



# HEALTH



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## Editor's Notes

By Catherine Feinman



Acts of nature, intentional or unintentional actions, terrorist attacks, and innate properties of the natural and built environments can all affect the health of communities and their inhabitants in many ways. Incidents such as fires, floods, and weaponized bioagent releases can have immediate effects on human health, whereas health consequences of other incidents such as droughts, pollutants, and naturally occurring biological threats may only be visible over time.

Justin Snair and Christopher Mills lead this month's issue of the *DomPrep Journal* with an article and podcast discussion on environmental health security, which involves sustaining a healthy ecosystem and developing a capacity to control or avoid the environmental conditions and consequences that threaten it. Countering the short- and long-term health effects on the human population requires a multidiscipline approach. In "The Complexities of Environmental Health Security," *DomPrep's* readers helped define environmental health and determine where environmental health security fits alongside public health strategy and homeland security.

Rodrigo (Roddy) Moscoso and Robert C. Hutchinson describe in two separate articles the current practices and future plans to counter biosecurity threats. Whether an unintentional laboratory incident or an intentional release of bioagents, biothreats require the nation to have defined strategies and reliable technologies to help detect and deter threats as well as to warn local communities.

Audrey Mazurek and Raphael M. Barishansky share recommendations from the Institute of Medicine on the sustainability preparedness efforts for catastrophic incidents. Effective planning based on all-hazards capabilities and the Incident Command System (ICS) will help ensure better response for such incidents. Steven Maynard describes how ICS can be adapted to help save lives within vulnerable populations. When many lives are lost, however, it is important to understand the processing of human remains, as described by Joseph Cahill.

Rounding out the issue are examples of two states that are addressing public health and safety concerns in two very different ways. Andrew Geltman describes how the "Soda Ban" ruling may affect the New York City Board of Health's public health practices in the future. Whereas, Charley English and the Georgia Emergency Management Agency/Homeland Security use a newly redesigned mobile app to meet the changing needs of local communities.

*About the Cover: Protecting the world's population from short- and long-term threats to health and safety requires a multidiscipline, multijurisdictional approach. (Photo from iStockPhoto)*

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# Call for a Dedicated Environmental Health & Security Strategy

By Justin Snair & Christopher Mills, *Viewpoint*



Occasionally, single events have the ability to transform society – instigating dialogue, prompting resource allocation, and changing national policy. The 9/11 attacks in 2001, the subsequent mailing of anthrax letters in October of that same year, Hurricane Katrina in 2005, and the catastrophic failure at the Fukushima Daiichi Nuclear power plant in March 2011 all illustrate the power that traumatic events possess to catapult issues onto the national and international stage.

Some issues, however, are often a story of trends and long-term impacts, marked only by occasional incidents that gain widespread attention. Unfortunately, the collective impact of these individual events is not always recognized, and dangerous trends often continue undetected. Environmental health issues frequently fall into this latter category, compromising the health, welfare, and security of the nation.

## Defining Environmental Health

The World Health Organization defines [environmental health](#) as “all the physical, chemical, and biological factors external to a person, and all the related factors impacting behaviors. It encompasses the assessment and control of those environmental factors that can potentially affect health.” The environment, both built and natural, affects personal and population health. Exposure to harmful substances and organisms can result in negative health outcomes through food, water, and air consumption, as well as contact with soil.

As mentioned in a [2008-2009 project](#) published by the National Environmental Public Health Leadership Institute, many jurisdictions in the United States have traditionally addressed environmental health issues by developing “new, narrowly focused initiatives to tackle each specific issue individually.” This approach often results in the creation of programmatic silos that frequently are relegated to a subordinate position as one of many components of the public health system. National public health preparedness policy reflects this subordination, consistently positioning environmental health as a public health system component, rather than a separate, equally important issue in its own right.

Although environmental threats certainly can affect the health of entire populations, the central focus of the public health system, mitigation, prevention, and response to environmental threats cannot always be addressed solely through public health interventions. The drivers often are outside the direct influence of the public health system.

In recent years, an increase in extreme weather – attributed to climate change – has prompted acknowledgments of the effects that environmental threats can have. As a result, climate change is increasingly included in political discussions and national policy, which have catalyzed collective, strategic actions from a diverse set of disciplines. This issue illustrates that, although a threat can be of particular concern to the public health system, addressing it may require a more unique and multidisciplinary approach. Unfortunately, many other environmental threats that affect the security and health of the nation, such as those illustrated in Figure 1, have not found widespread and coordinated attention.

## National Health & Security Strategy

Moreover, segmenting environmental health policy and strategy into issues that impact public health and those that affect the security of the nation creates a false dichotomy, unnecessarily complicating efforts to strategically address the issues. A cohesive and holistic national environmental health and security (EHS) strategy, which considers environmental health drivers and consequences on national security and public health through a distinctive lens, would overcome the current segmentation to more effectively and comprehensively address the full spectrum of environmental health threats. Examining national policy and practice around this issue would be helpful before considering what an EHS-focused paradigm would look like.

Figure 1. Environmental security construct, drivers, and consequences. Adapted with permission from, “There’s a Pattern Here: The Case to Integrate Environmental Security into Homeland Security Strategy,” by James D. Ramsay and Terrence M. O’Sullivan (2013).

Currently, national policy surrounding environmental health security is largely a subordinate component of the public health system. The U.S. Department of Health and Human Services’ (HHS) National Health Security Strategy (NHSS), which frames public health as a national security issue, “acknowledg[ing] the interdependent relationship between national security, homeland security, and national health security,” includes the prevention or mitigation of environmental and other emerging threats to health as a strategic objective.

The NHSS recognizes, at least from a public health perspective, the capacity of negative environmental conditions to “compromise a society’s ability to provide food, water, health care and, more broadly, economic productivity[,] endanger[ing] the security and stability of that society.” The NHSS further underscores the need for the public health system to coordinate with and leverage the resources of those organizations and individuals responsible for food safety, environmental protection, and workplace safety.

The subordination of environmental health to public health continues under the Department of Homeland Security’s (DHS) National Response Framework (NRF), which presents the “guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies.” Within the NRF, Emergency Support Function (ESF) #8 provides the mechanism for coordinated federal public health and medical services, as well as assistance to supplement state, tribal, and local resources in response to a public health and medical disaster, to potential or actual incidents requiring a coordinated federal response, and/or during a developing potential health and medical emergency.

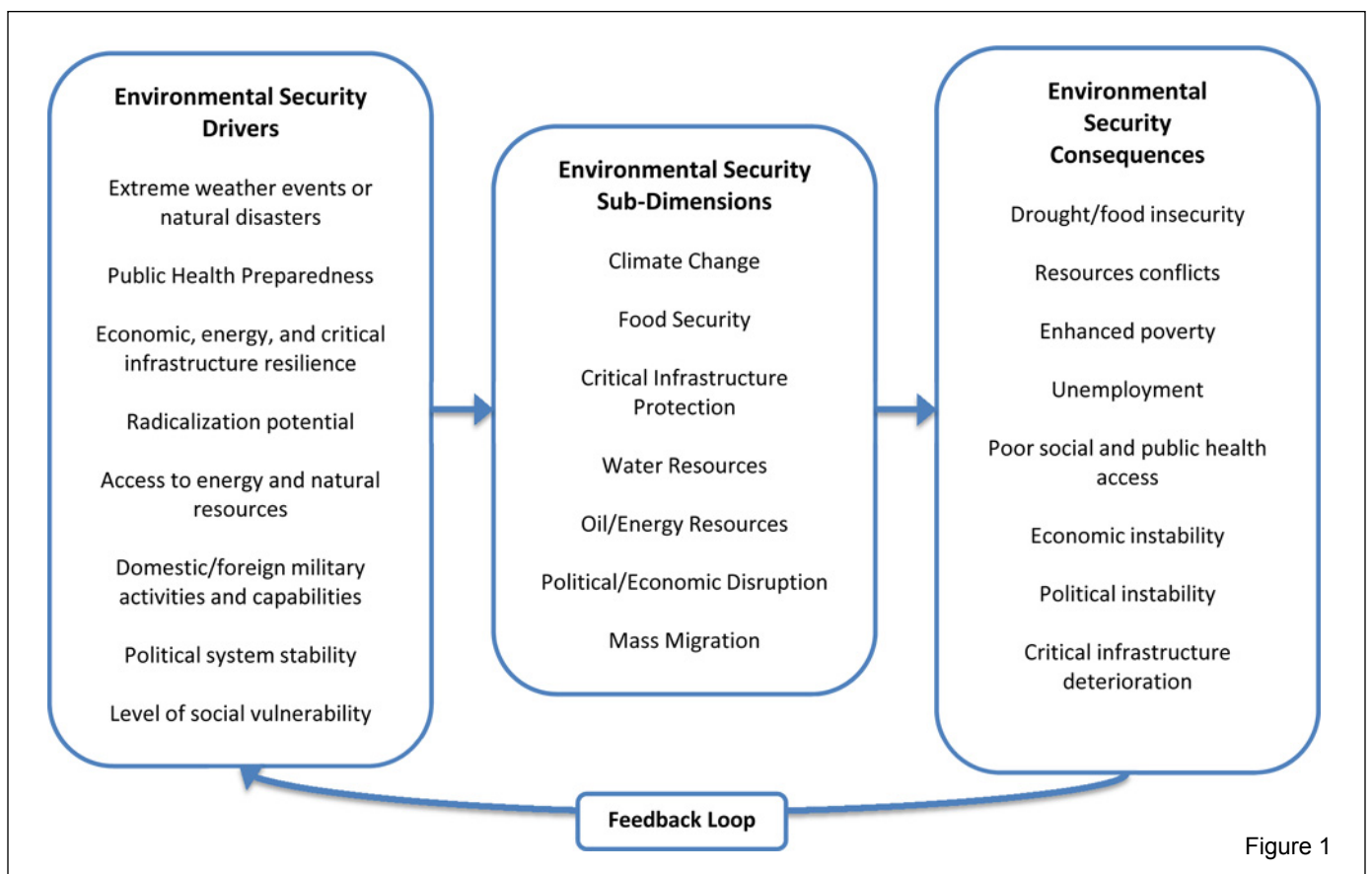


Figure 1

Environmental health security concerns – food safety and security, vector control, and potable water – are included in ESF #8, but once again enveloped into the public health agenda. The deeper causes of environmental problems are often overlooked in favor of a focus on the more immediate human health outcomes. Such an approach leads to more intense issues in the future and potentially greater harm to the public and environmental health.

## **Environmental Health Threats & Security**

Recognition of the fact that environmental drivers have the capacity to influence national security has not just recently emerged. Historically, environmental conditions affecting national security – mostly those related to water, food, energy resources, shelter, and economic productivity of a nation – have been considered an issue of military defense or international relations. Rooted in this perspective, [\*environmental security\*](#) is often defined as “a process for understanding how extreme environmental or climatic events, acting locally or trans-nationally, can destabilize countries or regions of the world, resulting in geopolitical instability, resource conflicts, and subsequently enhanced risk to critical infrastructure, or a combination of these.”

In the past, threats and disruptions to key natural or built environments by specific threat actors, such as domestic and international terrorist groups or competing nations, have undermined national security and welfare. Disputes between nations – such as the conflict between Israel and Arab states from 1964-1967 over the control of the water resource of the Jordan River drainage basin – illustrate this issue.

However, environmental threats are not solely perpetrated by discrete actors or by one nation to another. In recent years, natural disasters of increasing intensity and frequency have affected millions of people worldwide, caused [\\$2 trillion](#) in economic damage in the past 20 years globally, and disrupted the critical infrastructure essential for producing domestic and global resources and ensuring human welfare. Other broad environmental threats may involve resource competition, consumption, and pollution, and have the potential to degrade U.S. security and affect the health of the population. Examples include the impact of large-scale industrial accidents such as Freedom Industries’ contamination of the drinking water of 300,000 West Virginians in January 2014 or BP’s Deep Water Horizon oil spill in the Gulf of Mexico in April 2010.

Other consequences to consider are the politically destabilizing effects of widespread drought and famine and the effects of global industrial expansion in places like China. The breakdown or collapse of the nation’s built and natural infrastructure caused by environmental hazards such as these threatens not only individual and population health but also regional, national, and global security. The drivers of these threats are: irrevocably connected; complicated with feedback loops and political, economic, and social underpinnings; and outside the traditional role of the public health system.

As one out of ten strategic objectives included in the NHSS and as a small component of ESF #8, the prevention and mitigation of environmental health threats do not receive attention consistent with the magnitude and complexity of the threats themselves. Moreover, the inclusion of environmental health drivers that affect the health of the nation in the NHSS and ESF #8 contributes to a nationwide pattern in which environmental health typically is executed as a component of a broader public health agenda. The inclusion of prevention and mitigation of environmental threats in the NHSS and ESF #8 catalyzes consideration of the impact of the environment on public health security.

However, environmental drivers and consequences are so incredibly interconnected, the positioning of environmental health and security concerns under public health policy limits the efficacy of efforts to improve the national security posture and address the underlying environmental issues. To ensure the security and health of the nation from the aforementioned environmental threats, there needs to be a critical evaluation of how to address environmental health threats and consequences.

Short-, intermediate-, and long-term strategies need to be identified and then implemented at the local, state, federal, and international levels. A starting point for this could be a dialogue at the national level, in which federal agencies (e.g., DHS, HHS, and U.S. Environmental Protection Agency) and nongovernmental organizations (e.g., National Association of County and City Health Officials [NACCHO] and National Environmental Health Association [NEHA]) begin to consider the efficacy of the current approach to environmental health security in the United States.

## Promoting Discussion on a National Level

National conferences, meetings, and training events should be leveraged to begin this dialogue. NACCHO has taken a first step in this by making global health security the focus of the 2015 Preparedness Summit. The [call for abstracts](#) encourages submissions that address health security issues related to environmental conditions, such as climate change, and other threats – for example, cybersecurity, bioterrorism.

The discussion and strategies must consider all the impacts of environmental health drivers on society, not just those affecting public health. An EHS strategy should rest at the confluence of: environmental disaster prevention, mitigation, and response; domestic and global threat reduction; resource sustainability and scarcity concerns; critical infrastructure protection and adaptation; and environmental monitoring, regulation, policy, and workforce development.

A strategy should include coordination of the healthcare and public health, food and agriculture, water, energy, nuclear, and chemical sectors, which involve many interdependencies and necessitate public and private cooperation for continued availability of resources and services. Factors such as physical, chemical, and biological hazards that directly affect health and the nation's security should be incorporated. An EHS strategy also should prioritize “modifiable” environment-related factors realistically amenable to change using available [technologies, policies, and preventative practices](#).

Any change in national policy and practice involves a massive undertaking. [Factors](#) complicating the nation's ability to develop and execute an EHS strategy include domestic political agendas, competing public and private economic aspirations, societal and professional norms, and complex international relations. All of these issues serve to shape, and sometimes inhibit, policy- and practice-based responses to threats. The consideration and development of a National Environmental Health Security Strategy likely will take years to accomplish and to change how the nation approaches EHS, thus disrupting conventional practice and wisdom.

Disagreement is expected. Some may question the entire premise. Others may disagree over the approach to the revisioning process and what should be included in an EHS strategy. It may ultimately be determined that the United States does not need a separate EHS strategy, or political and professional incongruence may interfere with or prevent its development. Regardless, a dialogue – including hard questions and evaluation of current practices and policies – between public health, environmental health, and security professionals and agencies is needed. Asking questions and critically considering approaches to environmental health security are necessary for improving the nation's ability to prevent, mitigate, plan for, respond to, and recover from environmental health threats to the public.

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# The Complexities of Environmental Health Security

By Catherine Feinman, Editorial Remarks



When addressing “environmental health,” many agencies around the world cite the World Health Organization’s [definition](#), but this term still is not widely understood. With a growing interest in exploring security issues related to environmental health, public health and safety officials must be familiar with various aspects of this diverse topic. Environmental health security (EHS) involves sustaining a way of life, in the immediate and long term, and developing a capacity to control or avoid the environmental conditions and consequences that threaten it. Achieving this outcome is complicated and requires a concerted examination into current public and environmental policies and practices.

Responses from 78 DomPrep readers in an August 2014 flash poll related to a companion article, [Call for a Dedicated Environmental Health & Security Strategy](#), revealed a broad range of opinions on and mixed reactions to the complicated topic of EHS. The first question asked, “How would you define environmental health?” Some readers prefer a broad definition, some expressed an interest in narrowing the topic to avoid too much overlap with issues already addressed in public health and security models, and some do not see a need for it to be separated from current public health strategies.

One respondent stated that, “Environmental health is man’s first line of defense against disease agents and risk factors with potentially negative health and safety impacts.” The following definition of environmental health is a compilation of the poll responses received:

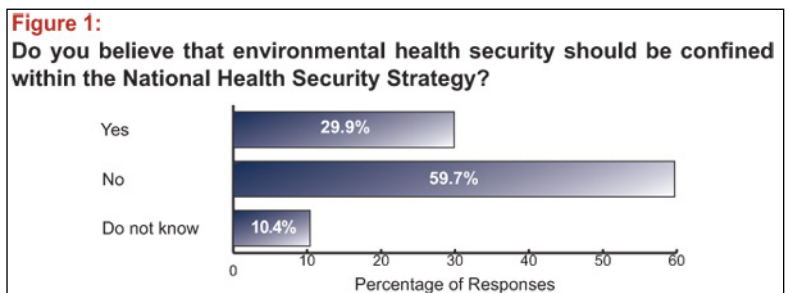
*Environmental health is the condition of the ecosystem, which is determined by integrating public health and environmental sciences to discover links between the environment – both natural and built – and human health in order to mitigate the long-term effects of air, water, land, and meteorological hazards as well as human activities on the ecosystem as a whole or in part.*

## A National Environmental Health Security Strategy

Separate national environmental health strategies exist or are being developed in some countries – for example, [United States](#), [Australia](#), and [United Arab Emirates](#), but these do not adequately address the short- and long-term EHS-related issues and largely envelopes environmental health as a component of the public health system. Many of the flash poll respondents (nearly 60 percent) agree that EHS in the United States should not be confined within the current [National Health Security Strategy](#) (Figure 1). However, it is important to note that at least one respondent in each of the three response groups stated that they agree that it should be “contained” in this strategy, but not “confined” to it.

Of those who answered “Yes” (almost 30 percent), the overlap and interconnectedness of environmental health and public health were the primary reasons provided. According to one respondent, “The two can’t be separated. An unhealthy population is more likely to become unstable and more of a threat than a strength.” Another respondent stated, “As it is now, it crosses into several of the ESFs [Emergency Support Functions] and needs to be better defined with clear responsibilities outlined, taking into consideration the considerable overlap and need for coordination and the ability to prioritize ‘modifiable’ environment-related factors realistically amenable to change using available technologies, policies, and preventative practices.”

Trust and ability to address and respond to these complex threats is another area of concern. Although



in agreement that it should be confined, one respondent does not “trust our current government for any honesty or truthfulness.” Because trust is difficult to build yet easy to lose, this concern can only be addressed through open dialogue and established relationships over time.

Of those who answered “No” (nearly 60 percent), many expressed the need for a multiagency – including public health, atmospheric/earth science, industry, public sector, and private sector – and/or multijurisdictional approach to be able to address the industry complexities and broad range of environmental health concerns at the local, state, and federal levels. These can be summed up in the following two responses: “The [existing] national framework can’t possibly cover them all”; and “If we value the environment enough to commit a strategy to protecting it, then it should stand on its own.” Another respondent pointed out the need to better educate the general population to know what to look for and how to provide valuable information to improve the detection process.

## Elements of a National Environmental Health Security Model

Environmental health is a fairly well explored and defined discipline. Yet, where the discipline fits into the broader context of national welfare and security needs further consideration. Before developing any new EHS model or strategy, it is important to review any documentation that already exists. For example, the U.S. Environmental Protection Agency (EPA) provides reference lists of [laws and executive orders](#) as well as [regulations](#), [compliance](#), [enforcement](#), and [guidance documents](#). These EPA references, the U.S. Geological Survey’s [Environmental Health Science Strategy](#), and other information provide a foundation for further advancement in the field of environmental health.

However, existing environmental health policies may not adequately address the security-related issues and a separate national EHS model should be considered. The respondents shared the following list of elements that should be included in a national EHS model:

- Coordination of the healthcare and public health, food and agriculture, water, energy, nuclear, and chemical sectors;
- Standards and regulations – including biological research and control; air and water quality; food and beverage imports; guidelines to develop, grow, stabilize, and maintain environmental health; solid waste management; building codes on the federal, state, and local levels;

## The Broad Topic of Environmental Health & Security

The Ebola outbreak, droughts, and the Elk River chemical spill are just a few of the environmental health concerns that have occurred in 2014. With many societal and cultural changes, such broad topics can be difficult to effectively address, but this podcast brings together subject matter experts to do just that.

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### Panel Members



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#### Craig Vanderwagen, M.D.

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- Vulnerabilities – including operations, systems, organizations, food and water supplies, wastewater systems, air quality, soil, crops and livestock, transportation, resource scarcity, and disease spread vs. mortality rates;
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- Surveillance, monitoring, and regular random sampling for security purposes of environmental components – including water, air, land, food, and transportation pathways – at regular and irregular intervals;
- Rapid response – including stabilization of the environment, minimal expansion of environmental catastrophes, disease control, decontamination, and removal of hazards from the environment; and
- Mitigation – including resilience building through education, training using the National Incident Management System and Incident Command System, comprehensive national land and water use plan, national public education program, climate-friendly national energy program emphasizing renewable energy, responsible environmental stewardship, and resource conservation and sustainability.

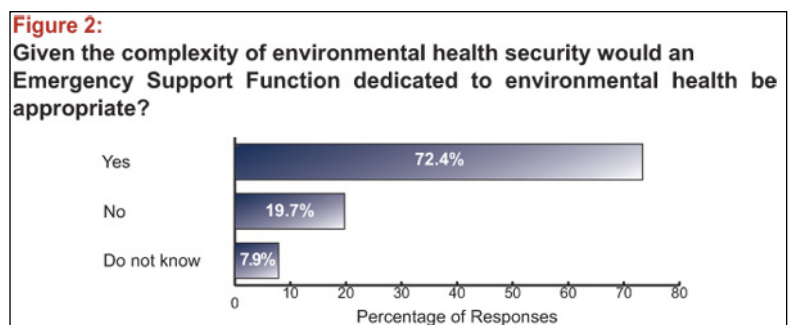
With so many threats to assess and monitor, it is important for authorities within each community to determine an “acceptable” level of risk, which may change over time, and to adjust their plans accordingly. The model should be scalable, beginning at the local level within each community and increasing to the national level, when incidents affect very large numbers of people or large geographical areas. The model also should consider environmental threat vulnerabilities of operations and systems necessary for food and water supply production and transportation, wastewater treatment, air and soil quality, and energy production.

## Emergency Support Functions & Environmental Health

The U.S. Department of Health and Human Services defines emergency support functions (ESFs) as “the grouping of governmental and certain private sector capabilities into an organizational structure to provide support, resources, program implementation, and services that are most likely needed to save lives, protect property and the environment, restore essential services and critical infrastructure, and help victims and communities return to normal following domestic incidents.” When asked if an ESF dedicated to environmental health would be appropriate, the majority of respondents (more than 72 percent) reported, “Yes” (Figure 2).

One respondent noted that public health and environmental health funding are often reduced when budgets are cut because of “the invisible nature of the impacts of the fields – disasters averted, illnesses prevented, and negative economic impacts prevented all go unrecognized.” Unfortunately, this puts additional burden on response agencies such as fire, law enforcement, and emergency medical services. As a large undertaking with various elements, environmental health could benefit from a separate ESF by focusing attention on, raising awareness of, and inspiring more thorough and timely effort toward the topic and possible resolutions. [Costa Rica](#) was suggested as a good example of a country that has one such program that already is effective and self-sufficient.

By collaborating with [environmental health specialists](#), already-established environmental health services in each state, emergency



preparedness, the [U.S. Public Health Service](#), and public health professionals at the local, state, national levels, new strategies can build on effective work of existing environmental health and safety programs. A new “environmental health” ESF may not be necessary but, according to one respondent, there needs to be “some way to manage contamination mitigation in a coordinated fashion.” After all, “a single event can be made exponentially worse if environmental health is ignored or not considered during the response.”

Approximately 20 percent of respondents reported that a separate ESF is not appropriate. One of these responses points to the response timeframe as a key factor in answering this question:

“Environmental health should be in the National Protection, Prevention, Mitigation, and Recovery Frameworks as we want to keep these natural systems functioning at all times and restore them as quickly as possible. The ESFs in the National Response Framework are there to ensure immediate and continuing provision of essential services during an emergency. As stated in the question, EHS is very complex and, I will add, time consuming to deal with. While EHS is very important to our society in the long term, emergencies are time dependent. The current ESFs include provisions for protecting people and the environment in the short-term.”

## Looking Ahead

Multidiscipline planning with an emphasis on EHS would help maintain a balance within the ecosystems by limiting factors that could have potentially devastating effects on human health, safety, and long-term welfare of the nation. According to one respondent, “When mankind designs infrastructure, it must take into account how it most likely will impact the natural balance of an ecosystem either negatively or positively. There must be a commonsense, in-depth analysis, and study over a long period of time on how a specific ecosystem may or may not be disrupted. The infrastructural design must allow the environment to accept the intrusion and be capable of responding positively.”

EHS is not just about responses to immediate incidents. EHS ultimately means sustaining a way of life by developing a capacity to control or avoid the environmental conditions and consequences that threaten it. Addressing immediate and long-term EHS issues will require strategic approaches, multidiscipline cooperation, and changes to policy and practice at all levels of government and industry. But, before that can occur, the long-term outcomes – such as the sufficient supply of food, energy, and water for the population – that contribute to overall and sustained welfare and security of the nation must be determined. With an understanding of the overall goals, jurisdictions can begin planning, resourcing, and undertaking the short-term objectives that cumulatively and strategically work to achieve the long-term outcomes.

This collection of DomPrep materials starts the process of understanding and defining environmental health security. However, this is just a beginning to a much longer process necessary to secure the nation from environmental threats and ensure the welfare of its people.

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*Catherine Feinman joined Team DomPrep in January 2010. As the editor, she works with writers and other contributors to build and create new content. With more than 25 years experience in publishing, she previously served as journal production manager for Bellwether Publishing Ltd. She also volunteers as an emergency medical technician, firefighter, secretary of the Citizen Corps Council of Anne Arundel County and City of Annapolis, and a Community Emergency Response Team (CERT) trainer.*

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# National Strategy for Biosecurity Threats

By Robert C. Hutchinson, Standards

Concerns over emerging pathogenic threats continue worldwide with the expanding Ebola outbreak and other public health threats such as Middle East Respiratory Syndrome and emerging novel influenza viruses. Such international threats quickly could become domestic in the global economy through international trade and travel.

However, preparedness continues to be required for emerging and possibly re-emerging domestic public health threats. Several recent domestic incidents involving dangerous pathogens in controlled environments demonstrate the potential threat moving closer to home. Whether preparing for a foreign or domestic biological hazard, a recent vital homeland security document – 2014 Quadrennial Homeland Security Review – provides strategic guidance and direction during the next four years for addressing public health concerns and pathogenic threats.

## Unexpected Biosecurity Incidents

While cleaning a government storage room in July 2014, National Institutes of Health employees located [vials that contained the smallpox virus](#). The vials subsequently were turned over to the Centers for Disease Control and Prevention (CDC) for testing and proper handling. This unexpected discovery challenged the commonly held understanding that the globally eradicated pathogen was well secured in only two high-security locations – one in the United States and one in Russia. Subsequent reporting indicated that [other unexpected pathogens](#) also were located with the smallpox virus in the storage room.

The CDC experienced its own incident in June 2014 when a [possible exposure](#) to live Bacillus anthracis (anthrax) occurred during its internal research operations. Reports found that anthrax samples distributed to other

research facilities were not properly deactivated before distribution to those locations – a violation of existing biosecurity and biosafety operating procedures.

Another disclosure in July 2014 by the CDC revealed that a relatively benign sample of the H9N2 influenza virus was [reportedly contaminated](#) with the more serious H5N1 influenza virus before transfer to another facility. The U.S. Department of Agriculture reportedly identified the error after receiving the sample in May 2014 and advised the CDC.

*“The recent high-containment laboratory incidents involved the same pathogens – smallpox and anthrax – identified in the 2014 QHSR. ... The naturally occurring plague in Colorado rounds out the specifically identified bioterrorism priority concerns.”*

These biosecurity incidents, along with previous ones, are relevant when considering the findings of a Government Accountability Office (GAO) report released in July 2014. The report on recent biosafety lapses at [high-containment laboratories](#) indicated that no federal agency is responsible for strategic planning and oversight of these essential research laboratories. The GAO report recognized the value of national standards and a government-wide strategy. A review of the related GAO products section for this report identified links to ten previous reports regarding this topic.

## Emerging Domestic Pathogens

Of course, the majority of emerging or unexpected domestic pathogenic incidents and threats have not been in controlled settings, but naturally occurring. The [pneumonic plague](#) re-emerged in Colorado in a man and his dog. At least [three additional people](#) became ill from the plague after having contact with the dog. Even though this deadly bacterium is rare in the United States, it requires close observation due to its striking history.

The [Heartland virus](#), a novel phlebovirus in the same genus as Rift Valley fever, emerged in Tennessee and

Missouri. Likely transmitted by lone star ticks, the virus has required hospitalization for most of the infected persons. As with the recently encountered pneumonic plague, the Heartland virus occurrences have been limited and well monitored by medical and public health officials.

Emerging pathogenic concerns are not limited to humans. The porcine epidemic diarrhea virus ([PEDv](#)) is estimated to have killed millions of pigs since its U.S. appearance in April 2013. Since PEDv has a nearly 100-percent mortality rate in young piglets, the possible zoonotic threat is a credible concern for those outside the agriculture environment.

## **Bioterrorism Concerns & Strategic Priorities**

Although research laboratory incidents involving smallpox, anthrax, and H5N1 influenza virus were controlled without documented expanded exposure, they provide another opportunity to assess the planning and preparedness levels for negative outcomes. Two of these pathogens – smallpox and anthrax – have long been considered for biological weapons and likely sought after by potential bioterrorists and unfriendly state or non-state actors.

Beyond bioterrorism or biological attack concerns, preparedness for such threats should include these vastly unanticipated domestic events. Such critical topics have been addressed in an updated national strategy document for homeland security planning and preparedness considerations.

In February 2010, the first-ever Quadrennial Homeland Security Review ([2010 QHSR](#)) was released pursuant to the Implementing Recommendations of the [9/11 Commission Act of 2007](#). The 2010 QHSR provides a broad vision of the strategic framework to guide homeland security activities to a common end. The report identifies biological weapons, pandemics, and disease outbreaks as threats viewed in conjunction with movement of people and goods across borders.

In June 2014, the 2014 Quadrennial Homeland Security Review ([2014 QHSR](#)) was released to provide updated national guidance and set priorities. According to the



Secretary of Homeland Security, the report provides a strong analytic and strategic foundation to ensure that the U.S. Department of Homeland Security invests and operates in a cohesive and unified fashion. The 2014 QHSR addresses biological threats and bioterrorism in several sections of this high-level national strategy. The 2014 QHSR possesses a more robust discussion of public health, biological, and bioterrorism threats than the 2010 QHSR report.

When assessing the strategic environment, according to the 2014 QHSR, “of the naturally occurring events, a devastating pandemic remains the highest homeland security risk.” In addition, the likelihood and consequences of an emerging novel infectious disease are expected to increase in the future – possibly spreading quickly around the world. The current Ebola virus outbreak clearly demonstrates the seriousness of naturally occurring events and the ability to spread to other nations, regions, and continents.

A strategic priority of the 2014 QHSR report is countering biological threats and hazards, ranging from bioterrorism to naturally occurring pandemics. These threats are identified as a top homeland security risk due to their potential to significantly impact the health and well-being of citizens and the ability to execute essential functions. Below are the four priority biological threats and hazards that pose a particularly high risk to the nation:

- Pathogens posing particular bioterrorism concerns – for example, anthrax, plague, and smallpox – including enhanced and advanced pathogens;
- Emerging infectious diseases that are highly disruptive – for example, viruses that could cause human pandemic;
- Animal diseases and plant pathogens or pests that are highly disruptive – for example, foot and mouth disease; and
- Bioterrorist contamination of the food supply chain and water systems.

According to the 2014 QHSR, these types of biological threats and hazards may evade early detection and spread quickly across regions, countries, and continents causing severe consequences – including mass illnesses, fatalities, and widespread disruption of the U.S. society and economy.

The 2014 QHSR strategy for managing biological risk is to “prevent the occurrence of priority biological incidents, where possible, but, when unable to prevent, to stop priority biological incidents from overwhelming the capacity of our state, local, tribal, and territorial partners to manage and respond.” This strategy emphasizes the importance of a whole of community planning and preparedness approach for the threats.

### Merger of Strategy & Threats

Interestingly, the recent high-containment laboratory incidents involved the same pathogens – smallpox and anthrax – identified in the 2014 QHSR priority above as posing particular concerns for bioterrorism. The naturally occurring plague in Colorado rounds out the specifically identified bioterrorism priority concerns. The list of pathogenic threats and concerns is obviously much broader than those discussed above. However, these recent events demonstrate the complexity of the public health threats and possibility of an unexpected emergence within domestic areas of responsibility.

None of this discussion has focused on the extremely serious threat of an intentional bioterrorism attack using any of the pathogens discussed so far. The impact of an intentional attack could be even greater due to the possible exposure in larger amounts and/or

in multiple locations. The nation’s ability to identify, contain, and mitigate the biological threat may not be sufficient for this potential Black Swan event.

Whether foreign or domestic, naturally occurring or accidentally released from a controlled environment, biosecurity and bioterrorism issues continue to be priorities for national homeland security planning and preparedness. However, local jurisdictions may not be operationally prepared for a no-notice biological incident, so it is critical to include these issues as part of their strategic plans.

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*The opinions expressed herein are solely those of the author in his individual capacity, and do not necessarily represent the views of his agency, department or the U.S. government.*

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# BioWatch – Challenges & Opportunities for Applied Research

By Rodrigo (Roddy) Moscoso, Law Enforcement



In April 2014, the Department of Homeland Security (DHS) canceled its procurement of the new “BioWatch Gen-3” (next generation) biosurveillance program originally approved for development by the DHS in 2009. Following the cancellation, the U.S. House of Representatives Subcommittee on Emergency Preparedness, Response, and Communications [held a hearing](#) on 10 June 2014 to identify “lessons learned” from the failed procurement. [Subcommittee Chairman Susan Brooks](#) (R-IN) stated that it was “not the first failed acquisition in the Department’s history.” A [June 2014 study](#) by the U.S. Government Accountability Office (GAO), which testified at the hearing, found significant problems with the procurement process for the Gen-3 system and identified several challenges facing DHS as it works to maintain its current system while planning for future enhancements.

## An Established Early Warning System

Charged with early detection of a biological attack in the United States, the BioWatch program has been operating using its current (Gen-2) technology platform for the past 10 years. Through the daily collection and analysis of air samples in a cooperative effort involving federal, state, and local agencies, BioWatch is designed to identify several biological pathogens – for example, anthrax – and serves as an early warning system to a potential biological attack in more than 30 cities, including Washington, D.C., and New York.

As a labor-intensive activity involving the manual collection of samples, the transportation of samples to nearby laboratories, and the requisite analysis itself, the current BioWatch system typically returns results within 12-36 hours. Due to the potential for rapidly spreading pathogens and subsequent person-to-person contact, DHS has been working to identify and implement new solutions that can significantly reduce the detection time and thereby mitigate large-scale exposure with various countermeasures, including emergency medical treatment, targeted vaccinations, and shelter-in-place orders.

During the past 10 years of operation, the current Gen-2 BioWatch solution has issued several “BioWatch

Actionable Results” following the detection of a specific pathogen in a collected sample. For example, in October 2003, the tularemia organism (*Francisella tularensis*) was identified from a BioWatch detector in Houston, Texas. Although later determined to be naturally occurring, and not a biological attack (“false positive”), the finding nonetheless demonstrated the effectiveness of the BioWatch monitoring technology itself.

## Reports on the Next Generation of Detection

In October 2009, DHS approved acquisition of a new BioWatch Gen-3 technology platform. The goal of Gen-3 was to automate the collection and analysis phase, thereby shortening the detection time to six hours and eliminating some manual labor costs currently incurred using Gen-2 technology. At that time, DHS’s Office of Health Affairs was overseeing BioWatch and suggested implementing new and automated “lab-in-a-box” solutions to achieve the performance objectives for Gen-3. However, concerns regarding an increasing estimated life-cycle budget for Gen-3, which increased from an initial DHS estimate of \$2.1 billion in 2009 to \$5.8 billion in 2011, coupled with questions regarding the acquisition process itself, led the House Homeland Security Committee to request that GAO conduct an assessment of the BioWatch Gen-3 acquisition.

In September 2012, the GAO issued its [first report](#) regarding Gen-3, finding that DHS had not fully followed its own acquisition process and, notably, that it had not performed an adequate analysis of alternatives (AOA) as required by the DHS Life-Cycle Framework for program development. In fact, at the completion of DHS’s “Phase 1” Gen-3 development effort, designed to assess the capability of market-available technology against its requirements for Gen-3, DHS conducted only limited field testing using a single vendor’s automated detection technology.

GAO also found that DHS’s Office of Health Affairs and its Science and Technology Directorate had each separately contracted with the Sandia National

Laboratory to conduct performance assessments of new Gen-3 autonomous detection technology. However, each office requested that Sandia use different metrics to assess technical performance – Office of Health Affairs supporting a metric of the “fraction of the population covered,” while Science and Technology Directorate preferred “probability of detection.” Although these metrics may be complimentary in terms of the overall analysis on the effectiveness of the new technology, GAO noted that this discrepancy could affect the ability of a chosen solution to meet the operational needs of the BioWatch program.

### **New Technologies – Cost vs. Effectiveness**

Following the 2012 GAO report, DHS commissioned the [Institute for Defense Analysis](#) to perform a new AOA study that included a more “exhaustive” market survey of new technologies, and which provided DHS with alternative methodologies to consider when pursuing future BioWatch technology acquisitions. In January 2014, GAO reviewed the results of the AOA and found that the Institute for Defense Analysis had properly followed DHS guidance resulting in a “more robust exploration of alternatives.” Although not intended to identify a specific solution or technology for the Gen-3 acquisition, the AOA focused on providing information that would assist DHS with considering the trade-offs between cost and effectiveness when investing in new technology. After reviewing the findings of the AOA and GAO’s updated recommendations, DHS canceled the Gen-3 acquisition, noting in the June 2014 GAO report that “the AOA did not confirm an overwhelming benefit to justify the cost” of the new system.

Despite the failure of the Gen-3 acquisition, BioWatch officials are nonetheless excited about the future of the program, and they are looking forward to exploiting new acquisition tools and research to modernize the “proven” Gen-2 system. BioWatch Program Manager Michael Walker, PhD, stated in a phone interview on 2 July 2014 that its future success “will be measured by

tapping into technologies that get us faster results that enable us to respond more efficiently when something is out of the ordinary.” Adding that their metric is “better, faster, cheaper,” Walker noted that there have been some misconceptions on the current (Gen-2) BioWatch solution, which some have incorrectly identified as “failures” that are, in fact, demonstrations of the effectiveness of the program, including the tularemia detection in Houston. He added that “timeliness and cost” are the main issues today, and that BioWatch remains a costly program to maintain.

Walker also discussed BioWatch’s support for “out-of-the-box” thinking for technical solutions. At the 10 June 2014 hearing, DHS testified that they were investigating the new use of federal “prize” authority for “engaging nontraditional” partners through a “biosurveillance grand challenge.” Walker added that they are “not ruling anything off the table,” including the use of data analytics to compliment BioWatch detection.

*“By casting a wider net and soliciting novel, incremental approaches on detection and response, DHS may be well on its way to improving BioWatch and implementing a ‘better, faster, cheaper’ solution”*

### **Big Data & Social Media Analytics**

Gregory Koblentz, deputy director of the Biodefense Graduate Program at George Mason University, stated in a phone interview on 27 June 2014 that “big data” and social media analytics can support biosurveillance efforts by identifying “hot spots” of symptoms occurring – for example, in tight geographic locations or identifying “unusual illnesses that are happening off-season” – and then engaging the health community to investigate. He added that the best data must be collected using a “bottoms-up” (localized) approach that can identify a small “blip” that warrants attention. Koblentz noted that engaging new partners and analyzing data – for example, from a local CVS pharmacy when there is a localized increase in Pepto Bismol sales – could serve as another type of “trigger” for detection.

In addition, Koblentz expressed a belief that localized training could greatly improve the timeliness of

detection once symptoms become apparent in the local population. He noted that most police officers and many doctors are not trained on what smallpox even looks like, and that training is relatively inexpensive to administer. Koblentz also stated that the convergence of public safety and public health data can be mutually beneficial to support biosurveillance efforts “by identifying what information each community has and how we can assist each other” during a potential biological event.

At BioWatch, Michael Walker remains focused on detection “before people get sick” in order to respond in a way that can prevent the spread of illness, not simply treat it once an outbreak is underway. However, Walker recognizes that BioWatch’s point system simply cannot sample everything and, “if a plume misses a detector, then we won’t see it.” He also recognizes additional opportunities to engage nontraditional partners, including the veterinary community. Walker suggested training veterinarians on what to look for in animals, as biological attacks will affect the local pet population.

On 16 June 2014, DHS Science and Technology Directorate’s Chemical and Biological Defense Division issued a [broad agency announcement](#) solicitation to improve its ability to “prevent, detect, respond to, and remediate from a chemical or biological incident, whether intentional or unintentional.” The \$50 million, 3.5-year solicitation is open to “all responsible sources” including business and academia as well as federal laboratories and research centers. By casting a wider net and soliciting novel, incremental approaches on detection and response, DHS may be well on its way to improving BioWatch and implementing a “better, faster, cheaper” solution – though the latter goal may continue to be elusive.

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## Georgia: Technologies & Disasters

*By Charley English, State Homeland News*



It is amazing how much technology has changed the way people stay informed about weather and natural disasters over the past 40 years. From National Oceanic and Atmospheric Administration (NOAA) weather radios to satellite imagery, it is a completely different world for emergency and safety professionals.

Staying on top of technology as it continues to evolve is crucial to emergency preparedness and, in Georgia, one form this technology has taken is the [Ready Georgia](#) mobile application. Created as part of the Georgia Emergency Management Agency/Homeland Security’s ([GEMA](#)) *Ready Georgia* campaign, the app was launched in 2011 as a tool to help residents get prepared.

### Technology – Then & Now

In 2011, GEMA recognized the massive growth in the smartphone market, and felt that creating a way to reach this growing channel was essential. Developed in partnership with the Georgia Department of Public Health, the *Ready Georgia* app became an award-winning resource that has served as a template for other state preparedness apps. It included a customizable preparedness plan, an emergency supplies checklist, a map of open Red Cross shelters,



information about how to prepare for specific types of disasters, and other features to help users get ready before emergencies occur.

Technology moves quickly and, in the few years since the initial launch of the app, smartphone adoption and usage has continued to expand rapidly. Today, according to a [February 2014 Nielson report](#), “over two-thirds (67%) of mobile subscribers in the U.S. [owned] smartphones in Q4 2013,” and they are becoming increasingly reliant on them. In one recent study conducted in May 2014 by [Bank of America](#), 47 percent of U.S. respondents admitted that they “couldn’t last more than one day without their smartphone.”

The importance of smartphones was apparent during the 28 January 2014 winter storm in Georgia. With thousands of drivers stuck in their cars on icy roads, smartphones and radios were the primary means of receiving information and updates.

This growing reliance on smartphones led Governor Nathan Deal and GEMA to reevaluate and expand the *Ready Georgia* mobile app’s capabilities to help users during emergencies, in addition to getting prepared beforehand. GEMA – in collaboration with experts from the National Weather Service (NWS), the Georgia Department of Transportation, Georgia Tech, and The Weather Channel – launched the redesigned mobile app on 23 June 2014 and already is seeing a lot of usage within the state.

### **Ready Georgia – New & Improved Features**

One of the primary goals of the upgraded app is to give state officials a better way to communicate information to residents through their smartphones. Improved emergency alert notifications are a major part of accomplishing this goal. The new app automatically sends notifications about severe weather alerts from the NWS to users in affected areas. To avoid

overloading users with these alerts, GEMA created a system that only sends notifications for the most severe types of storms.

In addition, the *Ready Georgia* app provides GEMA and other state agencies the ability to send custom notifications to users in specific counties. This enables a direct line of communication with Georgians if urgent information needs to be delivered about a natural or manmade emergency. Creating this direct line of communication between officials and residents moves emergency management into the digital era, meeting consumers’ expectations to receive vital information in a timely fashion via the smartphones in their pockets and purses.

Other new and improved elements include a traffic section to keep residents updated on real-time road conditions and an expanded shelters map. The new shelters map offers GEMA the ability to direct users to approved “good Samaritan” shelters, in addition to Red Cross shelters. GEMA officials are in the process of creating a substantial list of preapproved locations, such as fire stations and major retailers, which can be quickly added to the map in the event of an emergency.

Combined with substantial traditional media and social media outreach, the state of Georgia has never been more equipped to get the word out about emergencies. Staying on top of the technology curve is a challenge, but is necessary for emergency management professionals.

*“The growing reliance on smartphones led Governor Nathan Deal and GEMA to reevaluate and expand the Ready Georgia mobile app’s capabilities to help users during emergencies, in addition to getting prepared beforehand.”*

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*Charley English was sworn in by Governor Nathan Deal as GEMA’s homeland security director in January 2011 and currently serves as the president of the National Emergency Management Association. He oversees all state governmental actions designed to ensure mitigation and preparedness, appropriate response, and timely recovery from natural and manmade hazards that may affect the state of Georgia. He was a member of the G8 Summit security planning team and has coordinated the state’s response to nine presidentially declared disasters and numerous gubernatorial states of emergency.*

# Public Health Emergencies – Looking Toward the Future

By Audrey Mazurek & Raphael M. Barishansky, Public Health



Many victories for public health emergency preparedness programs at the federal, state, and local levels have occurred over the past decade. Those victories include but are not limited to leading efforts in: medical countermeasures dispensing; all-hazards preparedness training; implementation of the National Incident Management System within public health; procurement of new or improved communication systems; collaborative drills and exercises compliant with the Homeland Security Exercise and Evaluation Program; and a shift toward planning based on all-hazards capabilities.

More changes loom large in the future of public health emergency preparedness based on current trends in funding, workforce, and performance measures. A 7 January 2014 [white paper](#) released by the Institute of Medicine (IOM) Forum on Medical and Public Health Preparedness for Catastrophic Events, titled “Value-Based Models for Sustaining Emergency Preparedness Capacity and Capability in the United States,” provides seven recommendations to help serve as a roadmap to enhance the sustainability of preparedness efforts in the United States. These recommendations are based on performance measures, funding, and threat evolution.

## Measuring Public Health Performance

It is important, and will prove to be more so in the future, that public health emergency preparedness demonstrates the value of government and taxpayer investments by better preparing communities. Attempts at developing quantitative and qualitative measures to accurately capture the returns on investment of public health preparedness are ongoing.

Over the past few years, the Centers for Disease Control and Prevention (CDC) has used the Technical Assistance Review as its primary tool for annually evaluating medical countermeasure dispensing efforts through the Cities Readiness Initiative program for jurisdictions designated as metropolitan statistical areas (MSAs). There currently are 72 MSAs, with at least one Cities Readiness Initiative MSA in every state. However,

some states require all jurisdictions to participate in the Technical Assistance Review, even if they do not receive additional Cities Readiness Initiative funding – with the state, rather than the CDC, conducting site visits and the evaluation.

Another tool to qualitatively measure public health emergency preparedness programs against a standard set of criteria was the [Project Public Health Ready Program](#), administered by the National Association of County and City Health Officials (NACCHO) since 2003. This program evaluates a local health department’s capability in planning for a broad range of hazards and outcomes, workforce training, and exercises. It took into account capability beyond medical countermeasure planning and was the precursor to the CDC releasing its [Public Health Preparedness Capabilities](#) in 2011.

Since 2011, the public health emergency preparedness community has been waiting for an overhaul of the Technical Assistance Review to move from a medical countermeasure/strategic national stockpile focus to a more all-hazards, outcome-based approach. This shift has begun, with performance measures being a key focus in the most recent (Budget Period 3) CDC Public Health Emergency Preparedness cooperative agreement. Additionally, the Technical Assistance Review is evolving from the current version focused on medical countermeasures, to one that includes all public health preparedness capabilities.

Finally, in response to the lack of national standardized assessments of health emergency preparedness, the 2013 National Health Security Preparedness Index, according to the IOM white paper, “combines different preparedness criteria into one composite set of measures that can be used to determine relative health preparedness capabilities over time.” In addition, the Association of State and Territorial Health Officials claimed that the index “will provide benchmarks of health emergency preparedness and allow communities to track their preparedness levels over time.”

The IOM white paper included the following recommendations specific to development of measures:



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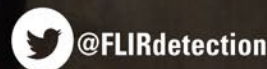
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- *Recommendation 1:* The federal government should develop measures of emergency preparedness both at the community level and nationally. A research agenda that would help guide this effort is proposed.
- *Recommendation 2:* Measures developed should be used to conduct a nationwide gap analysis of community preparedness.

## Funding & Financial Support

Fortunately, there have not been any recent major public health emergencies in the United States. Unfortunately, for public health, that means funding is slowly diminishing or, in the case of the hospital preparedness program, quickly being slashed. Various funding streams benefit public health preparedness efforts – for example, the Cities Readiness Initiative, Hospital Preparedness Program, and the CDC Public Health Emergency Preparedness cooperative agreement. These have fluctuated over the years and sometimes have been supplemented by short-term funding to address a specific health threat, such as the Public Health Emergency Response grant in response to H1N1 in 2009.

Federal funding is a core source of financial support for both state and local public health preparedness programs. Since 2002, the CDC Public Health Emergency Preparedness cooperative agreement alone has provided nearly [\\$9 billion](#) to public health departments across the nation. In an [August 2007 NACCHO report](#), 41 percent of state and local health departments that received the CDC's Public Health Emergency Preparedness cooperative agreement funding reported that these funds comprised 100 percent of their budget for preparedness activities (this includes dedicated emergency preparedness staffing). An additional 40 percent of respondents reported that federal funding made up at least three-quarters of their preparedness budget. A [2010 survey](#) conducted by NACCHO indicated that, 58 percent of local health departments rely exclusively on federal funding to carry out preparedness activities.

Additional funding that has benefited public health emergency preparedness has come from various other federal agencies – for example, U.S. Department of Homeland Security – or local funds. In the 2007

NACCHO report, 46 percent of the nation's local health departments reported receiving at least some financial support from local, city, or county funds. However, that percentage dropped to 29 percent in 2009, according to NACCHO, and continues to decrease.

According to the authors of the IOM white paper, “The major issue facing emergency preparedness and other traditionally government-funded services is that the infrastructure that has been built to ensure national preparedness is threatened by budget cuts and de-prioritization.” Public health emergency preparedness will continue to have unexpected and unstructured funding cuts unless there is a large-scale public health emergency that prompts additional funding. However, it is possible that funding could eventually be tied to performance measures and how well jurisdictions meet those measures.

The IOM white paper had the following recommendations specific to funding:

- *Recommendation 3:* Alternative ways of distributing funding should be considered to ensure that all communities can build and sustain local coalitions that can support sufficient infrastructure.
- *Recommendation 4:* When monies are released for specific projects, there should be clear metrics of grant effectiveness.
- *Recommendation 5:* There should be better coordination at the federal level, including funding and grant guidance.
- *Recommendation 6:* Local communities should build coalitions or use existing coalitions to build public-private partnerships with local hospitals and other businesses with a stake in preparedness.
- *Recommendation 7:* Communities should be encouraged to engage in creative ways to finance local preparedness efforts.

## Preparing for Evolving Threats

Much of the impetus for developing a more robust public health emergency preparedness system stemmed from the 2001 anthrax attacks (Amerithrax). Thirteen years later, there have been no similar large-scale



manmade biological attacks, but there have been significant emerging infectious disease threats such as SARS, H1N1 virus, Middle East respiratory syndrome coronavirus, and Ebola. Many more have affected other countries, and experts anticipate a rise in newly emerging and re-emerging infectious diseases with the rise in economic development and land use, changing ecosystems, climate change, and lack of adequate public health in many parts of the world.

Much of public health emergency preparedness efforts and funding was directed toward responding to manmade biological attacks. The return on investment may seem minimal for low-risk/low-probability events versus the high cost and resources spent on preparedness efforts. However, the partnerships established, lessons learned, technology developed, and infrastructure built as a direct result of those efforts can be and are being used to prepare for, respond to, and recover from naturally occurring disasters. Despite much talk about all-hazards planning, there is still a large amount of effort and resources spent on manmade biological attacks, rather than a true focus on all-hazards preparedness and response.

The future of public health emergency preparedness must be able to balance preparedness and response efforts between manmade and natural disasters. This can be done, in part, by focusing on outcomes-based, infrastructure-building efforts. For instance, the benefit of ensuring that communication systems are robust, current, and used is recognizable regardless of the emergency or threat. Additionally, medical surge capacity, surveillance and epidemiological investigation, mass care, non-pharmaceutical interventions, and public information and warnings are other areas that are critical in almost every incident with public health significance.

## Addressing Trends & Challenges

In addition to the aforementioned areas that will likely have a large effect on shaping what public health emergency preparedness looks like in the future, the following additional trends and challenges are important to note:

- Gradual shifting in efforts and resource considerations from preparedness to response and recovery;

- Decreasing workforce retention as the public health professionals that started with the preparedness programs in 2002-2003 retire, and new highly trained public health emergency preparedness personnel are difficult to recruit;
- Continuing effort to establish and carve out a niche/identity within public health and the traditional first responder community;
- Assessing and defining the value proposition for public health emergency preparedness;
- Finding sustainable approaches to fund preparedness efforts; and
- Conducting more cross-jurisdictional sharing of services (i.e., regionalization).

There are numerous areas – for example, mass fatality management, pandemic planning, and mass dispensing of antivirals secondary to a biological incident – where federal, state, and local public health emergency preparedness, response, recovery, and mitigation efforts have become much more robust since 2001. However, key questions remain about the outlook for public health emergency preparedness: Is there a future for public health emergency preparedness programs? Does the state of healthcare system readiness go away? Does the discipline of emergency management have the resources to take over, continue, and possibly even expand public health preparedness efforts and programs, or will public health preparedness remain a discrete discipline?

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# Mass Fatalities – Processing Human Remains

By Joseph Cahill, Health Systems



The unfortunate truth is – no matter how well prepared a jurisdiction is, no matter how well equipped and staffed, and no matter how good emergency plans are – bad things happen. Unlike most planning efforts, the goal of mass fatality planning is not to save lives, but rather to reunite decedents with their loved ones. These secondary victims are at the heart of such planning, which includes understanding the procedure for processing human remains – staging, decontamination, storage, examination, identification, and release – following a mass fatality incident.

## Staging Area & Morgue

Initially, first responders may take the remains to an on-site staging area to facilitate the other response activities as well as the medical examiner (ME)/coroner's recovery team activities. The staging area allows the recovery team to access remains in the cold zone rather than expose team members to hazards such as fires or hazardous materials spills. This procedure also helps avoid compromising any ongoing investigations.

Emergency planners should involve MEs/coroners in the pre-planning process so issues – for example, determining who is responsible for decontaminating human remains – can be resolved off-scene before the incident occurs. In addition, timing is important for two key reasons: (a) ME/coroner resources do not have to wait on-scene for lengthy forensics to be completed; and (b) investigators have ample time to perform their duties.

A formal morgue could hold the remains until the pathologist's examination, identification, and release to the legal claimant are complete. This facility(s) could be on-site or at the ME/coroner's office. Another option is a portable morgue system, which can be deployed to the scene by trailer. The capacity of the existing facility would dictate the need for an on-site versus off-site morgue. For instance, an office that has storage for 40 remains could not expand its operation to provide for 200+ remains from an incident such as a large aircraft collision.

*“Unlike most planning efforts, the goal of mass fatality planning is not to save lives, but rather to reunite decedents with their loved ones.”*

## Examination, Identification & Release

During the examination and identification phases of processing, ME/coroner staff must be able to access the remains in order to perform their tasks. Remains that are fragmented need to be examined and identified separately before being reunited with other fragments of the same decedent.

The process of identifying remains, in effect, is the act of making a connection between a living identity and its deceased remains, which involves documenting details from the remains and collecting information about the person during his or her life. Typically, staff

members will photograph, fingerprint, and dentally chart the remains. In addition, they may take a set of X-ray images. Through expert analysis, staff members then compare a record or image taken during the life of the decedent with the same type of record collected at the ME/coroner's office. The goal of this standard process is to have the materials available for identification without having to access the remains multiple times.

Once identified and fragments reunited, the remains can be released to the claimant. Determining who has the legal right to claim remains is based on jurisdictional statutes and practices, which should be under the direction of legal counsel. When bad things happen, it is important to have a framework in place for responders to understand the ME/coroner's responsibilities, provide accurate information to the public, and bring closure to the incident.

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*Joseph Cahill is the director of medicolegal investigations for the Massachusetts Office of the Chief Medical Examiner. He previously served as exercise and training coordinator for the Massachusetts Department of Public Health and as emergency planner in the Westchester County (N.Y.) Office of Emergency Management. He also served for five years as citywide advanced life support (ALS) coordinator for the FDNY – Bureau of EMS. Before that, he was the department's Division 6 ALS coordinator, covering the South Bronx and Harlem. He also served on the faculty of the Westchester County Community College's paramedic program and has been a frequent guest lecturer for the U.S. Secret Service, the FDNY EMS Academy, and Montefiore Hospital.*

# Incident Response for Nursing & Assisted Living Homes

By Steven Maynard, Private Sector



Residents of nursing and assisted living homes are subject to many risks, including fires. Residents tend to be more physically and cognitively impaired, which puts them at a higher risk for death than the general population. Moreover, nursing and assisted living homes have long been recognized as a fire safety challenge. For example, on 23 January 2014, a [devastating fire](#) in L'Isle-Verte, Quebec, Canada, at the Résidence du Havre nursing home left 32 people dead and 15 others injured.

Many of the victims used wheelchairs and walkers and could not quickly exit the building, nor could the one overnight employee assist all the residents before the arrival of emergency services. Local officials said rescuers were unable to carry out a complete evacuation because of the intensity of the fire, which officials suspected was caused by a cigarette. This is just one example of many incidents that could be lessened or avoided if nursing and assisted living homes were to adopt the Hospital Incident Command System ([HICS](#)) and the National Incident Management System ([NIMS](#)).

## Expanding the Reach Of Incident Command

HICS and NIMS are both flexible systems and can be incorporated into any sector. HICS is an emergency management program that nursing and assisted living homes can employ to improve their preparedness and fulfill one of the NIMS readiness objectives. Based on the Incident Command System, HICS is a standardized, all-hazard incident management tool that enables nursing and assisted living homes to organize and manage resources, staff, and facilities to remain operational during an emergency and foster recovery.

NIMS is designed to provide a framework for interoperability and compatibility among members of the response community, which includes nursing and assisted living homes. The result is a flexible framework that facilitates working together at all levels during phases of an incident – regardless of its location, size, or complexity.

## The Emergency Manager's Role

Local emergency managers may be able to promote buy-in by providing valuable information explaining why HICS and NIMS benefit both the employees and the residents of nursing and assisted living homes. This open dialogue should clarify the steps within the process and relate this process to the staff's current daily routines. When new ideas seem “big and scary,” the result is often failure to have buy-in from all stakeholders.

Success and sustainability can only be achieved when everyone at every level experiences the concepts and principles within the context of their everyday lives, especially when it comes to nursing and assisted living homes. Personnel at these homes may not initially recognize that they already understand and employ many of the principles and concepts, such as existing organizational charts. Subsequently, emergency management personnel can show them how the rest of the HICS and NIMS fit into their existing models and business practice.

*“On 23 January 2014, a devastating fire in L'Isle-Verte, Quebec, Canada, at the Résidence du Havre nursing home left 32 people dead and 15 others injured.”*

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*Steven Maynard is an emergency management associate with the City of Fairfax, Virginia, Office of Emergency Management, where he creates, writes, and updates emergency planning documents and courses to mitigate, prepare for, respond to, and recover from emergencies. He also volunteers his time as disaster response leader with American Red Cross, as a training coordinator with local Community Emergency Response Team (CERT), and as a volunteer emergency planner with local nursing and assisted living communities. He writes on emergency management, domestic preparedness, and healthcare planning. He holds a BS in public administration and masters in homeland security.*

# New York: Public Health Implications of the “Soda Ban” Ruling

By Andrew Geltman, State Homeland News



For more than 200 years, the New York City Board of Health has held the responsibility of [protecting public health](#). The board has tackled a wide range of issues – from sanitation to quarantine and isolation. The board derives its authority from the [State of New York Health Code](#), which grants it the authority to “add to and alter, amend or repeal any part of the health code.” Thereby, similar to many other administrative agencies, the board has broad authority to pass regulations that have the effect of law.

## Personal vs. Public Health

In recent years, the board has increasingly focused on regulating the personal consumption habits of residents. For example, the board has passed comprehensive [smoking bans](#) that include the barring of smoking in public places. In an attempt to curb the [obesity epidemic](#), at the behest of then-Mayor Michael Bloomberg in 2012, the New York City’s

Board of Health enacted the “Sugary Drinks Portion Cap Rule,” more popularly known as the “soda ban.”

Many characterize the ban as a “nanny state” regulation and an unfair intrusion into the personal consumption habits of citizens. On 26 June 2014, the New York Court of Appeals agreed and [struck down](#) the soda ban. Although that ruling may curb innovative forms of regulation in New York, it is unlikely to have a major effect on the core public health powers of the board.

Despite ever-increasing [food portions](#) and [drink sizes](#), as well as increasingly sedentary lifestyles, the court struck down the soda ban. In a press conference on 11 March 2013, Bloomberg [described the ban](#) as a moderate disincentive to consumers for excessive consumption of sugary drinks and an important public health tool to fight obesity. The court’s decision is significant not only because it overturned a widely unpopular regulation, according to a [2012 New York Times poll](#), but because of the following [legal reasoning](#) behind the decision:

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- The board acted “beyond its regulatory authority” and intruded upon the legislative powers of the City Council of New York; and
- The Portion Cap Rule represents “value judgments [that] entailed difficult and complex choices between broad policy goals – choices reserved to the legislative branch.”

The court does not say that New York City cannot create these types of “[nanny state](#)” regulations but, if it wants to do so, it must be done through the legislative process.

### Legal Doctrine & The Future of Innovation

In [Jacobson v. Massachusetts](#), the U.S. Supreme Court ruled that states have broad public health powers. However, the New York Court of Appeals took the interesting step of limiting this authority under the state’s concepts of the separation of powers. The court based its ruling on the structure of New York government and the state’s uniquely strong [nondelegation doctrine](#) – the legal concept that the legislature is the only branch that has the authority to create laws. As a result, when an administrative agency is acting, it cannot overstep its legislatively granted authority and “create law.”

Under this concept, the court stated that the New York Legislature and the City Council never properly delegated the authority to regulate the portion sizes of cups to the board. Thereby, the board acted without authority and intruded on both the separation of powers and the domain of the legislative branch. However, the nondelegation doctrine carries little weight in other jurisdictions. The unique legal reasoning behind the opinion makes it unlikely that other courts in other states will make the same decisions as the New York Court of Appeals. As a result, the ruling probably will not affect the strength of public health authorities in other states.

*“The court based its ruling on the structure of New York government and the state’s uniquely strong nondelegation doctrine.... As a result, when an administrative agency is acting, it cannot overstep its legislatively granted authority and ‘create law’.”*

Even though the legal reasoning behind the decision is unlikely to gain favor in other jurisdictions and to weaken public health authorities nationwide, the decision may negatively influence the nation’s public health. New York City’s public health efforts often have been [innovative](#). As [Richard Briffault](#), a law professor at Columbia University, articulated in a *New York Times* article on 26 June 2014, the court’s decision could stymie “the ability of administrative agencies to engage in innovative forms of regulation.” The court limits innovative forms of regulation by restricting the board’s authority to what it perceives as traditional public health functions – for example, the control of infectious diseases and sanitation. The loss in innovative regulations may cause the nation to lose an important public policy laboratory.

Although this ruling may hinder innovation, it does not eviscerate the board’s primary purpose in disease control. The narrow interpretation still maintains the board’s essential functions as a guardian of public health because it still has broad discretionary authority over “the reporting and control of chronic and communicable diseases.” The court acknowledges that the board has broad discretionary authority in dealing with the control of traditional threats to public health. As a result, the court maintains the board’s authority to act in the event of a public health crisis caused by novel influenza, bioterrorism, or other diseases.

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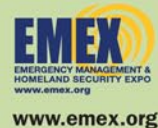
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