

THE BIOLOGICAL WEAPONS THREAT

Purpose:

The purpose of this paper is to highlight the governmental setbacks to preventing something as complex as a biological weapons attack. With the current system of internal checks and balances in every aspect of government it is hard to develop policy against an unknown threat. The media and the public can also both be blamed because their inattention to the problem means that it is not a priority for the publicly elected officials who are responsible for allocating resources to the intelligence community.

Introduction:

America as a nation is wholly unprepared for a biological attack within its borders. Bioweapons are the biggest threat to the United States today yet they remain impossible to fully protect against. This is due to America's historically *reactive* policy-making and the fact that the U.S. can only make changes within its own borders.

This threat could come not only from any of the rogue nations mentioned in President Bush's "evil empire" speech, but also from the newly-emerging terrorist "networks" that have vast financial resources and thousands of supporters worldwide. It is these terrorist organizations that the United States needs to be particularly concerned with. Unlike rogue nations, terrorist networks, like Al-Qaida, operate without borders and maintain links with smaller terrorist groups around the world. The dispersement of these groups around the globe makes it hard for nations to track their activities. Thus, this type of group would have an easier time developing biological

weapons for an attack than a nation such as Iraq or Libya. Ken Alibek, a former high-level scientist from the Soviet Union, admits that ‘the threat of a biological attack has increased as the knowledge developed in (Soviet) labs – of lethal formulations that took scientists years to develop – has spread to rogue nations and terrorist groups.¹’ A report by the United Nations' Al Qaeda and Taliban Sanctions Committee indicated that an attempt to launch a chemical or biological weapon attack by Al-Qaida is “just a matter of time.” According to the head of the sanctions committee, Heraldo Munoz, the panel believes the only restraint Al Qaida is facing “is the technical complexity to operate them properly and effectively.” He also stated that “at this point Al Qaida and some of the associates have tried to get hold of chemical and biological weapons.²”

Why biological weapons?

Modern biological agents are far more lethal than even the most toxic chemical agents³. The sarin gas attack in the Tokyo subway proved not to be as effective as Aum Shinrikyo had hoped. While this is partially due to the group’s ignorance in the subject of chemical weapons, it is also due to the weapon itself. Chemical weapons also have a narrow attack radius because they are not contagious. If a contagious disease is used in a biological attack, it could spread rapidly to many areas of the country.

Biological weapons are cheap to create once you have the knowledge to produce them and are easily accessible. In contrast to the strict safeguards placed on nuclear weapons materials, dangerous pathogens and toxins have typically been stored in unprotected research

¹ Alibek, Ken, “BioHazard,” Random House, New York, 1999, Page XI.

² Foley, Vivienne, “U.N. Details Al Qaida Threat,” CNN Online, November 20, 2003.

³ The Economist Newspaper Limited, London 2002, “The spores of war - Biological terrorism - How prepared is the world for bioterrorism?” November 30, 2002.

laboratories and shipped across national borders with minimal precautions⁴. This means they could be stolen by a lab employee or an outsider with very little difficulty. In addition, most germ strain samples can be obtained through university research labs or biotech firms in the United States or abroad. University-based researchers have a long tradition of sharing microbial cultures informally through the mail, and few countries restrict who is granted access to infectious agents⁵. Although labs in the United States have started to scrutinize potential buyers of these germ cultures, they are still available in many areas internationally without such protections. In addition, the creation of a simple front company could allow a terrorist to obtain these potentially deadly diseases from a U.S. firm. While this does leave a paper trail for authorities to follow after such an attack, it still allows the attack to occur.

The availability of germ strains on the black market may also be an option for terrorist groups. The temptation to sell pathogens on the black market might be particularly strong in the ex-Soviet states, where former bioweapons scientists currently receive only a fraction of their previous salary and perks. Traditional approaches to facility security such as "guns, gates, and guards" cannot prevent a covert outsider or a trusted insider from stealing a small sample of a pathogen and cultivating it in large quantities for illicit purposes⁶. The government of the U.S. may be able to protect pathogens in-country, but are unable to do the same outside its borders.

If germ strains are obtained from a lab or on the black market, they can then be mutated by scientists in order to make a hardier version of the disease that is resistant to ordinary antibiotics. On November 12th, 2002, a hospital in Detroit, Michigan reported the first American

⁴ Tucker, Jonathan B., "Preventing the Misuse of Pathogens: The Need for Global Biosecurity Standards," *Arms Control Today*, June 1, 2003.

⁵ Tucker, Jonathan B., "Preventing the Misuse of Pathogens: The Need for Global Biosecurity Standards," *Arms Control Today*, June 1, 2003.

⁶ Tucker, Jonathan B., "Preventing the Misuse of Pathogens: The Need for Global Biosecurity Standards," *Arms Control Today*, June 1, 2003.

case of staphylococcus, a potentially deadly infection that is resistant to vancomycin, the strongest antibiotic in doctors' arsenals⁷. For obvious reasons, an altered bacterium resistant to antibiotics would be most favored by terrorists. As part of their offensive weapons program, the Soviet government decided it was best to study germs with no known cure⁸. By mutating a strain of a currently known disease, a terrorist could create a disease with no known cure with little difficulty. New scientific understandings, such as how to manipulate DNA, have led to breakthroughs in the ability of scientists to genetically alter bacterial strains to resist antibiotics. This adds a whole new realm to bioterrorism prevention.

While dissemination of biological weapons can be tricky, there are so many potential delivery methods that this problem is virtually eliminated. Food or water contamination could be used as well as crop dusters or plague infested fleas. Aerosolizing a biological agent is by far the most effective delivery method, but it is also the most complicated, as weather conditions and temperature become important factors for the terrorist to consider.

Given the prevalence of suicide bombers in many terrorist organizations, it is conceivable that a terrorist could simply infect him or herself with a fatal disease and use it to infect thousands or even millions of people in a strategic location. This is certainly not the most favorable for terrorists, as in most cultures disease is a sign of being unclean. This is particularly the case in terms of religion, where "cleanliness is next to godliness." Even though the person may believe the cause to be honorable, a religious suicide attacker may not want to infect himself/herself with a disease for fear that he/she would be denied entrance to heaven. There is also the pain factor to consider. A suicide bombing is over within minutes and is believed to have a low level of extended pain. An individual infecting himself with a disease is likely to

⁷ The Economist Newspaper Limited, London 2002, "The spores of war - Biological terrorism - How prepared is the world for bioterrorism?" November 30, 2002.

endure prolonged and excruciating pain. However unlikely, this is still a threat that authorities must strongly consider.

The complexity of planning a biological weapons attack means that any terrorist organization with this aim would need to have scientists knowledgeable in infectious diseases. Yury Ovchinnikov, co-founder of the Soviet bioterrorism program, BioPreparat, recognized that a bioterrorism program is “only as good as its scientists.”⁹ This scientific knowledge can be obtained in any one of three ways. First, a terrorist group may attempt to recruit students currently studying biology or a similar field in the United States or another developed nation. Second, they could enroll a current terrorist group member in an accredited institution to learn the necessary information. Given that even the most in-depth epidemiology programs do not have background checks for potential students, it would be easy for a terrorist group to obtain information by infiltrating a university in the United States. This would also give them access to a number of biological cultures. Thirdly, they could attempt to buy one of the many scientists who already have that type of knowledge. The former Soviet Union alone had thousands of scientists working on an offensive biological weapons program in the 1970s and 1980s. Though not all of these individuals have the same level of knowledge and expertise, they have a significant advantage over those who are just beginning their studies. While the fall of the Soviet Union brought economic growth to the nation, some 25 percent of the population in Russia still lives below the poverty rate. In a country where the average gross domestic product per capita is \$9,300, scientists fall into a very low-income bracket¹⁰. This makes them easily susceptible to being bribed by a terrorist organization.

⁸ Alibek, Ken, “BioHazard,” Random House, New York, 1999, Page 18.

⁹ Alibek, Ken, “BioHazard,” Random House, New York, 1999, Page 44.

¹⁰ “CIA World Factbook 2003,” *Central Intelligence Agency*,
<http://www.cia.gov/cia/publications/factbook/geos/rs.html>

After the October 2001 anthrax attacks, panicked citizens ran out to purchase protective gear, such as gas masks and antibiotics, such as Cipro. Anthrax, however, is the least of the U.S. worries. These particular spores may take one to five days to incubate, but they are not contagious from person-to-person. A highly contagious disease such as smallpox could spread more rapidly than the U.S. could quarantine individuals. This makes it more attractive to potential terrorists. With a highly- contagious disease, you don't have to have a complex delivery system, as they go on killing long after they are used. A strategic attack, perhaps using a self-infected terrorist, could kill millions of Americans if carried out somewhere such as Union Station in Washington D.C., Grand Central Station in New York, or at the Pentagon metro station in Arlington, Virginia. If the disease being used is highly contagious, it is unlikely that an attack would be carried out at an airport because a large number of people would be traveling outside the United States, which would leave the terrorist organization with no way to control an international outbreak (assuming that the target is the United States). It is more likely that another transit point would be targeted because the disease would spread very quickly to other areas of the United States without necessarily spreading to other countries abroad. Union Station would be a high target based on the number of people who come through this particular train station. Similarly, a terrorist infected with a highly contagious disease would have a strong chance of infecting a large number of Defense Agency personnel simply by sneezing in the Pentagon underground metro station. Given that the aforementioned targets are indoors and typically have a high concentration of people, they would also be ideal for the aerosol method of dissemination. The lag time between the actual infection and the physical appearance of the disease would make it hard for authorities to detect an attack until days after it has occurred. Plague, for example, is a disease that can be spread via droplets in the air when a person sneezes and has an incubation period of anywhere between one and six days¹¹.

¹¹ Center for Disease Control, "Frequently Asked Questions (FAQ) About Plague," <http://www.bt.cdc.gov/agent/plague/faq.asp>

Possible Biological Weapon Threats

ANTHRAX

The Working Group on Civilian BioDefense identified a limited number of organisms that could cause significant deaths and would gravely impact a city or region. *Bacillus anthracis* (*B anthracis*), the bacteria that causes anthrax is one of the most serious of these¹². Research on anthrax as a biological weapon began more than 80 years ago; however, most nations stopped offensive bioweapons programs following the ratification of the Biological Weapons Convention in the 1970s. While in the past the biological weapons threat has generally been from nations, international terrorist groups have presented another threat in recent years. Several terrorist groups, including Al-Qaida, are widely suspected of actively seeking anthrax. Some analysts have questioned whether “weapons-grade” material (powders with specific characteristics such as high spore concentration, uniform particle size, low electrostatic charge, and treatment to reduce clumping) could be produced by those not supported by the resources of a nation-state. However, the U.S. Department of Defense reported that three defense employees with some technical skills but without expert knowledge of bioweapons manufactured a simulant of *B anthracis* in less than a month for \$1 million. Emerging terrorist organizations are believed to have the significant wealth required to produce such a weapon¹³.

Anthrax is not contagious and thus cannot be transferred from person-to-person. Symptoms typically appear within 7 days of coming in contact with the bacterium. However, for inhalation anthrax symptoms can take up to 42 days to appear¹⁴.

¹² Henderson, Donald A., “Bioterrorism: Guidelines for Medical and Public Health Management,” American Medical Association, 2002, Page 63

¹³ Henderson, Donald A., “Bioterrorism: Guidelines for Medical and Public Health Management,” American Medical Association, 2002, Page 64

¹⁴ Center for Disease Control, “Anthrax: What You Need to Know,” <http://www.bt.cdc.gov/agent/anthrax/needtoknow.asp>

There are three forms of anthrax infection: cutaneous (skin), inhalation, and gastrointestinal. Most (about 95%) of anthrax infections are cutaneous, occurring when the bacterium enters a cut or abrasion on the skin. Gastrointestinal anthrax, which may follow the consumption of contaminated meat, is characterized by an acute inflammation of the intestinal tract. Inhalation anthrax is the most serious of the three and is the most feared in terms of a biological attack. Initial symptoms may resemble a common cold (sore throat, mild fever, muscle aches and malaise); however, if not treated the symptoms may progress to severe breathing problems and shock within days. Inhalation anthrax is usually fatal if not treated¹⁵. Here in lies the problem. As mentioned previously, local physicians are likely to be the first to see an anthrax patient. Since symptoms would not appear until days after the biological attack and there would be no obvious cause for concern, a family physician is more than likely going to attribute the symptoms to a common cold. This would be a fatal mistake. If several anthrax patients turn up in a local hospital, it would cause significant concern and authorities would be contacted, but this would not be the case if patients visited different private medical practices instead of a hospital.

The Center for Disease Control is working with federal and state law enforcement agencies to prepare for an anthrax attack. Activities include:

- Developing plans and procedures to respond to an attack using anthrax;
- Training and equipping emergency response teams to help state and local governments control infection, gather samples, and perform tests. Educating health-care providers, media, and the general public about what to do in the event of an attack;
- Working closely with health departments, veterinarians, and laboratories to watch for suspected cases of anthrax. Developing a national electronic database to track potential cases of anthrax;
- Ensuring that there are enough safe laboratories for quick testing of suspected anthrax cases;

¹⁵ Center for Disease Control, "Anthrax: What You Need to Know," <http://www.bt.cdc.gov/agent/anthrax/needtoknow.asp>

- Working with hospitals, laboratories, emergency response teams, and health-care providers to make sure they have the supplies they need in case of an attack¹⁶.

The Department of Health and Human Services has made more than \$918 million available for state and local health departments to enhance their terrorism preparedness programs. Existing programs that proved invaluable during the October 2001 anthrax attacks, such as the Laboratory Response Network for Bioterrorism (LRN) and the National Pharmaceutical Stockpile (NPS), have also been strengthened. Since the anthrax attacks, rapid response teams composed of individuals with expertise in field operations, epidemiology, microbiology, data management, and communications have been created. These individuals have received specific training to enable immediate deployment to affected areas to assist state and local efforts¹⁷. Of course this could only happen after the potential biological attack has been discovered. The Epidemic Intelligence Service (EIS), CDC's long-standing disease investigation training program for epidemiologists, is also undergoing changes. In addition to traditional training for rapid response to disease outbreaks, this year's class of officers is receiving specialized field training to respond to terrorist attacks that might involve the intentional release of toxic chemicals or the spread of infectious agents¹⁸.

The aforementioned changes in the public health system since the anthrax attacks demonstrate that progress is being made; however, more work needs to be done. The 2001 attack was relatively small in scope and did not involve the use of multiple agents, multiple modes of transmission, a drug-resistant organism, transmission to animals, or global spread¹⁹. Due to this, the surge capacity of the health-care delivery system was not challenged. In

¹⁶ Center for Disease Control, "Anthrax: What You Need to Know," <http://www.bt.cdc.gov/agent/anthrax/needtoknow.asp>

¹⁷ Hughes, James M., "Anthrax Bioterrorism: Lessons Learned and Future Directions," *Center for Disease Control and Prevention*, September 19, 2002, <http://www.cdc.gov/ncidod/EID/vol8no10/02-0466.htm>

¹⁸ Center for Disease Control, "Anthrax: What You Need to Know," <http://www.bt.cdc.gov/agent/anthrax/needtoknow.asp>

addition, the CDC recognized that unlike some other threat agents, the causative organism (anthrax) was easily isolated in clinical laboratories, there was no risk of person-to-person transmission, and there was no risk of vector-borne transmission²⁰.

In 1970, a World Health Organization (WHO) expert committee estimated that casualties following the theoretical aircraft release of 50 kg of anthrax over a developed urban population of 5 million would be 250,000, 100,000 of whom would be expected to die without treatment. Obviously a biological attack conducted by a terrorist would likely be less sophisticated and on a much smaller scale. Nevertheless this potential loss of life from a biological attack does exist, it is essential that the U.S. does everything possible not prepare the government authorities, the medical community, and the American public.

SMALLPOX

Smallpox is a serious, contagious disease for which there is currently no treatment. The only prevention is vaccination, which is only available to lab scientists and members of the military²¹. Slowly, health care workers are also being vaccinated against this disease. Smallpox outbreaks have occurred from time to time for thousands of years, but the disease is now eradicated after a successful worldwide vaccination program by the World Health Association. Despite this, stockpiles of the virus are kept in labs in the United States and Russia. Some fear that those kept in Russia are not as closely guarded as those in the United States and are therefore susceptible to theft. "Dark Winter", a government study completed in June 2001 that modeled

¹⁹ Hughes, James M., "Anthrax Bioterrorism: Lessons Learned and Future Directions," *Center for Disease Control and Prevention*, September 19, 2002, <http://www.cdc.gov/ncidod/EID/vol8no10/02-0466.htm>

²⁰ Hughes, James M., "Anthrax Bioterrorism: Lessons Learned and Future Directions," *Center for Disease Control and Prevention*, September 19, 2002, <http://www.cdc.gov/ncidod/EID/vol8no10/02-0466.htm>

²¹ Alibek, Ken, "BioHazard," Random House, New York, 1999, Page 19.

the effects of a smallpox attack on three American cities, concluded that within two months there would be 1 million dead and twice as many infected²².

According to the Center for Disease Control, “The deliberate release of smallpox as an epidemic disease is now regarded as a possibility, and the United States is taking precautions to deal with this possibility.²³” Because a smallpox threat does exist there is a detailed nationwide smallpox preparedness program to protect Americans against smallpox as a biological weapon. This program includes the creation of preparedness teams that are ready to respond to a smallpox attack on the United States. Members of these teams, healthcare and public health workers, are being vaccinated so that they might safely protect others in the event of a smallpox outbreak. While this is a great start, these individuals may not be the first responders to a smallpox outbreak. Patients may end up visiting their primary care physician, who may or may not diagnose the disease. Also, according to the Center for Disease Control, smallpox vaccines have been stockpiled in amounts that allow authorities to vaccinate everyone who would need it in the event of an emergency. The problem is that the American public has *not* yet been vaccinated and remains extremely vulnerable to this threat.

Smallpox has a 7-17 day incubation period during which the individual is not contagious. It is during the next several stages that the patient is extremely contagious. Although it is extremely contagious, direct and fairly prolonged face-to-face contact is generally required to spread smallpox from one person to another. Rarely, smallpox has been spread by virus carried in the air in enclosed settings such as buildings, buses, and trains. This is not to say that suicide attackers with the intent to infect as many people as possible could not do so.

²² The Economist Newspaper Limited, London 2002, “The spores of war - Biological terrorism - How prepared is the world for bioterrorism?” November 30, 2002.

²³ Center for Disease Control, “Smallpox Questions and Answers: The Disease and the Vaccine,” <http://www.bt.cdc.gov/agent/smallpox/overview/faq.asp>

PLAGUE

Plague is a disease caused by *Yersinia pestis* (*Y. pestis*), a bacterium found in rodents and fleas in many areas around the world. Patients usually have fever, weakness, and rapidly developing pneumonia with shortness of breath, chest pain, cough, and sometimes bloody or watery sputum. Nausea, vomiting, and abdominal pain may also occur. Without early treatment, pneumonic plague usually leads to respiratory failure, shock, and rapid death²⁴.

Plague is a very contagious disease, which is why authorities are concerned that it may be used as a biological weapon. A bioweapon of *Y. pestis* could be created because the bacterium occurs in nature and can be isolated and grown in quantity in a laboratory. While manufacturing an effective weapon using this bacterium would require advanced knowledge and technology, it is certainly a conceivable task for those with significant resources such as Al-Qaida. If *Y. pestis* were used in an aerosol attack those exposed to the bacteria would develop pneumonic plague within one to six days. Once people have the disease, the bacteria can spread to others who have close contact with them²⁵. Due to the long incubation period, individuals could travel over a large area before becoming contagious and possibly infecting others, which would make the disease significantly harder to control. Efforts to quarantine those in suspected areas of infection would be less effective. Treatment is available for the pneumonic plague; however, antibiotics are most effective if taken within 24 hours of the first symptoms of the disease. Again, the pressure falls on the medical community to accurately diagnose what may, on the surface, look like the common cold or flu.

²⁴ Center for Disease Control, "Frequently Asked Questions (FAQ) About Plague," <http://www.bt.cdc.gov/agent/plague/faq.asp>

²⁵ Center for Disease Control, "Frequently Asked Questions (FAQ) About Plague," <http://www.bt.cdc.gov/agent/plague/faq.asp>

American Policy (reactive)

The fear of a biological weapons attack is not a new one. English troops gave blankets smeared with smallpox to Indians in the eighteenth century during the French and Indian Wars. During World War II, Japanese planes dropped porcelain bombs containing billions of plague-infected fleas over Manchuria²⁶. It was partially because of these potential uses in warfare that a Biological and Toxin Weapons Convention was held in 1972, during which more than 100 nations signed a treaty banning the development, production, stockpiling, and transfer of biological agents with the exception of defensive research. But for some this convention highlighted the importance of having bioweapons capability as a sign of power on the international level. Long before there was any substantial proof, many experts believed that some signatories, Iraq, Iran, China, and North Korea among them, were violating the terms of the treaty. It was also after signing this treaty that the former Soviet Union decided to expand their program and began mass-producing offensive biological weapons. During this time period, the threat was clearly from other nations. However, now the threat comes predominantly from terrorist groups.

During the Clinton administration, a small group of experts had attempted to put pressure on the president to take the threat of a possible biological attack more seriously. But it wasn't until after the Gulf war that the first signs of a government response were seen publicly. In 1997, some 2.4 million soldiers were vaccinated against anthrax bacillus because Pentagon officials were concerned that Saddam Hussein may attempt to use his stockpiles of the bacteria against U.S. soldiers²⁷. The threat, however, was overseas and not on American soil. A threat outside the U.S. border rarely gets the attention of the public and thus rarely gets the attention of the

²⁶ Alibek, Ken, "BioHazard," Random House, New York, 1999, Page 20.

²⁷ Miller, Judith, Stephen Engelberg, and William Broad, "Germs: Biological Weapons and America's Secret War," Simon & Schuster Inc. 2002, p. 12

government. Because of this, the issue was pushed to the side and little was done to prevent this type of attack in the future.

The problem is that America is a reactive nation rather than a proactive and preventative one. Throughout history there are numerous examples where the United States has reacted to a threat instead of thinking ahead and trying to prevent the threat from occurring in the first place. For example, there has been growing fear that smallpox may be used in a biological weapons attack simply because it is the most contagious disease known to man.

Trafficking in germs and viruses is just as legal today as it was before September 11th. There is currently no international law against the distribution of germ strains²⁸. The changes that occurred as a result of the attacks were designed to prevent *similar* attacks in the future. However, it is unlikely that a terrorist organization, such as Al-Qaida, will use the same technique twice.

Even if a biological weapon attack does not cause mass destruction in the form of massive life loss, it may still succeed in its goal of mass disruption. While the aforementioned sarin gas attack in Tokyo may not have succeeded in its goal of killing, it certainly succeeded in spreading fear among the community. Fear can be just as effective a weapon for terrorists. An attack in a strategic location such as a metro station, a sports stadium, or a mall could cause a nationwide panic. Americans may stop frequenting such locations for fear of another attack, which would have serious ramifications for the nation's economy.

After September 11th, there has been a plethora of information on terrorist groups, potential terrorist targets, and bioterrorism in general. However, most of this information is

being lost on American citizens who have heard all they want to on the subject. In addition, the information being provided to those who are listening is more “scary” than it is informative. This leads to a public that, as a whole, is ignorant to the actual threat of the biological attack. In the world of politics, if an issue is not important to the American public than it is not important to the politicians looking for reelection. However, if the threat of bioweapons is not addressed by politicians, then the U.S. will again be unprepared for an attack within its borders. The U.S. needs to focus on more preventative measures. This includes the educating of the public regarding the signs and symptoms of diseases associated with infectious agents. There has been significant talk about a biological weapons attack, but very little information on how to spot the signs of such an attack. This information could make the difference in whether an attack is discovered immediately following a biological dispersement or days later.

Not only is ignorance in the public sector a major setback, but ignorance in the medical sector is an even bigger threat. The medical sector has made huge strides in recent years to make sure first responders, nurses, and doctors are able to diagnose and treat all kinds of potential biological or chemical agents. However, this knowledge is generally confined to hospital staff as opposed to family physicians, who may be the first to see a bio-attack patient. Many highly infectious diseases, including anthrax, have symptoms extremely similar to that of the flu or a common cold, which can make it hard for an inexperienced physician to make an accurate diagnosis. This is essential because many of the diseases most likely to be used in a biological weapons attack require immediate treatment. Plague and anthrax are excellent examples. After several days, the symptoms of anthrax may progress to severe breathing problems and shock, which can be fatal, particularly with inhalation anthrax. Pneumonic plague, without early treatment, usually leads to respiratory failure, shock, and rapid death²⁹.

²⁸ Alibek, Ken, “BioHazard,” Random House, New York, 1999, Page 18.

²⁹ “Emergency Preparedness and Response”, *Center for Disease Control*, <http://www.cdc.gov/health/default.htm#P>

In addition, the knowledge of biological and chemical weapons is sometimes lost on medical staff outside the major cities in the U.S. Will staff in Topeka be able to handle an attack even half as well as medical staff in Washington D.C.? In short, health-care workers, particularly physicians and nurses, need training about the clinical aspects of diseases that may result from the use of biological agents. This includes medical personnel in major U.S. cities as well as medical personnel in rural areas of the country.

There is also the issue of medical supplies and beds for a plethora of patients. This is a lesser threat that I think the medical community collectively could handle in the event of such an attack. If a large outbreak were to occur, hospitals in the United States would also have to deal with the potential for overload. A large-scale attack could leave hospitals and physicians unable to cope with a flood of patients in need of constant treatment³⁰. Doctors and nurses may be in short supply due to fears of contracting the disease themselves. While this cannot be prevented, shortages on medical supplies themselves is something that needs to be addressed on a local level. Some hospitals, particularly those in the vicinity of large cities, are planning for such an outbreak while others are severely behind.

This is not to say that the U.S. has done nothing to prevent a bioterrorism attack. The government has started taking some preventative steps, though not nearly as many as needed. The Center for Disease Control is leading this initiative. Among these initiatives is the building of a computerized network designed to provide an early warning of any bioterrorism attack by monitoring visits to doctors offices, emergency rooms and drugstore sales in major U.S. cities. Although there has been little information released on the operation thus far, the initial effort is expected to be concentrated in eight or 10 U.S. cities that also will have the Environmental

³⁰ Alibek, Ken, "BioHazard," Random House, New York, 1999, Page 68.

Protection Agency's new Bio-Watch air quality monitors. The EPA monitors are designed to provide 24-hour notice of any release of anthrax, smallpox or other deadly germs³¹.

As a first step in combating against the bioterrorism threat, the Bioterrorism Preparedness Act was signed into law on June 12, 2002. The goal of the law is to upgrade federal capacities to respond to bioterrorism. When fully implemented, the law will accomplish the following:

- Expands the Strategic National Pharmaceutical Stockpile
- Expands CDC capacities and improves training, public health laboratories, disease surveillance and response
- Enhances controls on dangerous biological agents (currently only a list of 42 "select agents."³²)
- Improves the response to bioterrorism at the State and local level by providing grants to States to assure adequate planning and preparedness
- Equips hospitals to respond to bioterrorism
- Accelerates the production of smallpox vaccine
- Expands research grants for new product development and authorizes long-term contracts for vaccine and drug development
- Improves R&D coordination through public/private partnerships
- Gives FDA increased authority to ensure the safety of the nation's food supply
- Increases inspections to assure the safety and security of the food supply
- Improves the federal government's capacity to prevent and detect terrorist attacks on agriculture³³

The U.S. has also taken steps to take away the "safe havens" currently available to groups like Al-Qaida. Through war as well as diplomatic negotiations, American is working to prevent the grouping of terrorists in places such as the Sudan, Iraq, Saudi Arabia, Afghanistan, and Indonesia.

³¹ Toner, Mike, "U.S. building bioterror alert system Computer network to track visits to doctors," Milwaukee Journal Sentinel, January 29, 2003.

³² The Economist Newspaper Limited, London 2002, "The spores of war - Biological terrorism - How prepared is the world for bioterrorism?" November 30, 2002.

³³ "Bioterrorism Preparedness Act Summary," Senator Edward M. Kennedy's Office, November 15, 2002, <http://kennedy.senate.gov/~kennedy/statements/01/11/2001B15352.html>

While all these changes are happening in the United States, little is being done in the rest of the world. Thus, despite improvements, America is still extremely vulnerable to biological attack. This begs the question, what else can the U.S. do? Due to the complexity of planning a biological attack the key is to invest in the intelligence, as it is clearly the best way to prevent such a devastating outbreak. The United States can not protect against an unknown threat. Given the number of potential targets for any type of terrorist action, the terrorist will always have an upper hand. Due to the lack of resources, it is virtually impossible to protect against every possible attack. A smart terrorist will always target the one weakness in a heavily guarded system. This is why it is necessary that the United States thwarts a biological attack by catching it in the planning stages. This involves investing in intelligence. Once an attack is launched, the consequences, in terms of human lives and economic damage, are too great to fathom.

The United States must work on keeping the government, the media, and the public on the same page. There is a serious biological weapons threat that has the potential to affect every single person in America; however, most individuals are ignorant to this threat. It is the responsibility of the government to abandon its historically reactive policies in favor of proactive ones. In order to do this with success, the government, through the media, must inform the public of the threat without alarming or scaring them. An informed public will be more supportive of budgetary increases for the intelligence community, which is the best line of defense the U.S. has against the threat of a biological weapons attack.

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