



TRACIE

HEALTHCARE EMERGENCY PREPAREDNESS
INFORMATION GATEWAY

Disaster Veterinary Issues
Topic Collection
Updated 5/9/2016

Topic Collection: Disaster Veterinary Issues

Many watched in sorrow as residents affected by Hurricane Katrina refused to evacuate their flooded homes because they did not want to leave their pets behind. Later, in the summer of 2012, wildfires and droughts ravaged hundreds of thousands of acres across the western U.S., and farmers lost countless heads of livestock and acres of hay and feed corn to wildfires. In the past decade, many changes have been made in the disaster veterinary field. For example, the Pets Evacuation and Transportation Standards Act of 2006 mandates that: emergency plans take into account the needs of those with pets and service animals, more emergency shelters accept pets, and dogs who work in disaster response receive special preventive and medical treatment. The resources in this Topic Collection can help veterinarians, emergency planners, those in the farming and wildlife preservation industries, and residents with pets and service animals better plan for and respond to disasters. *ASPR TRACIE updated this Topic Collection in May 2016.*

Each resource in this Topic Collection is placed into one or more of the following categories (click on the category name to be taken directly to that set of resources). Resources marked with an asterisk (*) appear in more than one category.

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Must Reads

Animal Decontamination Best Practices Working Group, National Alliance of State Animal and Agricultural Emergency Programs. (2011). [Animal Decontamination: Current Issues and Challenges](#).

This report can familiarize first responders with disaster-related animal issues, including animal decontamination, resource allocation for animal issues, how to train personnel to work with animals after disasters, and other related issues.

Brackenridge, S., Zottarella, L., Riderb, E., and Carlsen-Landya, B. (2012). [Dimensions of the Human-Animal Bond and Evacuation Decisions among Pet Owners during Hurricane Ike](#). *Anthrozoös: A Multidisciplinary Journal of the Interactions of People and Animals*. 25(2).

The authors examined how the post-Katrina Pets Evacuation and Transportation Standards Act was carried out after Hurricane Ike.

Centers for Disease Control and Prevention. (2014). [Interim Guidelines for Animal Health and Control of Disease Transmission in Pet Shelters](#).

This guidance can help disaster responders plan for health management of pets who arrive at disaster shelters, including obtaining a health and vaccination history, creating a health record, verifying identification, maintaining behavioral health, taking protective measures for caretakers, and using safe handling methods.

Federal Emergency Management Agency. (2007). [Pet Sheltering Best Practices](#).

This document outlines successful practices in operating pet-friendly human shelters during major disasters. It includes discussion and links to many community-developed plans, resource lists, and other helpful documents.

International Fund for Animal Welfare. (2011). [Nuclear Accidents and the Impact on Animals: Committee Recommendations](#).

This report provides recommendations from a panel of subject matter experts assembled to discuss handling of contaminated animals after the Fukushima Daiichi Nuclear Power Plant. The committee provided recommendations for companion animals, livestock, and wildlife.

NASAAEP Disaster Veterinary Care Best Practices Working Group. (2012). [Disaster Veterinary Care: Best Practices](#).

The first half of this report explains federal regulations specific to incorporating animals into emergency management plans and highlights the challenges associated with developing animal response teams. The second half illustrates best practices and related information from various agencies on disaster planning and response for household pets, animal first responders, animal shelter managers, and veterinarians.

National Alliance of State Animal and Agricultural Emergency Programs. (2014). [Emergency Animal Sheltering Best Practices](#).

This document can help animal emergency management planners develop comprehensive animal evacuation and practical sheltering plans.

National Alliance of State Animal and Agricultural Emergency Programs. (2014). [Species Evacuation and Transport Guide](#).

This document includes evacuation and transport guidelines for: pet birds, snakes, reptiles, amphibians, pocket pets and rabbits, and poultry. It also includes a section on "oiled wildlife spills."

Otto, C., Franz, M., Kellogg, B., et al. (2002). [Field Treatment of Search Dogs: Lessons Learned from the World Trade Center Disaster](#). *Journal of Veterinary Emergency and Critical Care*. 12(1):33-42.

The authors share a graphic that depicts the Suffolk County (NY) Society for the Prevention of Cruelty to Animals' Disaster Plan. They also share lessons learned about preventive and curative veterinary medicine used on the search and rescue dogs that worked the 9/11 scene in New York City.

Schaffer, C. (n.d.). [Human-Animal Bond Considerations During Disasters](#). (Accessed 5/9/2016.)

Recent disasters highlight the dilemmas faced by disaster responders when trying to save the lives of people who are strongly attached to their animals. The author explains the human-animal bond and how disaster responders can consider that when planning to respond to a critical incident.

Schneider, M., Tirado, M., Rereddy, S., et al. (2012). [Natural Disasters and Communicable Diseases in the Americas: Contribution of Veterinary Public Health](#). *Veterinaria Italiana*. 48(2): 193-218.

The authors conducted an analysis of natural disasters that struck the Americas between 2004 and 2008 and emphasize the contribution of veterinary public health to the identification and management of zoonotic and foodborne diseases.

Soric, S., Belanger, M., and Wittnich, C. (2008). [A Method for Decontamination of Animals Involved in Floodwater Disasters](#). *Journal of the American Veterinary Medical Association*. 232 (3):364-370.

After a disaster, abandoned or stray animals and search and rescue dogs may be exposed to toxins in floodwaters. This article: outlines safety requirements for healthcare professionals who manage decontamination teams; provides strategies for laying out a decontamination site; and includes a decontamination protocol.

Thompson, K. (2013). [Save Me, Save My Dog](#). Australian Journal of Communication. 40(1).

In this article, the author emphasizes the positive effects that pet ownership can have on disaster resilience and protective factors and emphasizes the risks that humans are willing to take to save animals—even those they have no prior bond with.

Thompson, K., Every, D., Rainbird, S., et al. (2014). [No Pet or Their Person Left Behind: Increasing the Disaster Resilience of Vulnerable Groups through Animal Attachment, Activities and Networks](#). Animals. 4(2), 214-240.

The authors describe the potential positive effects pets can have on vulnerable populations in Australia: those living in remote communities, culturally and linguistically diverse communities, children and youth, older people, people with disabilities, homeless people, and people with mental illness. The authors highlight how animals can be used as a conduit to disaster-related communication and recovery for a vulnerable person.

Wingfield, W. and Palmer, S. (2009). Veterinary Disaster Response. (Book available for purchase.) Wiley-Blackwell.

The content of this book is presented in question and answer format and is split into four main sections: Training, Planning, Preparation, and Recovery.

Animals as Vectors

Centers for Disease Control and Prevention. (2012). [Frequently Asked Questions About the Laboratory Response Network \(LRN\)](#).

This document explains the role of the Laboratory Response Network, including how veterinary laboratories can help alert officials to potential disease outbreaks.

Greger, M. (2007). [The Human/Animal Interface: Emergence and Resurgence of Zoonotic Infectious Diseases](#). (Abstract only.) Critical Reviews in Microbiology. 33(4):243-99.

The author examines the origins of major human infectious diseases and the anthropogenic changes (e.g., land use, agriculture) related to increases and frequency.

Hamzi, A. and Karesh, W. (2016). [MERS and One Health: Understanding MERS-CoV at the Human-Animal Interface](#). Frontiers.

The authors provide a brief overview of the MERS-CoV human-animal interface and invite subject matter experts to contribute articles for consideration.

*Harris, C., Dallas, C., Williams, P., et al. (n.d.). [Identification, Treatment and Decontamination Procedures Regarding Yersinia Pestis Following a Biowatch Actionable Result \(BAR\)](#). (Accessed 5/9/2016.)

This presentation provides an overview of a training for the Georgia Veterinary Medical Reserve Corps and community partners to respond to a mass casualty/mass fatality event. The training included clinical description of signs and symptomology of plague (*Yersinia pestis*), principles of deluge decontamination, and proper donning and doffing procedures of protective equipment.

Lloyd-Smith, J.O. George, D., Pepin, K.M., et al. (2009). [Epidemic Dynamics at the Human-Animal Interface. Science](#). 326(5958): 1362–1367.

The authors highlight the need for new mathematical models that incorporate a broader set of pathogen life histories and can help scientists better understand vector-transmitted, chronic, and protozoan infections and cross-species transmission.

Reperant, L. A., Cornaglia, G., and Osterhaus, A. (2012). [The Importance of Understanding the Human-Animal Interface: From Early Hominims to Global Citizens](#). Current Topics in Microbiology and Immunology. (365): 49-81.

In this chapter, the authors describe the history of the human-animal interface and how domestication, agriculture, urbanization, industrialization, and colonization have effected this relationship.

Sinclair, R., Boone, S., Greenberg, D. (2008). [Persistence of Category A Select Agents in the Environment. Applied and Environmental Microbiology](#). 74(3):555–563.

The authors studied how the following Category A agents present in human and animal bodily fluids, are transmitted, and how they survive on fomites and in water: smallpox, anthrax, plague, botulism, tularemia, Lassa fever, Junin-Argentine hemorrhagic fever, Venezuelan hemorrhagic fever, hantavirus, Ebola hemorrhagic fever and Marburg hemorrhagic fever, and St. Louis encephalitis and Japanese B encephalitis.

Wenzel, J., and Nussbaum, K. (2007). [Veterinary Expertise in Biosecurity and Biological Risk Assessment](#). Journal of the American Veterinary Medical Association. 230(10): 1476-1480.

The authors explain how veterinarians can assist with risk assessments and making determinations on when to initiate extensive biosecurity responses regarding livestock.

World Health Organization. (2016). [Influenza at the Human-Animal Interface](#).

This webpage contains an overview of human infection with animal influenza viruses and links to specific information on avian and swine influenza.

Carcass Disposal

American Veterinary Medical Association. (2015). [Animal Carcass Risk in Natural Disasters](#).

The American Veterinary Medical Association writes that dead animals (including large quantities due to natural disaster) do not typically pose a significant health hazard for humans. This site includes links to resources on safe and environmentally responsible disposal of animal carcasses.

Delgado, J., Longhurst, P., Hickman, G., et al. (2010). [Intervention Strategies for Carcass Disposal: Pareto Analysis of Exposures for Exotic Disease Outbreaks](#). Environmental Science and Technology. 44(12): 4416-4425.

The authors of this study use charts to illustrate disease exposure opportunities associated with animal carcass disposal. They also identify key control points for risk management and strategies for waste technology assessment.

Harper, A. (2008). [Swine Carcass Disposal Options for Routine and Catastrophic Mortality](#). (Free with registration.) Council for Agricultural Science and Technology.

This issue paper provides a critical assessment of information available on methods of swine carcass disposal under routine and catastrophic conditions. The paper addresses the four predominant methods of mortality disposal in commercial swine production: burial, incineration, rendering, and composting.

Reuter, T., Alexander, T., and McAllister, T. (2010). [Viability of Bacillus licheniformis and Bacillus Thuringiensis Spores as a Model for Predicting the Fate of Bacillus Anthracis Spores during Composting of Dead Livestock](#). American Society for Microbiology.

The authors examined the effectiveness of two animal composters in containing diseases caused by spore-forming bacteria (e.g., Bacillus anthracis).

Reuter, T., Xu, W., Alex, T.W., et al. (2010). [Biocontained Carcass Composting for Control of Infectious Disease Outbreak in Livestock](#). Journal of Visualized Experiments. (39): 1946.

The authors explain how vulnerable "intensive livestock production systems" are to accidental and intentional infectious disease outbreaks. They also share that one strategy to contain the spread of disease is depopulation, but this is accompanied by a large number of carcasses and contaminated manure. The authors share findings on the bio-contained mortality composting procedure they designed, focusing on its efficacy for bovine tissue degradation and microbial deactivation.

Wilkinson, K. (2007). [The Biosecurity of On-Farm Mortality Composting](#). Journal of Applied Microbiology. 102(3): 609-18.

The author discusses the role of composting in carcass disposal and emergency animal disease outbreaks.

Decontamination

Animal Decontamination Best Practices Working Group, National Alliance of State Animal and Agricultural Emergency Programs. (2011). [Animal Decontamination: Current Issues and Challenges](#).

This report can familiarize first responders with disaster-related animal issues, including animal decontamination, resource allocation for animal issues, how to train personnel to work with animals after disasters, and other related issues.

County News Center (San Diego, CA). (2013). [Horse Decontamination](#).

Speakers in this short video emphasize the importance of decontaminating animals, particularly after floods.

*Gordon, L. (2006). [Canine Emergency & Gross Decontamination Procedures](#).

The author defines decontamination and shares guidelines for working canine decontamination.

*Gordon, L. (n.d.) [Guidelines for Emergency, Gross, and Technical Decontamination of the Urban Search & Rescue Canine](#). (Accessed 5/9/2016.)

The presenter defines decontamination and shares the following: information on canine exposure and toxin sensitivity compared to humans; anatomical and metabolic considerations; exposure symptoms; prevention strategies; and decontamination steps and supply lists.

Gordon, L. (2014). [Hospital Decontamination System and Decontamination Methods for Assistance Dogs that Accompany Incoming Disaster Victims](#).

The author lists considerations specific to service dogs who report for care with disaster survivors after a mass casualty incident. She includes canine-specific guidelines for hospital victim decontamination.

Hannon, M.R. (2012). [Minnesota's Strategy for Animals during a Nuclear Plant Incident](#).

The author provides an overview of statewide veterinary disaster planning initiatives and shares information on animal monitoring and decontamination after a nuclear plant incident.

International Fund for Animal Welfare. (2011). [Nuclear Accidents and the Impact on Animals: Committee Recommendations.](#)

This report provides recommendations from a panel of subject matter experts assembled to discuss handling of contaminated animals after the Fukushima Daiichi Nuclear Power Plant. The committee provided recommendations for companion animals, livestock, and wildlife.

Johnson, T.E. and Brandl, A. (n.d.). [Strategies for Radioactive Decontamination of Livestock.](#) (Accessed 5/9/2016.) Colorado State University.

The speakers share definitions and characteristics of several types of radiation incidents (intentional and accidental). They also share tips for evacuation/sheltering in place and decontaminating livestock and preventing further contamination of animals and their surroundings.

*Langston, C. (2005). [Postexposure Management and Treatment of Anthrax in Dogs — Executive Councils of the American Academy of Veterinary Pharmacology and Therapeutics and the American College of Veterinary Clinical Pharmacology.](#) The American Association of Pharmaceutical Scientists Journal. 7(2): E272-E273.

In this article, the author states that dogs have a relatively low risk of developing disease after being exposed to anthrax. Information on diagnosis and treatment is also provided.

Marianno, C.M., and Erchinger, J.L. (2013). [Using a Specialized Radiation Portal System to Monitor Livestock Following a Radiological Incident.](#) Texas A&M University.

The presenters share results from their project during which they examined state plans, conducted computer simulations to build a livestock portal, tested commercial systems, and built and tested a custom livestock radiation detection portal system.

*Murphy, L. (2009). Basic Veterinary Decontamination- Who, What, Why. Veterinary Disaster Response, Chapter 16. Wiley-Blackwell.

This chapter takes question-and-answer format to promote understanding and outline the steps for decontamination procedures that have been developed for different animal types. This reference is designed for anyone involved in disaster medicine, including veterinarians, veterinary technicians, veterinary students, animal control and shelter personnel, search and rescue personnel, and emergency response teams.

*Oklahoma Veterinary Medical Association. Oklahoma Task Force 1— Urban Search and Rescue. (2008). [Basic Canine Service Animal Decontamination for Hospitals.](#)

This document provides guidelines for decontaminating working canines.

*Soric, S., Belanger, M., and Wittnich, C. (2008). [A Method for Decontamination of Animals Involved in Floodwater Disasters](#). Journal of the American Veterinary Medical Association. 232(3):364-370.

After a disaster, abandoned or stray animals and search and rescue dogs may be exposed to toxins in floodwaters. This article: outlines safety requirements for healthcare professionals who manage decontamination teams; provides strategies for laying out a decontamination site; and includes a decontamination protocol.

Texas A&M University. (2015). [Effective Contamination Detection for Livestock Following a Radiological Event](#).

Information on this website includes research findings on policies and procedures for monitoring and decontaminating livestock and pets. Links to related resources are provided.

The State of Connecticut. (2009). [Appendix E. Small Animal Decontamination](#). State of Connecticut Mass Decontamination Guide & Mobilization Plan.

This Appendix is part of the State of Connecticut's mass decontamination guide and mobilization plan. It provides basic information and steps for setting up "three station decontamination" for small animals. Also included are tips specific to hazards (e.g., chemical, radiological).

*Wismer, T., Murphy, L., Gwaltney-Brant, S., and Albretsen, J. (2003). [Management and Prevention of Toxicoses in Search-and-Rescue Dogs Responding to Urban Disasters](#). Journal of the American Veterinary Medical Association. 222(3):305-310.

The authors of this article explain how to assess and treat search and rescue dogs for exposure to various toxins.

Education and Training

Basic Animal Rescue Training. (2015). [Courses](#).

This non-profit organization offers courses for disaster first responders in both small and large animal safety, recapture, and restraint.

Center for Food Security & Public Health. (2015). [Introduction to Animal Emergency Management](#). Iowa State University

This 10-part course provides those who care for animals with the basic information and skills to support the U.S. Department of Agriculture Animal and Plant Health Inspection Service's emergency planning and response roles as part of the ESF #11 mission area:

Safety and Well-Being of Pets. Information on other pertinent laws and policies is also included.

College of Public Health, Institute for Disaster Management. (n.d.) [BDLS - Basic Disaster Life Support/ ADLS - Advanced Disaster Life Support | Plus Vet Component](#). (Accessed 5/9/2016.) University of Georgia.

The Veterinary Basic and Advanced Disaster Life Support courses aim to improve and standardize communications, coordination, and triage/treatment protocols in a disaster setting. Veterinarians and veterinarian technicians are trained to remove the burden of animal-related issues while simultaneously supporting the efforts of first responders, public health, and healthcare professionals.

Federal Emergency Management Agency. (2010). [Emergency Planning for Household Pets and Service Animals](#).

This brief PowerPoint training details the expectations and regulatory policy for community response to animal rescue, mass care, sheltering, and essential needs.

Federal Emergency Management Agency. (2010). [IS-11.A: Animals in Disasters: Community Planning](#). (Free with registration.)

This course can help emergency management planners, animal owners, and animal care providers develop a plan for handling animals after a disaster.

Federal Emergency Management Agency. (2013). [IS-10.A: Animals in Disasters: Awareness and Preparedness](#). (Free with registration.)

This course can help animal owners and care providers learn more about disaster preparedness and response and how "typical" hazards affect animals.

*Harris, C., Dallas, C., Williams, P., et al. (n.d.). [Identification, Treatment and decontamination Procedures Regarding Yersinia Pestis Following a Biowatch Actionable Result \(BAR\)](#). (Accessed 5/9/2016.)

This presentation provides an overview of a training for the Georgia Veterinary Medical Reserve Corps and community partners to respond to a mass casualty/mass fatality event. The training included clinical description of signs and symptomology of plague (*Yersinia pestis*), principles of deluge decontamination, and proper donning and doffing procedures of protective equipment.

K9 Medic. (n.d.) [K9 First Responder with Disaster Focus](#). (Accessed 5/9/2016.)

This program teaches K9 handlers and disaster workers how to provide pre-hospital emergency field care to working K9s and companion dogs. Program elements include

handling safety, assessments and triage, extraction and transport, decontamination, common injury interventions and extended care.

Medical Reserve Corps. (2016). [National Veterinary Response Team Training Modules](#). (Free account necessary to access courses.)

These 60-minute training modules cover a variety of topics, such as arthropod vectors, canine decontamination, large animal first aid, and small animal basic life support.

*University of Albany, School of Public Health. (2009). [Emergency Animal Sheltering Course](#).

This 2 hour online course serves as an introduction to successful animal care shelter operations for officials providing animal response services during a disaster.

Wingfield, W. and Palmer, S. (2009). *Veterinary Disaster Response*. (Book available for purchase.) Wiley-Blackwell.

The content of this book is presented in question and answer format and is split into four main sections: Training, Planning, Preparation, and Recovery.

General Veterinary Guidance

American Veterinary Medical Association. (2015). [Disaster Preparedness for Veterinarians](#).

This webpage contains links to resources for veterinarians, including an introduction to the Veterinary Medical Assistance Team, a “Preparedness for Veterinary Practices” brochure, and a 400-page reference guide on veterinary emergency response.

Centers for Disease Control and Prevention. (2014). [Interim Guidelines for Animal Health and Control of Disease Transmission in Pet Shelters](#).

This guidance can help disaster responders plan for health management of pets who arrive at disaster shelters, including obtaining a health and vaccination history, creating a health record, verifying identification, maintaining behavioral health, taking protective measures for caretakers, and using safe handling methods.

NASAAEP Disaster Veterinary Care Best Practices Working Group. (2012). [Disaster Veterinary Care: Best Practices](#).

The first half of this report explains federal regulations specific to incorporating animals into emergency management plans and highlights the challenges associated with developing animal response teams. The second half illustrates best practices and related information from various agencies on disaster planning and response for household pets, animal first responders, animal shelter managers, and veterinarians.

National Alliance of State Animal and Agricultural Emergency Programs. (2014). [Species Evacuation and Transport Guide](#).

This document includes evacuation and transport guidelines for: pet birds, snakes, reptiles, amphibians, pocket pets and rabbits, and poultry. It also includes a section on "oiled wildlife spills."

General Veterinary Public Health Issues in Disaster

Davis, R. (2004). [The ABCs of Bioterrorism for Veterinarians, Focusing on Category A Agents](#). JAVMA. 224(7):1084-1095.

This article covers recent outbreaks of zoonotic diseases of public health concern and gives a detailed description of category A agents, those deemed most likely to cause high mortality in a bioterrorism event.

Heath, S., Voeks, S., Glickman, L. (2001). [Epidemiologic Features of Pet Evacuation Failure in a Rapid-onset Disaster](#). Journal of the American Medical Veterinary Association. 218(12):1898-1904.

The authors review the 1996 mandatory evacuation in Wisconsin after a chemical spill and highlight the epidemiologic features of the pet owners who did not successfully evacuate their pets.

Johnson, R. and Muller, M. (2002). [Animal Health Hazards of Concern During Natural Disasters](#). U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services.

The authors review some of the major natural disasters that have occurred in the U.S. and describe some infectious and non-infectious hazards perceived to be related directly to these natural disasters.

Levy, J., Edinboro, C., Glotfelty, C., et al. (2007). [Seroprevalence of *Dirofilaria immitis*, Feline Leukemia Virus, and Feline Immunodeficiency Virus Infection Among Dogs and Cats Exported from the 2005 Gulf Coast Hurricane Disaster Area](#). Journal of the American Medical Veterinary Association. 231(2):218-225

This article outlines a disease prevalence study of dogs and cats that were exported from the affected Gulf Coast states during the 2005 hurricane season. The authors found that nearly half of the dogs transported to temporary mass shelters tested positive for heartworm (which is estimated close to the non-disaster time rate in the Gulf Coast region).

McConnico, R., French, D., Clark, C., et al. (2007). [Equine Rescue and Response Activities in Louisiana in the Aftermath of Hurricanes Katrina and Rita](#). Journal of the American Medical Veterinary Association. 231(3): 384-392.

The authors describe the governmental response for horses affected by Hurricanes Katrina and Rita, including rescue, sheltering, and developing an Equine Branch of incident command.

Noah, D., Noah, D., and Crowder, H. (2002). [Biological Terrorism Against Animals and Humans: A Brief Review and Primer for Action](#). Journal of the American Veterinary Medical Association. 221(1):40-43.

The authors describe biological terrorism preparedness and list steps veterinary practitioners, government, academia, and legislators can take to successfully respond to a zoonotic agent of biological terrorism.

Nussbaum, K., Rollin, B., and Wohl, J. (2007). [The Veterinary Profession's Duty of Care in Response to Disasters and Food Animal Emergencies](#). Journal of the American Veterinary Medical Association. 231(2):200-202.

This article covers the ethics and other considerations of veterinary practice when responding to disasters.

Schneider, M., Tirado, M., Rereddy, S., et al. (2012). [Natural Disasters and Communicable Diseases in the Americas: Contribution of Veterinary Public Health](#). Veterinaria Italiana. 48(2): 193-218.

The authors conducted an analysis of natural disasters that struck the Americas between 2004 and 2008 and emphasize the contribution of veterinary public health to the identification and management of zoonotic and foodborne diseases.

Laboratory Animal Issues in Disasters

Alderson, C. and Garnett, N. (2002). [Disaster Recovery: "Who ya Gonna Call?"](#) Institutional Animal Care & Use Committee Feature of the Month.

The authors discuss lessons learned from recent disasters that impacted animal research facilities. Information on National Institute of Health grantees' responsibilities associated with the Office of Laboratory Animal Welfare and Office of Policy for Extramural Research Administration is also included.

*Durkee, S. (2007). [Disaster Planning](#). Animal Lab News.

The author describes the necessary points to consider when creating an emergency plan for a facility that houses laboratory animals.

Levy, L. (2006). [Lessons Learned from Katrina](#).

The speaker details the experience of the Tulane National Primate Research Center—which houses more than 5,000 non-human primates on 500 acres—when preparing for, responding to, and recovering from Hurricane Katrina.

*Office of Laboratory Animal Welfare. (2002). [B.6. Emergency Preparedness](#). Institutional Animal Care and Use Committee Guidebook.

This chapter details issues and emergency management planning and response needs and strategies for institutions using animals in research, teaching, and testing.

Stokes, W. (2006). [Disaster Planning for Laboratory Animal Facilities: Lessons Learned from Hurricane Katrina](#).

In this presentation, the speaker discusses the impact of the storm on animal facilities; how the response was coordinated under "State Animal Response Incident Command;" and lessons learned with regards to optimizing animal welfare, minimizing disruption to research, and ensuring employee safety.

*Swindle, M. (2006). [Disaster Planning - Lessons Learned from Katrina, Rita, and Their "Sisters:" Evacuating, Euthanizing, Rescuing, and Rebuilding](#). Annual IACUC Conference.

The presenter shares steps for developing emergency operations and business continuity plans; shares general animal laboratory policy information; and provides an overview of his facility's hurricane protocol, which incorporates lessons learned from recent storms.

Legal and Regulatory Issues

*American Veterinary Medical Association. (2012). [Emergency Preparedness and Response](#).

This document highlights the role of the American Veterinary Medical Association in disaster and emergency situations within the U.S. It also includes sections on policy, agency coordination, and disaster planning and preparation. Links to disaster-specific fact sheets, guidelines for animal care and handling, sample forms, training courses, and other resources are also provided.

American Veterinary Medical Association. (2013). [PETS \(Pets Evacuation and Transportation Standards\) Act \(FAQ\)](#).

Information on the history of the Pets Evacuation and Transportation Standards Act as well as how and when it is used is provided in this document.

Animal and Plant Health Inspection Service. (2012). [Inspection Procedures in Response to an Incident or Adverse Event in Regulated Facilities](#). U.S. Department of Agriculture.

This guidance outlines inspection procedures for animal research facilities, exhibitors, dealers, carriers, and intermediate handlers after incidents such as disasters.

U.S. Congress. (2006). [Pets Evacuation and Standards Act](#).

This law was enacted after Hurricane Katrina and mandates that local and state emergency preparedness authorities include information in their evacuation plans on accommodating household pets and service animals in case of a disaster.

Wenzel, J., and Wright, J. (2007). [Veterinary Accreditation and some New Imperatives for National Preparedness](#). Journal of the American Veterinary Medical Association. 230(9): 1309-1312.

This article describes new federal directives and orders and how they may affect veterinarian training, as well as disaster preparedness initiatives of the veterinarian branches of various Federal agencies.

Pets and Ebola

Behraves, C.B., Alves, D., Balsamo, G., et al. (2014). [Interim Guidance for Dog or Cat Quarantine after Exposure to a Human with Confirmed Ebola Virus Disease](#). American Veterinary Medical Association.

This document describes the process for conducting a risk assessment for exposure of dogs or cats that had contact with a human with Ebola. The document includes strategies for quarantining dogs or cats if deemed necessary by state and federal health officials.

Behraves, C.B., Alves, D., Balsamo, G., et al. (2014). [Interim Guidance for Public Health Officials on Pets of Ebola Virus Disease Contacts](#). American Veterinary Medical Association.

The guidelines presented in this document focus on the management of pets owned by contacts of Ebola patients.

Plans, Tools, and Templates

*American Veterinary Medical Association. (2012). [Emergency Preparedness and Response](#).

This document highlights the role of the American Veterinary Medical Association in disaster and emergency situations within the U.S. It also includes sections on policy, agency coordination, and disaster planning and preparation. Links to disaster-specific fact sheets, guidelines for animal care and handling, sample forms, training courses, and other resources are also provided.

American Veterinary Medical Association. (2015). [Emergency Contact Cards](#).

These cards can be printed and shared with pet owners or people who work with livestock.

*Animal Emergency Management Plan and READY Colorado. (n.d.). [Animal Emergency Response Planning Toolkit](#). (Accessed 5/9/2016.) Colorado Veterinary Medical Foundation.

This comprehensive planning guide was designed to support full community animal disaster response. It can help identify both potential demand and available resources for animal rescue and sheltering and identifies the community engagement stakeholders required for a successful plan, response, and recovery.

Clemson University Livestock Poultry Health Program. (2011). [South Carolina Emergency Plan for Animals and Agriculture](#). (An Annex to the South Carolina Emergency Operations Plan.)

This plan is an example of an “Emergency Support Function #17 –Animal Protection” plan that has standardized response actions that could be applied in many jurisdictions.

*Durkee, S. (2007). [Disaster Planning](#). Animal Lab News.

The author describes the necessary points to consider when creating an emergency plan for a facility that houses laboratory animals.

IND Response and Recovery Planning Animal Work Group. (n.d.). [Projecting Animal Demographics in a Nuclear or Radiological Emergency](#). (Accessed 5/9/2016.)

This planning tool can help animal care providers project animal populations in a community impacted by a nuclear or radiological incident.

IND Response and Recovery Planning Animal Work Group. (n.d.). [Animal Focus Group for IND Response and Recovery](#). (Accessed 5/9/2016.)

This group library includes links to resources specific to veterinary issues associated with nuclear/radiological events.

*Marion County, Florida. (2007). [Pet Friendly Shelter Plan Documents](#).

These documents, parts of which were shared in the Federal Emergency Management Agency's Lessons Learned Information Sharing system, provide plans to institute pet-friendly human shelters during major disasters.

National Alliance of State Animal and Agricultural Emergency Programs. (2012). [Planning and Resource Management Best Practices](#).

This document provides a "roadmap" and links that can help animal emergency management planners identify and locate essential disaster resource management information.

*National Alliance of State Animal and Agricultural Emergency Programs. (2013). [Animal Search and Technical Rescue](#).

The resources on this webpage include links to basic training requirements for starting an animal search and rescue (ASAR) team, ASAR levels and equipment, and related templates.

National Alliance of State Animal and Agricultural Emergency Programs. (2013). [Disaster Veterinary Care](#).

Resources on this site include veterinary-specific forms that can be downloaded, printed, and taken to a disaster site.

National Alliance of State Animal and Agricultural Emergency Programs. (2014). [Emergency Animal Sheltering Best Practices](#).

This document can help animal emergency management planners develop comprehensive animal evacuation and practical sheltering plans.

*Office of Laboratory Animal Welfare. (2002). [B.6. Emergency Preparedness](#). Institutional Animal Care and Use Committee Guidebook.

This chapter details issues and emergency management planning and response needs and strategies for institutions using animals in research, teaching, and testing.

*Red Rover. (2011). [Community Animal Emergency Planning Resources](#).

This website provides various forms and other resources that can assist with disaster animal shelter operations. It also includes disaster preparedness supply lists for dogs, cats, horses, birds, reptiles, and amphibians. Links to partner agency manuals for shelter operations are also available.

*Swindle, M. (2006). [Disaster Planning - Lessons Learned from Katrina, Rita, and Their "Sisters:" Evacuating, Euthanizing, Rescuing, and Rebuilding](#). Annual IACUC Conference.

The presenter shares steps for developing emergency operations and business continuity plans; shares general animal laboratory policy information; and provides an overview of his facility's hurricane protocol, which incorporates lessons learned from recent storms.

Veterinary Emergency Team. (n.d.). [Emergency Preparedness and Continuity of Operations Plan](#). (Accessed 5/9/2016.)

This plan can be tailored by veterinary practice emergency planners as needed to suit their practice and jurisdiction.

Resources for and About Pet Owners

American Red Cross. (2009). [Pets and Disaster Safety Checklist](#).

This checklist includes suggestions that can help pet owners prepare for and respond to disaster.

Brackenridge, S., Zottarella, L., Riderb, E., and Carlsen-Landya, B. (2012). [Dimensions of the Human-Animal Bond and Evacuation Decisions among Pet Owners during Hurricane Ike](#). (Abstract only.) *Anthrozoös: A Multidisciplinary Journal of the Interactions of People and Animals*. 25(2).

The authors examined how the post-Katrina Pets Evacuation and Transportation Standards Act was carried out after Hurricane Ike.

Lindenmayer, J. (2008). [Animals as Key Promoters of Human Resilience](#). *African Health Sciences*. 8(S): 46.

The author of this brief editorial emphasizes that community resilience includes the role that animals play in maintaining and restoring resilience. She encourages emergency planners to include veterinary care providers in emergency operations.

*Red Rover. (2011). [Community Animal Emergency Planning Resources](#).

This website provides various forms and other resources that can assist with disaster animal shelter operations. It also includes disaster preparedness supply lists for dogs, cats, horses, birds, reptiles, and amphibians. Links to partner agency manuals for shelter operations are also available.

*Schaffer, C. (n.d.). [Human-Animal Bond Considerations During Disasters](#). (Accessed 5/9/2016.)

Recent disasters highlight the dilemmas faced by disaster responders when trying to save the lives of people who are strongly attached to their animals. The author explains the human-animal bond and how disaster responders can consider that when planning to respond to a critical incident.

The American Society for the Prevention of Cruelty to Animals. (2015). [Disaster Preparedness](#).

This webpage lists six steps that can help pet owners prepare for disaster. It includes information for ordering a rescue alert sticker and lists special considerations for different types of pets.

The Humane Society. (2013). [Make a Disaster Plan For Your Pets](#).

This step-by-step checklist helps pet owners prepare to see their pets through disasters by taking disaster preparedness steps.

Thompson, K. (2013). [Save Me, Save My Dog](#). Australian Journal of Communication. 40(1).

In this article, the author emphasizes the positive effects that pet ownership can have on disaster resilience and protective factors and emphasizes the risks that humans are willing to take to save animals – even those with whom they have no prior bond.

Thompson, K., Every, D., Rainbird, S., et al. (2014). [No Pet or Their Person Left Behind: Increasing the Disaster Resilience of Vulnerable Groups through Animal Attachment, Activities and Networks](#). Animals. 4(2): 214-240.

The authors describe the potential positive effects pets can have on vulnerable populations in Australia, including: those living in remote communities, culturally and linguistically diverse communities, children and youth, older people, people with disabilities, homeless people, and people with mental illness. The authors also highlight how animals can be used as a conduit for disaster-related communication and recovery for a vulnerable person.

Search and Rescue Dogs

Fox, P.R., Puschner, B., and Ebel, J.G. (2008). [Assessment of Acute Injuries, Exposure to Environmental Toxins, and Five-Year Health Surveillance of New York Police Department Working Dogs Following the September 11, 2001, World Trade Center Terrorist Attack](#). (Abstract only.) Journal of the American Veterinary Association. 233(1):48-59.

The authors studied the long-term health effects of 27 dogs that helped with relief efforts at the World Trade Center site after the 9/11 terrorist attack. They found that while nearly

63% suffered health disorders in the first week, "only mild and infrequent health conditions" occurred in the five-year period.

*Gordon, L. (n.d.) [Guidelines for Emergency, Gross, and Technical Decontamination of the Urban Search & Rescue Canine](#). (Accessed 5/9/2016.)

The presenter defines decontamination and shares the following: information on canine exposure and toxin sensitivity compared to humans; anatomical and metabolic considerations; exposure symptoms; prevention strategies; and decontamination steps and supply lists.

*Gordon, L. (2006). [Canine Emergency & Gross Decontamination Procedures](#). The author defines decontamination and shares guidelines for working canine decontamination.

Gordon, L.E. (2012). [Injuries and Illnesses Among Urban Search-and-Rescue Dogs Deployed to Haiti Following the January 12, 2010, Earthquake](#). (Abstract only.) Journal of the American Veterinary Association. 240(4):396-403.

The author discusses findings from a survey completed by 19 dog handlers who worked in Haiti after the 2010 earthquake. Overall, the author found that dogs encountered 12.6 adverse effects for every 1,000 hours worked. Handlers reported that all health issues were cured either during the deployment or within two weeks after demobilization.

Jones, K., Dashfield, K., Downend, A., and Otto, C. (2004). [Search-and-Rescue Dogs: An Overview for Veterinarians](#). Journal of the American Veterinary Association. 225(6): 854-860.

Classification schema, training, deployment basics, and veterinary considerations are included in this article on dogs trained for search and rescue.

*Langston, C. (2005). [Postexposure Management and Treatment of Anthrax in Dogs — Executive Councils of the American Academy of Veterinary Pharmacology and Therapeutics and the American College of Veterinary Clinical Pharmacology](#). The American Association of Pharmaceutical Scientists Journal. 7(2): E272-E273.

In this article, the author states that dogs have a relatively low risk of developing disease after being exposed to anthrax. Information on diagnosis and treatment is also provided.

*National Alliance of State Animal and Agricultural Emergency Programs. (2013). [Animal Search and Technical Rescue](#).

The resources on this webpage include links to basic training requirements for starting an animal search and rescue (ASAR) team, ASAR levels and equipment, and related templates.

*Oklahoma Veterinary Medical Association. Oklahoma Task Force 1— Urban Search and Rescue. (2008). [Basic Canine Service Animal Decontamination for Hospitals](#).

This document provides guidelines for decontaminating working canines.

*Otto, C., Franz, M., Kellogg, B., et al. (2002). [Field Treatment of Search Dogs: Lessons Learned from the World Trade Center Disaster](#). Journal of Veterinary Emergency and Critical Care. 12(1):33-42.

The authors share a graphic that depicts the Suffolk County (NY) Society for the Prevention of Cruelty to Animals' Disaster Plan. They also share lessons learned about preventive and curative veterinary medicine used on the search and rescue dogs that worked the 9/11 scene in New York City.

*Wismer, T., Murphy, L., Gwaltney-Brant, S., and Albretsen, J. (2003). [Management and Prevention of Toxicoses in Search-and-Rescue Dogs Responding to Urban Disasters](#). Journal of the American Veterinary Medical Association. 222(3):305-310.

The authors of this article explain how to assess and treat search and rescue dogs for exposure to various toxins.

Shelter Animal Care

*Animal Emergency Management Plan and READY Colorado. (n.d.). [Animal Emergency Response Planning Toolkit](#). (Accessed 5/9/2016.) Colorado Veterinary Medical Foundation.

This comprehensive planning guide was designed to support full community animal disaster response. It can help identify both potential demand and available resources for animal rescue and sheltering and identifies the community engagement stakeholders required for a successful plan, response, and recovery.

Decker, S., Lord, L., Walker, W., and Whittum, T. (2010). [Emergency and Disaster Planning at Ohio Animal Shelters](#). (Abstract only.) Journal of Applied Animal Welfare Science. 13(1):66-76.

This article summarizes a cross-sectional study of Ohio animal shelters, their preparedness levels, and their incorporation into the response plans of their respective communities.

Federal Emergency Management Agency. (2007). [Eligible Costs Related to Pet Evacuations & Sheltering](#).

This Federal policy outlines when and how the costs of running congregate pet shelters can be reimbursed by the Federal government during disasters.
Federal Emergency Management Agency. (2007). [Pet Sheltering Best Practices](#).

This document outlines successful practices in operating pet-friendly human shelters during major disasters. It includes discussion and links to many community-developed plans, resource lists, and other helpful documents.

Hudson, L., Berschneider, H., Ferris, K., and Vivrette, S. (2001). [Disaster Relief Management of Companion Animals Affected by the Floods of Hurricane Floyd](#). Journal of the American Veterinary Medical Association. 218(3):354-359.

The authors describe the logistics of running a temporary animal shelter and animal hospital in the aftermath of Hurricane Floyd in North Carolina.

*Marion County, Florida. (2007). [Pet Friendly Shelter Plan Documents](#).

These documents, parts of which were shared in the Federal Emergency Management Agency's Lessons Learned Information Sharing system, provide plans to institute pet-friendly human shelters during major disasters.

*Red Rover. (2011). [Community Animal Emergency Planning Resources](#).

This website provides various forms and other resources that can assist with disaster animal shelter operations. It also includes disaster preparedness supply lists for the following: dogs, cats, horses, birds, reptiles, and amphibians. Links to partner agency manuals for shelter operations are also available.

*University of Albany, School of Public Health. (2009). [Emergency Animal Sheltering Course](#).

This 2 hour online course serves as an introduction to successful animal care shelter operations for officials providing animal response services during a disaster.

Treatment

*Gordon, L. (n.d.) [Guidelines for Emergency, Gross, and Technical Decontamination of the Urban Search & Rescue Canine](#). (Accessed 5/9/2016.)

The presenter defines decontamination and shares the following: information on canine exposure and toxin sensitivity compared to humans; anatomical and metabolic considerations; exposure symptoms; prevention strategies; and decontamination steps and supply lists.

*Gordon, L. (2006). [Canine Emergency & Gross Decontamination Procedures](#).

The author defines decontamination and shares guidelines for working canine decontamination.

- *Murphy, L. (2009). [Basic Veterinary Decontamination- Who, What, Why.](#) Veterinary Disaster Response, Chapter 16. Wiley-Blackwell.

This chapter takes question-and-answer format to promote understanding and outline the steps for decontamination procedures that have been developed for different animal types. This reference is designed for anyone involved in disaster medicine, including veterinarians, veterinary technicians, veterinary students, animal control and shelter personnel, search and rescue personnel, and emergency response teams.

- *Oklahoma Veterinary Medical Association. Oklahoma Task Force 1— Urban Search and Rescue. (2008). [Basic Canine Service Animal Decontamination for Hospitals.](#)

This document provides guidelines for decontaminating working canines.

- *Otto, C., Franz, M., Kellogg, B., et al. (2002). [Field Treatment of Search Dogs: Lessons Learned from the World Trade Center Disaster.](#) Journal of Veterinary Emergency and Critical Care. 12(1):33-42.

The authors synthesized the lessons learned by the veterinary community while preparing for and responding to the World Trade Center disaster. Information on training and preventing and treating injuries is included.

- *Soric, S., Belanger, M., and Wittnich, C. (2008). [A Method for Decontamination of Animals Involved in Floodwater Disasters.](#) Journal of the American Veterinary Medical Association. 232(3):364-370.

After a disaster, abandoned or stray animals and search and rescue dogs may be exposed to toxins in floodwaters. This article: outlines safety requirements for healthcare professionals who manage decontamination teams; provides strategies for laying out a decontamination site; and includes a decontamination protocol.

- *Wismer, T., Murphy, L., Gwaltney-Brant, S., and Albretsen, J. (2003). [Management and Prevention of Toxicoses in Search-and-Rescue Dogs Responding to Urban Disasters.](#) Journal of the American Veterinary Medical Association. 222(3):305-310.

The authors of this article explain how to assess and treat search and rescue dogs for exposure to various toxins.

Agencies and Organizations

Note: The agencies and organizations listed in this section have a page, program, or specific research dedicated to this topic area.

[American Veterinary Medical Association.](#)

[K9 Medic.](#)

[National Alliance of State Animal and Agricultural Emergency Programs.](#)

[National Animal Rescue and Sheltering Coalition.](#)

[Office of Laboratory Animal Welfare.](#)

United States Department of Agriculture. [Animal and Plant Health Inspection Service. Emergency Response.](#)

United States Department of Agriculture. National Agriculture Library. [Emergencies and Disaster Planning.](#)

[Urban Search and Rescue Veterinary Group.](#)

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