5th International Symposium

Managing Animal Mortalities, Products, By-Products, & Associated Heath Risks: Connecting Research, Regulations, & Responses

September 28 - October 1, 2015

Lancaster, Pennsylvania

5th International Symposium

Managing Animal Mortalities, Products, By-Products, & Associated Health Risks:
Connecting Research, Regulations, & Responses

Welcome to the 5th International Symposium focusing on Managing Animal Mortalities, Products, By-Products, and Associated Health Risks and our efforts to connect research, regulation and response. We are pleased that you have chosen to participate in this Symposium. The sustainability of agriculture, recreational, and natural animal systems is dependent on both the routine and emergency management of situations that result in animal mortality. We are meeting here in Lancaster, Pennsylvania this week to consider effective plans and methods aimed at protecting animal health, human health, economies, communities, and our environment.

This week, it is our hope that you will strengthen current networks and connect with one or more new networks. Networking links us together in durable relationships that ultimately help one another. As federal and state government officials, veterinarians, commodity group representatives, academic researchers, extension educators, food and agriculture emergency managers, public health officials, food animal processors, renderers, composters, and farmers, we have organized the symposium to enable the enhancement of existing relationships and the development of new relationships. Our goal is to provide you with a variety of opportunities to experience meaningful interactions with colleagues you currently work with, as well as with new acquaintances from nearby and others from places around the globe.

This week, we want to encourage you to consider where gaps exist and in what way we can foster the closing of these gaps. Think about creating systems that work effectively and quickly to manage mass mortality events involving animals. Gaps may exist in areas such as depopulation, disposal, or decontamination. Gaps may exist in the administration of the response, in its funding, or perhaps it is a technological gap. Gaps may exist between national and state agencies, the incident commander and the state veterinarian, the local incident manager and the carcass disposal contractor, or the farmer and the Incident Management Team. The number of people and the number of gaps in an emergency response may be varied in number and significance. Much of what you learn this week will be important to your work of closing these gaps.

We hope the 5th International Symposium has lasting influence in societies world-wide. This is an international event, encouraging us to learn from each other's experiences. We must share lessons we've learned. This year we draw particular attention to the highly pathogenic avian influenza disease that is currently affecting North America. When it comes to global food production we all need each other to be successful!

On behalf of all of the members of the Symposium Planning and Steering Committees, representing numerous partnering organizations, agencies, and institutions, I am pleased and privileged to present to you, the 5th International Symposium on Managing Animal Mortality and Health Risk. Have a great meeting!

Dale W. Rozeboom

Dale W. Rozeboom, Planning and Steering Committees Chair
Professor and Extension Specialist
Michigan State University

Schedule

Sunday, September 27, 2015

6:00 p.m.	Pre-Conference Reception and Registration (Vine Street Lobby)

Monday, September 28, 2015

8:00 a.m.	Breakfast and Registration/Load Buses (Vine Street Lobby)
9:00 a.m.	Pennsylvania Agriculture Tours
5:30 p.m.	Reception and Dinner (Harvest View Barn, Hershey Farms, Elizabethtown, PA)

Tuesday, September 29, 2015

7:00 a.m.	Breakfast and Registration (3rd Level Pre-Function Space)
7:30 a.m.	Exhibitor Showcase (3rd Level Pre-Function Space)
8:00 a.m.	Welcome and Opening Remarks (Heritage Ballroom) • Gregory Hostetter, Deputy Secretary for Animal Health and Food Safety, Pennsylvania Department of Agriculture • Melissa Hefferin Berquist, Ph.D., Institute for Infectious Animal Diseases • Dale W. Rozeboom, Ph.D., Professor, Michigan State University and Chair of the Symposium Steering Committee
8:30 a.m.	Keynote Address: Timothy Goldsmith, M.P.H., D.V.M., D.A.C.V.P.M., Assistant Professor, University of Minnesota
9:15 a.m.	Plenary Session: Patrick Webb, D.V.M., Director of Swine Health Programs, National Pork Board
10:00 a.m.	Break and Exhibitor Showcase (3rd Level Pre-Function Space)
10:30 a.m.	Technical Presentation Sessions: Session 1: New and Emerging Technologies for Euthanasia, Carcass Treatment, and Disinfection (Hickory Room) Session 2: Carcass Management (Conestoga Room)
12:30 p.m.	Lunch and Exhibitor Showcase (Heritage Ballroom)
1:30 p.m.	Plenary Session: Tim Reuter, Ph.D., Livestock Research Branch, Alberta Agriculture and Forestry, Government of Alberta (Heritage Ballroom)
2:30 p.m.	Break and Exhibitor Showcase (3rd Level Pre-Function Space)
3:00 p.m.	Technical Presentation Sessions: Session 3: Federal and State Planning (Hickory Room) Session 4: Disease Mitigation Strategies (Conestoga Room)
5:15 p.m.	Poster Presentation Session, Software Demonstration Reception, and Exhibitor Showcase (3rd Level Pre-Function Space and Heritage Salon D and E)
7:00 p.m.	Free Evening

Wednesday, September 30, 2015

7:00 a.m.	Breakfast and Exhibitor Showcase (3rd Level Pre-Function Space)
8:00 a.m.	Technical Presentation Session:
	Session 5: Depopulation and Disposal (Hickory Room)
	Session 6: All Hazards (Heritage Salon D and E)
10:00 a.m.	Break and Exhibitor Showcase (3rd Level Pre-Function Space)
10:30 a.m.	Distinguished Service Award Presentation to William Seekins
10:40 a.m.	Plenary Session: Mark Van Oort, Center Fresh Egg Farm (Heritage Ballroom)
11:30 a.m.	Lunch and Exhibitor Showcase (Heritage Ballroom)
12:30 p.m.	International Panel (Heritage Ballroom)
2:30 p.m.	Assemble for departure to the Demonstrations. (Vine Street Lobby)
3:30 p.m.	Concept and Equipment Demonstrations (Penn State University Southeast Agricultural Research and Extension Center, Landisville, PA)
7:00 p.m.	Return to hotel. Free evening

Thursday, October 1, 2015

7:00 a.m.	Breakfast (3rd Level Pre-Function Space)
8:00 a.m.	Emergency Exercise (Heritage Ballroom)
Noon	Lunch and Symposium Wrap-Up (Heritage Ballroom)
	Wrap-Up: Dale W. Rozeboom, Ph.D., Professor, Michigan State University and Chair of the Symposium Steering Committee
2:00 p.m.	Symposium Concludes

Keynote & Plenary Speakers

Keynote Speaker: Tim Goldsmith

Understanding Risk in Planning for and Responding To Catastrophic Animal Disease

Dr. Timothy J. Goldsmith has been a faculty member at the University of Minnesota, College of Veterinary Medicine since 2008, and is currently an Assistant Professor and Co-Director of the Veterinary Public Health and Preventive Medicine Residency Program within the Center for Animal Health and Food Safety. He is board certified in the American College of Veterinary Preventative Medicine. Dr. Goldsmith's professional experience prior to his current position was as a private practice food animal veterinarian. His current research and academic interest is related to topics in the areas of food safety, food security, livestock production systems and emergency response planning. His major research effort has focused on emergency response planning in the area of business continuity and development of secure food supply plans. In addition, Dr. Goldsmith focuses on the development and teaching of programs for veterinary students in the area of beef cattle production medicine and management, along with providing outreach and education to producers throughout Minnesota.

Welcome Speaker: Melissa Hefferin Berquist

Opening remarks from the Institute for Infectious Animal Diseases (IIAD)

Dr. Melissa Hefferin Berquist is the associate director of the Institute for Infectious Animal Diseases.

Dr. Berquist joined the IIAD following almost three years at BAI, Inc., a professional services company in Alexandria, Va., first as a senior biosurety analyst and then as a senior analyst and program coordinator. While at BAI, she worked with biodefense research sponsored by the Science and Technology Directorate of the U.S. Department of Homeland Security (DHS), where she served in a contract support role for the DHS Office of University Programs, specifically managing IIAD and related DHS Science and Technology Centers of Excellence.

Her primary responsibilities include assisting IIAD's interim director, Dr. Gerald Parker, in executive operations of the center, providing scientific leadership, ensuring overall strategic continuity, facilitating communication with stakeholders, and synchronizing and coordinating the Institute's efforts related to strategic management, budget, regulatory compliance, and efficiency.

A graduate of Northwestern University with a bachelor of science in biomedical engineering, Dr. Berquist earned her doctorate in molecular medicine/molecular and cellular biology from the University of Maryland's School of Medicine.

Welcome Speaker: Gregory Hostetter

The Diversity of Agriculture in Pennsylvania: Opportunities and Challenges

Deputy Secretary for Animal Health and Food Safety Gregory Hostetter manages a family grain and beef farm and previously partnered with his father for 23 years to run a 150-acre dairy operation. He recently served on the United States Department of Agriculture's Farm Service Agency Pennsylvania state committee, USDA's Natural Resources Conservation Service State Technical Committee, the Department of Environmental Protection's Agriculture Advisory Board, and has been active in the Pennsylvania Farm Bureau. He will serve as the deputy secretary for animal health and food safety, responsible for the bureaus of Animal Health and Diagnostic Services, Food Safety and Laboratory Services and Dog Law Enforcement.

Plenary Speaker: Tim Reuter

Composting Controls Pathogens

Dr. Tim Reuter is employed in the Livestock Research Branch of Alberta Agriculture and Forestry, Government of Alberta, located at the Agriculture Research Centre in Lethbridge. Dr. Reuter serves also as an adjunct Assistant Professor in the Department of Biological Sciences at the University of Lethbridge and as President of the Canadian Society of Animal Science. Dr. Reuter's research is focused on food safety along the farm-to-fork food production chain, and on major research topics concerning emerging pathogenic microorganisms and prions, causative agents of BSE and Chronic Wasting Disease. He has authored and co-authored over 40 publications in peer-reviewed journals as well as invited reviews and book chapters. Before coming to the Lethbridge Agriculture Research Centre, Dr. Reuter was a Research Scientist at the Institute of Physiology, University of Veterinary Medicine in Hannover, Germany. He has a PhD from the Martin-Luther-University in Halle, Germany. His PhD research was conducted at the Federal Research Centre in Braunschweig, Germany.

Plenary Speaker: Mark Van Oort
Avian Influenza Challenges from a Producer's Eye

For the last 10 years, Mark Van Oort has worked at Center Fresh Egg Farm overseeing the day-to-day care of 5.6 million egg laying hens as the Complex Manager. Center Fresh is one of America's leading egg-product producers. The families behind Center Fresh are committed to responsible production practices. Doing the right thing means producing safe, high-quality eggs and egg products, providing their hens with exceptional care, preserving the environment, and caring for their community. Mark is proud of his work alongside America's egg farmers and crop farmers.

Mark graduated from Aurelia High School and attended Buena Vista University where he majored in Elementary Education. After college Mark pursued a career in agriculture, which led to Center Fresh Egg Farm and an appreciation for how farmers provide our food. Mark grew up on a farm in rural Iowa working with cattle, horses, and hogs.

While working in the layer industry Mark has successfully completed HACCP training, OSHA training, Food Safety, Plant Sanitation, and many other bird health and animal husbandry workshops. Mark has recently faced one of his biggest challenges for which there was no standard operating procedure. He guided the Center Fresh Egg Farm through the avian influenza outbreak in the spring of 2015. This encompassed large scale euthanasia, carcass disposal, manure disposal, and virus eradication through composting, control of a quarantine zone to control virus spread, and large scale cleaning and disinfecting.

Thirteen years ago Mark married his wife Nikki. Their three children, Kory, Addisyn, and Dustin, enjoy the summer months that provide the opportunity to go boating and camping. Mark also volunteers his time as the head wrestling coach for West Sioux High School, and is active in his church.

Plenary Speaker: Patrick Webb
Lessons Learned from PEDv: Managing Morbidity and Mortality Related to an Emerging Swine Production Disease and the Effects on Pork Producers

Dr. Patrick Webb is the director of swine health programs at the National Pork Board, which he joined in 2005. He is responsible for the Pork Checkoff's efforts in animal identification, pre-harvest traceability and foreign animal disease planning, and preparedness and response. Previously, Patrick worked as a private veterinary practitioner in a food animal practice in rural Iowa. He has also worked for Iowa's Department of Agriculture and Land Stewardship as a foreign animal disease program coordinator, where he developed the department's emergency preparedness plan for animal disease disasters.

Throughout his career, Dr. Webb has worked extensively on emergency preparedness and planning at the local, state and federal levels. He has developed and delivered numerous educational programs directed at training producers, veterinarians, county emergency managers and first responders on how to react to foreign animal disease disasters. Dr. Webb received his veterinary degree from Iowa State University, where he also received his bachelor's degree in animal science. He also has completed Foreign Animal Disease Diagnostician School. Dr. Webb is a member of the American Association of Swine Veterinarians, Iowa Veterinary Medical Association, and the American Veterinary Medical Association.

International Panel

(12:30 p.m. - 2:30 p.m.)
Heritage Ballroom

Moderator: Dr. Heather Simmons, D.V.M., M.S.V.P.H., Program Manager and Education and Outreach Theme Leader, Institute for Infectious Animal Diseases, and Associate Head & Extension Program Leader, Texas A&M AgriLife Extension, College Station, Texas

At 12:30 p.m. on Wednesday, September 30, 2015, a panel of international experts will convene to discuss their perspectives and experiences on animal mortality management. This session will include a plenary address from Dr. Heekwon Ahn titled "Foot and Mouth Disease Standard Operating Procedures Revised by the South Korean Government after Experiencing a Serious FMD Outbreak in 2011."

1. **Brandon Gilroyed**, PhD, Assistant Professor, School of Environmental Sciences, University of Guelph Ridgetown Campus, Canada
   Dr. Gilroyed's research program is broad and interdisciplinary, with a focus on the intersections between agriculture, renewable energy, and the environment. In regard to mortality management, his experience is focused on composting and anaerobic digestion for disposal of cattle deadstock and specified risk materials. He has also investigated survival of pathogens in these systems, including prions, endospore forming bacteria such as *Bacillus spp*., and enteropathogenic bacteria such as Shiga-toxin producing *E. coli* (STEC). His current research is focused on applying novel anaerobic digestion techniques to disposal of swine mortalities for routine and emergency use.

2. **Machebe Ndubuisi Samuel**, PhD, Senior Lecturer, University of Nigeria, Nsukka, Nigeria
   Machebe Ndubuisi has his PhD degree in animal physiology and is a senior lecturer at the Department of Animal Science, University of Nigeria, Nsukka. He has been active in the area of livestock production, management, and disease control in Nigeria. He is presently doing research in domestic animal cloning as a JSPS post-doctoral researcher at Kinki University in Nara, Japan. He plans to share his experience in the application of 3D protocols (depopulation, disposal, and decontamination) as strategies for curbing the spread of avian influenza in Nigeria. He hopes to acquire additional knowledge and latest expertise available for managing animal tissues and disease containment during the symposium.

3. **Prysor Williams**, PhD, Senior Lecturer in Environmental Management, Bangor University, United Kingdom
   Prysor Williams is from Bangor University, UK, and he and his team have been involved in research projects on managing livestock mortalities for many years. Much of his work has been funded by industry, but also the Welsh and UK governments. The work primarily involves assessing the risks to both humans and livestock from the employment of mortality storage and disposal systems currently not permitted under EU regulations. He has been involved in high-level discussions with EU representatives about the need to amend the current stringent regulations to allow for more cost-effective and biosecure disposal systems to be available for use by industry.

4. **Mohamed Naceur Baccar**, DVM, Veterinarian Regional Inspector/Department Head of Regional Observation Unit, National Center of Zoosanitary Vigilance, Ministry of Agriculture, Tunisia
   Dr. Baccar is Veterinarian Regional Inspector and he holds the position of Department Head of the Regional Observation Unit at the National Center of Zoosanitary Vigilance of Tunisia. In addition to his diploma as

a doctor of veterinary medicine, he has a certificate of specialized studies in animal epidemiology. Dr. Baccar was at the origin of the diagnosis for the first time in Tunisia serotype 1 of blutongue in sheep in 2006, and for the diagnosis for the first time also the PPR in Tunisia in 2010. He is the general secretary of the Tunisian Veterinary Technical Group. Dr. Baccar will discuss his views on the management of animal mortality in Tunisia, and the risk of disease transmission and the role of developing countries in the transfer of new management technologies.

5. **Duncan Worsfold**, Statewide Specialist, Animal Emergency Preparedness, Department of Economic Development, Jobs, Transport and Resources, Australia
   Mr. Worsfold lives on a small irrigation farm in the heart of the Goulburn Valley of Victoria, Australia, which is a heavily concentrated dairy and horticulture region. He has been employed within the Animal Health Service of the Victorian State government responsible for agriculture for 20 years, specializing in the 3D work area. Mr. Worsfold has participated in many animal emergencies (field and control centre), including avian influenza, Newcastle disease, foot and mouth disease, equine influenza, anthrax, bushfires and floods. He brings a mixture of eternal optimism, practical experience, and problem solving ability to the discussion and he hopes to learn more about other people's experiences and how this can advance our problem solving strategies in the 3D discipline. Other interests include Australian rules football, fishing and growing corn for dairy farmers.

6. **Lasha Avaliani**, PhD, Head of National Food Agency's Especially Dangerous Pathogen Department, National Food Agency, Republic of Georgia
   Dr. Avaliani is a PhD veterinarian from Georgia. He works for state veterinary services as the Head of EDP division. He will be discussing the safe disposal of carcasses during an anthrax outbreak. Dr. Avaliani hopes to share his experience on managing anthrax positive animal carcasses.

7. **Heekwon Ahn**, PhD, Associate Professor, Department of Animal Biosystems Science, Chungnam National University, South Korea
   Dr. Heekwon Ahn is currently an associate professor at the Chungnam National University in South Korea. He has conducted various research projects related to animal mortality, composting, and burial in the U.S. and South Korea. He will introduce animal mortality disposal standard operating procedures recently revised by the South Korean government after experiencing a serious FMD outbreak in 2011.

8. **Van Dang Ky**, National Project Coordinator, ECTAD Program, Food and Agriculture Organization of the United Nations (FAO), Vietnam
   Last year, Dr. Van Dang Ky was chief of Epidemiology Division Department of Animal Health, MARD, Vietnam. Now he is the coordinator of the national FAO ECTAD Program in Vietnam. Dr. Ky will be attending the symposium to share Vietnam's experience in preventing zoonotic diseases, and he hopes to learn from the experiences of other attendees to improve Vietnam's disease prevention capability.


Session 1: Technical Presentations
New and Emerging Technologies for Euthanasia, Carcass Treatment, and Disinfection

(10:30 a.m. - 12:30 p.m.)
Hickory Room

Moderator: Dr. Robert E. DeOtte, Jr., Ph.D., P.E., P.G., Professor of Civil and Environmental Engineering, West Texas A&M University, Canyon, Texas

1. Is Foam an Option for Addressing the Challenges Associated with the Depopulation of Caged Layers?
   R. L. Alphin, E. R. Benson, D. P. Hougentogler, and E. R. Herrman
   University of Delaware, Newark, Delaware

2. Alkaline Hydrolysis of Mortalities and Disposition of the Sterile Remains
   J. Wilson
   Bio-Response Solutions, Danville, Indiana

3. Field Demonstration of the Aboveground Burial Enhanced with Phytoremediation (ABEP) System as a Tool for Managing Animal Carcasses Following a Disease Outbreak
   G. A. Flory[1], R. W. Peer[1], R. A. Clark[2], and N. Machebe[3]
   [1]Virginia Department of Environmental Quality, Harrisonburg, Virginia
   [2]Virginia Cooperative Extension, Woodstock, Virginia
   [3]Kinki University, College of Agriculture, Nakamachi, Nara, Japan

4. Solid-state Anaerobic Digestion of Beef Carcass: A Comparison of Bench Scale Versus Pilot Scale Trials
   D. L. Pratt[1] and J. Agnew[2]
   [1]University of Saskatchewan, College of Engineering, Department of Civil & Geological Engineering, Saskatoon, Saskatchewan, Canada
   [2]Prairie Agricultural Machinery Institute, Humboldt, Saskatchewan, Canada

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Session 2: Technical Presentations
Carcass Management

(10:30 a.m. - 12:30 p.m.)
Conestoga Room

Moderator: Mark Hutchinson, Extension Professor, University of Maine Cooperative Extension, Waldoboro, Maine

1. Mass Mortality Composting of Market Age Turkeys: Procedures and Lessons Learned from an Avian Influenza Infected Flock
   B. Malone[1] and G. Flory[2]
   [1]Malone Poultry Consulting, Princess Anne, Maryland
   [2]Virginia Department of Environmental Quality, Harrisonburg, Virginia

2. Improving Temperature Response During Mass Emergency Poultry Mortality Composting
   E. R. Benson, R. L. Alphin, M. K. Rankin, and D. P. Hougentogler
   University of Delaware, Newark, Delaware

3. Using Composting Principles During Avian Flu Response
   J. Paul
   Transform Compost Systems, Abbotsford, British Columbia, Canada

4. Quantification of Sodium Pentobarbital Residues from Equine Mortality Compost Piles: Final Results
   J. Payne[1], R. Farris[2], G. Parker[1], J. Bonhotal[3], and M. Schwarz[3]
   [1]Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma
   [2]Agricultural Experiment Station, Oklahoma State University, Stillwater, Oklahoma
   [3]Cornell Waste Management Institute, Cornell University, Ithaca, New York

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Session 3: Technical Presentations
Federal & State Planning

(3:00 p.m. - 5:15 p.m.)
Hickory Room

Moderator: Dr. Bill Seekins, Ph.D., Agricultural Researcher,
Maine Department of Agriculture, Food and Rural Resources, Augusta, Maine

1. Depopulation, Disposal, and Disinfection and Logistical Infrastructure Related to an Infectious Animal Disease Response
   L. Miller
   United States Department of Agriculture, Animal and Plant Health Inspection Service Veterinary Services, Riverdale, Maryland

2. Animal Disease Outbreak Emergency Response
   M. Mayes
   North Carolina Department of Agriculture and Consumer Services, Raleigh, North Carolina

3. Logistical Infrastructure for Carcass Disposal in Texas and the High Plains
   R. DeOtte
   West Texas A&M University, Canyon, Texas

4. Risk Assessment for the Transmission of Foot and Mouth Disease via Movement of Swine and Cattle Carcasses from FMD-Infected Premises to a Disposal Site
   T. Goldsmith
   University of Minnesota, Center for Animal Health and Food Safety, St. Paul, Minnesota

5. Tuberculosis Response in Texas – Lessons Learned from Implementing Traditional and Non-traditional Approaches
   [1]D. Finch, T. R. and [2]R. DeOtte.
   [1]Texas Animal Health Commission, Austin, Texas
   [2]West Texas A&M University, Canyon, Texas

Session 4: Technical Presentations
Disease Mitigation Strategies

(3:00 p.m. - 5:15 p.m.)
Conestoga Room

Moderator: Dr. Dale Rozeboom, Ph.D., Professor and Extension Specialist, Swine Nutrition & Production Management, Michigan State University, East Lansing, Michigan

1. PEDV Survivability in Swine Mortality Compost Piles
   A. M. Schmidt, J. D. Loy, C. Kellin, S. Vitosh, and J. Galeota
   University of Nebraska – Lincoln, Lincoln, Nebraska

2. Evaluation of an Accelerated Hydrogen Peroxide Disinfectant to Inactivate Porcine Epidemic Diarrhea Virus in Swine Feces on Metal Surfaces
   D. J. Holtkamp, J. Myers, P.R. Thomas, L. A. Karriker, A. Ramirez, and J. Zhang
   Iowa State University, Lloyd Veterinary Medical Center, Ames, Iowa

3. Evaluation of Time and Temperature Sufficient to Inactivate Porcine Epidemic Diarrhea Virus in Swine Feces on Metal Surfaces
   D. J. Holtkamp, P. R. Thomas, L. A. Karriker, A. Ramirez, and J. Zhang
   Iowa State University, Lloyd Veterinary Medical Center, Ames, Iowa

4. Pathogen Inactivation in Poultry Carcasses Composting
   P. Pandey, W. Cao, V. Vaddella, and M. Pitesky
   Department of Population Health and Reproduction, Veterinary Medicine School, University of California, Davis, California

5. Impacts of Sporulation Temperature, Exposure to Compost Temperatures, and Matrix on Survival of Bacillus licheniformis and B. thuringiensis Endospores
   K. Stanford[1], A. Harvey[2], S. Xu[3], T. Reuter[1], and T. A. McAllister[3]
   [1]Alberta Agriculture and Rural Development, Lethbridge, Alberta, Canada
   [2]University of Lethbridge, Lethbridge, Alberta, Canada
   [3]Agriculture and Agri-Food Canada, Lethbridge, Alberta, Canada

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Session 5: Technical Presentations
Depopulation and Disposal

(8:00 a.m. - 10:00 a.m.)
Hickory Room

Moderator: Gary A. Flory, Agricultural Program Manager, Virginia Department of Environmental Quality, Harrisonburg, Virginia

1. Transportable Gasifier for On-Farm Disposal of Animal Mortalities: Status Update
   P. Lemieux[1], S. Serre[1], B. Hall[2], B. Sharpe[2], and J. Howard[3]
   [1]United States Environmental Protection Agency, Research Triangle Park, North Carolina
   [2]ARCADIS, Research Triangle Park, North Carolina
   [3]Raleigh, North Carolina

2. Laying Hen Depopulation in Various Commercial Housing Systems
   D. M. Karcher
   Michigan State University, East Lansing, Michigan

3. Lessons Learned During a Winter Poultry Disease Response
   M. Neault
   Michigan Department of Agriculture and Rural Development – Animal Industry Division, Lansing, Michigan

4. Use of a Compressed Air Foam System in Response to Reportable Poultry Diseases
   M. Farnell[1], D. Caldwell[2], A. Byrd[3], L. Berghman[2], A. Kiess[1], T. Tabler[1], P. Stayer[4], and Y. Farnell[1]
   [1]Mississippi State University, Mississippi State, Mississippi
   [2]Texas A&M AgriLife Extension and Research, College Station, Texas
   [3]United States Department of Agriculture, Agricultural Research Service
   [4]Sanderson Farms, Inc., Laurel, Mississippi

Session 6: Technical Presentations
All Hazards

(8:00 a.m. - 10:00 a.m.)
Heritage Salon D and E

Moderator: Dr. Kim Stanford, Ph.D., Beef Research Scientist, Alberta Agriculture and Rural Development, Department of Agriculture and Forestry, Lethbridge, Alberta, Canada

1. Report on Federal Animal Emergency Management Decontamination and Disposal R&D Program Progress
   L. Miller
   United States Department of Agriculture, Animal and Plant Health Inspection Service Veterinary Services, Riverdale, Maryland

2. Lessons Learned in Animal Decontamination from the 2010 Kalamazoo River Enbridge Oil Spill
   M. Neault
   Michigan Department of Agriculture and Rural Development – Animal Industry Division, Lansing, Michigan

3. Exposure Assessment of Livestock Carcass Management Options for Natural Disasters
   S. Taft[1], P. Lemieux[1], L. Miller[2], J. Cleland[3], M. McVey[3], K. Jones[3], G. Carter[3], and T. Hong[3]
   [1]United States Environmental Protection Agency Office of Research and Development, Cincinnati, Ohio
   [2]United States Department of Agriculture, Animal and Plant Health Inspection Service Veterinary Services, Riverdale, Maryland
   [3]ICF International, Fairfax, Virginia

4. Approach to Planning for Canada-Wide Mass Depopulation and Disposal
   I. Richardson
   eBiz Professionals Inc., Oakville, Ontario, Canada

Poster Presentations

(5:15 p.m. - 7:00 p.m.)
3rd Level Pre-Function Space

1. Disposal of Dead Pigs Using Forced Aeration Composting in a Field Study
   S. Bin, T. Xiuping, D. Hongmin, and C. Yongxing
   Key Laboratory of Energy Conservation and Waste Management in Agricultural Structures (MOA), Institute of Environment and Sustainable Development in Agriculture, Chinese Academy of Agricultural Sciences, Beijing, China

2. Incidence and Prevalence of Taenia Solium Infection in Pigs Slaughtered in Abattoirs in Nsukka Agricultural Zone, Enugu State, Nigeria
   S. I. Onuorah[1] and N. S. Machebe[2]
   [1]Department of Animal Science, University of Nigeria, Nsukka, Enugu State, Nigeria
   [2]Laboratory of Animal Reproduction, College of Agriculture, Kinki University, Nakamachi, Nara, Japan

3. New Environmental Disinfectant Technology, a Brief Review
   L. G. Pantaleon
   Ogena Solutions, Pantaleon, PLLC, Versailles, Kentucky

4. Potential Applications of Detection Dogs in Safe Animal Carcass Disposal and Management
   N. Richards, A. Whitelaw, M. Parker
   Working Dogs for Conservation, Three Forks, Montana

5. The Spartan Emergency Animal Tissue Composting Planner
   D. Ross[1], D. W. Rozeboom[2], and R. D. Kriegel[2]
   [1]Agrosecurity Consulting, Bath, Michigan
   [2]Michigan State University, East Lansing, Michigan

6. Time-Temperature Combinations for Destruction of PEDV During Composting
   A. M. Schmidt, J. D. Loy, C. Kellin, S. Vitosh, and J. Galeota
   University of Nebraska – Lincoln, Lincoln, Nebraska

7. Effectiveness of Composting as a Means of Emergency Disposal: A Literature Review
   M. Schwarz and J. Bonhotal
   Cornell Waste Management Institute, Cornell University, Ithaca, New York

8. A Phased Approach to Mass Mortality Disposal Planning for Foot and Mouth Disease
   H. Smith, L. Tily, A. Mabarrack, W. Mossop, and M. Tothill
   Department of Primary Industries and Regions, Government of South Australia

9. Comparison of Three Methods of Meat By-Product Disposal with Emphasis on Biosecurity, Sustainability, and Economic Value of Conversion Products
   C. H. Gooding[1] and J. Meisinger[2]
   [1]Department of Chemical and Biomolecular Engineering, Clemson University, Clemson, South Carolina
   [2]National Renderers Association, Alexandria, Virginia

10. Heat Inactivation of Avian Influenza on Turkey Farms Using Composting Methods: Lessons Learned from Iowa 2015
    J. Payne
    Oklahoma State University, Stillwater, Oklahoma

11. System Dynamics Perspectives on Strategies to Control Spread of Animal Diseases and Reduce Number of Carcasses for Disposal
    R. DeOtte
    West Texas A&M University, Canyon, Texas

12. Comparison of Construction and ATD Performance Profiles in Two Avian Influenza Mortality Composting Operations
    Z. McManana[1] and R. Podgorski[2]
    [1]Wisconsin Department of Natural Resources
    [2]Wisconsin Department of Agriculture, Trade and Consumer Protection - Animal Health

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Software Demonstrations

(5:15 p.m. - 7:00 p.m.)
Heritage Salon D and E

1. APHIS Carcass Management Decision Tool: Matrix, Loop, Checklist (MLCh)
   Lori Miller
   United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services, Science, Technology and Analysis Services; with peer review by the DHS 3D Sub IPT Working Group and support from Cubic Applications, Inc.
   The MLCh Tool presents a detailed matrix comparing advantages and disadvantages of the six major carcass management options resulting in a ranking from most preferred to least preferred based on 15 criteria. Following the Matrix is a Decision Loop based on the order of preference from the Matrix, which enables the user to quickly answer a few questions to determine if an option is feasible in a particular situation. If so, the user can then refer to the Checklist, which is a more detailed list of actions to implement the option.

2. AgAware
   Robert G. Knowlton, Scott Olson, Kurt Hallowell, and Mark D. Tucker
   Sandia National Laboratories
   This software is a prioritization analysis tool for all-hazards/analyzer for wide-area restoration effectiveness. It is a comprehensive decision support tool to estimate the time and cost of disinfection, depopulation, and disposal during foreign animal disease outbreaks.

3. Routes and Ports for Integrated Management Zones - Texas
   Robert DeOtte, Kevin Korineck, Vanessa Brown, Kristen Johannsen, Heather Degenhart, Jason Antrobius
   West Texas A&M University
   This software program is an emergency management tool which delineates Quarantine Integrated Management Zones, each of which can be fully sustainable in a quarantine situation, with minor exceptions. The tool identifies routes and ports for use in traffic management into and out of integrated management zones, and includes automated route identification and route avoidance. The DeLorme™ Street Atlas is used for mapping.

4. Disposal Calculator
   Michael Mayes
   North Carolina Department of Agriculture and Consumer Services, Emergency Programs Division
   The disposal calculator determines amount of biomass (based on animal type and number of animals if known) to dispose of and then allows the user to select which option to use for disposal: this includes landfill, rendering, and burial. The calculator also allows the user to select which conveyance to use for transport to disposal site, and finally gives a summary of all selected options: includes animal type and number, total amount of biomass, option for disposal, and route from farm to disposal site.

5. Carcass Disposal Option Calculator
   Wayne Einfeld
   Cubic Global Defense
   This is an Excel-based tool that accompanies a series of carcass disposal options checklists that are being updated at the USDA/APHIS training web site. The calculator estimates key disposal parameters for each disposal option, such as: time to depopulate, capacity ratio (in terms of land available or transport resources), and estimated time and cost to complete disposal by each option.

September 28, 2015
Tours Focus on Protecting a Region's Animal Industries

Please arrive no later than 8:45 a.m. to board buses at the Vine Street entrance of the hotel at the bus boarding area

Livestock Collection Point, Livestock Truck Sanitation, and In-Vessel Mortality Composting
This tour will visit a hog-buying station that sorts and groups hogs for remarketing. This operation will explain how it handles on-site mortality and the importance of the on-site truck wash station for biosecurity. This type of station is critical for the livestock trucking business. Participants will also view an in-vessel composter and learn how it fits into the operation's management plans. This tour will also feature a stop at the New Holland Livestock Auction, the largest livestock auctions on the East Coast. On any sale day, nearly 2,000 sheep, 1,000 goats, and 1,000 cattle may be sold. Finally, the group will tour a 450-cow dairy operation that hosts public tours to help improve consumers' understanding of today's agriculture. The dairy manages its composting through a partnership with Terra-Gro, a commercial composting operation. Participants will have the opportunity to see this facility and learn about the importance of partnership in composting solutions.

Anaerobic Digestion, Composting, Egg Production, and Public Relations
Participants will view a large commercial truck wash and commercial poultry crate wash that is important for biosecurity in the livestock industry. This facility also houses the Lancaster County de-foamer for use in depopulation that is on standby for any county agricultural emergency. The tour will also feature a dairy and poultry operation that manages more than 2,500 acres of cropland, 6 million egg-laying chickens, 2,000 dairy cows, a milk bottling and ice cream plant, and a public farm tour program. At this stop, participants will learn the importance of biosecurity, disease prevention, and emergency response to disease outbreak. The third stop will include a compost and digester facility that uses farm manure, yard waste, and other organic materials to make compost (humus) and compost tea. At the site, fleece blankets are used to cover active compost to prevent nutrient loss.

Poultry Truck Wash, Beef Feedlot, Mortality Management, and Anaerobic Digestion
Participants will view a truck wash used exclusively for poultry trucks that is critical for the health of people and animals involved in this operation. The tour will also feature a farm with a beef feedlot that uses composting to manage mortalities. Composting entails daily temperature monitoring, manure solids from a gravity separator, and windrow static piles constructed with a woodchip base. Tour participants will explore a 950-cow dairy facility that uses some of the latest technology to manage manure and mortalities. Anaerobic digestion enables the farm to produce enough electricity to run the entire farm and 200 of its neighbors' houses. Participants will visit the farm's mortality shed and learn more about large-scale poultry and cattle mortality management options in the area.

September 30, 2015
Demonstrations

(3:30 a.m. - 7:00 p.m.)
Southeast Agricultural Research and Extension Center
Landisville, PA

1. **Foam Euthanasia of Poultry**. In the past year, in-house euthanasia of poultry has been necessary in addressing avian influenza in numerous locations. This demonstration will provide an opportunity to discuss euthanasia techniques and discussion of the challenges encountered when they are used. Penn Ag will demonstrate the Kifco's Avi-FoamGuard system, with non-toxic, biodegradable hy-expansion concentrates used. They are non-corrosive, non-toxic, and biodegradable Hy-x firefighting foam concentrates, which produce the proper bubble size in the foam required for euthanasia.

2. **Emergency Windrow Composting**. The moist heat of an active composting process has proven lethal to bacteria and viruses. It has recently been used to manage avian influenza outbreaks for mortality, bedding, manure, and litter. This demonstration will allow you to view the mixing of a 2 to 8 week-old carcass compost windrow using a commercial windrow turner. Participants will learn how to properly compost in a catastrophic event. You will see and experience how different compost feedstocks and pile construction affect the activity of decomposition. Participants will learn the proper layering, volume, and size requirements for efficient composting and vector control. Common reasons for poor composting performance will also be shared. Different management strategies for effective sanitation in cases of emergency depopulation and disposal will be discussed.

3. **Carcass Reduction**. A Supreme Enviro-Processor will be provided by Supreme International and operated by Hoober, Inc., Intercourse, PA, with technical assistance from Mr. Al Brodie, Brodie Ag & Industrial Inc. Ontario. This machine is equipped with a patented auger design and has the ability to cut and blend various compost materials such as green waste, vegetable waste, biosolids, wood, and mortalities. The result is a thorough and accurate mixture with a consistent and even distribution of moisture and porosity throughout the entire mix. Results are a quicker composting process and a more consistent product. The material may also be size-appropriate for anaerobic digestion.

4. **Animal Decontamination – Radioactive and Petroleum-Based Exposure**. The purpose of this demonstration will be to show the proper decontamination procedures that are necessary to reduce or eliminate further risk from exposure to radioactive and petroleum-based materials. This will be accomplished by highlighting the engineering controls and work place practices that can be used to handle animals, and

protect the worker and environment from the spread of contaminants. A simulated decontamination line will be used to demonstrate proper PPE selection and donning procedures, set-up of a decontamination area and proper decontamination procedures. The demonstration will conclude with termination of decontamination activities that include proper removal of PPE and disposable of contaminated materials.

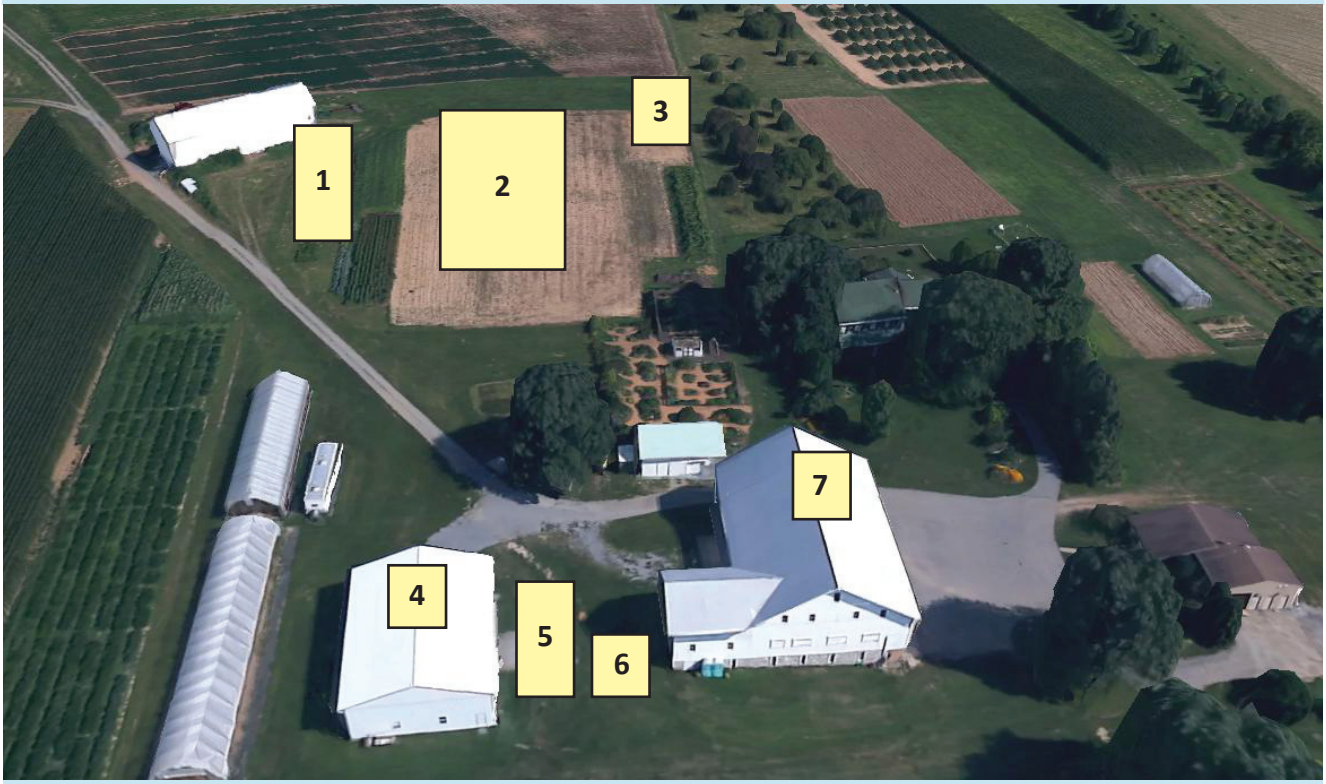
5. **Portable Vehicle Wash System.** The GWS Bio-Security Protector System is a drive-through vehicle disinfectant wash system focusing on the undercarriage, tires and lower detail. The system consists of a rugged steel wash platform with low profile steel ramp, stainless steel spray bars and limit switch entry system. The equipment storage enclosure houses: a disinfectant chemical dosing unit with pump, low booster pressure pump, and a cUL 120v, and a single phase approved electric control panel with disconnect. Design makes installation simple and convenient so that your system may be placed on gravel, asphalt or concrete surfaces. The simplistic design allows the system to be versatile and portable. Estimated installation time is about one hour.

6. **Wastewater Treatment System**. Clean Harbors manages environmental emergency responses and disaster recovery operations worldwide. They will exhibit a trailer-mounted carbon filtration system to treat wastewater from the portable non-freezing vehicle wash tunnel. Clean Harbors has carbon filtration technology for on-site wastewater remediation.

7. **Euthanasia of Livestock**. This demonstration will also include a short discussion of the safety and ethical issues surrounding a decision to euthanize large animals. Principles included in the American Veterinary Medical Association Guidelines for Euthanasia 2013 (www.avma.org/KB/Policies/Documents /euthanasia.pdf) will be reviewed. Euthanasia techniques and application of physical methods for euthanasia of livestock will be incorporated in this session. Proper handling, placement, and firing of a captive bolt will be available for hands-on practice. A small compressed air captive bolt unit suitable for mid-sized animals (turkeys and small pigs) will also be available for review. The safe and appropriate use of small caliber firearms will be discussed but not demonstrated. Cadaver skulls from several species will be included so participants can better appreciate how to render animals instantly insensible with no hope of recovery.

Demonstration Area for 5th International Symposium on Animal Mortality Management

Southeast Agricultural Research and Extension Center
Landisville, Pennsylvania



Numbered Sites

1. Foam Euthanasia of Poultry
2. Mortality Windrow Composting in Emergencies
3. Carcass Reduction
4. Animal Decontamination – Radioactive and Petroleum Based Exposure
5. Portable Vehicle Wash System
6. Portable On-site Wastewater Treatment System
7. Euthanasia of Livestock

October 1, 2015
Emergency Exercise

(8:00 a.m. - 12:00 p.m.)
Heritage Ballroom

Moderator: Edward Malek, Ontario Operational Specialist – Animal Health, Canadian Food Inspection Agency/Government of Canada, Guelph, Ontario, Canada

Moderator: Duncan Worsfold, Statewide Specialist, Animal Emergency Preparedness, Agriculture Services and Biosecurity, Department of Economic Development, Jobs, Transport & Resources, Echuca, Victoria, Australia

On October 1, a participatory learning exercise focused on a "highly pathogenic avian influenza (HPAI) outbreak" will take place from 8 a.m. to 11:45 a.m. This Emergency Exercise will include breakout sessions and active participation in facilitated scenario discussions. Participants will analyze a fictitious HPAI outbreak in various dimensions (on one farm, multiple farms, state or province, and nationally) and identify issues and gaps related to depopulation, disposal, and managing various contamination issues that would occur during the disease outbreak. The continuation of food production and distribution, with stop movement processes, will also be explored. Participants will be able to gather information and concepts that may apply in their own local area if such an outbreak should occur. The overall list of issues and gaps will form the basis for prioritized lists of research questions, needed funding, policy implications, and education. A summary of the Emergency Exercise findings will be included in symposium documentation available at the animalmortmgmt.org website.

Abstracts Accepted for the Emergency Exercise

- *3D Issues Associated with Response to Highly Pathogenic Avian Influenza – Frustrations and Lessons Learned*
  L. Miller, United States Department of Agriculture, Animal and Plant Health Inspection Service Veterinary Services, Riverdale, Maryland
- *Response to HPAI Outbreak*
  J. Bonhotal[1], and J. Payne[2]
  [1]Cornell Waste Management Institute, Cornell University, Ithaca, New York
  [2]Oklahoma State University, Stillwater, Oklahoma
- *No Two Are Alike*
  E. Malek, Canadian Food Inspection Agency, Government of Canada, Guelph, Ontario, Canada
- *Large-Scale, Emergency Carcass Disposal: We Know the Theory, but How Would We Do It?*
  Collaborating with multiple parties to develop an operational plan for carcass disposal during an epidemic of foot-and-mouth disease in New Zealand.
  E. Pleydell, Ministry for Primary Industries, New Zealand, Wellington, New Zealand

Distinguished Service Award
Dr. Bill Seekins

(10:30 a.m. - 10:45 a.m.)
Heritage Ballroom

Bill Seekins often describes himself as a problem solver. For over 35 years, Dr. Seekins has been solving waste management issues using compost. Dr. Seekins retired from the Maine Department of Agriculture and Rural Resources after 31 years as the Agricultural Resources Management Coordinator. In the late 1990s, Dr. Seekins recognized the need for an inter-disciplinary team to conduct compost research and educational programs and helped form the Maine Compost Team. His leadership was instrumental in the research and development of compost as a method for livestock carcass management during routine or catastrophic events. He quickly realized that others were doing similar work, but there was no avenue for sharing information.

Dr. Seekins took the initiative to organize the 1st International Carcass Management Symposium in Portland, Maine. The symposium brought together people with expertise in research, regulation, and response in carcass management. This initial symposium has lead to three additional symposiums with a substantial international audience. Through his efforts, local, state, and federal emergency procedures and policies have been developed and implemented in the recent HPAI outbreak.

In recognition of his foresight, fortitude, and persistence, we are pleased to present Dr. Seekins with the Distinguished Service Award for his life's work addressing carcass management issues.

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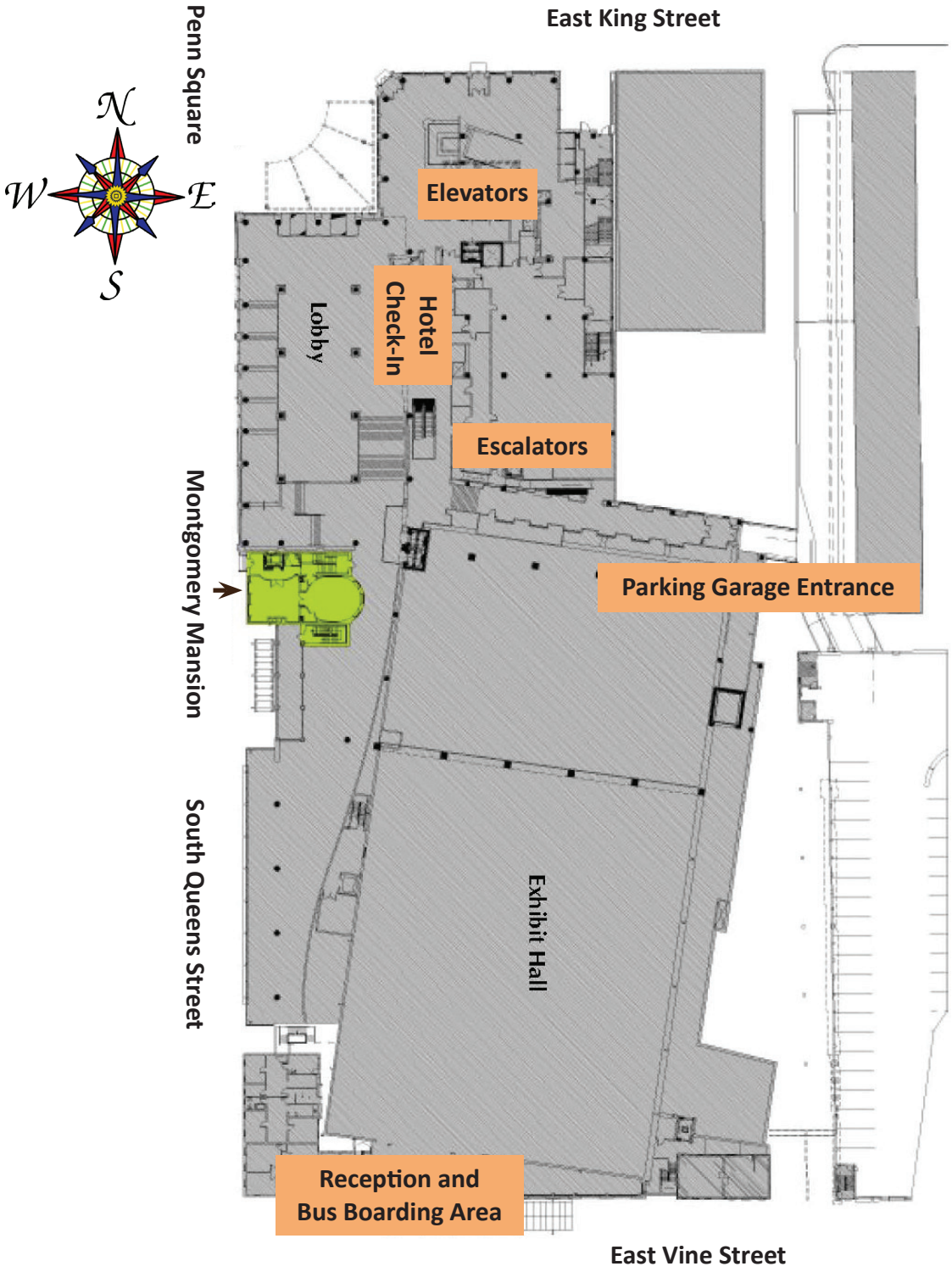
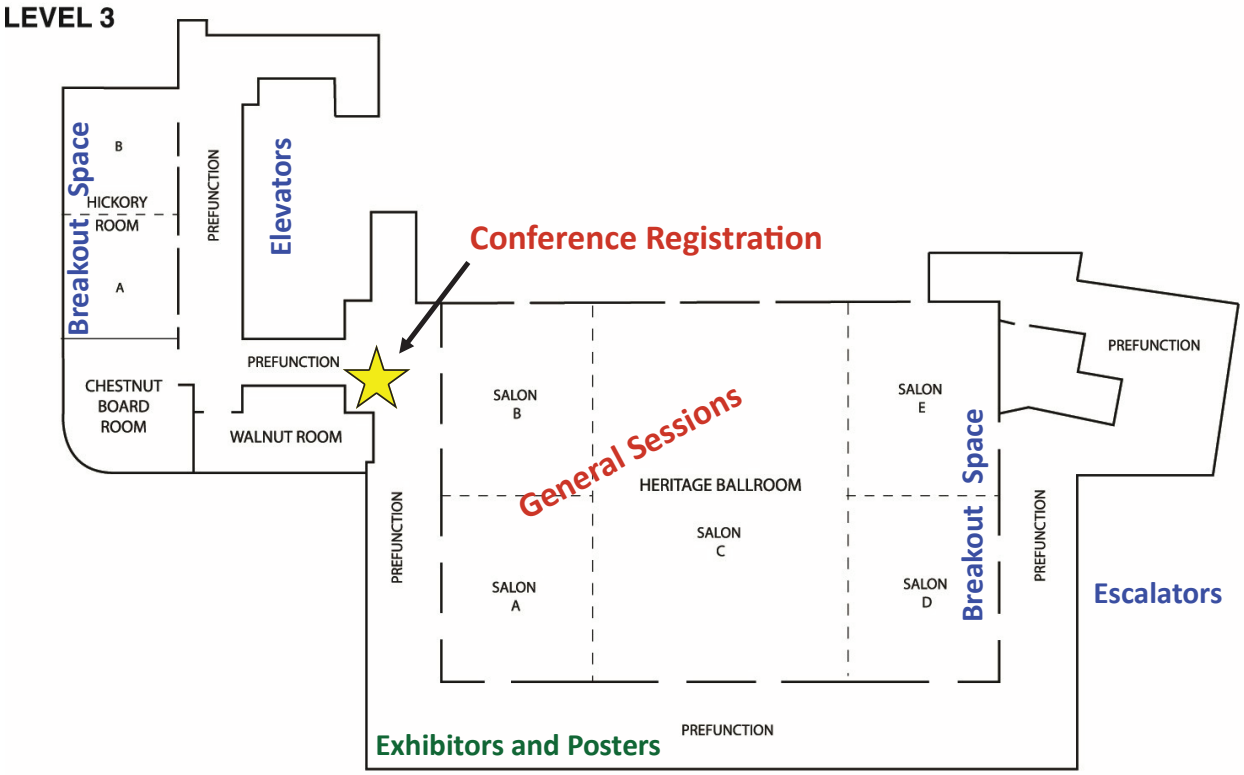
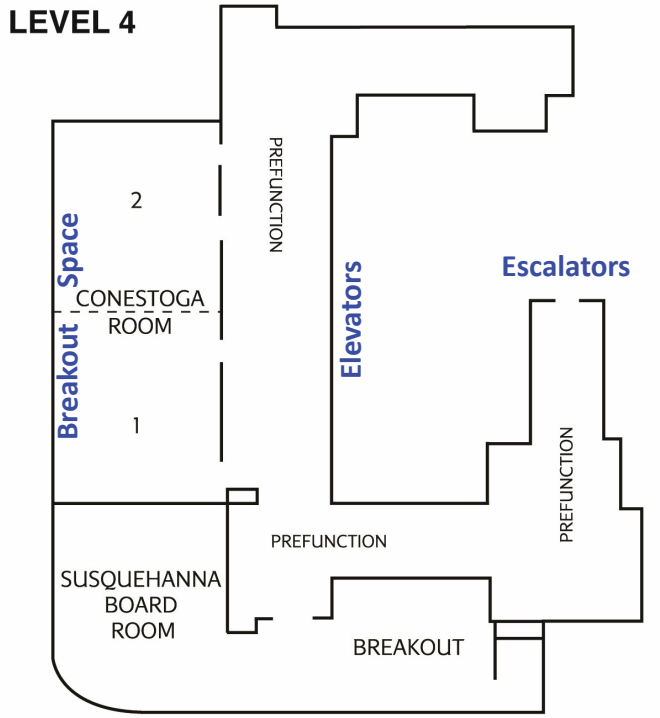
Lancaster Marriott at Penn Square Symposium Meeting Space

Entrance Level is a half level above the
Level 1 Exhibit Hall and Vine Street

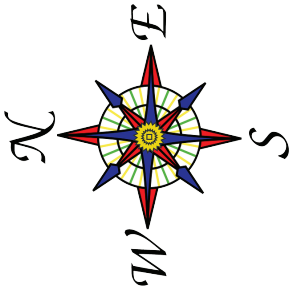


Lancaster Marriott at Penn Square Symposium Meeting Space





The meeting space on the 3rd and 4th levels can be accessed from the main elevators in the front of the hotel or the escalators located near the ramp to the parking structure.



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