Hagevoort presented that the western dairy industry is in a period of transition. Dairies continue to increase in herd size which mandates increased numbers of workers on the farm. Dairy operations rely on hired workers which represent different cultural/linguistic backgrounds with different skill sets, education, and training. The industry is realizing that an increased emphasis should be placed on the design and delivery of effective livestock handling training for workers on the farm. Workers should not only be trained but also evaluated on their livestock handling performance which will ensure the health and safety of both the cow and the worker. Dr. Hagevoort stressed that positive animal welfare is an outcome of the interaction between the worker and the animal. The industry is beginning to embrace the reality that worker and cow safety are not mutually exclusive of one another. Animal welfare is the result of people interacting correctly with animals, which requires an understanding and anticipation of animal behavior and responses to different stressors. Both animal and worker safety can be jeopardized by incorrect human behavior around animals.

## References

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