SCIENCE & DIPLOMACY

A quarterly publication from the AAAS Center for Science Diplomacy

Richard G. Lugar, “Nunn-Lugar: Science Cooperation Essential for Nonproliferation Efforts,” *Science & Diplomacy*, Vol. 1, No. 1 (March 2012). http://www.sciencediplomacy.org/perspective/2012/nunn-lugar.



# Nunn-Lugar: Science Cooperation Essential for Nonproliferation Efforts

*Richard G. Lugar*

DECEMBER 2011 marked the twentieth anniversary of the Nunn-Lugar Cooperative Threat Reduction program, our nation’s most successful and most comprehensive effort to counter the spread of weapons of mass destruction. Nunn-Lugar has deactivated more than 7,600 strategic nuclear warheads in the former Soviet Union—a number larger than the arsenals of France, Britain, and China combined. It has destroyed more than 2,300 nuclear-capable missiles and nearly 700 missile launchers. In addition, through Nunn-Lugar, approximately 820,000 rounds of chemical munitions have been destroyed and more than 2,247 metric tons of chemical weapons have been neutralized.

While these successes, and others associated with the Nunn-Lugar program, have made the world safer, we have far to go to eliminate the dangers posed by weapons of mass destruction. This is in part because WMD proliferation and the diffusion of scientific knowledge are inextricably linked. Work in scientific laboratories in the late nineteenth and early twentieth centuries led during World War I to the first widespread, systematic use of poison gas. Research into the structure of matter and the nature of the atom led to the atomic and hydrogen bombs. The rocket technology that launches communications satellites and astronauts can also deliver nuclear warheads. Advances in life sciences technologies and biochemical engineering can enable the development of biological weapons.

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Back in 1991, when the Soviet Union dissolved, Senator Sam Nunn (D-Ga.), then chairman of the Senate Armed Services Committee, and I, along with a bipartisan group of legislators and advisers, saw the new and dangerous threat posed by the potential proliferation of weapons, materials, and knowledge from Russia and the other former Soviet republics. This proliferation threat resided not just in the military, but also in the scientific establishment. The Soviets had built upon scientific traditions from nineteenth century Russia, particularly in the areas of virology and pathology, to construct the deadliest state-run biological weapons program in history.

In addition to the vast stockpiles of physical equipment and material—nuclear weapons, fissile material, chemical munitions, etc.—that could fall into the wrong hands, we recognized the equally grave danger from the possibility that this knowledge could proliferate. Political collapse and economic hardship left the material, the technology, and the scientific know-how vulnerable to diversion or sale. A vast cadre of scientists and engineers who had spent much of their careers supporting the Soviet weapons program faced the prospect of not being paid. One of the founding principles of the Nunn-Lugar program was that scientific engagement would create a powerful disincentive to proliferate the knowledge that these men and women possessed.

In the years since, many of the scientists who have worked with their American counterparts through Nunn-Lugar or the International Science and Technology Center (ISTC) in Moscow have become colleagues and friends. Strategic competition has been replaced by scientific cooperation. Global engagement with a dedicated scientific community has become essential to minimizing the threats from weapons of mass destruction.

The ISTC, an intergovernmental organization founded by the European Union, Japan, Russia, and the United States in 1992, has served as "a bulwark against proliferation of weapons know-how and technology," in the words of David Hoffman, author of the Pulitzer Prize-winning *The Dead Hand*. Direct funding of science cooperation through the ISTC has been vital to offering weapons scientists constructive, peaceful ways to employ their knowledge. The ISTC undertook projects that resulted in the peaceful employment of more than 73,000 scientists in such areas as disposal of weapons-grade plutonium, chemical weapons destruction, and nuclear material control and accounting.

It has also cooperated with more than seventy U.S. private companies, laboratories, and government agencies, including the National Nuclear Security Administration and the Defense Threat Reduction Agency. It has been a primary channel for efforts under the G-8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction. In addition to its "brain drain" rationale, the ISTC has also provided a means for added transparency and greater cooperative engagement on a wide range of WMD issues. As the ISTC works its way through its current transition, I am hopeful that many of these functions will be maintained.

International scientific cooperation and diplomacy can also advance U.S. national interests in areas far afield from weapons of mass destruction. That's why I introduced legislation in May 2009 to establish a cadre of world-class U.S. researchers to travel throughout the globe and interact not only with their scientific peers, but also with foreign publics. In November of that year, a Science Envoy program was established and is now run by the State Department. So far, six distinguished American researchers have been named: Ahmed Zewail, Nobel laureate in Chemistry and the Linus Pauling Chair of Chemistry and professor of physics at the California Institute of Technology; Bruce Alberts, former president of the National Academy of Sciences, current editor-in-chief of Science, and University of California at San Francisco biochemistry professor; Elias Zerhouni, former director of the National Institutes of Health, senior fellow at the Bill and Melinda Gates Foundation, and Johns Hopkins School of Medicine Professor of Radiology; Rita Colwell, Distinguished University Professor both at the University of Maryland at College Park and at Johns Hopkins University's Bloomberg School of Public Health; Alice P. Gast, president of Lehigh University; and Gebisa Ejeta, Distinguished Professor of Plant Breeding & Genetics and International Agriculture at Purdue University.

In the coming decades, the effectiveness of our response to most of the world's problems, including maintaining energy supplies, sustaining abundant food production, dealing with water scarcity, combating virulent diseases, responding to environmental disasters, as well as containing proliferation of weapons of mass destruction, will depend on the investments that we have made in global knowledge, scientific relationships, and communications.

We also must be alert to new WMD threats, and new sources of dangerous material that may exist in laboratories around the world. In my view, one of the most underrated dangers is the risk of biological weapons. One area of particular concern is Africa, where numerous deadly viruses exist in nature, such as Ebola and Marburg. They are easier to handle than nuclear material and harder to detect. Al Qaeda has made no secret of its desire to use biological weapons, and Africa contains many poorly governed spaces where terrorists hide and thrive.

Deadly agents can be crudely weaponized through dispersal in an air-conditioning system or contamination at a salad bar. Self-infected suicidal bioterrorists could travel anywhere in the world in just days. Even the simple act of creating random outbreaks of deadly diseases could produce terror and chaos. During the Cold War, the Soviet Union obtained from Africa the original samples of viruses and bacteria for its vast bio-weapons program.

That's why the Nunn-Lugar program is now paying special attention to potential threats from Africa, along with the former Soviet states and South Asia. To improve America's bio-defense preparedness, we must stop pathogen spread before it reaches our shores. A potential source of pathogens that could be used in a bioterror attack are the hundreds of poorly-secured laboratories in Africa and elsewhere around the world where deadly disease agents are collected, stored and studied. These facilities, especially in developing countries, often lack sufficient safeguards to prevent break-ins and theft by terrorists, or smuggling by insiders.

In 2010, I led a mission to Africa to assess the threat and found glaring security problems at several research installations. In Nairobi, Kenya, for instance, we inspected a public health disease laboratory located next to a known recruitment ground for Al Shabaab, the Somalia-based terrorist group affiliated with Al Qaeda. The laboratory compound was easily accessible, and, inside a building, bacteria and virus samples were stored in refrigerators with simple locks. There was no system to monitor what went in or out of the refrigerators, meaning that deadly samples could have been smuggled out without detection.

This is clearly an area where Nunn-Lugar's biological expertise can help protect Americans at home and our service personnel overseas. In Africa, as well as in South and Central Asia, the program is helping to secure vulnerable facilities, promote cooperative research and transparency in the handling of dangerous pathogens, and build an early warning system that will enable us to detect and diagnose infections quickly.

Proliferation of weapons of mass destruction remains the number one national security threat facing the United States and the international community. I have never considered Nunn-Lugar to be merely a program, or a funding source, or a set of agreements. Rather it is an engine of nonproliferation cooperation and expertise that can be applied around the world. In this way, international scientific collaboration can make a significant contribution to making the world safer for our children and grandchildren. SD