Chemical and Biological Defense
CBIAC Newsletter
Information Analysis Center
2006
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Volume 7 Number 2

EPA's Technology Testing and Evaluation Program Supports Homeland Security

The U.S. Environmental Protection Agency (EPA) is actively participating in the national homeland security effort by ensuring the protection of the nation's drinking water systems and the safety of the public in buildings and other structures. EPA's Office of Research and Development's National Homeland Security Research Center (NHSRC), headquartered in Cincinnati, Ohio, established the Technology Testing & Evaluation Program (TTEP) in the Fall of 2004 to assist this effort.

Building Protection

Water Security

> ***"The EPA has the responsibility to help protect the public from contaminated drinking water sources, and chemical or biological attack in workplaces or other buildings."***

The TTEP program is conducting third-party performance evaluations of commercially available homeland security technologies, incorporating stakeholder guidance and a high degree of quality assurance (QA) oversight. The users of information generated by TTEP are expected to include water utility operators, building and facility managers, emergency responders, health officials, regulators, the public, and the developers of homeland security technologies.

The technologies to be tested under TTEP represent two broad areas: water security and building protection. The ***water security technologies*** consist of detection devices, treatment methods for decontamination of drinking water systems, drinking water and wastewater treatment methods, as well as software for distribution system modeling/design and event detection. The ***building protection technologies*** include systems for indoor decontamination, detection and monitoring to guide decontamination efforts, air cleaning and filtration, and possibly for modeling air and contaminant movement in large buildings.

"The EPA has the responsibility to help protect the public from contaminated drinking water sources, and chemical or biological attack in workplaces or other buildings," said Eric Koglin of EPA/NHSRC. "That includes identifying methods and equipment for protecting water supplies, decontaminating buildings and indoor surfaces, and for detecting chemical and biological contaminants in water or in indoor environments," he said, "and to meet those goals, established the TTEP program."

TTEP's Mission

Technology plays a critical role in all aspects of NHSRC's mission, vision, values, and strategic plan. TTEP researchers test, evaluate, and report on the performance of homeland security related technologies that are designed to detect, contain, decontaminate, or manage chemical, biological, or radiological materials purposefully introduced into structures, drinking water, or the environment. After testing is complete, researchers evaluate the data and compile performance results into individual summary reports. These reports are available online at http://www.epa.gov/nhsrc/tte.htm.

TTEP's Approach

Evaluations involve rigorous testing of technologies against a wide range of performance characteristics, requirements, and specifications. All testing follows strict QA procedures described in a test plan. The testing process includes the use of live chemical and biological warfare agents. TTEP is an outgrowth of EPA's successful and internationally recognized Environmental Technology Verification (ETV) Program and often uses ETV test plans, modifying them to meet homeland security needs.† Examples of technologies being tested include:

†Additional information on the EPA's ETV Program is available online at http://www.epa.gov/etv/

Continued pg. 10

The **Chemical and Biological Defense Information Analysis Center (CBIAC)** is a Department of Defense (DoD)-sponsored Information Analysis Center (IAC) operated by Battelle Memorial Institute and supported by Horne Engineering Services, Inc., Innovative Emergency Management, Inc., MTS Technologies, Inc., QuickSilver Analytics, Inc., and SciTech, Inc., and administered by the Defense Technical Information Center (DTIC) under the DoD IAC Program Office (Contract No.SP0700-00-D-3180).

The CBIAC Contracting Officer's Technical Representative (COTR) may be contacted at the following address:

CDR USA RDECOM
Edgewood Chemical Biological Center
ATTN: AMSRD-ECB-RT (CBIAC COTR)
5183 Blackhawk Road
Aberdeen Proving Ground, MD 21010-5424

U.S. Government agencies and private industry under contract to the U.S. Government can contact the CBIAC for information products and services. CBIAC services also extend to all state and local governments and the first responder community, to include local emergency planners, firefighters, medics and law enforcement personnel.

Approved for Public Release; Unlimited Distribution

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The ***CBIAC Newsletter***, a quarterly publication of the CBIAC, is a public release, unlimited distribution forum for chemical and biological defense information. It is distributed in hardcopy format and posted in Portable Document Format (PDF) on the CBIAC Homepage.

The CBIAC welcomes unsolicited articles on topics that fall within its mission scope. All articles submitted for publication consideration must be cleared for public release prior to submission. The CBIAC reserves the right to reject or edit submissions. For each issue, articles must be received by the following dates: First Quarter (Number 1) – October 15th; Second Quarter (Number 2)– January 15th; Third Quarter (Number 3) – April 15th; Fourth Quarter (Number 4) – July 15th.

All paid advertisements and articles are subject to the review and approval of the CBIAC COTR prior to publication. The appearance of an advertisement or article in the ***CBIAC Newsletter*** does not constitute endorsement by the DoD or the CBIAC.

The CBIAC is located in building E3330, Room 150, Aberdeen Proving Ground-Edgewood Area, Maryland 21010. For further information or assistance, visit or contact the CBIAC.

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cbiac-kmd@battelle.org

http://www.cbiac.apgea.army.mil/

5th Army WMD Civil Support Teams Receive Training at ECBC

by Jennifer Gaskill, ECBC

Photo by Todd McKinney, ECBC

National Guard Weapons of Mass Destruction Civil Support Team executes one of the chemical and biological incident scenarios during their training.

This month U.S. Army Edgewood Chemical Biological Center (ECBC) is supporting the 5th Army in providing intensive training in chemical and biological incident management to four National Guard Weapons of Mass Destruction Civil Support Teams. The teams, who traveled here from Delaware, New Hampshire, Vermont and Washington D.C., are receiving chemical and biological defense classroom instruction as well as training on the use and capabilities of incident response and laboratory equipment.

The teams are being trained using four scenarios involving the supposed use of weapons of mass destruction. The scenarios are being acted out at three locations on Aberdeen Proving Ground and one just off post property. To construct the scenarios, ECBC experts used current hazard and intelligence information. Each one has been developed to presumably involve a chemical, biological, radiological agent in a clandestine environment that will require the team to utilize all equipment and personnel. The ECBC training team also provided classroom instruction on the history of chemical biological warfare, properties and characteristics of chemical agents, recognizing drugs versus chemical or biological materials, improvised dispersal devices, industrial agents and topics on laboratory and sampling methods. Instruction has been provided by ECBC subject matter experts.

Right now, 32 states have National Guard Civil Support Teams, and another 23 teams are in the process of forming. Each 22-person team is designed to augment "first response" agencies and must be prepared to deploy within 90 minutes of notification in response to a man-made or natural event causing massive destruction to lives or property within the United States or its territories. They are designed to provide assistance to a local incident commander in determining the nature and extent of an attack or incident; providing expert technical advice on response operations; and helping to identify and support the arrival of follow-on state and federal military response assets. They also support local and state authorities at domestic incident sites by identifying agents and substances, assessing current and projected consequences, advising on response measures, and assisting with requests for additional military support.

Contract Awards • *by Mary Frances Tracy*

Joint Service Aircrew Mask-System Development and Demonstration
Gentex Corporation
Rancho Cucamonga, CA
$9,519,690 April 13, 2006
By U.S. Air Force Human Systems Group, Brooks City-Base, TX

Joint Biological Point Detection Systems Bio Detection
General Dynamics
Falls Church, VA
$45,000,000 April 10, 2006
By U.S. Army Research, Development and Engineering Command Acquisition Center, Aberdeen Proving Ground, MD

M22 Automatic Chemical Agent Alarm System and M88 Chemical Agent Detectors
Smiths Detection
Edgewood, MD
$27,306,874 March 30, 2006
By U.S. Army Research, Development, and Engineering Command, Aberdeen Proving Ground, MD

Program Management and Logistics Services in Support of the Navy's Anti-Terrorism Force Protection Ashore Program at Naval Installations Worldwide
Systems Application & Technologies, Inc.
Oxnard, CA
$10,000,000 March 30, 2006
By Naval Facilities Engineering Command, Southwest, San Diego, CA

Joint Biological Point Detection Systems
General Dynamics Armament and Technical Products
Charlotte, NC
$45,292,966 March 29, 2006
By U.S. Army Research, Development, and Engineering Command, Aberdeen Proving Ground, MD

Design of a Medical Research Laboratory and Vivarium Facilities
CUH2A/Smith Carter/Hemisphere Engineering (Joint Venture)
Lawrenceville, NJ
$24,022,202 March 24, 2006
By U.S. Army Corps of Engineers, Baltimore, MD

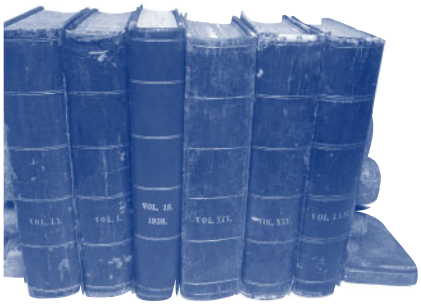
NBC Protection System M2000
Mine Safety Appliances Europe
Berlin, Germany
$9,300,000 March 24, 2006
By German Military

Development of Joint Operational Effects Federation Prototype, Including Code-Based Models, Analysis and Decision Support Tools Used as Part of CBRN Planning Process, and Development of New Software Tools to Help Prepare for CBRN Weapons Attacks
Cubic Applications, Inc.
San Diego, CA
$6,975,770 March 23, 2006
By Space and Naval Warfare Systems Command, San Diego, CA

Weapons of Mass Destruction Counterforce Combat Assessment Program
The Boeing Company
Huntington Beach, CA
$8,282,140 March 7, 2006
By Defense Threat Reduction Agency, Fort Belvoir, VA

Chemical Agent Resistant Coating for Vehicles
Hentzen Coatings
Milwaukee, WI
$9,214,745 (Part of $14,108,191 firm-fixed-price contract)
March 1, 2006
By U.S. Army Tank-Automotive and Armaments Command, Texarkana, TX

Medical Countermeasures for Radiological or Nuclear Incidents
Akorn, Inc.
Buffalo Grove, Il
$21,900,000 February 13, 2006
By U.S. Department of Health and Human Services, Bethesda, MD



History of Chemical and Biological Detectors, Alarms, and Warning Systems†

Mr. Jeffery K. Smart, Command Historian

THE 1950's

Chemical Agent Detectors

Continuing Requirement for Nerve Agent Alarms

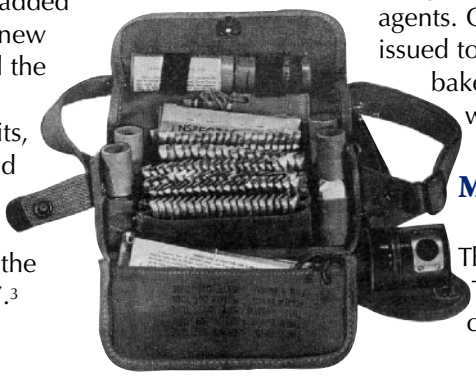
The inability to instantly detect nerve agents and to sound an alarm to alert surrounding troops was the primary concern of the Chemical Corps during the 1950s. Although field detector kits were updated to detect G-agents, these kits only provided confirmation of an attack, not advance warning. Eventually the original requirement for an automatic nerve agent alarm was split into various programs to develop different types of nerve agent alarms, to include field, remote sensing, and installation alarms for production and storage facilities.[1]

M9A2 Chemical Agent Detector Kit

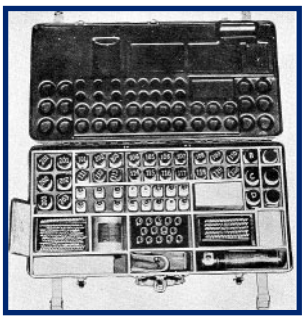
The M9A2 (E16) Chemical Agent Detector Kit was standardized in 1952. This version added the necessary detection capability for nerve agents (G-agents). This was the first standardized detector kit to have this capability. The kit also had a capability to collect samples of unknown chemical agents. Just over 8,000 of the M9 Kits were converted to the M9A2 version and an additional 4,000 new kits were procured. The M9A2 Kit was eventually replaced by the M18 Chemical Agent Detector Kit in 1957 and obsoleted in 1965.[2]

M10A1 Chemical Agent Analyzing Kit

The inability to detect nerve agent and problems with the packaging discovered during the Korean Conflict led to the standardization of the M10A1 (E10R2) Chemical Agent Analyzing Kit in 1952. The new kit added nerve agent detection ability and a new plastic carrying case which reduced the weight to 15 pounds. The Army procured only 108 of the M10A1 Kits, the U.S. Air Force procured 165, and the U.S. Navy procured one. The standardization of the M18A2 Chemical Agent Detector Kit led to the M10A1 Kit being obsoleted in 1967.[3]



M2 Chemical Agents Water Testing Kit



During World War II, the Army Medical Service developed chemical agent testing kits for water and food. After the war, the kits were improved by the Medical Service to detect nerve agents. In 1952, the Department of the Army recommended the kits be assigned to the Chemical Corps. After some debate about usefulness and the correct nomenclature, the Chemical Corps standardized the kits and changed their nomenclature.

The Chemical Corps standardized the M2 Chemical Agents Water Testing Kit in 1953. The kit consisted of reagents, a metal scoop, glassware, and cleaning equipment in a plastic case. It was designed to detect contamination of unchlorinated water by chemical warfare agents. It was not effective for use with chlorinated water. The kit was obsoleted in 1996.[4]

M3 Chemical Agents Food Testing and Screening Kit

The M3 Chemical Agents Food Testing and Screening Kit was standardized by the Chemical Corps in 1953. The kit was used in the field to detect contamination of food or food packages by chemical warfare agents. The kit consisted of chemical reagents, a vesicant detector crayon, medicine droppers, test papers and notepaper in a plastic case. It was designed to test for arsenicals, mustard and G-series nerve agents. Over 10,000 of the kits were eventually procured and issued to medical units, survey teams, veterinary inspectors, and bakery units. Although improved over the years, the M3 Kit was obsoleted in 1967.[5]

M4 Poisons Water Testing Kit

The Chemical Corps standardized the M4 Poisons Water Testing Kit in 1953. The kit consisted of a chest, flasks, cylinders, beakers, funnels, pipettes, colorimeter, ion

Continued pg. 8

†*This article is Part III of a series of articles extracted from the **History of Chemical and Biological Detectors, Alarms, and Warning Systems**, by Mr. Jeffery K. Smart, U.S. Army Research, Development and Engineering Command (RDECOM) Historian, June, 2000. This presentation is edited, with permission of the author, for the **CBIAC Newsletter** forum.*

In the News • *By Mary Frances Tracy*

JADI Selects Airtrax as Strategic Partner to Develop Omni-Directional Robotic Vehicles for U.S. Department of Defense

JADI Press Release
April 4, 2006
"Airtrax, Inc…announced today that JADI will be working with Airtrax as a strategic partner for one of its U.S. Army robotic navigation and control projects…JADI has been funded by the Department of Defense (DoD) to develop a chemical/biological detection sensor system for autonomous vehicles and individual soldiers."
http://www.jadi.us/AirTrax0304pressrelease.htm

Nuclear Weapons Center—The Right Organization at The Right Time

Mara Minwegen, 377th Air Base Wing Public Affairs
Air Force Print News
April 3, 2006
"'Ladies and Gentlemen, the Nuclear Weapons Center has been activated.' With that announcement March 31, Kirtland Air Force Base took another important step in its long history as a center of nuclear activity. In a ceremony replete with military tradition, Col. Gregory Foraker, formerly the director of the Nuclear Weapons Directorate…, assumed command of the Nuclear Weapons Center. Maj. Gen. Arthur B. Morrill, director of Logistics, Headquarters Air Force Materiel Command, presented the command. He represented Gen. Bruce Carlson, the commander of AFMC."
http://www.af.mil/news/story.asp?id=123018496

Response Teams Prepare for Chemical, Nuclear Threats

Staff Sgt. Kristina Barrett
506th Air Expeditionary Group Public Affairs, Air Force Link
March 31, 2006
"In an abandoned building on the outskirts of town…Chemical Biological Radiological Nuclear defense teams suit up and prepare to raid the 'hot zone' and dismantle the threat, safely and without disturbing the chemicals that lie inside. In Kirkuk Air Base, Iraq, this is just an exercise, but one that prepares CBRN teams for the real world."
http://www.af.mil/news/story.asp?id=123018326

Quantum Dot Method Rapidly Identifies Bacteria

NIST Tech Beat
March 30, 2006
"A rapid method for detecting and identifying very small numbers of diverse bacteria, from anthrax to *E. coli*, has been developed by scientists from the National Cancer Institute (NCI) and National Institute of Standards and Technology (NIST)."
http://www.nist.gov/public_affairs/techbeat/tb2006_0330.htm

DoD to Award $11.5 Million for Science and Engineering Research

Department of Defense News Release
March 28, 2006
"The Department of Defense announced today plans to award $11.5 million to 22 academic institutions in 17 states to perform research in science and engineering fields important to national defense."
http://www.defenselink.mil/releases/2006/nr20060328-12713.html

New Sensor Technology Detects Chemical, Biological, Nuclear and Explosive Materials

Argonne National Laboratory Press Release
March 21, 2006
"Engineers at the U.S. Department of Energy's Argonne National Laboratory, using an emerging sensing technology, have developed a suite of sensors for national security applications that can quickly and effectively detect chemical, biological, nuclear and explosive materials."
http://www.anl.gov/Media_Center/News/2006/news060321.html

Commerce Secretary Gutierrez Announces New Nanotechnology Center; Focus is on Building Infrastructure for Nanomanufacturing

NIST News Release
March 20, 2006
"U.S. Secretary of Commerce Carlos M. Gutierrez today in Detroit announced the launch of a state-of-the-art center for collaborative nanotechnology research at Commerce's National Institute of Standards and Technology (NIST)."
http://www.nist.gov/public_affairs/releases/cnst.htm

Continued pg. 9

Vol. 3 No. 2 of the Chem-Bio Defense Quarterly Magazine is Now Available!

Vol. 3 No. 2 Chem-Bio Defense Quarterly Magazine In this issue, we take a close look at the collective protection retrofit onboard the amphibious assault ship USS Bonhomme Richard (LHD-6). Joint Project Manager Collective Protection is providing protected zones that will allow shipboard personnel to work safely while the ship traverses contaminated areas. We also present an interview with Mr. Jean D. Reed, the recently appointed Special Assistant for Chemical and Biological Defense and Chemical Demilitarization Programs. Mr. Reed shares his views on the current status of the chemical and biological defense program and discusses the future of the program. His previous position as a House Armed Services Committee professional staff member allows him a unique perspective on the chemical and biological defense programs.

To view the electronic version, visit: http://www.jpeocbd.osd.mil/page_manager.asp?pg=4&sub=0

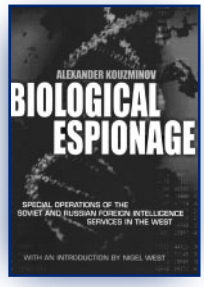
Would you like to receive the link to upcoming issues or have a hard copy version for your office or organization?
If so, complete the interactive form at http://www.jpeocbd.osd.mil/page_manager.asp?pg=0&sub=9

New CBIAC Information Resources • *By Richard M. Gilman*

Books

Kouzminov, Alexander. **Biological Espionage—Special Operations of the Soviet and Russian Foreign Intelligence Services in the West.** Mechanicsburg, PA: Stakpole Books, 2005.

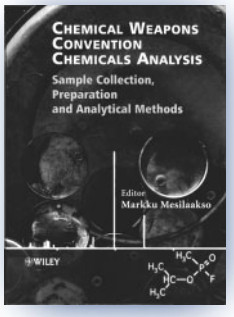
This is the account of the ten years the author spent as an agent of the KGB and the Russian Foreign Intelligence Services. He worked in the top secret, elite inner core of these organizations. His primary assignments were to learn the secrets of Western biological warfare defense programs and to plan and carry out acts of bioterrorism and sabotage in the event of war between Russia and the West.



CB-193593
Stakpole Books
5067 Ritter Rd.
Mechanicsburg, PA 17055
Phone: (717) 796-0411
Fax: (717) 796-0412

Mesilaakso, Markku, ed. **Chemical Weapons Convention Chemical Analysis: Sample Collection, Preparation and Analytical Methods.** Chichester, West Sussex, England: John Wiley & Sons, Ltd.

The purpose of this book is to provide a comprehensive view of how to internationally verify compliance with the Chemical Weapons Convention using analytical chemistry and related strategies and methods.
"There are currently eighteen analytical laboratories that have established capability, and obtained recognized competence, in the analysis of samples for CWC-related chemicals; these laboratories are the OPCW designated laboratories. The majority of the chapters in this book discuss the analytical methods used in these off-site laboratories. The methods discussed are for the identification of target chemicals from environmental and human origin samples. The procedures and strategies for on-site sampling and analysis are also discussed." (publisher's advertisement)

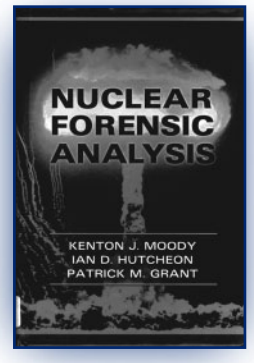


CB-193654
John Wiley & Sons, Ltd.
The Atrium
Southern Gate, Chichester
West Sussex P019 8SQ, England
Phone: (+44) 1243 779777

Moody, Kenton J. *et al.* **Nuclear Forensic Analysis.** Boca Raton, FL: CRC Press, 2005.

This work offers, "a multidisciplinary reference for forensic scientists. The book consolidates fundamental principles of nuclear forensic analysis, all pertinent protocols and procedures, computer modeling development, interpretational insights, and attribution considerations, into one convenient source." (publisher's advertisement)

Contains numerous figures, tables and an index.

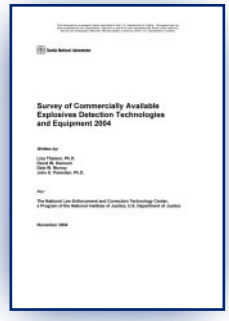


CB-193401
CRC Press
Taylor & Francis Group
6000 Broken Sound Parkway NW
Boca Raton, FL 33487
Phone: 1-800-272-7737
Fax: 1-800-374-3401

Documents

Thiesan, Lisa *et al.* **Survey of Commercially Available Explosives Detection Technologies and Equipment 2004.** Washington, D.C.: the National Institute of Justice, U.S. Dept. of Justice, 2005.
http://www.ncjrs.org/pdffiles/nij/grants/208861.pdf

"This document provides an overview of currently available explosives detection methods and technologies to aid the law enforcement community in the selection of explosives detection equipment for various applications." (Introduction)

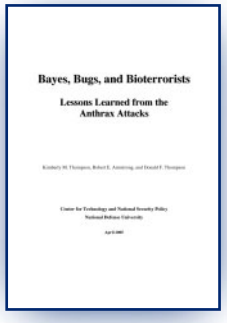


Includes numerous figures, tables and a glossary.

CB-193772
National Criminal Justice Reference System
2277 Research Blvd.
Rockville, MD 20850
Phone: (301) 519-5500
Fax: (301) 519-5212

Thompson, Kimberly M. *et al.* **Bayes, Bugs, and Bioterrorists: Lessons Learned from the Anthrax Attacks.** Washington, D.C.: National Defense University, 2005.
http://www.ndu.edu/ctnsp/Def_Tech/DTP14%20Bayes%20Bugs%20Bioterrorists.pdf

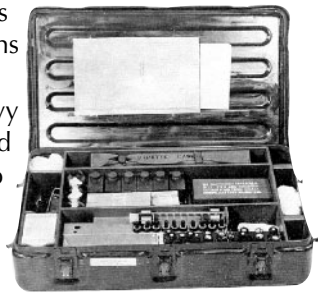
"This paper presents a risk-and decision based framework—derived from the field of Baysesian statistics—for developing strategies that facilitate managing the risks of biological agents. The framework recognizes the significantly different attributes of potential biological weapons and offers a strategy for improving communication to effectively coordinate national biopreparedness efforts." (Executive Summary)



CB-165257
National Defense University Center for Technology and National Security Policy
Fort Lesley J. McNair
Washington, D.C. 20319
Phone: (202) 685-4210
Fax: (202) 685-4608

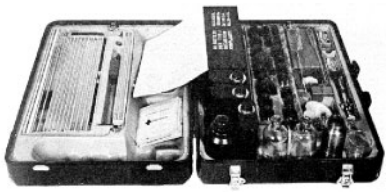
History of Detectors *cont.*

exchange column, and reagents. It was used to make qualitative determinations of mustard agent, arsenicals, the G-agents, cyanide agents, and other heavy metal poisons in water. It was designed for Army Medical Service personnel to certify drinking water supplies. The kit was obsoleted in 1959 when the M4A1 Kit replaced it.



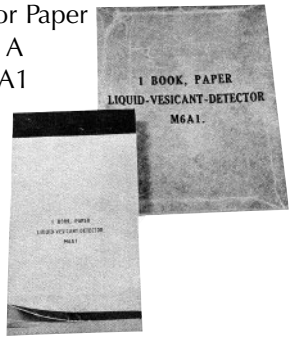
M4A1 Poisons Water Testing Kit

The M4A1 Poisons Water-Testing Kit was standardized in 1959 to improve the packaging deficiencies of the M4 Kit. It was used in conjunction with a water-testing and screening kit to measure the concentration of previously identified chemical warfare agents in water, to determine the feasibility of treating the water, to determine the quantity of chemicals needed for treatment, and to test whether the treatment had been successful. The kit consisted of chemical reagents for making quantitative analyses of water by cholorimetric determination. In 1962, a V-agent determination capability was added to the kit. The Army procured over 900 of the kits between 1951-1966. During 1962-63, the Air Force procured 137 M4A1 Kits for use in Vietnam. The kit was obsoleted in 1970 in favor of the M2 Chemical Agents Water Testing Kit's "go-no-go" detection capability.[6]



M6A1 Liquid Vesicant Detector Paper

The original size of the M6 Liquid Detector Paper sheets, five-inch square, proved too large. A smaller sheet size version, designated M6A1 Liquid Vesicant Detector Paper, was standardized in 1954. It could detect G-agents in addition to mustard agent. Almost 40,000 of the M6A1 books were procured during the 1960s. M6A1 Paper was obsoleted in 1996.[7]



E33 Remote Sensing Alarms

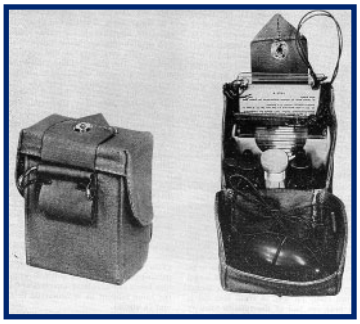
The requirement for a remote sensing alarm was for an automatic warning device that could scan a large area and detect a chemical agent at a safe distance. In 1954, the Corps began development of a small, simple alarm commonly called LOPAIR (long-path infrared). The principle behind this device was that the G-agents absorb certain portions of the infrared spectrum. Such a device would scan the atmosphere continuously in advance of troops and give a warning alarm when G-agents were spotted.

The prototype model, designated the E33 Area Scanning G-Agent Alarm, performed satisfactorily up to about 300 yards, but weighed over 250 pounds and used too much electrical power.

An improved version, designated the E33R1, reduced the weight to 34 pounds and the power consumption to a reasonable amount. These reductions, however, resulted in the effective range of detection being reduced to 100 yards. The response time was 3-10 seconds.

A third version, designated the E33R2, was the most successful. It combined the best of each unit with a slight weight increase but less power consumption and an increased range of 1/4 mile. The alarm consisted of an infrared source, optical reflector, optical collecting system, grating monochromator, and other electronic devices. It was designed to respond to nerve agent within seven seconds. This unit was approved for procurement for additional testing in 1955. The E33 series of alarms were never standardized.[8]

M15 Chemical Agent Detector Kit



The requirement for a simplified detector kit originated with the Navy based on the need for a shipboard detector to determine whether masks should be donned or doffed. To meet this requirement, the M15 (E27R4) Chemical Agent Detector Kit was standardized 1956 to detect dangerous vapor concentrations of nerve agent (G-agents) and mustard agents. These agents were detected by observing color changes in detector tubes. The kit consisted of a canvas carrier worn on the belt, an air-sampling bulb, detector tubes, and reagents.[9]

Continued pg. 12

In the News *cont.*

The Fabric of Protection

Marty Kauchak

Military Medical Technology Online Edition

March 16, 2006

"Approximately 5.4 million JSLIST suits have been manufactured since the program's inception in 1997. Companies have continually sought technology advancements to keep pace with the growing threat spectrum and keep the warrior safe in the field."

http://www.military-medicaltechnology.com/article.cfm?DocID=1369

ECBC Decontamination Technology Wins Prestigious Award

Edgewood Chemical Biological Center Feature Story

February 15, 2006

"A decontamination technology developed by the U.S. Army Edgewood Chemical Biological Center (ECBC) was named a winner of the prestigious 2006 Award for Excellence in Technology Transfer. The new technology, called "Enzyme-Based Decontamination Technology for Organophosphorus Nerve Agents and Pesticides," is an enzyme-based catalytic decontaminant for chemical warfare agents and toxic industrial chemicals."

http://www.edgewood.army.mil/about/features.htm

Navy, UH Team Up To Detect Biological Agents, Land Mines

University of Houston News Release

February 14, 2006

"Through a National Science Foundation (NSF) grant, the Nanoscale Interdisciplinary Research Team at UH's Cullen College of Engineering is collaborating with the U.S. Naval Research Laboratory and the Naval Air Warfare Center Weapons Division to provide opportunities for a group of students in the electrical and computer engineering department to participate in joint research programs to study and develop technologies in the area of nanomagnetics."

http://www.uh.edu/admin/media/nr/2006/02feb/021406nsf_nanomag.html

Terry Heston Leads the DoD IAC Program Office at DTIC

By Sandy Schwalb

Terry M. Heston is currently the Acting Program Manager of the DoD Information Analysis Centers (IACs), Defense Technical Information Center (DTIC). Appointed to this position in February 2006, Heston has held a variety of positions at DTIC.

From 2000-2006 he served as the Director of DTIC's Information Systems Support Directorate, where he was responsible for DTIC's telecommunications and ADP support to include systems analysis, maintenance and modifications, programming and central design. He was this directorate's Deputy Director from 1997-2000.

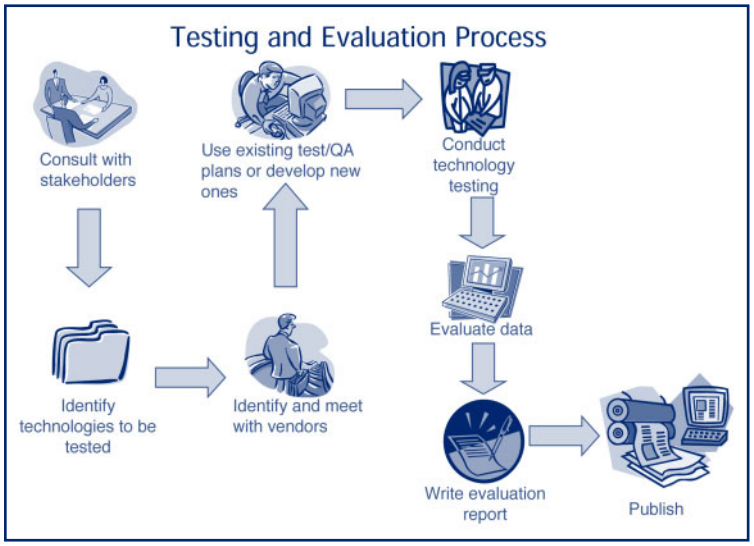
He served as Deputy Director of DTIC's Administration and Resource Management Directorate. This directorate is a consolidation of functions normally associated with separate offices of comptroller, corporate plans and policies and installation services.

While working at the Naval Air Systems Command (Washington, D.C.) he served in a number of positions in Aviation Logistics Management from 1981-1993.

For more information on the IAC program or other IACs, visit http://www.iac.dtic.mil

TTEP *cont.*

- Ultraviolet absorption detectors
- Membrane filtration sampling apparatus
- Agent test kits
- Rapid toxicity monitors
- Mobile mass spectrometers



Stakeholders

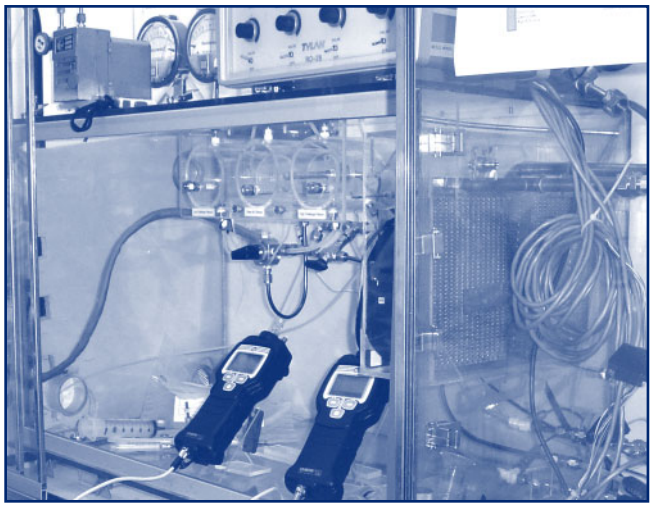
Stakeholder involvement, an important element in the success of the program, includes identifying and selecting technologies for testing and providing input into developing the test plans. Stakeholder input ensures that user needs and perspectives are part of the test design and that useful performance information is produced for the technologies tested. TTEP's primary stakeholders are those responsible for protecting water infrastructure and decontaminating indoor and outdoor environments. These include water utility operators, building and facility managers, emergency responders, consequence managers, health officials, regulators, developers of homeland security technologies, and the public.

Products

TTEP provides decision makers and potential users with unbiased, third-party technology evaluation reports that can supplement vendor-provided information.

First Technology Tested

The ChemPro 100—a commercially available, portable ion mobility spectrometer (IMS)—was the first technology tested by TTEP. Two units of the ChemPro 100 are shown (top, right column) installed in a test chamber. IMS detectors are lightweight and designed to rapidly detect toxic industrial chemicals (TICs) and chemical warfare (CW) agents in air.



Reports to date available online:

- Portable Cyanide Analyzers
- Rapid Polymerase Chain Reaction (PCR) Technologies
- Ion Mobility Spectrometers
- Surface Acoustic Wave Detectors
- Chlorine Dioxide Decontamination Technology
- Ventilation Media Air Filters
- Immunoassay Test Kits for Pathogens and Biotoxins
- Reverse Osmosis Point-of-Use Devices
- Paraformaldehyde Decontamination Technology
- Multi-Parameter Water Quality Probes
- Decontamination Wastewater Treatment
- Hydrogen Peroxide Decontamination Technology
- Rapid Toxicity Testing Systems

Benefits

TTEP provides high quality information that is useful to decision makers in purchasing or applying the tested technologies. It provides potential users with unbiased, third-party information that can supplement vendor-provided information. Stakeholder involvement insures that user needs and perspectives are incorporated into the test design so that useful performance information is produced for each of the tested technologies.

For additional information, contact

U.S. Environmental Protection Agency,
Office of Research and Development,
National Homeland Security Research Center

Eric Koglin, Director, Technology Testing and Evaluation Program
Las Vegas, NV
koglin.eric@epa.gov
Online at: www.epa.gov/nhsrc

The National Homeland Security Research Center

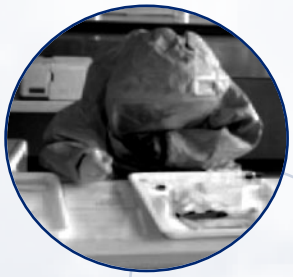
Advancing Our Nation's Security Through Science

The National Homeland Security Research Center's (NHSRC's) goal is to develop and deliver reliable, responsive scientific expertise and products. These are widely used to prevent, prepare for, and recover from public health and environmental emergencies.

NHSRC develops its research plans in two important ways. The first involves envisioning various circumstances under which attacks may occur. These circumstances, or threat scenarios, are analyzed to determine which could have the greatest consequences. Research is directed to address these high-consequence scenarios to ensure that we get the most valuable information within an appropriate time frame. Secondly, research is prioritized by seeking the advice of experts. NHSRC scientists and engineers routinely meet with representatives from the water and building industries, security specialists, public health officials, and other government agencies to understand their research needs and technical challenges. NHSRC is dedicated to solving real-world problems and putting technology in the hands of those who need it.

NHSRC Research Areas

- Detection/Characterization
- Prevention/Containment
- Decontamination/Mitigation
- Disposal of Residues
- Risk Assessment
- Technology Evaluation
- Technical Assistance/ Technology Transfer



NHSRC Supports Five Major Research Areas

Threat and Consequence Assessment addresses human exposure to chemical, biological, and radiological contaminants to define dangerous levels of these contaminants and help establish protective cleanup goals.

Decontamination and Consequence Management provides support for the decontamination and restoration of indoor and outdoor areas purposefully contaminated with biological, chemical, or radiological hazards. Safe disposal of contaminated food and agricultural products are also addressed.

Water Infrastructure Protection is charged with protecting the nation's water supplies and infrastructure, as well as wastewater collection, treatment, and disposal systems.

Response Capability Enhancement works directly with emergency responders and local governments to provide tools and information needed to make informed decisions in the event of an attack.

Technology Testing and Evaluation evaluates technologies that show potential for use in homeland security applications. These evaluations are used by water utilities, building owners, emergency responders, and others to make informed decisions when purchasing security technology.

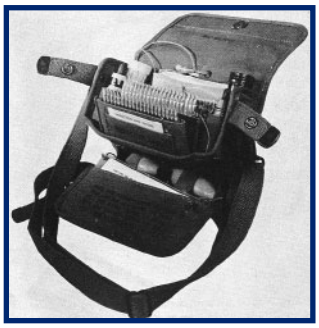
Key NHSRC Research Products

- A Web-based catalog of technical resources
- A compendium of sampling and analysis methods
- Design and operational guidance for building and water system protection
- Decontamination and disposal technical guidance
- An interactive database and expert system for rapid risk assessment
- Technology Testing and Evaluation Program (TTEP) reports for commercially available detection, containment, and decontamination technologies.

For additional information on NHSRC products, go to www.epa.gov/nhsrc

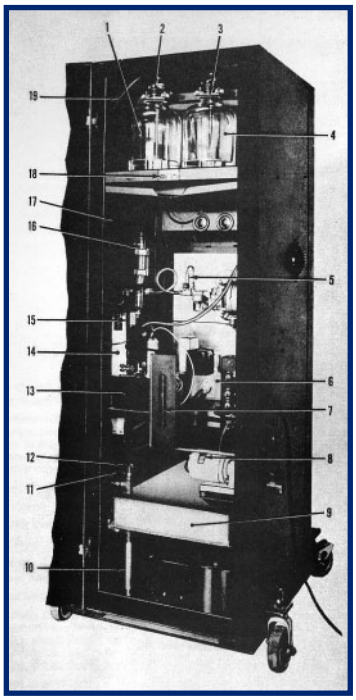
History of Detectors *cont.*

M18 Chemical Agent Detector Kit



An improved version of the M9A2 Detector Kit that provided increased test sensitivity, ease of operations, all reduced weight and size was standardized as the M18 (E28) Chemical Agent Detector Kit in 1957. It consisted of a canvas carrier for over the shoulder, sampling and testing equipment, chemical reagents, and accessory equipment. It could detect most dangerous chemical agent vapor to include G-agents. The kit also had a sampling capability when the agent could not be identified by any test. It was designed primarily to detect the continuing presence of a chemical agent that was already identified so that a decision could be made about whether to unmask. Over 19,000 M18 Kits were procured until it was obsoleted in 1965.[10]

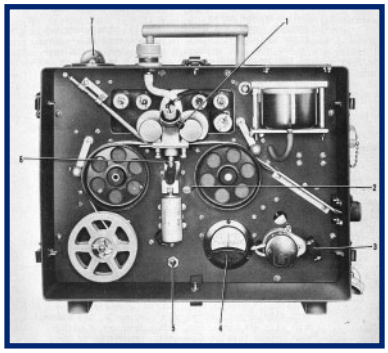
M5 Automatic G-Agent Fixed Installation Alarm



The requirement for an alarm for nerve agent production and storage facilities was developed in 1951. After seven years of development, the Chemical Corps standardized the M5 (E17) Automatic G-agent Fixed Installation Alarm in 1958. This was the first automatic nerve agent detector and alarm standardized by the U.S. Army. The detector portion of the alarm was based on the Schoenemann reaction utilizing a reagent solution which in the presence of G-agents, produced florescent indoxyl. A photometer measured the florescence and fed the information to a continuous-trace recorder that activated the alarm. The unit could detect G-agent and sound an alarm in about 10 seconds. Unfortunately, the unit was seven feet high and two feet square and weighed 725 pounds. Each unit cost over $10,000 and required continuous fluid replacement to remain active. Only 31 units were procured for mainly Rocky Mountain Arsenal. A converter to allow VX detection was added later. The M5 Alarm was obsoleted in 1979.[11]

M6 Automatic G-Agent Field Alarm

The first automatic G-agent field alarm developed by the Chemical Corps was standardized for the Navy. This was also the first electronic device developed by the Chemical Corps for field use. The Chemical Corps standardized the M6 (E21) Automatic G-Agent Field Alarm for the Navy in 1959. The Army considered several versions of the alarm and actually procured 44 units, but rejected it for standardization due to its inability to detect V-agents and other logistical problems. The M6 Alarm was contained in a 24-pound aluminum case approximately 7-inches by 15-inches. The operation of the alarm was based on the Schoenemann reaction similar to the M5 Alarm. Color formed when any G-agent came into contact with a reagent. Design of the alarm provided that a drop of this combined solution was placed upon a paper tape which was moved (every five minutes) under two sampling spots, one of which sampled ambient air while the other acted as a monitor to minimize the effects of variations in light reflected from the paper and fluctuations in electronics. The two spots on the paper were viewed by two balanced photo cells. If color developed on the sample side, unbalance occurred between the cells and the buzzer alarm triggered. As designed, it would function continuously unattended for a 12-hour period at which time it required fresh solutions and new tape. One problem with the alarm was that it did not function below freezing. Another problem was that it ran off a battery. Despite these problems, the Navy procured over 500 of the units for its dockyards and 10 for shipboard use. The M6 Alarm was obsoleted in 1970.



M6A1 Automatic G-Agent Field Alarm

Along with the M6 Alarm, the Chemical Corps standardized an improved version for the Navy designated the M6A1 (E21R2) Automatic G-Agent Field Alarm. This alarm had an improved air pump, tape take-up reel, a transformer to allow AC current, and relocation of various other elements. The Navy procured 169 of these units for dockyard use. The M6A1 Alarm was obsoleted in 1970.[12]

Biological Agent Detectors

Biological Agent Field Detection

The lack of biological agent field detection remained a problem throughout the 1950s. The Chemical Corps Technical Committee commented in 1957 that: "The detection of BW agents presents a problem no less important than the detection

Continued pg. 19

Chemical and Biological Attack Warning Systems Installed in Kuwait Ports

By Joan Michel, ECBC Public Affairs

In cooperation with the Air Force Research Laboratory, the U.S. Army Edgewood Chemical Biological Center (ECBC) recently completed the installation of the Port Warning and Reporting Network System at the Port of Ash Shuaybah, Kuwait and Kuwait Naval Base. Commonly called PortWARN, this system is an integrated hardware and software network that provides a commander with situational awareness to include near real-time display of detector data, event management, hazard prediction, and messaging. The system is made up of a series of detection nodes that communicate with a central command post through a remote data relay by either radio or Ethernet.

PortWARN near real time display

The PortWARN system integrates nuclear, biological and chemical reports generated from other systems. Should an event occur, the system can send reports to higher headquarters, notify the port workers, and instruct alarms on the nodes themselves to activate visual and audible warnings, such as strobe lights and voice sirens.

ECBC also installed and trained military personnel in Kuwait on the use of other chemical and biological defense technologies designed to integrate with the PortWARN system. Dry filter units were installed to provide a biological sample collection and detection capability and a two-tent collective protection unit was installed to provide personnel decontamination capabilities. A blood diagnostic tool for determining chemical agent exposure was provided to the port's medical clinic, and escape hoods were supplied to dockside workers.

PortWARN detector

Calendar of Events

Do you have a Chemical and/or Biological Defense or Homeland Security course or event to add to our Calendar? Submit the pertinent information via email to **cbiac@battelle.org**. *The CBIAC reserves the right to reject submissions. For a more extensive list of events, visit our Website at* **http://www.cbiac.apgea.army.mil/**.

July 5-7, 2006
COURSE: Emergency Response to Domestic Biological Incidents
Los Angeles, CA
http://rohrabacher.house.gov/homelandsecurity/

July 5-13, 2006
SANSFIRE 2006
Washington, DC
http://www.sans.org/sansfire06

July 10-11, 2006
EXCELLENCE In GOVERNMENT
Washington, DC
http://www2.govexec.com/EIG2006/index.cfm?CFID=715134&CFTOKEN=67955227

July 11-13, 2006
Fourth TICs and TIMs Symposium
Richmond, VA
http://www.ticsandtims.com

July 18-19, 2006
The 5th Annual Conference on Information Sharing and Homeland Security
Washington, DC
http://www.ncsi.com/ishs06/index.shtml

July 18-21, 2006
AUSA Medical Symposium and Exhibition
San Antonio, TX
http://www.ausa.org/webpub/DeptIndustry.nsf/byid/KGRG-6ENKSP

July 19, 2006
Best Practices For Defending Against Insider Threats to Proprietary Data For Government & Commercial Legal, Privacy, Facility, IT & Security Managers
Arlington, VA
http://www.homelanddefensejournal.com/hdl/conf_insider_july.htm

July 20-21, 2006
COURSE: Train the Trainer - Law Enforcement Prevention and Deterrence of Terrorist Acts
San Pedro, CA
http://rohrabacher.house.gov/homelandsecurity/

July 24-26, 2006
COURSE: Combating Bioterrorism/Pandemics: Implementing Policies for Biosecurity
Cambridge, MA
http://web.mit.edu/mitpep/pi/courses/combating_bioterrorism.html

July 24-26, 2006
INFORMS Military Applications Society Conference: Homeland Security for the 21st Century
Mystic, CT
http://military-appl.society.informs.org/

July 25-27, 2006
Homeland Defense Training Workshop®: Target Analysis & Vulnerability Assessment
San Antonio, TX
http://www.homelanddefensejournal.com/hdl/conf_TAVAjuly.htm

July 25-30, 2006
FirehouseExpo
Baltimore, MD
http://www.firehouseexpo.com

July 26-28, 2006
NACCHO Annual 2006 Conference
San Antonio, TX
http://www.naccho.org/conferences/NACCHOannual06/

July 31 - August 2, 2006
2006 National Summit on Pandemic Disease & Avian Influenza
Arlington, VA
http://www.performanceweb.org/CENTERS/LE/Events/L217/L217.htm

August 1-3, 2006
COURSE: Public Safety WMD Response - Sampling Techniques and Guidelines ("Bio 2")
Orange, CA
http://rohrabacher.house.gov/homelandsecurity/

August 6-11, 2006
Force Health Protection Conference
Albuquerque, NM
http://chppm-www.apgea.army.mil/fhp
http://chppmwww.apgea.army.mil/USACHPPMToday/032001/032001fhp.asp

August 8-11, 2006
Radiological Emergency Planning: Terrorism, Security, and Communication
Boston, MA
http://www.hsph.harvard.edu/ccpe/programs/NEP.shtml

August 14-18, 2006
COURSE: Hospital Management of Chemical, Biological, Radiological/Nuclear and Explosive Incidents
Aberdeen Proving Ground, MD
https://ccc.apgea.army.mil/courses/In_house/cbrne.htm

August 15, 2006
Continuity of Government Operations and Telework Training Conference
Arlington, VA
http://www.homelanddefensejournal.com/hdl/conf_continuity.htm

August 21-22, 2006
Chi's Systems Integration In Biodefense
Washington, DC
http://www.healthtech.com/2006/btr/index.asp

Calendar *cont.*

August 21-23, 2006
COURSE: Train the Trainer - Operational WMD Response for Law Enforcement, Performance Level
San Pedro, CA
http://rohrabacher.house.gov/homelandsecurity/

August 21-25, 2006
In-Place Filter Testing Workshop
Boston, MA
http://www.hsph.harvard.edu/ccpe/programs/IPFT.shtml

August 22-23, 2006
Security Exposition
Baltimore, MD
http://www.fbcinc.com/event.asp?eventid=Q6UJ9A00B5JK

August 22 - 24, 2006
InfraGard 2006 National Conference
Washington, DC
http://infragardconferences.com/index.html

August 27-September 1, 2006
13th International ISRP Conference: Respiratory Protection of Healthcare Workers and Emergency Responders
Toronto, Ontario
http://isrp.com.au

August 30, 2006
FBI HQ Security Awareness Day
Washington, DC
http://www.fbcinc.com/event.asp?eventid=Q6UJ9A00AJPF

September 5-7, 2006
COURSE: WMD/Terrorism Incident Defensive Operations for Emergency Responders
Avalon, CA
http://rohrabacher.house.gov/homelandsecurity/

September 6-8, 2006
8th Annual Technologies for Critical Incident Preparedness Conference and Exposition
Atlanta, GA
http://guest.cvent.com/EVENTS/Info/Summary.aspx?e=40addb55-0f0f-4188-82a5-61247221a15d

September 10-15, 2006
COURSE: Medical Management of Chemical and Biological Casualties
Ft. Detrick and Aberdeen Proving Ground, MD
https://ccc.apgea.army.mil/courses/in_house/BrochureMCBC.htm

September 11-13, 2006
Chi's Protein Biomarkers 2006
Philadelphia, PA
http://www.healthtech.com/2006/bmk/index.asp

The CBIAC Covers Radiological and Nuclear Defense

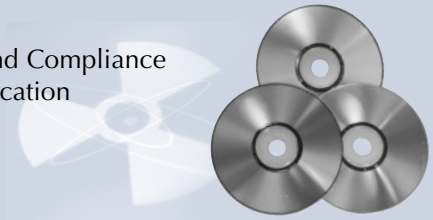
"Serving the CB Defense and Homeland Security Communities" has been the tagline for the mission of the CBIAC. The CBIAC has added Radiological and Nuclear (RN) Defense to this tagline. Although the CBIAC's scope has always included radiological and nuclear defense, these areas are now receiving additional emphasis and visibility at the direction of the CBIAC's Executive Steering Committee.

The CBIAC is tasked to be a support and service provider to the CBRN Defense and Homeland Security Communities. Our database and document collection efforts are placing additional emphasis on research and information related to radiological and nuclear defense. The CBIAC offers inquiry and TAT support in these areas. Our newsletter content is also reflective of this expanded emphasis.

If you have materials in any CBIAC scope area that you would like to donate to our collection, the CBIAC would welcome your contributions. If you are conducting research, training, or other activities in any of our scope areas that would be of interest to our newsletter readers, please contact the CBIAC.

The scope of the CBIAC includes:

- Analysis of Manufacturing Processes for NBC Defense Systems
- Chemical and Physical Properties of CBD Materials
- Chemical Identification
- Combat Effectiveness
- Counterproliferation
- Counterterrorism
- Decontamination
- Defense Conversion and Dual-Use Technology Transfer
- Domestic Preparedness / Homeland Security
- Environmental Fate and Effects
- Force Protection
- Individual and Collective Protection
- International Technology Proliferation and Arms Control
- Medical Effects and Treatment
- Nuclear, Biological and Chemical Survivability Demilitarization
- Radiological and Nuclear Defense
- Smoke and Obscurants
- Toxic Industrial Chemicals and Toxic Industrial Materials
- Toxicology
- Treaty Verification and Compliance
- Warning and Identification



DoD IACs: Focused Scientific and Technical Information Resources

A Sixty Year Heritage:

Chemical Propulsion Information Analysis Center

Although it has a new name, the ***Chemical Propulsion Information Analysis Center (CPIAC)*** has a 60-year heritage of serving the nation's defense components, NASA, and the greater aerospace propulsion scientific and technical community.

History

CPIAC and its predecessor organizations have been continuously operated by The Johns Hopkins University since 1946, when leading rocket scientists of the era successfully lobbied the [Navy] Bureau of Ordnance to establish the Rocket Propellant Information Agency (RPIA) for the purpose of consolidating, organizing, cataloging, and storing the inventory of wartime reports generated by the ad hoc Office of Scientific Research and Development (OSRD). The rapid technological advances of the fledgling U.S. rocket industry during World War II necessitated the preservation of critical technical reports and data for future generations.

RPIA evolved into the Solid Propellant Information Agency (SPIA) and, by 1962, merged with the sister Liquid Propellant Information Agency to form the Chemical Propulsion Information Agency (CPIA). As CPIA's scope increased, its technical reports and papers repository (both classified and unclassified matter) grew to become the most comprehensive collection devoted specifically to chemical rocket propulsion and propellants—a true national asset. CPIAC staffers have indexed and cataloged reports and papers according to a propulsion-specific hierarchical subject index system that enables rapid identification and location of key data. To date, CPIAC has digitized over 20% of its technical reports and papers collection, which contains many one-of-a-kind reports and original issue copies.

On 1 August 2005, CPIA's name was changed to CPIAC to establish consistency with DTIC's IAC enterprise model. Today, the CPIAC scope includes all technical data, reports, analyses, and technology associated with propulsion hardware, components and technologies (including propellants and energetic materials) for rockets, missiles, space exploration systems, and gun-launched munitions. CPIAC is staffed with engineers and scientists who have substantial experience in propulsion research and development, manufacturing, and testing for both the Government and U.S. industry.

JANNAF

One of CPIAC's major functions is providing technical and administrative support to the Joint Army-Navy-NASA-Air Force (JANNAF) Interagency Propulsion Committee, the primary technical information exchange platform for the U.S. propulsion industry. JANNAF exists to promote and facilitate the exchange of technical information in a controlled-access (U.S. citizens only) environment; to establish and promulgate standards; to coordinate research, exploratory development, and advanced development programs in the areas of rocket, missile, space and gun propulsion; and accomplish problem solving in areas of joint agency interest.

JANNAF is organized into twelve functional subcommittees that are aligned with key propulsion technology areas. CPIAC administers four to six JANNAF technical meetings per year, ranging in attendance from a couple dozen people to more than 800. CPIAC publishes JANNAF workshop and meeting proceedings on CD-ROM and electronically catalogs all papers in its repository and citations database. CPIAC also maintains the JANNAF Web site at http://www.jannaf.org.

Products and Services

In addition to maintaining the most comprehensive propulsion-related scientific and technical reports collection in the world, CPIAC maintains a number of industry handbooks, manuals, databases, and its signature Propulsion Information Retrieval System (PIRS). This extensive information collection represents the documented national knowledge base in chemical rocket

propulsion and is available for dissemination to eligible individuals and organizations. Major CPIAC customers include DoD research laboratories, NASA and its field centers, the DoD Research and Engineering (DDR&E) organization, the Defense Ammunition Center, the DoD Explosives Safety Board, and propulsion system manufacturers.

CPIAC has increased its use of modern information technology to deliver critical information through the convenience of the Internet. In 2005, CPIAC launched the secure Chemical Propulsion Information Network (CPIN), a Web-based framework that provides qualified users with single portal access to CPIAC-controlled data products and services. CPIN currently hosts the Rocket Motor Electronic Database (RMED), Solid Propellant Database (SPD), and Rocket Propulsion Test Facilities (RPTF) database. Online Propulsion Information Retrieval System (PIRS) and the Liquid Propellant Database (LPD) will soon be added to CPIN.

Support to the Research and Development Community

As a knowledgeable and objective participant in supporting industry research and development, CPIAC assists sponsors in maximizing increasingly limited research and development funding by focusing on key propulsion system technology needs through workshops, symposia, technical assessments, and surveys. For example, CPIAC supports the DoD/NASA Integrated High Payoff Rocket Propulsion Technology (IHPRPT) initiative, which has the goal of doubling U.S. propulsion performance capability by the year 2010. CPIAC has also provided substantial technical support to NASA as it executes its new exploration vision for going to the Moon, Mars, and beyond.

Artist's concept of future launch of NASA's Crew Exploration Vehicle (courtesy ATK).

Technical Area Tasks

CPIAC also conducts technical area tasks (TATs). TATs are separately funded work efforts over and above basic IAC products and services. TATs typically have a period of performance of less than three years and can be funded by a simple modification to the existing CPIAC contract. Examples of recent or current TATs include the development of a propellant and explosive ingredients supply status database, a survey and catalog of reduced sensitivity explosives for fragmentation warheads, an international survey of gun propellants for medium and large caliber applications, tactical missile characterization for demilitarization, and administration of the biennial DoD Explosives Safety Seminar.

One of CPIAC's recent TATs focused on the documentation of advancements in the development of reduced sensitivity explosives as potential alternatives to conventional TNT-based formulations. Under the sponsorship of the U.S. Army Armaments Research, Development and Engineering Center (ARDEC), CPIAC identified, surveyed, and cataloged the characteristics of mature and emerging explosive compositions that have demonstrated reduced sensitivity to initiation by unplanned stimuli, such as a fuel fire, bullet or fragment impact, or the detonation of an adjacent munition. Reduced sensitivity characteristics, commonly referred to as "insensitive munitions" or "IM" characteristics, are desirable to increase the safety of warfighting personnel and reduce the probability of catastrophic damage to critical military assets and infrastructure.

In order to identify all known explosives meeting the survey criteria and to maximize the data collected for each candidate composition, CPIAC used several approaches to acquire information, including an indexed search of its signature PIRS and other in-house resources, review of relevant symposia, and personal contacts with subject matter experts in the military R&D community and at the NATO Munitions Safety Information Analysis Center (MSIAC).

Bullet impact test result on a munition

The product of this TAT was recently published as CPIAC-TR-05-002, *Reduced Sensitivity Explosive Compositions for Fragmentation Warheads*. It includes information on 49 domestic and foreign compositions that have shown some degree of reduced sensitivity to IM threats. Data presented include formulations, sensitivity characteristics, subscale and full-scale IM test results, processing characteristics, results of aging studies, mechanical and thermal properties, and toxicity. Quantitative performance and sensitivity data for many of the explosives are compiled and plotted to facilitate comparison of candidates. The information and data contained in this limited distribution document will aid the DoD and the Services in assessing candidate reduced sensitivity compositions for metal accelerating applications.

Looking Forward

CPIAC continues to evolve to meet the needs of the greater propulsion scientific and technical community. The changing role of U.S. military operations, the transformation of the Services, the creation of a new vision for NASA, and the dynamics of a modern aerospace industry shaped by acquisition reform, corporate consolidation, information technology, and new threats at home and abroad, make the need for information collection, coordination, sharing, and informed analysis greater now than at any other time in the history of the aerospace and defense industry. In this challenging environment, CPIAC is postured to meet the knowledge needs of the Warfighter, the DoD, NASA, and the extended chemical propulsion and energetics industrial community.

For more information about CPIAC's products and services, go to http://cpiac.jhu.edu or call 410-992-7300, ext. 202 or 211.

In Memory of Fred Sidell, M.D.

Physician, Teacher, and Scientist

DR. FREDERICK R. SIDELL, age 71, of Bel Air, MD, died on February 14, 2006 at the Mariner Health and Rehabilitation Center in Bel Air, MD. Born in Marietta, OH, he was the son of the late Alonzo Russell and Frances Virginia Haught Sidell.

Dr. Sidell attended Marietta College and the NYU School of Medicine. He completed his internship and residency in internal medicine at the Cleveland Metropolitan General Hospital. After spending two years in the U.S. Army, stationed at the Edgewood Arsenal, he was employed by the Department of Defense until he retired in 1995. While with the Department of Defense, Dr. Sidell developed into one of the world's experts and educators on the impact and management of casualties from chemical agents.

In the late 1960s, Dr. Sidell and some colleagues developed a course for military personnel on the Management of Chemical and Biological Casualties. He began providing informal instruction on proper decontamination procedures to health care providers and workers at chemical manufacturing and depot sites. Today, the six-day course, which is cosponsored by the U.S. Army Medical Research Institute of Chemical Defense (USAMRICD) and the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), is offered to U.S., and also allied, military physicians, nurses, and medical NCOs, and as well as to civilian emergency response personnel. It is a recognized and approved military course and provides postgraduate medical education credit. Dr. Sidell served as the course director for many years. He also prepared much of the teaching material and provided instruction for the Chemical Stockpile Emergency Preparedness Program and for the Domestic Preparedness Program.

Dr. Sidell was frequently sought out by media outlets to discuss topics in his field of expertise, and contributed to CNN and the New York Times among others. He was called upon by the Department of Defense for a number of highly sensitive assignments. These included a trip to Southeast Asia in 1979 to investigate the alleged use of "yellow rain" against Hmong tribesmen in Laos. In 1987, he examined Kurdish civilian casualties who were victims of chemical warfare in their homeland. He traveled to Japan in 1995 to assist and advise Japanese physicians on the care of casualties from a terrorist-led nerve agent incident in the Tokyo subway system.

Dr. Sidell spent his retirement years providing education and training in the management of chemical agents and casualty treatment to civilian first responders, including many EMT units throughout the United States.

The Sidell Learning Center, located on the Edgewood Area of Aberdeen Proving Ground, Maryland, was dedicated on January 23, 2002.

His research and studies have resulted in over 100 reports and articles. He wrote several handbooks and was the senior editor of the military's textbook on the management of chemical and biological casualties.

Dr. Sidell was the recipient of many awards and medals. A new building at the Edgewood area of the Aberdeen Proving Ground was named the Sidell Learning Center in 2002 in recognition of his work. He was inducted into the Marietta College Hall of Honor in 2003, becoming one of only 24 people to be so recognized at that time.

Dr. Sidell is survived by one son, Bruce R. Sidell of Roanoke, VA; two daughters, Rebecca Sidell Harris of Wallingford, PA and Kathrin R. Sidell of Palo Alto, CA; one sister, Janet S. Townsend of Williamstown, WV; and three grandchildren, Eleanor Harris and Robert Harris, both of Wallingford, PA, and Cooper Sidell of Roanoke, VA.

Contributions may be made to the American Diabetes Association, 800 Wyman Park Drive, Suite 110, Baltimore, MD 21211, or to the Kidney Foundation of MD, 1107 Kenilworth Drive, Suite 202, Baltimore, MD 21204.

Sources:
McComas Funeral home online
http://www.mccomasfuneralhome.com

Public Affairs Office of U.S. Army Medical Research Institute of Chemical Defense

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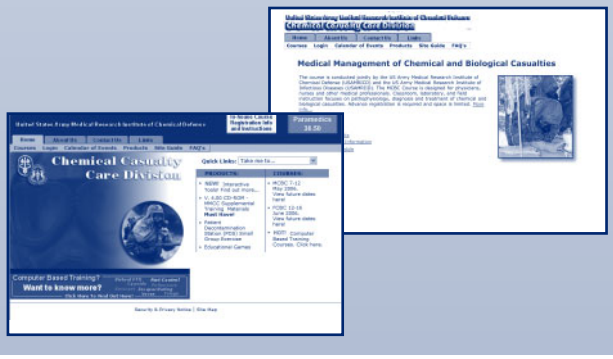
For more information about the course created by Dr. Sidell and his colleagues visit the Chemical Casualty Care Division of the U.S. Army Medical Research Institute of Chemical Defense online at:
https://ccc.apgea.army.mil/courses/In_house/MCBC.htm



History of Detectors *cont.*

of the corresponding CW agents which has been duly recognized with the development of appropriate equipment for sampling, detecting, analyzing, and confirming the specific agents involved in any circumstance." Biological agents, however, were live agents and required far more complication to create a field detection capability. Instead of detection, the Chemical Corps concentrated on sampling equipment. Field manuals during the 1950s for biological warfare stated that the first indication of a biological attack would be widespread illness. Medical treatment would have to begin before identification of the specific biological agent, which might take days or even weeks. Much like the World War II procedures, the manuals advised that field samples would have to be tested and identified at Army Medical laboratories. Early sampling kits were described as field expedient collections of the pertinent items such as test tubes, air sampler, and notebooks.[13]

M17 Biological Agent Sampling Kit

In 1951, the Chemical Corps issued a formal requirement for a biological agent sampling kit to collect samples of contaminated air, soil, and other materials for dispatch to an appropriate medical laboratory for positive identification. The M17 (E25R1) Biological Agent Sampling Kit was standardized in 1957 to meet the requirement. Due to problems with finding the right nutrient media for the various biological agents, only 50 kits were procured by the Army for training purposes. The kit was declared unsuitable for field use due to its inability to sample for all biological agents. As standardized, the kit consisted of a hand-operated vacuum pump, filtration units, sump tank, sterile plastic petri dishes, personal incubation vest, vials of nutrient broth, vials of swab liquid, cotton-tipped wood swabs, gloves, forceps, and plastic bags. The total weight of the items plus the plastic carrying case was 18-pounds. The kit was designed to collect samples from aerosols, surfaces, water, food, and materiel and to allow for initial culturing of the samples while enroute to a Medical laboratory for definitive identification. In addition to the Army, the Navy procured over 400 kits and Civil Defense procured 25 kits. The kit was eventually replaced by the M19 CBR Agent Sampling Kit and obsoleted in 1968.[14]

NBC Reconnaissance

E4 Mobile Chemical Laboratory

During the Korean Conflict, there was a renewed interest in the concept of the front line field laboratory that could analyze and identify chemical, biological, and radiological materials. Originally intended as a replacement for the M3 Mobile Chemical Laboratory, the E4 Mobile Chemical Laboratory was a self-sufficient unit in an aluminum trailer approximately 27-feet by 8-feet in size. It was intended to identify chemical and radiological materials, and later biological agents when the specific equipment became available. The development project was dropped in 1965 when the M3 Mobile Laboratory was obsoleted.[15]

Notes

[1] CCTC Item 1749, 26 Jun 47.

[2] CCTC Item 2480, 1 May 52; CCTC Item 2806, 12 Feb 54; AMCTC Item 3598, 23 Jun 65; TM 3-306, *Detector Kits Chemical Agent M18, M9A2, and M15*, April 1958, 2, 10.

[3] CCTC Item 2542, 16 Aug 52; AMCTC Item 5437, 31 Aug 67.

[4] CCTC Item 2695, 25 Apr 53.

[5] AMCTC Item 5267, 3 Apr 67; TM 3-500, *Chemical Corps Equipment Data Sheets,* 1961, 98.

[6] CCTC Item 3629, 14 Aug 59; AMCTC Item 8065, 12 Aug 70; *Fact Sheet on Water Testing Kit, Poisons, M4A1*, 9 Oct 68; TM 3-500, 119.

[7] Falkof and Gehauf, 38-39; CWTC Item 456, 6 Feb 42; CCTC Item 2818, 8 Apr 54; AMCTC Item 1647, 1 Nov 63; *Report of Production*, 24; TM 750-5-15, *Chemical Weapons and Defense Equipment*, February 1967, 107; TM 3-290, *Individual Protective and Detection Equipment*, September 1953, 62-63.

[8] CCTC Item 3133, 20 Oct 55; U.S. Army Chemical Corps. *Summary of Major Events and Problems*, FY56, 133-134.

[9] AMCTC Item 7793, 9 Apr 70; TM 3-306, *Detector Kits Chemical Agent M18, M9A2, and M15*, April 1958, 2, 17-18.

[10] AMCTC Item 3598, 23 Jun 65; AMCTC Item 7793, 9 Apr 70; TM 3-306, 2-3, 7.

[11] CCTC Item 3463, 25 Jun 58; Material Status Record (MSR) Item 05796009, 3 Apr 79.

[12] AMCTC Item 7626, 17 Feb 70; U.S. Army Chemical Corps, *Summary of Major Events and Problems*, FY54, 35-36 and FY55, 133.

[13] CCTC Item 3296, 1 Feb 57; FM 21-45, *Defense Against Biological Warfare*, October 1952, 16.

[14] CCTC Item 3296, 1 Feb 57; AMCTC Item 6251, 20 Jun 68.

[15] AMCTC Item 3400, 22 Apr 65.

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