

Introduction

As the threat of chemical and biological (CB) weapons grows ever more ominous for the United States and its allies, the Edgewood Chemical Biological Center's (ECBC's) contributions to the defense of our national interests becomes ever more crucial. ECBC, located at the Edgewood Area of Aberdeen Proving Ground (APG), MD, focuses its work around core competencies in biology and chemistry and plays a unique role among all other research and development (R&D) groups within the Army. Designated as the lead DOD laboratory for nonmedical chemical and biological defense research, ECBC provides integrated CB defense solutions to the Army, the joint Services, civilian first responders, intelligence agencies, and the international CB defense community.

Products for the warfighter remain the top priority for ECBC. With 85 years of experience and its capability to work with actual chemical and biological agents for defense purposes, ECBC is especially able to deliver effective and reliable warfighter products that identify CB agents and protect personnel and equipment from such threats. The organization has long partnered with other Army and joint Service groups to ensure that CB protection and detection measures are incorporated into the early designs of warfighting systems. The Army Materiel Command's new Research, Development and Engineering Command (RDECOM) will facilitate these relationships and encourage integrated capabilities, dual use, and interoperability.

Detection Equipment

ECBC is well known for its contributions to CB agent detection equipment such as the Joint Biological Point Detection System (JBPDS), which is currently in its third generation in 10 years. Each new version has been smaller, lighter, more durable, and more capable—in a word, better. ECBC is now hard at

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work on the fourth generation of this biotechnology application. From 1996 to 1999, as part of an Army advanced technology demonstration program, ECBC developed a Biological Attack Warning System (BAWS) that became the first successful real-time, lightweight biological alarm system, ultimately earning ECBC the U.S. Army R&D Achievement Award in 2000. By May 2000, the latest evolution of the BAWS was fully integrated into the JBPDS, and by September 2001 it was transitioned to industry and incorporated into the first production JBPDSs.

In response to heightened security following September 11, 2001, ECBC engineers adapted the JBPDS technology suite for use in standard commercial trailers, which were inconspicuously deployed on a very rapid timetable to monitor for biological agents at multiple sensitive locations. These systems have performed around-the-clock aerosol monitoring in the national capital region for more than a year. ECBC provided technical reachback for the response to the anthrax threat, and ECBC personnel also supported monitoring and security operations at the 2002 Winter Olympics in Salt Lake City, UT.

Warfighter Protection Equipment

ECBC is universally recognized for its work in respiratory protection for the warfighter. ECBC continues to lead in technology base activities in design, material, filtration, and test

technology to support both fielded and developmental mask systems. Recently, ECBC design and technology development supported full-scale development transition of the Joint Service General Purpose Mask (JSGPM) Program. The JSGPM satisfies all joint Service chemical/biological mask field and combat vehicle applications for the next-generation soldier and is significantly influencing future civilian respiratory protection systems. In addition, performance and test criteria developed at ECBC have been used to create national standards for the National Institutes of Occupational Safety and Health and the National Institute of Standards and Technology for evaluation of first responder equipment.

Decontamination, important for returning equipment and territory to usability following an attack, is another focus of ECBC work. The Advanced Catalytic Enzyme System is a nontoxic, noncorrosive, nonflammable, lightweight, environmentally safe enzyme-based decontamination system for chemical and biological threat agents. Decon Green, another new ECBC product, is a simple solution composed of common high-volume commercial chemicals that affords broad-spectrum decontamination of CB warfare agents. Both new technologies reduce the logistical burden and can be transitioned to civilian production and use.

ECBC also provides life-cycle development of survivability-increasing obscurants and nonlethal

weapons exclusively for the Army. The goal of the Smoke and Target Defeat Technology Area is to develop and improve smoke and obscurant, nonlethal, and incendiary technologies that provide effective, affordable, and efficient crowd control; screening of deployed forces from threat force surveillance sensors; and effective defeat of target acquisition devices, missile guidance, and directed energy weapons.

International Services

ECBC provides extensive cooperative and international services in the CB arena. Since the end of the 1973 Arab-Israeli War, when the sophistication of Soviet CB defense equipment was illustrated, ECBC has conducted an almost continuous series of evaluations of foreign nuclear, biological, and chemical (NBC) defense and obscurant equipment. ECBC has assembled a team of NBC defense equipment experts to work with the U.S. Central Command (CENTCOM) in a cooperative defense initiative (CDI) against weapons of mass destruction with the Ministries of Defense from a number of nations in the Middle East. The team tests, inspects, and reports the readiness condition of the participating nation's detection, protection, and decontamination equipment. CENTCOM and the CDI nations use this information to improve NBC defense postures.

Following Operation Desert Storm and continuing today, ECBC personnel directly support U.N. weapons inspections in Iraq by performing forensic sampling, assessment, and destruction of Iraq's weapons of mass destruction facilities and weapons. The CB Services



ECBC personnel conduct Bio Safety Hazard Level 3 work to further the U.S. Army's biological agent decontamination capabilities.

element of ECBC continues to provide training and expertise to the United Nations and other allies in the war on terrorism. ECBC also plays a significant role in characterizing and testing chemical and biological substances that the intelligence community identifies as potential CB agents. In addition, ECBC leverages its capabilities and experience through many international partnerships, forging valuable links within the small community of CB defense laboratories worldwide.

Homeland Security Initiatives

On the home front, ECBC was named in the 1996 Nunn-Lugar-Domenici Domestic Preparedness legislation to lead a nationwide training and testing program for first responders to improve readiness for handling incidents involving chemical, biological, and radiological weapons of mass destruction. More than 27,000 first responders in approximately 100 of the Nation's largest cities received training from ECBC personnel. Today, ECBC con-

tinues to support homeland security through a variety of avenues with other branches of military, government agencies, and private entities.

Conclusion

ECBC, with its unique capabilities and critical mission, plays a broad yet specific role within RDECOM, the Army, and the joint Services. Armed with nearly a century of hands-on CB defense expertise, ECBC looks forward to ensuring even greater ground-floor integration of detection, protection, and decontamination technologies in warfighter products.

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