

**Looking Back and Moving Forward: 20 years of Worker Education and Training
NIEHS National Trainers' Exchange – March 2007**

**WORKSHOP SESSION SUMMARY
NIEHS NATIONAL TRAINERS' EXCHANGE
MARCH 2007**

1. Session Title and Presenter's Contact Information:

“Keeping Avian Influenza from Becoming a Pandemic: the Role of Responder Training”

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2. Workshop Summary

The goal of this session was to make peer trainers aware of the role of first responders during a full-blown Avian Influenza (AI) outbreak among domestic poultry, the risks they would face and the value of the Kirkwood awareness program in the effort to prepare responders. Ron Snyder began the workshop by providing a broad technical overview of the NIEHS-funded awareness program developed to train stakeholders about responding to an Avian Influenza outbreak. Responders will be asked to maintain roadblocks, assist with sealing infected farms, halt movement of livestock, assist the veterinarian-in-charge to facilitate the difficult task of depopulation, and deal with irate, despondent or frightened farmers and citizens. Bruce Lippy provided industrial hygiene information about personal protective equipment selection and use by responders during an AI outbreak. He made the major point that surgical masks are totally unsatisfactory for protecting responders and the least level of protection should be N-95 respirators, but higher protection would be much better. He also raised an often misunderstood concept about the capture efficiency of HEPA filters; using diagrams and a simple demonstration he made the point that these filters are 99.97% efficient with the most difficult particle size to capture (0.3 micrometers) so they are more efficient with smaller and with larger particles. He also stressed that the OSHA requirement of fit testing respirators is absolutely essential to ensure a good fit.

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The training objectives were for participants to be able to:

1. Describe the Kirkwood training program for Avian Influenza, both for the National Institute of Environmental Health Sciences and the Department of Homeland Security.
2. Demonstrate a basic understanding of Avian Influenza
3. Describe the scope of the national repercussions from an AI outbreak.
4. Explain the differences in response for an outbreak of AI versus pandemic flu.
5. Explain why surgical masks are unacceptable and why eye protection is important with Avian Influenza

3. Methods

This session involved PowerPoint presentations with several demonstrations, including proper hand-washing techniques.

4. Main Points

From Ron Snyder's Overview

- HPAI (H5N1) in poultry is **not** the same as pandemic influenza and is **not** the same as seasonal influenza. This training is focused solely on responding while the virus is spread from poultry to humans by direct contact with birds or their feces. Quick and effective response can keep the virus from mutating into a form that can be spread from human to human, which could then lead to a pandemic.
- The United States is the world's largest producer and exporter of poultry meat and the second-largest egg producer, consequently, an outbreak of HPAI could result in tremendous financial losses for the country if not contained quickly
- Low Pathogenic Avian Influenza (LPAI) commonly causes mild symptoms among poultry and may easily go undetected; it is the Highly Pathogenic Avian Influenza (HPAI) that is of concern because it spreads rapidly through poultry flocks, causes disease affecting multiple internal organs and has a mortality that can approach 100% within 48 hours.
- Contact with infected fecal material is the most common means of bird-to-bird transmission and all outbreaks of the highly pathogenic form of avian influenza have been caused by viruses of the H5 and H7 subtypes.
- First responders must be trained to understand the unique nature of their role in an AI outbreak. Veterinarians, not firefighters or police, will serve as Incident Commanders. Every state has official animal health authorities, such as field veterinary medical officers (VMO) and Foreign Animal Disease Diagnosticians (FADD) who would direct the depopulation and disposal of poultry during an outbreak. The Area Veterinarian In Charge (AVIC) will be the official Incident Commander for a major outbreak
- Local responders will be needed primarily to establish quarantine around infected premises and maintain biosecurity and decontamination operations.
- Guidelines for protecting personnel involved in HPAI control and eradication were developed by CDC, WHO and OSHA and include commonsense concepts including:

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- Not eating, drinking, or smoking while culling, transporting, or disposing HPAI virus-infected poultry;
- Washing hands frequently and methodically; and
- Conscientiously wearing Personal Protective Equipment (PPE).
- The appropriate level of PPE will be determined by the animal health authority in charge or as outlined in your state's Foreign Animal Disease Response Plan.
- All vehicles, equipment, trailers and PPE must be cleaned and disinfected before entering and leaving a quarantined or infected premises. Responders will most likely be pulled into helping to ensure compliance with cleaning and disinfection because it is critical in limiting the spread of disease. Fully removing mud and debris from equipment with water is essential for a subsequent application of disinfectant to be effective.
- An outbreak can be quite large and involve euthanizing thousands or millions of poultry, which will create traumatic stress for responders who need to be aware that this can lead to:
 - Physical illness;
 - Inability to function adequately on the job;
 - Depression;
 - Anxiety; and
 - Marital and family conflict.

From Bruce Lippy's Presentation

- Under the testing and certification requirements of the National Institute for Occupational Safety and Health (NIOSH),(1) a Type N95 filter may allow no more than 5% penetration of a challenge sodium chloride aerosol with a 0.3 μm mass median aerodynamic diameter.
- High efficiency filters (p-100) are 99.97% efficient with airborne particles 0.3 micrometers (μm) in diameter. Particles of this size are the most difficult to filter and thus the *most penetrating particle size* (MPPS). Particles that are larger *or smaller* are filtered with even higher efficiency.
- Tests with actual viruses (Balazy, 2005, AJIC) showed that N-95 respirators could achieve 95% efficiency, although one brand of N-95 failed. All surgical masks failed.
- Respirators must be worn conscientiously to achieve the proper protection: a 99.97% efficient respirator drops to 95% if it isn't worn 24 minutes in an 8-hour work day of exposure.
- NIOSH concluded after testing that "...fit-testing of N95 respirators is necessary to ensure that the user receives the expected level of protection."
- Other routes of entry must be considered. During the 2004 outbreak of H7N3 AI in Canada the only infections in humans came from exposure to dusts through the eyes. Therefore goggles are necessary.

5. References

D. M. Skowronski et al. (2007, Jan.) Protective measures during H7N3 AI outbreak in poultry in Canada, CMAJ, Jan 2007