

Book Review

***The Soviet Biological Weapons Program* by Milton Leitenberg, Raymond A. Zilinskas, and Jens H. Kuhn (Cambridge, Massachusetts: Harvard University Press, 2012) 921 pages.**

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The authors of *The Soviet Biological Weapons Program: A History*, have written an important work that should be in the library of anyone with even a passing interest in biological warfare, arms control, or the management of science in support of national security. It provides a rich account of Soviet efforts to use biology as an instrument of warfare, including discussions of related scientific, bureaucratic, and diplomatic issues. It draws on the authors' deep understanding of biological warfare, their use of Russian language sources unexploited by others, and on numerous interviews with people once associated with the program, mostly bench scientists and their managers. Harvard University Press should be commended for taking a risk on producing a tome of such size and depth.

In this book, Leitenberg, Zilinskas, and Kuhn undertook the daunting, perhaps impossible task, of describing the more than 60-year effort by the Soviet Union to develop biological weapons. The magnitude of their ambition is best appreciated by understanding the complexity of what they attempt. In addition to discussing the many biological agents that the Soviets sought to develop and field, the authors try to make sense of highly complex bureaucratic structures and processes, putting the biological weapons program within the larger context of Communist Party politics and Soviet decision making. This led them to look at the program from the perspective of both science policy and military strategy with an added appreciation of scientific and bureaucratic cultures, military operations and strategy, and the personalities of key people who shaped and served within this system.

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The book's first half, written primarily by Zilinskas, focuses on the history of the program from its origins in the 1920s until the end of the Cold War. In addition to outlining the evolution of the program, the book provides detailed accounts of the activities of its most important component organizations and a description of Soviet open air testing of biological agents. Thus, we find that some enterprising Soviet biologists, eager to reinvigorate a field devastated by the politicization of science under Stalin, sought to use military interest in biological weapons as a lever to obtain funding at a time when the West was making revolutionary advances.

This material is essential reading for anyone interested in the complexities of developing biological agents for use in weapons. Microorganisms are less tractable than atoms, and as a result the scientific challenges associated with weaponizing biology to cause mass death are in many ways far greater than those facing the developer of a nuclear weapon. Even today, despite our growing understanding of biological processes, much about how pathogens cause disease remains a mystery. What is more, living organisms often unexpectedly gain or lose some function, a characteristic not desired by the weaponeer who needs nothing if not predictability. As the authors show us, there is no such thing as a generic pathogen, and each species of pathogen comes in a multitude of varieties. Selecting amongst those available, nurturing them to gain desired characteristics or lose those not wanted, and ensuring the stability of desired organism when it is cultured in ton quantities all require scientific skill that the Soviets lacked at the end of the 1960s.

The second half of the book, written mostly by Leitenberg, covers a wider range of subjects relevant to the topic, each chapter focusing on a different issue. Thus, there are discussions of Soviet allegations of Western biological weapons use (essentially all fabricated), Western intelligence on the Soviet biological weapons program, and a review of the 1979 Sverdlovsk incident. Particularly important, however, are the chapters that delve into biological arms control.

From 1975, the Soviet biological weapons program operated in violation of the Biological and Toxin Weapons Convention, which requires states parties not to develop or acquire biological agents for use as weapons of war. Nonetheless, the Soviet Union continued its pursuit of ever more effective biological armaments, possibly constituting the most serious arms control failure of the Cold War era. How this came to happen, and how the outside world addressed these violations, is the focus of several chapters (including one that looks at Soviet activities in the chemical arena by way of comparison). This discussion is essential reading for anyone with even a passing interest in arms control. The book also provides some useful primers on open air testing of biological agents and on the difficult task of differentiating between offensive and defensive biological warfare research.

The book's title, however, is more than a little misleading, because this book is neither a comprehensive nor definitive account of Soviet programs to develop biological weapons capabilities. Nor do the authors purport that it is. While it is the most comprehensive, detailed single account yet written, or that is likely to appear for quite some time, the omissions are significant. They result mostly from the secrecy that Russia continues to impose on what was once the world's largest and most sophisticated biological weapons program.

There is nothing, for example, on the activities of the laboratories supporting the intelligence services, presumably mainly intended to develop tools for assassination and covert operations, or on the efforts organized by the Ministry of Agriculture, probably focused on attacking crops and livestock and defending against such assaults. Frustratingly, the authors have identified a number of code names for certain programs, but could find out nothing about them. It is possible that those programs came to nothing, but unfortunately we do not know what we do not know. Even when information is available, it is sometimes sketchy and inadequate. Hence, there are considerable gaps in what is known about activities in the decades immediately after the end of the Second World War.

Ironically, one of the biggest knowledge gaps relates to the weapons, the purported topic of the book. We know almost nothing about how the Soviets intended to disseminate their biological agents, their concepts for use, or the military and strategic roles assigned to biological weapons. The authors are able to describe only two weapons, an explosive bomblet, apparently based on a U.S. Army system developed in the late 1950s, and an aircraft sprayer. It is hard to believe that a program as massive as this one had such limited military capabilities. Moreover, the United States is known to have developed more effective bomblets, albeit not ones put into service, and it seems hard to believe that the Soviets would not have adopted something better. In contrast, the book does a better job of explaining what the Soviets did not do. Contrary to what others have claimed, the authors contend that the Soviets never put into service a biological warhead for an intercontinental ballistic missile. Similarly, they argue that the Soviets only began development of a cruise missile for delivery of biological agents in the waning years of the Cold War.

While specialists will have an obvious attraction for this book, others would do well to peruse at least parts of it. Those with only a cursory interest in biological weapons would benefit from reading the conclusions and the chapter on distinguishing offensive from defensive biological warfare activity. Arms control specialists should review the three chapters that focus on that topic. Those interested in science policy should study the second chapter, which describes the origins of what the author's call the "modern" Soviet biological weapons program. In summary, Leitenberg, Zilinskas, and Kuhn have written one of the most important books on biological warfare ever published, and one of the best historical accounts of a biological weapons program.