



DOD DECONTAMINATION SCIENCE AND TECHNOLOGY PROGRAM

By John Weimaster, Ph.D., U.S. Army Soldier and Biological Chemical Command, Aberdeen Proving Ground-Edgewood Area, Maryland; and John Ontiveros, Ph. D., and Mr. Imran Baig, Battelle Edgewood Operations, Bel Air, Maryland

The decontamination program area of the Joint Science and Technology Panel for Chemical and Biological Defense (JST-PCBD) has seen the attainment of many goals in 1999.

The JSTPCBD has primary responsibility for management and oversight of projects in the areas of 1) basic research, 2) supporting science and technology, 3) chemical and biological detection, 4) individual and collective protection, 5) decontamination, and 6) modeling and simulation. The wide range of these projects encompasses basic research, advanced research, and advanced technology development. This article will describe the achievements of 1999 and 2000 to date, and outline the planned activities for the remainder of 2000 for the decontamination program area.

Present Achievements

It is important to note that in the area of decontamination, several key activities were accomplished in fiscal year 1999 (FY99) and 2000 (FY00) to date. Most importantly, a comprehensive Front-End Analysis (FEA) was conducted. This consisted of an exhaustive literature search in combination with a world-wide market survey to identify technologies, equipment and projects associated with decontamination. Additionally, care was taken to identify on-going decontamination projects conducted at the Department of Energy (DOE), Defense Advanced Research Projects Agency (DARPA), Army Research Office (ARO), and the Technical Support Working Group (TSWG), as awareness and collaboration are integral elements to successful planning and the judicious use of common resources. These efforts led to the development of a comprehensive and insightful ten-year decontamination research Master Plan that identifies technologies having potential application to projected DoD decontamination acquisition programs. Copies of the Master Plan were distributed at the **Decon 99 Conference** held in Nashville, Tennessee.

The second major achievement during FY99 was the identification of candidate decontaminants for the Joint Service Fixed Site Decontamination (JSFXD) program. This was based largely on information collected during the FEA and on recent test results from large panel tests conducted at Dugway Proving Ground, Utah. Identification of the candidates has allowed the JSFXD program to initiate a series of investigations designed to evaluate performance of those decontaminants and to determine potential suitability.

Finally, a Joint Service Sensitive Equipment Decontamination (JSSED) transition team was established to coordinate the transition and maturation of technologies that are applicable for the decontamination of sensitive equipment. The transition team will continue its efforts through FY00.

Current and Future Programs

The main thrust for 2000 is the **JSSED-Block I** program. This program addresses the need to decontaminate CB agents from sensitive equipment such as avionics, electrical, electronic and environmental systems equipment. This program is scheduled for transitioning in FY01. Figure 1 summarizes the planned DoD decontamination acquisition programs and the anticipated dates for transition from research to engineering.

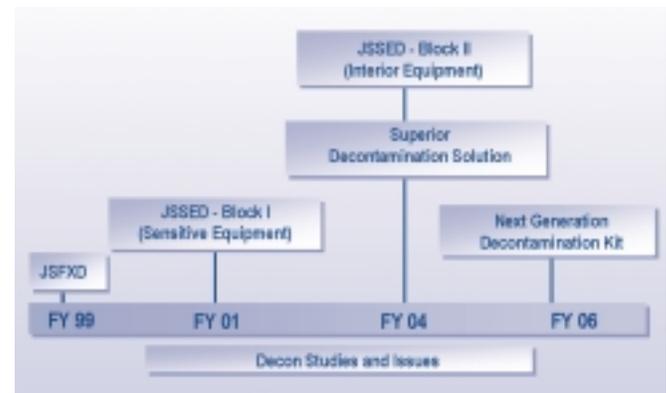


Figure 1. Decontamination Key Tech Base Transition Programs

The **JSSED-Block II/III** program emphasizes decontamination of vehicle and aircraft interiors and also addresses the need for “on-the-move” decontamination. The **Superior Decontamination Solution (SDS)** program consists of a series of projects that target the replacement of DS2 and the development of other decontaminating solutions. The **Next Generation Decontamination Kit** encompasses a new category of solid decontaminants such as reactive sorbents (e.g., zeolites and nanoparticles). These will serve as a product improvement to replace the current developmental sorbent in the M295 Decontamination Kit and also have other applications. To conclude Figure 1, there are several issues, such as the environmental fate of agents and the behavior of agents on surfaces, that impact all programs and these are collectively represented in the category **Decon Studies and Program Issues**.

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FY00 Project Descriptions

Currently, there are thirteen funded projects that fall under the programs described above.

• JSSSED-Block I

- **Supercritical Carbon Dioxide (SCCO₂) for Sensitive Equipment Decontamination:** to determine the feasibility of employing SCCO₂ or liquid CO₂ extraction technology for military purposes. It will be necessary to evaluate the technical benefits and challenges associated with the development of such a system. Additionally, the required testing for determination of material compatibility and cleaning efficiencies will be conducted.
- **Environmentally Friendly Sensitive Equipment Decontamination (Solvent Wash):** to develop a system that uses non-ozone depleting solvents to decontaminate electronic equipment, precision parts, and other sensitive equipment effectively and efficiently. In both these technologies, however, the solvent removes agent from the surface that must later be destroyed. A reactive sorbent, once developed, may be able to perform this function.

• SDS Program

- **Investigation and Validation of Organic Chemical Matrix Strategies for Fixed Site/ Large Area Decontamination:** to develop a non-aqueous monoethanol amine (MEA) decontaminating solution as a replacement for DS2.
- **Enzyme and Catalyst Based Decontamination:** to develop an enzyme-based, catalytic decontaminant that is non-toxic, non-corrosive and environmentally safe.
- **Enzymatic Decontamination of Chemical Warfare Agents:** to evolve and enhance the catalytic properties of the bacterial enzyme phosphotriesterase towards the decontamination, destruction and detection of G- and V-type nerve agents and their analogs. This project complements the previously described effort.
- **Surfactant-Based Decontamination Solution:** to develop a chemical and biological agent decontaminating solution utilizing surfactant or microemulsion technology and peracid chemistry.
- **Development of Decon Green:** to develop a non-corrosive, non-toxic, environmentally-friendly, peroxocarbonate-based decontaminating solution with a wide variety of decontamination/site-restoration applications.

• Next Generation Decontamination Kit

- **Destructive Adsorption: A New Approach to Reactive Sorbent for Immediate Decontamination:** to prepare a reactive sorbent for immediate decontamination. This requires an initial preparation of inorganic substrates impregnated with oxides of transition state metals and a subsequent characterization of their reactivity to chemical warfare agents and simulants. This project may have

application in the JSSSED – Block II/III program mentioned earlier.

- **Solid State NMR:** to develop methodologies to investigate advances in materials science/technology that utilize high surface area reactive materials.

• Decontamination Studies and Program Issues

This is a “technology watch” category in FY00 for monitoring the maturation of technologies presently lower than the level required to reach desired transition milestones. As appropriate advancement occurs, insertion to the CB Defense Program could take place.

- **Biological Agent Decontamination Evaluation:** to examine the status of biological agent decontamination; identify data gaps and potential areas for the use of specialized technology.
- **Chemical Agent Reactivity with Concrete, Asphalt and Soil:** to collect sufficient data for persistence models to predict agent hazard with a high degree of accuracy that supports international efforts.
- **Fate of Chemical Agents on Surfaces:** to quantify the fate of agent-contaminated surfaces by using an experimental approach to study the off-gassed and surface adsorbed/reaction components.
- **Decontamination Area Integration:** to conduct a variety of tasks including an update of the decontamination area Front-End Analysis and Master Plan. Integration includes funding and participation in a NATO working group to define decontamination requirements for Allied Nations.

Other Federal CB Decontamination Programs

There are promising avenues in the field of decontamination presently being explored under the aegis of federal organizations such as DOE, DARPA, ARO, and TSWG. At the DOE laboratories, a decontaminating foam, an oxone gel, and an Atmospheric Pressure Plasma Jet (APPJ) are all being evaluated to determine their effectiveness in decontamination. In addition, GD5, a non-aqueous decontaminant, is part of the Foreign Comparative Tests (FCT) being conducted by the U.S. Air Force for employment in the decontamination of sensitive electronic items and aircraft interiors. All these projects will be watched for maturity and close monitoring will allow timely insertion into decontamination acquisition programs.

Conclusion

The multi-fold responsibilities of the Joint Science and Technology Panel for Chemical and Biological Defense are strongly directed to the goal of achieving innovative and effective decontamination techniques for the future. Four transition milestones will occur over the next five years. The transfer of technologies to engineering development will provide new capabilities where none existed before. Continual awareness of varied on-going projects will lead to effective collaboration, the judicious use of resources and concurrent investigation of promising

See “Decon S&T Program”
Continued on page 4

CBD CONTRACT AWARDS

By Mary Frances Tracy

1. **Woodland Camouflage Enhanced Hot Weather Trousers**
American Apparel, Inc.
Selma, AL
\$6,332,634. December 15, 1999
By Defense Supply Center-Philadelphia, PA
2. **Woodland Camouflage Enhanced Hot Weather Trousers**
Propper International, Inc.
Mayaguez, Puerto Rico
\$14,858,410. December 15, 1999
By Defense Supply Center-Philadelphia, PA
3. **908 Protection Assessment Tests Systems (M41) in support of the M40/M42 Chemical/Biological Protective Masks**
TSI, Inc.
Shoreview, MN
\$5,050,296. December 15, 1999
By U.S. Army Tank-Automotive & Armaments Command-Rock Island, IL
4. **M40A1 Masks (Small, Medium, and Large)**
ILC Manufactured Products Division
Frederica, DE
\$6,469,243. December 21, 1999
By U.S. Army Tank-Automotive & Armaments Command-Rock Island, IL
5. **Chemical Detector Kit**
Bachrach, Inc.
625 Alpha Drive
Allegheny County
Pittsburgh, PA
\$91,760. January 16, 2000
By Defense General Supply Center-Richmond, VA
6. **Contractor Support to the Director of the Defense Threat Reduction Agency's Advanced Systems and Concepts Office**
LOGICON Advanced Technology
San Pedro, CA
\$17,508,947. February 2, 2000
By Defense Threat Reduction Agency-Arlington, VA
7. **Elector-Optic Threat Warning Development Program**
Veridian Engineering, Inc.
New York, NY
\$14,032,000. February 2, 2000
By U.S. Air Force Research Laboratory-Wright Patterson Air Force Base, OH
8. **Chemical Barrier Skin Protective Compound**
Seeders Bob Buffer Zone
3215 Oakleaf Drive
Edmond, OK 73034-8941
\$39,600. February 4, 2000
By Defense General Supply Center-Richmond, VA
9. **Chemical Protective Patient Wrap and Litter**
FW Lang Company
PO Box 112
Clifton Heights, PA 19018
\$32,250. February 5, 2000
By Defense Personnel Support Center-Philadelphia, PA
10. **Maintenance and Support Services for the M93 Fox NBC Tactical Vehicle**
General Dynamics Land Systems, Inc.
Sterling Heights, MI
\$6,150,000. February 11, 2000
By U.S. Army Tank-Automotive & Armaments Command-Rock Island, IL
11. **Miniature Chemical Agent Detector**
Environmental Technologies Group, Inc.
1400 Taylor Avenue
PO Box 9840
Baltimore, MD 21284-9840
\$850,000. February 20, 2000
By Defense General Supply Center-Richmond, VA
12. **Demonstration of SET(TM) Technology for the Destruction of Chemical Weapons**
Commodore Applied Technologies, Inc.
Albuquerque, NM
\$7,900,000. February 25, 2000
By U.S. Army
13. **Biological Agent Sample Preparation for the Detection and Identification of Multiple Agents by Nucleic Acid-Based Analysis**
Xohox, Inc
Instant Genetics, Inc.
3475 Edison Way, Suite T
Menlo Park, CA 94025
\$70,000. February 26, 2000
By USAMRAA-Ft. Detrick, MD
14. **Decontaminating Agent for M295 Decontamination Kits**
Guild Associates
5750 Shier-Rings Road
Dublin, OH 43016-2013
\$666,326. March 1, 2000
By U.S. Army Industrial Operations Command-Rock Island, IL
15. **M295 Decontamination Kit**
Trutech
680 Elton Street
Riverhead, New York 11901
\$3,958,164. March 1, 2000
Sponsor: Not identified
16. **Base Operating Support Services for Johnston Atoll**
Raytheon Support Services
Burlington, MA
\$9,853,119. March 3, 2000
By 15th Contracting Squadron-Hickam Air Force Base, Hawaii
17. **Program Definition and Risk Reduction (PDRR) Effort to Design, Fabricate and Test the Joint Service General Purpose Mask (JSGPM)**
Avon Rubber & Plastics Inc.
805 West Thirteenth Street
Cadillac, MI 49601-9282
\$9,190,260 April 4, 2000
By U.S. Army Soldier and Biological Chemical Command, APG, MD

"Decon S&T Program"

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technologies. In addition to ongoing reviews, there will be scheduled updates of the Front-End Analysis and Master Plan, thus ensuring appropriateness of research efforts.

FY00 to date has been a dynamic, challenging and fast-paced year. Decontamination efforts will continue to provide further insight into the complex business of decontamination and will identify solutions to these challenges.

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CB IN THE NEWS

By Mary Frances Tracy

Joint-Service Team Develops New Protective Mask

Garamone, Jim

CB Quarterly

September 1999

The Joint-Service General Purpose Mask (JSGPM) has been developed to be the lightest, most comfortable protective mask service members have ever used. It has been developed to protect wearers from battlefield concentrations of chemical and biological agents and toxic industrial chemicals. The JSGPM is lighter than the current M-40 mask and has a single eyepiece that provides the wearer a much greater field of view. Testing is being conducted to ensure it will interface with night vision equipment, weapon-sighting systems, and individual weapons. The JSGPM integrates the filters back into the mask with a plan to embed a "service-life indicator" in the mask filter. This will show the need for replacement of the mask filter. An additional idea being incorporated involves color-coding parts inside the mask that need replacement. The development of this one-piece design makes cleaning the mask easier. Finally, the development team hopes to hold the cost to \$50 per mask. This makes the mask virtually disposable if it becomes unserviceable.

Ion Sniffers

Hand-Held "Laboratories" Detect Faintest Traces Of Explosives, Narcotics, and Chemical Warfare Agents

Roos, John

Armed Forces Journal INTERNATIONAL

January 2000

With a promise to make the detection and identification of illegal substances easier, two detection devices based on the technology of Ion Mobility Spectrometry (IMS) have been introduced. Barringer Technologies has produced the hand-held IONSCAN Sabre2000TM which is capable of detecting and classifying chemical agents, identifying trace amounts of explosives and narcotics in airborne vapors and particles, and detecting illegal airborne vapors and particles as small as 1/100th the size of a grain of salt. Sandia National Laboratories is developing a system that can detect and classify trace amounts of explosives under water. Although the Sandia system is not quite ready for manufacture, the portable detector system is yielding results that far exceed the detection capabilities normally expected from the components being used.

High-Profile Marine Unit Moving Here

Terrorist Response Team Repositioning Near Capital

Vogel, Steve

<http://search.washingtonpost.com/>

January 8, 2000

The Marine Corps' elite chemical and biological (CB) weapons response team, Chemical Biological Incident Response Force (CBIRF), is relocating from Camp Lejeune, NC, to Indian Head Naval Surface Warfare Center, Charles County, MD. The 373-member Marine unit, trained to deploy worldwide in the event of a CB terrorist attack, will begin moving in April 2000. The relocation plan positions the unit closer to the nation's capital.

CBIRF has the capability to detect and identify chemical and biological agents, to medically treat and evacuate casualties from a contaminated location, to decontaminate casualties, and to disarm weapons of mass destruction.

Note: A complete description of CBIRF and its capabilities can be found in the **Armed Forces Journal INTERNATIONAL**, author Jason Sherman, January 2000.

DoD Announces Plans for 17 New WMD Civil Support Teams

<http://www.defenselink.mil/news/>

[Jan2000/b01132000_bt017-00.html](http://www.defenselink.mil/news/Jan2000/b01132000_bt017-00.html)

January 13, 2000

In a press release from the Department of Defense (DoD), Secretary of Defense William S. Cohen announced the creation of 17 additional Civil Support Teams for Weapons of Mass Destruction (WMD) to support local, state, and federal civil authorities in the event of a WMD incident in the U.S. Formerly known as Rapid Assessment and Initial Detection Teams (RAID), the newly created Civil Support Teams, consisting of National Guard personnel, will be located in Alaska, Arizona, Arkansas, California, Florida, Hawaii, Idaho, Iowa, Kentucky, Louisiana, Maine, Minnesota, New Mexico, Ohio, Oklahoma, South Carolina, and Virginia. Establishment of the teams is expected to occur between March and July 2000.

Russia gets EU money to destroy chemical weapons

http://abcnews.go.com/wire/World/reuters20000302_1815.html

March 2, 2000

The European Union (EU) will provide Russia with seven million euros (\$6.81 million) to continue the destruction of its chemical weapons. Over half of the money will be devoted to dismantling the Kaprolaktam factory that produced mustard gas in the Nizhny Novgorod region on the Volga River. The remainder of the money will be used to create a monitoring system at a chemical factory at Gorny.

The following publications contain several articles of interest to the CB Defense community:

Environmental Health Perspectives

December 1999

1. *Chemical and Biological Weapons: New Questions, New Answers*
2. *The Sources, Fate, and Toxicity of Chemical Warfare Agent Degradation Products* by Nancy B. Munro, et al.
3. *Biological Warfare Agents as Threats to Potable Water* by W. Dickinson Burrows and Sara E. Renner
4. *Hazards of Chemical Weapons Release during War: New Perspectives* by Sharon Reutter

ARMY RD&A Magazine

January-February 2000

1. *Demil Versus Acquisition* by Gary L. Lawson and Thomas H. Howell
2. *The Biological Weapons Improved Response Program* by Dr. Mohamed Athher Mughal
3. *Alternative Technologies and Approaches for Chemical Demilitarization* by LTC Joseph E. Pecoraro

CALENDAR OF EVENTS

The CBIAC maintains a Calendar of Events highlighting conferences, symposia, meetings, exhibitions and workshops of interest to the CB community in every issue of our newsletter and on the **CBIAC Homepage** at <http://www.cbiac.apgea.army.mil>. We invite CBIAC users to submit information on various events to Mary Jo Waters (watersm@battelle.org) at 410-612-6418.

2000 MEETINGS

May 15-18, 2000

Global Demilitarization Symposium & Exhibition

(Event #058)

Coeur d'Alene, Idaho

POC: Megan McCrory

Tel: (703) 522-1820

Fax: (703) 522-1885

Email: mmccrory@ndia.org

URL: <http://www.ndia.org>

May 15-June 2, 2000

COURSE: Health Emergencies in Large Populations (H.E.L.P.)

(See web site for additional dates and worldwide locations)

University of Montreal

Montreal, Canada

POC: Joyce Hudon

Tel: (514) 376-7034

Fax: (514) 362-2929 box 3033

Email: helpcrs@redcross.ca

URL: <http://www.redcross.ca/international/help/>

May 16, 2000

IAC Awareness Conference: "Key Challenges"

Hope Hotel-Wright Patterson Air Force Base

Dayton, Ohio

POC: Donna Egner

Tel: (937) 255-4840

Fax: (937) 255-9673

Email: degner@bah.com

URL: <http://iac.dtic.mil/surviac>

May 22-24, 2000

Defense Modeling and Simulation Office (DMSO) Industry Days 00

POC: Larry Alexander

Tel: (703) 824-3404

Email: lalex@dmsi.mil

URL: <http://www.msiac.dmsi.mil/>

May 22-24, 2000

The International CW Demil Conference (CWD2000)

OPCW (May 22)

Dutch Ministry of Foreign Affairs (May 23-24)

The Hague, Netherlands

POC (DERA): Ian Chilcott

Tel: +44 (0) 1980 613129

Fax: +44 (0) 1980 613139

Email: dmil@dera.gov.uk or eichilcott@aol.com

URL: <http://www.dera.gov.uk>

May 22-25, 2000

Remediation of Chlorinated and Recalcitrant Compounds: The Second International Conference

Monterey Conference Center

Monterey, California

Tel: (800) 783-6338 (USA and Canada), (614) 424-5461

Fax: (614) 488-5747

Email: conferencegroup@compuserve.com

URL: <http://www.battelle.org/environment/er/chloconf.html>

May 23-25, 2000

2000 Joint Service Chemical and Biological Decontamination Conference

The Hilton Hotel

Salt Lake City, Utah

POC: Booz-Allen & Hamilton (registration)

Attn: Decon 2000

1309-R Continental Drive

Abingdon, MD 21009

POC: MAJ Brendan Powers (exhibits)

Tel: (410) 436-4000

Email: brendan.powers@sbccom.apgea.army.mil

May 30-June 2, 2000

DTRA 9th Annual International Conference on Controlling Arms: "Globalization of the Security Environment"

Waterside Marriott Hotel

Norfolk, Virginia

POC: The Arms Control Technology Center

Jerry Stockton or Scott Evans

Tel: (703) 715-4414/ (703) 264-9213

Fax: (703) 264-2560

Email: stocktoj@dynacorp.com or evanss@dynacorp.com

URL: <http://www.dtra.mil/news/conferences/meet.html>

June 4-9, 2000

U.S. Army Medical Defense Bioscience Review 2000

Marriott's Hunt Valley Inn

Hunt Valley, Maryland

POC: Katie Deel

Tel: (410) 679-3290

Fax: (410) 679-7104

Email: Kathy.M.Deel@SAIC.com

URL: http://chemdef.apgea.army.mil/Bios...%202000/bioscience_review_2000.htm

June 7-10, 2000

(Exposition: June 8-9, 2000)

Technologies for Public Safety in Critical Incident Response Conference 2000

Denver Technical Center Marriott

Denver, Colorado

POC: Lisa Hecker

Tel: (703) 625-1489

Fax: (703) 920-9300

Email: Lhecker@crc.org

URL: <http://www.nlectc.org>

June 11-15, 2000

FEMA 2000 Technology Partnerships for Emergency Management Workshop: "Moving Preparedness, Mitigation, and Response into the Next Millennium"

Sheraton Hotel

Colorado Springs, Colorado

POC: Kimberly Taylor

Tel: (303) 275-4358

Fax: (303) 275-4320

Email: kimberly_taylor@nrel.gov/surviving_disaster
http://www.hrel.gov/surviving_disaster

June 13-15, 2000

NBC 2000: Symposium on Nuclear, Biological and Chemical Threats in the 21st Century

Helsinki University of Technology

Espoo, Finland

POC: Dr Katri Laihia

Tel: +358-14-602 655

Fax: +358-14-602 501

Email: laihia@cc.jyu.fi

URL: <http://www.vtt.fi/aut/rm/spt/index1.htm>

June 15-16, 2000

WMD & Military Assistance to Civil Authorities: "How DoD Will Support State & Local Authorities"

Washington, D.C.

POC: Marty Masiuk

Tel: (410) 987-2075

Email: marty@imrnet.com

URL:

<http://www.imrnet.com/conference/2000program/wmdprogram.html>

June 18-19, 2000

NEHA's 2000 Bioterrorism Conference

Adams Mark Hotel

Denver, Colorado

POC: NEHA Service Specialist

Tel: (303) 756-9090 Ext. 0

Fax: (303) 691-9490

Email: Clayne@neha.org

URL: <http://www.neha.org/Bioterrorism2000.html>

June 19-23, 2000

Worldwide Chemical Conference

(Event #030)

Fort Leonard Wood, Missouri

POC: Dick Riegel

Tel: (703) 247-2593

Fax: (703) 522-1885

Email: driegel@ndia.org

URL: <http://www.ndia.org>

June 19-23, 2000

EUROSATORY 2000: International Land Defence Equipment Exhibition

Paris-Le Bourget, France

Tel: 33-1 44 14 58 10

Fax: 33-1 42 30 70 88

Email: Coges.eurosatory@wanadoo.fr

URL: <http://www.eurosatory.com/anglais/welcome.shtml>

June 20-22, 2000

The 68th MORS Symposium: "Expanding Our Horizons"

U.S. Air Force Academy

Colorado Springs, Colorado

Tel: (703) 751-7290

Fax: (703) 751-8171

Email: morsoffice@aol.com

URL: <http://www.mors.org>

June 26-29, 2000

The 6th Annual Joint Aerospace Weapons Systems Support, Sensors and Simulation (JAWS S³) Symposium & Exhibition

(Event # 092)

Adam's Mark Hotel San Antonio Riverwalk

San Antonio, Texas

POC: Erin Curry

Tel: (703) 247-2578

Fax: (703) 522-1885

Email: ecurry@ndia.org

URL: <http://www.ndia.org>

<http://www.jawswg.hill.af.mil>

June 26-29, 2000

16th Annual Security Technology Symposium & Exhibition: "Partners in Protection: The Future of Physical and Cyber Security"

(Event #049)

Williamsburg Marriott

Williamsburg, Virginia

POC: Angie DeKleine

Tel: (703) 247-2599

Fax: (703) 522-1885

Email: adekleine@ndia.org

URL: <http://www.ndia.org/>

Jul 9-14, 2000

Gordon Research Conference on Illicit Substance Detection

Connecticut College

URL: <http://www.grc.uri.edu/00sched.htm>

July 16-19, 2000

International Conference on Emerging Infectious Diseases 2000

Atlanta Marriott Marquis

Atlanta, Georgia

Tel: (202) 942-9257 (scientific program)

Fax: (202) 942-9340

Email: ICEID@asmusa.org

Tel: (301) 694-5243 (registration)

Fax: (301) 694-5243

URL: <http://www.cdc.gov/ncidod/ICEID/index.htm>

July 25-27, 2000

Operational Impact of Psychological Casualties from Weapons of Mass Destruction

Sanford Auditorium - Uniformed Services University of the Health Sciences (USUHS)

Bethesda, MD

POC: Ross Pastel, LTC, MS, USA

Tel: (301) 295-1946

Email: pastel@mx.afri.usuhs.mil

URL: <http://www.afri.usuhs.mil>

July 30-August 3, 2000

2nd International Symposium: Destruction of Chemical Weapons: Technologies and Practical Aspects

Munster, Germany

Tel: 49-5192-136400

Fax: 49-5192-136508

Email: expo@munster.de

URL: <http://munster.de>

August 8-10, 2000

Smoke and Obscurants Symposium XXI: "Defeating Target Acquisition Systems"

U.S. Army Chemical School

Ft. Leonard Wood, Missouri

POC: Amy Coverstone

Tel: (410) 612-6426

Fax: (410) 612-9703

Email: coverstonea@battelle.org

URL: <http://ss-cbiac2.apgea.army.mil/SMOKE/>

Postponed!

CBIAC ACTIVITIES

By CBIAC staff

CONFERENCE AND MEETING NEWS!

CBIAC Director Meets Redstone Leadership

On January 6 and 7, 2000, Mr. Ron Evans, Director, CBIAC, had discussions with Dr. Shelba Proffitt, Deputy Program Executive Officer, U.S. Army Program Executive Office for Air and Missile Defense (PEO AMD) and with Mr. Bill Reeves, Director, Weapons Directorate, U.S. Army Space and Missile Defense Command (SMDC). During these discussions, Mr. Evans highlighted CBIAC involvement and support of Theatre Missile defense programs to PEO AMD and SMDC.

CBIAC Visits Dugway Proving Ground, Utah

On January 25th, 2000, Mr. Ron Evans and Dr. Jim King, CBIAC Deputy Director, visited Dugway Proving Ground (DPG) to meet with DPG staff and senior leadership. Mr. Evans updated COL Ed Fisher, DPG Commander, LTC Dave Coker, West Desert Test Center Commander, and Ms. Paula Nicholson, DO49 Joint Contact Point office chief, on the current state of the CBIAC Satellite Operation at the West Desert Technical Information Center (WDTIC) at DPG and on our future plans for the WDTIC. Mr. Evans and Dr. King also briefed branch and division chiefs from the DPG chemistry laboratory on the CBIAC's products and services.

CBIAC Briefs Army Environmental Center Leadership

On January 28, 2000, Mr. Ron Evans briefed Army Environmental Center (AEC) leaders, which included LTC Friendak, (Chief of Staff), Mr. Guzewich (Deputy/Tech Director), Dr. York (Director, Restoration), and Mr. Arnold (Director, Environmental Technology and Pollution Prevention). As a result, AEC is interested in the CBIAC's Core capabilities, in establishing Technical Area Tasks, and in developing a long term relationship. A follow up meeting will examine capturing AEC's chemical and environmental database within the CBIAC.

CBIAC Collaborates With USAMRICD On Journal Special Issue

Dr. James King worked closely with U.S. Army Medical Research Institute of Chemical Defense (USAMRICD), Aberdeen Proving Ground, MD on a special issue of the journal Military Psychology. The issue deals with warfighter performance effects of chemical warfare agents and present and future medical countermeasures. It is the result of a close collaboration with COL James Romano, USAMRICD Deputy Commander, and USAMRICD senior scientists. The special issue, and its six exhaustive review articles, are now at the journal editor for scientific peer review. Both USAMRICD and the CBIAC feel this work is destined to become a classic in medical CB defense.

CBIAC Briefs Commanding General, U.S. Army Developmental Test Command

BG Dean Ertwine, Commanding General, U.S. Army Developmental Test Command, visited the CBIAC at Aberdeen Proving Ground, Maryland on March 15, 2000. During the visit, he was briefed by Mr. Ron Evans, Dr. James King, and Ms. Janice Rhodes, CBIAC Technical Area Task Manager. Discussions of the CBIAC Core Program emphasized support provided through and to the Dugway Proving Ground community. Technical Area Task related conversations focused on providing support to the Joint Program Office for Biological Defense for their anthrax vaccine production efforts. This visit established a firm basis for further support to BG Ertwine and his command.

CBIAC Attends DOD MEDIC WMD 2000

Dr. James M. King attended the DoD Medical Initiatives Conference (MEDIC) & Exhibition Weapons of Mass Destruction (WMD 2000), April 2-6, 2000, in Arlington, Virginia. The CBIAC staffed a display featuring CBIAC Technical Area Task (TAT) efforts in support of the Preventive Medicine community, such as the USACHPPM medNBCnet database and The Medical NBC Battlebook.

CBIAC Plans to Participate in Conferences

Look for CBIAC representatives at the following upcoming conferences:

- **2000 DoD IAC Awareness Conference: "Key Challenges"**, May 16, 2000, at Wright Patterson Air Force Base, Dayton Ohio.
- **2000 Joint Service Chemical and Biological Decontamination Conference (DECON 2000)**, May 23-25, 2000, in Salt Lake City, Utah.
- **Defense Threat Reduction Agency (DTRA) 9th Annual Conference on Controlling Arms**, May 30-June 2, 2000, in Norfolk, Virginia.
- **U.S. Army Medical Defense Bioscience Review 2000**, June 4-9, 2000, in Hunt Valley, Maryland.
- **FEMA 2000 Technology Partnerships for Emergency Management Workshop**, June 12-15, 2000, in Colorado Springs, Colorado.
- **Worldwide Chemical Conference**, June 19-23, 2000 in Fort Leonard Wood, Missouri.
- **Operational Impacts of Psychological Casualties from Weapons of Mass Destruction Conference**, July 25-27, 2000, in Bethesda, Maryland.

NEW CB INFORMATION RESOURCES

By Richard M. Gilman

Books

National Research Council. **Review and Evaluation of Alternative Technologies for Demilitarization of Assembled Chemical Weapons.** Washington, D.C.: National Academy Press, 1999, pp.242.

This study was carried out primarily in response to strong public and political opposition to the U.S. Army's ongoing efforts to destroy the United States' stockpile of chemical weapons using incineration as the preferred "baseline" destruction technology. This work examines seven alternative demilitarization technologies that emphasize neutralization processes based on the hydrolysis of chemical agent in water or in sodium hydroxide solution. Includes numerous tables, illustrations and nine appendices.

Full text can be reviewed online at the website of the National Academy Press —reading room <http://www.nap.edu>.

CB-169701
ISBN 0-309-06639-5
National Academy Press
Box 285
2101 Constitution Ave., N.W.
Washington, D.C. 20055
Phone: 1-800-624-6242 or 202-334-3313
<http://www.nap.edu>

National Research Council. **Review of the U.S. Army's Health Risk Assessments for Oral Exposure to Six Chemical Warfare Agents.** Washington, D.C.: National Academy Press, 1999, pp. 304.

"Several military bases contaminated with chemical-warfare agents as a result of storage and past disposal practices are slated to be closed pursuant to the Base Realignment and Closure Act. Before those military bases can be transferred to civilian use, contaminated soil and water must be cleaned to levels that are considered safe. To make decisions on restoration required at contaminated sites and on the potential uses of the former military installations...the U.S. Army developed interim chronic oral reference doses and, where appropriate, oral slope factors for six chemical-warfare agents that are likely to be encountered at contaminated sites. Similar information for inhalation exposure is under development.

In this report, the Subcommittee on Chronic Reference Doses for Selected Chemical-Warfare Agents of the National Research Council's (NRC) Committee on Toxicology reviews the scientific validity of the Army's interim values for the six chemical-warfare agents—GA, GB, GD, VX, sulfur mustard, and lewisite." (*from the preface*)

Includes numerous tables, a glossary and seven appendices.

Full text can be reviewed online at the website of the National Academy Press —reading room <http://www.nap.edu>

CB-169699
ISBN 0-309-05783-3
National Academy Press
Box 285
2101 Constitution Ave., N.W.
Washington, D.C. 20055
Phone: 1-800-624-6242 or 202-334-3313
<http://www.nap.edu>

Salem, Harry and Sidney A. Katz, eds. **Toxicity Assessment Alternatives: Methods, Issues, Opportunities.** Totowa, NJ: Humana Press, Inc. 1999, pp. 262.

"*Toxicity Assessment Alternatives: Methods, Issues, Opportunities* contains a broad array of critical surveys, contributed by active and respected investigators, describing their research and offering updates on toxicity assessment alternatives, directions determined by current and future grant programs, opportunities for mechanically based test methods to detect endocrine disruptor activity, the use of alternatives in the Department of Defense hazard assessment initiatives, and the issues and opportunities for validation and regulatory acceptance. Several of these advances make use of transgenic models that reduce the time and cost of carcinogenicity testing. Others use tissue cultures for the assessment of endocrine disrupting chemicals. Cultures of human epidermal keratinocytes are applicable as models for sulfur mustard lesions, and in vitro protein denaturation is used as a chemical test for assessing the ocular and dermal irritation potential of cosmetic products. Molecular modeling is applied to explaining chemical toxicity." (*from the preface*)

This book provides information from members of the scientific and regulatory communities on what has been achieved and what has been accepted as alternatives to animal testing.

CB-167865
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ISBN 0-89603-787-8
Humana Press, Inc.
999 Riverview Drive
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Totowa, NJ 07512
Phone: (973) 256-1699
Fax: (973) 256-8341

Documents from the Web

McGovern, Thomas W. and George W. Christopher. **Biological Warfare and Its Cutaneous Manifestations.** <http://www.telemedicine.org/BioWar/biologic.htm>

This chapter, from Drugge, Rhett, M.D. and Heather Dunn, eds. *The Electronic Textbook of Dermatology*. Stamford, CT: The Internet Dermatology Society, Inc., 1995-2000. begins with an overview of the history and nature of biological weapons, and is followed by an examination of "agents with cutaneous manifestations as part of a BW presentation." The agents described include causal agents bubonic plague, smallpox and related pox diseases, various hemorrhagic fevers, anthrax, tularemia and melioidosis. Includes tables and numerous photos.

See "New CB Information Resources"

Continued on page 11

INQUIRIES

By Judith A. Hermann

Q: Can you suggest any Internet resources that address the CB needs of First Responders?

A: The CBIAC responds to a wide variety of questions pertaining to Domestic Preparedness (DP) and the response to CB terrorism. The CBIAC Homepage, at <http://www.cbiac.apgea.army.mil/>, features the CB Internet Directory, an Internet resource that provides links to CB-related websites. After accessing the directory, select Domestic Preparedness/Homeland Defense, to find over 75 links to DP related reports, fact sheets, agencies, and information. This list is updated weekly.

Here are just a few of the Internet sites that have been found to be useful resources for Domestic Preparedness/First Responder information:

<http://wmdfirstresponders.com/>

This site has been created by first responders, for the purpose of improving the response capabilities of emergency communications centers, EMS, fire, rescue, hazmat, law enforcement, bomb squads, SWAT, hospitals, public health, risk management, security, emergency management, disaster management, and other responder agencies/organizations to events involving Weapons of Mass Destruction (WMD). This site offers access to past and current issues of The Beacon, (the National Domestic Preparedness Office's monthly newsletter), hypertext links to websites of other First Responder agencies/organizations and many informational references available on the Internet. Other features of this site include: Guest Articles on Domestic Preparedness, MSDSs (Material Safety Data Sheets) for Chemical, Biological and Industrial Chemicals, and listings of WMD Training Courses.

<http://dp.sbccom.army.mil/>

Domestic Preparedness, a program coordinated by a federal inter-agency team, has created a website that contains both current and archived reports, fact sheets from the Domestic Preparedness Training Program and from a number of chemical and biological training exercises. Expert Assistance can be obtained online through an Information Request Form. Two resources unique to this site are the Chemical/Biological HelpLine for Technical Information and the Chemical/Biological Hotline.

<http://www.domesticpreparedness.com/>This website is dedicated to the integration of the communities of first responders, local, state and federal law enforcement, biomedical, hospital, EMS, military, government, National Guard, emergency planners, industry and consultants concerned with Domestic Preparedness. Features at this site include: a searchable reference area, a calendar of events, the press center, commentary and discussions, and the capacity to download a number of reports.

<http://www.fbi.gov/programs/ndpo/default.htm>

The mission of the National Domestic Preparedness Office is to coordinate all federal efforts, including those of the

Department of Defense, Federal Bureau of Investigation, Federal Emergency Management Agency, Department of Health and Human Services, Department of Energy, and the Environmental Protection Agency, to assist state and local emergency responders with planning, training, equipment, and exercise needs necessary to respond to a weapon of mass destruction (WMD) incident. The website addresses their services, programs and initiatives.

<http://www.rris.fema.gov/>

FEMA's Rapid Response Information System (RRIS) can be used as a reference guide, training aid, and an overall planning and training resource for response to a chemical, biological and/or nuclear terrorist incident. The RRIS is comprised of several databases that contain characteristics of chemical and biological agents and radiological materials, first aid measures, Federal response capabilities, Help Line, Hotlines, and other Federal information sources concerning potential weapons of mass destruction. Training courses and a reference library are featured.

<http://cseppweb-emc.ornl.gov/TRAINDocumentation.html>

The Chemical Stockpile Emergency Preparedness Program [CSEPP] site contains instructor guides, student guides, and slide sets for five CSEPP Training Courses.

Q: Can you recommend informational resources addressing both the scientific and legal aspects of the safety of drinking water in a chemical and/or biological (CB) agent environment?

A: There are several informational resources that discuss the scientific and legal issues of establishing potable drinking water in a CB contaminated environment. The following resources are useful starting points:

U.S. Army Center for Health Promotion & Preventive Medicine (USACHPPM), Water Supply Management Program (WSMP) Technical Library.

<http://chppm-www.apgea.army.mil/dwater/information.html>

Biological Warfare Agents as Threats to Potable Water, W. Dickinson Burrows and Sara E. Renner, **Environmental Health Perspectives**, Volume 107, No. 12, December 1999, 975-984.

Monitoring Waterborne Pathogens using DNA Probes, Calomiris, Jon J., **Proceedings of the International Symposium on Protection Against Chemical and Biological Warfare Agents (6th)**, Page 47, (CB-105358).

Guidelines for Chemical Warfare Agents in Military Field Drinking Water, National Research Council, Washington, DC. (CB-029488).



“New CB Information Resources”

Continued from page 9

CB-167784

Internet Dermatology Society
Stamford, CT 06902

Smart, Jeffery K. **History of the Army Protective Mask.**
Aberdeen Proving Ground, MD: U.S. Army Soldier and Biological
Chemical Command, PMNBC, 1999.

<http://www.sbcom.apgea.army.mil/RDA/pmnbc/pdfs/mask.pdf>

This overview of the history of protective masks examines approximately 60 different civilian and military masks. Starting with a design proposed by Leonardo Da Vinci in the 16th century to protect against toxins generated from his proposed toxic powder weapon the narrative and photos move on through a variety of 19th century fire-fighting, mining and industrial safety masks. The remainder of the CD, dealing with military masks, is divided into eight sections: World War I Masks, Between the World Wars, World War II, Post World War II 1945-1959, The 1960s, The 1970s, The 1980s and The Future.

CB-171417

Project Manager—NBC Defense Systems
SBCCOM
Aberdeen Proving Ground, MD 21010-542

Henderson, Donald L. et al. **Smallpox as a Biological Weapon.**
JAMA. Vol. 281, No. 22 (June 9, 1999).

<http://jama.ama-assn.org/issues/v281n22/full/jst90000.html>

“Specific recommendations are made regarding smallpox vaccination, therapy, postexposure isolation and infection control, home care decontamination of the environment, and additional research needs. In the event of an actual release of smallpox and subsequent epidemic, early detection, isolation of infected individuals, surveillance of contacts, and a focused selective vaccination program will be the essential items of an effective control program.”
(authors' conclusion)

CB-171040

American Medical Association
515 S. State St.
Chicago, Ill 60610
(312) 464-2402

Inglesby, Thomas V. et al. **Anthrax as a Biological Weapon.**
JAMA. Vol. 281, No. 18 (May 12, 1999).

<http://jama.ama-assn.org/issues/v281n18/full/jst80027.html>

“Specific consensus recommendations are made regarding the diagnosis of anthrax, indications for vaccination, therapy for those exposed, postexposure prophylaxis, decontamination of the environment, and additional research needs.” *(from the authors' conclusion)*

CB-167672

American Medical Association
515 S. State St.
Chicago, Ill 60610
(312) 464-2402

Macintyre, Anthony G. et al. **Weapons of Mass Destruction Events With Contaminated Casualties—Effective Planning for Health Care.** JAMA. Vol. 283, No. 2 (Jan. 12, 2000).

<http://jama.ama-assn.org/issues/v283n2/full/jsc90100.html>

“The threat of a large-scale incident involving intentional release of chemical or biological agents in the United States is significant, but currently, no practical models exist for HCF (health care facility) response to a suddenly recognized event requiring the decontamination of mass casualties. The time has come to establish a forum of experts to address the questions presented in this article and elsewhere and to reach a consensus on how to develop and disseminate comprehensive guidelines for HCFs. These solutions should be fully integrated into the community response plan for chemical or biological terrorism.”

(from the authors' conclusion)

CB-169488

American Medical Association
515 S. State St.
Chicago, Ill 60610
(312) 464-2402

“CBIAC Activities”

Continued from page 8

PRODUCT INFORMATION!

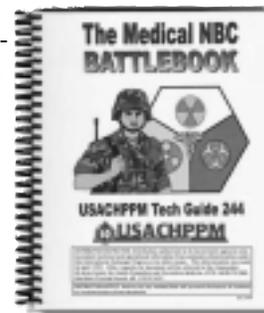
The Medical NBC Battlebook

There were questions generated by the item in the Winter 2000 issue of the *CBIAC Newsletter* with regard to the distribution of **The Medical NBC Battlebook**. Hopefully, the following will clarify the distribution options!

The **Battlebook** is available to *U.S. Government Agencies only*.

With an official request, signed by the commander or other appropriate authority and containing a unit mailing address and point of contact, *DoD agencies* and units can receive up to five copies, free of charge, from the CBIAC.

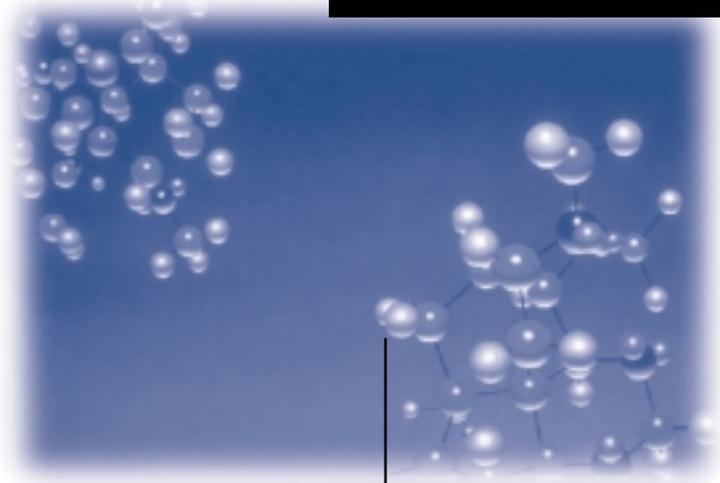
With an official request, signed by an appropriate authority and containing an agency mailing address and point of contact, *non-DoD U.S. government agencies* can receive up to five copies of the Battlebook from the CBIAC, at a cost of \$5.00 per copy.



DoD agencies and non-DoD agencies requiring more than five copies of the **Battlebook**, should send official requests signed by the commander or other appropriate authority, and containing a unit or agency mailing address and point of contact, to the Commander; U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM); 5158 Blackhawk Road; Aberdeen Proving Ground, MD 21010-5424.

Note: Further release is being considered by CHPPM. Details will be posted on the CBIAC web site.

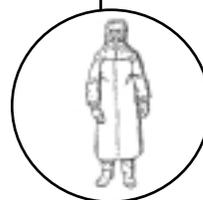
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