6. Rubinow IM. Labor insurance. *Am J Public Health.* 1997;87:1862–1863. Originally published in: *J Political Economy.* 1904;12: 362–381.
7. Knox JHM Jr. The relation of the milk supply to infant mortality. *Am J Public Health* 1999; 89:408–411. Originally published in: *Johns Hopkins Nurses Alumnae Magazine.* 1906:68–81.
8. New board to expand horizons for APHA's educational efforts. *The Nation's Health.* June 1999:3.
9. Yankauer A. The American Journal of Public Health: 1957–1973. *Am J Public Health* 1979; 69:1061–1065.
10. Viseltear AJ. C.-E. A. Winslow and the early years of public health at Yale. *Yale J Biol Med.* 1982;55:137–151.
11. Viseltear AJ. C.-E. A. Winslow: his era and his contribution to medical care. In: Rosenberg CE, ed. *Healing and History: Essays for George Rosen.* New York, NY: Science History Publications; 1979:205–228.
12. Wiehl DG. Edgar Sydenstricker: a memoir. In: Kasius RV, ed. *The Challenge of Facts: Selected Public Health Papers of Edgar Sydenstricker.* New York, NY: Prodist; 1974: 3–17.
13. Furman B. *A Profile of the United States Public Health Service, 1798–1948.* Washington, DC: US Government Printing Office; 1973.
14. Terris M, ed. *Goldberger on Pellagra.* Baton Rouge: Louisiana State University Press; 1964.

Bioterrorism Initiatives: Public Health in Reverse?

Warnings about "bioterrorist" attacks, causing concern among those responsible for public health, have cited recent instances of the use or threatened use of biological or chemical agents.[1] Documented episodes, although extremely rare, have been dramatic. In Japan, the chemical warfare agent sarin was released by the Aum Shinrikyo cult, first in 1994 in Matsumoto and then in 1995 in the Tokyo subway.[2] In 1984, an Oregon cult allegedly contaminated salad bars with a biological agent, salmonella.[3] These episodes, and recent hoaxes concerning anthrax release, have led to well publicized, costly responses by health and safety officials.[4]

Underlying the concern about bioterrorism is the long history of the use of chemical and biological weapons in war, which the US Public Health Service has termed "public health in reverse."[5] Since World War II, the military forces of the world have built up major stockpiles of chemical and biological weapons and tested them at a number of sites around the world.[2,6] Although the Biological Weapons Convention (effective 1975)[7] and the Chemical Weapons Convention (effective 1998)[8] outlawed the development, production, stockpiling, and transfer of these weapons, large stockpiles of chemical weapons still await destruction in several nations,[9] and it is alleged that stockpiles of biological weapons are still maintained in a few nations.[10] Although the technical knowledge and materials needed to produce chemical and biological weapons are relatively available, the ability to "weaponize" and target these materials remains extremely limited. The risk is thus small, but there is indeed a finite chance of their use.

In response to this threat, the US government has developed a number of bioterrorism initiatives.[11] Some of these initiatives, such as a worldwide surveillance program to detect the incidence and prevalence of infectious diseases, whether intentionally introduced, accidentally introduced, or naturally arising, would undoubtedly be useful in public health practice throughout the world. The recent outbreak of vancomycin-resistant *Staphylococcus aureus* in the Midwest[12] certainly suggests the need to bolster the nation's capacity for the detection and control of emerging and reemerging infectious diseases.

But other bioterrorist initiatives are more questionable. Before they are implemented by the public health community, such programs must be thoughtfully and scientifically examined in terms of their necessity, efficacy, safety, and cost. Bioterrorist initiatives may divert resources from other, more urgently needed public health tasks or may place public health agencies and personnel under the control of military or law enforcement officials. We should pause to consider how to maximize the limited resources available for the health protection of the people of the United States and of the world.

Since President Clinton's Executive Order 12938 of 1994,[13] funding for bioterrorist iniatives has dramatically increased, to some extent at the expense of existing public health budgets. Emergency response teams are being assembled in 120 cities, and mock attacks have been staged to gauge US readiness for attack.[14] According to Donna Shalala, secretary of the Department of Health and Human Services, these plans represent "the first time in American history in which the public health system has been integrated directly into the national security system."[15]

Significant bioterrorist iniative funds have been distributed for biomedical research by the Defense Advanced Research Projects Agency (DARPA), a branch of the Department of Defense. The Clinton administration is calling for a 70% increase in DARPA's biological warfare research budget, to $146 million annually.[16–18] Bioterrorist initiative projects include funding the nation's nuclear weapons laboratories for the development of advanced detection devices and countermeasures for chemical and biological weapons. Research grants from DARPA's "unconventional pathogen countermeasures program," typically ranging from $1 million to $2 million per year, have been attractive to academic institutions, laboratories, and researchers who have long faced tight budgets at the usual granting agencies such as the National Institutes of Health. "Too Radical for NIH? Try DARPA," read a 1997 headline in *Science.*[19]

The civilian and military programs that have been developed as bioterrorist initiatives raise significant issues for a public health community long concerned about the problems inherent in military organization and the control of basic research and about the selection of public health priorities. These issues, which lie at the core of professional ethics and the independence of scientific thought and inquiry, have been especially important in the history of US chemical and biological weapons programs, where the divide between defense and offense is often poorly defined. Before the Biological Weapons Convention, military and intelligence agencies developed extensive stockpiles of lethal biological agents and conducted numerous tests, including "nonpathogenic" organism releases on an unsuspecting civilian population. After the Biological Weapons Convention, which permits "defensive" research programs, the US Biological Defense Research Program (BDRP) was vastly expanded.[6,20] The offensive potential inherent in this program led over 2000 biomedical researchers, including 29 Nobel laureates and 180 members of the National Academy of Sciences, to sign a pledge not to engage in research and teaching that would further the development of chemical and biological warfare agents.

Current bioterrorist initiative activities raise similar questions about offensive capabilities being developed under "defensive" programs. Moreover, because bioterrorist initiative programs are being developed concurrently with the expansion of missile defense programs under the Strategic Defense Initiative

("Star Wars"), and with nuclear weapons modernization programs in the Department of Energy and the Department of Defense, they can reasonably be perceived by others around the globe as bolstering US military preparedness. Hence, bioterrorist initiative programs could lead to a biological and chemical arms race, in the typical action–reaction sequence that has characterized the history of nuclear weapons proliferation.

In addition, without adequate public and scientific consultation, the Department of Defense is currently immunizing more than 2 million US armed forces personnel against anthrax, although the vaccine is of unproven efficacy against inhalation anthrax and has uncertain side effects. Even if the vaccinations do work to provide protection against particular strains of anthrax, they would not protect against other natural or genetically engineered strains, nor would they protect against a wide spectrum of other organisms such as smallpox. The mass vaccination of soldiers or civilians, besides having dubious utility, could result in harmful side effects and false confidence.[21]

It is suspected that in response to the monopoly of nuclear weapons held by the United States, Russia, and the other 6 declared or undeclared nuclear weapons states, a number of countries have attempted to develop chemical and biological weapons arsenals, often referred to as "poor man's nuclear weapons." The alleged threat posed by these weapons was used as justification by the US government in 1993 to launch a new "counterproliferation" program. This program allows nuclear and nonnuclear weapons to be used by US and allied forces against "enemies" allegedly possessing chemical and biological weapons, as demonstrated by the 1998 attack on a Sudanese pharmaceutical plant for which evidence of chemical weapons production was subsequently found to be lacking. "Counterproliferation" underscores the continued centrality of nuclear weapons to US strategic planning and, ironically, it has had an impact on continued global proliferation of weapons of mass destruction, indicated by the nuclear detonations in 1998 by India and Pakistan.

Bioterrorist initiative programs are strongly reminiscent of the civil defense programs promoted by the US government during the Cold War. Many health professionals recognized that fostering the delusion that nuclear war was survivable increased the chances for such warfare to occur. Consequently, many health-based organizations, including the American Public Health Association, challenged the underlying assumptions of civil defense and instead advocated more fundamental solutions such as nuclear disarmament and addressing the root causes of global conflict, including poverty, hunger, inadequate housing, and lack of clean water and health care.

The US government's active support for bioterrorist initiative programs stands in marked contrast to the inadequate attention that has been paid to providing more basic resources necessary to protect the US and the global population from prevalent infectious diseases and the chemical threats posed by environmental pollution. While one instance of intentional salmonella contamination may be persuasive to advocates of bioterrorist initiatives, perhaps public health would be better served by preventing the millions of illnesses and thousands of deaths from food-borne infections that occur annually[22] because of negligence and inadequate inspections. More broadly, finding ways to provide adequate food, housing, and health care for all would increase levels of resistance to infection while diminishing the causes of terrorism and war.

The threat posed by all weapons of mass destruction defies reliance on programs such as bioterrorist initiatives. It would be tragic if the phrase "public health in reverse" applied not only to weapons but also to the methods being used to protect the public against them. This paradox has been long understood by the American Public Health Association, as demonstrated by its recognition of the dangers of militarism, its opposition to "defensive" stratagems such as the Strategic Defense Initiative, and its support for the abolition of nuclear weapons, including an end to weapons programs at Department of Energy facilities. While working for adequate civilian-directed resources to prevent all infectious diseases, public health professionals must advocate solutions that "above all else, do no harm." We need to continue to encourage our government, which remains the world's most formidable military power, to take the necessary steps to strengthen existing conventions for eliminating biological and chemical weapons and to take a leadership role, as directed by the International Court of Justice, in the expeditious elimination of nuclear weapons. □

Hillel W. Cohen, DrPH
Department of Epidemiology and Social Medicine,
Albert Einstein College of Medicine and Montefiore Medical Center, Bronx, NY

Robert M. Gould, MD
San Francisco, Calif

Victor W. Sidel, MD
Department of Epidemiology and Social Medicine,
Albert Einstein College of Medicine and Montefiore Medical Center, Bronx, NY

References

1. Carter A, Deutch J, Zelikow P. Combating catastrophic terrorism. *Foreign Affairs*. November–December 1998:80–94.
2. Lockwood AH. The public health effects of the use of chemical weapons. In: Levy BS, Sidel VW, eds. *War and Public Health*. New York, NY: Oxford University Press; 1997:84–97.
3. Torok TJ, Tauxe RV, Wise RP, et al. A large community outbreak of salmonellosis caused by intentional contamination of restaurant salad bars. *JAMA*. 1997;278:389–395.
4. Tucker JB. National health and medical services response to incidents of chemical and biological terrorism. *JAMA*. 1997;278:362–368.
5. *Effects of Biological Warfare Agents*. Washington, DC: US Dept of Health, Education, and Welfare; 1959.
6. Gould R, Connell ND. The public health effects of biological weapons. In: Levy BS, Sidel VW, eds. *War and Public Health*. New York, NY: Oxford University Press; 1997:98–116.
7. Arms Control and Disarmament Agency. *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (BWC)*. Available at: http://www.acda.gov/treaties/bwc2.html. Accessed August 20, 1999.
8. Arms Control and Disarmament Agency. *Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction (CWC)*. Available at:http://www.acda.gov/treaties/cwctext.html. Accessed August 20, 1999.
9. Brooke J. So far so good as chemical weapons are burned in Utah, officials say. *New York Times*. April 13, 1998:A10.
10. Venter AJ. Biological warfare: the poor man's atomic bomb. *Jane's Intelligence Review*. March 1999:42–47.
11. Clinton, WJ. Remarks by the President on keeping America secure for the 21st century. The White House, Washington, DC, Jan. 22, 1999. Available at: http://www.whitehouse.gov/wh/new/html/19990122-7214.html. Accessed August 18, 1999.
12. Stolberg SG. Lethal strain of germ may pose threat to public health. *New York Times*. August 20, 1999:A1.
13. Clinton, WJ. Executive Order 12938: proliferation of weapons of mass destruction. The White House, Washington, DC, November 14, 1994. Available at: http://www.disastercenter.com/laworder/12938.html. Accessed August 18, 1999.
14. Hulse C. Readying emergency teams for terrorist attacks. *New York Times*. July 3, 1999:A9.
15. The White House Office of the Press Secretary. Press briefing by Attorney General Janet Reno, Secretary of HHS Donna Shalala, and Richard Clarke, president's national coordinator for security, infrastructure and counterterrorism [transcript]. January 22, 1999. Available at: http://www.fas.org/spp/starwars/program/news99/99012207_tlt.html. Accessed August 18, 1999.
16. Stephenson J. Pentagon-funded research takes aim at agents of biological warfare. *JAMA*. 1997;278:373–375.
17. Associated Press. Lab meets with residents over bacteria release. New York, NY: Associated Press; July 9, 1999.
18. Jacobs P. Attack of the killer microbes. The Pentagon is funding research into novel ways to thwart bioterrorists. Advances could pay off

commercially as well. *Los Angeles Times*. August 19, 1999:1.
19. Marshall E. Too radical for NIH? Try DARPA. *Science*. 1997;275:744–746.
20. Piller C, Yamamoto KR. The U.S. biological defense research program in the 1980s: a critique. In: Wright S, ed. *Preventing a Biological Arms Race*. Cambridge, Mass: MIT Press; 1990:133–168.
21. Sidel VW, Nass M, Ensign T. The anthrax dilemma. *Medicine and Global Survival*. October 1998;5:97–104.
22. Tauxe RV. Emerging foodborne diseases: an evolving public health challenge. *Emerging Infectious Diseases* [serial online]. October–December 1997;3:1–14. Available at: http://www.cdc.gov/ncidod/EID/vol3no4/tauxe.html. August 11, 1999.

Why "Public Health Matters"

Most readers of the Journal would agree that public health matters. Even within the public health community, however, there are widely divergent views as to what constitutes "public health" and "public health research." We claim no special vantage point. Our world views are undoubtedly influenced by our respective disciplines (anthropology and epidemiology) and academic locales (Brooklyn College and the Joseph L. Mailman School of Public Health of Columbia University), both subtly and sometimes blatantly, as Nancy Krieger recently reminded us.[1] Yet, as editors of this journal, we have accepted the charge to open its pages to a wider range of public health disciplines and methods than has been considered in recent decades. We intend to return to and build upon the Journal's earlier practice of including descriptions and reviews.[2] As the field of public health continues to grow and evolve, so, too, must the Journal.

Fulfilling Our Mission

The mission of the Journal, namely, "promoting public health research, policy, and practice," is now stated at the beginning of the page "What AJPH Authors Should Know," which appears in every issue. The mainstay of the Journal in recent years has been original, quantitative research articles. The departments of the Journal provide diversity and balance by featuring other perspectives and types of research not afforded sufficient visibility otherwise. For instance, "Notes From the Field" provides a forum for public health practitioners to highlight work once considered outside the realm of scholarly discourse. We are beginning to publish more original, practice-based research articles. This is especially timely as the Journal forms the basis of a program of continuing education intended primarily for workers in state and local health departments, many of whom have otherwise limited opportunities to solidify their public health foundations.[3] (See also Fee and Brown's editorial.[2])

Introducing "Public Health Matters"

Recognizing that a variety of fields and methods are useful, important, and meaningful to public health, we have introduced a new department in the Journal this fall: "Public Health Matters." Although many outside the traditional public health community are unaware of exactly what "public health" entails, we argue here that public health does, in fact, matter not only to the traditional public health community but also to others. We offer our vision for the new department and illustrate the sorts of contributions that are encouraged.[4–6] By providing a forum for high-quality public health research from disciplines other than epidemiology and clinical medicine, the Journal aims to foster the closer integration of essential disciplines (including anthropology, sociology, economics, planning, communications, and political science) necessary to critically examine and devise solutions to the fundamental public health issues that really matter.

Does Public Health Matter?

The Journal is dedicated to the principle that public health matters as a science. Only by studying the health of populations can we begin to understand and hope to ameliorate the most pressing threats to life and well-being. In the interconnected world in which we live, dangers as diverse as ongoing radiation exposure from the Chernobyl disaster and the catastrophic AIDS pandemic forcefully demonstrate that public health problems have the potential to affect millions across political and geographical boundaries. Public health research, surveillance, practice, service delivery, regulation, and education are essential to safeguard global health.

As Paul Farmer passionately and eloquently argued in last month's feature, public health also matters as a human rights and social justice issue.[4] People everywhere have the right to lead satisfying, productive lives. We subscribe to the World Health Organization's definition of health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."[7] Promoting public health is the right thing to do.

According to a recent Harris poll, most members of the general public recognize the importance of the core functions in public health. Lay respondents, however, both misunderstand what public health is and have trouble defining it. Nevertheless, when questioned specifically, the majority value the work of public health. For example, 93% of those surveyed believe that the "prevention of the spread of infectious diseases like tuberculosis, measles, flu, and AIDS is very important," and 82% believe that "conducting research into the causes and prevention of disease is very important."[8]

Enlisting the Sympathizers

We suspect that many professionals in other disciplines, including those in the media, are also concerned with public health issues but are largely unaware of the varied concerns and key contributions of the field of public health. We want to reach this wider audience by presenting these issues in a format that is intelligible, accessible, and compelling to diverse readers. Useful outcomes of such a venture would include broad-based support for public health initiatives and new avenues for joint research across disciplines. Public health professionals would also benefit from perceptive insights from other fields (e.g., anthropology and communications) that may lead to better conceptualizations of public health problems. Furthermore, experts from other disciplines (e.g.,