

*Risk communication needs in a chemical event*

Janice S. Lee, PhD, MHS  
Sharon L. Lee, PhD  
Scott A. Damon, MAIA, CPH  
Robert Geller, MD  
Erik R. Janus, MS  
Chris Ottoson, CIH  
Marilyn J. Scott, CSP, ARM

**ABSTRACT**

*In an effort to define the role of state and local health agencies in a chemical terrorism event and to share knowledge, materials, and resources, representatives from state, local, and federal agencies formed the Interstate Chemical Terrorism (ICT) workgroup in 2002.*

*Working with the ICT workgroup, the Centers for Disease Control (CDC) funded a workshop effort to address the basic elements of risk communication (RC) needs in a chemical event. The primary goal of the workshop was to develop templates for chemical fact sheets destined for the general public and press, medical providers, public health officials, first responders, and impacted workers, as well as a list of core competencies and benchmarks. We summarize workshop discussion and outcomes.*

*Key words: risk communication, chemical event, core competencies, benchmarks*

**INTRODUCTION**

According to the Monterey Institute's Weapons of Mass Destruction database on worldwide reported terrorist actions, readily available chemical agents have been the most common means of delivering terror. From 2000 to 2003, of 246 incidents by criminals or terrorists, 67 percent involved chemical agents, 16 percent were biological agents, and seven percent were radiological.<sup>1</sup> The Monterey Institute recorded 953 fatalities and 4,351 nonfatal injuries from chemical agent terrorism and only 8 fatalities and 1,059

injuries from biological agents. The most common delivery methods are consumer product tampering, water supply contamination, or contamination of food or drink. These problems fall squarely on the public health establishment (Dr. Gary Ackerman, Monterey Institute of International Studies, July 2003).

Chemical and biotoxin incidents, particularly those that leave a contaminating residue, tend to involve a wider range of governmental regulatory agencies at the local, state, and federal level than incidents involving a biological agent. This is because many different agencies have regulatory authority for different media. A terrorist attack on a train with a tank full of pesticide might involve water, soil, wildlife, and air, with each affected media having its own regulatory agencies at local, state, and federal levels. The potential for conflicting risk communication (RC) is greater when the number of responsible agencies increases.

Although any worker can be impacted during a terrorist event, first responders, healthcare workers, and construction workers are most at risk of illness and injury during response and recovery efforts. Worker health and safety is a critical consideration during emergency response but one that may be overlooked in the initial crisis and early recovery phases.<sup>2</sup>

All these complexities imply the need for unique RC strategies in the pre-event, crisis, and recovery phases of events involving chemical contamination. A Council of State and Territorial Epidemiologists (CSTE) report in April 2004 found 40.9 percent of

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respondents to an assessment on state and territorial public health preparedness reporting “none” or “minimal planning” for RC pertaining to chemical and radiological terrorism.<sup>3</sup> The report points out that, in the crisis and recovery phases, public health agencies would provide RC for labor, management, and community stakeholders, and facilitate development of a plan for decontamination. Public health agencies would also identify and maintain communication with community gatekeepers and opinion leaders through whom risk messages may flow in a terrorist event.

State and federal health agencies recognize that the nation’s terrorism preparedness and response activities have focused almost entirely on biological terrorism in recent years. In early 2002, health departments responded by coming together to form the Interstate Chemical Terrorism (ICT) workgroup. The ICT workgroup is currently composed of state, local, and federal health agency and response personnel representing 50 states, federal agencies, and other national health and nonprofit organizations. The goal of the ICT workgroup is the timely sharing of knowledge, materials, and resources on chemical terrorism as well as emergency preparedness/ response between states and agencies. Sharing of information is accomplished via monthly teleconferences and the CDC’s web-based secure information system for public health professionals (known as the Epidemic Information Exchange or “Epi-X”). Monthly teleconferences coordinated by the ICT feature guest speakers presenting and leading discussions on topics and issues relevant to chemical terrorism preparedness.

State, local, and federal agencies also recognize that there is an immediate need to develop pre-event information and materials on a wide range of chemicals to ensure responding agencies are well prepared. The ICT workgroup’s idea to bring a multidisciplinary group together to work on RC issues led to the workshop, “Risk Communication Needs in a Chemical Event,” held in Atlanta, Georgia, February 3-4, 2004. The workshop consisted of panel presentations on audience-related (general public and press, medical providers, and local public health), occupational health, and inter-agency communication needs, followed by concurrent breakout sessions focusing on fact sheet templates and

core competencies and benchmarks for the categories mentioned above. The primary goals of the workshop were: 1) to develop templates for chemical fact sheets destined for the general public and press, medical providers, public health officials, first responders, and impacted workers; and 2) to develop a list of core competencies and benchmarks. The latter are intended to assist agencies in determining if they are competent in the communication skills and resources needed to prepare for, respond to, and recover from a chemical event. Agencies may also find these products useful for subsequent efforts to formulate a model RC plan at the local or state level. Fact sheet templates and core competencies and benchmarks were drafted in preparation for this workshop.

#### **GENERAL PUBLIC AND PRESS RISK COMMUNICATION**

University of Oklahoma (UOK) researchers presented their preliminary research findings on RC needs for the general public. They found the following to be key aspects of crisis communication in a chemical agent release scenario: providing information in a consistent voice, admitting it may change, and acknowledging that such uncertainty may be frightening. UOK researchers found a desire by the public to know more about the status of any event, how to seek shelter and to take other protective action, and how to recognize symptoms of chemical exposure. Respondents in the UOK study, representing the general public, expressed concern for how to contact family members and receive constantly updated information, and shared a fatalistic belief that a chemical attack would not be survivable. Respondents also provided specific feedback regarding the form and content of messages: messages should be simple and fact-based, messages should provide action steps as well as what *not* to do, and messages should be provided in multiple languages. Certain populations, particularly ethnic minorities and rural people, did not trust the federal government to fully disclose, or adequately translate, relevant information. They expressed a desire that messages be communicated by a person or persons with both recognized content expertise and community trust.

Another key point, noted primarily by UOK researchers, is that communication is multidirectional

**Table 1. Model core competencies and benchmark activities**

**Preparatory Phase Communication Plan explaining what is communicated to whom and by what means:**

Core competency	Benchmark
1. For various modes of delivery, the agency will establish relationships with likely partners in the crisis and recovery phase. Agency partners will clarify their roles with regard to risk communication. Agency partners will work with each other and with relevant opinion leaders/gate keepers in the community.	1. Agencies will maintain partnerships with all relevant response agencies and individuals through electronic information sharing, conference calls, meetings, and other "stakeholder" activities such as preparedness exercises. For each mode of delivery (explosion, environmental release, consumer product tampering, food tampering, etc.), list the responsible local, state, and federal agencies that would be involved as well as their 24/7 contact numbers.
2. Scientific staff of agencies will be able to disseminate information and prepare fact sheets on chemical agents according to an agreed upon template in a timely fashion.	2. A detailed team structure and procedure for quickly acquiring and disseminating technical information and preparing fact sheets for different audiences according to agreed upon templates will be developed and rehearsed. Memorandums of understanding (MOUs) will be completed with regard to likely cooperating agencies (considering various modes of delivery).
3. Agencies will give priority to scenarios that also are subject to accidental disasters.	3. Consider and practice likely local accidental release scenarios.
4. Agency scientists will have established access to "surge capacity" assistance from others with regard to acquiring and summarizing information.	4. Have MOUs with adjacent states, other state, local, and federal agencies, academia and private sector entities for voluntary mutual aid and will have conducted tabletop drills.
5. Public information officers (PIOs) will have access to "surge capacity" assistance from other agency's PIOs with regard to their functions.	5. Have MOUs with other agencies for mutual aid and will have conducted and/or participated in table top drills.
6. Agency staff will be able to respond 24/7 to support the state's crisis response if necessary.	6. Have plans for, and rehearse, a "shift" system for working and a protocol for changing shifts.
7. Agencies will know how the public health function fits into the "Incident Command" Structure (ICS), what assets they have to contribute, and how to communicate within the chain of command.	7. Have an organization chart for the structure of the "public health functional group" and how its activities contribute to the "planning/intelligence" function, "worker health and safety," and "public information" functions. Train and exercise staff in operating in ICS.
8. Agencies will know how to communicate with stakeholders, including community leaders, the news media, and the Health Alert Network (HAN), during the crisis and recovery phases.	8. Have a protocol in place involving other likely agencies to deal with conflict, and rehearse the protocol. This may involve community or labor/management advisory groups, special newsletters, etc., as they relate to: (a) prolonged clean ups or (b) epidemiological studies.
9. Agency staff will cooperate with others to minimize the prevalence of anxiety and exacerbation of existing mental health problems.	9. Agencies (e.g., public, mental health, education, industrial relations departments), as well as the Red Cross, and volunteer organizations (e.g. citizen core councils) will have a mutual rehearsed plan which includes the propagation of sound risk communication through preset opinion leaders such as the clergy, school officials, union leaders, ethnic leaders, employers, private sector leaders, mental health professionals, physicians, and service organizations.
10. With regard to the crisis and response phases, PIOs and scientific and community spokespersons will be familiar with risk communication concepts and techniques as they apply to oral, written, and visual communication.	10. PIOs, scientists, elected officials, and emergency managers will have completed didactic and experiential trainings.

**Table 1. Model core competencies and benchmark activities (continued)**

<b>Preparatory Phase Communication Plan explaining what is communicated to whom and by what means:</b>	
<b>Core competency</b>	<b>Benchmark</b>
11. Agencies will anticipate the need to monitor and respond to rumors.	11. Have and practice a staffing plan to monitor media reports of rumors and a protocol for responding to them.
12. PIOs, agency leadership, and scientists will be able to convert technical fact sheets into press releases and radio spots in a timely fashion.	12. Have a protocol describing how the PIOs, department/agency leadership, and scientists summarize toxicological information and develop public guidance to expedite review and approval.
13. Scientific staff will use agreed-upon reference materials for summarizing information.	13. Have access to the agreed upon reference materials and be able to describe their appropriate use. Update reference materials regularly.
14. Agencies will have immediate electronic and nonelectronic access to risk communication facts for relevant audiences. Agencies will ensure that public communications will include information on appropriate internet access to risk bulletins.	14. Prepare secure web-based fact sheets and streaming audio presentations that can be downloaded or faxed for chemicals/agents of concern. Internet access information to risk bulletins is readily available in all forms of media.
15. For each mode of delivery, the department/agency should know the relevant community opinion leaders/gatekeepers on whom they can rely to help propagate risk communication.	15. For each mode of delivery, list the likely type of opinion leaders/gatekeepers on whom one can rely to help propagate risk communication and how to contact them (e.g., management, union, school principals, community leaders, radio, TV and internet providers of news).
16. The department/agency will communicate with non-English speakers in the community.	16. List the languages (including sign language) in use in the jurisdiction and the contact numbers for those able to translate verbal, written and visual messages into those languages. Establish "As-Needed" contracts with these resources.
17. Agencies will provide guidance on worker health and safety on an ongoing basis. First responders, first receivers, contractors, skilled support personnel, and volunteers in work settings most likely to be directly or indirectly impacted are a priority for receiving guidance in a practice-based timely fashion. This approach anticipates that risk communication for workers assigned duties within controlled access hazard zones at a chemical event will not only need information about a chemical agent but other essential safety and health information to make informed decisions about their own safety and well-being.	17. A. Risk communication needs for all workers will be determined and are consistent with OSHA hazard assessment and worker training requirements. B. Risk communication protocols and templates are used to transfer essential information to all workers in a uniform, timely fashion. C. Actively recruit/involve the regulatory agency responsible for occupational safety and health for your locale, as a technical assistance and resource asset for risk communication. D. Roles and responsibilities for worker health and safety within the ICS are defined. E. MOUs are implemented to facilitate successful risk communication across all aspects of a chemical event (pre-event, crisis, and post-event). F. Standard operating procedures will be developed with personnel trained to respond to emergency events and to worker health concerns.
18. Agencies responsible for worker health and safety will target early assistance to organizations most likely to be affected by chemical terrorism or chemical disasters.	18. Organizations and sites identified as potential vulnerable worksites, such as airports, subway systems, major tourist attractions, chemical manufacturing and transportation firms, hospitals, etc., have established risk communication plans in conjunction with emergency response plans. Responsible agencies will have MOUs with organizations (labor and management) about risk communication in the crisis and recovery phases.

**Table 1. Model core competencies and benchmark activities (continued)**

<b>Crisis phase</b>	
<b>Core competency</b>	<b>Benchmark</b>
19. Agencies will be able to convey accurate and clear information to the groups that need them in a practice-based, timely fashion.	19. In actual events, an assessment shows that risk communication is/has been accurate, timely, and understandable.
20. Agencies will be able to provide occupational health guidance to first responders, first receivers, contractors, and volunteers in a practice-based timely fashion.	20. Agencies have MOUs on who is responsible for disseminating and maintaining key occupational health information, (e.g., chemical fact sheets, personal protective equipment, decontamination, etc.). This information is readily available (command centers, work sites, on the web, and for e-mailing and faxing) when needed.
<b>Recovery phase (particularly in situations in which there is residual contamination to clean up)</b>	
<b>Core competency</b>	<b>Benchmark</b>
21. Agencies involved with prolonged clean up or follow-up epidemiological studies will communicate in a timely, intelligible, practice-based, and accurate way.	21. A survey or other methods for contacting stakeholders (including vulnerable subgroups) will suggest that the developed protocol is being followed and that stakeholders are satisfied.
22. Agencies will be able to provide practice-based guidance on worker health and safety on an ongoing basis.	22. First responders, volunteers, contractors, and other workers involved in the recovery phase will be shown to have avoided unnecessary risk.
Note: "Agency" refers to any agency or department with a responsibility for risk communication in a chemical terrorism event.	

and cross-cultural, not a one-way transmission of objective facts. The key to such communication is knowledge of a community, its information gatekeepers, and its ingrained and evolving cultural beliefs about both the topic at hand and the government and nongovernment agencies that are leading any emergency response.

State health department public information officers (PIO), federal participants, and nongovernment organization representatives at the workshop all emphasized two additional keys to successful crisis communication planning. They felt that agencies must 1) have a tested communication plan that identifies with whom they will communicate, internally and externally, during a terrorist event, and that ensures regular updating of information; and 2) have a team of staff trained in crisis and emergency RC.

A communication expert panel noted a number of additional preparation-related concerns. These included the relatively low importance placed on communicator training for terrorism events and wide variance in

professional experience and background among communicators, minimal communication staffing at most state health departments, challenges in communicating with special populations, and the need for guidance and training in evaluating communication efforts. A crucial strategy noted by state communication officers is the establishment of a Joint Information Center (JIC), which is a central coordination point for information processing and release, accomplished through the Joint Information System (JIS). The strength of a JIC is that it creates a unified voice that can be highly responsive to both the public and the news media audiences. The JIC and JIS are required components of the National Incident Management System (NIMS) and National Response Plan (NRP), which was developed by the Department of Homeland Security (DHS) to provide a framework for interagency coordination during domestic incidents (<http://www.fema.gov/nims/>). The Incident Command System (ICS) has been incorporated and established into the NIMS as the standardized

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organizational structure for the management of all incidents.

#### **PHYSICIAN AND HOSPITAL INFORMATION NEEDS DURING A HAZARDOUS MATERIALS EVENT**

Any suspected release of a potentially hazardous material in a community sets many processes in motion. Workshop participants discussed how hospitals and medical staff need accurate and timely information to best meet their medical care roles. This includes information on the substance(s), exposure, victims, coordinating information center, on-scene point of contact, and spokesperson.

The exact name of the substance(s) allows the medical community to obtain the best available information about the substance's potential toxic effects and their appropriate treatment. Workshop participants noted that it is best to provide both the chemical name and other methods of identifying each substance such as the Chemical Abstracts Service (CAS) registry number, because similar-sounding substances may have very different properties. The nature and estimated scope of a release are important in determining exposure. It is also important for medical staff to know whether or not additional release is anticipated.

Medical providers need a working estimate of the number of potential victims, the likely extent of their contamination, and severity of their injuries (if any), as well as an estimated time for arrival at an emergency treatment facility. This allows the facility to anticipate staffing needs, to muster additional resources, and to move into a disaster response mode if appropriate. Decontamination facilities may have to be set up for ambulatory and self-transporting patients who account for 80 percent or more of patients in most disasters.<sup>4,5</sup> Even at hospitals where these facilities are utilized frequently, preparing the facility for use and getting staff dressed in personal protective equipment can require more than 20 minutes.

Frequently, more than one hospital will receive patients from a disaster. Therefore, it is desirable to have one point of coordination so that information obtained at one hospital can be shared with others involved in treatment. A regional Poison Control Center (PCC) can serve this information-coordinating

role, if requested to do so, or when designated in local or regional response plans. A point of contact with an official on scene, centralized at or by the coordinating center, is essential to minimize unnecessary duplication of work for the on-scene staff. The hospital should direct all media inquiries through the designated spokesperson for the event, who may wish to involve others in the handling of inquiries, but should coordinate the flow of information to the public. Centralization reduces the risk of releasing conflicting or contradictory information.

The information needs of each hospital must be addressed in an ongoing manner. As new data become available from the scene, or as previous data are corrected or refined, revised information should be forwarded promptly to the coordinating information center. This allows new information to be shared with all involved hospitals as well as other nearby facilities which may need to become involved.

#### **LOCAL PUBLIC HEALTH AGENCY NEEDS**

Workshop participants discussed challenges that a local public health agency (LPHA) may face in achieving competencies for RC relative to chemical events. Establishing a comprehensive list of competencies that measure readiness for chemical events for LPHAs can be complicated by the basic differences among public health infrastructures. "Top-down" systems act as local extensions of an overall state public health agency while "bottom-up" systems with a network of single-county or multi-county health departments do not necessarily "report up the chain of command" to the state public health agency. These differences can pose unique challenges in standardizing training programs and measuring overall readiness. LPHAs can exhibit wide variability in their individual staff and financial resources as well as their capabilities in dealing with chemical releases (including the necessary equipment, staff, and training).

Workshop participants agreed that a more formal list of roles and responsibilities for LPHAs during a chemical event is needed for both "everyday" RC and "crisis and emergency" RC. However, assigning roles to LPHAs in those jurisdictions where resources are lacking, even when funds are transmitted to local health

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agencies, can result in what is effectively an unfunded mandate for LPHAs in “bottom-up” systems. Local input and collaboration is crucial in the development of regional and statewide RC strategies. Input from LPHAs can help state agencies achieve competency. Finally, the inclusion of LPHAs in the planning process will ensure pooling (and not duplication) of efforts and resources.

Another general theme that emerged from the LPHA workshop session was the need for continuing old partnerships as well as establishing new relationships. Beyond law enforcement and emergency response organizations, the Federal Bureau of Investigation (FBI) has established a network of weapons of mass destruction (WMD) coordinators throughout the country. State public health preparedness partners should be aware of their respective FBI WMD coordinator. County emergency management coordinators (EMC) can be a wealth of information when it comes to managing, staffing, and implementing emergency response activities. Most counties also have a local emergency planning committee (LEPC) as mandated by the Emergency Planning and Community Right-to-Know Act. The Community Right-to-Know provisions help increase the public’s knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. LEPCs are required to develop an emergency response plan, review it at least annually, and provide information to citizens about any chemicals in the community.

Other potential partners discussed include state occupational safety and health organizations, groups that represent the chemical industry (such as the American Chemistry Council), and the chemical transportation industry. All of these groups have unique knowledge and skills that can contribute to a more robust sense of readiness. PCCs serve every state and rapidly respond to a high volume of calls involving chemical exposures. The idea of using PCCs as “rumor control” agencies was briefly discussed. Pre-scripted messages regarding a particular event could be developed jointly with PCCs, enabling them to spread the correct information to those who call in, prevent unnecessary anxiety, and possibly save money that would be

needlessly spent on clinical testing. Ongoing relationships with all of these entities can offer a dynamic partnership in which knowledge is shared via a “lessons learned” process following exercises and real events.

#### **OCCUPATIONAL HEALTH**

The health and safety of first responders and first receivers is a critical component for emergency management and response planning. The focus of emergency response and site mitigation is direct intervention that involves emergency responders, skilled support (environmental cleanup contractors, construction workers, and heavy equipment operators), public and environmental health specialists, and volunteers. Other affected occupational workers may include those healthcare workers who decontaminate, transport, or treat contaminated patients; those who receive patients in hospital emergency rooms or provide housekeeping services; and personnel in work settings having a chemical release.

The workshop panel on occupational health, with representatives from state and federal government and labor, identified and discussed occupational RC needs in the pre-event, crisis and recovery phases of a chemical event. RC must address responder health and safety issues. Emergency responders need to be protected, but, unfortunately, appropriate protection is usually determined after worker exposure has occurred. Emergency worker training programs need to be improved so that emergency responders to chemical incidents know how to protect themselves, know what equipment is required, and what additional training and resources they may need.

Firefighters need uniform firefighting standards, improved methods of information delivery, and increased training at the first-responder operations level in chemical events. Increased training for healthcare workers is needed because hospital staff can be first responders and not just first receivers. Hospital workers need more education and training on personal protective equipment as well as clarification regarding privacy issues, such as what patient information does and does not need to be shared. Improved pre-event RC for chemical workers at manufacturing plants or transportation firms is also needed.

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Site safety management guidance should be consistent with Occupational Safety and Health Administration (OSHA) hazard assessment and worker training requirements. The massive response to the events of 9/11 underscored the need for improved coordination of the agencies involved in site safety management at major incidents. As a result of the difficulties encountered in the safety management for first responders at the World Trade Center and the Pentagon incidents, the National Institute for Occupational Safety and Health (NIOSH) has recommended building an integrated safety function into the ICS.<sup>2</sup>

#### **INTERAGENCY DISCUSSION**

Interagency communication is never more crucial than in the function of the ICS, which was developed for traditional first responders, such as firefighters. The events of 9/11 and the anthrax incidents extended the first response paradigm further into critical areas of law enforcement and public health.

Public health agencies must have an excellent understanding of the NIMS ICS. Panelists noted that the NIMS ICS does not specifically identify the role of public health in the ICS. Since response functions are dynamic and change over time, public health needs to be intimately familiar with ICS and be prepared to fill in at multiple ICS duty functions. Training and exercises were also discussed with respect to integrating the public health function into the ICS. Workshop participants suggested the development of exercise scenarios with broad public health implications so that partner agencies could have a better understanding of what public health has to offer.

For agencies which are not typically first responders, including public health agencies, the issue of operating around the clock is a significant logistical concern. While the CDC has an Emergency Operations Center that functions nonstop to manage emergency response nationwide, state public health agencies typically do not have this capacity. This is likely to require interagency cooperation, particularly in key areas such as public information and specialized scientific information. Memoranda of understanding may be required.

Agreement upon the interpretation of scientific information is a frequent stumbling block both within and between agencies. Scientific databases may post conflicting information on some points. This can further hamper timely and accurate sharing of information with the public and others. Agencies must agree upon core reference materials and methods for expediting the release of health-related information. There are multiple federal and nonfederal databases in existence. Workshop participants recommended a unified database of scientific information. Panelists discussed common databases in use by first responders, such as the NIOSH pocket guide (<http://www.cdc.gov/niosh/npg>) and CAMEO (<http://www.epa.gov/ceppo/cameo/what.htm>). Participants also identified the National Response Team, the National Guard WMD Civil Support Teams, and Regional Response Teams as well-established interagency resources for technical support during hazardous substances responses.

A key area of communication involves reducing fear and anxiety within affected communities. One panelist noted that, "Communication is actually the strongest ingredient in counter-terrorism in denying the terrorists their objectives. If you effectively communicate and dispel panic, you have denied the terrorists their goal." This specialized area of communication necessitates preplanning among agencies, particularly coordinating with mental health agencies. Panelists noted the usefulness of local mental health planning groups and tabletop exercises. Further information is available from the National Mental Health Association at <http://www.nmha.org/blueprint/index.cfm>.

#### **WORKSHOP PRODUCTS**

##### *Fact sheets*

Fact sheet templates for public and press, emergency medical providers, local public health agencies, and first responders were developed, along with a matrix of high-quality information sources to consult when compiling fact sheets for chemical events. Fact sheet and information templates were developed so that they can be completed and released rapidly to the public and news media, identifying minimum necessary



elements while still being adaptable to local needs. Workshop participants agreed that determining literacy levels and the use of graphics would best be done by local health departments, but noted that common sources of scientific information for completing the templates need to be identified.

Workshop participants adopted one chemical fact sheet template for responders (emergency responders, first receivers, and other affected workers) operating under the ICS for the duration of an event. As with other community members, workers in an affected worksite would want to know what happened, how they have been affected, how to obtain access to medical evaluation and treatment options, how to protect themselves and their families, and when it is safe to return to work. Workshop participants identified several modes of distribution for fact sheets including electronic mail, fax blast, compact disc, and the internet via agency web sites and/or Health Alert Network systems.

#### *Core competencies and benchmarks*

The model core competencies (CCs) and benchmarks developed in this workshop on RC needs in a chemical event build on general public health performance standards recommended by the CDC<sup>6,7</sup> and academic findings on public health competencies for emergency response.<sup>8-10</sup> "User guidelines" for the core competencies/benchmarks and for assessment tools used to measure baseline knowledge, skills, and abilities and to gauge increased competency as a result of training and response to actual events remain to be developed.

Twenty-two CCs and benchmarks were developed to assist agencies in determining if they have a complete RC plan for the preparatory, crisis, and recovery phases of a chemical event (Table 1). Several CCs (CC 10, 11, 12, 14, 19) were identified as being the most germane to RC staff, medical providers, and LPHAs, including: 1) achieving a basic level of training in RC concepts, 2) being able and equipped to respond effectively to rumors in a crisis situation, 3) being able to convert complex data rapidly into information for a variety of audiences, 4) providing ready access to information for the public and media, and 5) being able to convey accurate and clear information to various audiences in a practice-based, timely fashion

during all phases of response. CCs 15 and 16 address improvements in cross-cultural communication, as discussed by the UOK researchers, and the need to evaluate crisis communication efforts.

CCs 17, 18, 20, and 22 address the protection of responders and describe a continuity of actions in pre-event, initial response (crisis phase), and recovery from an incident. Pre-event CCs 17 and 18 address the safety and health guidance for all individuals directly or indirectly impacted in an event, as well as early assistance to organizations most likely to be affected by a chemical event to ensure appropriate RC and emergency response plans are established. The importance of providing guidance on worker health and safety during crisis and recovery phases is reflected in CCs 20 and 22.

Communication with affected communities and other stakeholders is a critical public health function in a crisis. Many of the workshop CCs specifically address this need (CC 1, 8, 10, 21). Panelists noted that relying solely on the media to get public health messages out is insufficient. Stakeholder advisory groups, newsletters, and other methods may be needed, particularly in a long-term recovery phase. Partner agencies must also understand each agency's role and mandate in the overall RC process. Panelists noted that one of the key elements in RC exercises should be the public communications plan.

The interagency panel spent some time discussing CC 3, which suggests that agencies give priority to identifying and drilling for local chemical release scenarios that are also likely to be subject to accidental disasters. This CC recommends enhanced planning and preparation for local emergency response in general and was written with the understanding that terrorists may choose to use industrial chemicals in situ rather than attempt to clandestinely import a chemical agent into the target area. However, panelists noted that local industrial risks might be fundamentally different from terrorist risks. For example, industrial chemical releases usually involve an "exterior" release, while chemical terrorism is likely to involve an "interior" release, such as the sarin release in the Tokyo subway. Panelists recommended a geographical priority analysis. A first tier effort would include

discussions with LEPCs to identify their priority concerns and analysis of the US EPA Risk Management Program (RMP) database for industrial-use chemicals in the geographical area of concern (agencies can obtain the RMP database upon written request to the US EPA). Panelists agreed that an all-hazards approach or a “likely hazards” approach would both be reasonable.

### CONCLUSION

CDC, in partnership with the Association of Schools of Public Health, is working intensively to identify and develop the necessary content of public health messages in anticipation of key terrorist scenarios involving chemical, biological, or radiological material.<sup>11-15</sup> Key findings from this and other work point to the absolute necessity for public health agencies to be pro-active with communities and stakeholders in formulating education and communication strategies.<sup>16-18</sup> For example, public focus group findings indicate that “shelter-in-place” is a confusing concept for many people, and, furthermore, many people may choose to disregard shelter-in-place instructions in favor of gathering their loved ones to flee the location.<sup>11,17</sup> This suggests a fruitful role for public health agencies to work with communities and stakeholders to provide pre-event education around likely emergency response activities.

The public health lessons from 9/11 and the anthrax incidents include the need for public health agencies to keep abreast of the nearly instantaneous reporting by news media and how the media shapes the information they release.<sup>16</sup> Agencies must also streamline their message development and clearance processes to keep abreast of rapidly changing events and demand for information. Communication response teams need to be more integrated with emergency response teams, even so far as accompanying field science investigation teams.<sup>16</sup> This may do much to allay public rumors and fears.

The long-term recovery process is the arena where public health comes to the fore, and RC is a central consideration. Public health issues will almost certainly include concerns following a WMD terrorist attack, such as chronic disease (especially cancer), reproductive concerns (especially pregnancies), and psychological effects.<sup>18</sup> Community and stakeholder

involvement should be sought even in the most sensitive discussions to promote public confidence and support long-term social recovery.

Strictly speaking, there is no defined place for a “public health function” within the NIMS ICS. Historically, it has been assumed that an agency representative will coordinate with the liaison officer while individual public health functions, such as occupational health and community relations and education, will coordinate respectively with the planning section/safety officer and public information officer. However, public health has many functions that may be useful in a large or atypical incident, such as epidemiological surveillance. Some examples of incidents where public health has a major role to play in emergency response include: 1) chemical, biological, or other agents sent through the mail; 2) contamination of public drinking water systems; or 3) contamination of food or consumer products. Not only does public health need to be familiar with ICS, but ICS also needs to be familiar with public health. Cross-cultural training of both groups would be beneficial.

### ACKNOWLEDGMENTS

*The full summary report with fact sheet templates, information sources, and core competencies and benchmarks can be accessed at [http://www.wetp.org/wetp/public/hasl\\_get\\_blob.cfm?ID=1051](http://www.wetp.org/wetp/public/hasl_get_blob.cfm?ID=1051).*

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Janice S. Lee, PhD, MHS, National Health and Environmental Effects Research Laboratory, US EPA, Research Triangle Park, North Carolina.

Sharon L. Lee, PhD, California Department of Health Services, Environmental Health Investigations Branch, Richmond, California.

Scott A. Damon, MAIA, CPH, Centers for Disease Control and Prevention (CDC), National Center for Environmental Health, Agency for Toxic Substances and Disease Registry, Atlanta, Georgia.

Robert Geller, MD, Georgia Poison Control Center, Hughes Spalding Children's Hospital, Atlanta, Georgia.

Erik R. Janus, MS, Michigan Department of Community Health, Bureau of Epidemiology, Lansing, Michigan.

Chris Ottoson, CIH, Oregon OSHA, Enforcement Policy Section, Salem, Oregon.

Marilyn J. Scott, CSP, ARM, Portland, Oregon.

## REFERENCES

1. Center for Nonproliferation Studies. The Monterey WMD Terrorism Database page. Available at: <http://cns.miis.edu/wmdt>. Accessed January 13, 2005.
2. National Institute for Occupational Safety and Health. NIOSH Publication No. 2004-144: Protecting Emergency Responders, Volume 3, Chapter 7 Integrated, Incident-Wide Safety Management. Available at: <http://www.cdc.gov/niosh/docs/2004-144/chap7.html>. Accessed February 9, 2005.
3. The Council for State and Territorial Epidemiologists (CSTE). A National Assessment of the Status of Planning for Public Health Preparedness for Chemical and Radiological Contaminating Terrorism- Findings and Recommendations. Available at: <http://www.cste.org/chemrad.pdf>. Accessed January 13, 2005.
4. Auf der Heide E. Principles of hospital disaster planning (Part II (8)). In: Hogan D, Burnstein JL (eds.) *Disaster Medicine*. Lippincott Williams & Wilkins, 2002: 57-89.
5. Barbera JA, Macintyre AG. *Mass Casualty Handbook: Hospital, Emergency Preparedness and Response*. First ed. Jane's Information Group, Ltd., 2003.
6. Centers for Disease Control and Prevention. State Public Health System Performance Standards page. Available at: <http://www.phppo.cdc.gov/nphpsp/TheInstruments.asp>. Accessed January 13, 2005.
7. Centers for Disease Control and Prevention. Local Public Health System Performance Standards page. Available at: <http://www.phppo.cdc.gov/nphpsp/TheInstruments.asp>. Accessed January 13, 2005.
8. Gebbie K, Merrill J, Hwang I, et al.: Identifying individual competency in emerging areas of practice: an applied approach. *Qualitative Health Research*. 2002; 12: 990-999.
9. Gebbie K, Merrill J: Pubic health worker competencies for emergency response. *J. Public Health Mgmt Practice*. 2002; 8: 73-81.
10. Lichtveld M, Hodge JG, Gebbie K, et al.: Preparedness on the frontline: what's law got to do with it? *J. Law, Medicine & Ethics Supplement to Volume 3*. 2002; 30: 184-188.
11. Vanderford ML: Breaking new ground in WMD risk communication: the pre-event message development project. *Biosecurity & Bioterrorism: Biodefense Strategy, Practice, and Science*. 2004; 2: 193-194.
12. Henderson JN, Henderson LC, Raskob GE, et al.: Chemical (VX) terrorist threat: public knowledge, attitudes, and responses. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice and Science*. 2004; 2: 224-228.
13. Becker SM: Emergency communication and information issues in terrorist events involving radioactive materials. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice and Science*. 2004; 2: 195-207.
14. Glik D, Harrison K, Davoudi M, et al.: Public perceptions and risk communications for botulism. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice and Science*. 2004; 2: 216-223.
15. Wray R, Jupka K: What does the public want to know in the event of a terrorist attack using plague? *Biosecurity and Bioterrorism: Biodefense Strategy, Practice and Science*. 2004; 2: 208-215.
16. Prue CE, Lackey C, Swenarski L, et al.: Communication monitoring: shaping CDC's emergency risk communication efforts. *J. Health Communications*. 2003; 8: 35-49.
17. Lasker RD: Redefining readiness: terrorism planning through the eyes of the public. Available at: <http://www.cacsh.org/pdf/RedefiningReadinessStudy.pdf>. Accessed January 13, 2005.
18. Hyams KC, Murphy FM, Wessely S: Responding to chemical, biological, or nuclear terrorism: the indirect and long-term health effects may present the greatest challenge. *J Health Politics, Policy and Law*. 2002; 27: 273-291.



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