

# F.A.S. PUBLIC INTEREST REPORT

JOURNAL OF THE FEDERATION OF AMERICAN SCIENTISTS (F.A.S.)

Volume 53, Number 5

September/October 2000

## Controlling Biological Weapons: It's Time for Action

It's time for the US to assume leadership in the international effort to control the development and use of biological weapons. US efforts today are focused almost exclusively on unilateral investments in defensive technologies.

No one should be under the illusion that preventive measures will be easy or that complete success can be guaranteed. But this should not be an excuse for paralysis. Practical tools are available now and the next President should move quickly to exploit them.

New approaches will clearly be needed. A successful control strategy must employ both conventional arms control approaches and build a flexible reporting network supported both by governmental and non-governmental organizations.

There's no excuse for delay. Biological attacks are a very real and very troubling threat. Iraq and the former Soviet Union made extraordinary investments. It's impossible to be certain that illicit activities have stopped or to know where dangerous materials, and dangerous know-how, developed in these programs have gone.

There is also no questioning the fact that controlling biological weapons presents unique difficulties. Research on methods for delivering biological agents and toxins as functional weapons may be identifiable, but virtually all of the equipment needed to conduct research on the production of biological agents and toxins is identical to equipment with legitimate uses for producing medicines and other materials. The problem will get more difficult rapidly given the explosive development and geographic diffusion of biotechnologies that could be misused.

Although the US is now spending billions on unilateral programs to mitigate potential biological attacks, it appears to place very low priority on international or domestic *prevention* strategies, including the strengthening of the Biological Weapons Convention. Instead of exercising creative leadership, the US has become the single greatest block to reaching agreement on a protocol for verifying compliance with the interna-

tional prohibitions on BW.

While rapid adoption of the protocol under negotiation is an essential element for prevention, however, full confidence in compliance is not achievable. An effective strategy must also include informal supporting measures that rely on people and institutions operating outside of formal government structures. The problem

*continued on p. 3*

### Averting the Exploitation of Biotechnology

*By Matthew Meselson*

Every major technology - metallurgy, explosives, internal combustion, aviation, electronics, nuclear energy - has been intensively exploited, not only for peaceful purposes but also for hostile ones. Must this also happen with biotechnology, certain to be a dominant technology of the twenty-first century?

Such inevitability is assumed in "The Coming Explosion of Silent Weapons" by Commander Steven Rose (Naval War College Review, Summer 1989), an arresting article that won awards from the US Joint Chiefs of Staff and the Naval War College:

The outlook for biological weapons is grimly interesting. Weaponers have only just begun to explore the potential of the biotechnological revolution. It is sobering to realize that far more development lies ahead than behind.

If this prediction is correct, biotechnology will profoundly alter the nature of weaponry and

*continued on p. 4*

## In This *Issue ...*

Controlling Biological Weapons: It's Time for Action .....	1
Averting the Exploitation of Biotechnology .....	4
FAS Sends Letter to DCI .....	9
A Critical Moment for the Control of Biological Weapons .....	10
The Danger of the "Mininuc" .....	11
Changes in FAS Staff .....	11
FAS Raises Questions in Wen Ho Lee Case .....	13
ASMP Strives to Minimize Damages from Ill-Advised Export Reforms .....	14
Animal Disease Surveillance Project: Recent Advances .....	15
Breakthrough for Anti NMD-ers .....	16

# www.fas.org

## The Premier On-line Global Security Resource

**FAS FUND** The Federation of American Scientists Fund, founded in 1971, is the 501(c)(3) tax-deductible research and education arm of FAS.

**Steve Fetter, Chairman      Henry C. Kelly, President**

### BOARD OF TRUSTEES

Bruce Blair	Richard Muller
Marvin L. Goldberger	Peter Reuter
Mark A. R. Kleiman	William Revelle
Kenneth N. Luongo	Massoud Simnad
	Herbert F. York

The *FAS Public Interest Report* (USPS 188-100) is published bi-monthly at 307 Massachusetts Avenue NE, Washington, DC 20002. Annual subscription is \$25/year. Copyright©2000 by the Federation of American Scientists.

Archived FAS Public Interest Reports are available online at [www.fas.org](http://www.fas.org) or by phone at (202) 546-3300, fax at (202) 675-1010, or email at [fas@fas.org](mailto:fas@fas.org).

Periodicals Postage Paid at Washington, D.C.

POSTMASTER: Send address changes to FAS Public Interest Report, 307 Massachusetts Avenue NE, Washington, DC 20002.

# FAS

*Chairman:* FRANK VON HIPPEL

*President:* HENRY C. KELLY

*Secretary:* PRISCILLA J. McMILLAN

*Treasurer:* MICHAEL MANN

The Federation of American Scientists (FAS), founded October 31, 1945 as the Federation of Atomic Scientists by Manhattan Project scientists, engages in research and advocacy on science-and-society issues with an emphasis on global security.

Current war and peace issues range from nuclear disarmament to space policy to arms sales; related issues include drug policy, biological weapons control and disease surveillance. FAS also works on learning technology and on reductions in government secrecy.

### BOARD OF SPONSORS

*Sidney Altman <i>Biology</i>	*Edwin G. Krebs <i>Pharmacology</i>
Bruce Ames <i>Biochemistry</i>	*Willis E. Lamb <i>Physics</i>
*Philip W. Anderson <i>Physics</i>	*Leon Lederman <i>Physics</i>
*Kenneth J. Arrow <i>Economics</i>	*Edward Lewis <i>Medicine</i>
*Julius Axelrod <i>Biochemistry</i>	*William N. Lipscomb <i>Chemistry</i>
*David Baltimore <i>Biochemistry</i>	Jessica T. Mathews <i>Public Policy</i>
Paul Beeson <i>Medicine</i>	Roy Menninger <i>Psychiatry</i>
*Baruj Benacerraf <i>Immunology</i>	Robert Merton <i>Sociology</i>
*Hans A. Bethe <i>Physics</i>	Matthew S. Meselson <i>Biochemistry</i>
*J. Michael Bishop <i>Molecular Biology</i>	Neal F. Miller <i>Psychology</i>
*Konrad Bloch <i>Chemistry</i>	*Franco Modigliani <i>Economics</i>
*Nicolas Bloembergen <i>Physics</i>	*Mario Molina <i>Chemistry</i>
*Norman Borlaug <i>Agriculture</i>	Philip Morrison <i>Physics</i>
*Paul Boyer <i>Chemistry</i>	Stephen S. Morse <i>Virology</i>
Anne Pitts Carter <i>Economics</i>	*Joseph E. Murray <i>Medicine</i>
*Owen Chamberlain <i>Physics</i>	Franklin A. Neva <i>Medicine</i>
Morris Cohen <i>Engineering</i>	*Marshall Nirenberg <i>Biochemistry</i>
*Stanley Cohen <i>Biochemistry</i>	*Douglas D. Osheroff <i>Physics</i>
Mildred Cohn <i>Biochemistry</i>	*Arno A. Penzias <i>Astronomy</i>
*Leon N. Cooper <i>Physics</i>	*Martin L. Perl <i>Physics</i>
*E. J. Corey <i>Chemistry</i>	Gerard Piel <i>Publisher</i>
Paul B. Corneily <i>Medicine</i>	Paul Portney <i>Economics</i>
*James Cronin <i>Physics</i>	Mark Ptashne <i>Molecular Biology</i>
*Johann Deisenhofer <i>Structural Biology</i>	George Rathjens <i>Political Science</i>
Carl Djerassi <i>Organic Chemistry</i>	*Burton Richter <i>Physics</i>
Ann Druyan <i>Writer/Producer</i>	David Riesman, Jr. <i>Sociology</i>
*Renato Dulbecco <i>Microbiology</i>	*Richard J. Roberts <i>Molecular Biology</i>
John T. Edsall <i>Biology</i>	Vernon Ruttan <i>Agriculture</i>
Paul R. Ehrlich <i>Biology</i>	Jeffrey Sachs <i>Economics</i>
George Field <i>Astrophysics</i>	*J. Robert Schrieffer <i>Physics</i>
*Vil L. Fitch <i>Physics</i>	Andrew M. Sessler <i>Physics</i>
Jerome D. Frank <i>Psychology</i>	*Phillip A. Sharp <i>Biology</i>
*Jerome I. Friedman <i>Physics</i>	Stanley K. Scheinbaum <i>Economics</i>
*John Kenneth Galbraith <i>Economics</i>	George A. Silver <i>Medicine</i>
*Walter Gilbert <i>Biochemistry</i>	*Herbert A. Simon <i>Psychology</i>
*Donald Glaser <i>Physics-Biology</i>	*Richard E. Smalley <i>Chemistry</i>
*Sheldon L. Glashow <i>Physics</i>	Neil Smelser <i>Sociology</i>
Marvin L. Goldberger <i>Physics</i>	*Robert M. Solow <i>Economics</i>
*Joseph L. Goldstein <i>Medicine</i>	*Jack Steinberger <i>Physics</i>
*Roger C. L. Guillemin <i>Physiology</i>	*Henry Taube <i>Chemistry</i>
*Herbert A. Hauptman <i>Chemistry</i>	*James Tobin <i>Economics</i>
*Dudley R. Herschbach <i>Chemical Physics</i>	*Charles H. Townes <i>Physics</i>
*Rold Hoffmann <i>Chemistry</i>	Frank von Hippel <i>Physics</i>
John R. Holdren <i>Political Science</i>	Myron E. Wegman <i>Medicine</i>
*David H. Hubel <i>Medicine</i>	Robert A. Weinberg <i>Biology</i>
*Jerome Karle <i>Physical Chemistry</i>	*Steven Weinberg <i>Physics</i>
Nathan Keyfitz <i>Demography</i>	*Torsten N. Wiesel <i>Medicine</i>
*H. Gohind Khorana <i>Biochemistry</i>	Alfred Yankauer <i>Medicine</i>
*Arthur Kornberg <i>Biochemistry</i>	Herbert F. York <i>Physics</i>

\*Nobel Laureate

### NATIONAL COUNCIL MEMBERS (elected)

Ruth S. Adams	Marvin Miller
David Albright	David Z. Robinson
Harold Feivuson	Barbara Hatch Rosenberg
Jean Herskovits	Arthur H. Rosenfeld
Michael T. Klare	Lynn R. Sykes
Priscilla J. McMillan	Gregory van der Vink

## A Call for Action

(continued from p. 1)

is dispersed and decentralized, and so must be the solution. Key elements will be to ensure that the largest possible number of people understand how to recognize dangerous and illegal activities, and to provide convenient and safe mechanisms for bringing such activities to light. A proliferator would need to involve a complex network of people—suppliers, research teams, operators, and guards—to develop and produce BW. That some of these people might have the moral sense and courage to take action is our greatest hope for facing down the abhorrent threat of biological warfare. The Internet can provide an important new tool. Internet access is becoming ubiquitous—particularly at research facilities worldwide—and this communication web provides a powerful, global tool for collecting volunteered information and for reporting suspicious activities.

We suggest immediate consideration of the following steps:

- ◆ *The next President should make international measures for preventing the development and use of BW a high defense priority and publish an action plan early in the first year of the new administration.* The US must take a leadership position.
- ◆ *A Presidential Decision Directive should be issued early next year on US policy that will promote consensus with our allies on the verification protocol under negotiation for the Biological Weapons Convention, and make its adoption possible by the end of 2001.* The directive should include instructions to Cabinet Officials for rapid, high-level consultations with industry. Only the President can provide the energy needed to penetrate the quagmire of interests blocking progress on this critical protocol.
- ◆ *The US should support proposals for establishing a global program for monitoring, research and training to control infectious diseases, including regional diagnostic centers with clinical networks. A substantial US contribution should be included in the budget proposed for 2002.* In addition to its importance for public health, the program could provide early warning of illegal activities to ensure that worldwide response to emergencies would be swift and effective in preventing the spread of disease. The provision of computers and communication equipment for needy hospitals and health facilities around the world would facilitate early warning and response to all kinds of disease outbreaks, and provide crucial access to health information wherever it is needed.

*[T]he US has become the single greatest block to reaching agreement on a protocol for verifying compliance with the [BW] international prohibitions.*

- ◆ *A mechanism to promote openness and safety in work involving hazardous biological agents and toxins should be developed by professional societies or other non-governmental organizations.* A global system for confidential reporting, together with a campaign to create societal pressure for compliance, should be established outside of governments and formal treaty regimes.
- ◆ *A mechanism to facilitate voluntary confidential reporting of suspicious activities should be established by non-governmental organizations.* This could be done through an Internet “hot-line” protected by strong encryption (and possibly technology to prevent tracing the origin) that would guarantee anonymity and privacy for the whistleblower.
- ◆ *Universities worldwide should be encouraged to adopt a policy where no person is granted a degree in molecular biology or other fields potentially useful to the development of biological weapons, without taking at least a one semester-hour course that teaches the essentials of national and international treaties, laws, regulations, and non-governmental programs designed to control BW.* FAS is actively working with several major universities to develop such a course, which will eventually be made available online.
- ◆ *An international treaty should be negotiated to make actions related to BW an international crime, like piracy, aircraft hijacking or slave trading.<sup>1</sup>* Individual offenders, including government officials, would then be subject to prosecution or extradition regardless of their nationality or the country where the crime was committed.

While mandatory declarations and inspections are essential, they clearly will not be sufficient to capture determined bioweapon developers. In the long-term, our greatest hope for facing down the gruesome threat of biological warfare must be based on our hope that at least some of the people involved in this process will have the moral sense, and the courage, to speak. We can't wait until a major biological weapons incident galvanizes public attention. The next President must act, and act quickly.

<sup>1</sup> A Draft Convention to Prohibit Biological and Chemical Weapons Under International Criminal Law, *the CBW Conventions Bulletin*, December 1998.

## Averting the Exploitation of Biotechnology

*continued from p. 1*

the context within which it is employed. During World War II and the Cold War, the United States, the United Kingdom, and the Soviet Union developed and field-tested biological weapons designed to attack people and food crops over vast areas. During the century ahead, as our ability to modify fundamental life processes continues its rapid advance, we will be able not only to devise additional ways to destroy life but will also become able to manipulate it - including the processes of cognition, development, reproduction, and inheritance. A world in which these capabilities are widely employed for hostile purposes would be a world in which the very nature of conflict had radically changed. Therein could lie unprecedented opportunities for violence, coercion, repression, or subjugation. Movement towards such a world would distort the accelerating revolution in biotechnology in ways that would vitiate its vast potential for beneficial application and could have inimical consequences for the course of civilization.

Is this what we are in for? Is Commander Rose right? Or will the factors that thus far have prevented the use of biological weapons survive and even be augmented in the coming age of biotechnology? After all, despite the fact that the technology of potentially devastating biological weapons has existed for decades and although stocks of such weapons were produced during the Cold War, their only use appears to have been that by the Imperial Japanese Army in Manchuria more than half a century ago.

A similar history of restraint can be traced for chemical weapons. Although massively used in World War I and stockpiled in great quantity during World War II and the Cold War, chemical weapons - despite the hundreds of wars, insurgencies, and terrorist confrontations since their last large-scale employment more than 80 years ago have seldom been used since. Their use in Ethiopia, China, Yemen, and Vietnam, and against Iranian soldiers and Kurdish towns are among the few exceptions. Indications that trichothecene mycotoxins had been used in Laos and Cambodia in the 1970s and 1980s proved to be illusory.

Instead of the wave of chemical and biological terrorism some feared would follow the sarin gas attacks perpetrated by the Aum Shinrikyo cult in Japan in 1994 and 1995 or would be occasioned by the arrival of the new millennium, there has been only an epidemic of "biohoaxes" and several relatively minor

***Human beings have exhibited a propensity for the use, even the veneration, of weapons that bludgeon, cut, or blast, but have generally shunned and reviled weapons that employ disease and poison.***

"biocrimes", confined almost entirely to the US. Nothing has come to light that would contradict the 1996 assessment of the Federal Bureau of Investigation reaffirmed in July 1999, that:

Our investigations in the United States reveal no intelligence that state sponsors of terrorism, international terrorist groups, or domestic terrorist groups are currently planning to use these deadly weapons in the United States.

Continued surveillance to deter and forestall terrorist violence and contingency plans to limit and ameliorate the consequences if it should occur certainly merit the attention and resources of government. But sensationalist publicity is at odds with the historical record.

Whatever the reasons - and several have been put forward - the use of disease and poison as weapons has been extremely limited, despite the great number of conflicts that have occurred since the underlying technologies of the weapons became accessible. Human beings have exhibited a propensity for the use, even the veneration, of weapons that bludgeon, cut, or blast, but have generally shunned and reviled weapons that employ disease and poison. We may therefore ask if, contrary to the history of other major technologies, the hostile exploitation of biotechnology can be averted.

The factor that compels our attention to this question is the possibility that any major turn to the use of biotechnology for hostile purposes could have consequences qualitatively very different from those that have followed from the hostile exploitation of earlier technologies. Unlike the technologies of the conventional or even nuclear weapons, biotechnology has the potential to place mass destructive capability in a multitude of

hands and, in the coming decades, to reach deeply into what we are and how we regard ourselves. It should be evident that any intensive exploitation of biotechnology for hostile purposes could take humanity down a particularly undesirable path.

Whether this happen is likely to depend not so much on the activities of lone misanthropes, hate groups, cults, or even minor states as on the policies and practices of the world's major powers.

In the United States, there was an abrupt and remarkable change – from nearly thirty years of being deeply engaged in the development, testing, and production of biological weapons declared by President Nixon in November 1969 and the US renunciation of toxins three months later. Today the former US offensive biological weapons programme and the logic behind its abolition are largely forgotten, although there are valuable lessons to be learned from both.

During World War II, research, development, and pilot-scale production of biological weapons was centered at Fort (then Camp) Detrick, in Maryland. Large-scale production was planned to take place at a plant near Terre Haute, Indiana, built in 1944 for the production of anthrax spore slurry and its filling into bombs. Equipped with twelve 20 000-gallon fermentors, it was capable of producing fill for 500,000 British-designed 4-pound anthrax bombs a month. Although the United Kingdom had placed a large order for anthrax bombs in 1944 and the plant was ready to go into weapons production by the following summer, the war ended without it having done so.

Contrary to the view that biological weapons are easy to develop and produce, by the end of the war Fort Detrick comprised some 250 buildings and employed approximately 3,400 people, some engaged in defensive work but many in the development and pilot production of weapons. Several years after the end of the war, the Indiana plant was demilitarized and leased to industry for production of antibiotics. It was replaced by a more modern and flexible biological weapons production facility constructed at Pine Bluff Arsenal, in Arkansas, which began production late in 1954 and operated until 1969.

A major effort of the 1950s was encompassed under Project St. Jo, a programme to develop and test anthrax bombs and delivery methods for possible wartime use against Soviet cities. In order to determine quantitative munitions requirements, 173 releases of noninfectious aerosols were secretly conducted in Minneapolis, St. Louis and Winnipeg - cities chosen to

have the approximate range of conditions of climate, urban and industrial development and topography that would be encountered in the major potential target cities of the USSR. The weapon to be used was a cluster bomb holding 536 biological bomblets, each containing 35 millilitres of anthrax spore slurry and a small explosive charge fused to detonate upon impact with the ground, thereby producing an infectious aerosol to be inhaled by persons downwind.

In later years, a strain of the bacterial pathogen of tularemia, less persistent and with an average human infectious dose more reliably known than that for anthrax spores, was standardized by the US military as a lethal biological agent. Other agents - the bacteria of brucellosis, the rickettsia of Q-fever, and the virus of Venezuelan equine encephalomyelitis, all more incapacitating than lethal, as well as fungi for the destruction of rice and wheat crops - were also introduced into the US biological weapons stockpile, along with improved biological bomblets for high-altitude delivery by strategic bombers and spray tanks for dissemination of biological agents by low-flying aircraft. According to

*continued on next page...*

## About the FAS Working Group on BW Verification

The FAS Chemical and Biological Arms Control Program covers all aspects of chemical and biological weapons and their control, but concentrates, at present, on efforts to prevent the development and use of biological weapons (BW) and the further proliferation of BW programs. A major focus is the strengthening of the Biological Weapons Convention with a compliance regime and cooperative measures for the prevention of infectious disease. The program is implemented by the FAS Working Group on Biological Weapons Verification, which consists of a core group of experts in a variety of fields who volunteer their services, and a larger group of consultants. The Working Group develops papers and reports on technical issues and holds workshops and seminars for the Protocol negotiators.

**For more information regarding this effort, check out [www.fas.org/bwc](http://www.fas.org/bwc)**

published accounts, these developments culminated in a major series of biological weapons field tests using various animals as targets, conducted at sea in the South Pacific in 1968.

Soon after Richard Nixon became president, a

***The significance of the BWC lies in its statement of a clear norm ... prohibiting any exploitation by states of biological agents and toxins for hostile purposes [including] hostile purposes of a state directed against its own citizens or anyone else.***

comprehensive review was undertaken of US biological weapons programs and policies - which had been unexamined and unanalyzed by policy makers for fifteen years. Each relevant government department and agency was instructed to present its evaluation of the arguments for and against each of several options, ranging from retention of the offensive BW programme to its entire abolition. Following this review, the president announced that the United States would unilaterally and unconditionally renounce biological weapons. The US biological weapons stockpiles were destroyed and the facilities for developing and producing them were ordered dismantled or converted to peaceful uses. President Nixon pledged that the US biological programme would be restricted to "defensive purposes, strictly defined". He also declared that, after nearly 50 years of US recalcitrance, he would seek Senate agreement to US ratification of the 1925 Geneva Protocol prohibiting the use in war of chemical and biological weapons. In addition, he announced US support for an international treaty proposed by the United Kingdom, banning the development, production, and possession of biological weapons, leading to the Biological Weapons Convention (BWC) of 1972.

It is important to note that these US decisions went far beyond the mere cancellation of a programme. They renounced, without prior conditions, even the option to have biological and toxin weapons. What was the underlying logic?

First, it had become evident through the results of the US biological weapons programme that deliverable biological weapons could be produced that, although subject to substantial operational uncertainties, would be capable of killing people, livestock, and crops over

large areas.

Second, it was realized that the US biological weapons programme was pioneering a technology that, although by no means simple to bring into existence, could be duplicated by others with relative ease, enabling a large number of states to acquire the ability to threaten or carry out destruction on a scale that could otherwise be matched by only a few major powers. The US offensive programme therefore risked creating additional threats to the nation with no compensating utility or benefit and

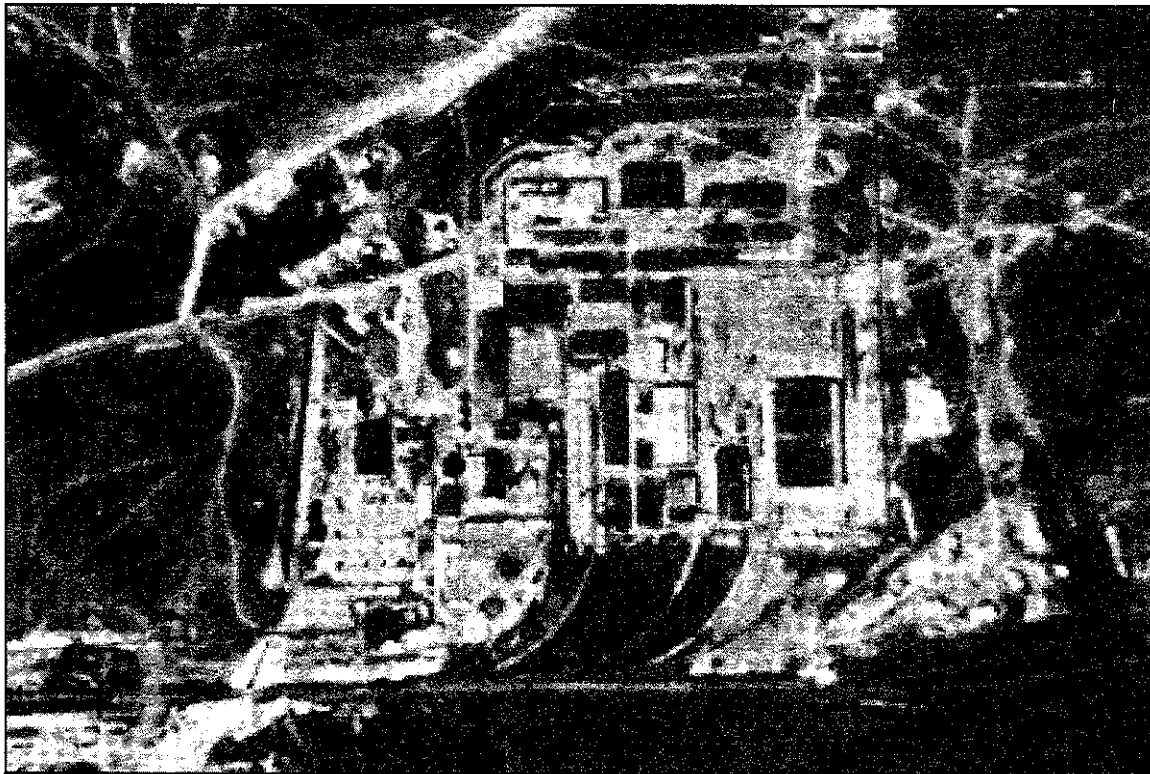
would undermine prospects for combating the proliferation of biological weapons.

The clear policy implication, reinforced by widespread abhorrence for any use of disease as a weapon, was that the United States should convincingly renounce biological weapons and seek to strengthen international barriers to their development and acquisition. The US renunciation of biological weapons was seen as a major step away from a universal menace. As wisely expressed by President Nixon, "Mankind already carries in its own hands too many of the seeds of its own destruction."

The BWC entered into force in 1975 - the first worldwide treaty to prohibit an entire class of weapons. The convention now has 143 states parties, the most important holdouts being in the Middle East. Unlike the Chemical Weapons Convention (CWC) of 1993, it has no organization, no budget, no inspection provisions, and no built-in sanctions - only an undertaking by its states parties never in any circumstances to develop, produce, stockpile or otherwise acquire or retain:

- (1) Microbial or other biological agents or toxins, whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes;
- (2) Weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.

The significance of the BWC lies in its statement of a clear norm - reinforced by international treaty - prohibiting any exploitation by states of biological



**September 17, 1971**

*Cornona reconnaissance satellite image of the Stepnogorsk anthrax production facility, operating at the height of the Cold War. (From FAS Archives <http://www.fas.org/nuke/guide/russia/facility/cbw/stepnogorsk.htm>)*

agents and toxins for hostile purposes. It is important to note that its prohibition of biological agents and toxins for all but “peaceful purposes” and its reference not only to “armed conflict” but, more generally, to “hostile purposes” make the BWC applicable not only to hostile purposes of a state directed against another state but also to hostile purposes of a state directed against its own citizens or anyone else. Thus, the BWC embodies an international norm and provides a legal bulwark against the exploitation of biotechnology by states for hostile purposes whether in armed conflict or in any other circumstance.

While the US renounced biological weapons and abided by the BWC, the Soviet Union did not. According to statements by officials of the former Soviet programme, it was believed that the US renunciation was a hoax, intended to hide a secret offensive programme. Aware of the post-war US biological weapons programme and of the dynamic US lead in molecular biology and biotechnology, the Soviet Union continued and intensified its preparations to be able to employ biological weapons on a large scale.

An example was the standby facility built in the early 1980s for the production of anthrax bombs at Stepnogorsk, in what is now the independent republic of Kazakhstan. Recently dismantled in cooperation with Kazakhstan under the US Cooperative Threat Reduction Program, it was equipped with ten 20,000-litre fermentors, apparatus for the large-scale drying and milling of the agent to a fine powder, machines for filling it into bombs, and underground facilities for storage of filled munitions. According to its Cold War deputy director, the facility conducted numerous developmental and test runs but never produced a stockpile of anthrax weapons. Nevertheless, there is no doubt that its purpose was to provide a capability to commence production on short notice if ordered to do so.

Field testing of Soviet aircraft and missile delivery systems for biological agents was conducted on Vozrozhdeniye Island in the Aral Sea. In a 1998 interview with a Moscow newspaper, the general in charge of Russian biological defence is quoted as saying

*continued on next page...*



that activities at the test site in the 1970s and 1980s were "in direct violation of the anti-biological treaty".

The Russian Federation has done little to convince other nations that the military core of the Soviet biological weapons programme has been dismantled. The former Soviet biological weapons facilities at Ekaterinburg, Sergiyev Posad, and Kirov remain closed to foreigners. The US-Russian-British discussions that had achieved agreement on the principle of reciprocal visits to each other's military biological facilities as a means of resolving ambiguities have foundered and are in abeyance. Resolving the problem and establishing conditions that will allow the two nations to cooperate in fostering global compliance with the BWC will require that the matter be accorded high priority on the agenda of US-Russia dialogue.

At present, we appear to be approaching a crossroads -a time that will test whether biotechnology, like all major predecessor technologies, will come to be intensively exploited for hostile purposes or whether instead our species will find the collective wisdom to take a different course. An essential requirement is international agreement that biological and chemical weapons are categorically prohibited. With the BWC and the CWC both in force for a majority of states, including all the major powers - and notwithstanding the importance of achieving full compliance and expanding the membership of both treaties still further-the international norm of categorical prohibition is clearly established.

The CWC, now with 135 states parties, prohibits the development, production, acquisition, retention, transfer, and use of chemical weapons. Like the BWC, its prohibitions are purpose-based, so that a toxic chemical or precursor intended for peaceful purposes, so long as its type and quantity are consistent with such purposes, is not a chemical weapon within the meaning of the Convention. As with the BWC, this criterion for what is and what is not prohibited, termed the General Purpose Criterion, is intended both to avoid hampering legitimate activities and to help keep the Convention from becoming outmoded by technological change. Also like the BWC, the language of the CWC is applicable not only to prohibited weapons intended for use against another state but also to such weapons

intended by a state for use against anyone.

The stringent verification provisions of the CWC, designed with the active participation of the chemical industry, require initial declaration of chemical weapons and chemical weapons production facilities and subsequent verification on-site of the correctness of the declarations. Declared chemical weapons and chemical

*At present, we appear to be approaching a crossroads -a time that will test whether biotechnology, like all major predecessor technologies, will come to be intensively exploited for hostile purposes or whether instead our species will find the collective wisdom to take a different course.*

weapons production facilities must be secured and are subject to routine inspection until they are destroyed and such destruction must be verified on-site. Facilities that produce more than designated amounts of certain chemicals deemed to be of particular importance to the objective of preventing diversion for chemical weapons purposes must be declared annually and are subject to inspection. Suspect sites, whether declared or not, are subject to short-notice challenge inspection under managed access procedures designed to protect legitimate confidential information and to avoid abuse. All inspections are conducted by experts of the Technical Secretariat of the Organization for the Prohibition of Chemical Weapons (OPCW), the international operating arm of the CWC headquartered in The Hague. In the three years since April 1997, when the CWC entered into force, there have been nearly 700 inspections at declared sites. These include 60 chemical weapons production facilities in nine states (China, France, India, Iran, Russia, the UK, the USA, and one other and the Aum facility in Japan) and 31 chemical weapons storage sites in four states (India, Russia, the USA, and one other), holding 8.4 million chemical munitions and bulk containers, most of them in Russia and the US.

In Geneva, the Ad Hoc Group of States Parties to the BWC is negotiating a protocol to strengthen the Convention, including measures for verification. There is general agreement that there should be an international operating organization similar to the Technical Secretariat of the OPCW and that there should be initial declarations of past offensive and defensive BW



activities and of current biodefence programs and facilities, vaccine production facilities, maximum containment facilities, and work with listed agents. It is also generally agreed that there should be provision for challenge investigation at the request of a state party, including investigation on-site, of suspected breach of the Convention.

In order to encourage accuracy in declarations and to help deter prohibited activities from being conducted under the cover of otherwise legitimate facilities, some states believe that declared facilities should be subject to randomly-selected visits by the international inspectorate, using managed access procedures to protect confidential information, similar to those practiced under the CWC. Other states and certain pharmaceutical trade associations have so far opposed such on-site visits. Other important matters, including the scope and content of declarations, the procedures for clarifying ambiguities in declarations, the substantive and procedural requirements for initiating an investigation, measures for assistance and protection against biological weapons, measures of peaceful scientific and technological exchange, and provisions affecting international trade in biological agents and equipment also remain to be resolved and are the subject of intense negotiation.

What can international treaties like the CWC and a strengthened BWC accomplish? First, they define agreed norms, without which arms prohibitions cannot succeed. Second, their procedures for declarations and on-site visits, monitoring, and investigation, including challenge investigation, pose the threat of exposing noncompliance and coverup, creating a disincentive for potential violators and increasing the security of compliant states. Third, these same procedures have the potential to resolve unfounded suspicions and to counteract erroneous or mischievous allegations. Fourth, the legal obligations and national implementation measures of such treaties act to keep compliant states compliant, even when they may be tempted to encroach at the limits, or to ignore violations out of political expediency. Fifth, treaty-based regimes legitimate and facilitate international cooperation to encourage compli-

## FAS Sends Letter to the DCI

On September 25, 2000, FAS urged the Director of Central Intelligence to release obsolete satellite imagery from broad-area film return reconnaissance satellites as soon as practically possible. Executive Order 12951 calls on the Director to establish a comprehensive program for the periodic review of obsolete film return satellite imagery and set a five year time deadline for the completion of the review. The deadline for that review has passed, and FAS therefore urged the DCI to find in favor of releasing the obsolete imagery, and publish his findings as set forth in the EO.

The imagery from these satellites varies from 16 to 38 years old. Given the age of these images, FAS believes that their release to the public would pose little if any risk national defense and foreign policy, and would be valuable to Cold War historians and also serve a host of other applications including environmental monitoring, land-use planning, arms control, and other commercial applications.

ance and to take collective action against violators, thereby enhancing deterrence. And sixth, as membership in the treaty approaches universality and its prohibitions and obligations enter into international customary law, holdout states become conspicuously isolated and subject to penalty.

In sum, a robust arms prohibition regime like that of the CWC and the BWC strengthened by the kind of protocol that one may hope will emerge from the present negotiation serve both to insure vigilance and compliance by the majority who are guided by the norm and to enhance the deterrence of any who may be disposed to flout it.

The prohibitions embodied in the BWC and the CWC are directed primarily to the actions of states, not persons. Both conventions enjoin their states parties to take measures, in accordance with their constitutional processes, to insure compliance anywhere under their jurisdiction, including a provision in the CWC obliging

*continued on next page...*

**For more info on chemical and biological weapons production and dissemination, see**

<http://www.fas.org/nuke/intro/cw/index.html>

*A robust arms prohibition regime ... serves both to insure vigilance and compliance by the majority who are guided by the norm and to enhance the deterrence of any who may be disposed to flout it.*

its parties to enact domestic penal legislation to this effect and to extend it to cover prohibited acts by their own nationals wherever such acts are committed. Nevertheless, important as such domestic legal measures can be, neither the CWC nor the BWC seeks to incorporate its prohibitions into international criminal law, applicable to individuals whatever their nationality and wherever the offense was committed.

Recently, interest has developed in the possibility of enhancing the effectiveness of the BWC and the CWC by making acts prohibited to states also crimes under international law. A treaty to create such law has been drafted by the Harvard Sussex Program, in consultation with an international group of legal authorities (see CBWCB 42, December 1998). It is patterned on existing international treaties that criminalize aircraft hijacking, theft of nuclear materials, torture, hostage taking, and other crimes that pose a threat to all or are especially heinous. Such treaties create no international tribunal; rather their provisions for adjudication, extradition, and international legal cooperation are aimed at providing enhanced jurisdiction to national courts, extending to specific offences committed anywhere by persons of any nationality. The proposed treaty would make it an offence for any person - including government officials and leaders, commercial suppliers, weapons experts, and terrorists- to order, direct, or knowingly render substantial assistance in the development, production, acquisition, or use of biological or chemical weapons. Any person, regardless of nationality, who commits any of the prohibited acts anywhere in the world would face the risk of prosecution or extradition should that person be found in a state that supports the proposed convention. Such individuals would be regarded as *hostes humani generis* - enemies of all humanity.

International criminal law to hold individuals responsible would create a new dimension of constraint against biological and chemical weapons. The norm against using chemical and biological agents for hostile purposes would be strengthened, deterrence of potential offenders, both official and unofficial, would be en-

hanced, and international cooperation in suppressing the prohibited activities would be facilitated.

What we see here - the non-use of biological and chemical weapons; the opprobrium in which they are generally held; the

international treaties prohibiting their development, production, possession, and use; the mandatory declarations and on-site routine and challenge inspections under the CWC; the negotiations that may lead to strengthening the BWC with similar measures; and the possibility of an international convention to make biological and chemical weapons offenses crimes under international law, subject to universal jurisdiction and applicable even to leaders and heads of state-suggests that it may be possible to reverse the usual course of things and, in the century ahead, avoid the hostile exploitation of biotechnology. Doing so, however, will require wider understanding that the problem of biological weapons rises above the security interests of individual states and poses an unprecedented challenge to all.

*Matthew Meselson is the Thomas Dudley Cabot Professor of the Natural Sciences, Harvard University, and co-director of the Harvard Sussex Program on CBW Armament and Arms Limitation. For more information on the Harvard Sussex program, see (<http://fas-www.harvard.edu/~hsp/>).*

*This article first appeared in the June 2000 issue of the CBW Conventions Bulletin and is reprinted here with permission from the author.*

### **Contribute to FAS online!**

Simply go to the FAS homepage, [www.fas.org](http://www.fas.org), and click on "Support FAS" in the lower right corner. Follow the links, enter your credit card information on the SSL secured page, and that's it!

*No more check writing  
No more stamps  
No more hassle!*

## The Danger of the "Mininuc"

Pentagon officials and several members of Congress recently suggested that nuclear missiles could be designed that could "threaten a bunker tunneled under 300 meters of granite without killing the surrounding population." Our analysis suggests that these claims are both wrong and dangerous. Unfortunately a study of such weapons is required under the terms of the 2000 Defense Authorization Act recently sent to the President.

No missile casing could withstand the impact stresses that would be encountered by a weapon designed to penetrate more than 30 meters. A nuclear weapon penetrating to this depth would send a column of high-temperature debris and highly radioactive dust up through the opening. Our preliminary estimates suggest that a 10 kiloton weapon exploding at 30 meters would produce radioactive fallout over ten square miles and could kill 100 thousand people if the detonation were near a densely populated area.

Prior to Congressional action, FAS sent a letter to the leadership of the Armed Services Committee of both the Senate and House pointing out the dangers inherent in pursuing a new generation of small nuclear weapons – for attacking buried bunkers or any other purpose. If the US appears to believe that nuclear weapons can be made useful as a part of a theater war, it risks blurring the distinction between nuclear and conventional wars that has served as an effective barrier since 1945. The US action could also make it easier for new nuclear weapon states to justify their actions. The search for new nuclear weapons requirements is also a clear attempt to find a rationale for new nuclear testing – and further reason to delay the badly needed Senate approval of the Comprehensive Test Ban Treaty.

The battle over the need for a new generation of "post-cold-war" nuclear weapons is likely to be resumed next year.

*The letter from FAS to Congress appears on the FAS website at [www.fas.org](http://www.fas.org).*

## Changes in FAS Staff

This summer has seen quite a few changes in FAS staff, aside from the momentous change in leadership in June with the arrival of Henry Kelly.

Peter Voth is FAS's new Assistant Webmaster and Systems Administrator. He received a MA in US Foreign Policy from American University in 1997. He spent a year as a research assistant at the National Security Archives followed by a year as an analyst and assistant systems administrator at the JFK Assassination Records Review Board.

Robert Nelson will be working with FAS on issues related to nuclear testing and the Comprehensive Test Ban Treaty. He is currently with the Arms Control Program at Princeton University and has a background in Astrophysics.

Marianne Bakia is studying worldwide investments in learning technology research in support of a potential FAS project in this area. She recently completed a study of learning technology research at the World Bank, and was a major contributor to the report on this subject by the President's Council of Advisors for Science and Technology. She is completing her PhD at Columbia University.

Dr. Brian Athey of the University of Michigan is working to establish a funded FAS Peace Fellowship as a means for academic researchers to contribute to FAS activities. He is also coordinating a joint project between the University of Michigan Life Sciences and Values Program and the FAS Working Group on BW Verification. The goal is to create an Internet-based graduate course which discusses the dangers and international context of Biological Warfare and Terrorism.

Charles Ferguson left FAS in August to take a position in the Department of State. In his two years as director of the FAS Nuclear Policy Project he played a key role in developing FAS analysis on Ballistic Missile defense. He was also effective in communicating FAS positions on BMD through articles, letters and commentaries as well as appearances on radio and television.

Anna Rich left FAS to start her first year of law school at Yale University. As Research Assistant to the Arms Sales Monitoring Project she spent the last two years tracking US conventional arms exports and monitoring US export policy. Her many contributions to the field were reported in the *Arms Sales Monitor*.

# A Critical Moment for the Control of Biological Weapons

By Barbara Hatch Rosenberg

In the US over the last several years we have heard a lot about the threat of bioterrorism, but the focus has been on measures for mopping up after a disaster rather than on prevention, as though prevention were hopeless. But the fact is that today, BW development is a complex art beyond the competence of most terrorists, as witnessed by the numerous failed attempts of Aum Shinrikyo in Japan to produce and deploy BW, despite their extraordinary access to resources and expertise. At present, States are the only likely source of BW that could cause damage on a significant scale, and there are tools that can be used to deter action by States.

The primary instrument is a strong international norm against BW, but the norm needs to be buttressed by means to verify compliance and commitment to a united international response if the norm is violated.

Neither of the two landmark treaties of the 20<sup>th</sup> Century that codified the norm, the Geneva Protocol of 1925 (no first use of CBW) and the Biological Weapons Convention of 1972 (prohibiting development and possession of BW), contains verification measures.

The BWC has been challenged from its start by suspicions, intensified by the advent of genetic engineering. The Parties to the Convention have never felt confident of compliance. The essential failure of the annual information exchange, adopted as a politically-binding confidence-building measure in 1986 as the Cold War was ending, eventually made it necessary to seek legally-binding evidence of compliance. Encouraged by the positive feasibility report issued in 1993 by a group of Verification Experts (VEREX) from the States Parties, the Parties embarked on the negotiation of a legally-binding Protocol to strengthen the BWC. Now in their sixth year, the negotiations have reached the endgame, with only the most important and controversial issues awaiting solution:

- the criteria for annual declaration of certain facilities and programs;
- the question of random transparency visits to confirm the accuracy of declarations;
- on-site measures for clarifying ambiguities or uncertainties concerning declarations; and
- the requirements for launching a challenge investigation.

But in the last several years progress has slowed almost to a halt. The negotiations have passed several tentative deadlines and are approaching the latest target date: the BWC review conference to be held in late 2001. Many States Parties consider the next year to be the last chance to muster the necessary political will to strengthen the Convention.

Prolonged lack of leadership and unilateral demands by the United States have inspired despair among our allies in Geneva. Elements in the present Administration are even seeking to dissolve the Protocol negotiations next year. The inability of the West to form a solid front is a primary reason why the regime likely to emerge from the negotiations, if any *does* emerge, will be considerably weaker than it could have been otherwise.

***Failure of the Protocol negotiations could lead to the perception that the BWC is a failed treaty which ... can be violated with impunity. The international norm would be in mortal danger.***

Failure of the Protocol negotiations could lead to the perception that the BWC is a failed treaty which, in the absence of international will to demand evidence of compliance, can be violated with impunity. The international norm would be in mortal danger.

The difficulty of verifying the BWC, where so much of the relevant materials and activities are dual-use, is not the problem. An effective, albeit imperfect, compliance regime can be constructed based on transparency rather than prohibitions. The goal of such a regime would be to dispel or raise suspicions, rather than to uncover smoking guns. Such suspicions could then be confirmed or not, using national means.

Nor can the problem be blamed on the need to protect confidential information. Multiple safeguards have been built into the Protocol. Relevant facilities are already subject to inspection under the Chemical Weapons Convention and other international regimes, some of which (eg, FDA and international analogs thereof) are considerably more intrusive than has ever been contemplated for the BWC Protocol. Only rarely would confidential information be relevant in a BWC compliance regime. The US bioindustry believes that many of its concerns could be handled in US Protocol-

implementing legislation rather than in the Protocol. The industry is dubious, however, about the willingness of the United States to take the appropriate steps.

In Geneva, the Protocol negotiators are now waiting for the next US Administration to determine the fate of their efforts. There is a good chance that the remaining issues can be at least largely resolved next year if the new Administration will give the necessary priority to the Protocol and if it will support its traditional allies—which have led in devising and testing the regime under development—rather than trying at this late moment to form new policies or divert the stream of opinion.

The past history of the negotiations has already determined that any regime that emerges will not be optimal. But even so, the adoption of a BWC Protocol will have enormous importance for shoring up the international norm, boosting confidence in compliance, enhancing deterrence, providing mechanisms for timely action to resolve questions, and providing the basis for

international action when necessary. The Protocol will also incorporate the norm into national structures and routines through national legislation and regulations, including criminalization (lacking in Japan when Aum Shinrikyo attacked in the Tokyo subway) and through the establishment of National Authorities that will interact continuously with the treaty organization to be established.

Perhaps most importantly of all, the Protocol has a unique dimension that has already been agreed and is in progress toward implementation: explicit measures requiring peaceful scientific cooperation for prevention of infectious diseases, with oversight on implementation. This could become the Protocol's greatest achievement. In addition to providing an incentive for adherence to the Protocol and enhancing global capability for recognizing and preventing the spread of emerging diseases like AIDS, the cooperative measures will also aid in the rapid recognition and control of the use or escape of BW.

### Government Secrecy

## FAS Raises Questions in Wen Ho Lee Case

By Steven Aftergood

The prosecution of Los Alamos scientist Wen Ho Lee on charges of mishandling classified information cast a harsh spotlight on government secrecy and security policies, dramatically illustrating many of the defects of those policies. After the prosecution concluded with a plea agreement on September 13, even President Clinton stated that he was "troubled" by the conduct of the case.

The Project on Government Secrecy has been working to elucidate some of the many questions raised by the Lee case and to suggest some tentative answers.

Did Wen Ho Lee improperly download the "crown jewels" of the U.S. nuclear weapons program, as some government witnesses said? Or was most of this material already in the public domain and of no national security consequence, as other experts argued? Why weren't the files marked as classified when they were downloaded by Wen Ho Lee? If they were in fact the "crown jewels," why were they only classified at the Confidential or Secret Restricted Data level, rather than at the highest, Top Secret level? Exactly what is a nuclear secret anyway?

Furthermore, how does one account for the widely disparate treatment of Wen Ho Lee and former Director of Central Intelligence John Deutch, despite their

seemingly similar computer security violations? How is it possible that polygraph examiners at the Department of Energy found that Lee passed a polygraph test with flying colors and polygraph examiners at the FBI found that he failed the very same test? And, by the way, whatever happened to "innocent until proven guilty?"

FAS, which last summer urged the court to release Dr. Lee on bail, provided unique public access to the

*[It] seems increasingly clear that the security system today is less effective at catching spies and more effective at impeding the business of government.*

most important files from the Wen Ho Lee case, from the original indictment to the Declarations of former Los Alamos Director Harold Agnew and other defense witnesses, as well as the key court orders, all of which were published on the FAS web site. (See: <http://www.fas.org/irp/ops/ci/index.html#whl>.) We also provided critical commentary on the case on all of the broadcast TV networks and many other media outlets.

*continued on next page ...*

## Wen Ho Lee

*continued from p. 13*

With the recent suspension of Ambassador Martin Indyk's security clearance in the midst of sensitive Mideast peace negotiations, it seems increasingly clear that the security system today is less effective at catching spies and more effective at impeding the business of government.

This is particularly true at the national laboratories, according to a recent report prepared by former Senator Howard Baker and former Congressman Lee

Hamilton, who wrote: "The current negative climate is incompatible with the performance of good science. A perfect security system at a national laboratory is of no use if the laboratory can no longer generate the cutting-edge technology that needs to be protected from improper disclosure." (This report, which was published on the Web exclusively by FAS, is available at <http://www.fas.org/sgp/library/bakerham.html>.)

In testimony before a House Commerce Subcommittee, FAS urged that the security apparatus be returned to a subordinate position in which it serves, but does not dominate, the national interest.

### Arms Sales Monitoring

## ASMP Strives to Minimize Damages from Ill-Advised Export Reform

*By Tamar Gabelnick*

The Arms Sales Monitoring Project (ASMP) has been closely following the Clinton administration's Defense Trade Security Initiative (DTSI), a package of 17 ill-advised changes to U.S. arms export regulations approved last May (see the July/August 2000 *Public Interest Report*). With help from allies in Congress, the ASMP is working to limit damage stemming from the implementation of the DTSI package.

The most troublesome DTSI reform is a plan to drop the export licensing requirement for unclassified arms transfers to close allies, a supposed incentive to improve their somewhat lax export controls. License-free transfers to a specific country would be granted only after that state agreed to lift its controls in areas like re-transfers, brokering, and technology transfers to the level of U.S. standards. But in the rush to complete license exemption agreements with the UK and Australia before the administration leaves, the resulting accords might not be as serious as originally pledged.

An agreement with the UK poses particular problems because of a recent move by European Union states to weaken internal controls on arms transfers. In July 2000, 6 EU states agreed to a "Framework Agreement" on defense cooperation that would facilitate the movement of arms and technology among those states, as well as lower barriers on exports of jointly-produced weapons. In reaction, the ASMP drafted a sign-on letter to Jacques Gansler, Under Secretary of Defense for Acquisition and Technology, and Eric Newsom, Assistant Secretary of State for Political Military Affairs expressing our concerns about the lack of an impact the DTSI "carrot" was having on EU

states' behavior. We were granted a meeting with both offices, to be held in mid-October, to discuss those concerns and to get an update on the negotiations.

In the meantime, the ASMP has been working with members of Congress who were also concerned about the proliferation risks of the DTSI reforms. With support from ASMP staff, the House International Relations Committee attached language to the Security Assistance Act that sets firm standards on the content of any bilateral agreement on license-free exports. The bill, now awaiting the President's signature, also specifies that any agreement on license exemptions must be legally binding, as political commitments to improve export controls would be virtually meaningless. Further-

*continued on p16*

### ASMP News of Note

ASMP was successful in getting language in the Security Assistance Act that will improve transparency on U.S. arms exports by requiring that data on deliveries of commercial arms exports are included in the annual arms export report to Congress. Currently, only the licenses for commercial sales are listed. But since licenses are good for four years and are not always acted upon, data on licenses only is of limited value. This language will close a significant gap in the public's knowledge about U.S. arms deliveries.

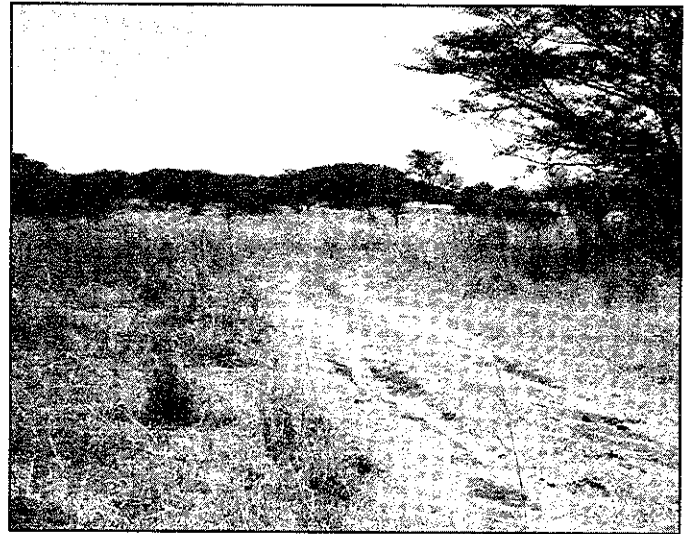
**Animal Diseases (AHEAD)**

## Animal Disease Surveillance Project: Recent Advances

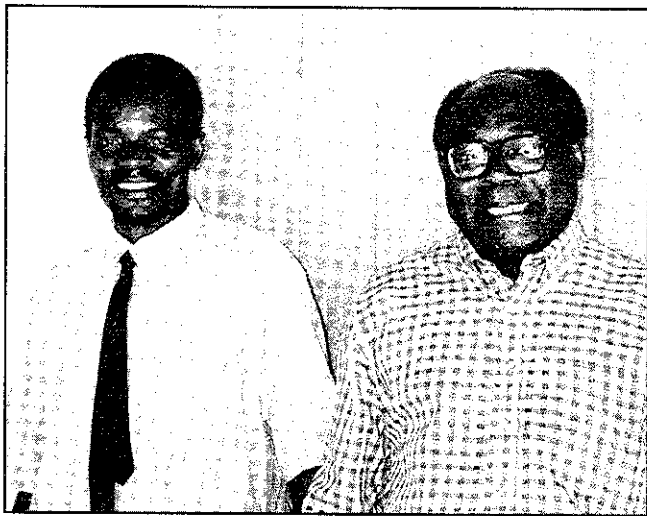
By Dorothy Preslar

The animal disease surveillance project is conducted through the AHEAD (Animal Health/Emerging Animal Diseases) policy research and analysis work, and its operational program known as ILIAD (International Lookout for Infectious Animal Disease).

A proposal for a 15-month test of the ILIAD surveillance concept in Tanzania's Western Corridor has just been accepted in principle by the Ministry of Agriculture and Cooperatives in Dar es salaam. Details will now be worked out, in cooperation with a bilateral animal health project of the UK Department for International Development, with several levels of wildlife and livestock disease agencies of government ≤ from the national livestock development authority down to district veterinary officers and community-based animal health workers ≤ and with several non-governmental organizations. The Tanzania discussions began when, early this year, extensive collaboration with South



The "Interface:" where tire tracks fade and low hills screen the savannah of the unfenced Serengeti Park, wild and domestic animals share pasture and exchange disease.



Dr. Phillip Mtiiba, Bariadi District Veterinary Officer (left), and Dr. Charles Nyamrunda, Shinyanga Regional Livestock Adviser, introduced AHEAD/ILIAD to animal health problems in Tanzania's Western Corridor.

African partners fell victim to an unanticipated reorganization of several governmental institutions. However, the project's association with the wildlife components of the work — the Serengeti National Park and Tanzania Wildlife Research Institute — date from early 1998.

ILIAD-Tanzania, as the program would be known, features an innovative introduction of appropriate "developed country" technology into the interface between wildlife preserves and remote rural villages of

Meatu/Bariadi districts in the Shinyanga Region. The locus — a swath of territory approximately 160 km long and 40 km wide along the southern boundaries of the Serengeti National Park and Maswa Game Reserve — is home to pastoralists and agro-pastoralists whose indigenous knowledge of animal health is an excellent base on which to build, but whose histories of antagonism toward wildlife operations is legendary. Our focus on diseases transmitted between wild and domestic animal life, some of which are zoonoses, e.g. rabies, trypanosomiasis (sleeping sickness), Rift Valley fever and tuberculosis, has the potential to ameliorate these tensions through developing data that is sure to demonstrate disease transmittal from both sides of the interface. It also enables a timely test of the "bottom-up" approach to animal disease surveillance that will have to be developed as a result of the decentralization of Tanzania veterinary services. And it could detect the emergence of new diseases from wildlife reservoirs.

Other project activities include substantial assistance to media covering recent outbreaks of West Nile virus and anthrax in the U.S., and increasing interest in the threat of infectious diseases to international security and trade. In November, Preslar will participate in a forum convened by the Cornell University Department of Peace Studies, presenting a paper on the role of animal disease surveillance in assessing the potential threat of agro-terrorism.



## ASMP Fights Ill-Advised Reforms

*continued from p. 14*

more, any agreement would also have to meet the approval of the Attorney General to ensure enough information on exports be collected to uphold arms export laws. Finally, the law mandates that the regular congressional notification process on arms transfers still be followed for license-free exports. The conference

language warns that if the spirit of the law is not abided by, Congress could take away the executive branch's legal authority to exempt states from licensing requirements.

**For more info on the DTSI, see**  
<http://www.fas.org/asmp/campaigns/control.html>

### Nuclear Policy

## Breakthrough for Anti NMD-ers

*By John E. Pike*

**I**n a surprise move, on 01 September 2000 President Clinton announced that he would leave the decision on deploying a national missile defense system to the next president. An affirmative decision by Clinton could have led to the system becoming operational by the year 2005, though the President's decision has now delayed the operational date to the 2006 to 2007 timeframe.

A number of factors surely influenced this decision, not least of which was the modest progress in the test program. With only three of nineteen planned tests completed, and two of those three failures, it was difficult to view the program as so "technically sweet" as to overwhelm other considerations.

Ultimately, the decision was one of both policy and politics, and by early Fall it must have been clear to the Clinton/Gore political operation that the politics of missile defense would play essentially no role in the

November election. The summer campaign warmup demonstrated that Bush would criticize Gore on missile defense regardless of what Clinton decided. And at some point both the Gore and Bush campaigns evidently concluded that the election would not be decided on this issue — one way or the other — in the face of massive public indifference to missile defense.

Once again, as with the original Reagan Strategic Defense Initiative, the decision lies with "a future Congress and a future President." On the eve of the election it appeared that President Gore would continue with the Clinton/Gore plan, and that President Bush would embark upon a somewhat more robust course.

Curiously, today we are no closer to actually deploying an anti-missile system than in 1983, when the Gipper announced his five-year \$26 billion SDI. Now, 17 years and perhaps \$75 billion later, missile defense remains a shimmering mirage, beckoning five years hence.

**FAS PUBLIC INTEREST REPORT** (202) 546-3300  
 307 Mass. Ave., N.E., Washington, D.C. 20002; [fas@fas.org](mailto:fas@fas.org)  
**Return Postage Guaranteed**  
 September/ October 2000, Volume 53, No. 5

**Periodicals  
 Paid at  
 Washington, D.C.**