

# Best Practices in Chemical Emergency Risk Communication: the Interstate Chemical Terrorism Workgroup

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## ABSTRACT

The Interstate Chemical Terrorism Workgroup (ICTW) was formed in 2002 and currently includes members from nearly all states and Washington, DC, as well as representation from a number of non-governmental organizations. In addition to offering monthly conference call/presentations, the ICTW partnered with the Centers for Disease Control and Prevention (CDC) in 2003 to host a workshop to address basic elements of risk communication needs in a chemical event. The primary goal of the workshop was to develop a list of core competencies and benchmarks as well as a series of fact sheet templates destined for the general public and press, health care providers, public health department and/or officials, and first response and emergency workers (Lee et al., 2006).

Key findings of the 2003 workshop, along with other work being done by CDC, academia and the states, underscore the importance of public health agencies in providing risk communication services during (and particularly after) chemical emergencies, whether intentional or not. Tools developed by the ICTW have been used and/or consulted by many groups involved in public health preparedness. This case study will examine the efforts of Michigan to implement these tools to reduce information overload in an emergency.

## Keywords

Risk communication, chemical terrorism, chemical emergencies, Interstate Chemical Terrorism Workgroup.

## INTRODUCTION

Over 850,000 facilities in the United States (US) that manufacture and work with about 15,000 hazardous chemicals are regulated by the US Environmental Protection Agency (EPA) (TFAH, 2002). Nearly 15,000 of these facilities are required to file "Risk Management Plans" (RMPs) with EPA. Recent reviews of RMPs nationwide showed that 600 to 700 plants could put at least 100,000 surrounding citizens at risk while over 100 sites endanger at least one million people (Stewart, 2002). On average, there is an actual or threatened release of a non-petroleum substance in every state once per day. Every state has at least one facility storing over 100,000 pounds of an "extremely hazardous substance," with the exception of Vermont (TFAH, 2002). A Chemical Abstract Service report reported that a first responder could reasonably expect to encounter any of 1.5 million chemicals in an emergency, with up to 63,000 of these considered "hazardous" (EPA 2001). (In fact, these potential 63,000 compounds can be known by up to 183,000 different names.) In a sense, it was a common thread of concern that led to the creation of the Interstate Chemical Terrorism Workgroup (ICTW) after September 11, 2001. The ICTW was formed in 2002 and currently includes members from nearly all states and Washington, DC, as well as representation from a number of non-governmental organizations.

The primary goal of the ICTW is timely sharing of professional knowledge, materials, and resources on chemical terrorism as well as emergency preparedness/response between states and agencies. Sharing of sensitive information is accomplished via the CDC's web-based secure information system for public health professionals (known as the

Epidemic Information Exchange, or “Epi-X”). An all-volunteer advisory council now exists to manage the logistical and administrative needs of the ICTW. The council selects guest speakers for the ongoing series of monthly teleconferences on topics and issues relevant to chemical terrorism and chemical emergency preparedness. In addition to offering monthly conference call/presentations, the ICTW partnered with the CDC starting in 2003 to host a workshop to address basic elements of risk communication needs in a chemical event. A multidisciplinary group of invited participants and speakers were brought together for two days in Atlanta in February 2004 for the “Risk Communication Needs in a Chemical Event” workshop. Panel presentations followed by concurrent breakout sessions were used to discuss the information needs of several different audiences (general public and press, health care providers, local public health and occupational health) as well as interagency communication needs and best practices in risk communication. The primary goals of the workshop were to (1) develop a list of core competencies and benchmarks and (2) develop a series of fact sheet templates destined for the general public and press, health care providers, public health officials, and first response and emergency workers (Lee et al., 2006).

### ICTW, MDCH AND CHEMICAL RISK COMMUNICATION

#### Results of the ICTW 2004 Workshop

CSTE (2004) lists two major factors that are key to reducing morbidity and mortality from an intentional chemical, biological, radiological, nuclear or explosive (CBRNE) event: (1) response capability on both the local and state level and (2) rapid mobilization of regional or federal resources to support local and/or state response. The ICTW, in organizing the 2004 workshop, sought to capitalize on members’ desire to streamline response to chemical events, especially when it came to the “new” world of hazardous materials response and “chemical terrorism.” Part of the charge to participants was to help finalize some products (see below) that were distributed via electronic mail a few weeks prior.

Crisis Phase Chemical Risk Communication	
Core Competency	Benchmark
Agencies will be able to convey accurate and clear information to the groups that need them in a practice-based timely fashion.	In actual events, an assessment shows that risk communication is/has been accurate, timely, and understandable.
Agencies will be able to provide occupational health guidance to first responders, first receivers, contractors and volunteers in a practice-based timely fashion.	Agencies have “memoranda of understanding” detailing who is responsible for dissemination 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.
Recovery Phase Chemical Risk Communication	
Core Competency	Benchmark
Agencies involved with prolonged cleanup or follow-up epidemiological studies will communicate in a timely, intelligible, practice-based, and accurate way.	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.
Agencies will be able to provide practice-based guidance on worker health and safety on an ongoing basis.	First responders, volunteers, contractors, and other workers involved in the recovery phase will be shown to have avoided unnecessary risk.
<i>“Agency” refers to any agency or department with a responsibility for risk communication during a chemical event (whether intentional or not).</i>	

**Table 1. Example of model core competencies and benchmark activities developed during the 2004 “Risk Communication Needs in a Chemical Event” workshop.**

A large portion of the 2004 workshop focused on developing a table of core competencies and benchmarks for risk communication needs in a chemical event. Twenty-two (22) core competencies were identified with at least one

benchmark each for achieving competency in that particular area. The competencies and benchmarks were further organized into the phases of emergency response. While the full table has been published elsewhere (refer to Lee et al., 2006), Table 1 lists the 2 “crisis phase” and “recovery phase” competencies identified at the workshop.

In addition to creating a draft of a tool called the “Chemical Information Source Matrix” (or InfoMatrix), other products of the two-day workshop included fact sheet templates for several audiences. (These two products, the templates and the InfoMatrix, were intended to be dynamic and symbiotic documents.) Templates were developed for (1) the general public and press, (2) health care workers and medical providers, (3) local public health agencies, and (4) “responders operating under an Incident Command System for the duration of the event” to include emergency workers, first receivers, and other affected workers (Lee et al, 2006). In developing the templates, consideration was given to meeting the informational needs of all audiences including people at low levels of health literacy and special populations. These audiences are also at risk of being adversely impacted by a chemical event but are less adept at assimilating complex, scientific information related to chemical exposures.

Implementation at the state level

Following the ICTW workshop, many of the participants got to work to implement the best practices and competencies discussed at the meeting. The Michigan Department of Community Health (MDCH) Chemical Terrorism and Emergencies (CTE) Unit began to assist in creating directories of high-quality information sources for use in agency planning and informational documents, relative to chemical emergencies. One was designed for agency use (and included as a chapter of their online “Toxic Substances Information Directory”) while an extended version of this (the InfoMatrix) was continually developed in conjunction with the ICTW. The InfoMatrix was created in Microsoft Excel© and intended to be used on an Internet-enabled computer to maximize the use of hyper-linking within the document. The most recent version is usually found at the web page maintained by the MDCH CTE Unit. (As of January 2008, see [http://www.michigan.gov/mdch/0,1607,7-132-2945\\_5105-98025--,00.html](http://www.michigan.gov/mdch/0,1607,7-132-2945_5105-98025--,00.html) to link to the latest matrix document, available in Microsoft Excel© format.) Figure 1 shows a screen capture of a portion of the InfoMatrix.

*This directory is intended to provide users with a ready-to-go list of information sources offering chemical-specific data that could be needed in an emergency. It is not intended to be an exhaustive list of internet sites containing information specific to chemicals.*

**Chemical-specific sites include both toxic industrial chemicals (TICs) and weapons of mass destruction (WMD) chemicals**

Site	URL	Contact	Summary	Toxicology	Epidemiology	Laboratory	Worker Protection	First Responders	Acute Health Hazards	Medical	Public FAQs	Other languages	Planning
<b>I. Emergency Response</b>													
<b>I.A Critical Phone Numbers</b>													
American Association of Poison Control Centers	<a href="http://www.aapcc.org/">http://www.aapcc.org/</a>	(800) 222-1222	(Staffed 24/7) phone number connects anyone in the US to their local poison center.							X			
ASPCA National Animal Poison Control Center	<a href="http://www.aspcacare.org/site/PageServer?pagename=pro_aspc">http://www.aspcacare.org/site/PageServer?pagename=pro_aspc</a>	(888) 426-4435	(Staffed 24/7) A fee of \$95 may be charged per case. Allied with the University of Illinois College of Veterinary Medicine.							X			
Centers for Disease Control / Agency for Toxic Substances Disease Registry	<a href="http://www.atdr.cdc.gov/2p-emergenc-response.html">http://www.atdr.cdc.gov/2p-emergenc-response.html</a>	(770) 488-7100	(Staffed 24/7) CDC's main emergency operations center					X	X				
Chemical Transportation Emergency Center (CHEMTREC and MEDTREC)	<a href="http://www.chemtrec.org/CHEMTREC/Resourcess/">http://www.chemtrec.org/CHEMTREC/Resourcess/</a>	(800) 424-9300	(Staffed 24/7) public service hotline for emergency responders. Medical advice available (Medtrec). CHEMTREC® is part of the American Chemistry Council.					X		X		X	
National Response Center	<a href="http://www.nrc.uscg.mil/">http://www.nrc.uscg.mil/</a>	(800) 424-8802	(Staffed 24/7) The National Response Center is the sole federal point of contact for reporting oil and chemical spills. This is also the hotline for chemical & biological WMD incidents.					X					X
<b>I.B First Responders (**alerts to the full range of response hazards: fire/explosion, reactivity, health)</b>													
2004 Emergency Response Guidebook **	<a href="http://hazmat.dot.gov/pubs/erg/guidebook.htm">http://hazmat.dot.gov/pubs/erg/guidebook.htm</a>	(202) 366-4433 DOT Pipeline & Hazardous Materials	Contains emergency response protocols for specific chemicals and chemical classes including fire & toxic/chemical hazard information.					X					X

Infomatrix / Abbreviations / Sheet3 / | < |

Figure 1. Screenshot of a portion of the Chemical Information Source Matrix (“InfoMatrix”)

This matrix was part of a larger suite of interdependent tools developed for rapid, credible and accurate information sharing for a variety of audiences during a chemical emergency. More specifically, the suite of tools was intended to inform FEMA Emergency Support Function # 8 (Health and Medical Services) via distribution of information through the “usual channels,” such as an Emergency Operation Center or a Joint Information Center.

Fact sheet templates were developed for a number of audiences and were expected to be filled out by information obtained through consultation with both a graphical interface for existing fact sheets and exposure standards (Michigan Toxicological Emergency Resources, or MiTER) as well as the InfoMatrix, should this be a “novel” chemical threat without existing fact sheets. A redundant less-technical interface (referred to as the “Fact Sheet Matrix”) was also developed providing hotlinks for quick access existing fact sheets from reputable sources on hazardous chemical and toxins of most concern for use in chemical terrorist events. The Fact Sheet Matrix was developed using risk management and transportation data and offers immediate access to .pdf versions of fact sheets (often in languages other than English) for 130 “chemicals of concern.” (As of January 2008, see [http://www.michigan.gov/documents/fact\\_sheet\\_matrix\\_12-21-05\\_148400\\_7.xls](http://www.michigan.gov/documents/fact_sheet_matrix_12-21-05_148400_7.xls) to link to the latest fact sheet matrix document, available in .xls format.) While these tools are mainly intended to be used on an Internet-enabled computer, it should be pointed out that redundant storage is desirable and this is accomplished by loading all available fact sheets and medical management guidelines into MiTER (which does not require Internet access to utilize the resources embedded within).

This suite of tools was used more than one once by Michigan in response to “emergency intelligence” as well as emergency events - both in response to events in London involving the suspected chemical agents *ricin* and *osmium tetroxide* (an industrial and laboratory staining agent with significant volatility and airborne toxicity that was purportedly combined with an improvised explosive device).

The tools developed by the ICTW, MDCH and their partners have also been used as essential training materials for public health response to chemical emergencies. Extensive use of these materials has been done at a variety of training sessions and professional presentations (from local to national in scope). All materials have been made available by MDCH at the web site listed above and hundreds of free copies of the MiTER graphical interface program (and accompanying training) was accomplished throughout Michigan, in conjunction with the University of Michigan Academic Center for Public Health Preparedness. These materials were also made available through the Interstate Chemical Terrorism Workgroup (ICTW) via secure web site and/or electronic mail list-serv.

## CONCLUSION

Discussions that started at the 2004 ICTW workshop (and continue to this day) underscored the importance of a coordinated and streamlined risk communication response during and following a chemical emergency. The creation of standardized templates for use with high-quality information sources and easy-to-use interfaces for accessing specific information quickly has been an invaluable tool to the state of Michigan for both public health emergency response and associated education and training efforts.

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