

# Biological Security in a Changed World

**T**he horrifying events of 11 September 2001 serve notice that civilization will confront severe challenges in the 21st century. As national security budgets expand in response, we should recognize that only a broad conception of security will be adequate to meet some of the threats that we may face. Biological security provides a powerful example. It must address both the challenge of biological weapons and that of infectious disease. The right approach should benefit public health even if major acts of biological terrorism never occur. Our thinking about biological security must transcend old misplaced analogies to nuclear and chemical security.

Nuclear security has been based on nonproliferation, deterrence, and defense, with intelligence woven throughout. Nonproliferation seeks to prevent the diversion of materials from civilian programs to military or terrorist weapons. Should nonproliferation fail, the United States relies on deterrence through the threat of retaliation. Defense, active or civil, has so far been less central.

Effective biological security requires a different mix. For all its challenges, nuclear nonproliferation is comparatively robust, in part because the production of weapons-usable uranium or plutonium provides a conspicuous bottleneck through which any nuclear program must pass, unless those materials are stolen. This is why preventing nuclear theft is such a high priority in the post-Cold War world. Biological agents are easier to acquire. Most can be found in naturally occurring outbreaks. Weaponizing these agents has proved challenging for terrorist groups, but the Aum Shinrikyo's unsuccessful efforts to spray the anthrax organism throughout Tokyo in 1993 warned that attempted mass urban attacks were no longer in the realm of the fantastic.

The transfer of dangerous biological agents should be controlled where possible, and the spread of the technologies and personnel to weaponize them should be impeded. But any biological nonproliferation regime will necessarily be less robust than its nuclear counterpart, because the relevant materials, technologies, and knowledge are far more widespread.

Biological terrorism also challenges requirements for successful deterrence. Because some diseases incubate for a week or more, identifying the perpetrators of an attack may prove difficult. A terrorist group might even hope that its attack would go unrecognized; when followers of the Bhagwan Shree Rajneesh infected 750 Oregonians with salmonella in 1984, it took over a year before the infection was determined to have been intentional. Finally, as with any form of terrorism, some groups may simply be unconcerned about retaliation.

In the face of these difficulties, good intelligence is all the more important. Warning and prevention are preferable to coping with the consequences of an attack, but we must also be ready should an attack occur. This requires that greater emphasis be placed on improving public health, a kind of homeland defense that is applicable to both unintentional and intentional disease outbreaks.

Because of disease incubation times, the first responders to a biological attack may well be health care workers at hospitals and clinics rather than specialized units. The speed and effectiveness of a response will depend on disease surveillance: the recognition by health care workers that certain illnesses appear unusual and the rapid notification of the proper authorities. Because incubation times often exceed international travel times, both domestic and international components are required. But the domestic component of disease surveillance in most nations, including the United States, is too weak, and international networks are inadequate. Donor nations need to increase support for these efforts. And there are many other needs, such as developing and stockpiling sufficient vaccines, antibiotics, or antivirals and otherwise preparing to meet the enormous challenges that would be posed by a major outbreak. It is time to quicken the pace of these efforts, to which departments of health are as central as departments of defense.

Disease surveillance and response are not nonproliferation measures, so cannot substitute for an effective verification regime under the Biological Weapons Convention. But biological security requires the developed world, especially the United States, to see that its ongoing self-interest is closely allied with sustainable public health improvements in the developing world. And the explosion of biotechnology, with the weapons implications that follow from it, requires the scientific community to discuss its responsibilities in earnest.

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