School of Public Health at New York Medical College

BIOTERRORISM: A Guide for Community Leaders and First Responders

Prepared for the National Memorial Institute for the Prevention of Terrorism

Edited by Maria F. Trujillo, PhD
William E. Bertrand, PhD, and
Esther R. Dyer, DLS

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www.bioterrorhelp.com

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Under the threat of terror from biological sources, our nation must adopt the best possible defensive and prevention strategies. The United States is built upon a representative form of government; every citizen has multiple rights and responsibilities. From the base of the individual to the family, community, state and nation, this system is built upon the respect for each citizen whose unalienable rights are the core of our national strength. The Internet, coming from its origins as a system of communication that was indestructible in case of nuclear attack, has used technology to build on this principle of decentralized nodes. Each node should have enough knowledge and resources required to survive should other nodes in the system be destroyed.

If every community takes on the responsibility of effective organization, appropriate vigilance and response, then the whole nation becomes virtually indestructible. Decentralization of prevention and response to a bioterrorist attack is consistent with our democratic principles and representative governance and the best approach to defending our nation against terrorists' attack. Therefore, we have chosen to focus primarily on the community level and secondarily on the individual and family. This Community Handbook is intended for community leaders from the business, government and public service sectors. It offers some basic tips and access to detailed resources on how to develop a community preparedness strategy in the event of a threat such as bioterrorism. While we have oriented this handbook towards biological threats the general steps and strategies outlined can be used for most community action plans. Developing adequate and appropriate information and community strategies will help our nation and assist in protecting us all.

The following readings provide an important framework for developing effective community response strategies:

Centers for Disease Control – Bioterrorism Preparedness and Response
The definitive CDC web page for bioterrorism and contains a number of useful links, FAQs, forms and articles. The site includes links to state and local-level information and plans with state profiles as examples: http://www.bt.cdc.gov/planning/index.asp

Medline Plus Information
This page contains a wealth of resources regarding biological and chemical weapons, from general information to very specific. http://www.nlm.nih.gov/medlineplus/biologicalandchemicalweapons.html

American Red Cross
Very useful for family disaster preparedness. Includes links to sites with information related to biological and chemical weapons. http://www.redcross.org/services/disaster/keepsafe/unexpected.html

WMD Agent Summary Card
Pocket-sized card for health care professionals with characteristics, treatments, and symptoms of biological and chemical agents that may be used in a terrorist attack. Produced by the Center for Biological Defense (University of South Florida and Florida Department of Health) http://www.bt.usf.edu/alinks.htm

Local Plans and Resources

In May 2001, the Infectious Disease Society of America surveyed members about bioterrorism issues. The findings were as follows:

- 68% of respondents indicated that they are likely to be involved during any bioterrorism event in their community;
- 21% are already participating in local planning efforts and
- 70% of those currently not participating in local planning indicated that they would participate if asked.

There is high awareness in the United States about the risk of a bioterror attack and the will to prevent it.

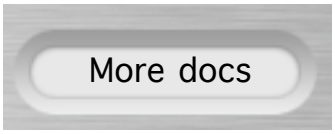
It is imperative that the massive resources required by such an event be assembled in a coordinated fashion. Local resources always provide the most important response to an emergency event like a bioterrorist attach or a disaster. An Emergency Operations Plan (EOP) is the key to prepare a community to effectively manage resources.

A local EOP is the community's method of identifying resources and organizational responsibilities for the acquisition and deployment during a biological emergency. Typically an EOP contains an analysis of the hazards within a community; identifies vulnerable populations and facilities; provides a basic overview of plan operational concepts and specifically outlines the organizational responsibilities and resources that the community has available. All of this should be developed within the context of a demographic database generated prior to the event.

An EOP developed at the community level will typically include the following elements:

- Functional Annexes: each annex focuses on one of the critical emergency functions that the jurisdiction will perform in response to an emergency. Functional annexes are oriented towards operations organized around performances of task and goals.
- Hazard Analysis: a list of hazards that may increase the risk to the local community.
- Vulnerability Analysis: identifies all the vulnerable populations in the community.

Once a local EOP is created, the strengths and weakness of the community become evident. The EOP defines how the Community Emergency Response Teams (CERT) and Disaster Community Health Assistance Teams (DCHAT) are created. Throughout this handbook, Internet references to more information and bibliographical details of content are provided.

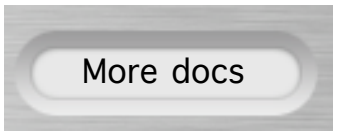


Preparing for Biological Terrorism: An Emergency Services Planning Guide, by George Buck, Delmar – Thomas Learning, 2002.

Centers for Disease Control – Bioterrorism Preparedness and Response:
http://www.bt.cdc.gov/

Community Defined

Generally, our communities are defined as physical locations. The first objective therefore is to define the physical borders of your community. It is useful to try to be consistent with units where data is already compiled because the key to preparation is having data in advance to drive decisions. In the United States, the unit where data is most often found is the census tract. The first task then is to identify the unit you want to consider your community. The place, if you will, where people live that you care about or are responsible for their safety. The population characteristics of an area can be collected in the United States from local census materials (go to census http://www.census.gov/ and find out what is there plus any other sources of data.)



Guide for the collection of community information: getting started, Statistics New Zealand, 1998. http://www.stats.govt.nz/

http://www.census.gov/

Included in the Census web page and in the EM-DecS (Emergency Manager Decision Support)

Once you have defined your community, the next task is to define whether the information already exists or if the information needs to be gathered. The steps in **Figure 1** outline the decision process.

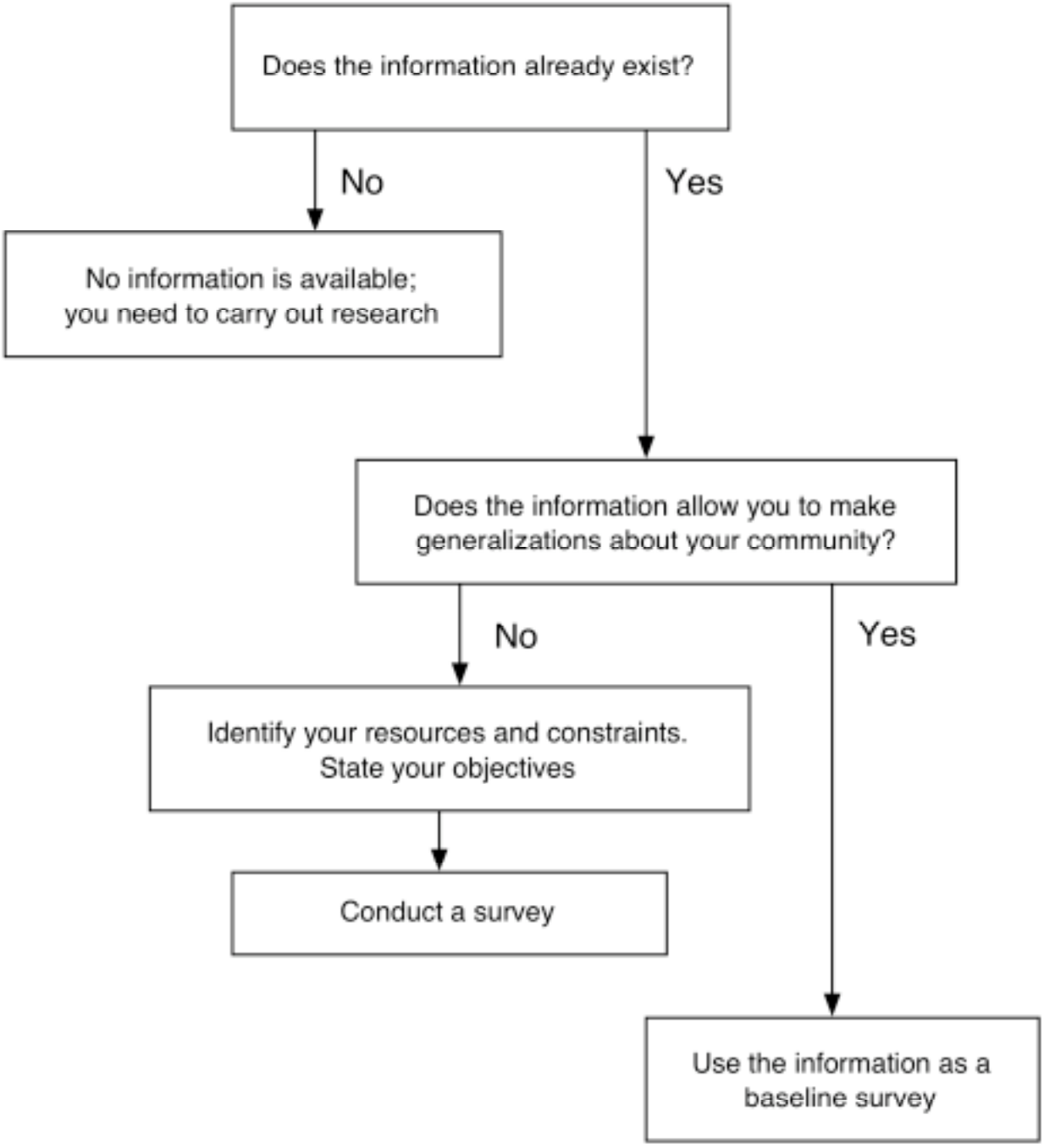


Figure 1 - Determining the need for survey

Once the objective of collecting information and carrying out a survey has been determined, then a planning phase (see **Figure 2**) and data collection needs to be carried out.

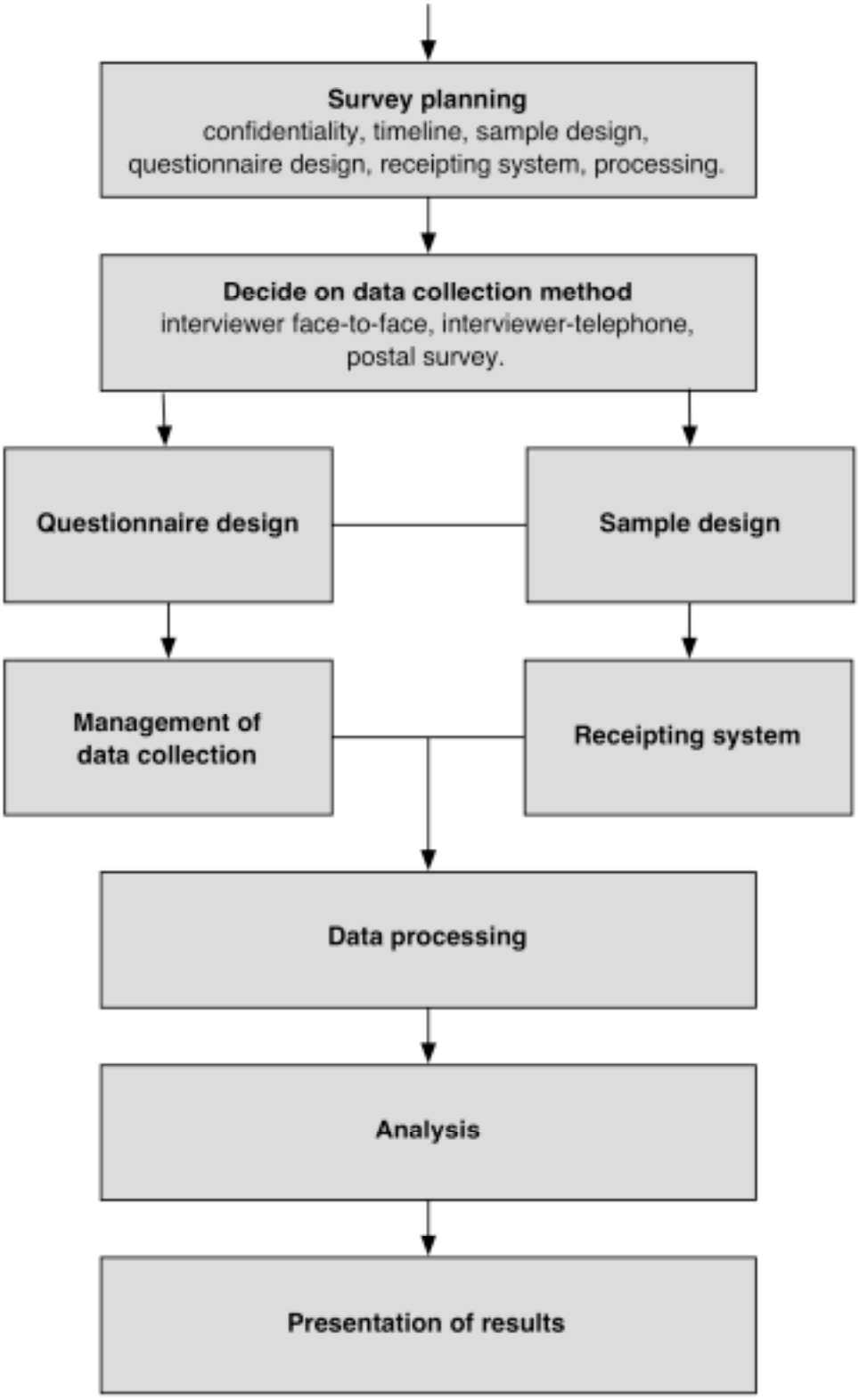


Figure2 – Step by Step Data Collection Strategy

Information on the community can be categorized as follows: **demographic**, **economic** and **environmental**. Sectoring is dividing the community into manageable segments in order to define specific types of information such as:

- **Geography** (features such as mountains, rivers, canyons, coastal areas, fault lines, wildlife, urban, fire interface, etc.);
- **Property** (numbers and general characteristics such as land use, types of construction, manufactured homes, building codes, essential facilities and potential secondary hazards such as nuclear power plants or facilities where hazardous materials are manufactured or stored),
- **Infrastructure** (utilities, communication systems, major highway transportation routes including bridges, and mass transit systems), and
- **Response Agencies** (locations, facilities, services and resources needed to plan for response capability.) We have included two sample forms that may help you create the profiles of the selected community:
  - **Form 1** is a template for collecting data to create an Educational Profile of the Community.
  - **Form 2** is a template for collecting demographic census-type data.

Educational Profile of the Community – Form 1			
Community Name:			
Assessment Period:		**To:**	
	Estimate	**Lower Bound**	**Upper Bound**
Population 25 and older **Male** **Female**			
Less than Grade 9 **Grade 9 – 12** **No diploma** **High School Degree** **College, No degree** **Associate Degree** **Bachelor's Degree** **Graduate/Professional Degree**			

Demographic Profile of the Community – Form 2			
Community Name:			
Assessment Period:		**To:**	
	Estimate	**Lower Bound**	**Upper Bound**
Total Population			
Sex and Age **Male** **Female**			
Under 5 years **5 to 9 years** **10 to 14 years** **15 to 19 years** **20 to 24 years** **25 to 34 years** **35 to 44 years** **45 to 54 years** **55 to 59 years** **60 to 64 years** **65 to 74 year** **75 to 84 years** **85 years and over**			
Median years			
Household population **Householder** **Spouse (or partner)** **Child** **Other Relatives**			

Once you have listed all of the potential data sources for your community's profile in a summary fashion, one of your objectives will be to keep your community's key characteristics up-to-date.

Now that you have started with an information base, you are ready to use data to assist in the development of your vision and goals for the program. This may be your most important and intellectually challenging task. You should be prepared to go through several iterations of your missions and goals. Protecting your community against terrorism is a high order mission but there should be a number of secondary goals, which can be easily converted into objectives. The important thing to remember is that your objectives should be clearly stated and someone should be identified in advance who will be in charge of each of them.

Coalition Building

Before addressing *any* problem in any community, it is vital to identify the key actors. Therefore, your first step should be to produce a short but informative review that focuses on the potential threat to your community from a biological, chemical or nuclear event. A clear and consistent message helps develop a unified coalition. It is very important that everyone involved with your effort be informed.

Stressful events in a community create the potential for disorganization. A coalition is vital to the success of any community project. By presenting specific pre-determined and understood responses to those events, such as a bioterrorism attack, much of the chaos can be avoided. Remember that communities change and their members change as well. Be sure that someone or some group is in charge of responding to and working with keeping your information database current and updating your coalition members names and points of contact. The Internet is an excellent way to keep all of this information available and current. Multiple backup-up copies should be kept on CD-ROM's and on hard (printed) copies.

Strategic Planning: Goal and Objective Setting

As your coalition is identified, you will need to refine your objectives to be specific to your community's problems. Each objective should have attached to it indicators that tell you and other community leaders the status of progress or problems. This process is often overlooked because it is time consuming and complex. Yet, to the extent that it is well done, it will assure that your plan works.

The following questions will help you refine your vision and set the parameters for the initiative. When answering these questions, consider and incorporate ideas from people who represent various sections of the community. Always keep the lines of communication open so the

community understands the needs and supports the solution. **Remember**--the more input you have, the clearer your vision will become, and the more community support you will gather.
Ask members of the community the following questions to get their ideas and input. Ask people from all sectors--local businesses, local government, local educational institutions (helping students of all ages!), community organizations and families. Getting input from a variety of sources can make the difference between an effective plan to prepare for terrorism or disasters and one that will not work. The following are some planning questions that will help you focus on your objective of keeping your community safe from threats.

Planning Questions:

- What are your objectives in preparing for terrorism or disasters?
- What types of service are already being provided that relate to bioterrorism and disaster preparation and response?
- What other services/information are needed for effective preparation?
- What type of service are you trying to provide?
- Is anyone else currently providing or developing this service?
- Can you identify the responsible party in each of these environments?
- Who will need to cooperate to get it done?
- Are there barriers to cooperation and if so can they be overcome?
- What information is already available and what is needed?

After gathering input from as many sources as possible, you should be able to identify the elements listed below as the core of your community readiness plan.

Identify:

- The target population
- The services needed
- Your specific objectives by segment of the target population
- The interested and vulnerable populations (stakeholders) and their specific interests
- The objectives of the populations above to see if obvious conflicts in objectives exist:
    - Resources: (people, non-profit organizations, government agencies, funding, etc.)

- Leaders who need to be involved at all stages of the process of planning.
- Key infrastructure and communication resources that could be utilized in the process of an emergency such as a biological, chemical or nuclear event.
- Private sector resources that could be utilized in planning, preventing and responding to such an event.

Goals reflect the final product. Our goal is to prepare our community to prevent, and if needed, respond and recover from primarily manmade biological, chemical or nuclear disasters. To achieve this goal we need to outline specific objectives. These are measurable, observable and above all communicable information, which are specific to what we would like to accomplish. **Figure 3** illustrates the hierarchical structure of a Goal, Indicators and Benchmarks.

Goal			
Indicator		**Indicator**	
Benchmark	**Benchmark**	**Benchmark**	**Benchmark**

Figure 3 - Hierarchical Structure of Goals, Indicator, and Benchmarks

Indicators are specific to a goal. They are used to gauge progress toward reaching the goal. It is important that the goal has enough indicators to measure progress but not so many that they become overwhelming. Good indicators are:

- Action-based
- Timely
- Measurable
- Reliable

In developing indicators and benchmarks, you will need to get data from more than one source in order to develop appropriate measures. Use a pre-test or a dry run as a first step to see if your data sources are feasible. This allows you to identify problems on a small scale and resolve them before becoming involved in a full-scale complex preparation. When possible use already collected data for your indicators. Sources of such information might be:

- Sign-in sheets from places of employment, time clocks and human resources records.
- Work Product reports normally produced.

- Sales or activity records
- Comments from participants or observations collected systematically.

In order to show change, it is vital to collect baseline information when you start so that you can determine any future changes. It is always important to document the source of your information since they can differ wildly in their validity. For example:

<table>
<tr><th colspan="4">Goal:
Develop a Community Demographic Profile</th></tr>
<tr><td colspan="2">Indicator:
Leaders will know how and where to access block level demographic statistics in community</td><td colspan="2">Indicator:
Increased access and durability to information sources.</td></tr>
<tr><td>Benchmark:

After 1 year, at least 75% of leaders will be able to find and use demographic data on community</td><td>Benchmark:

After 1 year, at least 75% of response plan leaders will be able to find and use key demographic data on community.</td><td>Benchmark:

Within six months 4 different points in the community will have redundant and protected data sources.</td><td>Benchmark:

Within six months there is a website established which documents all demographic parameters of community.</td></tr>
</table>

Figure 4 - Example of a Goal, Indicators and Benchmarks

Evaluation

The process of monitoring and evaluation allows us to identify strengths and weaknesses as we move along. We can catch problems early and avoid failures. This is particularly important when we are trying to prepare for an event. Human nature responds to the emergency of the moment, not necessarily the threat of the future. A good monitoring and evaluation system routinely carried out helps us to be ready for these events when they happen. Planning for evaluation in the early stages also helps to clarify objectives at every level and to be sure that we are consistent in attaching resources to objectives and objectives to goals.

Creating Disaster Resistant Communities

The gathering of information about vulnerabilities to and risk of bio-terrorism events combined with and matched to the resources needed to counter such events is the first step in developing programs that protect communities. This information will lead to identifying the target population, its average risk level and programs that already exist to serve the population. A disaster resistant community employs a long range, community-based approach to mitigation. A community can be termed "disaster-resistant" when, after a major disaster it can claim the following:

- Minimal loss of life
- Limited interruption of public services
- Timely resumption of business operations
- Management of the response operation with or without assistance
- Recovery to pre-event in a timely, pre-planned mode

The hazard analysis process involves identifying all of the hazards that potentially threaten a community and analyzing them individually to determine the degree of threat that is posed by each. Hazard analysis determines:

- What hazards can occur
- How often they are likely to occur
- How severe the situation is likely to get
- How these hazards are likely to affect the community
- How vulnerable the community s to the hazard

Once the community profile has been compiled, hazard analysis is a five-step process:

- **Step 1:** Identify the hazard (anthrax, for example)
- **Step 2:** Profile each hazard
- **Step 3:** Compare and prioritize risk
- **Step 4:** Create and apply scenarios

Step 1: Identify the hazards

This list should include hazards such as intentional release of biological agents, as well as the deliberate use of weapons of biowarfare. Biowarfare agents can be introduced via aerosol devices (munitions, sprayers, or aerosol generators), breaking containers, the release of a vector, or covert dissemination. Biological agents have the potential to be more lethal than chemical agents and are primarily deployed through aerosol spray or introduction into a water system. General indicators of possible biological warfare usage include: unusual dead or dying animals; sick or dying animals,

people, or fish; unusual casualties; unusual illness for the region; definite pattern inconsistent with natural disease; unusual liquid, spray or vapor; suspicious devices or packages; unusual swarms of insects. Potential bioterrorist-related hazards include:

- Hazardous material incident – highway
- Hazardous material incident – fixed facility
- Hazardous material incident – rail
- Hazardous material incident – pipeline
- Hazardous material incident – river
- Radiological incident – transportation
- Radiological incident – fixed facility
- Nuclear attack

Step 2: Profile each hazard

Develop a hazard profile for each hazard identified in the previous step. Each profile should include the following information about the hazard:

- Potential frequency of occurrence – how often is it likely to occur?
- Magnitude and potential intensity – how bad can it get?
- Location – where is it likely to strike?
- Probable spatial extent – how large and what area is it likely to affect?
- Duration – how long can it be expected to last?
- Seasonal pattern – at what time of year is it more likely to occur?
- Speed of onset – how fast is it likely to occur?
- Availability of warnings – how much warning time is there, and does a warning system exist?

Step 3: Compare and prioritize risk

After community and hazard information have been compiled, the next step is to quantify the community's risk so that the planning team can focus on the hazards that present the highest risk to the community. Risk is the predicted impact that a hazard would have on people, services, specific facilities and structures in the community. To quantify risk:

- Identify elements of the community (populations, facilities and equipment) that are potentially at risk from a specific hazard
- Assign severity ratings
- Compile risk data into community risk profiles

In addition to a risk assessment, a vulnerability analysis of the high-risk populations within the local community will identify populations with "special needs". These populations may include

elderly, handicapped, non-English speaking and ethnic groups that present unique medical considerations. In addition, vulnerable facilities such as nursing homes, hospitals, adult congregate living units, high-density housing and major transportation routes are also identified and cataloged.

Identify elements at risk – for each hazard, survey risk-related factors in each sector in the community to develop a composite picture of overall risk. These factors include:

- Geographic features such as topography and soil composition
- Infrastructure lifelines including utilities, communication and transportation systems.
- Essential facilities such as police and fire stations, and emergency medical services
- Special facilities such as schools, nursing homes, and health care facilities.
- Unique, historic or other cultural resources.
- Hazardous material production/storage/transport
- Property characteristics such as land use and type of construction
- Population densities and shifts
- The availabilities of response resources

Assign severity ratings – Each applicable hazard is then assigned a severity rating that will quantify, to the degree possible, the damage that can be expected in the community as a result of that hazard. This rating quantifies the expected impact of a specific hazard on people, essential facilities, and property. **Figure 5** is an example of a severity-rating scheme.

Severity level	Characteristics
Catastrophic	• Multiple deaths • Complete shutdown of facilities for 30 days or more. • More than 50% of property is severely damaged
Critical	• Injuries and/or illnesses result in permanent disability. • Complete shutdown of facilities for at least 2 weeks. • More than 25% of property is damaged
Limited	• Injuries and/or illnesses do not result in permanent disability. • Complete shutdown of facilities for at least 1 week. • More than 10% of property is damaged
Negligible	• Injuries and/or illnesses result are treatable with first aid. • Minor quality of life lost. • Shutdown of facilities for at 24 hours or less • Less than 10% of property is damaged

Figure 5 – Severity Rating

Compile data into a community risk index – By cross-referencing the compiled community profile and hazard analysis, a risk index can be developed for all hazards. It will include:

- Frequency of occurrence
- Magnitude
- Speed of onset
- Community impact (severity rating)
- Social characteristics and planning considerations

Based on these ratings, a **Risk Priority** can be assigned to each hazard. Risk priorities may be described using qualitative ratings such as High, Medium or Low. **Form 3** is a sample Risk Index worksheet.

Risk Index Worksheet – Form 3						
Community Name:						
Assessment Period:			**To:**			
Hazard	**Frequency**	**Magnitude**	**Warning Time** **(in hours)**	**Severity**	**Special Conditions**	**Risk Priority**
	❑ Highly Likely ❑ Likely ❑ Possible ❑ Unlikely	❑ Catastrophic ❑ Critical ❑ Limited ❑ Negligible	❑ Minimal ❑ 6–12 ❑ 12-24 ❑ 24+	❑ Catastrophic ❑ Critical ❑ Limited ❑ Negligible		
	❑ Highly Likely ❑ Likely ❑ Possible ❑ Unlikely	❑ Catastrophic ❑ Critical ❑ Limited ❑ Negligible	❑ Minimal ❑ 6–12 ❑ 12-24 ❑ 24+	❑ Catastrophic ❑ Critical ❑ Limited ❑ Negligible		
	❑ Highly Likely ❑ Likely ❑ Possible ❑ Unlikely	❑ Catastrophic ❑ Critical ❑ Limited ❑ Negligible	❑ Minimal ❑ 6–12 ❑ 12-24 ❑ 24+	❑ Catastrophic ❑ Critical ❑ Limited ❑ Negligible		
	❑ Highly Likely Likely ❑ Possible ❑ Unlikely	❑ Catastrophic ❑ Critical ❑ Limited ❑ Negligible	❑ Minimal ❑ 6–12 ❑ 12-24 ❑ 24+	❑ Catastrophic ❑ Critical ❑ Limited ❑ Negligible		

Step 4: Create and apply scenarios

The final step in the hazard analysis process is to brainstorm worst-case scenarios that will identify hazard-specific planning and resource requirements. From initial warning, if available, describe the hazard's development and impact on the population and its generation of specific consequences. Include:

- Overall impact on the community
- Impact on specific sectors
- Consequences (e.g. collapsed buildings, loss of critical services and infrastructure, death, injury, or displacement)
- Needed actions and resources, including mitigation activities

FEMA Collection of documents for emergency managers.

http://www.fema.gov/library/lib07.htm

Communicating the Facts

Effective management of the impact of a bioterrorist incident in the community requires coordinated and timely dissemination of accurate information in a manner that minimizes confusion and unwarranted panic. Conflicting information must be avoided and information regarding protective actions, appropriate evacuation measures, self-aid and decontamination must be provided in a timely and coherent manner. At the operational area level, the dissemination will be handled by the **Emergency Operations Center** in close coordination with all affected agencies. Sometimes the FBI's Joint Information Center (JIC) receives and handles all media enquiries. JIC will report its decisions to local and State Public Information Offices (PIOs). Other information should also be released through an Internet-based web page. A telephone hotline should also be established. This number should be identified in advance and communicated to all stakeholders. Radio and television emergency broadcasts should all be coordinated.

Regular communication with subject-matter experts and, if possible, organized support groups to answer question and answer sessions on bioterrorism. **F**requently **A**sked **Q**uestions (FAQs**)** associated with bioterrorism are seldom well known among the communities. The following sections include some FAQs on bioterrorism and answers.

Frequently Asked Questions

- **What is bioterrorism?** Bioterrorism is the deliberate or threatened use of bacteria, viruses, and toxins to cause disease, death, or fear. Bioterrorism could also be directed against livestock, food crops, and environmental resources such as reservoirs.

- **What are the major disease (biological agent) threats and how are they spread and treated?** Any infectious agent could theoretically be engineered for deliberate use as a weapon. While no one knows for sure exactly what microbes a terrorist will use, public health officials are most concerned with the following disease threats:

    - **Inhalation anthrax** is the most serious form of anthrax and results from breathing bacterial spores into the lungs. Once in the lungs, the spores germinate into live bacteria that release potent toxins. The disease starts with flu-like symptoms, followed by severe respiratory complications. Death may occur within 2 to 3 days of symptoms. Exposure to airborne anthrax spores could cause symptoms as soon as 2 days after exposure or as late as 6 to 8 weeks after exposure. Once symptoms appear, antibiotics may have limited effectiveness for treatment of inhalation anthrax because it is too advanced.

    - **Cutaneous anthrax**, the skin form of anthrax, can cause skin or intestinal disease. It is the most common form of anthrax and results from contamination of the skin with anthrax spores (particularly on exposed areas of the hands, arms, or face.) The disease begins with a local swelling that may look like an insect bite and progresses to a fluid-filled blister. The blister dries, ulcerates, and then forms a coal-black scab (the word anthrax comes from the Greek word for coal.) Without antibiotic treatment, the local infection may spread through the body and can be fatal.

    - **Smallpox** is a serious viral disease that starts with fever, aches, fatigue, and vomiting, and progresses to a rash with blisters over much of the body. Initially, the rash may be confused with chicken pox. Smallpox spreads directly from person-to-person through airborne transmission. because it is a virus, it does not respond to antibiotics. A vaccine exists but is not available for widespread use.

    - **Pneumonic (*new-monic*) plague** is caused by inhaling the bacteria associated with the "Black Death." It begins as a severe pneumonia with high fever, chills, and cough. Without prescription antibiotics, respiratory failure and death may occur within 12 to 24 hours after the initial symptoms appear. It spreads directly from person to person through the air (e.g., cough, sneeze). A vaccine exists for prevention of bubonic plague (when the lymph nodes are infected instead of the

lungs) but is not considered effective against the inhaled (pneumonic) form of the disease.

- **Botulism** is caused by a bacterial protein that has been eaten or inhaled. It is one of the most potent toxic compounds known. Affected individuals may have difficulty speaking, seeing, and swallowing. Depending on the severity of exposure, symptoms may progress to general muscle weakness and respiratory failure. Without adequate respiratory care and treatment with antitoxin, death can occur within 24 to 72 hours. *Botulism does not spread from person to person*. A bioterrorist attack would likely involve airborne or foodborne release of botulinum toxin. *Antibiotics are not effective*.

- **Tularemia** (*too-la-ree-mia*) is one of the most infectious bacterial diseases known. A bioterrorist attack would likely involve airborne release of this organism. Fever, headache, and a pneumonia-like illness characterize the disease. Without antibiotic treatment, the disease can progress to respiratory failure, shock, and death. *There is no evidence that it can be spread from person to person*. A vaccine exists but is not available for widespread use.

- **Viral hemorrhagic fevers** are caused by a diverse group of viruses (e.g., Ebola, Marburg, Yellow Fever, Lassa, Rift Valley). Illness generally begins with flu-like symptoms such as fever, fatigue, dizziness, headache, and muscle aches. After 5 days a rash often develops, which is most prominent on the trunk of the body. Severe infection may lead to death due to complications from massive bleeding and shock due widespread damage to blood vessels. These viruses can be spread from person to person through contact with body fluids (eg, blood.) A vaccine is available for prevention of Yellow Fever. Other vaccines are under investigation. No antibiotic is effective against these or any viral diseases.

Immunization

Should I be immunized against anthrax?

The anthrax vaccine is only available to military personnel and those who might come in contact with natural anthrax in their work (special-risk groups such as goat-hair mill or goatskin workers, wool or tannery workers, laboratory workers.) Vaccination is not a single shot but a series of 6 shots given over 18 months, followed by yearly boosters. *Physicians do not have this vaccine and cannot obtain it*. In the event of a bioterrorist attack, health authorities would conduct a rapid investigation, determine the place and time of the release, and identify individuals who need antibiotics rather than vaccine. The anthrax vaccine is only recommend for people between 18 and 65 years of age.

Should I be immunized against smallpox?

The last naturally occurring case of smallpox in the world occurred in 1977. The United States stopped routine smallpox immunizations in 1972 and, consequently, drug companies stopped making the vaccine. The vaccine is not generally available to the public. The Center for Disease Control (CDC) estimates there are approximately 12 to 15 million doses of vaccine remaining in the United States. Although there is no treatment for the disease, the smallpox vaccine provides excellent protection and serves to stop spread of the disease. While many vaccines must be given weeks or months before a person is exposed to infection, the smallpox vaccine is different. It can be protective when given 2 to 3 days after exposure and may prevent death even when given as late as 4 to 5 days after exposure.

There is suspicion that some nations or groups have stolen stocks of the smallpox virus from the former Soviet Union. Since we don't know if terrorists have stolen the virus or (if they have) who they would target, we cannot determine who should receive the vaccine. In the event of a smallpox outbreak, the national vaccine stockpile would be used to control the spread of the disease. The federal government has a contractor developing new vaccine for a larger stockpile. Although rare, the smallpox vaccine can have serious side effects (e.g., severe skin reaction, brain infection, and death.) Currently, the benefits and risks of reintroducing of the vaccine are being carefully evaluated. The only way that health authorities would recommend wide-scale vaccination is if there was clear evidence that the disease had resurfaced and citizens were at risk of becoming infected.

I was vaccinated against smallpox before 1980, can I still get smallpox?
In most people, vaccination wears off after 10 to 15 years but may last longer if the person had been successfully vaccinated on multiple occasions. It is likely that most vaccinated persons are now susceptible to smallpox and would need to be re-vaccinated.

Antibiotics

Should I ask my doctor for antibiotics to have on hand in case of a bioterrorist attack?
No. Indiscriminant use of antibiotics could be harmful, particularly for pregnant women and children. Many antibiotics are effective for a variety of diseases but *there is no antibiotic that is effective against all diseases*. Antibiotics can cause side effects and should only be taken with medical supervision. This type of inappropriate use of antibiotics may lead to increased antibiotic resistance in bacteria that cause other common infections (e.g., otitis media, pneumonia, urinary tract infections), which can complicate treatment. Keeping a supply of antibiotics on hand poses an additional problem because they have a limited shelf life and will lose potency over time.

Gas Masks

Should I purchase a gas mask?

No. A gas mask provides a false sense of security and would only be protective if you were wearing it at the exact moment of a bioterrorist attack. Since such an attack would be unannounced and initially undetected, the mask would have to be worn continuously to be protective. In other words, in order to be protected, you would have to wear this mask 24 hours a day, seven days a week - never removing it. This is impractical, if not impossible. Gas masks can actually be dangerous for persons with pre-existing heart or lung problems; there have been reports of accidental suffocation when people have worn masks incorrectly.

Also, to work effectively, a gas mask must be specially fitted to you and you must be trained in its use. This is usually done for the military and for workers in industries and laboratories who are routinely exposed to hazardous chemical and biological agents. Purchasing a gas mask from an Army surplus store or off the Internet carries no guarantee of effectiveness.

Response to Exposure

Who do I contact regarding a possible exposure?
If you believe you have been exposed to an infectious bioagent or if you develop symptoms that you believe might be associated with such an exposure, immediately contact a physician. Your physician may choose to contact the local health department to determine the best course of action based on the circumstances of the exposure.

What can I do to protect my family and myself?
Although there is little that you as an individual can do in advance to protect yourself from a bioterrorist attack, there is much we can do as a country. The best protection is a strong and prepared public health system; well-trained physicians and other medical personnel who can recognize an illness caused by a bioterrorist agent; coordinated planning between medical, public health, emergency management, and law enforcement personnel; and an informed public. Government agencies, health care institutions, and public health agencies can and are doing more to improve capacity to protect the public following a bioterrorist attack. We can all educate ourselves about this issue, make family preparations for a disaster, and find out ahead of time what our local communities suggest we do.

Furthermore, in the event of a disaster, every family should have the following emergency supplies on hand:

- A battery-powered radio and flashlight, with plenty of extra batteries
- Bottled drinking water (1 gallon per day per person, with a 3 to 7 day supply recommended.) Store water in sealed, unbreakable containers. Note the storage date and replace every 6 months.
- A supply of nonperishable canned and sealed packaged foods that do not require refrigeration or cooking (at least enough for 3 to 7 days) and a can opener
- A change of clothing, rain gear, and sturdy shoes

- A blanket or sleeping bag for each family member
- First-aid kit, including any special prescription medications
- Toilet paper and paper towels
- Extra set of car keys
- Credit cards and cash
- Tools
- Special items for infants (e.g., disposable diapers), elderly, or disabled family members
- Extra eye glasses; contact lenses and supplies
- A list of physicians and their telephone numbers
- A list of important family information, important documents, and telephone numbers; copies of family immunization and health records; and the style and serial number of medical devices such as pacemakers.
- A list of family alternative location and gathering places, contact numbers and communication plan in case of dislocation.

Careful planning and sufficient resources are critical for any response to an emergency, be it a natural disaster or a terrorist attack. Inquire about emergency plans for your children's school or day care center. Familiarize yourself with the evacuations and emergency notification plans and contacts for these facilities as well as places of work. Consider becoming involved in your community emergency response team.

Public domain Medline documents are available on:
http://www.nlm.nih.gov/medlineplus/biologicalandchemicalweapons.html

A document on microbes in sickness and health (including viruses):
http://www.niaid.nih.gov/publications/microbes.htm

Useful Links for First Responders and Health Professionals

- **American College of Surgeons:** http://www.facs.org/civiliandisasters/index.html. This website is oriented to how surgeons and health facilities can prepare for a disaster involving biological and chemical weapons.

- **Army Medical Research Institute of Chemical Defense**: This laboratory is concerned with developing medical countermeasures to chemical warfare agents and training medical personnel in the medical management of chemical casualties. Useful for health professionals. http://chemdef.apgea.army.mil/

- **Centers for Disease Control – Bioterrorism Preparedness and Response** This page is the definitive CDC WWW page for bioterrorism and contains a number of useful links, FAQs, forms and articles. The site includes links to State and Local-Level Information and Plans with state profiles as examples: http://www.bt.cdc.gov/Planning/index.asp Includes links to the National Center for Infectious Diseases: http://www.cdc.gov/ncidod/

- **Chem-Bio Terrorism Links.** These pages include a list of Local Emergency Management/BT/WMD Sites. The lists is compiled and targeted mainly towards first responders http://www.chem-bio.com/links/local.html

- **Federal Emergency Management Agency.** This agency has an excellent collection of online materials geared towards first responders and emergency managers. The links on hazardous materials are especially relevant. http://www.usfa.fema.gov/hazmat/

- **Food and Drug Administration**: Includes links to other organizations and general information on bioterrorism http://www.fda.gov/oc/opacom/hottopics/bioterrorism.html

- **Office of Emergency Preparedness**: http://www.oep-ndms.dhhs.gov/

- **Office of Public Health Preparedness**: http://www.hhs.gov/news/press/2001pres/20011101a.html

- **U.S. Army Medical Research Institute of Infectious Diseases**: http://www.usamriid.army.mil/

- **WMD Agent Summary Card**: Pocket-sized card to provide health care professionals with characteristics, treatments, and symptoms of biological and chemical agents, which may be used in a terrorist attack. http://www.bt.usf.edu/alinks.htm

Useful Links for Bioterrorism Research

- **Bioterrorism and the public health sector,** Richard McCluskey, MD, PhD, Center for Disaster Mitigation and Humanitarian Assistance Joint Publication **JP 3-07.2 JTTP** for **Antiterrorism**.

- **Center for Strategic and International Studies:** This think-tank is concerned with policies towards bioterrorism. Online publications include Congressional Testimonies such as: "The Threat Of Bioterrorism And The Spread Of Infectious Diseases", Testimony of Frank J. Cilluffo, Chairman, Committee on Combating Chemical, Biological, Radiological and Nuclear Terrorism, Homeland Defense Initiative Center for Strategic and International Studies http://www.csis.org/

- **Department of State International Information Programs**: Information on US and international policies on terrorism http://usinfo.state.gov/homepage.htm.
  Links from the State Department include http://www.state.gov/www/global/terrorism and http://www.state.gov/s/ct/

- **Environmental Protection Agency**: Agency responsible for protecting the environment and promoting health http://www.epa.gov/

- **Program to Monitor Emerging Infectious Diseases (PROMED)**
  http://www.fas.org/promed/

- **HSTAT** (Health Services/Technology Assessment Text): Database from the National Library of Medicine http://text.nlm.nih.gov/
  National Institutes of Health: http://www.nih.gov/
  National Library of Medicine Gateway: http://gateway.nlm.nih.gov/gw/Cmd
  NLM MeSH Browser: http://www.nlm.nih.gov/mesh/MBrowser.html

  MEDLINEplus: http://medlineplus.gov
  Medical NBC Defense Training and education Network: http://www.nbc-med.org/
  Institute of Medicine http://www.nationalacademies.org/

- **The New Scientist**: Includes a series of policy articles on US an international policy on bioterrorism http://www.newscientist.com/nsplus/insight/bioterrorism/insideout.html

- **Potomac Institute:** http://www.potomacinstitute.org/

- **PubMed**: http://pubmed.gov/

- **Red Cross**: http://www.redcross.org/

- **TOXNET:** http://toxnet.nlm.nih.gov/

- **World Health Organization** http://www.who.int/home-page/

Bioterrorism Training for Public Health Professionals

- **Agency for Healthcare Research and Quality** hosts documents such as *Training of Clinicians for Public Health Events Relevant to Bioterrorism Preparedness*. Summary, Evidence Report/Technology Assessment: Number 51. AHRQ Publication No. 02-E007, December 2001, among others oriented towards improving the heath sector preparedness for a bioterrorist event: http://www.ahrq.gov/clinic/epcsums/biotrsum.htm

- **American Medical Association:** http://www.ama-assn.org/ama/pub/category/6206.html
  A good site for health personnel to find information regarding training and news releases. More links are found at http://www.ama-assn.org/ama/pub/category/6671.html

- **Johns Hopkins Center for Civilian Biodefense Strategies**: Includes online course mostly geared for health professionals, as well as publications and an extensive database on bioterrorism This is also an excellent site for policy and governmental reports and testimony. http://www.hopkins-biodefense.org/

- **National Guidelines Clearinghouse (NGC)** is a public resource for evidence-based clinical practice guidelines. NGC is sponsored by the Agency for Healthcare Research and Quality (formerly the Agency for Health Care Policy and Research) in partnership with the American Medical Association and the American Association of Health Plans. Excellent resource for database searching http://www.ngc.gov/index.asp

- **Training Finder**: Includes online courses offered for public health professionals on a wide range of topics including bioterrorism. http://www.trainingfinder.org/

Appendix

Links from the University of South Florida - Center for Biological Defense (http://www.bt.usf.edu/alinks.htm)

This is a very useful site that provides edited links to important information on sources of information for emergency management, community preparedness and biological defense.

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- **American Society for Microbiology – Communications**
  http://www.asmusa.org/pcsrc/bioprep.htm
  This web site lists ASM's links and documents relating to biopreparedness. Included are materials on agents, lab protocols, disease and antibiotics.

- **Applied Science and Analysis**
  http://www.asanltr.com/
  Company website for ASA, a Nuclear, Biological & Chemical defense consulting firm

- **Athena Project**
  http://mywebpages.comcast.net/bnham/athena/comp1.html
  Although created as a high school project, this web page provides an excellent BT reference site with quick introductions to a number of important technologies.

- **California Polytechnic State University – Chem450 Student Information Page**
  http://www.calpoly.edu/~drjones/chemwarf.html
  This page, created by students in 1996 and 1998 chemistry classes provides very nice material on chemical and biological weapons history. Although oriented more towards chemical weapons, it is still an excellent resource for researchers looking for introductory bioweapon information.

- **Centers for Disease Control – Bioterrorism Preparedness and Response**
  http://www.bt.cdc.gov/
  This page is the definitive CDC WWW page for bioterrorism and contains a number of useful links, FAQs, forms and articles. The site describes CDC's duties and research and the organization of their BT effort. The links on laboratory shipping and protocols as well as state level contacts are particularly valuable.

- **Chemical and Biological Arms Control Institute**
  http://www.cbaci.org/
  This site has a number of original publications including an extensive biological terrorism bibliography. There is also summary information about the Institute's projects and staff.

- **CIA - Chemical/Biological/Radiological Incident Handbook**
  http://www.cia.gov/cia/publications/cbr_handbook/cbrbook.htm
  This site makes sense out of NBC threats. Does an excellent job discussing how to distinguish the threats for one another.

- **Consequence Management Interoperability Services**
  http://www.cmi-services.org/
  This website has information about CMI-Services, a group comprised of defense contractors in cooperation with the U. S. Defense Department. The organization facilitates the exchange of information between DOD resources and local first responder groups. It is difficult to determine exactly what services CMI-Services provides.

- **Core Processes Inc**
  http://www.coreprocesses.com/
  Core provides a wide range of emergency management and disaster exercises and consultations for corporations and communities. Their site provides in depth explanations of their services and training programs.

- **Defense Against Toxin Weapons**
  http://www.nbc-med.org/SiteContent/MedRef/OnlineRef/FieldManuals/datw/index.htm
  This report is focused on providing a basic understanding of toxins and how they work to any person interested; especially, according to the author, those working in the fields of counter-terrorism.

- **Defense Threat Reduction Agency**
  http://www.dtra.mil/
  DTRA is the military agency broadly charged with reduction of weapons of mass destruction threats to the United States and coordinating efforts against these threats. This site provides good information about the many divisions of DTRA and their projects. The DTRA Strategic Plan 2001 provides an overview of the agency's goals and objectives.

- **Department of Defense – Joint Program Office for Biological Defense**
  http://www.jpobd.net/
  This website provides information about the JPO-BD, a joint service organization that handles military biodefense acquisitions. Of particular interest are the summaries about the office's projects – including the Critical Reagents Program and the Joint Vaccine Acquisition Program.

- **Departments of the Army, Navy, Air Force, and Marine Corps - Treatment of Biological Warfare Casualties**
  http://www.vnh.org/FM8284/
  This site is a copy of the military's Field Manual for handling BW casualties. It provides a lot of information regarding biological threats.

- **Department of Health and DMAT - Incident Command System**
  http://oep.osophs.dhhs.gov/dmat/
  This website walks readers through the Incident Command System. Provides an excellent view of the ICS – especially as it relates to public health.

- **Department of Transportation – Hazardous Materials Safety Office**
  http://hazmat.dot.gov/
  This site serves as a clearinghouse for information concerning hazardous materials and HAZMAT transportation procedures. Of particular value is the online Emergency Response Guidebook.

- **Disastercenter.com – Counter-Terrorism**
  http://www.disastercenter.com/terror.htm
  Both detailed and basic information is provided on this counter-terrorism web page. Reports from the National Commission on Terrorism, suggested book readings, and additional information are listed.

- **Domestic Preparedness.com**
  http://www.domesticpreparedness.com/
  This website, sponsored by the IMR Group – a defense industry marketing firm, provides an assortment of press releases, commercial product information and government report links.

- **Emergency Response and Research Institute - Emergency Net**
  http://www.emergency.com/
  This site has reports and editorials for a wide range of emergency response topics.

- **Federation of American Scientists**
  http://www.fas.org/press/index.html
  This site contains a number of scientific policy articles and reports. The site includes a massive collection of quick reference materials to military hardware, descriptions of nuclear tests, sample intelligence photo archives and simple guides to arms control agreements. The section on "special weapons" is particularly interesting.

- **Fire Protection Publications - Incident Command System**
  http://216.202.128.19/dr/DisasterResponse.nsf/section/07?opendocument&home=html
  Another view at the Incident Command System, this website provides a detailed history, as well as a description of ICS.

- **HEICS III San Mateo County - Incident Command System**
  http://www.emsa.cahwnet.gov/Dms2/heics3.htm
  A county in California has provided an outline of their project for Hospital Emergency Incident Command System.

- **Henry L. Stimson Center – Chemical and Biological Weapons Nonproliferation Project**
  http://www.stimson.org/cbw/?SN=CB2001112951
  This site contains a number of original reports on chemical and biological weapons proliferation. There are synopses of threats by country – with a special section on Iraq.

- **Infectious Disease Center**
  http://www.idcenter.net/
  This is the homepage for the joint Tampa General Hospital & University of South Florida Infectious Disease Center. The site contains information about the IDC, research there, faculty members as well as a list of relevant documents and links for bioterrorism and infectious disease in general.

- **Johns Hopkins University – Center for Civilian Biodefense Studies**
  http://www.hopkins-biodefense.org/
  This is an excellent site containing policy and governmental reports and testimony. D. A. Henderson's series of articles and the online version of "Biodefense Quarterly" provide terrific reading. The list of biopreparedness events is also convenient.

- **Lawrence Livermore National Laboratory – Counterterrorism and Incident Response**
  http://www.llnl.gov/nai/rdiv/rdiv.html
  LLNL provides information about their technical developments aimed at terrorism, including Nuclear Threat Assessment process and the use of biosensor technology.

- **Maryland Department of Health - Healthy People, Healthy Communities**
  http://www.dhmh.state.md.us/eis6501/biotbiot.htm
  This website provides links to must-read articles for anyone wanting to supplement or enhance their basic knowledge of bioterrorism.

- **Medical Department of the Army - Medical Aspects of Chemical and Biological Warfare**
  http://www.nbc-med.org/SiteContent/HomePage/WhatsNew/MedAspects/contents.html
  This web page provides detailed information regarding chemical and biological-weapons threats. The information is written for a scientific audience.

- **Modeling and Simulation Analysis Center**
  http://www.msiac.dmso.mil/
  This page describes the activities of the simulation IAC, one of a number of information analysis centers. They have a particularly nice list of links.

- **Monterey Institute for International Studies - Center for Nonproliferation Studies**
  http://cns.miis.edu/research/cbw/index.htm

A collection of chemical, biological terrorism, biowarfare documents and links. The document collection includes articles pertaining to international conventions and law and terrorism threats organized by geographical region.

- **The National Academies - Institute of Medicine**
  http://www.iom.edu/IOM/IOMHome.nsf/Pages/Health+Sciences+Policy
  The IOM has produced a number of quality reports that should be of interest to the biodefense community. In particular, a 1999 book on chemical and biological terrorism and a 1998 report on antimicrobial resistance.

- **National Academy Press – Clinical & Biological Terrorism**
  http://www.nap.edu/html/terrorism/index.html
  Online extracts from the book "Clinical & Biological Terrorism." Nice sections on drugs, decontamination and detection.

- **The National Association of County and City Health Officials**
  http://www.naccho.org/project63.cfm
  NACCHO's biodefense website contains a link to the NACCHO biopreparedness guide as well as a number of links to CDC's BT site.

- **NDPO – The National Domestic Preparedness Office**
  http://www.ndpo.gov/profile.htm
  The homepage of the governmental agency charged with ensuring domestic terrorism response training. Excellent and informative web page.

- **National Guard – WMD Civil Support Teams**
  http://www.defenselink.mil/specials/destruction/
  This is the homepage for the National Guard's WMD Civil Support Team (CST) previously known as RAID. This site provides information and current news regarding the CSTs including what they do, when they will be ready for deployment, and other information regarding them. These teams are considered the military's First Responders.

- **National Security Institute - Counter-Terrorism**
  http://nsi.org/terrorism.html
  This page provides links to terrorism legislation and Executive Orders, as well as facts regarding terrorism.

- **NBC Industry Group**
  http://www.nbcindustrygroup.com/
  This page represents the NBC Industry Group and serves as a contact point for marketing the products of the group's members.

- **Nuclear, Biological, and Chemical Weapons Response**
  http://155.217.58.58/cgi-bin/atdl.dll/fm/8-10-7/toc.htm
  Yet another website produced by the Army regarding NBC, but this one is particularly informative in discussing the effects of Nuclear weapons (and Bio/Chem) and the military's Command and Control structure.

- **Official DoD Website for the Anthrax Vaccine**
  http://www.anthrax.osd.mil/
  Do you have questions about the Anthrax vaccine? Get them answered here at the DoD's website. Find information on the threat, the disease, the vaccine, vaccine's safety, and an FAQ from the DoD's perspective.

- **Principles of Preparation and Coordination of Disaster Response**
  http://216.202.128.19/dr/disasterresponse.nsf/section?openview&home=html
  This web page walks readers through the steps and stages of a response/coordination plan. Chapters include excellent tips on tendencies of communities, media, and first-responders. A must-read for anyone writing a disaster plan.

- **Private Individual - The Chem/Bio/Nuclear Anti-Terrorism Web page**
  http://www.nbcnco.com/
  This web page is written by a private individual who has worked in the military or a police officer. This web page has links to interesting information that provide another view to the NBC counter-terrorism efforts.

- **RAND - Gilmore Commission's Second Annual Report**
  http://www.rand.org/nsrd/terrpanel/
  The Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, also known as the Gilmore Commission, provides its Second Annual Report.

- **St. Louis University – Center for the Study of Bioterrorism and Emerging Infections**
  http://www.bioterrorism.slu.edu/
  Details the research projects of the Center. The online reference and the "quick" reference sections are particularly useful and contain a comprehensive set of handouts.

- **St. Petersburg, FL Community College - National Terrorism Preparedness Institute**
  http://terrorism.spjc.edu/
  If you are interested in taking courses in emergency response to terrorism, this is the place to go. Distance Learning is available.

- **SBCCOM On-Line – US Army Soldier and Biological Chemical Command**
  http://www.sbccom.apgea.army.mil/

This web page highlights what the Army is doing to combat Biological and Chemical Warfare. It explains what SBCCOM is, what it does, what it is currently researching, and its relationships with other organizations.

- **State Department – Biological & Toxins Treaty WWW Page**
  http://www.state.gov/www/global/arms/treaties/bwc1.html
  This page lists the text of the Convention on the prohibition of the development, production and stockpiling of bacteriological (biological) and toxin weapons and on their destruction.

- **The Terrorism Research Center - Terrorism RealNews**
  http://www.terrorism.com/realnews/realnews.shtml
  This site has a list of current news events for those in the field of terrorism.

- **Texas Department of Health – Bioterrorism**
  http://www.tdh.texas.gov/bioterrorism/default.htm
  The Texas Department of Health's page does an excellent job of providing a very basic glimpse into the field of bioterrorism including the basic recognized threats, bioterrorism preparedness, etc.

- **U. S. Army Medical Research and Materiel Command**
  http://mrmc-www.army.mil/
  Flashy military site that explains proposals, research and organization of the MRMC.

- **U.S. Army Medical Research Institute of Infectious Diseases**
  http://www.usamriid.army.mil/
  The homepage for US' leading researchers in biowarfare agents. Get a free downloadable version of their Bluebook available in Word, pdf, and for your PalmPilot.

- **U. S. Army Medical Research Institute of Chemical Defense - Chemical Casualty Care Division**
  http://ccc.apgea.army.mil/
  This page has a large assortment of chemical agent reference materials and treatment guides. Particularly handy is the Textbook of Military Medicine, which also contains information about biological agents.

- **U. S. Army Office of the Surgeon General – NBC Med**
  http://www.nbc-med.org/ie40/Default.html
  This site serves as a clearinghouse for military related BT information. The site has easily understood information about BT agents and links to other government BT related websites.

- **US Army Surgeon General's Homepage – Medical NBC On-Line Information Server**
  http://www.nbc-med.org/ie40/Default.html

Get current news and information regarding NBC at this website. Site includes recent news, and information regarding civilian training programs done through the military.

- **The US Commission on National Security – The Hart-Rudman Commission**
  http://www.nssg.gov/About_Us/about_us.htm
  USCNS/21's Road Map for National Security

- **U. S. Navy – Chemical Biological Defense**
  http://www.chembiodef.navy.mil/index.htm
  Naval Chem/Bio homepage provides access to Navy & Joint Service reference manuals. This site also contains basic descriptions of Navy protective equipment.

- **University of South Florida - Florida Center for Leadership in Public Health Practice**
  http://www.hsc.usf.edu/PUBHEALTH/clphp/index.htm
  Read about the work of one of our sister centers here at USF. They are actively engaged in public health leadership development and workforce training.

- **Virology on the Internet**
  http://www.virology.net/garryfavwebbw.html
  This web page provides links to sites that explain what type of research is currently being conducted in other countries that have (or have had) bioweapons programs (such as the Soviet Union.)

- **WMD Agent Summary Card**
  http://www.bt.usf.edu/files/WMDagentcard.pdf
  Pocket-sized card to provide health care professionals with characteristics, treatments, and symptoms of biological and chemical agents which may be used in a terrorist attack.