

The Scientist 14[8]:18, Apr. 17, 2000

Previous

Issue Content

Next


BioMed Scientist
 JOBS

www.biomedscientistjobs.com

NEWS

Ken Alibek: For the Biodefense

The man who ran the Soviet biological weapons development program now combats germs of war

By Tom Hollon



Ken Alibek

People who make biological weapons live with the risk that they will die by them. Ken Alibek found that out in a visceral way one Sunday evening in 1983 when a phone call to his home informed him that the tularemia plant he directed had a problem. When he arrived at the plant, Alibek went to inspect a room suspected of being contaminated by a leak from Zone 3, the interior area reserved for culture of tularemia bacteria. Entering alone and turning on the lights, he found himself standing in a puddle of *Francisella tularensis*.

Tularemia is a plaguelike disease transmitted by bites from fleas, ticks, and flies. First described in the county of Tulare, in California, its potential as a weapon was recognized before World War II. America, Great Britain, and Canada once had tularemia battlefield weapons. Alibek was one of the few who knew Russia killed 100,000 Nazis with it at the Battle of Stalingrad. Now he had to clean up enough tularemia bacteria to infect the entire Soviet Union.

By sloshing huge quantities of disinfectants across the floor,

he and some hastily enlisted assistants managed to decontaminate the room, but the next day he felt the chills and fever that mark the onset of tularemia; the protective clothing he'd worn hadn't been designed for exposure to that much bacteria. Because he was a military physician, it wasn't hard to have an antibiotic, tetracycline, delivered to his home, where he took a triple dose. A week later, he was back at work.

Few have as comprehensive an understanding of biological weapons as Alibek. In fact, the course of his Soviet military career--hands-on weapons work with tularemia, brucellosis, glanders, plague, and anthrax, as well as directing viral research for smallpox, Marburg, and Ebola weapons--arguably has given him the world's finest education in the biotechnology of mass destruction.

From his third-floor office in Alexandria, Va., all that now looks very far away. Certainly, it is physically: He moved his wife and three children from Moscow to the United States eight years ago. His name, Americanized from Kanatjan Alibekov, symbolizes the redirection of his work from biowarfare to biodefense. Today, at 50, he conducts biodefense research at Hadron Inc., where he is chief scientist.

His workplace has only a few reminders of the old days, mainly some medical textbooks with Russian titles. More revealing are the abstracts from Medline searches taped up around his desk. They signal both his business at hand and his adaptation to what some think of as *the* American scientific ritual: He is writing a grant.

"Novel approaches to treat anthrax" proposes research aimed at finding new ways to use antibiotics to treat anthrax. He points out that they are only effective against anthrax spores if used immediately after infection. "Even a slight delay," he notes, "can give a 90-95 percent mortality rate." Alibek hopes to find antibiotics effective for a longer period of time after infection.

His research proposal is within the scope of his larger interests, which center on understanding the earliest stages of pulmonary infection by germs of war. Here, he believes, research might help more civilians survive biological warfare. Understanding lung invasion is important because sophisticated biological weapons release microorganisms in aerosols, so infections are nearly always pulmonary.

When a warfare microbe is breathed in, it doesn't go immediately into the bloodstream, he says. For a while--"from an hour to several days," depending on the organism--it remains in the lung alveoli. There, he thinks, it ought to be a good target for elimination by pulmonary macrophages, monocytes, and neutrophils.

Since bioweapon microorganisms are in low concentration after release into the air, and because disease is a matter of how many enter the bloodstream, boosting nonspecific cellular immunity might help people ward off attacks. The idea isn't a panacea--it wouldn't work against viruses, he says, such as smallpox, or the hemorrhagic filoviruses, Marburg and Ebola. It's true as well that there might be undesirable side effects, but Alibek thinks enhancement of nonspecific immunity is worth exploring as an alternative to vaccine development. He believes there are too many different threats for vaccine development to be practical and affordable.

As research, "It's doable," comments **C.J. Peters**, head of the Special Pathogens Branch of the Centers for Disease Control and Prevention in Atlanta, "but it's not something we know is going to work." It's an opinion that Alibek is used to; he knows it takes a lot of selling to fund this kind of research, especially when vaccine development, whatever its problems, is conceptually more straightforward. In any case,

he is much more comfortable doing defense research than he was making weapons of mass destruction.

Alibek's crossover from biowarfare to biodefense was an odyssey spanning 17 years. Why he made biological weapons at all, he says, "is very difficult for many people in the United States to understand. For me, the Soviet Union was my country. I loved my country. But I was born under Soviet propaganda that the United States had a strong desire to destroy the Soviet Union."

He was assigned to work on bioweapons not long after he received his M.D. in 1975. Pride in defending his country and the good life he could give his family led him to submerge the conflict he felt as a physician pledged not to cause harm. And then too there was the fascination of the science. Making a sophisticated biological weapon is an elaborate industrial process, requiring solution of hundreds of problems concerning pathogen growth, concentration, stability, packaging, delivery, and dispersal. He showed an aptitude for the work and rose quickly, eventually becoming first deputy director of Biopreparat, the pharmaceutical company the Soviets used as a cover for bioweapon development. Alibek helped run a mammoth operation, employing thousands of people and investigating dozens of pathogens as potential weapons.

But in the 1980s, **Mikhail Gorbachev's** policy of *perestroika*, or rapprochement with the West, brought back Alibek's doubts. Alibek came to believe that the United States and Great Britain were no longer enemies. When he said so openly--and worse, when he advocated negotiated reductions of American and Soviet bioweapon stockpiles--he was painted as a peacenik. His misgivings deepened when he visited America in 1991 as part of a Soviet delegation inspecting U.S. biodefense facilities. The trip convinced him of what he had never believed before, that President **Richard Nixon's** 1969 executive order to dismantle American biological weapons had actually been carried out.

"It's not really clear I defected," he muses. That's because he wasn't a citizen of the country he left. When the Soviet Union dissolved in 1991, Kazakhstan, where he was born, became an independent country, and overnight he went from Soviet citizen to foreigner living in Moscow. Around that same time, he followed his convictions and resigned from Biopreparat, intending to become a businessman in the oil industry. Leaving, however, wasn't easy for a man whose head held so many secrets. He was made so uncomfortable by police surveillance that he knew he had to leave Russia fast or face arrest.

How he and his family escaped is the only secret he claims not to have revealed in his book of memoirs, *Biohazard*, published last year by Random House. Whether he defected or not, it is clear that he was a prize intelligence catch for the United States. An earlier defector had revealed the existence of the Soviet biowarfare industry, but not until Alibek's arrival did U.S. officials understand its full scope.

His revelation about smallpox is a case in point. After smallpox was eliminated worldwide, says Peters, "It meant one thing downstream--that people were not going to be vaccinated against smallpox. As soon as a weapon became a wide open opportunity, they seized it." His debriefers, who thought smallpox was just a research project, were shocked to learn the Russians produced smallpox by the ton. The news resuscitated the Army's moribund virus defense program, which had been shut down because of lack of evidence of a threat.

Alibek's debriefing took more than a year. After that, he became a visiting scientist at the National Institutes of Health, where he studied mycobacteria. There followed two positions as a biodefense consultant before he received an offer last year from Hadron to build a biotechnology business from

scratch, only part of which concerns biodefense.

And last year, he made the final break from his former life by becoming an American citizen. He says his friends noticed a difference in him immediately. "Before this, you were a Russian with a thick Russian accent and not very perfect English," they told him. "But now, you are an American with perfect Russian."

Tom Hollon (thollon@starpower.net) is a freelance writer in Rockville, Md.

The Scientist 14[8]:18, Apr. 17, 2000

[Previous](#) [Issue Content](#) [Next](#)

© Copyright 2000, *The Scientist*, Inc. All rights reserved.

We welcome your opinion. If you would like to comment on this article, please write us at editorial@the-scientist.com

[News](#) | [Opinions & Letters](#) | [Research](#) | [Hot Papers](#) | [LabConsumer](#) | [Profession](#)
[About *The Scientist*](#) | [Jobs](#) | [Classified](#) | [Web Registration](#) | [Print Subscriptions](#) | [Advertiser Information](#)