

# The Looming Biological Warfare Storm

## Misconceptions and Probable Scenarios

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*Editorial Abstract: The several anthrax incidents that occurred in Florida, New York, and Washington, D.C., during the fall of 2001 did not provide convincing evidence that a mass-casualty biological warfare attack is likely. Colonel Davis systematically unravels six prevailing myths that, in his view, blind US decision makers to the possibility of bioattacks against agriculture, troops, and population centers. In Davis's opinion, our persistent denial of the realities that characterize our adversaries' biological warfare capabilities could result in catastrophic consequences.*

*Yet, this is still a dangerous world, a less certain, a less predictable one. . . . Many have chemical and biological weapons. Most troubling of all, the list of these countries includes some of the world's least-responsible states.*

—President George W. Bush  
National Defense University, 1 May 2001

**T**HE LIKELIHOOD THAT biological weapons will be used against our nation continues to rise. Many in the recent past have considered the talk of such horrific weapons as only hype to justify funding for certain programs for DOD, other governmental agencies, or government contractors. The stark reality of 11 September 2001—

when hijacked airliners were used as missiles, and anthrax attacks followed—has changed that perception for many. However, since we have not yet suffered a mass-casualty biological warfare (BW) event, there are others that still dismiss the scenario as highly unlikely.

If this view is persuasive to US decision makers, it will impede the nation's ability to

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prepare for or prevent such an event. Until very recently, the lack of focus on this subject had resulted in a lack of appropriate funding and accountability. There are six important myths that have caused some senior civilian and military government leaders to develop an inappropriate view of this threat.

It would be valuable to those who recognize the nation's vulnerability to BW to know the most likely scenarios we should expect to encounter. Such informed speculations and visualization allow us to prepare before the event or possibly even to prevent it. This article describes six common myths about BW and three of the most likely future BW scenarios we may face.

### Why Postulate?

Thomas C. Schelling observes that "the tendency in our planning is to confuse the unfamiliar with the improbable. The contingency we have not considered seriously looks strange; what looks strange is thought improbable; what is improbable need not be considered seriously."<sup>1</sup>

The United States has limited funds to spend on social and military programs. The military budget is currently 3 percent of the US gross national product (GNP) as compared to 6 percent of the GNP during the late 1980s.<sup>2</sup> The most devastating terrorist attack ever perpetrated against the United States occurred on 11 September 2001 and not only cost many lives, but the associated economic impact exceeded hundreds of billions of dollars in direct replacement costs, lost revenues, and costly response efforts. Yet, the human impact and economic impact of 11 September 2001 will be dwarfed if adversaries are able to effectively deploy mass-casualty biological weapons against the United States. Unless we focus appropriate dollars and develop a coherent national plan to prepare for and prevent such actions, the United States will likely suffer an enormous economic loss that could even lead to our demise as a superpower.

### Will There Really Be an Attack?

A belief in one or more of at least six false assumptions or myths helps explain why individuals, including senior civilian and military leaders, do not believe that a mass-casualty BW attack will occur.

#### ***Myth One: There Never Really Has Been a Significant BW Attack***

This contention is counter to historical fact. Even before the fall 2001 anthrax terrorism in the United States, incidents of BW and bioterrorism have occurred on multiple occasions. Today, more countries have active BW programs than at any other time in history, which increases the likelihood that BW will be used again in the future.

Military organizations have used biological weapons many times. One BW event occurred in 1346 when the Mongols used plague (*Yersinia pestis*) at the Battle of Kaffa. More recently, during the French and Indian War, the British used smallpox (*Variola*) against the Delaware Indians and also are alleged to have used smallpox against Gen George Washington's forces during the Revolutionary War.<sup>3</sup> The Germans used anthrax (*Bacillus anthracis*) and glanders (*Pseudomonas mallei*) against the horses and mules of the US Army and its Allies in World War I. The Japanese used typhoid (*Salmonella typhi*) in World War II in direct attacks on approaching Russian forces.<sup>4</sup> They also used over 16 different BW agents (plague, anthrax, etc.) on Chinese forces and citizens, US prisoners of war, British detainees, and others. Ken Alibek, former head of the civilian branch of the Soviet offensive biological program, has unearthed information that leads him to believe that the Soviet army may have used tularemia (*Francisella tularensis*) to halt the oncoming German army in World War II.<sup>5</sup> The *Textbook for Military Medicine*, published in 1997, states that an estimated 10,923 deaths resulted from the Soviet use of chemical and biological warfare (CBW) agents in Afghanistan, Laos, and Kampuchea (Cambodia).<sup>6</sup> In 2001, the US Senate and other US government offices were attacked through the mail system by letters

filled with lethal anthrax spores milled to the 1–5 micron size, which can inflict death from inhalation. BW, it must be concluded, has been an accepted practice for a number of states for a long time.

***Myth Two: The United States Has Never Been Attacked by a BW Agent***

Counting the 2001 anthrax attacks, there are at least six known instances where BW has been used against US citizens or resources. The British were alleged to have used smallpox in the Revolutionary War. The Germans used glanders against US horses and mules during World War I. The Japanese used multiple biological agents against their foes during World War II. The Aum Shinrikyo cult failed in 1990 in its botulinum toxin attack on the two US naval bases located at Yokosuka and Yokohama.<sup>7</sup> In 1984, the Bhagwan Shree Rajneesh cult contaminated 10 restaurant salad bars in Oregon with salmonella and infected at least 750 local citizens.<sup>8</sup> This BW attack, like the naval base attacks, was not discovered until several years after the event. Proliferation experts, such as the National Defense University's Seth Carus, agree that these examples lend credence to the possibility that the United States may have unknowingly fallen victim to still other BW attacks in the past.<sup>9</sup>

***Myth Three: You Have to Be Extremely Intelligent, Highly Educated, and Well Funded to Grow, Weaponize, and Deploy a BW Agent***

Financial status or brilliance is no longer a major roadblock for an individual or group to acquire a significant BW capability. Dr. Tara O'Toole, deputy director for the Center for Civilian Biodefense Studies at Johns Hopkins University, believes we have probably crossed over the threshold from "too difficult" to accomplish to "doable by a determined individual or group."<sup>10</sup> It is true that there are certain technical hurdles, but there are many thousands of highly educated microbiologists or other health science professionals worldwide that are capable of growing, weaponizing, and employing a BW agent. Much of the technical information is readily available on

the Internet, in libraries, and through mail-order channels that provide "how-to" manuals. For example, Steve Priesler, who has a degree in chemistry, wrote such a manual and made it available on the Internet for only \$18.<sup>11</sup> This manual, titled *Silent Death* by "Uncle Fester," tells the reader where to find, grow, and weaponize agents such as *Bacillus anthracis* and *Clostridium botulinum*; it also instructs the reader on how to employ the agents to kill small or large numbers of people.

***Myth Four: Biological Warfare Must Be Too Difficult Because It Has Failed When It Has Been Tried***

Most of the BW attempts mentioned in this article resulted in deaths or casualties. However, not all attempts in the past have been successful. For example, it was not known until 1995 (when several of its incarcerated leaders confessed) that in 1990 the Aum Shinrikyo cult had sprayed two US naval bases in Japan. It is not known why their attack failed, but there were thousands of US sailors and dependants who were one breath away from dying had the Aum Shinrikyo cult been a bit more skilled. While this cult may have failed to master the technological hurdles, several nations had learned a great deal about how to make and effectively use these weapons over half a century earlier. The Japanese began their BW program in the early 1930s and used it against their opponents in World War II. The United States, Great Britain, and the Soviet Union also started BW programs during the 1930s and 1940s. Basic BW technology has been around for 60 years, and all of these countries were to develop large and potent BW programs. This was long before the era of genetic engineering and the mapping of genomes. Although some of the BW program secrets were probably not available to the Aum Shinrikyo cult, the 1990s brought a proliferation of information and biotechnological advances.<sup>12</sup> In light of all the previously successful attacks, it is a weak argument to say that BW "has not been successful," based only on the Aum Shinrikyo's inability to kill Americans with botulinum toxin or its failed attempts to kill Japanese with anthrax.<sup>13</sup> In the

twenty-first century, technological barriers are no longer as formidable as they once were, and some experts believe that a determined individual or group can independently develop BW mass-casualty weapons.<sup>14</sup>

***Myth Five: There Are Moral Restraints That Have Kept and Will Keep BW Agents from Being Used***

Most states in the twentieth century have generally avoided the use of BW agents. For example, the United States had an offensive BW program from 1942 to 1969, but it never used BW agents. The Soviets had enough BW agents weaponized to kill the world several times over and yet exhibited restraint. It may be that the various political, military, and moral constraints against BW use have thus far prevented BW on a mass scale, but it appears that we are now entering a new era. Jessica Stern, in *The Ultimate Terrorists*, outlines four techniques of "moral disengagement" that individuals and groups have used to justify their use of mass-casualty weapons.<sup>15</sup>

The following examples illustrate the lack of moral inhibition by various types of terrorism. On 26 February 1993, terrorist Ramzi Yousef and several other Muslim terrorists exploded a bomb intended to topple the World Trade Center twin towers and kill at least 250,000 people.<sup>16</sup> The blast, although not completely successful, killed six, injured more than 1,000, and inflicted costs in excess of \$600,000,000.<sup>17</sup> On 19 April 1995, Timothy McVeigh committed the worst act of domestic terrorism by an American citizen when he bombed the Alfred P. Murrah Federal Building in Oklahoma City.<sup>18</sup> More than 550 people were targeted, and the resulting tragedy left 168 dead and hundreds of others wounded.<sup>19</sup> On 11 September 2001, international terrorists destroyed the twin towers of the World Trade Center, ruined over 20 adjacent buildings, and significantly damaged the Pentagon by hijacking and crashing US commercial airliners into these icons of American society. In less than two short hours, these brutal acts of terror killed approximately 3,000 innocent civilians and military personnel while injuring

many thousands more and bringing US air travel to a temporary and very costly halt.<sup>20</sup>

We can look to the emergence of organizations such as al Qaida, Osama bin Laden's group, and see that any previous moral constraints to inflicting massive civilian deaths are no longer applicable. They have launched a "holy war" against the United States and are not reticent to inflict heavy casualties on US citizens—even if it entails the loss of their own lives. In fact, according to the holy war paradigm propagated by Bin Laden, great honor is supposed to accrue to those who die killing many "infidels." Thus, "morality" can be marshaled as a reason both to limit BW use and to advocate mass killings—depending on the decision maker's values and perspectives.

***Myth Six: The Long Incubation Period Required for BW Agents before Onset of Symptoms Makes BW Useless to Users***

There have already been multiple BW attacks, and to a savvy biological weaponeer, the incubation period can be used as an advantage rather than a disadvantage. The two following scenarios illustrate that advantage. In the first scenario, an anthrax attack is made on an adversary's military installation. That attack could render the installation nonfunctional within 72 hours. The first clinical cases of anthrax would probably manifest themselves in around 24 hours, with the number of subsequent cases increasing rapidly. A follow-on conventional military attack that was timed to occur three to four days after the BW attack would likely find the installation defenders laid low by the disease and therefore would be more likely to succeed. Moreover, because of the nature of the *Bacillus anthracis* organism, the attackers would not have to be overly concerned about significant secondary infections from their infected adversaries or by large amounts of residual spores in the environment.

The second scenario involves an attack on an adversary's population or military installation with Q fever (*Coxiella burnetii*). With Q fever's two- to 10-day incubation period, the attacker and his followers would have days to escape before their adversary would recognize

that there had been an attack. Between the fifth and 10th day after the attack, the attackers could announce that a nonlethal weapon had been used as a “show of force and resolve” and demand whatever concessions they were after. The attackers would have little concern of being exposed to secondary infection because Q fever is not communicable. Likewise, the low fatality rate would take away the adversary’s justification for a massive retaliation but at the same time leave the adversary’s population with a heightened sense of fear because of their proven vulnerability.

## What Would Motivate a BW Attack on the United States?

There are two primary motivations that might drive an adversary to attack the United States with a BW agent. Either one is enough to cause a nation, organization, or individual to act against the United States, but concerns should be particularly heightened when both of these motivations intersect.

The first motivation is to gradually “erode US influence” as a world superpower. Adversaries such as Iraq, Iran, or the al Qaida organization desire more influence in their region. They are infuriated that American infidels have increased their presence in the Middle East from three ships in 1949 to over 200,000 US military personnel in 2001.<sup>21</sup>

Likewise, there are other emerging economic powers in the world that see the United States in a love/hate relationship. They realize the United States is helping them to become economically sound, but they would ultimately like to take a piece of the economic action from the United States. These nations might also want to inflict damage to the US economy, and in their mind, level the playing field in a way that would minimize damage to their own economy. The far-right wing of groups with this motivation include religious terrorist groups such as Osama bin Laden’s al Qaida who declare that they have a religious obligation to destroy the “evil race” in the name of “Allah.”

The second motivation is categorized as “revenge or hate.” At a time when the United

States is an integral part of stimulating the global economy and thereby improving the standard of living for millions in the world, the so-called transparency of the United States inflames envy, which often leads to hatred, in millions around the world. The United States has 5 percent of the world’s population yet uses 24 percent of the global energy.<sup>22</sup> The extravagance of the United States is seen by some as the reason for a worldwide moral decay. Often these same individuals may want to inflict revenge because of what they perceive the United States or its “puppet nations” have done to them individually, their family, or their group. Many of these individuals have been taught from childhood to hate the United States. This prejudice often grows as they see images on television that portray the United States as a drunken, immoral, gluttonous, and violent society.

There is synergism when a nation, group, or individual desires to erode US influence as a world superpower and is also full of revenge and hate. This effect would amplify their desire and ability to enlist support financially and deliver an effective BW attack. They then have a cause where emotion reinforces or even overrides the logic or illogic of such an attack.

## Possible Future BW Scenarios

This author believes that there are three most likely BW scenarios the United States and its allies might face in the future:

- An agroterrorist event against the United States,
- A BW attack on United States and allied troops in the Middle East, and/or
- A bioterrorist attack against a large population center in the United States or an allied state.

### *Scenario One: An Agroterrorist Event*

Anne Kohnen states that “agricultural targets are ‘soft targets,’ or ones that maintain such a low level of security that a terrorist could carry

out an attack unobserved. Biological agents are small, inexpensive, and nearly impossible to detect. A terrorist may choose to use BW against agriculture simply because it is the easiest and cheapest way to cause large-scale damage."<sup>23</sup>

As was articulated by Mark Wheelis, a senior microbiologist at the University of California, Davis, many of the moral constraints that might inhibit an adversary can be overcome by using agroterrorism.<sup>24</sup> The US economy could be made chaotic by inflicting damage to the US agricultural industry with three to five BW agents over a few years. For example, the United Kingdom suffered a severe disruption in day-to-day life in 2001 when foot-and-mouth disease broke out, forcing the slaughter of hundreds of thousands of livestock. Estimated cleanup and economic loss is assumed to have reached \$30 to \$60 billion.<sup>25</sup> Belgium suffered an apparent agroterrorist event when dioxin was discovered in chicken feed.<sup>26</sup> This resulted in boycotts across Europe and Asia of Belgian meat products that cost their economy nearly \$1 billion.<sup>27</sup> Such an incident in the United States could potentially jeopardize \$140 billion in yearly pork, beef, and poultry exports.<sup>28</sup> Table 1 was developed to show the status of some of the offensive agricultural BW capabilities developed or maintained by certain nations.

This type of attack has an added benefit for the adversary: unless he desires otherwise, he may never be identified. Since the goal is not to achieve attention, but to promote the demise of and inflict pain on the United States, the perpetrators could maintain a safe distance and enjoy the daily news of turmoil in the United States. They could watch the successful completion of their plan as the contagious nature of their weapon operated on its own—the gift that keeps on giving. Perpetrators willing to use this style of BW attack(s) would have to recognize that it might take years to achieve their objective. Some world terrorists may be willing to wait and see their strategic plans carried out over this longer period of time.

### ***Scenario Two: A BW Attack on Forces in the Middle East***

This attack's goal is to have the United States withdraw its military forces from the region and possibly reduce its aid to allies like Israel. The Middle East contains more states with biological weapons than any other region of the world. According to the Center for Nonproliferation Studies at the Monterey Institute of International Studies, there are 11 states with suspected or confirmed offensive biological programs. Of these, six reside in the Middle East.<sup>29</sup> Additionally, more weapons of mass destruction (WMD) attacks have occurred in the Middle East than in any other region. Although most of the examples in table 2 are chemical warfare (CW) and not CBW, use clearly indicates that this region of the world has an entirely different view about the use of weapons considered taboo by much of the rest of the world. Table 2 shows some regional highlights.

So how would a BW attack be carried out in the Middle East? There are multiple options an adversary might choose to pressure the United States to withdraw from the region. The three options discussed below are illustrative of the variety of problems those attacks could create.

An adversary might choose to use a non-lethal BW agent, perhaps VEE (Venezuelan Equine Encephalitis), on a US installation. Such an attack would make personnel sick and incapacitated, but would not kill them. It could be used to demonstrate an adversary's capability, resolve, and even compassion. The adversary could allow time to ensure that the attack was effective, that deaths were minimal, that people were recovering, and then announce why and what he had done. If the BW attack failed, then the adversary would not make an announcement or lose credibility. Likewise, if the attack caused many unexpected deaths, he could merely remain quiet and potentially avoid US retaliation.

With a successful attack, the adversary's announcement of responsibility could include a stated abhorrence to killing. He could announce that while he has lethal BW agents, he had elected not to kill the sons and daugh-

**Table 1**  
**States with Past and Present Agricultural BW Capabilities**

STATE	STATUS	DATES	DISEASE	COMMENTS
Canada	Former	1941–60s	Anthrax, Rinderpest	Exact date of project termination unclear.
Egypt	Probable	1972–present	Anthrax, Brucellosis, Glanders, Psittacosis, Eastern Equine Encephalitis	(none)
France	Former	1939–72	Potato Beetle, Rinderpest	Exact date of project termination unclear.
Germany	Former	1915–17, 1942–45	Anthrax, Foot-and-Mouth Disease, Glanders, Potato Beetle, Wheat Fungus	In World War II experimented with Turnip Weevils, Antler Moths, Potato Stalk Rot/Tuber Decay, and misc. anticrop weeds.
Iraq	Known	1980s–present	Aflatoxin, Anthrax, Camelpox, Foot-and-Mouth Disease, Wheat Stem Rust (Camelpox may have been surrogate for Smallpox)	Believed to retain program elements despite UN disarmament efforts.
Japan	Former	1937–45	Anthrax, Glanders	During World War II experimented with misc. anticrop fungi, bacteria, nematodes.
North Korea	Probable	? – present	Anthrax	(none)
Rhodesia (Zimbabwe)	Uncertain/ Former	1978–80	Anthrax	Suspicious epidemic of cattle anthrax resulted in 182 human deaths. Some scientists believe government forces infected livestock to impoverish rural blacks during last phase of civil war.
South Africa	Former	1980s–93	Anthrax	(none)
United Kingdom	Former	1937–60s	Anthrax	Exact date of project termination unclear.
United States	Former	1943–69	Anthrax, Brucellosis, Eastern and Western Equine Encephalitis, Foot-and-Mouth Disease, Fowl Plague, Glanders, Late Blight of Potato, Newcastle Disease, Psittacosis, Rice Blast, Rice Brown Spot Disease, Rinderpest, Venezuelan Equine Encephalitis, Wheat Blast Fungus, Wheat Stem Rust	(none)
USSR (Russia, Kazakhstan, Uzbekistan)	Formerly active; current status unclear	1935–92	African Swine Fever, Anthrax, Avian Influenza, Brown Grass Mosaic, Brucellosis, Contagious Bovine Pleuropneumonia, Contagious Ecthyma (sheep), Foot-and-Mouth Disease, Glanders, Maize Rust, Newcastle Disease, Potato Virus, Psittacosis, Rice Blast, Rinderpest, Rye Blast, Tobacco Mosaic, Venezuelan Equine Encephalitis, Vesicular Stomatitis, Wheat and Barley Mosaic Streak, Wheat Stem Rust, parasitic insects, and insect attractants	(none)

Source: Monterey Institute of International Studies, Center for Nonproliferation Studies, *Agro-terrorism: Agriculture Biowarfare: State Programs to Develop Offensive Capabilities*, created October 2000, on-line, Internet, 25 January 2003, available from <http://cns.mii.edu/research/cbw/agprogs.htm>. (Chart edited for space considerations; see complete chart and extensive footnotes on Web page.)

**Table 2**  
**Examples of CBW Uses in the Middle East**

<i>Date</i>	<i>Country</i>	<i>Specific CB Agent</i>	<i>Description</i>
1917	Iraq	glanders	In 1917, German agents infected over 4,500 British pack animals in Mesopotamia.
1920–30	Morocco	mustard	Spain employed mustard shells and bombs against the Riff tribes.
1930	Libya	mustard	Italy dropped 24 mustard gas bombs on an oasis fighting Libyan rebels.
1935–36	Ethiopia	mustard, tear gas, various other agents	Benito Mussolini authorized the use of chemical weapons on 16 Dec 1935, with the first attack on 23 Dec, when Italian air force planes sprayed mustard gas and dropped bombs filled with mustard agent on Ethiopian soldiers and civilians. Italian forces repeatedly attacked Ethiopian soldiers and civilians with mustard gas and used tear gas, sneezing gas, and various asphyxiating agents. A letter from the Ethiopian delegate to the League of Nations, dated 13 Apr 1936, alleges Italy made 20 "poison gas attacks," with mustard gas being used frequently.
1930s	Kurdistan	lung irritants	Soviet Union was accused of using lung irritants against Kurdistan tribesmen.
1944	Israel/ Palestine	unknown	Plot by the grand mufti of Jerusalem and Germans to poison wells in Tel Aviv. Ten containers were discovered with enough poison to kill 10,000 people.
1957	Oman	BW	Britain was accused of using biological warfare agents in Oman.
1963–67	Yemen	mustard, phosgene, tear gas, possibly nerve gas	Egypt employed chemical weapons against royalist forces in the Yemen civil war. Egypt used Soviet-built aerial bombs to deliver phosgene and aerial bombs as well as artillery shells abandoned by British forces after World War I to deliver mustard gas. According to chemical weapons expert Milton Leitenberg, some of the nerve agent reportedly used by Egyptian forces may actually have consisted of hand grenades fitted with containers of organophosphate pesticides. This incident is sometimes referred to as the first use of nerve gases, but according to some reports, this is unsubstantiated.
1965	Iraq	unknown	In May 1965 at a press conference in London, a spokesman for the Kurdish Democratic Party stated that on at least two occasions during the previous six weeks the Iraqi army had used gas against Kurdish forces.
1984–88	Iran /Iraq	sarin, tabun, sulfur, mustard	During the 1980s Iran-Iraq War, Iraq repeatedly attacked Iranian troops with chemical warfare agents. The first allegation of Iraqi CW attacks was in Nov 1980. In Nov 1983, Iran made its first official complaint to the UN regarding Iraqi CW attacks. Iraq was confirmed to have used mustard/nerve agents against Iranian forces from 1983 to 1988. Iran is believed to have conducted initial CW attacks by firing captured Iraqi CW munitions at Iraqi forces in 1984 or 1985. By the end of the war, Iran reportedly employed domestically produced CW munitions against Iraqi soldiers. First-ever use of tabun (nerve agent) on the battlefield was by Iraq in 1984.
1987	Chad	unknown	Libya reportedly used Iranian-supplied chemical weapons against Chad troops.

Table 2 (Continued)

1988	Iraq	hydrogen cyanide, mustard, sarin, tabun	Iraqi warplanes attacked the Kurdish city of Halabja, Iraq, with mustard and nerve agents, killing up to 5,000 people, mostly civilians. (Following Iraqi mustard gas attacks on Halabja, fleeing Kurds may have been mistaken for Iraqi troops and bombarded with hydrogen cyanide [AC] artillery shells by Iranian forces.)
1990	Sudan	mustard	President Omar al-Bashir's Sudanese government had been accused of producing CW with Iranian and/or Iraqi assistance. The government was accused of initiating several mustard gas attacks on civilians and Sudanese People's Liberation Army forces in the Nuba mountain region. The allegations were not independently confirmed.
1997	Jordan	toxic gas	Israeli agents used toxic gas in assassination attempt on a Hamas official in Amman.

Source: Unclassified research at the USAF Counterproliferation Center, Maxwell AFB, Ala., 2001.

ters of the United States, because he only wants the US forces out of the region—killing would only be used as a last resort.

This approach would likely trigger great debates in Washington, D.C., and Middle Eastern countries, and might even cause the US Congress to pressure the president to withdraw US forces. If the United States then elected to stay in the region and a lethal attack did occur, local populations around US bases would die along with the targeted Americans. Thereafter, local governments would be under enormous pressure and might choose to ask the United States to withdraw rather than suffer additional BW attacks on their populations.

Another option an adversary might choose would be to release a lethal agent just outside a US base so that the wind would carry it away from the base. A desirable effect could be achieved by even a small attack aimed at killing as few as 20 to 50 of the local population. The downwind casualties would be blamed on the Americans, creating a local mistrust of the American government. The responsible group would never claim credit but would inform the media and others that the deaths were caused by US BW agents (even though the United States does not have any offensive BW agents). It's likely that the regional media would have a "heyday," which would lead to a groundswell of anger against the United States. Another similar attack could be launched after several months if the United

States had not elected to significantly downsize its presence in the region. Again, the United States would be blamed, and locals might evacuate areas close to US installations. A continued US presence in the region could become politically impossible to maintain. Such small-scale attacks could be repeated over and over with lethal or nonlethal BW agents.

An adversary could also use a lethal agent directly against a US installation in the region. The adversary would never claim credit for this attack option, but might release a small dose of BW agent like anthrax or tularemia to try to kill two to 10 Americans. These deaths could raise fear of future lethal attacks and cause US officials and members of Congress to debate the merit of a continued US presence in the Middle East. In a response similar to the last option, the host government might become uncomfortable with a US presence if a few of its local citizens also died. A single attack might not cause the United States to "tuck tail and run," but if repeated often enough, the United States might reconsider and remove its forces from harm's way.

***Scenario Three: A Bioterrorist Attack on a Large US or Allied Population Center***

The American public learned to fear anthrax after letters containing the substance had been sent via the US Postal Service to senators and various news agencies shortly after the 11 September 2001 terrorist attacks. The resultant

deaths and the discovery that some al Qaida terrorists had explored renting crop dusters caused the US government to temporarily ground these important agricultural aircraft. The news media, in turn, informed the public that biological attacks were possible.

Similar to the 11 September attacks, a BW attack might be a coordinated attack and take place in several major US cities. Anthrax would probably be the agent of choice in a mass-casualty attempt since it is not contagious and the perpetrators would not have to worry about the disease getting back to their country. Five 100-pound bags of anthrax could easily be smuggled into the United States using one of the many shipments of grain that arrive at US ports every day. These bags could be made to blend in with the shipment and lined with plastic so that no powder would be prematurely released. Three to five major cities, on the order of Houston or Los Angeles, could be targeted and would require only a 100-pound bag each. An appropriate aerosolizing device, easily procured in the United States, could be mounted on an automobile, airplane, or boat. The terrorists that perpetrate this attack would not have to die because they could be vaccinated and treated with antibiotics prior to delivering the agents, which would protect them even if they were exposed. They could also easily depart the country before the first symptoms appeared and defeat the ability of federal authorities to respond and arrest them.

Hundreds of thousands of American citizens could potentially become infected and die if the agent were correctly manufactured and employed and if optimal climatic conditions were present during the attack. Such a mass-casualty attack would overwhelm the US medical system and a human, economic, and political catastrophe would result.

## Summary

Many of our national leaders still do not believe that a mass-casualty BW event will happen in the next 10 years—in spite of our experience with the anthrax attacks that fol-

lowed the 11 September 2001 attacks. This view is based on their belief in one of the several myths discussed in this article. Such myths continue to inhibit the adequate funding of US and allied biodefense.

US national security leaders must appreciate the urgency to refocus programs and develop appropriate budgets to support a concerted biodefense effort to counter BW possibilities. The counteragroterrorism effort is woefully underfunded. This program is of extreme importance, and it needs billions of additional dollars to upgrade the protection of our agricultural industry.

United States military forces in the Middle East must be well prepared for a BW attack, but all countries in the region have a long way to go before their biodefense equipment and tactics are adequate for the threat. US Central Command and the Office of the Secretary of Defense have an aggressive cooperative defense initiative (CDI) with allies and friends in the region designed to overcome the threat of WMD. Huge steps forward have already been made in preparation for a BW attack, but there is still much work ahead. While detection capabilities in the region have improved, lab results still require several hours, and these are limited to just a few of the possible BW agents. Only US installations have detection capabilities in place, and there are none in the local areas. Although there is a correct emphasis on ballistic missiles within the CDI, the biocruise missiles threat, described by Kiziah in his *Assessment of the Emerging Biocruise Threat*, may be an even more likely threat and should be addressed with an equal effort.<sup>30</sup>

One of the most horrifying possibilities would be a coordinated and simultaneous BW attack against several major cities in the United States and in allied countries. Those attacks could occur today, and we might not become aware of them for days. A series of major exercises have documented the likely and frightening results; many hundreds of thousands could die, and US and allied societies could be thrown into chaos and panic.

Myths to the contrary, the biological warfare and bioterrorist threats are real and require the full commitment of the United States and its allies to have a well-funded biodefense effort to produce an effective defense. The United States must take up the

yoke of preventing such attacks and prepare for consequence management—managing the aftermath of such attacks—with the same vigor our nation used during the cold war. Otherwise, our national security stands in jeopardy. □

## Notes

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