



**Law, Science, and Disaster: Summary of the
October 18, 2005 Workshop of the Disasters
Roundtable**

Byron Mason, National Research Council

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Law, Science, and Disaster



Summary of the October 18, 2005 Workshop of the Disasters Roundtable

By Byron Mason

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FOREWORD

The Disasters Roundtable (DR) seeks to facilitate and enhance communication and the exchange of ideas among scientists, practitioners, and policymakers concerned with urgent and important issues related to natural, technological, and other disasters. Roundtable workshops are held three times a year in Washington, D.C. Each workshop is an open forum focused on a specific topic or issue selected by the DR Steering Committee. For upcoming meetings, please visit <http://www.nationalacademies.org/disasters>.

The Disasters Roundtable Steering Committee is composed of five appointed members and sponsoring ex-officio members. The appointed members at the time of the workshop were William H. Hooke, chair, American Meteorological Society; Ronald T. Eguchi, ImageCat, Inc; John R. Harrald, The George Washington University; Juan M. Ortiz, Tarrant County Office of Emergency Management; Havidán Rodríguez, University of Delaware; Monica Schoch-Spana, University of Pittsburgh Medical Center; and David Simpson, University of Louisville. The ex-officio members were Stephen Ambrose, National Aeronautics and Space Administration; Frank Best, PB Alltech, Inc.; Lloyd Cluff, Pacific Gas & Electric; Timothy A. Cohn, U.S. Geological Survey; Elizabeth Lemersal, Federal Emergency Management Agency; James Russell, Institute for Business and Home Safety; Dennis Wenger, National Science Foundation; and Helen Wood, National Oceanic and Atmospheric Administration. The DR staff includes William A. Anderson, director, and Byron Mason, senior program assistant.

This document presents the rapporteur's summary of the forum discussions and does not necessarily reflect the views of the roundtable members or other participants. For more information on the Roundtable visit our website, <http://dels.nas.edu/dr>, or contact us at the address below.

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This summary has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published summary as sound as possible and to ensure that the summary meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We wish to thank the following individuals for their review of this summary: Ann-Margaret Esnard, Florida Atlantic University; Jon A. Kusler, Association of State Wetland Managers; and Ellis M. Stanley, Sr., Emergency Preparedness Department, Los Angeles, California.

Responsibility for the final content of this summary rests entirely with the author and the institution.

Introduction

The 15th workshop of the Disasters Roundtable, “Law, Science, and Disaster,” was held October 18, 2005 on how disaster-related law is related to issues of public safety. Public safety is a major responsibility of local, state, and federal governments. With this goal in mind, these entities develop and implement a complex variety of laws and regulations that impact individuals and institutions in all sectors of society. Decision makers enact and implement disaster-related laws to regulate land use, building practices, emergency response planning, and other actions. Such laws can take the specific form of urban design regulations, building codes, and occupancy requirements. They can also involve government and private liability for actions taken or not taken and means for compensating disaster victims. Like other laws, those related to public safety meet with varying degrees of success and are changed periodically to meet new demands, such as those caused by the emergence of new threats and societal vulnerabilities.

It is recognized that science and technology can provide part of the basis for more effective disaster-related laws and regulations, including zoning laws, building codes, and hazard disclosure requirements. It is also clear that issues unrelated to science and technology also drive the development of disaster-related law. Workshop speakers and panelists examined recent developments and trends in disaster-related law and its implementation and drew on the September 11, 2001 experience to discuss the related issue of victim compensation. Panelists and speakers also considered the role of scientific understanding in providing a basis for designing and implementing laws and regulations that promote public safety in an era of increasing risk. Following each panel, and in some cases individual speakers, audience members were encouraged to participate in open discussions of the day’s topics.

Session I: Overview

Disaster-Related Law and Disaster Management

Disasters are described in the media and in popular parlance as natural, suggesting that human settlements are inadvertent victims of unforeseen natural hazards. Resulting from interactions between built environments and natural hazards, disasters are in fact unnatural. David Brower, research professor at the University of North Carolina, Chapel Hill, stated that technological advances can allow for increased understanding and better prediction of hazards, but their occurrence cannot be prevented. Conversely, disasters may be mitigated and even prevented by focusing on the planning and development of built environments. Brower stated that the characteristics of a built environment its location, use, size, and density, are determined by human design. Moreover, development decisions are value-based, and are generally made to maximize bottom-line values of profit. Development decisions are occasionally made to maximize design but rarely are they made to reduce hazard risks. According to Brower, urban planners seldom consider potential damages from hazards like floods when writing zoning

ordinances; and developers claim that their clients are undeterred when they are advised that there may be limited sound infrastructure in hazard prone areas.

Brower remarked that communities have become increasingly vulnerable to natural hazards because of public policies that encourage development in areas that are hazard prone. The body of public policies that govern the development and growth of built environments includes legislation, regulations, land acquisition programs, and land management. Citing programs like the National Flood Insurance Program (NFIP), administered by the Federal Emergency Management Agency (FEMA), Brower claimed that these public policies make unsafe areas attractive to developers. He noted that following a disaster, the United States spends millions of dollars to lure people back to vulnerable areas and suggested that interjecting hazard concerns into the decision making process can result in better policies that do not encourage this kind of development. Brower stated that it is possible to enact public policies that do not place communities at risk for hazards, citing the [Coastal Barrier Resources](#) and [Coastal Zone Management](#) acts. He suggested reviewing and modifying existing public policies to ensure that they do not encourage at-risk development.

Learning from Disasters: The Synergy of Law and Geography

Rutherford Platt, professor of geography and planning law and director of the Ecological Cities Project at the University of Massachusetts, Amherst, stressed the importance of learning from past disasters and suggested that the lessons learned from the rebuilding of London, England, after the fire of 1666 provide an example of smart rebuilding as the United States embarks upon rebuilding communities in the Gulf Coast in the wake of Hurricane Katrina. Platt described Elizabethan London as a walled city characterized by wooden construction and buildings with second floors that overhung narrow and winding streets without adequate access to water from the Thames River. According to Platt, fires blazed throughout London on September 2-6, 1666 and damaged 80 percent of the city; 13,000 homes, 89 churches, and 52 guild halls were destroyed. In response to this disaster, King Charles II appointed a royal commission, headed by Sir Christopher Wren and Robert Hooke, to investigate the causes of the fire and recommend new rules and regulations for London's rebuilding (Sarre, 2002). The Rebuilding Act of 1667 adopted the commission's recommendations requiring buildings to be constructed with brick or stone, widened streets, and open space along the Thames (House of Commons Journal, Volume 8, 1667). Platt stated that these regulations helped mitigate the damage London received during the 1940 blitz attacks by Germany in World War II. Platt cited London's rebuilding efforts as an example of smart rebuilding, a process that involved modifying land use roles and practices in response to improved knowledge from science and technology, as well as economic, environmental, and social conditions.

According to Platt, disaster response in the United States prior to World War II was the responsibility of local governments, community groups, and charities. The Great Mississippi Flood of 1927 marked the beginning of federal involvement in disaster response. The initial policies that emerged were primarily concerned with structural flood control. Questions of constitutionality that have arisen from governmental floodplain management and zoning have been allayed by legal defenses similar to the one presented in Allison Dunham's 1959 law

review article, “Flood Control under the Police Power.” Dunham championed the merits of floodplain zoning to protect unwary investors from investing in hazardous areas, as well as to protect owners of nearby properties at risk from increased flooding and to protect the public from expenses related to rescue and disaster assistance (Burby, 1998). Platt indicated that the language of Dunham’s article was quoted in the 1972 Turnpike Realty v. Town of Dedham decision by the Massachusetts Supreme Judicial Court, and similar defenses were used successfully in subsequent court challenges well into the 1980s (ibid). In 1992 the U.S. Supreme Court decided in [Lucas v. South Carolina Coastal Council \(505 US 1003\)](#) that property owners that are required to sacrifice all economically beneficial uses of their land for the common good have experienced a taking and must be compensated. According to Platt, developers began building along U.S. coastlines with renewed vigor following the Lucas decision.

Platt stated that the United States needs New Orleans and that its residents should be allowed to return to a safer city with better infrastructure. Improved infrastructure will require a thorough examination of the causes of the flood control system failure in New Orleans. Platt called for a nationally appointed commission to coordinate and synthesize all of the disciplinary and organizational reviews that are currently under way. He stressed the importance of communicating the data collected, as well as the knowledge of the natural and social sciences, to decision makers, Congress, and state and local legislators. He also cautioned that disaster assistance funds tend to be devoted to the rebuilding of downtown and tourist areas of damaged cities at the expense of lower-income communities, and noted that in the absence of an expert national review process the recovery of New Orleans and the Gulf Coast region will be chaotic, politically driven, and likely set the stage for future disasters.

In the discussion that followed this panel, several participants noted that local and state governments rarely face litigation for permitting unsafe development. It was suggested that better development decisions might be made if local and state zoning authorities were concerned with liability. The need for scientists to take an active role in leading the law was also addressed by the audience.

Session II: Some Recent Trends and Issues in Disaster-Related Law

Emergency Management Law

The creation of the Department of Homeland Security (DHS) in response to the September 11, 2001 terrorist attacks caused concern among emergency managers and fueled the conflict of cultures that exists between emergency management and law enforcement, according to William Nicholson, assistant professor at North Carolina Central University. He noted that law enforcement hoped to receive the authority needed to prevent future terrorist acts while emergency management hoped that all hazards would receive greater attention. Nicholson characterized the culture of law enforcement as hierarchical and bureaucratic, wherein the planning and implementation of decisions are conducted in a top-down manner. He stated that the culture of emergency management is organic, adaptable, and results oriented. Emergency management decisions are made by the individuals working on the frontlines. Nicholson

remarked that the division between the two cultures was institutionalized during the creation of DHS, when the Office of Domestic Preparedness (ODP) was transferred from the Office of Justice Programs to the Transportation Security Administration rather than being placed under the purview of FEMA. Nicholson stated that ODP is the lead executive branch agency for preparedness and mitigation of terrorist events in the United States. [Homeland Security Presidential Directive 8 \(HSPD-8\)](#), issued by President George W. Bush on December 17, 2003 initiated a national domestic all-hazards preparedness approach by ODP to build capacity to address catastrophic events, particularly terrorism. According to Nicholson, ODP is specified as the lead executive branch agency for preparedness and mitigation of non-terrorist-related disasters in the United States.

Nicholson also lamented the lack of involvement of emergency management in the development of the National Response Plan (NRP) (see Box 1). He noted that [Homeland Security Presidential Directive 5 \(HSPD-5\)](#), issued February 8, 2003 tasked the Secretary of Homeland Security to develop a National Incident Management System (NIMS) and the NRP in consultation with other federal agencies, but first-responders and emergency management were not involved in the development process.

According to Nicholson, mutual aid agreements and assistance between states have traditionally been managed at the local and state levels and, while recommended, are not currently required by NIMS. The [Emergency Management Assistance Compact \(EMAC\)](#) is a congressionally chartered organization charged with managing mutual aid assistance. EMAC allows states that have experienced a disaster to request and receive assistance from other states. Nicholson stated that EMAC assistance can pose challenges in terms of liability. He noted that because emergency workers are credentialed only in their home states, states that receive out-of-state emergency workers must decide whether to validate their credentials.

Box 1. The National Response Plan

On March 1, 2004 the Department of Homeland Security (DHS) announced the development of the National Incident Management System (NIMS), a comprehensive nationwide framework for incident management, to increase cooperation among emergency responders at local, state, and federal levels. NIMS incorporates practices used by incident managers at all levels and provides the concepts, principles, and organizational processes needed for more effective and collaborative incident management. NIMS is managed by the NIMS Integration Center (NIC), which was established by the Secretary of Homeland Security to provide strategic direction and oversight of the system. While NIMS provides a template, it is not an operational incident management or resource allocation plan.

The National Response Plan (NRP) provides the coordinating structure for national-level policy and operational direction for federal support to local and state emergency managers, as well as federal-to-federal support, and for the exercise of direct federal authority as appropriate to manage domestic incidents. The plan incorporates practices from homeland security, emergency management, law enforcement, firefighting, public works, public health, responder and recovery worker health and safety, emergency medical services, and the private sector. It establishes protocols to help:

- save lives and protect the health and safety of the public;
- ensure security of the homeland;

- prevent an imminent incident, including acts of terrorism, from occurring;
- protect and restore critical infrastructure and key resources;
- conduct law enforcement investigations to resolve the incident, apprehend perpetrators, and collect and preserve evidence for prosecution and/or attribution;
- protect property and mitigate damages and impacts to individuals, communities, and the environment; and
- facilitate recovery of communities, businesses, governments, and the environment.

Source: Homeland Security, 2001.

Public Health and Disaster-Related Law

Public health concerns and laws are important components of disaster response that need to be more directly integrated into the disaster planning and preparedness models set forth by emergency management and law enforcement agencies, according to Lance Gable, senior fellow at the Center for Law and the Public's Health at Georgetown University and Johns Hopkins University. He defined public health law as the legal powers and duties of government that are used to ensure the conditions necessary for the public to remain healthy. Public health laws also entail the structural and rights-based limitations placed on the power of states to act in the interest of the public's health or constrain the legally protected interests of individuals. Gable noted that the predominant powers and responsibilities for public health are situated at the state and local levels of government. The federal government has generally assumed a financial role, providing grant aids and funding projects to influence public health policies. Most state public health laws have traditionally been concerned with infectious diseases and sanitation and have not directly addressed the challenges of emergency response. Gable's assessment of the current state of public health laws found them to be antiquated, unfocused, inconsistent, and complicated. He noted that many of these laws were developed in the early 1900s and do not reflect the modern principles of health care practices and the biological sciences. Moreover, the missions of these laws are poorly articulated, and prove difficult for the public to comprehend and challenging for health officials to implement.

Gable stated that inadequate guidance in statutes leads to questions about the authority and exercise of public health powers. He recommended a broader conception of public health that would include non-communicable diseases, as well as environmental and built environment concerns. He stressed that well-crafted public health laws need to be designed to anticipate likely challenges and allow for the establishment of hierarchical systems flexible enough to adapt to emerging public health concerns. Gable stated that public health laws need to be updated to keep pace with scientific developments, clarify legal powers and duties, and improve public health emergency responses.

Following the September 11, 2001 attacks, the Center for Disease Control and Prevention (CDC) tasked the Center for Law and the Public's Health to draft model state legislation prescribing emergency health powers that would allow for a direct emergency response from

public health agencies. Gable's colleagues drafted the [Model State Emergency Health Powers Act](#) concerned with preparedness, surveillance, the management of property, the protection of individuals, and communications. According to Gable, laws based on this model would authorize proactive preparedness and surveillance activities to aid in disease detection, allowing for mitigation and rapid response. He also noted that management of property, protection, and communication activities are predicated on a declaration of a public health emergency. Following this model, governors would be empowered to declare a public health emergency, granting states powers to manage and seize property, to house people for medical care, and to stockpile medical supplies. States would also be allowed to destroy property that is contaminated or deemed a threat to the public's health. Gable stressed that a public health emergency should only be declared when there is a severe threat with a high probability of widespread harm, because once such an emergency is declared the legal landscape changes. He reported that legislative bills based on the model have been introduced in 45 states since December 2001; 37 of these states and the District of Columbia have passed or enacted emergency health policy provisions.

No Adverse Impact Floodplain Management

The Association of State Floodplain Managers (ASFPM) defines No Adverse Impact (NAI) floodplain management as an approach that ensures that the action of one property owner, public or private, does not adversely impact the rights of other property owners, as measured by increased flooding, erosion, and sedimentation (ASFPM, 2004). According to Edward A. Thomas, attorney for Michael Baker Engineering Corporation, the process involves identifying the potential impacts of proposed development, determining which properties are at risk and notifying the individuals that will be adversely impacted. The proposed development project is then redesigned to include appropriate mitigation measures. Thomas stated that standard development practices do not follow this process, and at-risk communities are not notified in advance of the development. He noted that NAI floodplain regulation is consistent with sustainable development principles and complements wetland and storm water regulations.

Thomas stated that despite the increased number of takings challenges in the courts in the past 30 years, hazard-based regulations generally prevail because the goal of protecting the public from harm is accorded great deference by the courts. He stated that as a result of improved hazard management knowledge, courts are requiring increased standards of care. Hazard-based regulations are only ruled as takings when they deplete nearly all of a property's value, as was the case with the [Lucas](#) decision. Thomas noted that governments may be held liable for developing structures that block watercourses, or increase runoff by grading land, or cause damage by filling wetlands. However, he emphasized the benefit of utilizing NAI planning in alleviating these liability concerns.

In the discussion that followed, participants expressed a need for transparency in the activities of the Department of Health and Human Services (DHHS) and the Environmental Protection Agency (EPA) as a result of the classification authorities that these agencies gained after September 11, 2001. Participants noted that the United States lacks a comprehensive

response plan for pandemic response, and jurisdictional concerns about the exercise of state and federal quarantine powers were also raised.

Session III: Victim Compensation Fund

On September 22, 2001 the U.S. Congress passed the [Air Transportation Safety and System Stabilization Act](#) in response to the unprecedented terrorist attacks on the World Trade Center and the Pentagon, establishing the September 11th Victim Compensation Fund. Kenneth Feinberg, managing partner and founder of The Feinberg Group, LLP, was designated as special master and charged with administering the program over a period of 33 months. According to Feinberg, anyone who lost a relative or significant other onboard United Airlines Flight 175, American Airlines Flight 77, United Airlines Flight 93, or in the World Trade Center and the Pentagon was eligible to participate in the program. Individuals that were physically injured from the attacks were also included. The program was a taxpayer funded alternative to litigation. Participation in the program was optional. Feinberg stated that 97 percent of eligible claimants voluntarily joined the program, with only 85 people opting to pursue litigation, and 7 billion dollars were awarded in indemnity payments. The awards were tax-free and ranged from \$500, for relatively minor injuries, to \$8.6 million for extreme cases as defined by the special master. Feinberg reported that the average award for a death claim was approximately \$2 million; the average award for an injury claim was \$400 thousand.

As special master, Feinberg was instructed to use a four-part formula to calculate the amount awarded to each claimant:

1. Calculate the economic loss suffered as a result of death or injury of the victim.
2. Calculate non-economic losses, such as pain and suffering or emotional distress.
3. Deduct collateral sources of income like life insurance.
4. Exercise discretion to see that justice is done.

Feinberg noted that Congress did not explicitly define which victims' relations were eligible to file claims. Consequently, he received claims from parents, siblings, spouses, fiancés, significant others, and estranged relatives of deceased victims. Because only 20 percent of the victims had legal wills, Feinberg relied on the Maryland, Virginia, and New York state laws of intestacy to determine descent and inheritance for those who died without them. He stated that disputes between biological family members and victims' fiancés or same-sex partners were mediated. Feinberg also noted that U.S. citizenship was not a claim requirement. Families of undocumented illegal aliens were eligible to participate without threat of deportation by the Immigration and Naturalization Service, and families in 65 foreign countries received compensation.

Feinberg remarked that concerns for the victims of Hurricanes Katrina and Rita have generated questions about duplicating the program in the future. He noted that the September 11th Victim Compensation Fund was a unique response to a unique event in U.S. history that can

only be justified by recognizing its historical singularity. Feinberg cautioned against making distinctions among victims based on causation. He stated that victims of terrorist acts are not more or less valuable than victims of disasters caused by natural hazards. He also opposed creating a similar fund in the advent of a future terrorist attack on U.S. soil.

In the discussion that followed, participants noted that the September 11th Victim Compensation Fund was managed without establishing an administering bureaucracy, which allowed for quick resolution of claims. Some participants disagreed with Feinberg's assertion that a similar fund should not be established for the victims of Hurricane Katrina.

Session IV: Sector Perspectives on the Role of Law in Meeting Future Disaster Management Challenges

A Post-Katrina Look at the National Response Plan

Executive branches at the federal and state levels of government are empowered with a broad scope of authority to take responsive action during an emergency. Ernest Abbott, founder of FEMA Law Associates, PLLC, stated that legal authority is at its peak at the height of an emergency and subject to greater legal constraints as crisis conditions are brought under control. Questions of jurisdictional responsibility may arise during the coordination of disaster response. Abbott stated it appears that in the aftermath of Hurricane Katrina, local officials were not in agreement about who was in charge of response efforts. He stated that the 10th Amendment of the U.S. Constitution reserves powers not granted to the federal government for the states. States have historically granted enumerated powers to the federal government to regulate interstate commerce, provide for national defense, and to tax and spend for the public welfare, while reserving powers to police their populations.

Abbott remarked that all emergencies begin locally, but as Hurricane Katrina demonstrated, as the scale and complexity of an event increases state and federal support may be needed. Large-scale emergencies require increased coordination between agencies. Abbott noted that NIMS and the NRP are aimed at ensuring effective management of such large-scale emergencies (see Box 1). He stated that there was a general lack of understanding of the NRP by the local, state, and federal officials responding to Hurricane Katrina. According to Abbott, the NRP requires the designation of a principal federal officer and the creation of a task force during the emergency preparations phase, yet there was no move in DHS to form an interagency crisis management group as Katrina approached the Gulf Coast. He stated that the NRP was designed with an emphasis on response to terrorist events, wherein the federal prerogative in national defense is clearly expressed in the Constitution, thereby requiring less federal-state collaboration.

Abbott stated that, under the 2000 [Stafford Disaster Relief and Emergency Assistance Act](#), commonly referred to as the Stafford Act, governors of states impacted by a disaster must request a declaration from the President before the federal government exercises its response powers. The President may declare an emergency without a governor's request if it is found that

the primary responsibility to address the challenge falls under an area, such as national defense, where the federal government has preeminent authority. Major disaster and emergency declarations authorize the same emergency response measures. Abbott cautioned against unilateral federal action because it raised liability issues and excludes local personnel who have intimate knowledge of the impacted region.

A View from the States

On April 19-20, 2005 the National Association of Attorneys General (NAAG), in collaboration with the Public Health Law Program of the CDC, convened at Michigan State University to provide an opportunity for attorneys across the nation to share their experiences in dealing with disaster-related law. Robert Ianni, director of Homeland Security and Special Projects for the Michigan Attorney General's Office, stated that 75 attorneys representing 32 states attended. The conference focused on public health emergency responses. Ianni reported that participants examined emergency management laws, the legal lessons learned from September 11, the roles of an attorney general in a disaster, and the role of the judiciary. He noted that the rule of law does not exist without the judiciary, an often overlooked component of emergency response.

Ianni reported that public health emergencies do not allow sufficient time to develop legal pleadings. To address this concern the Michigan Attorney General and NAAG prepared a legal manual based on Michigan state laws that can be adapted for use in other states. The manual included key Supreme Court decisions and a set of legal forms. The manual was distributed to all workshop participants, along with the CDC's [Public Health Emergency Law \(PHEL\)](#) course book, DHS' Continuity of Operations CD, and a manual prepared by the Michigan Attorney General and NAAG on how to create and conduct a legal issues table top exercise.

Role of the Attorney General

The role of an attorney general during an emergency is to represent the interest of the state. Attorneys general act as legal advisers to their governors and provide advice as to whether conditions meet the requirements necessary for an emergency declaration. Ianni stated that when providing legal advice on disaster response, attorneys general must ensure that the public's interest is also represented and that the rights of individuals are respected. He emphasized that it is particularly important in regards to risk management to ensure that the state has legal authority for its actions in order to reduce liability.

Minimizing Liability

Returning to the expanded powers of the executive branch in an emergency, Ianni noted that, in addition to the power to suspend state laws, governors may make laws by issuing executive orders. By issuing an executive order, governors can provide the legal authority for response actions and protect emergency management from liability. Executive orders can also assist law enforcement in its evacuation efforts and in the commandeering and destruction of

property. Ianni also highlighted the importance of documenting emergency response actions. He stated that it is easier to defend response actions in a court of law if they are documented. Documentation is particularly important in regards to property seizure to prevent inflated damage claims.

A Local Emergency Manager's View

As commissioner of the Nassau County Office of Emergency Management, Richard Rotanz is charged with coordinating the county's response and recovery efforts associated with emergencies caused by natural, technological, and civil hazards. Rotanz reported that Nassau County is comprised of 2 cities, 3 towns, 64 villages, 71 fire departments, and 404 tax brackets. According to Rotanz, jurisdictional concerns of emergency response authority are decided by New York's "home state" rule, which finds local authorities responsible for emergencies that occur within their boundaries. He noted that [New York State Executive Law Article 2-B](#) allows his office to seize command if local towns and villages are inadequately prepared to respond. Rotanz stated that Article 2-B is not well known among New York emergency managers. Expanding his assessment, he asserted that there is a general lack of understanding of emergency management laws among emergency managers nationwide. For example, emergency managers are often surprised to learn of the legal attributes of public health and emergency responses. Rotanz stated that laws like the [Stafford Act](#) directly impact the planning and preparedness efforts of emergency managers. He recommended the adoption of NIMS by emergency managers, noting that the mandates of law enforcement are more clearly defined. According to Rotanz, Nassau County recently adopted NIMS but neighboring counties rely on other systems. In light of this inconsistency, he stressed the importance for ongoing education and training of emergency managers to allow for more cohesive and universal emergency response operations.

A View from the Private Sector

The reinsurance industry developed from the insurance industry's need to spread out the costs of the claims that it underwrites. Reinsurance agreements allow an insurance company to transfer all or part of the losses it sustains from claims on its policies to another insurer, limiting its loss exposure. According to Franklin Nutter, president of the Reinsurance Association of America, the insurance industry defrays most of its costs from catastrophic events through reinsurance agreements. He estimated that 50 to 75 percent of insured losses that stem from Hurricane Katrina will ultimately be covered by the reinsurance industry. Using their 2005 U.S. Hurricane Industry Exposure Database (IED), Risk Management Solutions (RMS) estimates that the total insurance industry loss from Hurricane Katrina will range between \$40 and \$60 billion (see Table 1).

Loss Component	Gross Industry Loss
First Landfall (in Florida)	\$1-2 billion
Offshore Energy	\$2-5 billion
Winds, Storm Surge, and Second Landfall	\$20-25 billion
Flooding of New Orleans	\$15-25 billion
Additional Sources: Disruption of power, ports and river freight, businesses, tourism, and energy production; decontamination and clean up.	\$2-3 billion
Total Estimated Loss	\$40-60 billion

Table 1. RMS Loss Estimates as of September 9, 2005. (RMS, 2005)

Nutter stated that the insurance industry can afford to assume the losses because the industry’s profitability has risen to record levels. He reported that the insurance industry’s net income for the first 6 months of 2005 was \$32 billion, nearly equaling the total net income for 2004, which was \$38 billion.

Still, Nutter stated that there are issues facing the insurance industry following Hurricane Katrina. In particular, tension exists over the “wind-water issue.” Noting that much of the property damage that New Orleans suffered was caused by flooding, he stated that homeowner insurance policies do not cover damages caused by flood waters. Rather, property owners in flood-prone communities are expected to participate in the NFIP. Even without direct coverage, Nutter noted that some catastrophic risks are being underwritten as a de facto practice. He reported that some states require insurance companies to participate in insurance pools that provide basic coverage to people that cannot afford to buy insurance. In a reference to comments made earlier by Brower, Nutter suggested that the NFIP and state pools that provide private insurance against natural hazards have spurred development in high risk areas.

The need for increased collaboration between the state and federal levels of government was discussed at length. The issue of utilizing the military in an emergency, without suspending posse comitatus, which limits the use of the U.S. Army and the Air Force for law enforcement purposes to the quelling of an insurrection (Trebilcock, 2000), was raised as well as the commandeering of medical facilities in response to a pandemic emergency and the authorizations necessary to protect emergency responders from liability.

Session V: Making Science Relevant to Disaster-Related Law

As recently as the early 1980s many believed that science and medicine had effectively removed the threat of epidemics caused by infectious disease. The emergence of HIV would prove otherwise. Focusing on concerns of the spread of avian influenza, Eric Noji, special assistant to the U.S. Surgeon General for Homeland Security and Disaster Medicine, modeled the course of a potential outbreak and incorporated many of the concerns that were addressed in the workshop.

- Can we declare a public health emergency?
- Can we investigate contacts?
- Can we examine and test people?
- Can we share information?
- Can we treat and vaccinate?
- Can we isolate and quarantine?
- Can we obtain facilities and supplies?
- Can we use nongovernmental personnel?
- Are we liable?

Using case-study methodology, Noji described a 21-year-old male patient with symptoms of fever, cough, and headache, who has waited in an emergency room for several hours without receiving treatment. Noji remarked that patients have waited as many as 36 hours, three hospital shifts, before being seen by a physician. Hospital staff and other patients have come and gone while the patient waited to be diagnosed. Upon examination, the physician suspects avian influenza and notifies local, state, and federal officials. These officials are now faced with the legal issues of declaring a public health emergency, as well as identifying and quarantining people that came in contact with the patient. As mentioned earlier, the statutory authority to declare a public health emergency is provided by the [Stafford Act](#). Under [Title 42 of the U.S. Code \(42 U.S.C. §§264 and 266\)](#) the Secretary of Health and Human Services is authorized to control the movement of people in the United States to prevent the spread of communicable disease.

There is a pressing need for reliable information at every stage of a public health emergency response. Noji stressed the importance of providing accurate information to the media to quell public fears. He also noted that officials responding to an outbreak will be heavily reliant upon information and need a quick but coherent process to address scientific issues in the midst of a crisis. Improved collaboration between public health, law enforcement, and emergency management agencies is also important. Noji remarked that the anthrax scares of 2001 were poorly handled by the disease detectives from the CDC's Epidemic Intelligence Service, a program initiated in 1952 to deal with a potential polio outbreak, because they had never interacted with the Federal Bureau of Investigations (FBI).

In the discussion that followed, participants addressed the challenges presented when dealing with the public in a public health emergency. The resistance of individuals to be voluntarily quarantined and the likelihood that some may refuse treatment were noted. Participants also noted that mitigation practices, like vaccinations, may lead to increased public skepticism about the severity of potential threats.

Concluding Remarks

William Hooke, director of the Atmospheric Policy Program at the American Meteorological Society and chair of the Disasters Roundtable, remarked that, without planning, the rule of law can be one of the first casualties of a disaster or public emergency. Disasters are socially constructed, a result of social decisions made within a legal framework that shapes mitigation, response, and recovery and determines their effectiveness. Consequently, the interconnectedness of science and the law is an ever pressing concern for stakeholders at all levels of society.

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