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Biological Warfare: A Nation at Risk--A Time to Act

by the [Honorable Richard Danzig](#)

Under Secretary of the Navy

Conclusion

There is a regrettable tendency to think about defense against biological warfare either as unnecessary or as "too hard." Unfortunately, the danger of biological warfare did not dissipate with the dismantling of our own offensive program in 1969, the signing of the Biological Weapons Convention in 1972, the fall of the Berlin Wall, or the threat of nuclear retaliation against Saddam in 1991. Only by planning and preparing will we be able to diminish the likelihood that biological weapons will be used, and reduce the risks if they are. Fortunately, substantial improvements can be made in our biological defensive capabilities at relatively small levels of investment.

Why Think About Biological Warfare?

There are three compelling reasons why the national security establishment ought to be thinking more about, and investing more in, defenses against biological warfare (BW).

1. Our future enemies' strategies. To assess our vulnerabilities, it is useful to put ourselves in the shoes of our potential opponents. The overwhelming conventional military superiority the United States displayed in the Kuwaiti desert will make potential aggressors less likely to confront us directly. Concomitantly, those who wish to challenge our resolve will be tempted to do so indirectly and unconventionally. Additionally, the perception that America is reluctant to accept high mortality rates in combat will make high casualty weapons, such as biological agents, especially attractive to our enemies.

2. Our future enemies' resources. While a nuclear arsenal requires massive investments and a sophisticated and capable military infrastructure to support it, an opponent does not need to be a superpower to have a biological warfare capability. Biological weapons are inexpensive and accessible. A small pharmaceutical industry or even moderately sophisticated university or medical research laboratory can generate a significant offensive capability. Delivery can be by warheads on missiles, but also by means as simple as a crop sprayer.

Some sense of why biological weapons are the "poor man's nuclear bomb" is suggested by a United Nations expert's 1969 estimate that the costs of producing mass casualties per square kilometer are as follows: biological-\$1/km²; chemical (nerve agent)-\$600/km²; nuclear-\$800/km²; conventional-\$2000/km². While these figures are outdated, the relative orders of magnitude they suggest are still quite valid.

3. Our blind spots. Our current vulnerabilities to BW are substantial. Many of these blind spots are beyond our immediate control; they result from the inherent nature of the biological weapons, such as their relative ease of production and concealment. Many, however, are self-inflicted -- they are a result of our underinvestment and lack of attention. In short, by our neglect, we are ourselves creating an incentive to use BW.

The history of the absorption of technology into the operational and warfighting capabilities of the Department of Defense suggests one reason for this blind spot. Professor Alan Beyerchin of Ohio State University has suggested that we might think about WWI as a conflict that forced chemists and warfighters to talk with one another; WWII as a conflict that brought physicists and warfighters together; the Cold War as a history of Pentagon investments in computers, electronics, and telecommunication skills. But, as Prof. Beyerchin notes, this framework does not include events that led to the development and integration of biologists with the Pentagon. Today, the number of biologists employed by DOD is orders of magnitude less than the number of scientists and engineers employed in other areas.

Taken together, these factors suggest that it is important to think about biological warfare because it is an area of weaknesses, because our opponents are likely to perceive this, and because they will have the resources to exploit it.

Characteristics and Associated Risks

These concerns are exacerbated when the characteristics of biological weapons are considered:

Extraordinarily small quantities of biological agents are all that are required for lethality. In the case of anthrax, for example, 1 gram produces one trillion spores -- an amount equivalent to 100 million lethal doses.

These small quantities make the concealment, transportation and dissemination of biological agents relatively easy.

An adversary does not need sophisticated artillery, intercontinental ballistic missiles, or advanced communications gear to have effective biological warfare weaponry. Rather, since aerosolization is the predominant method of distribution, "homely methods" will suffice -- including agricultural crop dusters, back pack sprayers, land and sea mines, and even purse-size perfume atomizers.

Information on how to develop biological agents is readily available in open source literature, and even now on the Internet.

The "invisibility of the archer" can complicate defensive efforts. Ease of concealment and delivery, when coupled with difficulties in detection of agents and delays (often of days) in the appearance of symptoms, make an assailant difficult to detect and even identify after the fact.

Why Haven't They Been Used?

Faced with these facts, policymakers often ask: If these weapons are so potent and so easy to use, why haven't they been used before? The short answer is that they have been. History provides little comfort or support for the proposition that, though they exist, biological weapons, uniquely, will not be used. Cadavers infected with plague were catapulted over the walls of medieval European castles and cities under siege; the British supplied Indians with blankets infected with smallpox during the French and Indian Wars; wells were poisoned during the Civil War to impede Sherman's march; and even as recently as the Second World War, the Japanese Unit 731 experimented with biological weapons on prisoners of war in Manchuria, resulting in over one thousand deaths.

More recent examples bring the threat closer to home: in 1995 two members of a Minnesota militia organization were convicted of possession of ricin, which they had produced themselves and intended to use in retaliation against local government officials. It has also come to light that Aum Shin Rikyo, the Japanese cult on trial for the horrifying sarin attacks on the Tokyo subway system, was also pursuing a sizable biological warfare capability -- without the knowledge of any Western intelligence agency.

Not only have they been used in the past, but the widespread international proliferation of these weapons also increases the expectation that they will be used in the future. The list of countries that possess them reads like a "Who's Who" of dangerous actors.

Is the Threat of Nuclear Retaliation a Sufficient Deterrent?

Though our threats of nuclear retaliation apparently deterred Saddam from unleashing his BW at us, we now know that he developed and concealed a biological program and weapons that were substantial and sophisticated -- and continued even after the war's termination while subject to scrutiny from United Nations inspectors. There is not sufficient assurance that deterrence would be effective again, particularly if Saddam or his equivalent felt that his regime, he himself, or his capital were threatened.

Nuclear deterrence will be of even more doubtful efficacy if we find ourselves dealing with non-state actors, a domestic terrorist contingency, or an unidentifiable opponent. In those instances, whom would we threaten? Against what targets would we retaliate? And what would constitute proportionality? Moreover, even state actors may not be deterred by a nuclear threat if they believe they can mask the nature or the source of their attack (it is easier to do this with biological than with most other weapons) or if they are already threatened by nuclear weapons and have ignored that threat when they went to war in the first place.

Where Do We Go From Here?

Our current risks are substantial. But investments to lower these risks can be made and, if made, they will yield two very attractive rewards: 1) they will lower the likelihood of biological warfare by signalling to potential adversaries that we have reduced our vulnerabilities; and 2) they will lower the amount of death and disruption if biological weapons are used.

To make these investments meaningful, I offer seven recommendations for how we might begin to reorder our priorities to enhance our defenses against biological warfare.

1. Establish a new mindset. This is a purely conceptual step--it doesn't cost any money. But it is important. We must declare our independence from the term "weapons of mass destruction" (WMD), and recognize that biological weapons have special characteristics that distinguish them from chemical and nuclear weapons. In many respects, biological warfare defense requires an altogether different approach than that for nuclear or chemical warfare. For example, counting enemy warheads for arms control or donning full protective gear in a potentially contaminated environment are relevant for nuclear and chemical scenarios, but not for biological. Our intelligence and masking requirements are different for biological warfare. Even decontaminants are different.

2. Identify personnel. Within DOD, we should identify selected operational units, including Army, Marine and Special Operations Forces, to be trained, equipped, inoculated, and exercised to respond specifically to biological warfare threats. While these forces would be designated principally to deal with operational military scenarios, their skills and capabilities should also be available to the National Command Authorities as required for domestic response and consequence management.

We have already made some progress in this area. The Secretary of Defense recently assigned counterproliferation as an additive mission for Special Operations Forces. The Army's well-established Technical Escort Unit has expertise in this regard. In addition, at the Commandant's direction, and with the advice of a distinguished panel of civilian technical experts, the Marine Corps is establishing a unit designed specifically for these types of contingencies.

3. Focus on Antibiotics. There has already been a substantial amount of attention focused on vaccines as an active defensive measure. Comparatively little effort has been devoted to the development of antibiotic defenses. I believe we would benefit tremendously from close association with the

pharmaceutical industry to develop a research program, a supply strategy for prophylactic and post-exposure uses, and a system of intelligence alerts.

4. Develop and Acquire Masks. If the principal method of infection from BW is inhalation, then a simple, relatively low-cost mask that filters out dangerous airborne particles might be all that is required for effective individual protection. Differentiating between the protective requirements for chemical and biological threats can preclude the need to don cumbersome suits and gas masks that can degrade troop performance.

5. Acquire state-of-the-art detectors. The CINCs have articulated this as a top priority. To the extent that we are constrained in this area, it should be by the technology and not by a failure of funding. There are numerous fielded and developmental detectors for biological warfare agents. We should seek to accelerate, to the maximum extent possible, the integration of these stand-off and point detection systems into our warfighting and civil defense infrastructures, and continue our investments in the development of future technological approaches to bio-detection.

6. Focus on Intelligence. The recent revelations about Iraq's capabilities were a "wake-up call" for the intelligence community. Knowledge about our adversaries' intentions and capabilities lies at the very heart of our defense against this heinous type of warfare. Additional human intelligence resources are clearly warranted alongside of the pharmaceutical industry relationships raised above. Additionally, we should expand our cooperation with our allies in this regard, and enhance the relationship between our own intelligence and counterintelligence communities.

7. Strengthen Coordination. Interagency coordination is critical in the event of either international or domestic biological contingencies. Existing mechanisms must be strengthened and exercised, and DOD's bio-defense assets should be more effectively integrated for both traditional military operations abroad as well as civil defense at home.

There is much to be done, but much can be done. Given proper priority, biological defense will be a valuable investment for the United States.

This paper is based on a recent presentation made by Under Secretary Danzig at the National Defense University.

The one that scares me to death, perhaps even more so than tactical nuclear weapons, and the one we have the least capability against is biological weapons.

- General Colin Powell, 1993

If we do not stem the proliferation of the world's deadliest weapons, no democracy can feel secure ... One of our most urgent priorities must be attacking the proliferation of weapons of mass destruction, whether they are nuclear, chemical, or biological.

- President Clinton, 1993

... BW is a weapon of mass destruction. But no agency has done any serious planning about how to defend against a BW attack on our own cities, or those of our allies... We urge DOD to take the initiative, together with the Center for Disease Control and Prevention, in formulating a comprehensive plan for civil defense against BW attack. If such an attack should occur, the military establishment will be blamed for the failure in national defense, regardless of the purported mandate -- and above all, we will blame ourselves.

- 1993 Defense Science Board Study

About the Author

The Honorable Richard Danzig is the 26th Under Secretary of the Navy. He earned a doctorate in history from Oxford University as a Rhodes Scholar and a law degree from Yale. Besides teaching and practicing law, Mr. Danzig served in the late 1970s as Principal Deputy Assistant Secretary of Defense for Manpower, Reserve Affairs and Logistics where he made substantial contributions to U.S. mobilization capabilities. He has also been a senior evaluator for Joint Chiefs of Staff mobilization exercises, a State Department consultant on defense trade controls, and Director of the National Semiconductor Corporation.

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