International CBRNe Response:

Identifying Challenges to Delivering Capabilities in the Asia-Pacific

Conference Report

April 14, 2014

BANYAN ANALYTICS
An ANSER Institute

Informing Decisions that Shape the Nation's Role in the Asia-Pacific

Banyan Analytics is an institute focused on the Asia-Pacific region. The institute uses analysis to inform decisions that shape the Nation's role in the Asia-Pacific, aiding the U.S. government with the implementation of programs and initiatives involved in regional engagement efforts. The institute is a valuable partner to government offices and other organizations that operate in the Asia-Pacific, leveraging over five decades of ANSER experience supporting the U.S. government with objective research and analysis in addressing challenges that are inherent in coordinating and executing complex initiatives.

The research described in this report was produced by Banyan Analytics, and results from the investment of Analytic Services Inc. in research related to Informing Decisions that Shape the Nation's Future.

Contents

I. Background

The U.S. Government, along with nongovernmental and private-sector organizations, provides, on a fairly regular basis, assistance to foreign nations stricken by disasters. Responses span a variety of scenarios, from small- to large-scale disasters and including natural disasters, man-made incidents, and armed conflicts. The core U.S. stakeholders in this mission include the Department of State, the Agency for International Development (USAID), the Office of U.S. Foreign Disaster Assistance (OFDA), the National Security Staff, and the regional bureaus, offices, and embassy teams. While procedures are in place to address small- to medium-scale disasters, fewer established protocols are in place to respond adequately and efficiently to complex, large-scale disasters. These events may involve robust interagency participation, including agencies and organizations unaccustomed to foreign disaster response.

Foreign disasters with chemical, biological, radiological, nuclear, or high-yield explosive (CBRNe) elements may not occur very often, but when they do, they have significant global implications. Besides adding layers of complexity to disaster response, these disasters complicate the long-term response potential by exposing fundamental weaknesses in the core U.S. stakeholders' ability to fully mitigate CBRNe hazards in foreign countries. The Asia-Pacific, a region that includes many of the United States' friends and allies, bears the brunt of a majority of the world's natural disasters with the greatest number of fatalities. The largest and most complex disaster in recent memory was the March 2011 earthquake-tsunami and subsequent nuclear disaster in Japan.

Banyan Analytics, a research and analysis institute of Analytic Services Inc. focused on the Asia-Pacific, recently examined the current approach of the U.S. Government to foreign disaster preparedness and response. In its published case study, *The 2011 Earthquake, Tsunami, and Nuclear Accident in Japan: Coordinating the U.S. Government Response*, Banyan Analytics identified three areas of opportunity for future U.S. Government response to foreign disasters: adapting existing coordination mechanisms to meet international response needs; coordinating technical expertise and resources to address the radiological hazard; and managing funding authorities and constraints to meet resourcing challenges.

Currently, most of the thinking about potential foreign disasters with CBRNe attributes rightly focuses on emergency response and the impact of CBRNe elements on the country as a whole. However, populations remain vulnerable to the lingering impacts of a disaster, especially the cascading effects of an incident. This is especially true in CBRNe-related disasters, whether natural or man-made, or in the case where a terrorism-related incident unleashes weaponized nuclear, biological, radiological, or chemical materials. Moreover, examining a full array of contingencies in these cases reveals that most developing countries in the Asia-Pacific region are ill-prepared for a complex, CBRNe-related disaster. Understanding the regional capabilities along with the requirements for successful remediation will aid the U.S. Government in preparing for the next nuclear-related incident. In addition, looking at the toxic environmental impact of natural disasters in Southeast Asia will provide insight into long-term planning for future disasters in that region.

On April 14, 2014, Banyan Analytics held an on-the-record conference in Washington, D.C., exploring challenges to delivering U.S. Government response capabilities to CBRNe incidents in the Asia-Pacific. The conference featured a variety of speakers from the public and private sectors, and the agenda was designed to address planning considerations for future CBRNe disasters in the region by distilling lessons learned from select historical cases and discussing obstacles to and considerations for CBRNe response.

The program kicked off with a keynote address on lessons learned from the Fukushima Daiichi nuclear accident by Charles "Chuck" Casto, doctor of business administration, former Regional Administrator for the Nuclear Regulatory Commission, and former Director of Site Operations in Japan after the Fukushima Daiichi accident. Dr. Casto then joined a panel discussion of foreign perspectives on lessons learned from Fukushima, Bhopal, and USAID/OFDA regional engagement. Dr. Casto spoke further on Fukushima while Professor N. Vinod Chandra Menon, former founding member of the Government of India's National Disaster Management Authority, discussed lessons learned from India's Bhopal chemical tragedy. The panel was enriched by comments from two representatives from OFDA: Deputy Director Carol Chan discussed OFDA's disaster response capabilities, and Mr. William Berger, Principal Regional Advisor for Asia, spoke of his experience as leader of the Disaster Assistance Response Team during Japan's triple disaster.

The second panel explored obstacles to and considerations for regional CBRNe response. Katherine Uraneck, M.D., Health Care Preparedness Specialist and Elin Gursky, D.Sc., former Senior Advisor for the Office of the Assistant Secretary for Preparedness and Response at the Department of Health and Human Services, gave presentations covering chemical and biological threats, public health, proliferation, and other topics. Another panel discussion fefaturing Eric Daxon, Ph.D., Certified Health Physicist, of the Battelle Memorial Institute, and Timothy Frazier, former Acting Director of the Policy Office in the Office of Nuclear Energy at the U.S. Department of Energy, provided an industry perspectives on workforce management during remediation efforts. The final panel of the day addressed Department of Defense perspectives on future CBRNe events in the Asia-Pacific and featured Colonel Peter Ahern, former Chemical-Biological Incident Response Force Commander of II Marine Expeditionary Force; James Schear, Ph.D., former Deputy Assistant Secretary of Defense for Partnership Strategy and Stability Operations; and Richard Love, Esq., Senior Research Fellow at the Center for the Study of Weapons of Mass Destruction, National Defense University.

II. Key Findings

The Asia-Pacific faces high potential for future complex, CBRNe disasters.

In light of the U.S. foreign policy rebalance towards Asia, U.S. decision-makers have begun to more closely examine the challenges they face in the region. Asia records about 60 percent of the annual global disasters and about 75 percent of the global casualties caused by disasters. In addition to its propensity for natural disasters, Asia has experienced a rapid increase in industrialization that not only introduces the potential for industrial accidents, but also increases the likelihood for environmental pollution. Asia has just over 19 percent of global chemical sales, and as of 2012 China led the chemical industry in sales. As the region continues to grow industrially and economically, so do its energy demands, and as of April 2014 Asia had 119 operable nuclear power reactors, 49 under construction, and another 100 proposed. China alone is projected to have 71 nuclear reactors by 2020. As the number of nuclear reactors increases, so does the probability of an accident resulting from a man-made cause or a natural disaster. The Asia-Pacific also faces the significant threat of terrorism-related incidents unleashing weaponized chemical, biological, radiological and nuclear agents (e.g., sarin gas attack on the Tokyo subway by the Aum Shinrikyo cult in 1995).

These CBRNe threats lead many to believe that it is not a question of if another incident will occur, but when. There has already been a notable increase in the magnitude and severity of natural disasters over the last decade due to the effects of climate change, population growth, and industrialization. The response to Japan's triple disaster highlighted the fact that even wealthy, well-prepared nations are likely to encounter unanticipated challenges when responding to a catastrophic disaster with CBRNe elements. Though most countries in the Asia-Pacific have national authorities for emergency preparedness and response, their focus tends to be on natural disasters, with little consideration of man-made or technological disasters such as CBRNe incidents. With these shortfalls in mind, panelists at the conference discussed how to better prepare for and respond to future events by examining historical events and current capabilities.

Varied standards exist in regard to CBRNe hazards.

One panelist noted that the accident in Bhopal, India, showed how inadequate safety requirements and provisions, cutbacks in preventative maintenance, and lack of trained staff can set the stage for disaster. The Union Carbide factory in Bhopal had a history of small accidents prior to the major industrial accident on December 2, 1984. The factory lacked redundant safety procedures and many of its safety systems were either shut down or nonfunctional. On-site personnel had been reduced in a cost-cutting measure, and safety training had been reduced from six months to only 15 days. The potential for disaster was high, the capacity to respond was low, and the factory's location next to a residential area made it dangerous to the local population.

The region should aim to make emergency preparedness systems resilient and reduce the likelihood of future incidents. Industry representatives noted that the radiological controls used in some countries would not pass the standards in the United States. Standardizing operating regulations on an international level for industrial sites that handle hazardous chemicals or nuclear materials could improve best practices for safety and maintenance in all countries. The Bhopal incident led India to enact a number of laws and regulations, set up ministries, and ensure environmental protection and regulation of industrial chemicals. Better guidelines should also be available for responder safety to ensure that the health risks are clearly understood and mitigated in a CBRNe environment. While some countries have made strides in policy, levels of regulation and enforcement vary within the Asia-Pacific.

In a CBRNe environment, responders may have to operate with incomplete information.

As the Bhopal gas leak case exemplifies, misinformation can also have devastating consequences. When the first victims arrived at local hospitals, a Union Carbide India Limited medical officer told local hospitals that the gas was not deadly, but was merely an irritant. Even as the incident progressed, there was continued confusion about the poisonous gas and how to treat it. Cyanide poisoning was suspected, and many victims responded to sodium thiosulfate antidote, a therapy for cyanide poisoning, yet doctors could not explain the source of the poisoning, and the possible chemical composition of the cloud was never released by Union Carbide.

When responding to a CBRNe incident, understanding the ground truth is critical, but often the level of information expected is not what is available. Even with plans in place to conduct assessments during Fukushima, the assessment teams were not deployed and leadership had to operate without the information those teams would have provided. The realm of international response adds layers of complexity, since incoming responders from other nations might not have the knowledge of the local terrain or the language skills necessary to understand the situation and the risks. At the policy level, decision-makers must have accurate and relevant information readily available in a crisis. The information must relate to the risk, to identify how the situation is evolving on the ground and what that means in terms of the response. Providing training in responding to CBRNe incidents prior to an event can help mitigate some of these challenges.

Effective public messaging is critical to saving lives and building confidence following a CBRNe incident.

When the gas leak occurred in Bhopal, there was mass panic as people tried to evacuate the city. One panelist noted that a simple message from the government to the public could have saved thousands of lives—for instance, a message instructing people to place a handkerchief over their nose and mouth when trying to leave the gas cloud. Prior to the incident, the public was uninformed and unprepared, and there was little messaging after the incident occurred.

The lack of information created panic, fear, and confusion. In the case of the Fukushima disaster, the Japanese government provided numbers on radiation levels without any context, assuming the media and the public would understand what they meant. The Japanese government considered the people literate enough about radiation and the associated risks, so it felt that further context was unnecessary. Poor messaging – or in some areas lack of any messaging at all – targeting domestic first responders (e.g., fact sheets addressing radiological hazards) resulted in high levels of absenteeism among hospital staff, negatively affecting the quality of the response.

Providing timely and accurate information to populations impacted by a CBRNe incident is critical to response. Host-nation governments have a responsibility to provide information to their citizens so that the citizens understand the response measures their government is taking and can protect themselves. Because accurate information and effective messaging by the government help to instill trust in authorities during a crisis, the U.S. Government identified public messaging as an area where expertise could be provided during the response to Fukushima. Indeed, some Japanese citizens did not trust the information provided by the Government of Japan on the threat from the Fukushima incident. One recommendation provided by the United States was for the Japanese government to install local radiation monitors and for citizens to be trained to use them. This would have enabled citizens could get information on their own. These sorts of public outreach programs can help the public feel more comfortable with the information they are provided.

Few means exist for sharing best practices in the international community.

A current gap in international response, and particularly in the CBRNe field, is that best practices are not adequately shared internationaly (i.e., technical communities do not share their techniques and approaches). This gap was visible in the response to the Fukushima incident. There was no sharing of contaminant data in Fukushima, and various plume models circulated. Panelists suggested that establishing a means to share best practices could help resolve some terminology differences and improve data sharing in future events.

Some small-scale bilateral efforts for sharing best practices and lessons learned have been pursued to help mutually improve response systems for the United States and partner nations. Since 1999, the United States has been working with Japan to determine how the two nations can coordinate to respond to disasters in other countries. The National Guard State Partnership Program also provides an opportunity for the states, through their National Guards, to collaborate with partner nations around the world.

The resource request process poses coordination challenges in international response.

Identifying needs is an important step in providing support during disaster response. For Fukushima, USAID developed a phasing strategy that set the framework for understanding the resources that would be needed as the incident evolved. The requests for this support were collected and validated through the Hosono process (i.e., daily intergovernmental conferences to exchange information). Further coordination was required, however, at a technical level to ensure there was a clear understanding of the exact requirements. OFDA then identified which U.S. agency could fill that request and coordinated with other donors to ensure there was no duplication of effort. For the use of DoD forces, Title 10 language states that assistance is supplementary and cannot be duplicative, so there must be a means to ensure that the support provided is a gap that cannot be filled by others. There was no method to conduct this process prior to the disaster, so one had to be established at the time. Establishing a standardized, rigorous system

that focuses on information sharing and coordination of resources would be useful in future CBRNe responses.

Domestic CBRNe assets can provide capabilities and expertise needed for international response.

During the response to the Fukushima incident, parts of the U.S. Marine Corps Chemical-Biological Incident Response Force (CBIRF) and the Joint Task Force Civil Support deployed to Japan to support both U.S. and Japanese needs. The CBIRF's mission is to forward deploy and/or respond to credible threats of chemical, biological, radiological, nuclear or high-yield explosive incidents in order to assist local, state, or federal agencies and their designated combatant commands in the conduct of consequence management. It is the only response unit that can conduct both technical rescue and advanced medical treatment over time in a contaminated environment. While deployed in Japan the CBIRF team provided planning assistance, conducted joint training, and exchanged techniques and procedures with Japanese forces. The CBIRF was also prepared to help support decontamination of American citizens if necessary. The deployment of the CBIRF, a domestic CBRNe asset, to Japan has raised the question of what role the domestic CBRN Response Enterprise could play in future international response operations. In addition to the CBIRF, the domestic CBRN Response Enterprise is composed of a number of National Guard units and active duty forces.

The current funding mechanisms for international response are not sufficient for CBRNe incidents.

A framework for U.S. response to international incidents would also need to address funding. In domestic response, the Stafford Act provides the means for Federal support when an incident occurs in the United States. However, the Overseas Humanitarian, Disaster, and Civic Aid accounts that fund DoD response to international incidents are limited to humanitarian assistance. This causes great concern in a CBRNe incident where the threat of contamination cannot be addressed through humanitarian assistance. Consequence management is expensive, but currently there is no funding stream to support CBRNe response. This issue arose in the response to the Fukushima disaster, when Japan did not require humanitarian assistance, but instead needed technical expertise. Under current mechanisms the DoD is prohibited from funding development initiative (to include infrastructure improvement projects). Thus, while DoD authorities can be used to earmark funds for reconstruction in disaster-stricken areas, they are prohibitively restrictive and can not be used to improve resilience. Some panelists suggested that an international equivalent of the Stafford Act could provide a systemic means of delivering non-humanitarian support to other nations.

The United States faces challenges protecting and supporting U.S. citizens and assets abroad.

The U.S. Government is responsible for protecting its citizens and assets in disaster stricken nation. However, differences between how the United States and other countries respond can be barriers to these efforts. In the Fukushima case, the United States provided its citizens living in the impacted areas with an evacuation plan, while Japan issued different evacuation guidance. The discrepancies between the two plans ultimately undermined the credibility of the Japanese government and the validity of its recommendations.

Another challenge highlighted by the Fukushima response was the need to evacuate Americans on a large scale. In Japan, the United States has a large presence, including several military bases and other infrastructure. These assets aided the State Department and DoD in coordinating large-scale evacuations, but there are no clear processes to guide these types of efforts. Large-scale evacuations would be far more challenging in a country where the

United States has a smaller footprint due to the lack of infrastructure and assets.

The U.S. Government must also consider how to protect its staff when supporting international CBRNe response operations. While some CBRNe hazards are short-lived, some have lingering effects. In these situations, responders must face these hazards while providing relief and support to affected populations. Though many U.S. agencies and nongovernmental organizations (NGOs) will not enter contaminated areas, the proximity needed to conduct effective humanitarian operations may require the provision of hazard-specific precautions. OFDA, for example, provides personal protective equipment and CBRNe training to its staff and partner organizations.

Public-private partnerships offer a valuable resource for CBRNe response overseas.

The private sector can offer assistance with many aspects of CBRNe response and remediation. Public-private partnerships should be encouraged between our partner nations and the private-sector entities that do business in those countries. These relationships can be particularly important in CBRNe incidents where the impacted facility is owned by a commercial enterprise, such as Tokyo Electric Power Company's Fukushima power stations or British Petroleum's Deepwater Horizon oil rig. The situation becomes more complicated when the U.S. Government interacts with an international company. Better planning and coordination are required to ensure that the public and private sectors, as well as NGOs, can work together effectively during response operations.

The private sector can play a major role in remediation, during which hazardous materials must be cleaned up and disposed of without affecting the groundwater or atmosphere. The United States is a leader in cleaning up nuclear sites and has a large nuclear industry base that conducts cleanup operations. The U.S. nuclear industry has tried to make this expertise available to partner nations; however, there has been pushback from and issues of coordination with these countries. In Japan, there were no clear roles or responsibilities for the interactions of U.S. private-sector entities, the U.S. Government, the Japanese Government, and the Tokyo Electric Power Company. A key issue that must be resolved for both private-sector and NGO involvement is the issue of liability. There are no practical limits on what liability might be, and while there is an international framework to handle liability and claims for nuclear incidents, not all countries are signatories. The use of this agreement and expansion of similar agreements in the chemical or radiological areas could help pave the way for private-sector involvement in international response and remediation.

There is a corporate responsibility that must be met for creating public awareness of risks from industrial sites and emergency response procedures should an accident occur. Shifts in the corporate mindset related to this responsibility can be seen by comparing the response of Union Carbide following the Bhopal gas leak and that of British Petroleum following the Deepwater Horizon oil spill. Following the Bhopal incident, Union Carbide placed much of the blame for the ineffective response on the Indian government. On the other hand, when the Deepwater Horizon oil spill occurred in the Gulf of Mexico, British Petroleum was up-front about accepting responsibility and fulfilling its obligation to contain and clean up the spill.

Displaced populations pose a public health challenge.

CBRNe incidents add a layer of complexity to response efforts due to the presence and potential spread of contaminants. As populations move, the potential for contaminants to spread and even reach U.S. shores poses a threat. At the start of the response, it is difficult to determine the risk posed to displaced populations. Radiological and nuclear incidents, in particular, pose the significant challenge of sheltering displaced populations. The evacuation of the areas around the Fukushima Daiichi and Fukushima Daini

plants resulted in 270,000 evacuees in addition to the 170,000 displaced by the earthquake and tsunami. In addition to shelter, all 270,000 individuals needed screening for radioactive contamination. Japan proved to have a robust and effective system for shelters, but the shelters were subject to the consequences of congregate living—for example, deaths due to hypothermia or preexisting conditions that received inadequate care. The most vulnerable populations must be considered when planning and conducting evacuations. Since shelter following a radiation incident can be a long-term need, this process must be planned carefully and exercised.

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III. Recommendations

Develop an interagency all-hazards framework to coordinate U.S. activities while responding to foreign disasters.

A whole-of-government response supported by a coordinated Federal interagency is needed to provide effective U.S. support in a catastrophic event, particularly one with CBRNe elements. For CBRNe incidents, agencies with specialized capabilities and technical expertise may need to be involved, but many of these agencies do not have experience or a normal role in response to international crises. Panelists identified the need for a framework that outlines how the U.S. Government coordinates resources internally and also how it interacts with an impacted nation during response operations. Panelists suggested that the U.S. Government needs to have a clear framework for international response that mirrors the domestic system. Roles and responsibilities, as well as authorities, must be clearly defined so that responding agencies understand how coordination is conducted.

The internal coordination of Federal agencies in response to large-scale disasters overseas has been a challenge in the past. Following the response operations in Haiti and Japan, Federal agency stakeholders identified the need for better communications and information sharing among the interagency. OFDA has begun some initiatives to improve this coordination through the institution of a quarterly forum where U.S. Government decision-makers may discuss issues related to international response. OFDA also developed a searchable database so agencies can identify relevant authorities, capabilities, legal agreements, and policies for international disaster and humanitarian assistance. When a disaster occurs, OFDA also initiates interagency calls that provide an opportunity for Federal agencies to gather further information and identify potential partnerships, resources, and capabilities available to support response operations. This coordination across the interagency is important particularly in CBRNe disasters when a variety of expertise is required beyond the normal roster of international response agencies.

The pathway for requests made by a host nation also needs to be clarified, with better protocols and request management required to facilitate whole-of-government response planning. Towards this end, OFDA has begun work on an international response framework (IRF) that articulates the response structure, processes, and approaches the agency uses. While this document is intended for internal use at OFDA, it can provide other Federal agencies with better knowledge of how OFDA conducts international disaster response. It is worth noting that an internal OFDA IRF does not address gaps in the numerous agencies across the U.S. Government that will most likely be called upon to respond to future complex disasters. Banyan Analytics recommends that the scope of an IRF include the whole of government when addressing coordination, funding, roles, and responsibilities. OFDA's IRF may be a good starting point for a government-wide response framework as proposed by Banyan Analytics in *Coordinating the U.S. Response to Foreign Disasters: Concept and Considerations for a Framework.*

Standardize processes for coordinating U.S. response with the host nation.

Large-scale and complex disasters, such as the triple disaster in Japan, have highlighted the need to improve how the U.S. coordinates with the impacted nation to provide support. For example, a new method of coordination with the Japanese government had to be developed ad hoc during the response. Many panelists agreed that an important step towards improving the U.S. response to CBRNe incidents in the Asia-Pacific, particularly non-humanitarian response, is to standardize plans and processes for international response.

A key feature of such an approach would be to develop common terminology so the U.S. understands how the nation it is supporting defines preparedness, response, and recovery. This effort could also mitigate some of the confusion seen in the Fukushima response, with agencies and countries using different units to measure radiation.

The standardized processes should rest on a well-defined legal framework to clarify how the U.S. and impacted countries interact, acknowledging that international response must rely on a "pull" system (as opposed to domestic situations where the Federal Government aims to push resources to affected areas to make them more quickly available). The "pull" approach ensures that the support provided is supplementary to the needs of the impacted nation as required by law. Clear, well-defined processes would also be required to ensure that support is complementary and not duplicative. During the Japanese triple disaster, the Hosono process for receiving requests from Japan was developed to manage what was requested and what was provided. This process organized and deconflicted requests, ensuring there was no excess of supplies provided. It consolidated communication channels between the Japanese and U.S. governments to help manage prioritization, resource allocation, liability concerns, and strategic communications. Incorporating standard procedures that perform these functions into U.S. Government policies would streamline response activities going forward.

Focus U.S. efforts on building partner capacity.

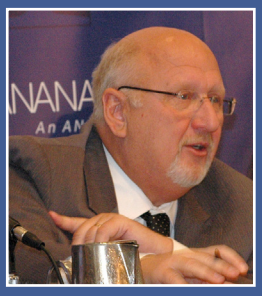
Due to the timeliness of response required to save lives in many CBRNe disasters, impacted nations must have their own capabilities in place before a disaster occurs in order to quickly and effectively respond. The timeline for chemical disasters, for example, requires an immediate lifesaving response that cannot be provided by teams traveling from abroad. Additionally, the U.S. faces the challenge of determining what level of support is appropriate. If the U.S. enters the response at a high level, it might be difficult to pull back. If the U.S. pulls back prematurely, the impacted nation might have difficulty meeting the same level of support, which could cause

a loss of confidence in that nation's government. In a situation where the overseas incident is the result of an intentional act, any potential threat to the homeland may mean that the U.S. would be unable to provide support. Impacted nations will need the capability and capacity to support their own operations.

Towards this end, OFDA and USAID spend much of their time on mitigation and disaster preparedness programs and disaster risk reduction. In the time between disasters, they work towards identifying and implementing lessons learned and helping to build resilience in the region. OFDA uses priorities identified by the host nation to help develop a program so that it is not pushed upon the host nation but rather built into its institutions as desired. The aim is to not only build partner capacity at regional and national levels, but also increase the resilience of individual communities. In disasters, the first responders tend to be the victims themselves. Communities need support and information to improve their resilience and ensure that victims can support one another after an incident occurs. Complex disasters will also often require military assistance, and efforts must be made to help partner nations' militaries align their response and capabilities with those of their civilian counterparts. The National Guard State Partnership Program has proven a valuable tool, both for preparing partner nations' military forces to respond to disasters and for better integrating those forces with the nations' civilian first responders and emergency management. Many panelists identified preparedness efforts as one of the most cost-effective ways to support partner nations in the field of disaster response and recovery.

The transformation of the response system in India following the Bhopal incident demonstrates how effective it can be to improve partner nation capacity. As India began to focus on improving its disaster response system, the U.S. provided critical inputs to help build the system. India now has an institutional home where the U.S. can share knowledge and offer training to improve preparedness and response programs. The impact of these efforts was seen in the wake of the 2013 Cyclone Phailin, the second strongest cyclone to make landfall in India (behind the 1999 Odisha cyclone). In Cyclone Phailin, over a million people were evacuated and relatively few died. In contrast, the 1999 Odisha cyclone that struck the same area resulted in at least 20,000 deaths. The improvements to the Indian response system since that cyclone have made the response system one of the most capable in South Asia.

Distinguished Panelists



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IV. Conclusion

Discussion at the April 14, 2014 conference "International CBRNe Response: Identifying Challenges to Delivering Capabilities in the Asia-Pacific" identified the following key findings:

- The Asia-Pacific faces high potential for future complex, CBRNe disasters.
- Varied standards exist in regard to CBRNe hazards.
- In a CBRNe environment, responders may have to operate with incomplete information.
- Effective public messaging is critical to saving lives and building confidence following a CBRNe incident.
- Few means exist for sharing best practices in the international community.
- The resource request process poses coordination challenges in international response.
- Domestic CBRNe assets can provide capabilities and expertise needed for international response.
- The current funding mechanisms for international response are not sufficient for CBRNe incidents.
- The United States faces challenges protecting and supporting U.S. citizens and assets abroad.
- Public-private partnerships offer a valuable resource for CBRNe response overseas.
- Displaced populations pose a public health challenge.

Based on the proceedings of the conference and analysis of the key findings, Banyan Analytics makes the following recommendations for the U.S. Government to enhance its foreign CBRNe disaster response capability:

- Develop an interagency all-hazards framework to coordinate U.S. activities while responding to foreign disasters.
- Standardize processes for coordinating U.S. response with the host nation.
- Focus U.S. efforts on building partner capacity.

As the importance of effective bi-lateral and multi-lateral response to disasters in the Asia-Pacific is expected to grow, Banyan Analytics will continue to assist the U.S. Government in improving its capabilities by applying rigorous analysis to complex issues.

Distinguished Panelists

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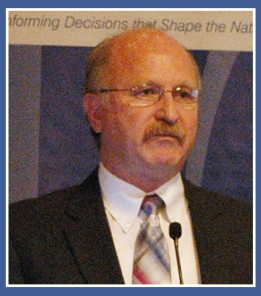

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