

## Chemical (VX) Terrorist Threat: Public Knowledge, Attitudes, and Responses

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### ABSTRACT

**This article reports the results of a study of people's perceptions and reactions to a hypothetical terrorist attack involving a chemical agent (specifically, the nerve agent VX). Thirteen focus groups composed of 8 to 12 participants each were conducted using trained moderators. To achieve a broad representation of perspectives, the groups were conducted in several regions and included urban and rural locations. In addition, a variety of population groups, such as African Americans, Hispanics, American Indians, Asians, and people with English as a second language, were included in the study. Findings demonstrated fear, fatalism, and unfulfilled information needs related to the threat agent. To better prepare the public for VX threats or threats from other highly toxic chemical agents, it will be important to emphasize that VX exposure can be avoided or reduced, that VX effects can be treated, and that VX can be survived if appropriate protective measures are taken. Related findings from the focus groups are that participants preferred television, radio, and the Emergency Alert System for emergency messages and that people prefer to hear information about a chemical attack from a well-known, well-respected public figure or from a content expert on chemical attacks, protective actions, and health. In addition, local television meteorologists were identified as a category of trusted conveyers of important information in relation to chemical terrorist attacks.**

**S**INCE THE MID-1990s, when the religious cult Aum Shinrikyō killed and injured people in Japan with the nerve agent sarin, it has been clear that chemical terrorism represents a serious and continuing threat. Among the fiercest and most frightening of toxic chemical agents is VX. Developed for military use, VX and other nerve agents can cause seizures, apnea, sudden loss of consciousness, and death.

Fortunately, large-scale attacks involving VX have not occurred thus far. But this does not mean that groups have not experimented with the agent. Well-publicized events include Syria's development and testing of VX or

a similar agent and efforts by Aum Shinrikyō to synthesize small amounts of VX to use for assassinations.<sup>1</sup> Also, there is suspicion that Saddam Hussein may have used VX against some Iranian forces and the Iraqi Kurds.

A terrorist attack involving VX or other highly toxic nerve agents could have tremendous impacts—physical, psychological, and economic. Consequently, it is important to have accurate and easily understood information available in order to reduce the terrorist effects of such a weapon.

This article reports the reactions, both emotional and protective, that the public voiced in response to a hypo-

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thetical chemical attack involving VX. One purpose of the study was to produce findings specifically related to VX. At the same time, the hypothetical scenario involving VX was also seen as useful for learning more about public views of the broad range of highly toxic chemical nerve agents and similar threats.

The approach of this research was to ascertain people's knowledge, attitudes, and responses to chemical terrorist threats and events, and to do so in people's own words. Known as the *emic* perspective, this approach purposely takes the professional expert *away* from his or her perspective in order to avoid projection of potentially incorrect assumptions onto the layperson's viewpoints.<sup>2</sup> The result is a panoramic window into the perceptions and behaviors of the public in relation to a hypothetical VX attack.

## PURPOSE

The post-9/11 era is characterized by the experience of large-scale, coordinated terrorism with massive loss of life, continuous media discussion of potential threats, frequent alerts from the Homeland Security color alert system, more or less constant news about Al-Qaeda activities, and regular discussion of chemical, biological, radiological, and nuclear agents. Terrorism, in short, is more a part of American life and American consciousness than ever before.

In such a context, communication about threats, about safety and health, and about protective actions becomes a life-or-death matter. Effective communication is a complex and difficult problem in the context of technological disasters or terrorist events.<sup>3</sup> Prior knowledge of public beliefs, perceptions, and expected behaviors is indispensable when developing effective information and message dissemination campaigns. Without an insight into people's actual views, it is difficult to reach the public in a manner that enhances confidence and helps people protect themselves and family members.

The two specific aims of the study described here were (1) to obtain insight into the general public's current knowledge, attitudes, and potential responses to terrorist threats, and (2) to pretest agent-specific informational materials developed by the CDC.

## SELECTION OF VX

Chemical agents disrupt normal physiological function of various organ systems (e.g., blood, cognitive, lacrimal, respiratory, dermatologic, digestive, and nervous).<sup>4</sup> Although VX is not a highly likely choice for a terrorist attack because of the associated production and dispersion dangers to handlers, it is the most potent of the chemical nerve

agents currently deployed.<sup>1</sup> Nonetheless, VX terrorist attack scenarios serve as a compelling model to stimulate discussions that open a window into public perceptions and behaviors of the broad class of physiologically potent chemical agents such as sarin and mustard gas.<sup>1</sup> At the same time, it is important to bear in mind that the impact of a chemical terrorist attack should not be based on physiologic or mortality potential alone. The public's fear of any chemical attack is high regardless of the biochemistry and objective measures of harm due to chemical agents.

## METHODS AND ANALYSIS

To achieve the study's aims, qualitative research methods were employed, and focus group interviews were conducted with members of the general public. Focus group interviews have become an important means of collecting data to address message and campaign creation, as they can be done relatively quickly yet still effectively capture opinions and sentiments of selected groups or segments within a population.<sup>5</sup>

### *Design*

The focus groups were led by moderators trained to guide discussions in nondirective and nonjudgmental ways, and to elicit responses from all participants. In addition to seeking information about attitudes and perceptions, the groups also gathered feedback about draft CDC informational materials for the purpose of enhancing the clarity and quality of these materials. For this pretesting portion of the focus group discussions, a set of core content related to VX was developed into fact sheets. The fact sheets were given to participants, who read them and then assessed them for quality in the areas of: (1) clarity of the material and information conveyed; (2) comprehensibility of the information; (3) adequacy of the level of detail; and (4) recommendations for improvement.

### *Data collection*

Focus group discussions were guided by a set of open-ended questions (focus group guide) designed to elicit information on the responses, concerns, and information needs of participants. The basic structure of the focus group guide for the general public was as follows:

1. Introduction and ice breaker;
2. Current knowledge and attitudes about the national color alert system and different types of terrorist threats;
3. Three-part scenario roll-out based on specific type of agent—chemical (VX);

4. Confidence in the government's ability to respond to a terrorist event of the type described; and
5. Part four of the scenario in which participants are asked to review agent-specific educational materials and information.

Thirteen focus groups composed of 8 to 12 participants each were carried out. Groups were conducted in several regions and in both urban and rural locations. Also, special population groups, such as African American, Hispanic, American Indian, Asian, and speakers of English as a second language, were included. A total of 90 participants provided 180 hours of discussion.

The structure of the hypothetical VX scenario began with the Homeland Security color alert system being raised. Next, a three part "roll-out" scenario was employed in which an aerial VX attack occurred over a crowded stadium. Each phase of the scenario conveyed more information and provided increased specificity regarding the event. This approach was used to most closely simulate a real attack situation, where information is scarce at first and then accrues over time.

### *Data analysis*

Analysis of the transcribed focus group discussions was conducted using a standardized set of concepts and topics selected for their relevance to VX terrorism and communication. The initial coding scheme was generated from literature on the theory of the Cultural Construction of Realities, literature of Grounded Theory, and code domains identified in collaboration with participating universities, the Centers for Disease Control and Prevention, and the Association of Schools of Public Health.<sup>7,8</sup> As Miles and Huberman<sup>6</sup> note, the coding process is simultaneously data collection method and analysis. Consequently, code categories are not simply convenient labels facilitating text retrieval; they are crucial data leading to an auditable trail of findings.<sup>6,8</sup>

Research relevant statements were extracted from each interview, coded, and analyzed for meanings, and these meanings were clustered into themes that could be compared and analyzed across focus groups.<sup>9</sup> A thematic analysis was by the use of Ethnograph qualitative research software.<sup>6</sup> Intercoder reliability was 80% or higher.

## FINDINGS

The findings of this research are not nationally representative. Focus group nonrandom sampling is not intended to be used for generalizing to a large population.

With regard to knowledge and response, focus group participants were relatively unfamiliar with chemical ter-

rorism issues, wanted more information, and indicated they would actively seek and use such information. There is a strong need to know where to get information in order to be prepared. Television, radio, and the Emergency Broadcast System were commonly identified as information sources that would be used during an event. (The use of the older term "Emergency Broadcast System" was derived from the participants. Participants did not use the current term, "Emergency Alert System.")

Regardless of special circumstances related to culture, ethnicity, and the like, nearly all population segments believed that the government would withhold full information in order to prevent panic. Intense emotion regarding the demand for full information was clear, and the excuse for nondisclosure as a way of preventing panic was considered unacceptable.

In response to the hypothetical scenario of a VX attack, it was clear that an information vacuum existed about the nature of VX and its effects on personal health and safety. The primary reference points from which many participants extrapolated were "nerve gas" reports during wars in the 20<sup>th</sup> century and the 1995 release of Sarin gas in a Japanese subway.

The information vacuum was associated with a pervasive sense of fatalism regarding survivability of a VX attack. Even in large, dispersed, urban areas, the belief was that the entire human population would likely be immediately decimated. Moreover, participants considered a VX attack in the U.S. to be so heinous as to be surreal and too bizarre to imagine. Participants sometimes described the only recourse as being prayer or preparing one's self for death.

The scenario also elicited strong desires for families to be brought together at the time of an attack. Some people indicated they would tolerate authorities keeping children in school on the assumption that this would be safer than the risk of exposure to VX if a child were removed from the school. However, there were others who would do "whatever they had to" in order to reunite family. Again, a sense of futility prevailed.

Information that was desired by participants focused on (1) the current status of the attack, (2) protective actions, and (3) detailed medical facts about exposure and treatment. The attack status specified questions about its magnitude, whether it was still in progress, and in which direction the attackers had gone (recalling an aircraft dispersal scenario). Protective action questions centered on suitable shelter, degrees of exposure, mechanisms of exposure, and duration of need for protective shelter. Medical information desired included notions that are relational in nature (e.g., dose-response effects, treatment efficacy as a function of degree of exposure, indirect self-contamination as a result of eating meat from animals that had ingested contaminated food sources, etc.).

Sources of information during an attack universally included television and radio. The “obvious” nature of television as an information source coexisted with a sense of distrust of news outlets due to what was seen as sensationalism and distortion of facts. The result is a potentially demoralizing situation in which commercial television news sources are seemingly the best and most immediate sources of information, but for which there is a need for content evaluation in order to reach valid conclusions about a terrorist event. Some sentiment about the moral obligation of news sources to suspend commercial interests in the face of a terrorist event was stated, but with the conclusion that this was unlikely.

Other information sources included government or helping agencies such as the Centers for Disease Control, the Red Cross, health departments, fire departments, and police departments. The use of the internet was cited by many in urban areas but was also perceived as being available only to more affluent citizens.

Special population focus groups provided insight into unique features of participants’ lives relative to a VX event. While information seeking always elicited a reference to television, in rural areas there were several other information sources either in addition to television or in lieu of television. For example, rural communities are generally many miles (about 30–100) from a local television station. Cable availability is limited mainly to small towns and is not extended into the country. Satellite television is also present but can only get either national news outlets (e.g., CNN) or the local station located at a significant distance to the rural satellite viewer. Consequently, there is great reliance on local radio stations in the event of local crises. Also, rural dwellers use police/fire/emergency scanners and ham radio to disseminate local news rapidly. In rural areas, citizens are most likely to simply call a friend, the local police, the fire department, or hospital services to obtain first-hand news.

Language-isolated communities also constitute a special population. Those for whom English is a second language or is barely usable live in fear that they will miss vital communication. Language isolation does not operate on a “speak/don’t speak” English toggle, but rather on a continuum of fluency that is connected to dialects and nuance.

The complexities of language as one form of crisis communication are underscored by comments from Hispanic participants. Reports stated that in an emergency, Hispanic people check the English news first and then check Spanish-language news outlets. The reason for the dualism and sequence is to first get what is perceived as a less emotionally tinged report gleaned from the English language news. Next, they listen to the Spanish-language news report so that its higher load of “Latin emotionality” can be filtered out by comparing it to the English report. The importance of native language fluency and nuance

is underscored here in at least two ways. First, the Hispanic participants do not use the more emotionally sterile English language report alone. Second, the Spanish-language information seeker will listen to the same news topic in his or her native language to incorporate nuance into the facts learned from the English language report.

Distrust of the federal government was a pervasive issue among the African American and American Indian participants. While African Americans clearly stated a distrust of government information, American Indian participants stated that their distrust of the federal government stemmed from having an alternate source of trusted information: the tribal government. For those American Indian Nations with strong and affluent governments, the source of trusted information was the currently elected officials of the tribe.

## DISCUSSION

In order to counter the pervasive fatalism about a VX or other nerve agent attack, an information campaign would need to emphasize that VX exposure can be avoided or reduced, that VX effects can be treated, and that VX can be survived. This information should be disseminated in a fact-based, calm, and authoritative manner. Also, information should be full and complete with clarification of questions brought by the public. Language, whether verbal or in print, should be as simple and comprehensible as possible. This requires a great deal of effort to fully address the multilingual communities of this nation.

The media of choice for most people are television, radio, and the Emergency Alert System, but the latter does not state exactly who or how any specific message will be constructed and delivered. The focus group participants considered that a pair of spokespersons should be identified and consistently used to communicate to the public about the nature and evolution of a VX attack. More specifically, one of the pair should be a well-known, well-respected public figure. The other should be a content expert in VX attacks, protective actions, and health matters. Each member of such a pair essentially co-endorses the credibility of the other.

Another unexpected concept regarding who is a credible person to deliver terrorist information and news was noted: Local television meteorologists were identified as a category of trusted conveyer of important information. Conversely, the news anchors were seen as “contaminated” with bias and sensationalism. Paradoxically, the television meteorologist (albeit, perhaps more a “forecaster” than a real scientist) is now also a part of selling a station’s news report due to the elaborate instruments (e.g., extremely high tech radar, software that provides

virtual tours under the clouds and around North America, etc.) purchased to compete across stations. Yet, focus group data indicate that of all those at the news desk, the meteorologist alone is seen as having a science background from which objective data will be derived and reported. This distinctive feature causes the meteorologist to be perceived as the most credible reporter of crisis information, such as a VX attack.

The preference of the television meteorologist as a preferred spokesperson may be especially relevant in areas where severe weather and tornadoes are prevalent. In such areas, weather-reporting capacity is often very technologically advanced, and people rely on weather reports to protect themselves.

The welfare of pets and livestock was a topic of strong concern. At the same time, pets were also seen as being a source of potential contamination to the human population. For those in rural areas, the health of livestock in the event of VX exposure was a significant point of concern. Like pet owners, livestock owners needed information on the risk of livestock contaminating ranchers through contact as well as through food products, such as milk and meat.

## CONCLUSION

The American public needs to have easy access to valid information on self-protection. Informational efforts should include knowledge of the barriers to communication on topics such as chemical terrorism. For example, such an event was considered nearly unthinkable and surreal by the participants in this research; thus, informational efforts must take this into account.

The American public also needs to know that a VX attack (or an attack involving other nerve agents) can be survived by the majority of a population. This is important because of participants' strong expectation of total population decimation in a VX attack. If not countered with factual information about survivability, fatalism could lead to pessimism, inaction, and other unnecessarily deleterious behaviors, even in the presence of less potent chemical agents.

The public also should know that treatment for exposure to VX is developed and efficacious given certain parameters. Currently, the ability for communities to respond effectively to large numbers of casualties may be limited. However, the facts of treatment and its limits should be known.

Multiple communication channels should be identified, tested, and prepared with appropriate information available to all population segments, including ethnic minorities, rural dwellers, and language isolated groups. Such an undertaking is not an easy task. However, its benefits to society before, during, and after an attack are

clear: a lower toll of deaths and injuries, maintenance of public confidence, and a reduced psychological impact. With attacks involving nerve agents or other highly toxic chemicals, a distinct possibility in the 21<sup>st</sup> century, enhanced informational capabilities will form an important part of chemical terrorism preparedness efforts.

## ACKNOWLEDGMENTS

The authors wish to thank Jason Davis, BA, University of Oklahoma Health Sciences Center, College of Public Health.

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Published online: August 31, 2004