



Critical Infrastructure Protection in the National Capital Region

**Risk-Based Foundations for Resilience and
Sustainability**

**Final Report, Volume 17:
Critical Role of Citizens in Biodefense and
Early Warning**

September 2005

University Consortium for Infrastructure Protection

Managed by the
Critical Infrastructure Protection Program
School of Law
George Mason University

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Final Report, Volume 17: Critical Role of Citizens in Biodefense and Early Warning

Submitted in fulfillment of:

Department of Homeland Security Urban Areas Security Initiative (UASI) Grant 03-TU-03; and
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September 2005

Arnauld Nicogossian, Tom Zimmermann, and Rosann Wise

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– **Notice** –

This research was conducted as part of the National Capital Region Critical Infrastructure Project, carried out by the University Consortium for Infrastructure Protection, managed by the Critical Infrastructure Protection Program, George Mason University, John A. McCarthy, Director and Principal Investigator.

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The views expressed are those of the authors, and do not necessarily reflect the views of the Department of Homeland Security, the Department of Justice, or the Senior Policy Group of the National Capital Region.

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Critical Role of Citizens in Biodefense and Early Warning

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Office of International Medical Policy

The School of Public Policy (SPP) at GMU emphasizes interdisciplinary and alternative approaches to public policy. In addition to offering seven master's degrees and the largest PhD program in Public Policy in the nation, SPP offers a variety of hands-on research activities conducted through several research centers. From global issues, such as peacekeeping and electronic commerce, to regional issues, such as land use and transportation management in Northern Virginia, SPP conducts inquiry into public policy formulation and recommendation of appropriate solutions.

As one of the newest disciplines within SPP, the Office of International Medical Policy (OIMP) provides leadership and focus on global medical and public health processes and policies. OIMP complements and enhances the SPP training and research portfolio. OIMP's primary objective is to train a new generation of well-informed health policy analysts and planners, prepared to face future challenges by making decisions in the context of global health interdependencies and security.

The OIMP mission is to coordinate medical and health policy research and training activities for SPP; to provide a health policy focus for professional academic activities; and to facilitate interdisciplinary and international research and training activities within and outside GMU.

Contents

Acknowledgement	2
Research Team	3
Office of International Medical Policy	4
Executive Summary	6
Introduction	9
Approach	9
Methodology	10
Results	12
Survey Findings and Limitations	19
Conclusions and Recommendations	25
Appendix 1: Call to the Workshop	30
Appendix 2: Workshop Participant Lists	32
Appendix 3: Workshop Agendas	39
Appendix 4: Evaluations	42
Appendix 5: Survey	46
Appendix 6: Summary of the Expert Meetings	51
Appendix 7: Information Regarding Recommended Practices for Small Businesses when preparing for bioterrorism	58
References	64

Forging the America's New Normalcy

The Gilmore Commission Report

Released January 2004

The New Normalcy Benchmark:

- Both the sustainment and further empowerment of individual freedoms in the context of measurable advances that secure the homeland.
- Consistent commitment of resources that improve the ability of all levels of government, the private sector and our citizens to prevent terrorists attacks and, if warranted, to respond and recover effectively to the full range of threats faced by the nation.
- A standardized and effective process for sharing information and intelligence among all stakeholders—one that is built on moving actionable information to the broadest possible audience rapidly and that allows for heightened security with minimal undesirable economic and societal consequences.
- Strong preparedness and readiness across state and local government and the private sector with corresponding processes that provide an enterprise wide national capacity to plan, equip, train, and exercise against measurable standards.
- Clear definition about the roles, responsibilities, and acceptable uses of military domestically—that strengthens the role of the National Guard and Federal Reserve Components for any domestic mission, and ensures that America's leaders will never be confronted with competing choices of using the military to respond to a domestic emergency versus the need to project our strength globally to defeat those who would seek to do us harm.
- Clear processes for engaging academia, business, all levels of government, and others in rapidly developing and implementing research, development and standards across technology, public policy, and other areas needed to secure the homeland—a process that focuses efforts on real versus perceived needs.
- Well-understood and shared process, plans, and incentives for protecting the nations critical infrastructures of government and in the private sector—a unified approaches to managing our risks.

Executive Summary

September 11, 2001 and the mailings of letters laced with anthrax spores, sounded a wake up call for our Nation. The recognition of our vulnerability in this new asymmetric warfare triggered a reexamination of our readiness to respond and a search for means to better protect ourselves against future attacks. In 2002, during his State of the Union address, President George W. Bush launched the USA Freedom Corps initiative to engage all Americans to volunteer their service to participate in the defense of our Nation. In April 2005 the Office of International Medical Policy (OIMP), SPP, initiated a research effort addressing the training needs for citizen preparedness.

Citizens were defined to include *all individuals permanently residing in a given community*. The research team used the successful 20th

century experience gained from training in civil defense, first aid, cardiopulmonary resuscitation (CPR) and automatic external defibrillators (AED) as a potential guide and a model for such education and training of citizens as immediate first responders (1, 2).

Most of the available disaster response training protocols involve the "*traditional first responders*" such as emergency medical services and fire and rescue. An increasing effort to involve communities through the Citizen Corps, and the affiliated Community Emergency Response Teams (CERTs) and the Medical Reserve Corps (MRC) has been underway since September 11 2001.

Our findings suggest that despite the importance of the community and school *civil de-*

fense preparedness, allocated resources remain inadequate. The findings from the December 2003 report "Trust for America Health" concludes "... that after two years and nearly \$2 billion of federal bioterrorism preparedness funding, the states are only modestly better prepared to respond to health emergencies than before September 11, 2001" (3). The 2004 report "Ready or Not?" (4) finds that over two-thirds of states and D.C. achieved a score of six or less out of the 10 possible preparedness indicators.

Based on the available information, the research team finds that in 2005 the National Capital Region (NCR) as a whole is better prepared than most of the communities, but an urgent need for improvements persists. We also propose that every disaster mitigation training strategy should target and involve each and every community member as a resource for emergency preparedness and response.

Extensive reviews and analysis of the relevant literature, supplemented by three expert workshops, and a pilot survey on knowledge, attitude and practices (KAP) resulted in the following findings and recommendations:

1. Available bio-sensor technologies for real time monitoring of bioterrorist events is still in its infancy. Eric Lipton of the New York Times, reports in the May 9, 2005 issue that the US government is planning to replace, at an extraordinarily high cost- most of the antiterrorism monitoring devices, especially those used for radiation and air sampling. New technology and monitoring equipment will be required in order to create a virtual defense and "shield" to protect against future terrorist attempts. But in the foreseeable future properly trained individuals will remain the best resource for detecting, evaluating, reporting, and initial handling of terrorist events, including first aid and care. Adequate funding to communities and businesses by the federal government should be made available for training and education purposes.

2. Unlike training in cardiopulmonary resuscitation and first aid, standards for recognition and response to a rare event such as terrorist attack using nuclear, radiological, chemical, and *most notably biological* agents have not been fully de-

veloped or agreed upon. A standard needs to be developed, adopted and adapted for different segments of our society and geographic distribution.

3. In order to understand the bioterrorism effects on health, and to act accordingly, adequate *health and science literacy* are a prerequisite. Based on the literature reviews and our pilot survey, community organizations such as Citizen Corps (MRC and CERTS), should be a resource for raising health literacy and disaster and bioterrorism preparedness.

4. A concentrated effort must be put forth to develop comprehensible information and user-friendly training tools. The most difficult task may be to develop civilian concepts for heightened vigilance and situational awareness. Civilian awareness will be essential for the recognition of the epidemiological aspects of infectious diseases.

5. New frontiers utilizing promising technology to educate the public on the dangers of bioterrorism need to be developed. This information should be disseminated and reach a larger and more diverse audience in a timely fashion.

6. A campaign focused on attitudes and practices of preventive measures to reduce vulnerabilities should be undertaken. Information can be presented in a mode that categorizes the routes of infestation and the means to protect against them. Categories that can be utilized are: airborne and or inhalational; blood borne; food and water transmissions (see *Figures 8 and 9* on page 26).

7. So far, few efforts have been systematically directed toward the preparedness and training of the residents of communities and their integration into the overall emergency response and preparedness programs. Major barriers include the lack of resources and uniform standards, as well as the low level of health literacy.

8. A review by the NCR/Critical Infrastructure Vulnerability Assessment (CIVA) Health Sector of the available medical resources within the local area has shown a wide distribution of capabilities among different jurisdictions.

9. Self sufficiency, preparation and the ability to respond to terrorist or other disaster events by individuals within a community should be emphasized for those areas with sparse and expanding populations but lacking adequate access to medical/health and emergency infrastructures.

10. Neighborhoods are the building blocks and serve as the basic web of relationships in the community. Conscious efforts to build and strengthen these basic blocks, or modules, are an essential step in achieving preparedness. The GMU research team has adopted a model for potential impacts resulting from natural and human-made disasters. The impacts were subdivided into business, health, policy and societal categories. Well structured educational and training materials should recognize and address every sequential event presented in the model.

11. The commercial nucleus and “21st Century Commons” for neighbors is the local shopping center. The potential of the neighborhood shopping centers as the staging area and point of coordination for Weapons of Mass Destruction (WMD) preparedness requires further evaluation.

12. Developing generic and appropriately individual emergency preparedness plans and conducting periodic training exercises with employees and family members (including residentially operated businesses) is an essential part of the response and resilience for the small businesses. The government and insurance industry should provide enticements and resources to those businesses willing to produce preparedness plans and engage in training exercises. In the case of small businesses, dissemination of logical and applicable information is important.

13. The key issue facing small businesses is the ability to develop redundant systems to help rebuild their capacity after a disaster. Many businesses may be familiar with the need for this type of system, but may be unwilling or unable to implement it. Implementation barriers include cost, staffing and general lack of information on what are the steps to be taken following an event.

14. Quick and reliable means and platforms for critical and emergency preparedness information dissemination- internet, cell phones, and pda's, need to be developed and field tested prior to their deployment.

15. A communications link connecting families in the case of an emergency, similar to the one developed by *Stargazer* (5), should be field tested and readily made available for individual residents and small businesses.

16. All educational materials and training should include a component of psychological preparedness and response.

17. The news media should be involved in this process and be able to deliver “spectacular and news worthy materials” in responsible and informative ways.

18. The social contract between government, public health organizations, and the general public, needs to be renegotiated. The government must clearly establish the roles of the stakeholders.

19. Recently the Department of Homeland Security (DHS) released a series of scenarios to be used in the simulations and training for disaster and terrorism preparedness. These scenarios should be adapted, widely disseminated and practiced. Lessons learned should be incorporated and the scenarios updated periodically. A set of evaluation tools and success criteria should be developed as part of such training, to provide a standardized measure of preparedness.

20. The survey developed and presented in this research on knowledge, attitudes and practices (KAP) should be widely distributed and the obtained information can be used to guide the development of the training curriculum.

21. The GMU/JMU Team, in concert with volunteer organizations such as Citizen Corps, should develop and field test the training materials for biodefense based on the principles presented in this report.

INTRODUCTION

Public health brings to the forefront the human dimension as a critical asset to our Nation's prosperity. Preserving and protecting our human capital will ensure the future of our society, democracy, and freedom. It is our citizens who shape our communities, build, maintain and operate the physical infrastructure of our society, and contribute to the socioeconomic growth and progress.

The ability of the citizen to act as first responders, minimize health and physical consequences of disasters or terrorist events should not be underestimated. Properly educated, trained and equipped individuals can provide initial medical assistance at the scene of the incident. These citizens can help secure, safeguard and operate the surrounding assets that are affected. This resource increases the probability of saving lives when "traditional first responders" and their resources are seriously constrained or damaged.

Evolving communities and neighborhood demographics are important inputs for planning, developing and implementing training curriculum. Medical and health services such as sanitation, food and water, transportation and utilities, health education and EMS response must be addressed. Addressing special health, psychological and physical challenges, presented by the aging communities is an important goal which has been proposed in the "Healthy People 2020". Changing priorities in resource allocation and constraints on domestic spending continues to impact communities and promote health disparities and divides. Training and emergency preparedness resources should be made available to ameliorate the disparities present in communities. DISPARITIES???

This report identifies the impact of the societal cost of natural and human made disasters and the means to improve the public health posture, the community emergency response, resiliency and recovery. How to train and involve the public in the decision making and implementation process is the central theme of this project. We believe that the research results can point to the venues which could minimize the impacts and societal cost of natural and human made disasters.

We define citizens as *all individuals per-*

manently residing in a given community. We believe that the 20th Century experience gained with the training in the use of first aid, cardiopulmonary resuscitation (CPR) and automatic external defibrillators (AED) can serve as models for this research project (1).

Although existing disaster response training programs place a major emphasis on the "traditional first responders", primarily fire and rescue and emergency medical systems (EMS) personnel, the Federal Emergency Management Agency is pursuing alternative approaches. The Federal Emergency Management Agency has increased its efforts to involve communities through the Citizen Corps and its affiliated programs such as the Community Emergency Response Teams (CERTs) and the Medical Reserve Corps (MRC).

The findings from the December 2003 report "Trust for America Health" support the conclusion "that after two years and nearly \$2 billion of federal bioterrorism preparedness funding, the states are only modestly better prepared to respond to health emergencies than before September 11, 2001"(6).

Our Research Team believes that today the NCR as a whole is better prepared than most communities but there is an urgent need for continued improvement. We also feel that every disaster training strategy should consider the demographics and disparities in each neighborhood, in an effort to retain every community member as a resource for emergency preparedness and response.

Approach

In June 2004 the Office of International Medical Policy (OIMP) began a research effort engaging experts in the areas of bioterrorism, health, public policy, and curriculum development. This research was intended to produce a reference data base on the health sector vulnerability, assessment methodologies, reviews and recommendations for civilian and community training protocols.

Six discrete tasks were initially proposed: 1) data gathering, 2) analysis and evaluation, 3) identification of risks, 4) recommendations for training programs, 5) identification of appropriate

training protocols and 6) information dissemination. The following sections briefly define each task.

Task #1 Data Gathering

Survey, review and evaluate the literature on citizen biodefense training, specifically bioterrorism programs at the regional, national and international level with a focus on health and care provision.

Task #2 Analysis and Evaluation

Analyze available information to identify best practices and knowledge retention skills, for incorporation into the educational and training programs.

Task #3 Identification of Risks

Evaluate successful strategies for risk identification of terrorist attacks. Prioritize risks based on geographic and demographic vulnerability, assessing promising monitoring methods, and defining training and communication needs.

Task #4 Recommendations for Training Programs

Develop recommendations for the NCR, with application to neighboring states and the federal government, including the Office of Emergency Preparedness, and the Department of Homeland Security.

Task #5 Identification of Appropriate Training Protocols

The domestic war on terror requires preventative measures that reduce the possibility of future terrorist attacks. Unquestionably the most important element in our domestic effort is the average American. If properly trained to recognize threats and initiate appropriate counter actions, every individual can play a critical support role prior to the arrival of law enforcement or emergency and rescue teams arrive. Being prepared and aware could improve the chances of foiling terrorist attacks and survivability of the victims after attacks. This research effort will continue the Task 2 activities and will incorporate lessons learned, and policies that facilitate or impede the establishment of such training programs.

Based on unique cultural and geographic needs, we will evaluate the ability to transplant such programs nationally and internationally, *The design of a training and preparedness program that has minimal utility for the terrorist to take advantage of is a major topic deserving thorough investigation.*

Task #6 Information Dissemination

Using the model outcomes from Task 3, identify methods for both urgent and sustained information dissemination, and voluntary citizen participation based on a series of some of the most plausible threats to the United States. These models will incorporate examples where training and information flow had to be instituted and/or augmented in order to achieve an important national goal. Documented experiences from successful distance learning projects will be evaluated and incorporated into the design of potential communications infrastructure.

Based on the constraints imposed by the availability of resources and schedules, 3 was partially completed and tasks 5 and 6 have been proposed as follow up activities.

Methodology

1. *Internal evaluations* by the research team of the available data and information in the open literature, websites, and other materials.

2. *External review* provided by subject matter experts through workshops or focused group meetings. Inputs and discussions were based on the research materials prepared and presented by the Office of International Medical Policy, SPP, GMU and the research team. The external reviews were supplemented by *survey(s)* designed to evaluate the responder's knowledge (health and biodefense literacy), sources of information and awareness, behavior, attitudes and practices, and learning preferences.

All the information was gathered in a systematic fashion, evaluated for relevancy, catego-

rized and analyzed. Data collected from these activities helped:

1. Create an evidence-based annotated bibliography,
2. Identify new research or inquiry needs,
3. Guide discussions at the meeting(s) of investigators,
4. Develop notional as appropriate
5. Generate educational and/or training concepts and materials,
6. Develop policies and benchmark best practices and
7. Recommend processes to reduce vulnerability and improve recovery

Internal Evaluations

A standard approach to the data mining was adopted and consisted of four steps:

1. Key words or phrases identified and agreed upon prior to the literature search
2. Articles, books, websites, etc. found from key word searches were added to the data base
3. The materials were either rejected as not useful, or retained as relevant for entry into the bibliographies database.
4. Materials identified as relevant were categorized by topic and the findings summarized.

The ranking system used for the categorization of the information is as follows:

- 1= Highly Relevant
- 2 = Relevant
- 3 = Minimally Relevant
- 4 = Not Relevant

Internet searches consisted of queries on Alta Vista, Google, Pub Med, government (federal and state) websites, congressional records and university web sites. Additional sources of information, such as books, CDs, brochures, are identified as appropriate and searched for secondary citations.

External Reviews

The external reviews consisted of:

- 1) a survey
- 2) expert and consultant meetings, conferences and workshops

Survey

The survey clearly stated the research goals, the purpose, and the way the information will be used. Adhered to practices of subject protection. The survey was posted on the *Stargzer* website (5) and by *Genesis* Corporation (47). A Likert Scale format for ranking purposes was utilized. The information from the responses was converted into a 1 to 5 Likert scale for further analysis using the statistics program Stata. The Likert scale displays results by using ordinal-level, discrete categories corresponding to such phrases as (1) strongly disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, and (5) strongly agree (48). Once the mean and deviation were calculated from Stata, the information was graphed for a visual presentation.

The survey was intended to provide information on demographics, knowledge, attitudes, practices and education preferences towards public health and biodefense. The survey was designed to: be simple to understand with short, well formulated questions; to take less than 45 minutes of the respondent's time; to provide a yes or no answer to each question representing a high or low confidence level of the responder; and for each question to lead to the next for consistency and continuity of process. For the purposes of this research project, rephrased questions aimed at validating prior responses were not used.

Expert Meetings, conferences, and workshops

For meetings and conferences the participants were provided with:

- a. Agenda, purpose, expected outcomes, description of the research project, list of participants, and any other background information required to function as an effective team member;
- b. Description of facility and logistics; and
- c. Evaluation forms addressing the usefulness of pre-workshop information, feedback on the effectiveness of the meeting and presenters, and self evaluation on expertise and/or knowledge of the subject. (See Appendix 5).

In addition to the investigators and discipline experts, each meeting had several participants serving as peer reviewers to ensure the quality of the process devoted to discussions, findings, recommendations and their disposition.

Citizen, Communities, and Small Business Preparedness

Individual and community preparedness are key factors in responding to terrorism, whether biological, chemical, nuclear, or radiological. Communities must be prepared to respond to disasters, including terrorist attacks, in anticipation that medical and public health response teams may not be able to reach all communities immediately following such event (s). It is prudent for the general public to be adequately informed (before, during and after an event) and properly trained to act as first responders. As demonstrated by commu-

nity reactions to the terrorist attacks in New York and Washington, D.C., the power of the public to respond effectively to disasters should not be underestimated (6). For example, preparedness played a key role in reducing the residents' and tourists' survival during the three consecutive 2004 hurricanes that battered the state of Florida.

The general public forms a web of community network based relationships. Individuals are members of civic and religious organizations and groups whose social ties, resources, communication links, and leadership structures have withstood the test of time and must be used to facilitate better and more coordinated responses to terrorist attacks (6). In the *Are You Ready (2002)* report (7), citizens are encour-

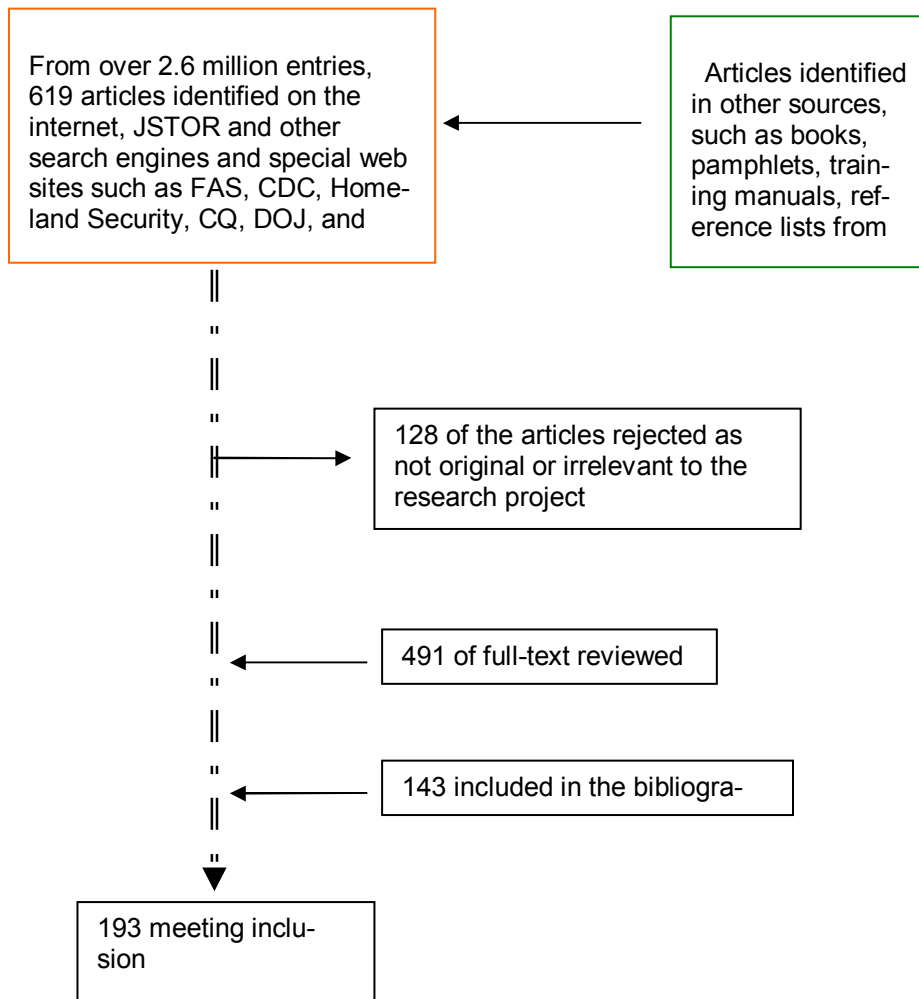
aged to participate in Citizen Corps programs managed by local Citizen Corps Councils to train people to support emergency services and to safe-

Results

1. Literature Review

By the end of November 2004, 620 articles and other materials were identified as potentially relevant to this research. Of those 491 were retained for further evaluation. Only 143 articles were included in the bibliographic data base as meeting the basic criteria (*Table I*).

Table I. Results of the Literature Review



The findings from the literature review for the different topics and categories can be summarized as follows:

guard themselves. Community Emergency Response Team (CERT) programs train people to immediately assist the public in the event of a terrorist attack until first responders arrive.

The following training programs offered to citizens were reviewed by the GMU team:

- American Red Cross (8)
- Federal Emergency Management Agency (FEMA) (9)
- Virginia Health Department
- National Aeronautics and Space Administration (10)

Community programs are necessary to train citizens, however institutions must use caution and be selective. Many cities, counties, and states, as well as the federal government have prepared websites with information for the public consumption. Citizen Corps, CERTs and FEMA did prepare a field operating guide on how a CERTs trained citizen must approach a compromised area and respond to various situations (11). It is a guide that can be printed from the internet and is ready for use. The city of Los Angeles offers the most comprehensive information regarding CERT awareness and training (12).

The United States Department of Education offers a manual for schools and communities to prepare for terrorist attacks (13). The report explains that school-based crisis planning is in its infancy, but the fundamentals are clear. Crisis planning begins with leadership that must be:

- 1) coordinated and implemented prior to attacks;
- 2) developed in conjunction with community groups;
- 3) readily accessible; and
- 4) training must be instituted.

Businesses are encouraged to prepare similar crisis planning. In the Atlanta metro region, *Business Executives for National Security* has prepared a guide for businesses to identify the elements of terrorism, and how government functions under such events, as well as a checklist for the assessment of response and plans to terrorist attacks (14).

Small businesses are vital to the U.S. economy. There are about 22.4 million non-farm firms in the U.S, according to 2001 data. Small businesses represent more than 99-percent of all

employers. They also employ 51-percent of private-sector workers, 51-percent of workers on public assistance, and 38-percent of workers in high-tech jobs. Small businesses account for nearly all the self-employed, which comprise seven percent of the work force (15). Small businesses in the United States produce 75-percent of all new jobs. They provide almost 70-percent of workers with their first jobs and initial on the job training, and account for nearly 50-percent of all sales in this country (16). Small businesses are the lifeblood of the American economy. Of particular significance for the National Capital Region, small businesses obtain 33.3- percent of federal prime and subcontract dollars. The private non-farm sector share of Gross Domestic Product (GDP) in 1999 was 52-percent.

Small businesses are particularly vulnerable to adverse events such as the 9/11 terrorist attack. Michigan State University reports the vulnerability of small businesses to adverse events and the failure to prepare a response plan (17):

- Most businesses do not have an emergency or recovery plan even though they know it is important.
- 47% of businesses that experience a fire or major theft go out of business within two years.
- 44% of companies that lose records in a disaster never resume business.
- 93% of companies that experience a significant data loss are out of business within five years.

The majority of businesses spend less than 3% of their total budget on business recovery planning. FEMA and ARC have developed informational materials on natural and human made hazards targeting this sector of our economy. However, small businesses whom for a majority of the time, operate on the margins of income/ bankruptcy require special consideration. Following the September 11, 2001 World Trade Center (WTC) destruction, businesses in the Chinatown section of New York City, were inaccessible to tourists and customers. Many of the businesses that were forced to close due to this event did not reopen following the attack.

Despite the best efforts of the city and state of New York, it is unlikely that all of the businesses lost on September 11 will ever re-open (18). In the year following 9/11, the state of New

York lost 138,000 jobs, with 78,800 coming from the city alone.

The 2004 hurricane season severely impacted residents and small businesses in the state of Florida. Over 2 million insurance claims were filed totaling approximately \$18 billion. One in every five houses was severely damaged and 25,000 destroyed. One million individuals requested assistance and 9,500 jobs were lost. State catastrophic funds were exhausted, and insurance reform was required to extend the policy renewal deadline until the state of emergency was over.

The overall cost to the insurance industry was estimated to be between \$20-25 billion, with an average of \$23 billion. The rest of the country has felt the impact of this disaster with the rise of the cost of living for items such as food; insurance; energy (coupled with the Middle East problems); construction materials and other commodities. This rise in the cost of living has impacted small business operations and reserves while preventing them from acquiring bioterrorism protection insurance.

Small businesses have a long way to go in navigating the steep learning curve of coping with – and planning for – adverse events, particularly bioterrorist events. "We're at about zero," states Joan L. Silberman, member service center manager for Mid-Atlantic Federal Credit Union in Gaithersburg, of her company's emergency preparedness. "We have disaster planning for our data and occasionally have a fire drill, but all of the emergency preparedness is in my department. I have a battery-powered radio in my office, but I can't buy water for everyone" (19).

In 2004 Lori Widmer reported in *Risk and Insurance* magazine, referencing the 9/11 tragedy, "Terrorism has forever altered the American landscape of risk management, contorting the view for all levels of risk. Hardest hit was the property and casualty market, with losses in that area alone reaching into the \$12-billion range at this writing. While it's impossible yet to predict the exact losses to the insured on that day, estimates are between \$30 and \$58 billion for all lines of business" (20).

The National Federation of Independent Business (NFIB) reported in November 2001 that the far-reaching effects of the Sept. 11 terrorist attacks threatened small business owners with the

loss of their commercial real estate insurance (21). The estimated cost to insurers of the WTC reached \$2.68 billion. Many insurance companies were refusing to renew policies that included terrorism coverage. Without specific coverage in place, business owners cannot construct new buildings, gain mortgage approval or replenish their goods. Faced with unaffordable renewal policies, business owners asked Congress to pass a law that would ensure the federal government would lend help in the future in the event of terrorism losses.

In late 2002, President Bush signed into law the Terrorism Risk Insurance Act that requires insurance companies to offer coverage for domestic terrorist attacks by foreign powers. The cost of terrorism insurance varies tremendously anywhere from two to 150-percent of the value of the property being insured; however, the average rates appear to be around 12- percent of the property value (22). The bill provides a federal backstop for certain acts of terrorism through a temporary federal program where the federal government would share the risk of loss from future terrorist attacks with the insurance industry. The bill spells out the deductible and coinsurance features under which insurers will share losses with the federal government (23).

In early 2003, The Council of Insurance Agents and Brokers surveyed 212 insurance brokers. *The majority said that less than 10-percent of their small business clients had purchased terrorism insurance* (24). The survey stated two main reasons for small businesses declining the coverage: 1) it is too expensive; and 2) the business owners do not believe their companies will be terrorist targets.

FEMA is testing a pilot program on a first come first served basis that addresses pre-disaster mitigation expenses. SBA's Pre-Disaster Mitigation Program is available to businesses whose proposed mitigation measures conform to the priorities and goals of the mitigation plan for the community, as defined by FEMA (25). These are low-interest, fixed-rate loans to eligible small businesses for the purpose of implementing mitigation measures. The measures are intended to protect business property from damage in the event of a future disaster.

In summary, the research team finds that within the community, small businesses are oper-

ated by citizens and residents. Small businesses are an important element of the overall economic, social, cultural and political life in society. These businesses contribute to the development and growth of the community. Consequently, the loss of small businesses can result in community impoverishment and/or demise. In 2003 nearly 24 million small businesses employed an estimated 116 million people (26). A recent Wells Fargo/Gallup Survey reports that two thirds of businesses named the rising health insurance and energy costs as their prime concern. While owners appreciated the risks of natural and human made disasters, protection against *terrorism was rated below* other concerns (27).

The research team recognizes that it is important to inform and prepare the public and the small businesses of each community, for potential terrorist attacks, especially bioterrorism. A Rand study found that people are receptive to learning more about potential terrorist's attacks and how to prepare for them (28). But the *Redefining Readiness* study findings indicate that 40-percent of the sampled people are worried about cooperating with government officials because they do not trust them (29). Information abounds on the internet for citizens to prepare and respond to terrorist attacks, and on how to assemble citizen emergency response teams. The research team finds that *information regarding bioterrorism and biodefense is very sparse; full of medical jargon; difficult to understand; cumbersome to research; and woefully inadequate.*

Health Literacy

Addressing the health literacy of the public is a central consideration for preparing individuals to handle biological, chemical or radiological terrorist attacks. The U.S. Postal Service mailed cards to every household in the U.S. following 9/11, explaining how to handle suspicious mail. However, no consideration was given to the fact that not everyone in the U.S. can read or understand what was written. *Ninety million adult Americans, or nearly half the adult population, lack the ability to understand basic health information, severely compromising their ability to take care of themselves and their families (30).* They cannot be casually confronted with an ex-

traordinary amount of material in written and electronic formats under the assumption they are computer literate. This is information that citizens will have to read process and potentially incorporate into their decision making (31) whether it is supplied by government officials, physicians, employers, or the media.

Access and comprehension for every U.S. citizen to preparedness information is vital. The Institute of Medicine (2004) notes, health literacy capacity is affected by culture, language, and the characteristics of health-related settings (32). Subsequently, periodic assessments will help identify the cultural traditions and beliefs of our communities and the education, literacy level, and language preferences necessary for the development of appropriate materials and programs (33).

Literacy in biodefense and the consequences from the use of weapons of mass destruction is not well understood by – or adequately communicated to – the public. An internet search using the search engines Alta Vista and Google produced 2.2 million entries for health literacy; 2.3 million entries for science literacy and 16 thousand entries for biodefense literacy. The majority of those web sites that pertained to citizen preparedness were duplicative, confusing, and difficult to navigate.

In the area of health and biodefense literacy, the majority of web sites, instead of providing information, directed the user to links to the Center for Disease Control (CDC); Department of Health and Human Services (DHHS); Federal Emergency Management Agency (FEMA); the Institute of Medicine of the National Academies and other agencies; professional societies and private organizations. Science literacy web sites provided links to the American Association of Science. A significant number of web sites offered commercial products; courses or research opportunities; promoted political opinions; or simply and summarily discussed literacy in the organizational context and needs. These sites did not address the subjects of interest to our research. The most deficient return on information was in the area of bioterrorism and biodefense. Very little is available on the internet defining, explaining or emphasizing bioterrorism and / or biodefense. The CDC website offers the most comprehensive information on understanding and preparing for bioterror-

ism events. Information on biodefense is even more elusive, even through the CDC.

Citizen Corps, CERT and the American Red Cross offer the most user friendly sites for primarily disaster emergency preparedness and terrorism; they also provide links to CDC and FEMA sites. Most of the medical societies primarily offer disease education, as opposed to health education for patients. The American Public Health Association is in the early stages of developing a public awareness program. Recent polls conducted by APHA show that the majority of Americans surveyed were aware of public health and its contribution to community welfare. However, the majority of responders did not know which organizations and agencies are responsible for funding public health research (The Nation's Health, APHA December 2004/January 2005, and <www.researchamerica.org>). These findings further underscore the need to inform and educate the public about the risks of, and public health measures against, bioterrorism.

Understanding bioterrorism is not an easy task given the vocabulary often used to describe infection symptomatology and manifestation. As Zarcadoolas, Pleasant and Greer (2004) point out, the CDC offers explanations of possible effects due to exposure to Anthrax. For example, the third sentence of the CDC's definition of anthrax, "Human anthrax has three major clinical forms: coetaneous, inhalation, and gastrointestinal" contains a few easy to read words (e.g. has, three, major, forms), but runs into an understanding roadblock when assuming the reader comprehends the embedded concept of a "clinical form" (34). When such explanations are offered it is assumed the reader is familiar with various medical terms.

Several agencies (National Aeronautics and Space Administration (NASA) and the Virginia Department of Health (VDH)) have issued simple, easily accessible, and transportable (wallet or briefcase) materials to guide preparedness especially in the shelter in place situations. Yet, the material is too simplistic and assumes that there will be trained personnel to provide additional leadership and guidance in the case of a real emergency. This assumption is misleading because past experience with major epidemics and mass casualties has shown that disasters spare no one and the

same holds true for terrorist events.

Panic and Civil Disobedience

Fear, anxiety, and distrust can be reduced through interactive participation by government agencies with its citizens in times of public health crises. When authorities fail to effectively communicate health risks and the means to address them, credibility suffers and the public response to events becomes unpredictable (35).

The United States has suffered from bioterrorism within its territories. Only after the 2001 anthrax-laced mail, did the public become cognizant and concerned with the threat of bioweapons. In 2002, Bedeneck and Holloway pointed out that a "natural state of denial exists at the community level" (36). Psychological preparedness programs must be tailored to the specific needs of each community. Planning, deployment, and exercises must involve the public, media, and education personnel in addition to the medical teams (37).

In summary, including the public in emergency response efforts to a public health crisis is critical in reducing panic and effectively communicating with the public (38). To integrate the public into bioterrorism preparedness and response, several guidelines are proposed by Glass and Schoch-Spana (6). First, the public must be included as a partner in planning responses to bioterrorism. Second, civil organizations can play an important role and must be enlisted in public health activities. The third guideline is aimed at developing plans that anticipate the needs for home-based patient care. Next, investments must be made in public outreach and communication strategies (39). Finally, planning must reflect the main concerns of the affected populations (6).

Panic, in relation to epidemics and bioterrorism, is not unique to recent history. It has been documented that smallpox played a critical role in the outcome of the Continental Army during the American Revolutionary War. The colonies were hit with smallpox, especially in the Boston area, and quarantines restricted travel and contact between those infected with smallpox and the general public. Special hospitals were designated for the treatment of the smallpox victims (40). At the

onset, inoculation of soldiers was prohibited in fear that it would result in spreading smallpox and devastating the armed forces.

Following the devastation by smallpox of nearly a third of the Americans gathered for the siege of Quebec in 1775, the wisdom of the inoculation policy was called into question (40). “Wave after wave of smallpox decimated the soldiers during the first two years of the war. New recruits would come down with the disease immediately upon enlistment, and thousands of potential fighters stayed away out of fear of infection” (41).

As the military forces waned, General George Washington gave orders to begin inoculating soldiers and new recruits for smallpox, leaving many unable to fight for weeks. This vulnerability led Washington to secretly conduct the smallpox inoculations so that the British would not know that large numbers of his forces were incapacitated (41). If this critical decision had not been made, many historians question the outcome of the war because smallpox may have led to the demise of the Continental Army. Conversely, the irregular volunteer forces were not inoculated against smallpox. This resulted in panic at the release by General Cornwallis of infected individuals, mostly former slaves, into the American forces. The disastrous response of the volunteers was their refusal to fight for cities, such as Charleston – or worse yet, the disbandment of the Continental militia.

The “Spanish Flu” pandemic of 1918 (aka, “The Purple Death”) killed 20 to 40 million people globally. Many died within hours of contracting the virus (42), causing panic everywhere. It is believed that the influenza outbreak began “amidst the carnage of the Western Front or at a U.S. Army camp during World War” then mutated as it spread across the globe (42). The virus was frightening in its attack, usually killing within a few hours of initial exposure and filling the victim’s lungs with bloody foam; death was the result of one’s drowning in their own body fluids (42). The Spanish Flu oddly attacked primarily the healthy young, striking at a time when many hospitals and physicians were busied tending to the wounded of World War I (42). This is attributed to the vulnerability of the large concentration of individuals such as armies, refugees, schools, hospitals and military training camps.

As stories of the Spanish Flu spread, so did

public fear and panic. As Rekenhaler describes: “Newspapers of the time were filled with stories of children, suddenly orphaned by the virus, wandering the streets in search of food and shelter; of speculation that the sickness actually was caused by a poison gas being spread by German U-boats prowling coastal regions... Street signs warned of heavy fines for spitting, and many people didn’t venture outside without a gauze mask over their faces. In some cities, including San Francisco, the masks for a time became mandatory... (42)”

Today the potential threat of panic raises reservations among experts, more so than the potential epidemics or bioagents themselves at times. For example, anthrax is not contagious between humans yet fear of it by the general public remains high, especially following the deaths of three postal workers in 2001 (44). The indiscriminate use of antibiotics which, as Demidov explains “could readily spread a new kind of drug resistance among various types of other pathogenic bacteria. The future consequences of this for the U.S. populace will be very harmful”(44).

When anticipating public response, oftentimes experts plan for the wrong scenarios and expect the public to react in fear and panic when in fact they do not.

The 1992 World Trade Center Bombings were thought to “be a recipe for panic” (45); however upon interviewing a sample of those trapped inside the buildings, many reported not having panicked at all. Thomas Glass writes that in the case of bioterrorism, it is not the public that generally is responsible for panic but rather the public health community and the manner in which information is provided. “Our tendency is to withhold information too long for fear that it will cause panic when, in fact, it’s the absence of information that is most likely to cause panic” (45). In 1985, the news of the imported Ebola infected primates to the Reston, Northern Virginia, primate quarantine facility were suppressed by the military due to fear of creating residential panic (Richard Horton *Health Wars* NYRB pg. 66-69). This resulted in the public erosion of trust in the government and health officials.

Table 2 (page 18) presents a selective summary of events of unusual psychosocial responses to epidemics. Most of these events were indeed triggered by poor planning for quarantines;

lack of communications, preferential treatment; profiling; the curtailing of civil liberties without involvement from the affected communities; and even acts of blatant discrimination.

Further, the media can play a critical role in stemming or inciting panic. The lack of local media presence during the 1995 Ebola virus outbreak in Zaire left a void of credible information being spread throughout the country. Rumors and fear were the main source of public knowledge. This void led to increasing suspicion of doctors and the WHO recruiting medical students to conduct an on foot campaign to spread information

and answer questions (46).

However, the media can also play a dangerous role by inciting panic as was seen following the outbreak of the plague in Surat, India in 1994. Patients were untreated as physicians began fleeing the area, leading the public to suspect the worse. The BBC, misinformed by a public health official, reported that "There is a mystery fever in Surat", leading to mass panic and 400,000 people fleeing Surat in less than 24 hours (46). Balanced reporting that provides enough information to allow the public to respond appropriately without inciting widespread public panic is key.

Table 2 Psychological Responses to Public Health Crises			
Community Diseases	Locality	Date	Civilian Response to Public Health Measures
Small pox	Milwaukee New York City	1894 1893-94	Civil unrest, panic Civil Unrest, Anti vaccination protests, forced vaccinations
Plague	San Francisco China Town	1900	Fear, Panic, Riots
Yellow fever and establishment of Quarantines	Staten Island El Paso	1858 1918	Riots Border Riots by Mexicans
Cholera	Fire Island, N.Y.	1892	Fear, Panic, Civil Unrest, Threat of Violence
Typhus	New York City	1892	Fear, Panic, Racial Discrimination against Jewish Immigrants from East Europe
Small pox vaccination campaign	U.S.A.	2003-2004	Civil protest by professional societies
SARS	Guangdong, China	2003	Riots protesting quarantine

Survey Findings and Limitations

The survey composed in English and Spanish languages with the appropriate information on subject protection and confidentiality of response, was posted as a website. Two mechanisms were used to distribute the survey. The first approach consisted of data collection from targeted population groups, such as the George Mason School of Public Policy students, Citizen Emergency Response Teams (CERTs) of Arlington, Citizen Council members, as well as Fairfax City business owners. The other involved contracting *Genesis Corporation* (47) a commercial polling agency, which has established a large sampling population consisting of panels. Each panel

is recruited through a multi-sourced combination of targeted emails, online banner ads, co-registrations, direct mail, and telephone. Each panel consists of respondents that have agreed to receive surveys and enquiries. Genesis corporation administered the survey only in the English language. As of June 16, 2005 204 responses were received and analyzed. Less than 1% took the survey in the Spanish language. Computer skills and literacy, limited geographic distribution of the respondents, and targeting special groups were limitations of this approach. Given time and resource constraints, we consider this survey to be a pilot survey.

Findings:

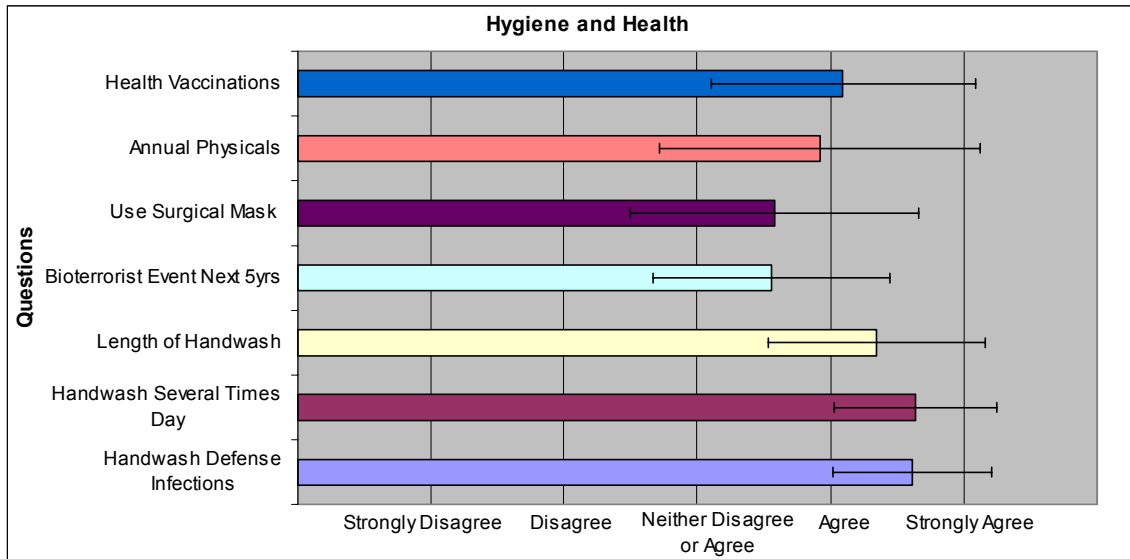
The analysis of the survey results show that of the 204 respondents, 125 were female and 79 were male (see *Table 3*). The majority of the survey respondents were females with 23 percent having a high school education, 34 percent as undergradu-

ates, 24-percent as having a graduate education, 18-percent as having a post graduate education and 2-percent would describe themselves as healthcare professionals (see *Table 4*).

Age	# of Respondents	% of Total Respondents	Female	% Respondents in Age Group (Female)	Male	% Respondents in Age Group (Male)
20-29	34	17	27	79	7	21
30-39	43	21	30	70	13	30
40-49	44	22	25	57	19	43
50-59	57	28	34	60	23	40
60-69	19	9	7	37	12	63
70-79	3	1	1	33	2	67
80-89	3	1	0	0	3	100
Un-known Age	1	<1	1	100	0	0
Total	204		125		79	

The sampled individuals that washing hands is a primary defense against infections. They do keep their vaccinations current and more often than not, have their annual physicals. They are uncertain about more specific hygiene techniques such as mask wearing.

FIGURE 3: Responses to Questions on Attitudes and Practices towards Hygiene and Health.



The results from the survey questions regarding planning revealed that the sampled individuals, including business owners, have engaged in very little planning for a bioterrorist attack. Essentially, they have not created nor practiced a plan to respond to a bioterrorist attack. They are uncertain over the possibility of a bioterrorist event in the next 5 years. However respondents have done very little to prepare for a bioterrorist attack and responding business acknowledge that they do not have a preparedness plans for their employees, customers or families. Interestingly enough, the majority of respondents were willing to use surgical masks if available if there were a bioterrorist attack or a natural epidemic (see *Figures 4 and 5*).

FIGURE 4: Responses to Questions on Planning for Bioterrorism Attacks.

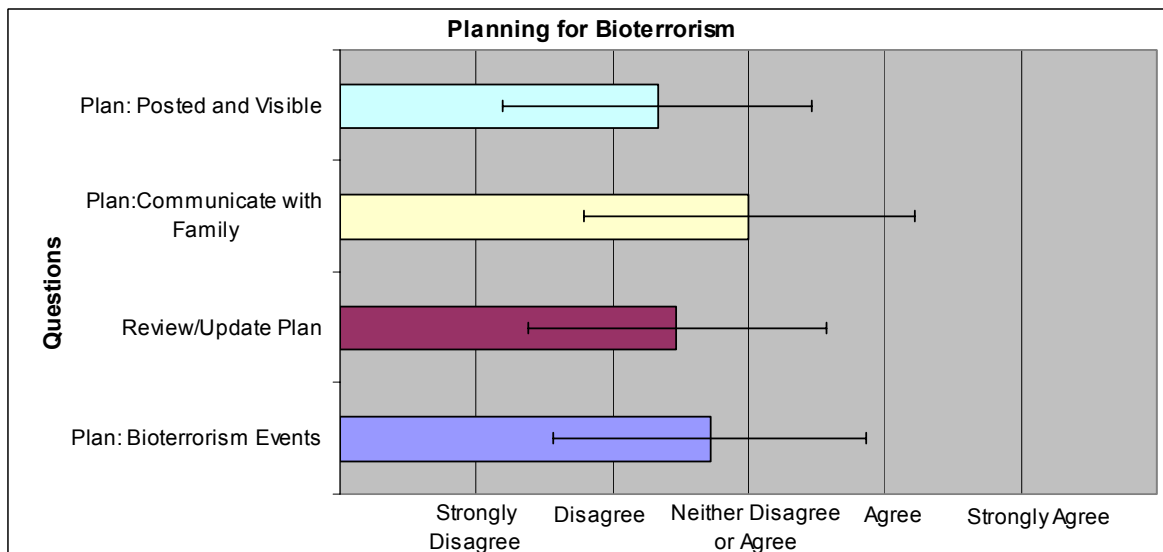
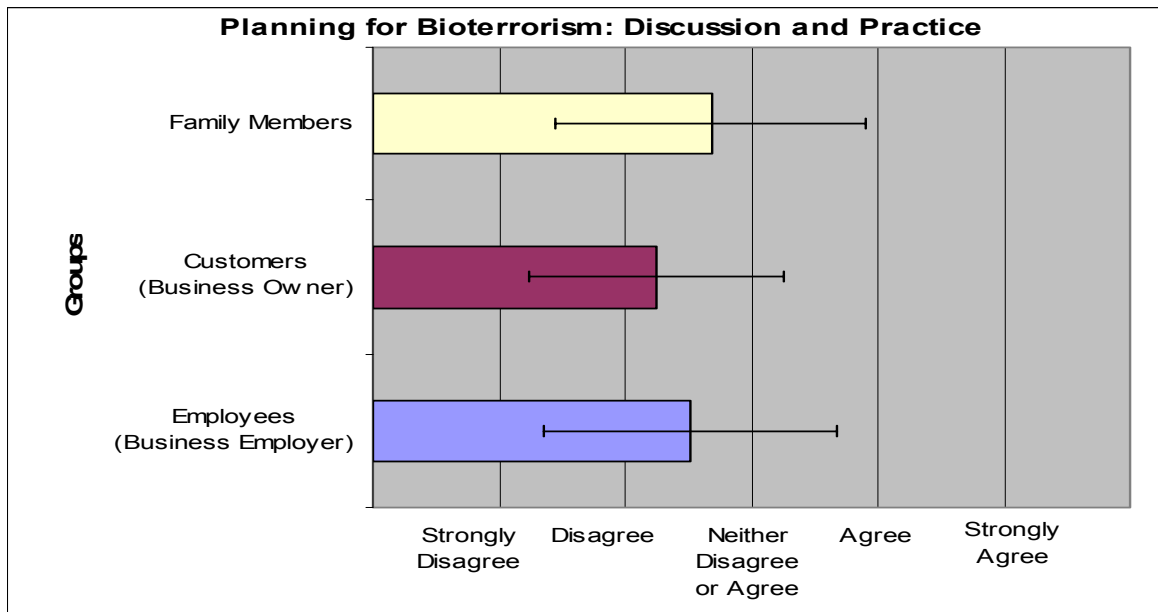


FIGURE 5: Responses to Questions on Discussion and Practices for Biodefense



All respondents were not prepared to shelter-in-place (54, 55) and were uncertain on how to prepare for sheltering-in-place. (Figure 6).

FIGURE 6: Responses to Questions on Sheltering-in-Place for Biodefense Preparedness.

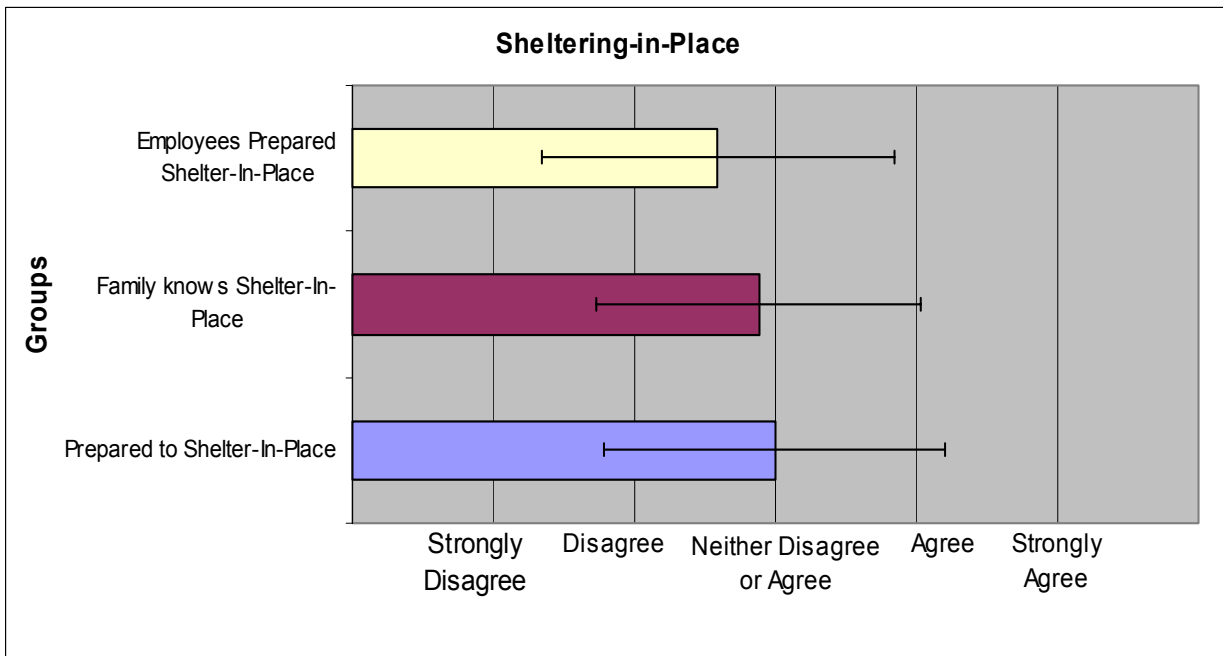


TABLE 4: Education of Respondents

	# of Respondents	% of Total Respondents	# Respondents (Female)	% Respondents (Female)	# Respondents (Male)	% Male
High School	46	23	34	74	12	26
Undergraduate	69	34	44	64	25	36
Graduate	48	24	23	48	25	52
Post Graduate	36	18	19	53	17	47
Healthcare Professional	5	2	5	100	0	0
Total	204		125		79	

Thirty three percent of the respondents were from Virginia, 60-percent from Maryland and 7-percent from Washington D.C (see *Table 5*).

TABLE 5: Represented Areas

State / Area/ Country	# of Respondents	% of Total Respondents
Washington D.C.	14	7
MD	122	60
VA	68	33
Total	204	100

The majority of the respondents (93%) were not members of Citizen Corps (see *Table 6*).

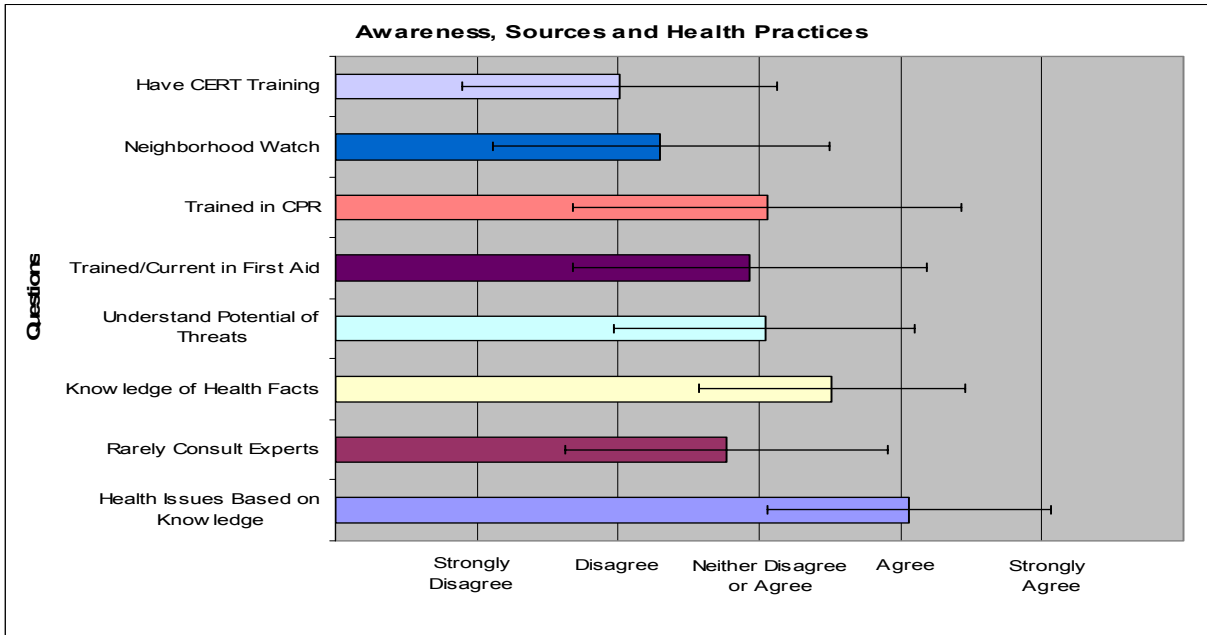
TABLE 6: Respondents that are members of Citizen Corps

Member of Citizen Corps	# of Respondents	% of Respondents
Yes	14	7
No	188	93
Total	202	

The majority surveyed indicated that they rely on their own knowledge for health and health care decisions. These findings underscore the findings that health experts are unlikely to be consulted on

a regular basis. There was a lack of first aid and CPR training (see *Figure 1*).

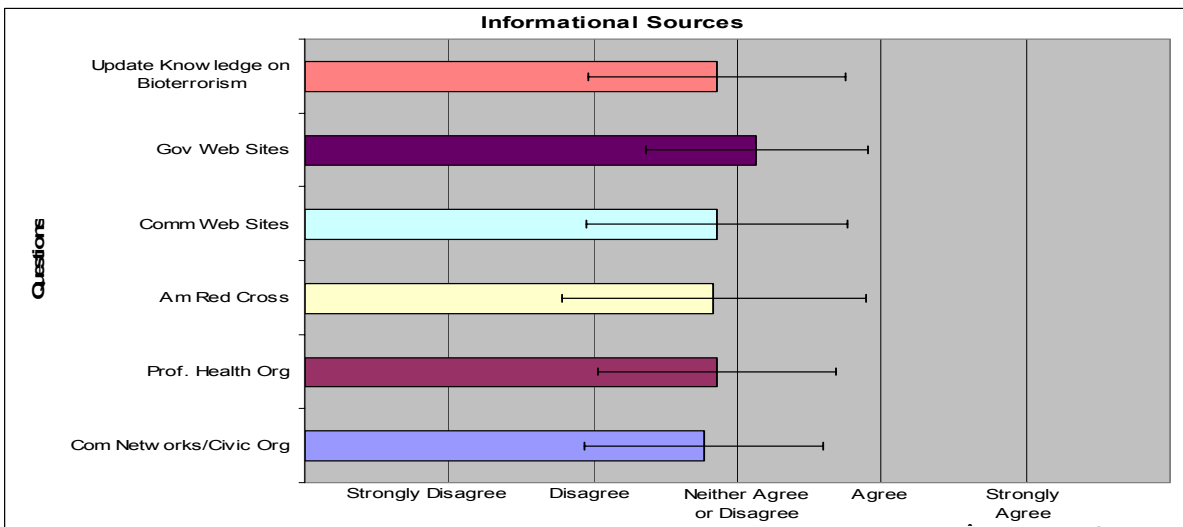
FIGURE 1: Responses to Questions on Health, Awareness, Sources and Practices.



The majority of the respondents rely on the internet websites from the government to update their knowledge on biodefense and bioterrorism (see

Figure 2). The findings indicate respondents do not update their knowledge about biodefense and bioterrorism on a regular basis.

FIGURE 2: Responses to Questions on Informational Sources for Potential Threats of Bioterrorism and Biodefense.



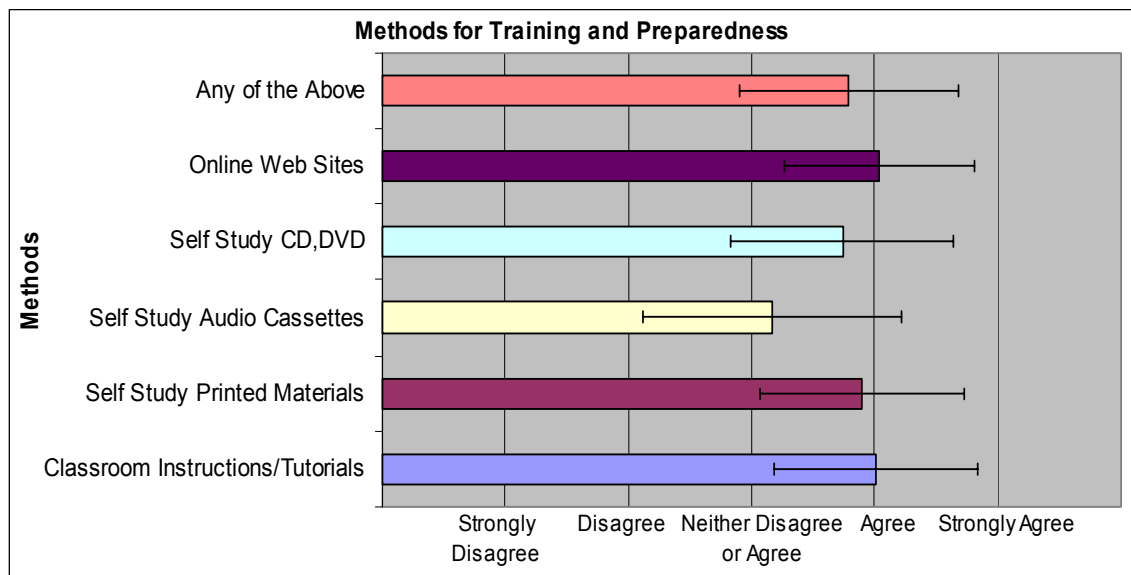
The respondents do not volunteer with a health organizations (88%) and the majority are not interested in volunteering for citizen preparedness activities (60%).

TABLE 7: Responses to Questions on Volunteer Activities.

	Yes	% of Respondents (Yes)	No	% of Respondents (No)
Volunteer with Health Organizations	22	11	179	88
Interested in volunteering for citizen preparedness activities.	81	40	122	60

The sample population prefer online websites, classrooms, and tutorials as a means to become educated on biodefense (see *Figure 7*).

FIGURE 7: Responses to Questions on Methods for Biodefense Preparedness and Training.



In summary, within the limitations of this survey, the research team finds that the public remains unprepared and confused about the need to develop skills to defend against bioterrorism. This is very striking for the population surveyed constitutes a well educated group of individuals. Information regarding knowledge, attitude, and practices among a more diverse population (a failure to reach the Spanish speaking population in this survey) should be conducted to ascertain the full needs of the NCR and other communities. Thus we conclude that health and science literacy, and proper communication format and outreach for the general public, is a major barrier in improving emergency preparedness.

Workshop summaries:

The findings and recommendations from the three expert workshops conducted between August 2004 and April 2005 are summarized in Appendix 6. The experts reviewed and critiqued the results of the research and provided additional comments and suggestions which were incorporated into the recommendations of this report. The need to develop biodefense training materials targeting diverse populations, improving literacy levels, and the use of community services for training purposes of the public were the salient findings of this report. Communicating risks and establishing community base strategies and services designed to promote resiliency and long term recovery following disasters and/or terrorism events should be given high priority and urgency.

Conclusions and Recommendations

Properly trained individuals still remain the best resource for detecting and reporting a bioterrorist event, given the state of sensor technology and their use for monitoring of bioterrorist events. Based on the available information, surveys and expert consultations, the research team has developed the following recommendations:

1. Available bio-sensor technologies for real time monitoring of bioterrorist events is still in its infancy. Eric Lipton of the New York Times, reports in the May 9, 2005 that the US government is planning to replace at a very high cost most of the antiterrorism monitoring devices, especially those used for radiation and air sampling. New technology and monitoring equipment will be required in order to create a virtual defense and “shield” to protect against future terrorist attempts. But in the foreseeable future properly trained individuals will remain the best resource for detecting; evaluating; reporting; and the initial handling of terrorist events including first aid and care. Adequate funding to communities and businesses by the federal government should be made available for training and education purposes.
2. Unlike training in cardiopulmonary resuscitation and first aid, standards for recognition and response to a rare event such as terrorist attack using nuclear; radiological; chemical; and *especially biological* agents have not been fully devel-

oped or agreed upon. A standard needs to be developed, adopted and adapted for different segments of our society and geographic distribution.

3. In order to understand the effects of bioterrorism on health and to act accordingly, adequate *health and science literacy* are a prerequisite. Based on the literature reviews and our pilot survey, community organizations such as Citizen Corps (MRC and CERTS), should be a resource for raising health literacy and disaster and bioterrorism preparedness.
4. Adequate health and science literacy are a prerequisite in order to understand bioterrorism effects on health and to act accordingly. Currently civic and organizations such as Citizen Corps and CERTS, operating within the community, should be a major conduit for raising health literacy and disaster preparedness awareness. It was noted that the federal government is currently providing modest funds for school teachers and students for biodefense curriculum development. However, there is an urgent need for a more concerted effort to develop understandable and user friendly information and training tools. Perhaps the most difficult task will be to develop a civilian concept for heightened vigilance and situational awareness. This would be beneficial when dealing with the epidemiological aspects of infectious diseases and the multiplicity and abundance of bioagents.
5. New frontiers should be explored, moving beyond printed materials, and utilizing more advanced technical resources to communicate with the public. Michael Rich found that video intervention and prevention assessment (VIA) is a useful method to give children and adolescents voices in their health care (49). Moreover, young people have an increased awareness of themselves and their health situations (49). Given the access people have to the internet, radio and television, it will be useful to expand beyond brochures. Other media outlets are capable of educating the public and the media of the dangers of terrorism (especially bioterrorism) and can reach a larger unconstrained and socio-economically diverse audience.
6. Significant vulnerability can be mitigated by

altering the attitude and practices towards simple preventive measures such as hand washing. A vigorous and focused campaign of structured education and training can reduce many vulnerabilities. Information can be presented in a succinct fashion categorizing the routes of infestation and means to protect against them. The modes of transmission infections can be divided into the following categories: *airborne and or inhalational; blood borne; food and water transmissions.* (see Figure 8 and 9).

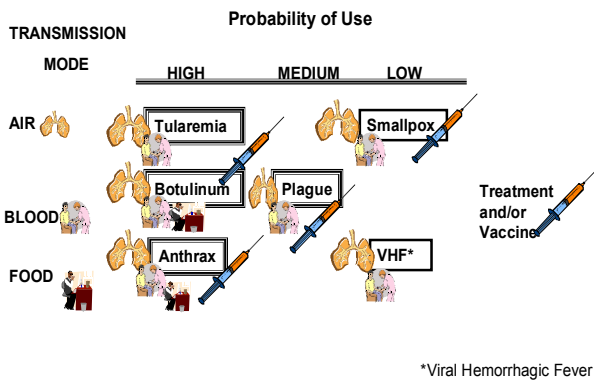
FIGURE 8: Educational Presentation

Prevention and Treatment

Bioagent	Prevention	Treatment
Anthrax		
Tularemia		
Botulinum		
Plague		
Smallpox		
VHF		

Proprietary Dr. Arnauld Nicogossian

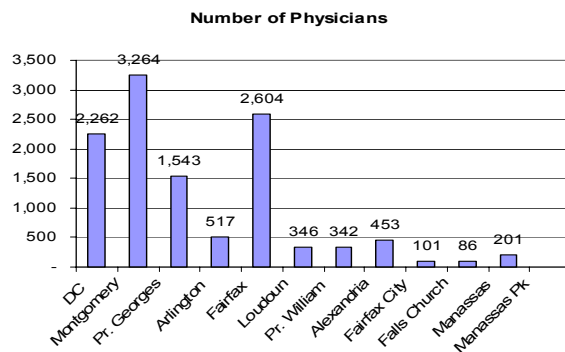
FIGURE 9: Modes of Transmission



7. So far few efforts outside of the CERTS activities have been systematically directed toward the preparedness and training of the residents of communities, and their integration into available emergency response and preparedness programs. Lack of resources and uniform standards, together with the low level of health literacy, are major barriers.

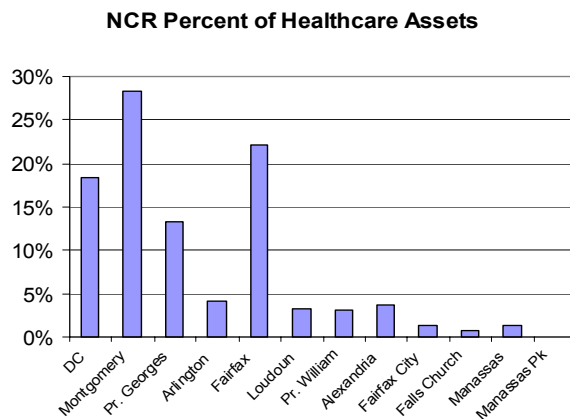
8. A review by the NCR/CIVA Health Sector of the available medical resources within the local area has shown a wide distribution of capabilities among different jurisdictions. This information is captured by the data presented in *Figures 10 and 11*, which display the distribution of healthcare assets within the National Capital Region (NCR). Maryland is home to the largest aggregate percentage, followed by Virginia and the District. Montgomery and Fairfax Counties account for

FIGURE 10: Number of Physicians in the NCR



ESRI Business Analyst, 2003

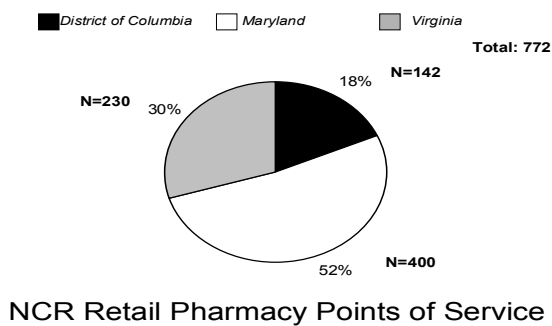
FIGURE 11: Distribution of the Percentage of Health Care assets in the NCR



ESRI Business Analyst, 2003

approximately half of all the resources. The pattern is consistent with the pattern of the geographical distribution of physician providers. This includes over 20,000 points of a broad range and types of facilities such as: offices, labs, clinics, hospitals, extended care, and others. The distribution of pharmacy/drugstores within the NCR follows a similar pattern and is supportive of the findings that a large proportion of medical and health care resources are located in the Maryland region (see *Figure 12*).

FIGURE 12: Drugstores and Pharmacies in the



The geographic distribution and availability of health care and emergency response resources should be carefully evaluated in relation to their criticality, vulnerability, preparedness and the probability of threats. Such analysis should include the community population density and sufficiency of the health resources.

9. Self sufficiency, preparation, and the ability to respond to terrorist or other disaster events by individuals within a community should be skills targeted in areas with sparse and expanding populations that lack adequate access to medical/health and emergency infrastructures. Based on the U.S. Census Bureau 2003 information on the NCR population distribution, the population density seems to be consistent with the available medical resources for the NCR. Further in-depth evaluation of the adequacy and

self sufficiency is necessary.

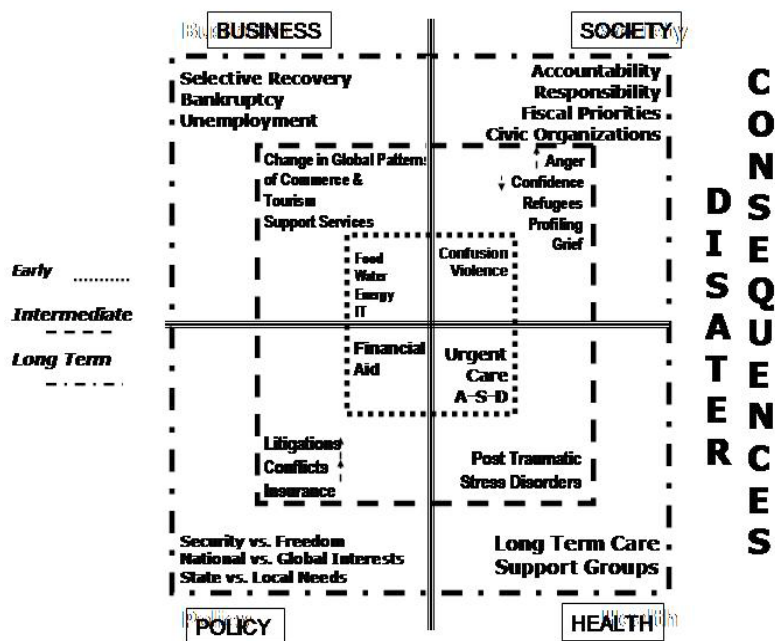
10. Neighborhoods are the building blocks and basic web of relationships in the community. Conscious efforts to build and strengthen these basic blocks are an essential step in achieving preparedness. This is based on the premise that individual proficiency in understanding and handling threats and attacks, coupled with a “hardened” neighborhood sufficiency are keys to medical preparedness; response and mitigation of injury; illness; and death. Health disparities and literacy within and between the communities and neighborhoods should be addressed when developing training and educational materials (50, 51)

Frequently located within and around the shopping center are professional buildings with such services as:

- Pharmacies
- Primary care services
- Dental services
- Rehabilitation services
- Urgent care facilities
- Basic laboratory
- Basic radiology

The research team has adopted a model for potential impacts resulting from natural and human

FIGURE 13: Potential Impacts Resulting from Natural and Human Made Disasters



made disasters. These impacts are subdivided into business, health, policy and societal categories. The sequence of events is further classified into early (hours or days), intermediate (days and weeks) and long term (weeks and months) phases. This concept is presented in *Figure 13*. Further, ASD stands for acute stress disorder, PTSD is post traumatic stress disorder, and “\$ AID” represents federal or state emergency aid or loans. Violence has been defined as actions aimed at emotional or physical harm. Well structured educational and training materials should address all three phases of sequential events to be encountered as the result of natural or human-made disasters.

11. The commercial nucleus and “21st Century Commons” for neighbors is the local shopping center. Exploring and exploiting the potential of the neighborhood shopping centers as the staging area and point of coordination for WMD preparedness requires further evaluation.

Many of the following professionals have their offices in or very near these locations:

- Paramedics, EMTs
- Community Pharmacists
- Physicians, Dentists
- Nurse Practitioners
- Physician Assistants
- Office Nurses
- Medical Assistances
- Rehabilitation

Frequently, the governmental Emergency

Medical Services are immediately adjacent to these offices (see *Figure 14*). In all cases they are nearby, and located in the proximity of several such shopping centers. Security of the shopping malls is an important issue, since they can be the target for terrorists, especially in the case of dissemination of bio agents.

There is a

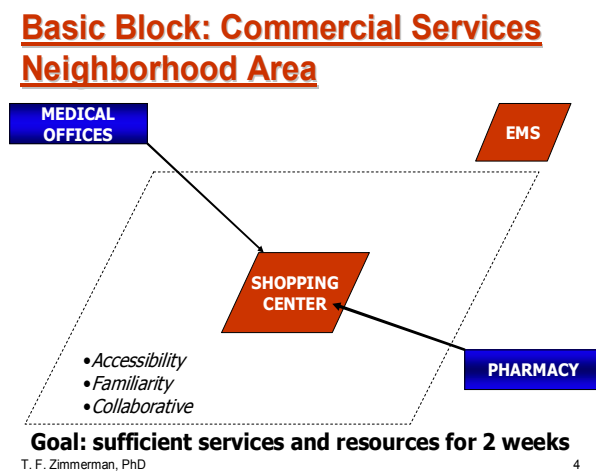
need to carefully study the feasibility of utilizing the neighborhood and regional shopping centers as basic and redundant organizing points for community preparedness.

12. Developing generic and as appropriate, individually tailored emergency preparedness plans and conducting periodic training exercises with the employees and family members (if business is within a residence) is an essential part of the response and resilience for the small businesses. The government and insurance industry should provide enticements and resources to those businesses willing to produce such plans and engage in rehearsal. The federal and state legislators and governments, with the help of insurance companies and representatives from the small business associations, should consider developing affordable disaster insurance plans, prorated by risk for different geographic areas.

Small businesses and communities face several issues after an act of terrorism. This should include the means for using credit services in lieu of cash in devastated areas. Many small businesses would be unable to function or remain open without credit card transaction capabilities and many residents will run out of cash to purchase goods and services. Staffing issues may also prevent small businesses from reopening or remaining open after an attack. In both of these cases, dissemination of useful and applicable information is important for local businesses and the media.

13. The key issue facing small businesses is whether they can set up a redundant system that can be used to rebuild. This issue may prove difficult to resolve as many businesses may recognize the need for such a system but may be unwilling or unable to implement it. Implementation barriers include cost, staffing and general lack of information, on the appropriate steps to be taken following

FIGURE 14: Emergency Medical Service Locations



T. F. Zimmerman, PhD

4

an event.

14. Methods of how businesses and individuals obtain information are changing so the methods of how to relay information in a quick and reliable manner needs to change as well—internet, cellular phones, PDA's, etc.

15. A communications link similar to the one developed by *Stargazer* should be field tested and readily made available for individual residents and small businesses. A preparedness survey is desirable in various languages in addition to English, especially; Arabic, Spanish, Korean, Vietnamese, Farsi, and Chinese.

16. All educational materials and training should include a component of psychological preparedness and response. A wealth of information on this subject is available in the open literature (52, 53). Individuals should be made aware of the psychological impacts of terrorism and be able to identify those feelings and symptoms which can affect an individual's performance and functioning. Special attention should be directed towards coping with grave information, grieving and interactions with vulnerable populations. Avenues for relating information to the average family and vulnerable populations (seniors, disabled) should be focused on in particular. Various avenues include: creating risk based standards for community outreach; convincing businesses to play a role in redundant communications; and visual communications options.

17. The news media should be involved in this process and be able to deliver "spectacular and news worthy materials" in responsible and informative ways. Training, preparedness and pertinent communications will be beneficial for the majority of the individuals. Service-oriented businesses should be trained on handling customers, employees and family members during a bioterrorist event. Panic, civil unrest and/or disobedience should not be an option. Recognition that terrorist use of WMD is of limited scope, and the primary objective is to "terrorize" is essential to the success of any training project.

18. The social contract between government, public health organizations, and the public in general,

needs to be renegotiated. The government needs to clearly establish the roles of the stakeholders. The public currently does not know what to expect from the government and the public health organizations. There is a lack of consensus on standards, practices and training. The model to be used must be scaleable, modular and capable of multiple delivery systems.

19. Recently the Department of Homeland Security (DHS) released a series of scenarios to be used in the simulations and training for disaster and terrorism preparedness. Such scenarios should be adapted, widely disseminated and practiced. Lessons learned should be incorporated and the scenarios updated periodically. A set of evaluation tools and success criteria should be developed as part of such training, to provide a standardized measure of preparedness.

20. The survey developed and presented in this research on knowledge, attitudes and practices (KAP) should be widely distributed and the obtained information should guide the development of a training curriculum.

21. The GMU/JMU Team in concert with the volunteer organizations such as the Citizen Corps, should develop and field test the training materials for biodefense, based on the principles presented in this report.

Appendix 1: Call to Workshop

Critical Role of Citizens in Biodefense and Early Response

The Call to the Workshop

On December 16, 2004 the Office of International Medical Policy of the School of Public Policy, George Mason University (OIMP, SPP, GMU) together with James Madison University will convene a one day meeting at the Finley Building, Fairfax campus of the George Mason University to address the ongoing research in the area of “**Critical Role of Citizens in Biodefense and Early Warning**”.

The workshop will start at 10:00 and conclude at 15:00. Additional follow up sessions might be required based on the outcome of this activity

Goal of the Meeting

This *meeting* is dedicated to the continuation of the development of background information, and planning for the preparedness training at the community level.

Background

Most of the current training activities involve the “traditional first responders” with some effort applied to establish the Community Emergency Response Teams (CERT). The findings from the report entitled “Trust for America Health,” released in December 2003, suggest that after two years and nearly \$2 billion of federal bioterrorism preparedness funding, the states are only modestly better prepared to respond to health emergencies than they were prior to September 11, 2001.

As recently as January 2004, the Gilmore Commission found that the citizen preparedness efforts are inadequate and require further enhancement:

Forging the America’s New Normalcy *The Gilmore Commission Report*

The new normalcy Benchmark:

- Both the containment and further empowerment of individual freedoms in the context of measurable advances that secure the homeland.
- Consistent commitment of resources that improve the ability of all levels of government, the private sector and our citizens to prevent terrorists attacks and, if warranted, to respond and recover effectively to the full range of threats faced by the nation.
- A standardized and effective process for sharing information and intelligence among all stakeholders—one that is built on moving actionable information to the broadest possible audience rapidly and that allows for heightened security with minimal undesirable economic and societal consequences.
- Strong preparedness and readiness across state and local government and the private sector with corresponding processes that provide an enterprise wide national capacity to plan, equip, train, and

exercise against measurable standards.

-Clear definition about the roles, responsibilities, and acceptable uses of military domestically—that strengthens the role of the National Guard and Federal Reserve Components for any domestic mission, and ensures that America’s leaders will never be confronted with competing choices of using the military to respond to a domestic emergency versus the need to project our strength globally to defeat those who would seek to do us harm.

-Clear processes for engaging academia, business, all levels of government, and others in rapidly developing and implementing research, development and standards across technology, public policy, and other areas needed to secure the homeland—a process that focuses efforts on real versus perceived needs.

-Well-understood and shared process, plans, and incentives for protecting the nation’s critical infrastructures of government and in the private sector—a unified approach to managing our risks.

The **purpose** of this research is to respond to the new normalcy benchmark, focusing on the training needs for the citizen. Six specific objectives have been identified:

Gather Data to evaluate the information on the effectiveness of various training approaches, and retention of skills provided by the training by creation of an electronic questionnaire, which will be delivered to representative groups in Virginia for emergency, health and citizen participation.

Analysis and Evaluation: Analyze the available information to develop a rank-order understanding of training-related techniques, knowledge and skills for incorporation into the program review and design. Propose evaluation tools and metrics for measuring the effectiveness of civilian defense training.

Identify and Prioritize Risks: Evaluate successful strategies for identification of risks of terrorist attacks. Prioritize risks based on geographic and demographic vulnerability, assessing promising monitoring methods, and defining training and communication needs.

Recommendations for Training Programs: Develop consensus recommendations for the State of Virginia, with future application to neighboring states and the federal government, including the Office of Emergency Preparedness, and the Department of Homeland Security.

Identification of Counter-measures: This research effort will focus on a survey of existing training programs (Task 2), lessons learned, and policies that facilitate or impede the establishment of such training programs. In addition, we will evaluate the ability to transplant such programs nationally and internationally, based on unique cultural and geographic needs. *The design of an educational program, which will improve civilian and international security, and has minimal utility for the terrorists to use such programs to further their own goals, is a major topic to be addressed.*

Training and Information Dissemination: Using the model outcomes from Task 3, identify methods for both urgent and sustained information dissemination, and voluntary citizen participation based on a series of plausible threats.

Appendix 2: Workshop Participants

Workshop 1

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Fastsigns of Fairfax
Fairfax, VA

George K. Anderson, MD, MPH
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Brightwood, VA

Steve Lomicka
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Associate
Director, School of Public Policy
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Stephan Widell
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Assurance
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Assistant Clinical Professor of Medicine
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Ting Zhang, MA
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Appendix 3: Workshop Agendas

Workshop 1

Friday, August 6, 2004
Large Conference Room, Finley Building
George Mason University, Fairfax Campus

Email: tfz3@aol.com

10:00	Welcome Opening Remarks	Roger Stough
10:10	Introductions Review of the Agenda Objectives of the Meeting, Research Project: Deliverables and Schedules, Relevant Background Information	Arnauld Nicogossian
10:40	Literature Survey	Shanea Watkins
10:50	Literature Survey	Joshua Barnes
11:00	Report	Stargazer
11:10	Break	
11:15	Questions and Answers General Discussion	All Participants
12:30	Working Lunch Presentation of Visible Learning Systems Training Material	
13:20	General Discussion	All Participants
14:30	Summary of the Findings Recommendations and Follow-Up	Arnauld Nicogossian

Workshop 2

**Thursday, December 16, 2004
Large Conference Room, Finley Building
George Mason University, Fairfax Campus**

10:00	Introductions	Arnauld Nicogossian
10:10	Welcome	Kingsley Haynes
10:20	Opening Remarks	Suzanne Simmons
10:50	NCR	Jerry Brashear
11:00	Overview of the Project Status and the Literature Database Search	Arnauld Nicogossian & Ting Zhang
11:10	Discussion of the Survey	Thomas Zimmerman & Michael Lasky JMU & Stargazer Workshop Participants
11:50*	Review & Discussion of the Interim Report †	Research Team & Workshop Participants
12:15	Working Lunch and Continuation of Discussions †	All
13:20	Special Topics †	Thomas Zimmerman
13:40	Findings and Recommendations	All
15:00	Adjourn	

***10 minute Coffee break scheduled from 11:40 - 11:50 † Moderator: Keith Segerson**

Workshop 3

**Friday, April 8, 2005
Large Conference Room, Finley Building
George Mason University, Fairfax Campus**

10:00 am	Welcome and Introductions	Roger Stough and Arnauld Nicogossian
10:15 am	Projected 2005-2006 Citizen Corps Council needs, resources and activities and relevance of the Research Team Findings and Recommendations	Suzanne Simmons And Workshop Participants
12:15 am	Comments and Discussions on the Draft Report	Thomas Zimmerman
12:30 pm	-Working Lunch	
1:30 pm	Review of the Status of Survey and Discussion	Hy Vu, Rosann Wise
2:15 pm	Policies and Recommendations / Meeting Summation	Stephen Stewart
2:45 pm	Administrative issues and next steps	Danielle Mutone-Smith Rosann Wise, and Arnauld Nicogossian
3:00 pm	Adjourn	

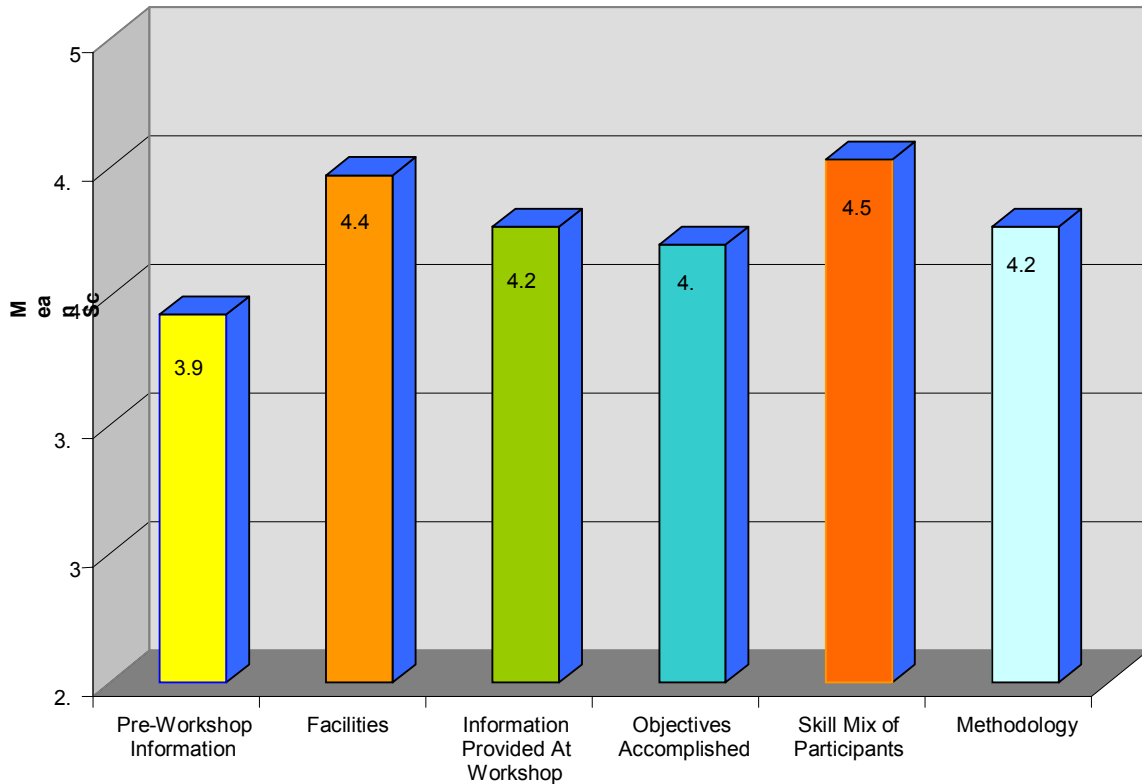
Appendix 4: Workshop Evaluation

Form

<i>Critical Role of Citizens in Biodefense and Early Warning</i>						
August 6, 2004						
Workshop Evaluation and Feedback						
Please complete the survey below. It will take only few minutes and will provide us with the information necessary to conduct an in depth analysis of the meeting outcome. Please return the survey to Shanea Watkins.						
Circle your satisfaction level on a scale of 1 to 5, with 5 being the most satisfied.						
Evaluate the following:	Very Low	Low	Medium	High	Very High	
Adequacy and usefulness of pre-workshop information.	1	2	3	4	5	N/A
Adequacy of facilities and accommodations.	1	2	3	4	5	N/A
Format and usefulness of information provided during the meeting.	1	2	3	4	5	N/A
Workshop accomplished established objectives	1	2	3	4	5	N/A
Are you satisfied that the skill mix of the participants was adequate to address the established agenda items?	1	2	3	4	5	N/A
Do you feel that the outlined research methodology will meet the intent of the proposal?	1	2	3	4	5	N/A
Were there any topics or issues that were not discussed during the workshop or that did not receive adequate attention and should be addressed at future meetings or researched by the GMU/JMU investigation teams? Please elaborate:						
Additional comments:						

Workshop 1 Evaluation

Evaluation Summary

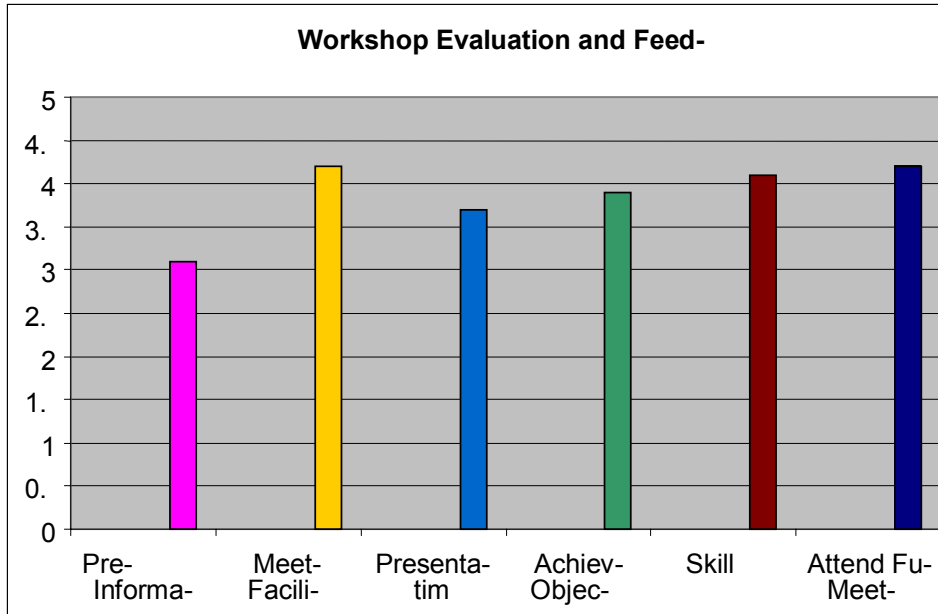


Evaluation Written Feedback Summary

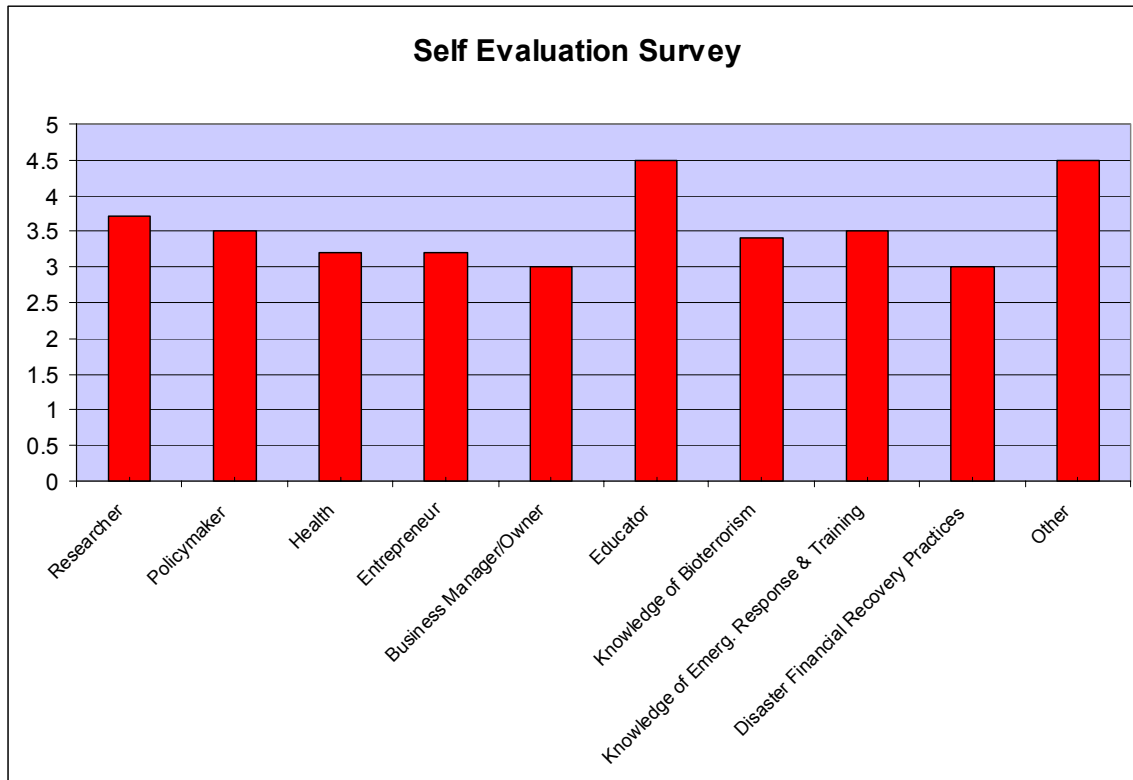
Were there any topics or issues that were not discussed during the workshop or that did not receive adequate attention and should be addressed at future meetings or researched by the GMU/JMU investigation teams? Please elaborate: **refinement of “citizen” roles by ? products need to get small business up and running following a WMD incident; it would have been a good idea to examine the baseline level of citizen awareness and the related assumptions on which the project is based**

Additional comments: **Defining the gap between public information and private business. Communications between all sectors during, before and after an emergency may help with the process. It will be important to maintain focus and discipline. This is a potentially very broad subject area.**

Workshop 2 Evaluation

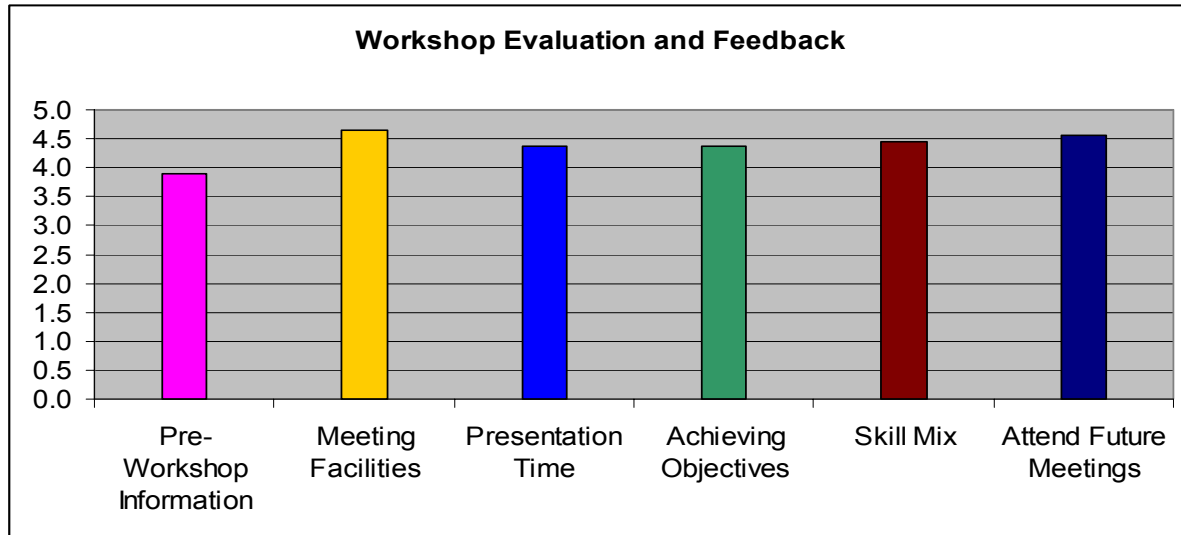


The workshop scored well on the skill mix of participants and achieving the set objectives. Email information prior to the meeting was sent twice to most participants, however the draft report was not sent out until two days prior the workshop. **Additional Written Feedback:** The workshop was well executed. Informational. We always learn more than we give.

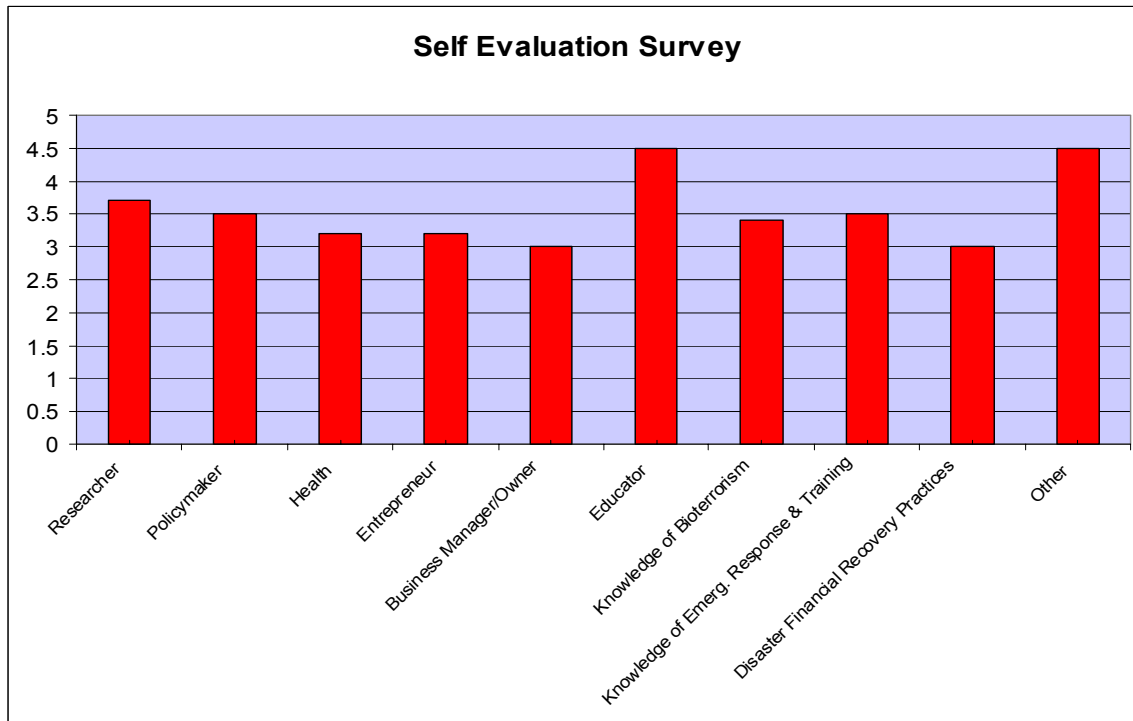


The self evaluation survey showed that there was a valuable and appropriate mix of skills present at the workshop.

Workshop 3 Evaluation



The workshop scored well on the skill mix of participants and achieving the set objectives. Email information prior to the meeting was sent once to most participants, however the draft report was not sent out until three days prior the workshop. **Additional Written Feedback:** The workshop was informational and well done. The group was a mix of high energy, and passionate participants.



The self evaluation survey showed that there was a valuable and appropriate mix of skills present at the workshop.

Appendix 5: Survey

Critical Role of Citizens in
Biodefense and Early Warning



Survey

The demographic information of each responder and individual responses will be kept confidential. All information obtained from the surveys will be combined and subjected to proper statistical analysis and reported as averages.

Training materials and policies are being developed to assist individuals, businesses, and communities to obtain biodefense (See 1) information, knowledge, and skills to respond to bioterrorism (See 2). Your assistance is needed to assure the usefulness of these resources. Effective training will enable individuals to make informed decisions and take appropriate actions. The final report on the findings and recommendations from this research project will be posted on or about July 2005 on our website <http://policy.gmu.edu/oimp/>

- 1) Biodefense is defined as the methods, plans and procedures involved in establishing and executing defensive or remedial measures against attacks with biological agents.
- 2) Bioterrorism is defined as the use of biological agents to create fear and inflict harm, including malevolent use of bacteria, viruses, chemicals or toxins, and radiation to inflict harm on people, animals, or plants.

Survey Begins Here:

This survey has not yet been published, therefore you can view it, but not take it.

Top of Form

Please take a few moments to fill out our survey. Your answers will help us improve our services and products so that we can better meet your needs.

Please take a few moments to respond to the questions below. Your answers will help us improve our services so we can better meet your needs.

1. Age:
2. Sex:
 - Female
 - Male

3. State:

(i.e. VA, DC, CA)

4. Zip Code:

5. Country:

6. Education (Please check the highest level achieved):

- High School
- Undergrad
- Graduate
- Post Grad
- Healthcare Professional

7. Are you a member of Citizen Corps?

- Yes
- No

SURVEY

PART I

Please select that which is best representative of your awareness, sources and health/medical practices using the following scale:

8. Read the information and make your selection below:

- a. I like to make decisions on health issues based on my knowledge.
- b. I rarely consult with experts on public health issues.
- c. My knowledge of basic health facts, terminology and practices is current.
- d. I understand the potential of bioterrorist threats and know how to defend myself and my family.
- e. I am trained and current in first aid.
- f. I am trained in CPR (Cardio Pulmonary Resuscitation).
- g. I am trained by and actively participate in my local Neighborhood Watch Program.
- h. I have received Community Emergency Response Team Training.

PART II

STRONGLY DISAGREE DISAGREE NEITHER AGREE
OR DISAGREE AGREE STRONGLY AGREE

- a. I have a plan on how to respond to bioterrorism events.
- b. I review and update my plan periodically.
- c. I have a plan for communications with family.
- d. The plan is posted and clearly visible in my workplace and/or home.

13. I have discussed and practiced this plan with my:

1=STRONGLY DISAGREE, 2=DISAGREE, 3=NEITHER AGREE OR DISAGREE, 4=AGREE, 5=STRONGLY AGREE

- Employees (Respond only if a business employer) 1 2 3 4 5
- Customers (Respond only if a business owner) 1 2 3 4 5
- Family members 1 2 3 4 5

14. Shelter-in-place

STRONGLY DISAGREE DISAGREE NEITHER AGREE
OR DISAGREE AGREE STRONGLY AGREE

-
- a. I am prepared to shelter-in-place and have the necessary supplies and provisions.
- b. My family knows how to shelter-in-place.
- c. My employees are prepared to shelter-in-place. (Respond only if an employer)

15. Volunteer and Support: (A) I volunteer with a health organization(s).

- Yes No

16. Volunteer and Support: (B) I am interested in volunteering in citizen preparedness activities.

(You can contact your local Citizen Corps Council, Neighborhood Watch, American Red Cross, or any other local organization offering training.)

- Yes No

PART IV

17. What method of training and information do you consider most useful and productive:

1=*STRONGLY DISAGREE*, 2=*DISAGREE*, 3=*NEITHER AGREE OR DISAGREE*, 4=*AGREE*, 5=*STRONGLY AGREE*

- Classroom instruction and tutorials 1 2 3 4 5
- Self study printed materials 1 2 3 4 5
- Self study audio cassettes 1 2 3 4 5
- Self study CD,DVD 1 2 3 4 5
- Online Web site 1 2 3 4 5
- Any of the above 1 2 3 4 5

18. Other training and information that you might consider most useful and preferable:

(Please fill in your response below)

19. ADDITIONAL COMMENTS AND SUGGESTIONS:

Appendix 6: Workshop Summaries

First Workshop

On August 6, 2004 the Office of International Medical Policy at the School of Public Policy, George Mason University (OIMP, SPP, and GMU) conducted a one-day meeting to address the ongoing research in the area of “Critical Role of Citizens in Biodefense and Early Warning”. During this meeting civic and community leaders were asked to review the initial research findings and capabilities of the research team... (A list of workshop participants is provided in Appendix # 1). Special evaluation forms were distributed to the participants to provide workshop feedback (Appendix #2 consists of forms and summary of the workshop evaluations). In addition, the experts were asked to provide views on the training needs of the community and individual citizen readiness to respond to terrorism challenges and Homeland Security warnings.

The main objectives for this workshop were:

1. Explore whether properly trained citizens can identify and help foil a bioterrorism event while acting as first responders to mitigate the health impacts caused by the event;
2. Recommend and evaluate sustainable educational and training materials for a general civilian use; and
3. Identify community educational and training needs.

Presentations and Discussions

The workshop began at 10:05 am (see Appendix 3 for workshop agenda) and was called to order by Dr. Arnauld Nicogossian. Opening remarks were delivered by Dr. Roger Stough. Dr. George Anderson, Mr. Jeff Bingham, and Dr. Christine Pommerening were asked to serve as peer reviewers for the meeting. Representatives from the Chamber of Commerce, Fairfax City small businesses, and Arlington Citizens Corps. attended the workshop. Discussion of the research project,

literature survey, and past experiences were provided by the experts and community leaders. Expert advice was sought from potential users of the training or educational material. The following is a summary of discussions:

1. Pre-planning is beneficial for citizen preparedness. For most people it is not sufficient to raise or lower the awareness by changing the color that identifies the national threat level. Citizens need to be appraised of what the actual threat is and how they must respond, both in the near and long-term, before and after an event. A primary preparedness challenge is to identify relationships between practice and policies – and not just follow rules and protocols.
2. Transportation means, availability, capacity and safety are key concerns for community planners and residents when an event occurs. Different evacuation routes must be studied to better plan relocation of the National Capital Region population if it ever becomes necessary. Evacuation routes must be properly identified and the residents better informed. Transportation of key emergency personnel, such as rescue and medical teams to the assembly areas, hospitals or potential high risk affected areas must be planned and practiced. Pre-planning for transportation needs is important and must be studied further.
3. A commonly voiced concern among the public is the type of actions they should be prepared to take in the first few minutes of an attack – or until they can get professional advice and assistance. Citizens need to be better educated on what they can do and how they must respond in the first five to ten minutes after an event before responders arrive. A bioattack might unfold for many hours, days, or weeks undetected. Better preparedness on how to respond once the public is informed may help to alleviate panic, overcrowding of hospitals and other medical facilities, and in the event quarantine or mass vaccinations and medication distribution might be required. For example, if the bio-agent is highly infective, medical care facilities might be an inappropriate place to seek care. Citizen preparedness must focus on what type of knowledge and training is needed for incremental response during the first 5, 20, and 45

minutes to 72 hours and beyond, after an event has occurred and until help arrives

4. Defining “citizen” is of great importance because the people that fall under this category are the constituencies of this research project. It may be better to use the term “resident” in place of “citizen”, as this term encompasses a broader range of individuals who are permanent or temporary residents of the community.

5. The main challenge in health literacy is to tailor the medical information so that it is easily understood and well-received by the public. The cultural differences between community groups sometimes make it difficult to effectively disseminate information. It is important to develop appropriate strategies to reach targeted segments of the community. The community and civic leaders might be the appropriate conduits for the information dissemination among their communities.

6. In many of the preparedness materials reviewed, the public is told to be prepared to shelter in place for 3 days. This advice may be misleading for some potential threats, especially in the case of communicable diseases. Community shielding as a response to communicable disease, might require to shelter in place for more than 10 days, until proper personnel, facilities, medications or vaccination (s) are available. The preparation, decision and information dissemination to support individual or mass sheltering in place for time frames exceeding 3 days may require a coordinated public strategy rather than an individual sheltering plan. The discrepancy between the 3-day and 10- day time frame may be resolved in some disaster scenarios by the fact that, after 3 days, the plan would require mass shelters in place, necessitating coordination between public health officials, local law enforcement authorities, National Guard, emergency response teams, community representatives, and others. This will require a public commitment and cooperation. However such an approach might not apply to situations involving communicable diseases, resulting from the use of bioweapons.

Presentation and Review of the Literature Search

The research team presented three literature searches pertinent to the topic of citizen response to terrorist events. The team stated that these searches were in their preliminary stages and cover the following:

1. The literature search for emergency preparedness was conducted using the key term “emergency preparedness” and by searching three online databases: AltaVista, AltHealth and Google. . Future searches will include the key terms “health education”, “emergency health”, “health infrastructure”, “health and safety”, “bioterrorism and biodefense literacy” and “emergency planning”. Searches did also make use of George Mason literature databases in addition to online resources.

Thousands of results were yielded by this search and a total of 143 were kept for entry into the literature database. The preliminary findings of the emergency preparedness literature search include evidence that *preparedness* makes a significant difference in the ability to respond effectively. However, it is only one of several factors that determine the health outcome of disaster victims. Preparation for emergencies by conducting *realistic integrated disaster rehearsals* and *facilities emergency preparedness plans* are additional factors which contribute to improved survivability. These training exercises and response plans must be general but include specific responses to the types of disasters that might occur.

In addition, it has been found that a facility's level of preparedness for mass casualty/weapons of mass destruction incidents may be *positively influenced by the availability on the scene of physicians with prior military background* (A Survey Assessment of the Level of Preparedness for Domestic Terrorism and Mass Casualty Incidents among Eastern Association for the Surgery of Trauma Members: Ciraulo, David L. DO, MPH, FACS; Frykberg, Eric R. MD, FACS; Feliciano, David V. MD, FACS, LTC; Knuth, Thomas E. MD, MC, FACS; Richart, Charles M. MD; Westmoreland, Christy D. RN, BSN, CEN; Williams,

Kathryn A. BS). Last, in order for dissemination of guidelines and training protocols to have an impact, it must be multifaceted and employ a variety of techniques

2. The health literacy literature search was conducted by searching for the key terms: health literacy, IOM reports on health literacy, biological terrorism, bioterrorism and literature, bioterrorism and citizen, bioterrorism and preparedness, health literacy and social disparities. The Center for Biological Defense database, GMU Library database, Google, and PubMed were searched using these key terms and resulted in approximately 2.6 million documents. Results were narrowed by excluding information that was not pertinent to the research project and by eliminating commercial websites. Seventy-two documents have been identified as being important to this research project and retained for entry into the literature database. Future search terms include “health literacy and languages”, “health literacy and culture”, and “health literacy and biodefense”.

Very few publications directly address health literacy specifically related to biodefense literacy. This indicates the inadequacy of currently available educational materials for the general public beyond basic explanations of symptoms, treatments, and vaccination as appropriate of anthrax, botulism, smallpox, plague, and other bioagents.

3. The key searched terms were “panic and terrorism” and “anxiety and terrorism”. PubMed, MedLine, and PsycInfo were searched, yielding a total of 180 results, 44 of which were kept for entry into the literature database. Future searches on this subject will use the key terms “PTSD and terrorism”, “stress and terrorism”, “traumatic event response”, “health literacy and panic” and “emergency communication and mass panic”.

Review of the literature resulted in the following preliminary findings:

a. Anxiety and panic that accompany chemical or biological threats may affect mass populations, disrupt their lives, and enormously increase the demands from the medical systems causing higher levels of psychopathology than physical injury.

b. Although it is not known how the population will react to an unprecedented act of bioterrorism, experience with natural and technological disasters and disease outbreaks indicates a pattern of generally effective and adaptive collective action.

c. Effective public communication about terrorism is essential to promoting resilience and helping people stay healthy during very stressful experiences, and

d. It is commonly believed that the use of weapons of mass destruction will cause mass panic or mass hysteria. However, studies of disasters and wars show that disorganized flight in the presence of a real or perceived danger (mass panic) are rare while outbreaks of multiple unexplained symptoms (i.e., mass psychogenic illness, mass sociogenic illness, mass hysteria, or epidemic hysteria) may be more prevalent.

All Threats WMD Decision Matrix

James Madison University has developed a general methodology for articulating a terror event. The purpose of this matrix is to create a standardized methodology for articulating a WMD terrorist incident and to provide accessible emergency action guidance for local jurisdictions. The color coded matrix is intended to supplement FEMA National Incident Management System (NIMS) and consists of four components: event, emergency actions, public protection, and historical examples. The matrix is being validated.

The matrix will be available electronically for print-out purposes and use. However, the most effective means of disseminating the information supplied by the matrix to the citizenry needs to be further explored.

ReadyLinks

The Stargazer Foundation is a nonprofit group that provides a free web service (ReadyLinks) for real-time online communications. ReadyLinks can be used for emergency preparedness as it allows people to communicate in real-time and to continuously access and update information. More infor-

mation on the Stargazer Foundation and using ReadyLinks is found at www.Stargazer.org.

American Red Cross (ARC)

Representatives from the national office of the American Red Cross distributed several sources of information they have made available to organizations and the public. Brochures on emergency preparedness and planning are available at www.redcross.org.

The Red Cross supplies most of the blood used in disasters. The Red Cross pre-positions blood for planned and threatened events. In addition at the time of the disaster the Red Cross provides shelters, food, water and limited medical and psychological support to the victims.

Citizen Corps Council

The Citizen Corps is a national organization. All Citizen Corps collaborate locally in order to coordinate resources and provide information on public education and emergency preparedness. Also, the Citizen Corps works towards integrating an emergency response plan for first responders and the public. Local Citizen Corps is currently one of the primary entities providing training for disaster response for the general public through the FEMA CERT training.

Developing a national response that is threat oriented is currently being researched by the Citizen Corps Council.

There have been several recent surveys by the Council on Excellence in Government, by National Citizen Corps and others on public knowledge and actions related to preparedness. However, no systematic and longitudinal studies of public response to post 9/11 community preparedness and education in the area of biodefense have been identified. Local Citizen Corps reports anecdotal evidence that, while public awareness about preparedness advice has increased, a much smaller population has used this awareness to take action to prepare according to the advice. There appears to be a gap between education and action that needs to be bridged.

Small Businesses

An important issue facing the American public after a terrorist attack is how to get small businesses up and running. This is an important issue because it has many social, psychological, and financial repercussions and implications.

There are currently 4,500 small businesses in Fairfax City, which are all important to the community economic and social health. Business owners are usually involved with their communities. They are also an important resource for information. The importance of small business to the community was illustrated after the attacks of 9/11. Many small shops were the first to reopen in Washington, D.C. and the surrounding areas. Their reopening brought that part of the city back to life and reestablished a sense of normalcy within the community.

Small businesses face several issues after an act of terrorism. After an attack it is important to get credit card funding operations back online. Many small businesses would be unable to function or remain open without credit card transaction capabilities. Staffing issues may also prevent small businesses from reopening or remaining open after an attack. In both of these cases, dissemination of information is important for local businesses and the media is the key player in getting information known.

The key issue facing small businesses is whether they can set up a redundant system that can be used to rebuild. This issue may prove difficult to resolve as many businesses may recognize the need for such a system but may be unwilling or unable to implement or afford it. Implementation barriers include cost, staffing and general lack of information, on what are the steps to be taken following an event.

Recommendations

1. If feasible, two additional tasks should be added and researched:
 - a. What can be done with policy, and

b. What should be done for – and through – proper citizen/community training and education.

For the purposes of completing this research, these two areas will need to be carefully delineated. The process of distinguishing between these issues may be accomplished by having more detailed focus groups covering the policy, planning, and operational domains. It may also be important to include government representatives in this research.

2. Literature searches should include topics on: emergency communications, multiple unexplained psychological symptoms, risk communication, public health policy, and the worried well. There should be more in-depth analysis of the relationship between physicians with military background and greater preparedness for emergency situations. If the literature consistently supports this relationship, then incorporating military protocol into citizen preparedness activities may result in greater effectiveness and return on the investment.

3. The structure of the “All Threats WMD Matrix” being developed by the James Madison University can be improved by: a. persistent and non-persistent agents need to be differentiated in the matrix; b. distinction between the threat to business and the threat to people needs to be incorporated traditional first responders cannot get there. CERTS’s volunteers are provided skills training in: fire suppression, first aid, basic search and rescue, terrorism preparedness and awareness, disaster psychology, and organization command. Volunteers complete eight modules that encompass 20 hours of hands on training.

The Second Workshop

The second Critical Role of Citizens in Biodefense and Early Response workshop took place on December 16, 2004 at George Mason University. The goals of the second workshop were to review the findings and recommendations generated by the August 6, 2004 workshop; and review the draft questionnaire intended to be released to the community.

The workshop began at 10:00 am with a welcome from Dr. Arnauld Nicogossian and the introduction of Dr. Kingsley Haynes, Dean of the School of Public Policy. Dr. Haynes proceeded to give the opening remarks and introduced the morning’s keynote speaker, Suzanne R. Simmons. Ms. Simmons is the Citizen Corps Program Manager for Virginia’s Citizen Corps Program with the Virginia Department of Emergency Management.

Mrs. Simmons gave a thorough presentation about the Citizen Corps program in Virginia. The presentation explained the organization of the Virginia Citizen Corps program which is comprised of local councils that represent 75% of Virginia’s population in all regions of the state. Mrs. Simmons also discussed the Medical Reserve Corps and the activities this group is involved in.

The CERTS program was discussed in detail. CERTS is the initial respond in catastrophic and dire emergencies when. Following the presentation, several workshop participants had questions regarding the transfer of liability for CERTS volunteers if they are called to respond in a different state, for example when called to Florida following the three hurricanes in the Fall of 2004. Mrs. Simmons explained that CERTS volunteers can be sworn in as FEMA employees and be federalized. Yet she explained that liability remains an issue that needs to be further explored.

Jerry Brashear, Associate Director of the NCR Project, spoke briefly about the critical infrastructure project in NCR and how health and emergency response fit into this infrastructure. He also addressed the interconnectivity of the NCR and its uniqueness as a region.

Presentations were made by Arnauld Nicogossian and Ting Zhang. Dr. Nicogossian presented the status and the accomplishments of the project. Ms. Zhang explained the fundamentals of the database and showed how it will serve as a tool in the future.

Mr. Hy Vu from the Stargazer Foundation presented the online format of the health survey questionnaire and discussed how the online system enables distribution of the survey.

Dr. Zimmerman presented the commercial center model. It was agreed that this has an important model and this with significant potential for planning use. It was stressed that the response to a bioterrorism event, other agencies like the National Guard be included so that emergency planning efforts are coordinated.

The workshop concluded with a review of the conclusions by the research team. This discussion was led by Mr. Keith Segerson.

The following recommendations were proposed:

- Preparedness survey should be made available in various languages.
- Methods of how businesses and individuals get information is changing hence the methods of how to disseminate information in a quick and reliable manner needs to change too—internet, cell phones, blackberries, etc.
- Avenues for relating information to average families and vulnerable populations (seniors, disabled) should be of special focus. Creating protocols to reach individuals based on the treat and their needs; businesses play a prominent role in redundant communications; Visual communication means could be preferable.
- Representation at workshops from Maryland and D.C. is desired for future workshops. In addition, GMU small business council may be a good addition to this group. An addition of Marilee Pierce from Fairfax Citizen Corps may be valuable contribution to future workshops.
- Designate certain areas for citizens in need of health are a good idea. A representative is needed from the county board of supervisors so there is a direct connection to powers that be so that these suggestions could be heard and where we anticipate needed input and help
- Emergency preparedness activities for small businesses need to be addressed.
- A matrix plan to make small businesses operational after a terrorist event should be developed and disseminated. This matrix must consist of a sector plan and prioritize the areas of concentration that are needed in order to make small businesses operational. The communication of a matrix plan or other emergency preparedness activities for small businesses must be addressed.

- Some examples include using monthly bills as communication tools into the matrix; identifying localities where people should be evacuating to for immediate decontamination; incorporating the fifteen scenarios that were created by the Homeland Security Council should be incorporated into the matrix.

The Survey should be released as soon as possible by Stargazer and made available to the NCR Citizen Corps for secondary dissemination to targeted populations and focus groups

The Third Workshop

On April 8, 2005 the Office of International Medical Policy at the School of Public Policy, George Mason University (OIMP, SPP, GMU) convened for a one day meeting in the Large Conference Room of the Finley Building, School of Public Policy on Fairfax campus of the George Mason University to address the ongoing research in the area of “**Critical Role of Citizens in Biodefense and Early Warning**”. (A list of workshop participants is provided in Appendix 11). The goals of this meeting were to bring together investigators or representatives to review the findings and policy recommendations proposed by the research team.

The workshop began at 10:00 am (see Appendix 12 for workshop agenda) with a welcome from Dr. Arnauld Nicogossian. Dr. Thomas Zimmerman led the discussion and comments on the draft report. Ms. Rosann Wise presented preliminary findings from the internet survey. (See Appendix 7 for survey).

Ms. Suzanne Simmons, the Citizen Corps Program Manager for Virginia’s Citizen Corps Program with the Virginia Department of Emergency Management proceeded to give a presentation regarding the status of the Citizen Corps Council. She spoke about the projected needs of the Citizen Corps Council, as well as resources, activities and relevance of the research team’s findings and recommendations.

The workshop concluded with recommendations regarding the needs of addressing the citizen’s role in biodefense.

Recommendations

1. The social contract between government, public health organizations, and the public in general, needs to be renegotiated. The government needs to clearly establish the roles of the stakeholders. We currently do not know what to expect from the government and the public health organizations. There is a lack of consensus on standards, practices and training. The model to be used must be scaleable, modular and capable of multiple delivery systems.
2. Recently the DHS has released a series of scenarios to be used in the simulations and training for disaster and terrorism preparedness. Such scenarios should be adopted, widely disseminated and practiced. Lessons learned should be incorporated and the scenarios updated periodically. A set of evaluation tools and success criteria should be developed as part of such training, to provide a standardized measure of preparedness.
3. A plan should be established to assist small and medium size businesses in recovery efforts in the aftermath of a terrorist attack. This could be accomplished through legislation.
4. Survival kits should be available to the public from markets and local neighborhood stores. Businesses could receive tax credits for purchasing kits for their employees.
5. People are being educated on terrorism and idea of sleeper cells and the public must continue to be looked to as a resource in biodefense.. Americans needs to produce an analogous model-the Awake America cell. People can train in groups by association and background to deal with, and prepare for, biodefense.
6. More town hall meetings and open communications with neighborhood civic leaders would be one way to engage the public. They can then be educated about public health issues related to biodefense.

Appendix 7:

Information Regarding Recommended Practices for Small Businesses when Preparing for Bioterrorism Currently recommended Approaches (literature Review)

The U.S. Census Bureau released a report on November 30, 2004 indicating that “the number of businesses with one or more owners but no paid employees grew nationwide from 17.0 million in 2001 to more than 17.6 million in 2002, a growth rate of 3.9 percent, according to a report issued today by the U.S. Census Bureau. The rate of increase during the 2000 to 2001 period was 2.7 percent. Nationally, these small businesses make up more than 70 percent of all businesses. They may be run by one or more individuals, can range from home-based businesses to corner stores or construction contractors and often are part-time ventures with owners operating more than one business at a time.

Some examples of no employer businesses having significant growth between 2001 and 2002 include landscaping services (21.5 percent), janitorial services (20.4 percent), nail salons (8.7 percent), real estate agents (7.1 percent), child-care providers (5.9 percent) and beauty salons (5.6 percent). Four economic sectors accounted for 60 percent of non-employer receipts — real estate and rental and leasing (\$161.8 billion or 21.0 percent); construction (\$115.3 billion or 15.0 percent); professional, scientific and technical services (\$96.4 billion or 12.5 percent); and retail trade (\$77.9 billion or 10.1 percent). Between 2001 and 2002 Virginia and Maryland showed a 6.4% increase each, with Washington D.C. having a 1, 7% decrease in the number of small businesses “(<http://www.census.gov/Press-Release/www/releases/>)

Such businesses, and especially those which operated from offices located in the residence, with a traveling staff, such janitorial and cleaning services, deserve special attention when planning and training for emergency response and preparedness. This issue should be factored in the development and application of education and training activities especially in the case of individuals who are not fluent in the English language and yet can be of significant value in the emergency response situations.

Preparation and Planning

The consensus from sources with deep experience in coping with adverse events is planning and preparedness. “The best time to respond to a disaster is before it happens. A relatively small investment of time and money now may prevent severe damage and disruption of life and business in the future,” states the Small Business Administration (SBA). “A small investment of time will go a long way toward averting serious damage to your business and minimize the disruption a natural disaster can cause to your life and business livelihood.” advises the Institute for Business and Home Safety.

The SBA encourages disaster planning that attends to:

- Identification of the potential hazards
- Planning for and reducing the impact of disasters
- Keep the doors of business open after a disaster hits, and
- Advice on insurance, disaster supplies and the things needed to make business more disaster resistant

Critical questions are suggested to guide an assessment organized under four areas of consideration:

Facilities-Buildings & Equipment

What would we do if our facility were closed for several days, damaged or even totally destroyed?

What could we absolutely not survive without?

Production machinery?

Computers?

Custom-made parts?

The buildings?

What can I do to assure I never have to live without them?

Operations

What if there was a prolonged power outage?

What if my key suppliers or shippers were shut down even though I am not?
What if my customer base suffered a disaster and no longer needed or could not afford our product?

Critical Information and Communications

What if my payroll, tax, accounting, or production records were destroyed?
What if my computer or computerized machinery was destroyed?
What if the local phone service were disabled?
Forewarned is forearmed, they say. How can I be forewarned?

Insurance

Is my insurance adequate to get us back in operation?
Do I understand what is covered and what is not?
Can I pay creditors, employees, and my own needs during a prolonged shutdown?
How long can I survive if we are shut down?

The Institute for Business and Home Safety produced a toolkit just prior to 9/11 to assist in disaster planning and preparation, *A Disaster Planning Toolkit for the Small Business Owner*. While published prior to 9/11, it remains a practical and useful resource to strengthen a business's probability of continuity in the face of bioterrorism. The guide is designed to help protect a business from the adverse effects of disasters. The premise of the guide is that by integrating protection from disasters into a company's risk reduction measures, it will safeguard the investment for ownership, employees, customers and the community at large. The guide considers protection of critical resources (human resources, physical resources, and business continuity planning), risk appraisal and threat assessment, and steps in conducting a business impact analysis and business recovery plan.

The guide specifies information that is critical to have on at your finger tips:

Local police department
Ambulance services
Hospital
Building security/manager
Insurance agent
Utility companies
American Red Cross and other
Disaster-relief agencies

It suggests a list of emergency supplies to keep on hand:

First aid kit
Flashlights/batteries
Pencils/pens
Paper towels
Waterproof plastic bags
Camera/film
Basic tool kit with wrenches, gloves, crow bar
Small supply of bottled water and nonperishable food

The guide contains many additional useful tips, forms, and references.

On October 8, 2001 an executive order mandated the Office of Homeland Security (OHS) "to develop and coordinate the implementation of a comprehensive national strategy to secure the United States from terrorist threats or attacks." In response, the National Institute for Occupational Safety and Health (NIOSH) form an interagency task force and published a providing guidance for protecting building environments from airborne chemical, biological, or radiological attacks. The guidelines publication was the product of the Interagency Workgroup on Building Air Protection under the Medical and Public Health Preparedness Policy Coordinating Committee of the OHS. The document identifies actions that a building owner or manager can implement to enhance occupant protection from an airborne chemical, biological, or radiological (CBR) attack. The publication's intended audience includes building owners, managers, and maintenance personnel of public, private, and governmental buildings, including offices, laboratories, hospitals, retail facilities, schools, transportation terminals, and public venues.

The guidelines suggest a work through of a building to become thoroughly familiar and aware of its characteristics. A partial list of items recommended for consideration during the walk-through includes:

- What is the mechanical condition of the equipment?
 - What filtration systems are in place? What are their efficiencies?
 - Is all equipment appropriately connected and controlled?
 - Are equipment access doors and panels in place and appropriately sealed?
 - Are all dampers (outdoor air, return air, bypass, fire and smoke) functioning? Check to see how well they seal when closed.
 - How does the HVAC system respond to manual fire alarm, fire detection, or fire-suppression device activation?
 - Are all supply and return ducts completely connected to their grilles and registers?
 - Are the variable air volume (VAV) boxes functioning?
 - How is the HVAC system controlled? How quickly does it respond? If sufficient questions or surprises arise from the building walk-through, an independent evaluation by a qualified HVAC professional should be used to establish a useful baseline
 - How is the building zoned? Where are the air handlers for each zone? Is the system designed for smoke control?
 - How does air flow through the building? What are the pressure relationships between zones? Which building entryways are positively or negatively pressurized? Is the building connected to other buildings by tunnels or passageways?
 - Are utility chases and penetrations, elevator shafts, and fire stairs significant airflow pathways?
 - Is there obvious air infiltration? Is it localized?
 - Does the system provide adequate ventilation given the building's current occupancy and functions?
 - Where are the outdoor air louvers? Are they easily observable? Are they or other mechanical equipment accessible to the public?
- Do adjacent structures or landscaping allow access to the building roof?

The publication makes recommendations divided into four general categories:

Things not to do-

- Do not permanently seal outdoor air intakes.
- Do not modify the HVAC system without first understanding the effects on the building systems or the occupants.
- Do not interfere with fire protection and life safety systems.

Physical security-

- Prevent access to outdoor air intakes.
- Prevent public access to mechanical areas.
- Prevent public access to building roofs.
- Implement security measures, such as guards, alarms, and cameras to protect vulnerable areas.
- Isolate lobbies, mailrooms, loading docks, and storage areas.
- Secure return air grilles.
- Restrict access to building operation systems by outside personnel.
- Restrict access to building information.
- General building physical security upgrades.

Ventilation and filtration

- Evaluate HVAC control options.
- Assess filtration.
- Ducted and non-ducted return air systems.
- Low-leakage, fast-acting dampers.

Building air tightness.
Maintenance, administration, and training.
Emergency plans, policies, and procedures.
HVAC maintenance staff training.
Preventive maintenance and procedures.

The publication concludes that the goals are to make your building an unattractive target for a CBR attack and to maximize occupant protection in the event that such an attack occurs.

Coping in the Midst of an Adverse Event

The prevailing expert advice in the event of a hazardous materials may have been released into the atmosphere is to shelter-in-place. This is a precaution aimed to keeping safe while remaining indoors. Shelter-in-place means selecting a small, interior room, with no or few windows, and taking refuge there. It does not mean sealing off your entire home or office building. The steps suggested by the American Red Cross for at sheltering-in-place in the workplace are:

- Close the business.
- Bring everyone into the room(s). Shut and lock the door(s).
- If there are customers, clients, or visitors in the building, provide for their safety by asking them to stay – not leave. When authorities provide directions to shelter-in-place, they want everyone to take those steps now, where they are, and not drive or walk outdoors.
- Unless there is an imminent threat, ask employees, customers, clients, and visitors to call their emergency contact to let them know where they are and that they are safe.
- Turn on call-forwarding or alternative telephone answering systems or services. If the business has voice mail or an automated attendant, change the recording to indicate that the business is closed, and that staff and visitors are remaining in the building until authorities advise it is safe to leave.
- Close and lock all windows, exterior doors, and any other openings to the outside.
- If you are told there is danger of explosion, close the window shades, blinds, or curtains.
- Have employees familiar with your building's mechanical systems turn off all fans, heating and air conditioning systems. Some systems automatically provide for exchange of inside air with outside air – these systems, in particular, need to be turned off, sealed, or disabled.
- Gather essential disaster supplies, such as nonperishable food, bottled water, battery-powered radios, first aid supplies, flashlights, batteries, duct tape, plastic sheeting, and plastic garbage bags.
- Select interior room(s) above the ground floor, with the fewest windows or vents. The room(s) should have adequate space for everyone to be able to sit in. Avoid overcrowding by selecting several rooms if necessary. Large storage closets, utility rooms, pantries, copy and conference rooms without exterior windows will work well. Avoid selecting a room with mechanical equipment like ventilation blowers or pipes, because this equipment may not be able to be sealed from the outdoors.
- It is ideal to have a hard-wired telephone in the room(s) you select. Call emergency contacts and have the phone available if you need to report a life-threatening condition. Cellular telephone equipment may be overwhelmed or damaged during an emergency.
- Use duct tape and plastic sheeting (heavier than food wrap) to seal all cracks around the door(s) and any vents into the room.
- Write down the names of everyone in the room, and call your business' designated emergency contact to report that is in the room with you, and their affiliation with your business (employee, visitor, client, and customer.) Keep listening to the radio or television until you are told all is safe or you are told to evacuate. Local officials may call for evacuation in specific areas at greatest risk in your community.

The National Institute for Chemical Studies offers a model for workplace shelter-in-place that is more extensive. This publication suggests additional points for consideration:

- Employees/customers cannot be forced to shelter in place. Therefore, it is important to develop a shelter in place plan with employees (and with customer input) to maximize the cooperation with the shelter plan. Determine if all employees/customers will shelter or if some will leave the building before shelter procedures are put in place.
- Develop an accountability system. You should know who is in your building and where they are if an emergency develops. Visitors should be made aware of the decision to shelter in place if advised by emergency management officials.
- Duties should be assigned to specific employees. Those employees should have backups. Drills should be planned and executed on a regular basis. Afterwards, the drill should be critiqued by employees and/or drill monitors from the Local Emergency Planning Committee (LEPC). Lessons learned should be incorporated into your Shelter in Place plan.

It is recommended that before an adverse event occurs; outfit your shelter kit with the following:

- Plastic sheeting - Pre-cut plastic sheeting to fit over any windows or vents in the sheltering area.
- Duct tape - Rolls of duct tape to be used to secure the plastic over windows/vents and to seal doors.
- Battery operated radio with fresh batteries - In the event of a power outage, a battery operated radio is necessary to hear emergency announcements including the "all clear" when the emergency is over.
- Flashlight and fresh batteries.
- Bottled water for drinking, and
First aid kit

Further, it is advised that the shelter room have a telephone (either regular or cellular) for emergency use only. The phone should be used only for emergency during the shelter in place to keep lines free for emergency responders. If you have an emergency in your shelter room, use the phone to call 911 for help.

The model plan suggests posting the following notice:

NOTICE!

In the event that a shelter in place is advised for the area including the ABC Company, all persons in the building will be notified that ABC Company is preparing to shelter in place and that all doors will be locked after 3 minutes. All employees and visitors must decide whether to shelter in place at ABC Company until the "all clear" is announced or whether they will leave the premises within 3 minutes. After that time, no one will be allowed to break the seal on the building until the "all clear" is announced.

Insurance for Small Businesses for Adverse Events

Insurance is a complex and major matter for the small business. The National Federation of Independent Business (NFIB), the nation's largest advocacy organization representing small and independent businesses, offers a checklist of insurance needs:

Events to be covered:

- Flooding
- Fire
- Windstorm (often requires additional policy in hurricane areas)

- Hail
- Lightning
- Earthquake (almost always requires additional coverage)
- Damage caused by aircraft
- Explosions (origins internal or external to business property)
- Arson
- Theft (by employee or non-employee, may require additional policy)
- Check fraud (by employee or non-employee, may require additional policy)
- Embezzlement (may require additional policy because of difficulty of proof)
- Death or disability of key employee or partner (often called “Key Man” insurance)
- Civil Authority losses, such as closure of airports and train stations in emergencies
- Errors and Omissions (“E & O” -- often requires additional coverage)
- Property damage, bodily injury or death caused by employees while on- or off-premises
- Vandalism
- Mudslide
- Sinkholes
- Roof collapse or damage
- Foundation collapse or damage
- Broken glass or damaged buildings and structures caused by riots, war or terrorism (may now require separate coverage for terrorism)
- Termite/insect/vermin damage
- Mold/fungus damage
-

The items to be covered are similarly lengthy:

Items to be covered:

- Buildings, roofing, internal walls, foundations, attached structures
- External structures, fences, signs, improved roads, bridges, etc.
- Carpeting, furniture, drapes, decorations, etc.
- Office equipment owned and leased (often requires additional coverage for expensive computer systems, phone systems, etc. Check to make sure that damage by lightning and power fluctuations is covered.)
- Security systems (Yes, these can be damaged too, or even stolen!)
- Communication equipment other than telephones, including two-way radio systems and satellite dishes
- Vehicles, machinery, spare parts for machinery, maintenance supplies
- Furnaces, air-conditioning equipment, ductwork, boilers (boilers often require additional policies)
- On-site and off-site stored records
- Cash on hand, bonds and stocks
- Business inventory (on display or in storage)
- Intellectual property such as trademarks and copyrights (usually requires additional policies)

To all this, add terrorism insurance.

References

1. Gallagher EJ, Lombardi G, Gennis P. "Effectiveness of Bystander Cardiopulmonary Resuscitation and Survival Following Out-of-Hospital Cardiac Arrest." Journal of American Medical Association 274(24) (Dec 27 1995):1922-5.
2. [Nichol G, Detsky AS, Stiell IG, O'Rourke K, Wells G, Laupacis A](#). "Effectiveness of Emergency Medical Services For Victims of Out-of-Hospital Cardiac Arrest: A Meta-Analysis." Annals of Emergency Medicine 27(6) (Jun 1996):700-10.
3. Trust for America's Health.(2003). "Ready or Not? Protecting the Public's Health in the Age of Bioterrorism." Retrieved on May 6, 2005 from <http://www.healthamericans.org/state/bioterror/>
4. Trust for America's Health.(2003). "Ready or Not? Protecting the Public's Health in the Age of Bioterrorism." Retrieved on August 30, 2005 from <http://www.healthamericans.org/state/bioterror/>
5. <http://www.stargazer.org>
6. Glass, Thomas A., Schoch-Spana, Monica. "Bioterrorism and the People: How to Vaccinate a City against Panic". Clinical Infectious Diseases. 34 (2002): 217-223.
7. FEMA. (2002). "Are You Ready?" Retrieved on October 24, 2004 from <http://www.fema.gov/areyouready/>
8. <http://www.mipt.org>
9. <http://www.fema.gov> www.bioterror.org
10. <http://www.vdh.virginia.gov>
11. United States Fire Administration.(2004). "CERT Team Field Operating Guide." Retrieved on October 24, 2004 from <http://training.fema.gov/emiweb/downloads/fog.pdf>
12. LAFD Disaster Preparedness Unit.(2004). "Cert- Los Angeles Homepage." Retrieved on October 24, 2004 from <http://www.cert-la.com/>
13. U.S. Department of Education, Office of Safe and Drug-Free Schools. Practical Information on Crisis Planning: A Guide for Schools and Communities, Washington, D.C., 2003.
14. Business Executives for National Security, Metro Atlanta Region. (2003). "Company Primer on Preparedness and Response Planning for Terrorist and Bioterrorist Attacks." Retrieved October 24, 2004 from http://www.bens.org/images/GettingReady_042304.pdf
15. US House of Representatives Small Business Committee.(n.d.). "Role In The Economy." Retrieved on April 22, 2005 from <http://wwwc.house.gov/smbiz/smallBusinessFacts/>
16. House Small Business Committee.(2003). "Broken Promises: The Stalled Agenda Small Business for American Small Business." Retrieved on Sept. 10, 2005 from <http://www.house.gov/smbiz/democrats/Reports/BrokenPromisesReport.pdf>
17. Jones, Radford W.(2000). "Critical Incident Protocol —A Public and Private Partnership." Retrieved on Feb. 13, 2005 from <http://www.ojp.usdoj.gov/odp/docs/cip.pdf>

18. Alesse, M. "New York 2002 Priorities." Small Business January 7, 2002.
19. Dolinski, C. "Small Businesses Face Challenges In Preparing For Terrorism." Retrieved on Sep. 10, 2004 from <http://www.gazette.net>
20. Widmer, L. "Terrorism Insurance: Where's the Coverage?" Risk and Insurance 2004.
21. National Federation of Independent Business. (November 28, 2001). "Sept. 11 Attacks Caused Insurance Costs To Skyrocket." Retrieved on November 3, 2004 from <http://www.nfib.com/object/3061649.html>
22. National Federation of Independent Business (February 24, 2003) "Terrorism Insurance Meets Deadline Today." Retrieved on November 3, 2004 from <http://www.nfib.com/object/3679916.html>
23. United States Department of the Treasury. (n.d.) "The Terrorism Risk Insurance Program Overview." Retrieved on April 7, 2005 from <http://www.treas.gov/offices/domestic-finance/financial-institution/terrorism-insurance/>
24. National Federation of Independent Business. (March 27, 2003). "Most Small Businesses Not Buying Terror Insurance." Retrieved on March 28, 2005 from <http://www.nfib.com/>.
25. United States Small Business Association. (May 19, 2003). "Pre-Disaster Mitigation Loan Program." Retrieved on May 20, 2005 from http://www.sba.gov/disaster_recov/loaninfo/pre_disaster_mitigation.html
26. United States Small Business Association. (n.d.) "State Economic Profiles." Retrieved on September 10, 2005 from <http://www.sba.gov/advo/research/profiles/>
27. "Terrorism Awareness for Corporations and Small Businesses." (n.d.). Retrieved on February 20, 2005 from http://www.westchestergov.com/ps/Co_PD_PDF_Forms/Terrorism%20Awareness%20for%20Corporations%20and%20Small%20Businesses.pdf
28. Davis, L., LaTourrette, T., Mosher, D., Davis, L., Howell, D. Individual Preparedness and Response to Chemical, Radiological, Nuclear, and Biological Terrorist Attacks. Santa Monica, California: Rand, 2003.
29. Lasker, R.D. Redefining Readiness: Terrorism Planning Through the Eyes of the Public. New York, NY: The New York Academy of Medicine, 2004.
30. Gardner, Amanda. (2004). "Literacy Gap Harms Nation's Health." Retrieved on October 24, 2004 from <http://www.4woman.gov/news/apr97.htm>.
31. Dubow, Joyce. (2004). Adequate Literacy and Health Literacy: Prerequisites for Informed Health Care Decision Making. Retrieved on October 24, 2004 from http://research.aarp.org/health/ib70_literacy.pdf.
32. Institute of Medicine. Health Literacy: A Prescription to End Confusion. Washington, D.C., National Academies Press, 2004.
33. U.S. Department of Health and Human Services. Healthy People 2010, 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, 2000.
34. Zarcadoolas, C., Pleasant, A., Greer, D. (2004). "Understanding Health Literacy: An Expanded Model."

Retrieved on October 24, 2004 from http://envstudies.brown.edu/courses/es126/2004/Restricted/finalzar-cadoolas_pleas_greer.pdf

35. Aakko, E.. "Risk Communication, Risk Perception, and Public Health." Wisconsin Medical Journal 103 (1) (2004): 25-7.
36. Benedek, D. M., H. C. Holloway, et al. "Emergency Mental Health Management in Bioterrorism Events." Emerg Med Clin North Am 20(2) (2002): 393-407.
37. Bleich, A. and I. Kutz. "Chemical and Biological Terrorism: Psychological Aspects, and Guidelines For Psychiatric Preparedness." Harefuah 141 (2002) Spec No: 111-7, 118.
38. Liebert, Mary Ann. "Leading during Bioattacks and Epidemics with the Public's Trust and Help". Biosecurity and Bioterrorism: Biodefense Strategy, Practice and Science. Volume 2, Number 1 (2004) pp. 25-38.
39. Heldring, M. "Talking to The Public About Terrorism: Promoting Health and Resilience." Families, Systems, & Health 22(1) (2004): 67-71.
40. Fenn, E. "The great smallpox epidemic of 1775-82: Elizabeth A. Fenn Examines A Little Known Catastrophe That Reshaped The History of A Continent." History Today (2003).
41. Franke-Ruta, G. "Pox Americana: The Great Smallpox Epidemic of 1775-82 - George Washington's Bioterrorism Strategy: How We Handled It Last Time-Book Review." Washington Monthly 2 (2001)
42. Rekenhaller, D. (2004). "The Flu Pandemic of 1918: Is a Repeat Performance Likely? --Part 1 of 2." Retrieved on December 7, 2004 from <http://www.Disasterrelief.org>
44. Demidov, V. V. "Anthrax-Related Panic Is More Dangerous Than The Disease." Trends Biotechnol 20(3) (2002): 97.
45. Glass, Thomas. "[Understanding Public Response to Disasters.](#)" Public Health Reports March-April 2001 v116 i2 pS69(5)
46. Garrett, L. "Understanding Media's Response to Epidemics." Public Health Rep 116 Suppl 2 (2001): 87-91.
47. <http://www.genescorp.com>
48. Singh, Jagdip, Howell, Roy D., Rhoads, Gary K. "Adaptive Designs for Likert-Type Data: An Approach for Implementing Marketing Surveys." Journal of Marketing Research 27 (3) (1990 Aug): 304-321.
49. Rich, Michael. "Health Literacy via Media Literacy: Video Intervention/Prevention Assessment." American Behavioral Scientist 48 (1999): 165-188.
50. Long, J.A., Chang, V.W., Ibrahim Saud & Asch. "Update on the Health Disparities Literature." Annals Internal Medicine 141 (2004): 805-812.
51. Kawachi, I. & Berkman, L.I.: Neighborhood and Health. Oxford: Oxford University Press 2003.
52. Hutton, D. (2001). "Psychosocial Aspects of Disaster Recovery: Integrating Communities into Disaster and Planning and Policy Making" Institute for Catastrophic Loss Reduction." Retrieved on December 2, 2004

from <http://www.iclr.org/pdf/research%20paper%2016%20-%20paper%202%20david%20hutton.doc.pdf>

53. Shrubsole, Dan. "Natural Disasters and Public Health Issues: A Review of The Literature With A Focus On The Recovery Period." ICLR Research Paper Series-No.4 (Dec 1999) University of Western Ontario.
54. American Red Cross. (February 2003). "Fact sheet on sheltering in place." Retrieved on November 23, 2004 from <http://www.redcross.org/services/disaster/beprepared/shelterinplace.pdf>
55. National Institute for Chemical Studies.(n.d.). "Shelter in Place at Your Office: A General Guide For Preparing A Shelter In Place Plan In The Workplace." Retrieved on November 23, 2004 from <http://www.nicsinfo.org/SIP%20plan%20for%20offices%20NICS%20feb2003.pdf>

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