

# The ASA NEWSLETTER

11-2

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Editor: Dr. Barbara B.S. Price

For the Professional in Government, Industry and Academia with an interest in Nuclear, Biological and Chemical Defense, Disarmament and Verification; Chemical, Biological and Radiological Terrorism; Emergency/Disaster Medical Planning; Industrial Health and Safety; and Environmental Protection.

*Graham S. Pearson is a Visiting Professor of International Security in the Division of Peace Studies at the University of Bradford, UK. He was previously the Director-General of the Chemical and Biological Defence Establishment at Porton Down, UK. He has devoted a considerable portion of his career to promoting and advancing the BTWC and its implementation.*

## The Seventh BTWC Review Conference

by **Graham S. Pearson**

The Seventh Review Conference of the Biological and Toxin Weapons Convention (BTWC) will take place in Geneva starting on Monday 5 December and finishing on Thursday 22 December 2011. Ambassador Paul van den IJssel of the Netherlands is the President-Designate, Ambassador Desra Percaya of Indonesia is the Chair of the Committee of the Whole and (cont. p.9 -- **7th RevCon**)

*Dr. DeBell is one of the US's leading scientists and consultants in BW defense. His friendship and collaboration with ASA is easily seen in the heartfelt testimonial he wrote for Richard Price.*

## Richard M. Price: A Short Testimonial

by **Robert M. DeBell**

In 1998, I boarded a plane bound for Sydney, Australia out of San Francisco. The International Unions of Microbiological Societies meetings were being held there for a few weeks, and as a Department of Defense contractor working in the field of biological weapons defense, I was assigned the responsibility of attending the meetings and determining the latest technological advances being developed and used for research. This trip was particularly eventful, however, because the more than 20 hours it took to get to Sydney was an opportunity to interact (cont. p.7 -- **Richard Price**)

*Dr. Benjamin Garrett continues his well-conceived series on our fellow professionals who have influenced the direction and course of history in CBR warfare and defense.*

## Profiles in CBR History: French Biographical Series

by **Benjamin Garrett**

The profiles of French scientists who were active in selecting and developing chemical warfare agents during World War One (WWI) started in ASA 10-3, Issue 138, and continued in ASA 11-1, Issue 141. Many are not familiar with their specific contributions, perhaps because of the controversies after the war regarding the use of chemical weapons. The profiles in this ASA Newsletter are for

André-Jean Kling  
Charles-Victor Mauguin

Adolphe Lepape

Louis-Jacques Simon (cont. p.12 -- **French Chem**)

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**Applied Science & Analysis, Inc., PO Box 6409, Kaneohe, Hawaii 96744 USA**  
**"at the interface of science and defense"**

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**The Professional Library:** To further understand the problems associated with nuclear, biological, and chemical defense, disarmament and verification, the requirements for emergency or disaster preparedness, and the possible effects of natural and manmade disasters on the civilian and military medical communities, ASA will continue to provide information on all publications of interest to the professional. Please contact ASA for information or to make an input.

**a. "Human Serum Butyrylcholinesterase as a Prophylaxis Against Russian VX"**, Karasova, JZ, Kuca, K, Jun, D and Bajgar, J. Mil. Med. Sci. Lett, 2011, vol. 80, p. 97-102, ISSN 0372-7025. Human BChE administered peritoneally to rats did not offer complete protection against Russian VX, but did help to protect the brain.

**b. "Anatoxin-A(S): Natural Organophosphorus Anticholinesterase Agent"**, Patocka, J, Gupta, RC, Kuca, K. Mil. Med. Sci. Lett. 2011, vol. 80, p. 129-139. ISSN 0372-7025. Review article. Anatoxin-A(S) is a guanidinemethyl phosphate ester isolated from the freshwater cyanobacterium (bluegreen algae) that inhibits cholinesterase with symptoms typical of an organophosphate agent.

**c. "Life Sciences and Related Fields: Trends Relevant to the Biological Weapons Convention"**, The National Academies Press at <http://www.nap.edu>, ISBN 978-0-309-21071-3, 164 pages, accessed 12 December 2011. Written cooperatively by many organizations, this report documents some of the advances in life sciences and communication. The rate of progress in the life sciences has increased since 2006, but more importantly communications in sciences has increased far faster with the use of new media. Bioreactors make it easier and faster to create transgenic organisms, but improvements in microbial forensics and detection enable easier monitoring of diseases and discrimination between deliberate releases and natural outbreaks.

**d. "Science and Technology and their Impacts on the Biological and Toxin Weapons Convention: A Synthesis Report on Preparing for the Seventh Review Conference and Future Challenges"**, John Hart and Ralf Trapp, SIPRI Dec 2011. This study surveys important science and technology (S&T) trends relevant to the effective implementation of the BTWC. Available from SIPRI.

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***The CBMTS and future meetings:***

**CBMTS IX**  
**Spiez Switzerland**  
**May 2012**

**Planning Meetings:**  
**CBMTS IX**  
**Spiez Switzerland**  
**23 & 24 January 2012**

**Proceedings from CBMTS Industry VII**  
**Dubrovnik, Croatia**  
**Due out Winter 2011/2012**

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**Hradec Kralove, Czech Rep. -- *Jiri Bajgar***  
**Buenos Aires, Argentina -- *Maria Jose Espona***  
**Solna, Sweden -- *John Hart***  
**Zagreb, Croatia -- *Slavko Bokan***

The 19th meeting in the CBMTS series

*Second Call for Papers*

## CBMTS IX

The Ninth International Plenary of the CBMTS

**SPIEZ LABORATORY**

**Spiez, Switzerland**

**7 - 10 May 2012**

As the next Chemical Biological Medical Treatment Symposia, CBMTS IX, draws close we would like to reflect that Applied Science and Analysis, ASA Inc. started this series in Switzerland in 1994. Since that time the conferences are being held every other year in Switzerland supported by the Swiss government and held at the Spiez laboratory. Other CBMTS meetings have been held in the Czech Republic, Egypt, Singapore and Croatia. We are proud of the past, and particularly proud of the exceptional community of scientists and policy makers and others involved in this venture, who have gathered around us over the years. We look forward to the future as we work to continue these conferences and support dialogue within the community in conjunction with the International Institute for Nonproliferation Studies. I am looking forward to our next meeting and I encourage you all to continue our tradition of collegial friendship and technical discourse around a core set of presentations on varied and thought provoking technical and policy topics.

Please send in your abstracts as soon as you are able, especially if you are seeking support to attend the conference, and do not hesitate to contact me should you have any questions. We live in a changing world and we are going to adapt to the world, we seek to encourage the next generations who are following in our footsteps to actively participate in our community and embrace CBMTS.

Please be assured that this conference will continue as a single entity into the future holding meetings where we have previously, and hopefully at new venues. All will still be under the CBMTS name and embrace the same principles as we have jointly developed over time.

**SPIEZ LABORATORY, ASA** and **IINPS** have partnered together so that CBMTS returns to the original setting where this highly respected series began in 1994. Dr. Marc Cadisch, Director SPIEZ LABORATORY and his staff are hosting and co-sponsoring this 18 year anniversary meeting of the CBMTS. Dr. Cadisch will open the **CBMTS IX** on Monday 07 May 2012. IINPS is the newly formed International Institute for NonProliferation Studies with Peter Lejeune, chairman.

The **CBMTS IX** will explore the scientific, medical, operational and policy aspects of chemical, biological, and radiological (CBR) warfare and terrorism. We will consider the effects of CBR agents wrongly used, intentional or accidental, on the community and individuals, military and civilian, and on the infrastructure of government. **CBMTS IX** will emphasize CBRN detection, decontamination and treatment; incident response (including emergency, disaster and crisis management); and, nonproliferation (including arms control, disarmament, dual-use, etc.). The **CBMTS IX** Symposium venue has a physical limit of 130 participants - **REGISTER EARLY**.

### *CBMTS Objective*

Bring together the professionals most concerned with the scientific, technical and policy aspects of problems associated with the CBRN and WMD threats.

### *Symposium Model*

To ensure the free flow of ideas, the **CBMTS IX** will continue with the CBMTS tradition of a relaxed shirt-sleeve environment, a first name basis in very short order, and as always a very enjoyable camaraderie between all participants. To encourage free discussions, attribution of any comments is permitted only with author/speaker consent.

### *Who Should Attend?*

Industry, government and academic professionals with an interest in the CBRN threat, whether the threat is from war, terrorist actions, accidents or incidents, natural or man-made. These include medical, public health and medical research professionals, such as primary care physicians, practitioners and veterinarians; local, regional and national laboratory representatives; first responders and HAZMAT specialists including emergency, crisis management and mitigation, and civil defense personnel; industry scientists and engineers; senior policy makers; and specialists in computer risk modeling and planning and training.

### *Proposed topic areas*

CBRN detection, decontamination and treatment;  
Incident response (including emergency, disaster and crisis management); and,  
Nonproliferation (including arms control, disarmament, dual-use, security matters, etc.).

### **Format**

Podium presentations: 20 minutes, with minimum 5 minutes for questions and discussion.

Poster presentations require a 3 slide presentation (title, author, topic). Poster size is 1.00 x 1.40 meters.

### **Abstract Submission**

Abstracts will be 250 words or less, not including title, authors, organizations, and contact information and abstract. Full instructions are at [cbmts.org/abstracts](http://cbmts.org/abstracts)

Each participant with accepted abstract is encouraged to supply a small picture and from 40 - 75 words for a bio sketch to be inserted into the Program and Proceedings with the Abstract and Paper.

### **Registration**

Registrations are simple and are to be sent by email sent to [cbmts@asanltr.com](mailto:cbmts@asanltr.com) and [irma.lehnherr@babs.admin.ch](mailto:irma.lehnherr@babs.admin.ch) with subject: **CBMITS IX**. Try out the form on [www.cbmts.org](http://www.cbmts.org). If you are not yet ready to send in the complete registration, copy and paste the form in an email to [cbmts@asanltr.com](mailto:cbmts@asanltr.com). Include title, presenter, author names, organizations, contact information and method of payment.

Participation is based on abstract acceptance and/or geographical representation. Registration requires abstract submission. Once the International Science Review Committee has reviewed abstracts, registrations and abstracts acceptance will be confirmed.

For those participants requesting OPCW support, registrations and abstracts must be received by 15 December 2011 in order to meet OPCW requirements.

Sponsors may present papers, subject to review by the International Science Review Committee.

### **Dates**

1 September 2011 - registration opens

15 December 2011 - abstracts for OPCW funding due

If you believe you may be eligible for OPCW support to attend the conference, the abstract is due by 15 December.

15 January 2012 - all abstracts due

20 March 2012 - early registration fees end

21 March 2012 - full registration fees apply

16 April 2012 - all papers are due

07 May 2012 - **CBMITS IX** begins

### **Contact Information**

The CBMITS web address: [www.cbmts.org](http://www.cbmts.org)  
For the **CBMITS IX** team:

1. **ASA**. Dr. Barbara Price at tel: +1-808-235-8010 and fax: 1-808-432-9670 and e-mail: [cbmts@asanltr.com](mailto:cbmts@asanltr.com) and

2. **IINPS**. Mr. Peter Lejeune at +1-703-992-4010, Office: 703-319-2031, fax +1-703-459-9618, and email: [cbmts@iinps.org](mailto:cbmts@iinps.org)

3. **SPIEZ LABORATORY**. Ms Irma Lehnerr at tel: +41-33-228-1586 and fax: +41-33-228-1402 and e-mail:

[irma.lehnherr@babs.admin.ch](mailto:irma.lehnherr@babs.admin.ch)

Note: On all message traffic, please include both the ASA and SPIEZ LABORATORY e-mail and/or fax addresses. A must - please include **CBMITS IX** in the subject line.

### **Registration fees for CBMITS IX**

Government/Academia: CHF 750, before 20 March 2012, and CHF 900 after 20 March 2012

Industry: CHF 900, before 20 March 2012, and CHF 1050 after 20 March 2012

Payments are accepted by credit cards Visa, Master Card, EuroCard, and American Express and via bank transfer or bank check. Bank data for **CBMITS IX** Switzerland: (To be supplied upon request)

The Registration Fee will include all lunches at the Laboratory Dining Room from Monday 07 May through Thursday 10 May 2012 and will also include Symposium Dinner and Program, Proceedings, Symposium bag, and local transportation for scheduled events.

### **Refund policy**

Until 26 March 2012 = 90% refund, from 27 March until 24 April 2012 = 75% refund. No refund after 25 April 2012.

### **Accommodations**

The SPIEZ LABORATORY has negotiated CBMITS rates with several hotels in Spiez. There will be a CBMITS bus service to/from SPIEZ LABORATORY and the hotels in Spiez. Once registered and accepted, please make reservations at the hotels. Hotel information will be on the CBMITS website.

### **Sponsors**

Sponsorships by government organizations, institutions and industries are crucial to the success of the **CBMITS IX** and are a vital part of CBMITS. Sponsorship funding provides the primary source of revenue used to assist many CBMITS professionals, especially those from developing countries, to attend the CBMITS meetings.

The **CBMITS IX** is hosted and partly sponsored by the SPIEZ LABORATORY, with the Government of Switzerland. ASA works in partnership with the host to ensure that the CBMITS meets the goals and objectives of the Swiss Laboratory and the CBMITS.

There are three sponsorship levels for CBMITS meetings:

- **Silver Sponsor**. Includes up to two industry registrations, plus half page advert space in the program and proceedings, plus one half page space in the ASA Newsletter CHF 2500.

- **Gold Sponsor**. The above, plus full page in program, proceedings, ASA Newsletter, plus up to three industry registrations CHF 4500.

- **Platinum Sponsor**. Above, plus up to four registrations CHF 7500.

Only sponsors will be permitted to include product and service brochures in the conference package.

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## ASA, CBMTS and IINPS

by Peter Lejeune

Of late many of you will have seen reference to both my name and the International Institute for Nonproliferation Studies. In the spring of this year Dr. Price and I started to discuss how we could consolidate the ASA newsletter and the CBMTS conferences, while at the same time enhancing communications within our community. We also discussed how the world has changed since the inception of ASA and the conferences; the threat now encompasses hostile groups and even individuals, targets could be anyone and attacks could be any place at any time with little or no warning. At the same time technology has changed to enable us to form a Community of Interest where we can continue those important conversations often started at the conference, or through the newsletter. The vision of our Institute is to promote a culture of safety and security by improving understanding of who, what, why, when, where, and how Weapons of Mass Destruction (WMD) could be used, whether in warfare or terror and thus attempt to achieve political goals.

To achieve this vision we will consolidate the previous activities of Applied Science and Analysis, ASA, Inc., and integrate the Chemical Biological Medical Treatment Symposia (CBMTS) into knowledge base. We also plan to publish weekly press clipping service which will report on all published articles and news stories published around the world which have relevance to our topics of interest. We also see the Institute as a platform for serious discussion and exchange of ideas, and a common point for publishing studies and articles either written by, or of interest to, the membership.

It is very important to us that we remain current both as regards the changing threat, new technologies and strategies for detection, response, and restoration to counter the threat, and national and international policies to address security and nonproliferation.

As a community we want everybody to feel part of this effort; we welcome any ideas that you may have, and we look forward to providing more information, and holding discussions, at the next year's CBMTS in Spiez. Shortly after that we plan to make the Institute's website operational at [www.IINPS.org](http://www.IINPS.org).

We thank you in advance for your advice and ideas, and hope that you share with us our belief that through this new Institute and website we can continue with the important work that was started by Barbara and Richard Price 25 years ago.

Peter can be reached at +1 703 319 2031 and [plejeune@iinps.org](mailto:plejeune@iinps.org).

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## CBMTS IX Planning Meeting Spiez, Switzerland 23 & 24 January 2012

CBMTS leaders are preparing for the CBMTS IX Planning Meeting. We will be meeting to layout the agenda and select papers for presentation.

We have received 20+ abstracts from 12 countries in all three areas major areas: Detection, Decontamination and Nonproliferation.

MALDI-TOF MS: A Universal Fingerprinting Tool  
Towards DNA Chip Technology for the Identification of Selected Pathogens  
Single Particle Maldi Mass Spectroscopy: A New Tool For Fast, Sensitive And Specific Bio-Agent Detection  
A Bioanalytical Platform for Simultaneous Multiplex Detection and Quantification of Biological Toxins  
Nanosweep™ Decontamination Wipes for Operational Decontamination,  
Smoke Inhalation Isn't Carbon Monoxide Poisoning Alone  
Experimental Model for study survival and inactivation *F.tularensis* in water.  
Nuclear Forensics: Can it do what is expected?  
Decontamination of Large Areas after a Nuclear Power Plant Accident  
Rapid advances in nucleic acid technologies for Detection and Diagnostics of pathogens  
Nanophotocatalysts: Effective Environment Remediation Substances Or Dangerous Chemicals?  
Structural Aspects of Oximes Reactivators against Organophosphate Inhibited Acetylcholinesterase  
Innovative And Increased Risks From CBR Disasters And Effective, Economical, Adaptive Countermeasures  
Understanding And Improving Population Resilience.  
CBRN/HAZMAT Assessment Schemes For Major Public Events  
CWC - A Swiss Perspective  
Switzerland's Response to CBRN Threat Samples  
ICA - The Swiss Perspective for an International Control Are Microreactors a New Threat to the CWC?  
Cognitive, Cultural, Religious And Other Factors  
Influencing The Willingness To Use Weapons Of Mass Destruction.  
Achieving Greater Security Through A New Approach In Applying Strategy Of Nonproliferation And Arms Control. The BTWC and the CB Convergence Discussion - A Swiss Perspective  
Fissile Material Cut-off Treaty: Technical Aspects  
Terrorists and Nuclear Weapons: Paranoia or Real Threat?  
Terrorist Motivations To Employ CBRN Weapons  
Empirical Study Of Terrorist Organizations Network  
Countering WMD: An Iraq Case Study

Updated lists at [www.asanltr.com](http://www.asanltr.com) and [CBMTS.org](http://CBMTS.org) \*\*

## Sampling of CBMTS IX Abstracts

### Empirical Study of Terrorist Organizations Network

ZU Zheng-hu , ZHENG Tao, Beijing Institute of Biotechnology, 20 Dong-Da street, Fengtai District, Beijing 100071, China

With the increasing of terrorist activities around the world, governments are becoming more concerned about the continuous treat of terrorism. This research is designed to study the structure among terrorist organizations by analyzing empirical terrorist attacks database. The terrorist organizations data was collected from the Global Terrorism Database II containing 7,153 terrorist attacks, among which 3,411 (47.7%) attacks in 77 countries were claimed responsibility by 450 terrorist organizations between 1998 and 2004. Utilizing complex network analysis method, we established the terrorist organizations network through extracting relevant information according to certain rules (e.g., different terrorist organizations responsible for the different attack in the same country were considered to have relation). Next, the characteristic parameters of the terrorist organizations network were calculated with the average path length  $L \approx 3.68$  and the clustering coefficient  $C \approx 0.83$ . The results indicated that the terrorist organiza-

tions network has the characteristics of small-world and scale-free simultaneity. The conclusion may be important for us to better understand the global terrorist organizations from structural prospective.

### Cognitive, Cultural, Religious and Other Factors Influencing Willingness To Use WMD

Peter Lejeune, International Institute for Nonproliferation Studies, Vienna, Virginia, 22181, USA

In order to develop a rational defense posture it is important to understanding why state, group, or lone actors choose to use certain weapons. This study investigates the cognitive, emotional, cultural and religious reasons for why an individual or group might choose certain methods of attack, such as chemical, biological, radiological or nuclear weapons. By understanding these reasons behind the use of such weapons, our models may be modified to determine whether or not a threat exists from potential hostile individuals or groups. Another important aspect to understand is how the decision to use certain weapons changes over time. What was previously regarded as acceptable or unacceptable actions has changed throughout history and is often driven by expediency, survival as well as "warrior codes". The results will enable us to determine why CBRN weapons are used and which potential attackers intend on using them.

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### IITRI - BIODEFENSE SERVICES

IIT Research Institute (IITRI) has provided research and development services to the U.S. Government and to commercial Sponsors in the biodefense, pharmaceutical, biotechnology, chemical, and consumer products industries for more than 50 years.

IITRI scientists have a proud history of supporting government and private industry in animal model development and assessments of medical countermeasures. As part of ongoing programs, research is currently underway on efficacy, potency, and safety assessments of vaccines and therapeutics for protection against biological warfare/bioterrorism agents. IITRI is registered with the CDC and USDA for possession and use of select agents and toxins. IITRI also operates a Department of the Army approved Biological Surety Program.

IITRI scientists have maintained active research and testing programs involving the preclinical development of novel therapeutics (including vaccines) for more than thirty years. Our large library of bacteria, viruses contains many biological agents of interest to the biodefense community. We can perform specialized microbiology, immunology, or molecular biology testing services. Further, capabilities are available in our newly expanded BSL 3 animal facility to offer in vivo models of bioaerosol exposure.

As a Contract Research Organization located just south of Downtown Chicago, our Toxicology, Inhalation Toxicology, Analytical Chemistry, Microbiology, Molecular Biology and Cancer Biology Divisions would be more than happy to tackle any of your challenges and make them our next priority.

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(cont. from p.1 -- **Richard Price**)

with other professionals on the plane.

During this transit, I met a rather diminutive individual with an engaging smile, cordial demeanor, and an irresistible charm. Although this gentleman was unknown to me as a microbiologist, he was polite and initiated conversation that was important to the ongoing discussion with Dr. Peter Jahrling, a world expert on pox viruses. This meeting was my first introduction to Richard Price.

Before I knew what had happened, Richard and I were having lunch and dinner together in Sydney and discussed much about the society meetings, key figures in attendance, important individuals who happened to be mutual friends, as well as future meetings we were to attend. During the last week of the meetings, Richard asked that we arrange for a dinner sponsored by both Applied Sciences & Analysis, ASA, and my employer with several very important Russian scientists, a few known by me but all known by Richard. Richard arranged the dinner at a Chinese restaurant. In retrospect, it was truly remarkable



**Richard Price in Croatia, 2003**

that Richard is one of the very few people with the talent to have a couple of Americans in Australia sponsor a dinner there for Russians at a Chinese restaurant. Typically Richard, he had almost a mystical talent for bringing people together.

This may have been my first encounter with Richard Price, but it was far from my last. Following this initial meeting and for more than a decade, Richard and I remained close friends, as well as professional colleagues. Soon after the meeting in Sydney, Richard and I found ourselves at another meeting in Helsinki. It was there that

he mentioned Barbara. As we walked along the waterfront back from an evening dinner on a nearby island, he said "you should meet Barb, she's great!" He was so proud that it struck me as to how sincere he was. It was so apparent that Richard's boast came from the heart.



**Barbara and Richard Price in Singapore, December 2000**

During this time, the Prices were in Maine, where for many years they resided and ran ASA started in 1983, the ASA Newsletter started in 1987, and CBMTS started in 1994. Eventually, Barbara and I became close associates working for the same company. Shortly after the turn of the century, Barbara and Richard moved to Bel Air, Maryland where they continued the ASA and CBMTS operations. Then, from Bel Air, the Prices moved to Kaneohe, Hawaii in 2006. While in Maryland, Richard and I were quite close, visiting each other frequently both on a professional and social basis. I must admit that I was so taken by his enthusiasm both for his work, the people with whom he associated, and the meetings he worked so hard to promote that you could not help but admire this man. In truth, I thought much more of Richard than being just a close friend. He was closer to me than my own siblings.

In 2003 my wife, Karen, and I attended Richard's 70th Birthday, and although we were asked not to bring presents, I could not resist. So I searched through my picture files and managed to come up with a photograph from every trip we had taken during the last five years. I was so proud of my effort and even more pleased when Richard was so grateful.

During the first few years Richard was in Maryland, I helped him plan and develop meetings in Singapore, Switzerland and Croatia. When I traveled with him for planning meetings to organize future symposia at these sites, I found that there was little for me to do. Richard was so far ahead of what was needed that it was easy to be convinced how devoted he was to these efforts. He must have worked diligently for hundreds of hours to be certain dozens of impor-

tant professionals, including high-level political and military representatives, from countries all over the world gathered and presented at the symposia. For those without travel funds, Richard sought out contributors to sponsor them, because he believed that these professionals from countries considered both friendly and unfriendly to the US needed technical interactions to ensure the peace and well-being for the future. Again, at play was Richard's immense talent for bringing people together. At the completion of a given symposium, Richard would go back to his home, push to get all the necessary materials to publish the symposium review and simultaneously start planning the next meeting.

At times, I wondered how Richard was able to work with so many high-level technical professionals and for many years promote meetings among individuals from countries all over the world without creating conflict, not only among the participants, but even with meeting organizers, including himself. Having been born and raised in New Orleans and Mississippi, Richard certainly developed a sense of charm so common in the south, along with the important values of life - honesty, dedication, persistence, and a sense of fair play. His intellectual talents were amply demonstrated in the years that followed at Jefferson Military College in Natchez, Mississippi, and in the US Air Force Air Cadet Program from which he graduated at the top of his class. After traveling to many parts of the world during a 30-year Air Force career that included the Military Airlift Command, the Philippines, USAF Europe, EUCOM, and NATO, Richard retired as a Colonel with a B.A. in economics and an M.A. in communication. Contemplating these highlights of Richard's life, it is now obvious he was a gifted individual who acquired all of the important qualities of life so important for success. It is so rare to find an individual with all of Richard's qualities and almost impossible to find a person with such a fine sense-of-balance as Richard displayed in managing others.



**Richard and his Australian Shepherds relaxing at the DeBell home in Maryland**

Through the years I traveled with Richard, or went to Bel Air to have lunch with him or with both Barbara and him, or when we were together for dinner with my wife,

Barbara, and frequently several other close friends, Richard always conveyed a sense of “family.” Richard was that quintessential center that was the core of the gathering.

In January of this year, I was told Richard had been diagnosed with terminal cancer, a brain tumor. I shall never understand why such things happen...I only know that they do. I did not want to dwell on the consequences, so I sent a large basket containing cookies, candy, and wine. (Barbara told me he hid two of the bottles of wine!) I was lucky enough to talk to Richard for about twenty minutes, and that conversation I will always covet as it was my last with Richard.

Richard passed away on October 2nd, 2011. He is one of those truly unusual people that become a part of your own existence. He will always be in my heart, and I will miss him more than is possible to convey. I am so terribly envious of all those people in heaven who will enjoy so much his company. \*\*



**Cruising in Russia with Dave Trudil, Richard, Barbara and David Robinson.**

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### **A Note from Barbara**

Thank you all who sent cards, emails, and notes. I particularly valued the memories of Richard that many of you sent. Some were funny. Some were poignant. Some praised his people organizing and communication skills. All admired his energy and determination. He will be missed by many of us, his family, his friends and all of our colleagues around the world. \*\*



(cont. from p.1 -- **7th RevCon**)

Judit Körömi of Hungary is the Chair of the Drafting Committee. The Preparatory Committee meeting for the Review Conference was held in Geneva on 13 - 15 April 2011 when 93 States Parties participated - some 15 more than at the corresponding Preparatory Committee meeting in 2006 prior to the Sixth Review Conference.

When Paul van den IJssel was nominated at the Meeting of States Parties in December 2010 he said that his main aim was to secure a positive outcome and to further strengthen the Convention. He went on to add *Let me stress here that in my view a positive outcome means two things: consensus, but also ambition. I hope we all agree that we should be guided by ambition when we are determining our aims for the RevCon. At the same time we should keep an eye on what is doable and realistic. Ambitious realism will be my guiding principle in the coming year, as I hope it will be for you as well.*

As the start of the Seventh Review Conference approaches, there is justifiably a great sense of optimism that realistic ambitions will be achieved effectively the regime totally strengthening prohibiting biological and toxin weapons. This will address international concern, anxiety and awareness of the dangers of the intentional use of disease as a weapon of war either by States or terrorist groups. Certainly no previous BTWC Review Conference has been as well prepared as this one; there have been a series of workshops around the world starting at Wilton Park in September 2010, and continuing in Beijing, Montreux, Berlin, Manila, Clingandael, Belgrade, Geneva and Lima. In addition, the Implementation Support Unit has made relevant material (articles and reports) available on the "Think Zone" of the [unog.ch/bwc](http://unog.ch/bwc) website. By early November 2011, within a month of the start of the Review Conference, more than 20 advance copies of papers for this Review Conference, as well as six of the eight background documents being prepared by the Implementation Support Unit, were also on the website.

There is a sense of widespread agreement that there are a number of topics that need to be addressed at this Review Conference in order to reach decisions. These topics include the following:

- o Universalisation of the Convention: Globalising the biological weapons ban,
- o The Intersessional Process
- o National Implementation together with Education and Outreach
- o The Confidence-Building Measures regime: Enhancing transparency, building trust,
- o Advances in Science and Technology,
- o International Cooperation and Assistance,
- o Compliance and Demonstration of Compliance,
- o The Implementation Support Unit.

Each of these is considered in turn in this article.

**Universalisation of the Convention.** There has been a sustained effort on universalisation from 2007 through to 2010 by successive Chairmen of the annual Meetings of States Parties who had been charged by Part III: Decisions and Recommendations section of the Final Document of the Sixth Review Conference:

*(b) Agrees that the Chairs of Meetings of States Parties shall coordinate universalization activities, address states not party to the Convention, provide an annual report on universalization activities at Meetings of States Parties, and provide a progress report to the Seventh Review Conference, bearing in mind the primary responsibility of the States Parties on the implementation of this decision.*

The BTWC currently has 165 States Parties and 12 Signatory States; 19 States have neither signed nor acceded to the Convention. In comparison, the Chemical Weapons Convention has 188 States Parties and two Signatory States (not yet ratified). Whilst successive Chairmen of the BTWC annual Meetings have made some progress since the Sixth Review Conference in 2006, it is evident that more is required in future. One attractive option that could provide sustained high-level attention to universalization throughout the period to the Eighth Review Conference, and be able to report not only to the annual Meetings of States Parties, but also to the Eighth Review Conference, is establishing a troika. It could be made up of the President of the Seventh Review Conference, the Chair of the Committee of the Whole and the Chair of the Drafting Committee who would work, in close cooperation with the Russian Federation, the United Kingdom and the United States as Depositaries, and be supported by the Implementation Support Unit. Such a troika would be an extension of the continuing role a President of a BTWC Review Conference has always held, acting in close cooperation with the Depositaries, through the years following the Review Conference at which he/she presided. That role goes back to 1980 - 1986 when Norway, holding the Presidency of the First Review Conference in 1980, took the responsibility in the years that followed to care for the Convention. Furthermore, such a troika could encourage a Foreign Minister to write to his/her counterparts in the states not party to the Convention - similar in the way in which the President-Designate of the Seventh Review Conference, in April 2011, encouraged the Foreign Minister of The Netherlands write to his counterparts in the states not party to the BTWC. A troika has the added benefit of having a member from different groups of States Parties, which could be advantageous in promoting regional initiatives.

**The Intersessional Process.** This process of meetings and reports has been very successful in sharing information on the topics that had been considered since the Sixth Review Conference. The Intersessional Process's focus included implementation, education, and awareness. However, it is

becoming clear that for the next intersessional period, there would be advantages in supporting the annual meetings by having standing working groups on subjects such as science and technology, on Confidence-Building Measures, and on compliance. The annual Meeting of States Parties should be able to request that these standing working groups carry out further work or, in the case of science and technology, consider further specific topics. Consequently, the annual Meeting of States Parties should have some decision-making powers, where appropriate, and these decisions should be based on consensus. In the context of decision-making, it has to be recognized that the annual Meeting of States Parties has made decisions during the Intersessional Process since 2006 - such as, who shall be the Chair for the following year, dates for the Meeting of Experts and the Meeting of States Parties and, at the Meeting of States Parties in 2010, who will be the President-designate for the forthcoming Review Conference, dates for the Preparatory Committee and dates for the Review Conference itself, as well as the budget for the Review Conference. Consequently, making decisions where appropriate, and on the basis of consensus, should present no difficulties for future Meetings of States Parties.

**National Implementation together with Education and Outreach.** Although the Sixth Review Conference in 2006 recognised the importance of national implementation in its language reaffirming *the commitment of States Parties to take the necessary national measures and that the enactment and implementation of necessary national measures ... would strengthen the effectiveness of the Convention*, it is evident that more is needed. A realistic and significant step forward would be the agreement of an Action Plan with an interim target for two thirds of the States Parties to the BTWC to have adopted effective national implementation legislation before the Eighth Review Conference..

In addition, the Seventh Review Conference should recognise that the effective implementation of the Convention amongst all those engaged in the life sciences requires the States Parties to take top-down action. Relying on bottom-up efforts will be ineffective in remedying the present abysmal level of awareness and education of life scientists around the world. Therefore there is a requirement for the States Parties to do more than the encouragement expressed at the 2006 Review Conference by taking action to implement effective education of, and outreach to, all those engaged in the life sciences so that they are aware of their national and international obligations not to misuse the life sciences. [See for example, Espona ASA 11-1]

**The Confidence-Building Measures (CBM) regime.** The present CBM regime was agreed at the Third Review Conference in 1991. It is now evident the regime needs to be amended and made more effective for today's world.

Since the Sixth Review Conference in 2006 there has been much debate during the intersessional period about the CBM regime in side sessions and an e-panel. From all of this, it is apparent that some modifications to the existing g CBM regime should be agreed at the Seventh Review Conference. In addition, a standing working group should be set up to consider how the effectiveness of, and the participation in, the CBM regime might be enhanced during the intersessional period after the Seventh Review Conference. As with the Second Review Conference in 1986 when the modalities of the CBMs were finalised at a subsequent meeting in 1987, further changes to the CBM regime could be agreed at a subsequent Meeting of States Parties.

**Advances in Science and Technology.** It is recognized that the present system - in which information on advances in science and technology is provided in a background paper for the Review Conference, but is not adequately discussed or considered at the Review Conference - is inadequate for today's world, wherein the developments in science and technology have important implications for all the Articles of the Convention. These developments need to be considered more frequently by States Parties. There appears to be general agreement to create a standing working group of scientific and technical experts open to all States Parties. This group should address specific topics identified by the annual Meeting of States Parties, and, as an extra advantage, could include participation by experts in the particular topics being addressed. This could follow along the lines of the guests of the Chair in the Meetings of Experts in the Intersessional Process since the Sixth Review Conference in 2006. The standing working group of scientific and technical experts would report on the implications for all Articles of the Convention, with a view to strengthening the Convention. Its report would be received and considered at the next annual Meeting of States Parties. It has been suggested that the Seventh Review Conference should agree upon the topic to be considered in the first year by the standing working group of scientific and technical experts - and that this topic should be synthetic biology.

**International Cooperation and Assistance.** Although there is less evident agreement on how this topic should be addressed, there is broad agreement that it needs to be addressed at the Seventh Review Conference. Whilst there have been proposals that there should be a specific mechanism to address international cooperation and assistance under Article X of the Convention, it is far from clear, given the huge amount of international cooperation already taking place, that, when viewed from a resource-benefit analysis, Article X merits the devotion of the limited available resources to a detailed mechanism other than a clearing house mechanism. Although a standing working group could be set up to consider international cooperation and

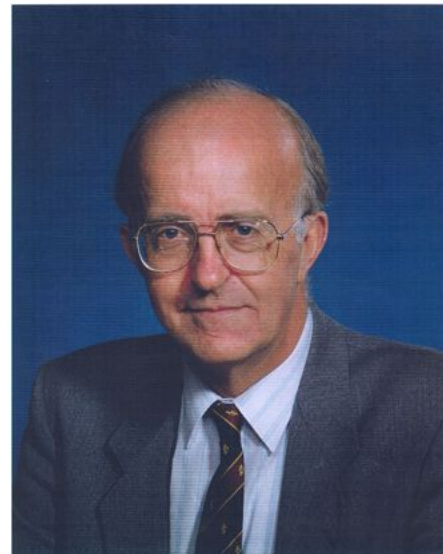
(cont. from p.10 -- **7th RevCon**) assistance in the intersessional period between the Seventh and Eighth Review Conference, it might be more effective to agree that a practical solution by tasking the Implementation Support Unit (ISU), with a modest augmentation of its staff, to extend its current clearing house activities to include international cooperation and assistance. Moreover, the ISU should be able to benefit from and build upon the experience gained by the clearing house activities to promote international cooperation that were established almost 20 years ago for the Convention on Biological Diversity. [See, for example, Graham S. Pearson, Promoting International Cooperation in the Field of Peaceful Biological Activities, Bradford Review Conference Paper No. 28, March 2011. Available at [www.brad.ac.uk/acad/sbtwc/briefing/RCPapers.htm](http://www.brad.ac.uk/acad/sbtwc/briefing/RCPapers.htm) and on The Think Zone of [unog.ch/bwc](http://unog.ch/bwc)] In addition, the ISU should submit a report prior to each annual Meeting of States Parties that describes what the clearing house has done in the past year, and, this report should be considered and discussed at the annual meeting.

**Compliance and Demonstration of Compliance.** Whilst there is even less agreement on how best to address compliance and how this can be demonstrated, there is again broad agreement that compliance does need to be addressed at the Seventh Review Conference. There appears to be agreement that this is a suitable topic for a standing working group subsequent to the Seventh Review Conference. The working group might consider through a conceptual discussion of what measures would demonstrate compliance, and how to clarify any queries regarding compliance. It should look ahead to what sort of compliance regime the Convention should have a decade from now. It could suggest that promising approaches to improve compliance could be evaluated on a voluntary trial basis by States Parties, with consideration being given subsequently to how these might be implemented by all States Parties.

**The Implementation Support Unit (ISU).** There has been universal praise for the work carried out by the ISU since its launch on 20 August 2007. However, it should be noted that because of its limited staff (only three people), it is currently unable to accept between one-third and one-half of the requests that it received to assist States Parties in the implementation of the Convention. A staff of about six to seven would be necessary to fully carry out the ISU's present mandate. If some of the proposals, such as those outlined in this article, are implemented, additional staff would be needed. It will be important that the Seventh Review Conference agrees to the continuation of the ISU and gives it an appropriate mandate, such as "The ISU's mandate will be limited to the tasks set out for the ISU in the Final Document of the Seventh Review Conference."

In **conclusion**, the Seventh Review Conference of the

BTWC is of particular importance to the peace and security of all States Parties. The preparations over the past 18 months have already identified much common ground and many States Parties have submitted advance copies of their papers to strengthen the regime. There is a real opportunity for concrete actions to be agreed in December 2011 that will demonstrate real progress towards strengthening the Convention. The States Parties are urged to rise to the challenges and achieve the realistic ambitions at the Seventh Review Conference to both reaffirm the norm that biological weapons are totally prohibited and strengthen the effectiveness of the Convention through taking at least the steps outlined in this article.



**Prof. Graham S. Pearson**

**Editor's note.** ASA has been fortunate to have had contributions from Prof. Graham S. Pearson since 1990. He has written on the importance of strengthening the BTWC in the ASA Newsletter since 1995, including the precludes to the BTWC Fourth, Fifth and Sixth BTWC Review Conferences and reports from the Ad Hoc Group meetings. He has worked tirelessly on programs for promoting and strengthening the BTWC, including Vaccines for Peace and the Program for Controlling Emerging Infectious Diseases, ProCEID. ASA believes it is largely through Prof. Pearson's efforts to bring compliance and confidence building measures strongly into the convention's meetings that the roles of science and technology remain prominent and have not lost in a diplomatic morass. For a list of Prof. Pearson's articles in the ASA Newsletter, please go to the author page, [www.asanltr.com/newsletter/authors.htm](http://www.asanltr.com/newsletter/authors.htm)

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**[www.opbw.org](http://www.opbw.org)**

Biological and Toxin Weapons Convention (BTWC)  
website, administered by the Division of Peace Studies  
of the University of Bradford.

(French Chem - from p.1)

**KLING, ANDRÉ-JEAN (1872-1947).** French chemist André Kling was educated in Paris, where he spent his professional career. He was associated with l'École Supérieure de Physique et Chimie Industrielles (the Graduate School of Industrial Physics and Chemistry) prior to being named director of the Laboratoire Municipal de Chimie de la Ville de Paris (Municipal Chemistry Laboratory of the City of Paris) in 1911. In this role, he directed the work of the laboratory in uncovering frauds in food and wine, such as the adulteration of these products with additives or falsely labeling contents so that cheaper goods might be sold as though they were premium products. He was closely associated with developing the use of racemic tartaric acid as a reagent for estimating the quantities of barium, calcium and strontium in food and wine and with developing a reagent for estimating tartaric acid content in fruit, such as apples and pears.

The Municipal Chemistry Laboratory of the City of Paris was co-located with the Central Police Laboratory (Laboratoire Central de la Préfecture de Police); consequently, Kling was routinely consulted on matters of interests to the police. A well-known example of such consultations took place in 1912. Kling and the director of the analysis section, Daniel Florentin, were asked to suggest a chemical means of subduing a gang of violent criminals. The gang, led by Jules Bonnot, had taken refuge in a building. Kling and Florentin suggested using ethyl bromoacetate as an irritant. Cartridges or grenades containing ethyl bromoacetate were to be fired into the building, and the irritating properties of this chemical would force the occupants into the open, where they might be apprehended by police.

Although reports released after World War One would claim that such cartridges were used in April 1912, contemporary news accounts fail to substantiate this claim. However, a 2003 report from the Municipal Chemistry Laboratory verifies that Kling and Florentin made the suggestion. [1] Such cartridges are reported to have been carried by French military or police forces during the fighting following Germany's 1914 invasion, prompting German claims that France - rather than the Germany - initiated the use of chemical warfare. [2]

Germany released a toxic chemical near Ypres, Belgium, on April 22, 1915 - an event associated with the initiation of the modern era of chemical warfare. Kling is credited as having been the first person to suggest using a cotton pad soaked in sodium hyposulfite plus ordinary goggles as a practical yet effective means to protect against the harmful effects of gaseous chlorine. [3]

Shortly after Germany's use of chlorine near Ypres,

Charles Moureu appointed Kling to the subcommittee on chemical weapons of the Commission des Études Chimique de Guerre (Commission for the study of chemical warfare). [4] Throughout the war, Kling supported the work of this subcommittee, particularly through the development of analysis and detection methods. During the war, he expanded the work of the explosives service of his laboratory, pressing that group to develop means for disposing unexploded chemical and conventional munitions.

Kling gave the code-name "Palite" to the mix of monochloromethyl chloroformate and stannic chloride. The code-name derives from the "Laboratoire Municipal," (which Kling headed) plus the ending "-ite" (commonly used by the French for their chemical warfare agents). [5]

After the war, Kling was recognized for his contributions by the award of the Croix de Guerre and by election to membership in the Legion of Honor.

**LEPAPE, ADOLPHE.** French chemist Adolphe Lepape was the long-serving chef des travaux de recherches physicochimiques à l'Institut d'hydrologie et de climatologie de Paris Collège de France (director of physico-chemical research at the Institute of Hydrology and Climatology of Paris at the College of France). He made fundamental discoveries relative to radioactivity and rare gases from mineral springs and received various honors, including the 1918 Cahours Prize.

In the context of chemical warfare agents, Lepape was a colleague of many of the French chemists who were assisting with planning the French offensive chemical warfare program. He is credited with being the first scientist to suggest the use of acrolein as a chemical warfare agent. [6] As a result, his surname was adapted for use as a code-name ("Papite") for the mix of acrolein (75%) and either stannic chloride or titanium chloride (25%). Stannic chloride or titanium chloride was added to the mix to provide a smoke puff that facilitated spotting of artillery rounds. More generally, papite came to be used as a synonym for acrolein.

**MAUGUIN, CHARLES-VICTOR (1878-1958).** French scientist Charles Mauguin is best known for his contributions to mineralogy and crystallography. Along with Carl Hermann (1898-1961), he devised a system of symbols for designating the symmetry properties of crystals. This system was adopted as the international standard notation for crystallographic groups and remains in use today, with only slight modifications. It is known as the Hermann-Mauguin notation in their honor. In the context of chemical warfare, Mauguin is the eponym of mauguinite, the French code-name for cyanogen chloride, honoring his contributions during World War I. [8]

Mauguin was educated at the École Normale of Saint-Cloud [Normal (Teacher's Training) School], intending to

become a teacher in one of France's system of Normal Teacher's Training College. However, his aptitude for science was noted by Louis Simon, who was on the faculty at Saint-Cloud but also directed the organic chemistry laboratory at the École Normale Supérieure (Graduate Normal School) in Paris. Simon encouraged Mauguin to pursue a career in chemistry, enabling him to enroll in Graduate Normal School in Paris, from which he was awarded his doctorate in chemistry in 1910.



**Charles Mauguin**  
1878-1958

Shortly after enrolling at the Graduate Normal School in Paris, however, Mauguin began attending lectures at the Sorbonne and elsewhere on mathematics. Inspired by lectures on symmetry in physical phenomena, he began studying crystallography at the Sorbonne, and by 1910 he had become an assistant to the head of the laboratory of mineralogy. He departed Paris briefly, taking up appointments at the Faculty of Sciences of Bordeaux (1912) and Nancy (1913). After Germany's use of chlorine in April 1915, Mauguin returned to Paris, supporting his former mentor, Simon, in the search for chemical warfare agents that might be produced in France. Of special interest were toxic or irritating substances that might be produced without use of bromine or acetone, both of which were in short supply in France. Among the substances studied by Mauguin and Simon were carbon tetrachloride, chlorosulfonic acid, dimethyl sulfate, and phosgene. They also perfected a method for preparing cyanogen chloride, and this method was successfully scale-up for use on an industrial scale. The success of this method may have inspired the French military to dub cyanogen chloride "mauguinite" in his honor.

After the war, Mauguin returned to his interest in crystallography, using x-ray diffraction to study the structure of the mica group of minerals. In 1919, he was appointed to the Faculty of Sciences of the University of Paris as an assistant to Frederic Wallerant (1858-1936), who was professor of mineralogy. In 1933, Mauguin succeeded Wallerant as professor of mineralogy and served in this post until he retired in 1948. By means of his systematic

studies of micas, Mauguin was able to use their atomic structure to explain their characteristic cleavage and their tendency to split into thin sheets.

**SIMON, LOUIS-JACQUES (1867-1925).** French chemist Louis Simon was born in Rio de Janeiro, Brazil, to French parents and educated in France. In 1894, he joined the faculty the École Normale Supérieure [Graduate Normal School] in Paris. The following year, he received his doctorate in chemistry. Thereafter, he had a joint appointment to the faculties of École Normale of Saint-Cloud [Normal (Teacher's Training) School] and the Graduate Normal School. In 1905, he took on an additional appointment to the Faculty of Science of Paris.

In 1915, he was one of the civilian chemists appointed to the subcommittee on chemical weapons of the French Government's Commission des Études Chimique de Guerre (Commission for the study of chemical warfare). [9] This subcommittee was led by Charles Moureu and had been established in response to Germany's use of chlorine in April 1915. Simon collaborated with Charles Mauguin, his former graduate student, to research methods of producing toxic or irritating chemicals that might be prepared on an industrial scale but without using bromine or acetone, which were in short supply. They succeeded in developing several methods, most especially one for cyanogen chloride.

After the war, Simon briefly resumed his pre-war affiliations with the normal schools and the Faculty of Sciences. In 1919 he was appointed chairman of the department of applied organic chemistry at the Muséum national d'histoire naturelle (National Museum of Natural History) in Paris. He remained in this position until his death in 1925.



**Louis Simon**  
1867-1925

## ON THE STREET

**a. Politically correct counter-terrorism.** According to the Westminster Institute, the White House is backing reviews of counter-terrorism training for federal law enforcement and the military. The questions are who is on the review committees and what criteria are they using for their reviews? At issue is a concern that by trivializing religious extremism, particularly Islamic extremism, counter-terrorism training misses some of the issues and personality forming education that defines terrorists. While all followers of Islam are certainly

NOT terrorists, some religious and cultural education processes do turn out more violent extremism. What drives a person to choose WMD for their terrorist means? And why? If you do not ask the questions and train people to examine the issues, how will we learn to understand and counter these actions? And who is on the review committees?

**b. Anthrax?** In 1951, Time Life Magazine published an article on Biological Weapons. Anthrax was not included in the list.

**c. Potential chemical weapons not limited to the traditional agents.** According to the Dec 2011 issue of Jour-

nal of Pharmacy Practice, pharmacists have knowledge of antidotes for chemicals that can be used by terrorists.

**d. Biowarfare countermeasure program dismantled.** According to Nature, the US DoD is dismantling the Transformational Medical Technologies Initiative it created in 2006. In 5 years and at a cost of \$1.5 billion, the program was to move potential drugs and treatments for BW agents through testing and clinical trials faster. TMTI was originally a broad spectrum approach, but has produced a few candidates for single agents. The research will continue, but spread out across other programs.

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(French Chem - from p.13)

### Notes

[1] *Du Laboratoire Municipal de chimie...au Laboratoire Central de la Préfecture de Police*. 125 ans. (Paris: Préfecture de Police, 2003): 7.

[2] See, for example, Ludwig Haber, *The Poisonous Cloud* (Oxford: Clarendon Press, 1986): 23-24, and "Official German Press Report of June 25, 1915" in Charles F. Horne (ed.), *Source Records of the Great War*, Vol. III - 1915 (Washington, DC: National Alumni, 1923): 138-139.

[3] Lucien Chassaing, "French Gas Warfare," *Journal of Industrial and Engineering Chemistry*, 12(5) (May 1920): 505-506 (translated by C. A. Lyford from an article that originally appeared in *Le Journal*, Paris, February 24, 1920).

[4] Patrice Bret, "Managing Chemical Expertise: The Laboratories of the French Artillery and the Service des Poudres," in Roy MacLeod and Jeffrey Allan Johnson (eds.), *Frontline and Factory. Comparative Perspectives on the Chemical Industry at War, 1914-1924* (Dordrecht, The Netherlands: Springer, 2006): 210.

[5] "La Guerre des Gaz," <http://pageperso.aol.fr/guerredesgas/lesgaz/irritants/irritants.html>, accessed June 27, 2007. <http://www.guerredesgaz.fr/> accessed 15 November 2011.

[6] Both Mario Satori, *The War Gases. Chemistry and Analysis* (London: J & A Church, 1939): 140 and *Danske Farmaceutiforening, Kemiske Kampstoffer* (Copenhagen: A. Johansens, 1939): 55 attribute the code-name "papite" to "Le Pape" (sic). Neither source provides further information on the identity of Monsieur Lepape.

[7] Augustin M. Prentiss, *Chemicals in War* (New York: McGraw-Hill, 1937): 474.

[8] Augustin M. Prentiss, *Chemicals in War* (New York: McGraw-Hill, 1937): 474; Dieter Martinetz, *Der Gaskrieg 1914-1918* (Bonn: Bernard & Graefe Verlag, 1996): 72.

[9] Elizabeth Fordham, "The University of Paris during the First World War. Some Paradoxes," in *Trude Maurer* (ed.), *Kollegen, Kommiliton, Kämpfer: europäische Universtitäten im Ersten Weltkrieg* (Wiesbaden: Franz Steiner Verlag, 2006): 102.

### Suggestions for additional reading

"Dr. Andre Kling," *Nature* 161 (1948): 87.

Ch. Mauguin and L. J. Simon, "Sur la préparation du chlorure de cyanogène par la méthode de Held," *Comptes rend.* 169 (1919): 383-386. [in French]

Jean Wyart, "Charles Mauguin," *The American Mineralogist* 59 (Mar-Apr 1971): 706-710.

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## Industry Notes

### ARA releases First Responder Support Tools (FiRST)

The DHS supported FiRST application is now available for iPhone/iPad and Android platforms. FiRST provides First Responders and Emergency Managers easy access to map-based improvised explosive device (IED) standoff distances and HAZMAT spill evacuation areas. The IED standoff data is based on criteria set by the DHS Office for Bombing Prevention and FEMA 426, Reference Manual to Mitigate Potential Terrorist Attacks Against Buildings. Hazmat evacuation and reference data are based on the 2008 Emergency Response Guidebook (ERG). Access to IED standoff data requires a one-time verification of a DHS TRIPwire account ([www.tripwire.dhs.gov](http://www.tripwire.dhs.gov)). To find out more, visit [www.ara.com/products/first](http://www.ara.com/products/first). A full description of the FiRST is in ASA 11-1.

Contact: Carl V. Jerrett, PhD, Applied Research Associates, Inc., email: [cjerrett@ara.com](mailto:cjerrett@ara.com)

**Dennis Reutter** has accepted a position with Battelle's Charlottesville Operations Center as Research Leader. Dennis moves there from his last position as Director: Forensic Science Center, Lawrence Livermore National Laboratory at Lawrence Livermore National Laboratory. Previously he was the Chief Scientist for Weapons of Mass Destruction Forensics at US Department of Homeland Security and Director of the C/B Forensic Analytical Center at Edgewood Chemical and Biological Center in Maryland.

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## CWA, TIC and EXPLOSIVES IDENTIFICATION: RAMAN & FTIR APPLICATIONS

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# Radiation Biology At the Brazilian Army Technological Center (CTEx): A Brand New Joint Research Field and Perspectives

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## Introduction

The Brazilian Army Technological Center (CTEx) is a governmental institution that reports to Brazilian Army Science and Technology Department (DCT). The CTEx is an institution in which the applied research activities and the experimental technological development are concentrated in the Brazilian Army core. In 2005, the CTEx was restructured and has absorbed the functions of extinct Special Research Institute (IPE), which conducted research regarding High Temperature Gas-Cooled Graphite Moderated Nuclear Reactors, HTGR. The activities in the assembly project of an experimental nuclear reactor, HTGR standard, brought together and certified a group of researchers with expertise on nuclear physics, medical physics, radioprotection, reactor engineering and criticality field.

The Chemical, Biological, Nuclear and Radiological Defense Division (DDQBN) is the successor of the missions and research lines developed in the former IPE. Since 1995, DDQBN has been developing projects for Chemical, Biological, Radiological and Nuclear (CBRN) defense and provides support for research activities in some areas of interest including: (a) specification, installation and qualification of equipment; (b) identification of chemical agents; (c) identification of contamination from radiological and biological by sampling in situ; (d) evaluation of CBRN scenario; and (e) training of specialists to be able to assist the Army in CBRN defense duties.

The CBRN field is a very on-demand duty; the CBRN division included (from 2010) support to research on Radiation Biology issues and started considering joint and

cooperation with universities and industry in order to promote successful results.

## Brief History

Starting from 2002, the Brazilian Army has been improving the Defense System and approved (2002) the implementation policy of the CBRN Defense System (SDQBNEx). This Policy establishes the technical and scientific advisory system necessary to the performance of Brazilian Army duty against threats or disasters involving CBRN agents, with the CTEx heading this mission. In order to carry out this mission, actions were planned to set up a laboratory facility (fixed and mobile) of monitoring and identification of CBRN agents, including the biological effects of the exposure to these agents. During the following years agreements involving governmental agencies and the Army enabled CTEx to start a modernization program that involves not only equipment but also personnel education and training.



The former Special Research Institute (IPE), now the Brazilian Army Technological Center (CTEx).

## CBRN Laboratory Facility (Project)

The general objective of the Project is encouraging the development of the defense studies and solutions against CBRN threats, increasing the technological capacity of the Brazilian CBRN Defense System; promoting research and development of technologies in the interest of National Security and encouraging public and private synergy.

Currently, the National Security System requires CBRN defense centers which must: (a) provide unequivocal identification of CBRN agents; (b) perform risk and scenarios assessment; (c) develop means of protection and decontamination of these agents and (d) develop specific drugs and antidotes. Brazil as a host of the 5th Military World Games (2011), World Cup (2014) and Olympic Games (2016) reinforced the need of Defense System preparedness against CBRN threatening. Therefore, this project aims to enhance the CBRN defense structure, upgrading the response level to those potential scenarios which may

involve emergencies such as dirty bombs or accidental radionuclide release.

The laboratory facility covers the fields listed below:

**LABMOVEL** - implementation of CBRN Agents Identification Mobile Laboratory with the specific objective of designing and building a laboratory able to perform the CBRN agents identification in order to offer response to CBRN disasters.

**LIAR** - implementation of Radiological Agents Identification Laboratory, with the specific objective of implement laboratory infrastructure that allow identifying radiological agents in environmental and non-environmental samples.

**LAMCAR** - implementation of Risk-Assessment Modeling-Consequences Laboratory, with the specific objective of researching and developing systems to support decision in actions of prevention, prepare and response to CBRN disasters.

**LADQB** - Implementation of Identification and Defense Laboratory Against Chemical and Biological Agents, with the specific objective of researching and developing methodologies to identify war chemical agents using spectroscopy by nuclear magnetic resonance (NMR).

### Radiation Biology Research

In 2008, the search around the use of food that may have some correlation with high levels of protection against biological effects of ionizing radiation was intensified. This subject has aroused the interest with the interface of military biological defense. It became a joint effort involving the Federal University of Santa Maria, the Army Technological Center and, Econatura, the farming industry that produces black grape juice used as input in the ongoing research. In 2009 we published the first study showing that there are positive correlations between the consumption of organic grape juice and protecting liver cells from animals irradiated with X-ray whole-body sub lethal doses. Other important results were achieved when it was shown that rats fed with organic grape juice showed elimination of anorexia, which usually presented as serious effect after irradiation. In recent work, the research team found that moderate drinking of black grape juice acts significantly in the expression of proteins that regulate the system primary antioxidant, acting mainly in hepato-cerebral system. This basic research is under LADQB requirements and administration.

### Perspectives

All results have potential application in the protection of military operations where there is risk of acute whole-body exposure to ionizing radiation. Thus, investments in equip-

ment and training of highly specialized personnel are being applied in order to get as soon as expand the studies and increase the sampling size. Consequently, the applied research will follow the basic research, leading to solutions that might be applied to military operations and possible applications in public health, as well. This technology presents a dual character with positive benefits to society as a whole.

### Conclusions

Given such challenges and potentials, the DDQBN/CTEx is under full mobilization to be able to be in a position of equality in quality and relevance of results, in some years, when compared to large laboratories that perform research in Radiation Biology in the world. Equally important is the initiative to establish partnerships between the military and other productive sectors of society to generate creative and intelligent solutions to key technological and social issues.

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# Disease Surveillance and Its Importance in the BW Context

Prof. Maria Jose Espona, ArgIQ

With the Seventh BTWC Review Conference starting, several topics are gaining more space on the media, both for both the specialized readers and the general public. One of them is disease surveillance, a critical aspect of identifying natural, accidental or deliberate disease outbreaks that affect humans, animals or plants.

This is not a new topic, and in fact at the Fifth Review Conference in November 2002 [1] it was decided by consensus, as follows in point 18 a, iii and iv:

*(a) To hold three annual meetings of the States parties of one week duration each year commencing in 2003 until the Sixth Review Conference, to be held not later than the end of 2006, to discuss, and promote common understanding and effective action on:*

- i. The adoption of necessary, national measures to implement the prohibitions set forth in the Convention, including the enactment of penal legislation;*
- ii. National mechanisms to establish and maintain the security and oversight of pathogenic microorganisms and toxins;*
- iii. Enhancing international capabilities for responding to, investigating and mitigating the effects of cases of alleged use of biological or toxin weapons or suspicious outbreaks of disease;*
- iv. Strengthening and broadening national and international institutional efforts and existing mechanisms for the surveillance, detection, diagnosis and combating of infectious diseases affecting humans, animals, and plants;*
- v. The content, promulgation, and adoption of codes of conduct for scientists.*

Even when we all agree that disease surveillance is an ongoing activity carried out at the international level by the World Health Organization (WHO), World Organization for Animal Health (OIE) and Food and Agriculture Organization of the United Nations (FAO) to detect or monitor the occurrence of disease for control purposes within human, animal and plant populations [2], that surveillance rests mainly on the shoulders of the States Party, who provide the specific local information about outbreaks. Also there are several NGOs who work on this, such as ProMed [3], an official program of the International Society for Infectious Diseases (ISID), a nonprofit professional organization. Disease surveillance, however, reinforces the need to improve the sanitary conditions all over the world as part of reducing the biological weapons/biological warfare risks.

As Lela Bakanidze et al said [4],

“natural outbreaks of disease could pose significant challenges to global security by undermining national economies, international trade and travel, public health and safety, and the trust of populace in its own govern-

ment, potentially leading to ineffective governance or fragile state collapse. The global biological threat environment is compounded by the possibility of rogue states and/or terrorists deliberately using biological agents as weapons of war. Any such use of a biological agent (whether overtly or covertly) could have potentially devastating consequences on public health or the environment.

Achieving effective, comprehensive biosecurity to prevent unauthorized possession, loss, theft, misuse, diversion, or intentional release of biological agents and toxins is a shared responsibility at the international level since infectious disease knows no borders.”

Disease surveillance is not just about devoting technical and human resources to this task, it is also about the political decision of doing so. Acknowledging the importance of such activity requires not just thinking about BW, but acknowledging that the improvement of the health care system at national, regional and international level should be a priority.

The BTWC is not a top priority on most political and even diplomatic agendas, particularly in developing countries. Even in the developed countries, it is the concerns and decisions about all the budget cuts in public health due to the latest economic crisis that captures all our attention; most people are unaware of the BTWC or the current Seventh Review Conference.

## BW Agents vs. Diseases

There are several differences between natural, accidental or deliberated outbreaks and it is well explained in Epidemiology of Biowarfare and Bioterrorism [5]. Nevertheless, to define the different situations does not mean that if we are witnessing one we will be able to categorize and identify it. This is not a math equation, this is about knowing the past and understanding the present from a holistic perspective.

The other big hurdle is the lack of a standardized list of pathogens of concern. Each of the international organizations, countries and other government and nongovernment organizations build their own pathogens' lists according to their priorities. Currently and especially under the biological threat scenario, this is not an efficient way of work. As it is mentioned by M. Dando [6] and G.S. Pearson [7], among others, to shape a “Web of Prevention” between all the areas (and actors) involved in the fight against the biological weapons is one of the most viable solutions in our times.

As stated in Japan's submission regarding strengthening response capabilities in the case of alleged use of biological or toxin weapons [8]

“During the Meeting of Experts held in August 2010, it became evident through the exchange of experiences that the establishment and maintenance of national mechanisms

for surveillance and detection of disease outbreaks is considered an effective way for immediately responding to epidemics. To this end, it was recognized that a holistic approach, particularly inter-agency cooperation including the public health sector and law enforcement agencies, is important.

While a good number of States Parties have already established national mechanisms, given the ease with which biological and toxin agents can spread across borders, regional and international coordination is indispensable. Thus it is beneficial to strengthen collective efforts, make preparations to rapidly respond to alleged use and make an effort to ensure transparency regarding the biological-related activities of states on a steady basis.”

### Disease Surveillance

To perform effective disease surveillance, first we need to agree between all the actors involved (from local to international level) if there is a need of a standard list of agents to monitor in order to optimize the use of assigned resources. Then, identify the key players who will be in charge of gathering of relevant information all over the world. And finally, considering all the information obtained, build a system that allows us to organize the data in such way that the quality is guaranteed. This is a process that may need to be repeated as we learn which data are most relevant. And once we have this, we can apply the definitions of natural, deliberate or accidental outbreaks' definitions showed previously.

The lack of quality standards in the statistics information about diseases leads us to our current chaotic situation, making determinations about a specific disease very difficult, and in some cases almost impossible. This situation also conspires against an optimal disease surveillance system. Many of those responsible for building the statistical models for disease are not aware of this situation, and in some cases are not even willing to consider the variances in data quality.

### South American Situation

When we tried to analyze the disease surveillance system in this region, we found out that the information about listed diseases is chaotic and inconsistent between sources. This is not just an organizational problem related to the diseases reporting system, but also with other situations that evolve continuously. This is a region with a wide variety of weather and ecosystems, ethnic backgrounds, local and regional economies, natural resources exploitation policies, and all contribute to a disease's dynamics making it difficult to understand. For example, because of the need of natural resources exploitation, people begin contact with ecosystems that are strange to their immune systems, and to this, we can add regional (and international) migrations due to harvest needs and work opportunities. All of these situations

contribute in different degrees to complicate the data gathering about diseases.

### Conclusions

As we discuss in this article, we are far away of an optimal disease surveillance system, but not all is bad news: the Seventh Review Conference will provide an opportunity to strengthen the existing confidence building measures (CBMs) by raising awareness between the States Parties about the importance of report the outbreaks that occur in their territory.

The lack of political will and interest about diseases and health care issues undermines the objectives of the BTWC.

Education is a key to overcome the current situation: all the actors involved in disease surveillance should know way is important to do it well and which regulations are in place. [9] See also Espona in ASA 11-1.

Disease surveillance can also be considered a dual use development: but in the meantime, a country fulfills the BTWC provisions and can improve its health care system. This is particularly important in developing countries where the resources available to this task are limited.

Finally, biological weapons are also a problem that touch us as human beings, our belief systems and principles. We need to work from this perspective, too. [10]

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**Dennis Reutter** has accepted a position with Battelle's Charlottesville Operations Center as Research Leader. Dennis moves there from his last position as Director: Forensic Science Center, Lawrence Livermore National Laboratory at Lawrence Livermore National Laboratory. Previously he was the Chief Scientist for Weapons of Mass Destruction Forensics at US Department of Homeland Security and Director of the C/B Forensic Analytical Center at Edgewood Chemical and Biological Center in Maryland.

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## Effective, Economical, Adaptive Countermeasures to Innovative and Increased Risks from CBR Disasters

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Ten years after 9-11, we are at a crucial junction in our preparedness and defenses for chemical, biological, radiological and nuclear (CBRN) events, whether initiated by terrorists, accidents or natural causes. Despite a decade of intensive work and significant expenditure to provide more effective prevention of as well as response to a variety of WMD-type incidents, societies face higher probabilities that disruptive events, particularly CBRN events, can cripple nations and their economies. Why are CBRN risks in fact higher than before, and why are some of the countermeasures, particular those focused strongly upon terrorist-origin CBRN threats, insufficient for preparing and responding in ways that maintain social resilience and sustainability? Our assessment includes non-terrorist events that can be potentially of greater damage and consequence than terrorist acts. We also examine the diversity and unpredictability by which CBR threats can be brought into a large and mobile population. How can such events be amplified and made more destructive, not only using physical measures, but also by using psychological effects

including inducing mass panic? This article considers the questions of new threats, but focuses on some of the advantages and disadvantages of our highly connected, mobile global society and how we can better use them to protect society from new threats, old threats and natural disasters.

### Risk Basis

Are the risks of CBR incidents growing and how do we assess them? As a result of the end of the Cold War, various peace initiatives, counter-terrorism and treaties, including the CWC, the prospects of an event or attack resulting in high casualty numbers (tens or hundreds of thousands of deaths and severe injuries) and massive environmental damage appear to be less than ten or twenty years ago. As a result of post-2001 counter-terrorism and security, there are new barriers to intentional, deliberate WMD terrorism. These barriers include not only traditional airport, shipping and border security, but also extraordinarily increased activities within electronic and human counterterrorism. We have built wide-area surveillance networks and deployed sensors and information gathering systems that appear to provide a strong defense. But are these sufficient for threats that can emerge from "behind the lines" (home-grown terrorists) and or threats without a traditional terrorist origin?

Two primary factors influence the current view that risks of CBR events have lessened. First, there have been no major CBR-disaster occurrences (affecting ~ 1000 people or more) over a relatively short period of time (the last

large chemical attack was in Halabja 1988). Second, there is a perceived reduction in threat from organized terrorist groups, particular those associated with radical Islamic extremist organizations, such as al Qaeda. Attention has been primarily upon deliberate, terrorist-driven, agent-performed attack threats. New risks with increasing probabilities stem from different causes, as well as from a weakened capability to respond effectively on a large scale (e.g., multiple incidents, or responses encompassing a large region/nation). Looking forward, we need to examine

- our current life with changing environments of increased and mobile populations,
- how we deal with tenuous and delicate balances in climate and environment,
- the transitions and dispersions of natural biothreats, and
- dangerous, at-the-edge conditions within our power, transportation and communication infrastructures.

But even as we examine those, can we use those protection methods and management systems that we have built for handling one hazard (e.g., toxic chemicals) for others (e.g., biological or nuclear materials)? Can we build-in fault-tolerance approaching fail-safe for our ability to respond?

### Responding

Does the emphasis upon unforeseen and multiple new risks imply that we must remain in a situation of diminished ability to protect and to respond in disaster settings? On the contrary, there are other countermeasures and protection procedures that can be developed and implemented; some are appropriate to large, civilian populations and appropriate for our present global economic conditions, demanding austerity and cost-cutting. For the last 30 years the CBR defense and protection emphasis has been upon advancing “newer, smaller, smarter” technologies, such as sensors, measurements, simulations, and intelligent information systems. All of these, if accurate and if appro-

riately deployed, are important and valuable, but only if we can effectively use the information. Detection of CBR agents is only useful if there are plans to avoid contamination, remove agents or decontaminate and restore the areas, and treat people. People must translate such information into responsible and timely actions. In brief, we need to employ more of our existing resources, not necessarily more unique systems and tools.

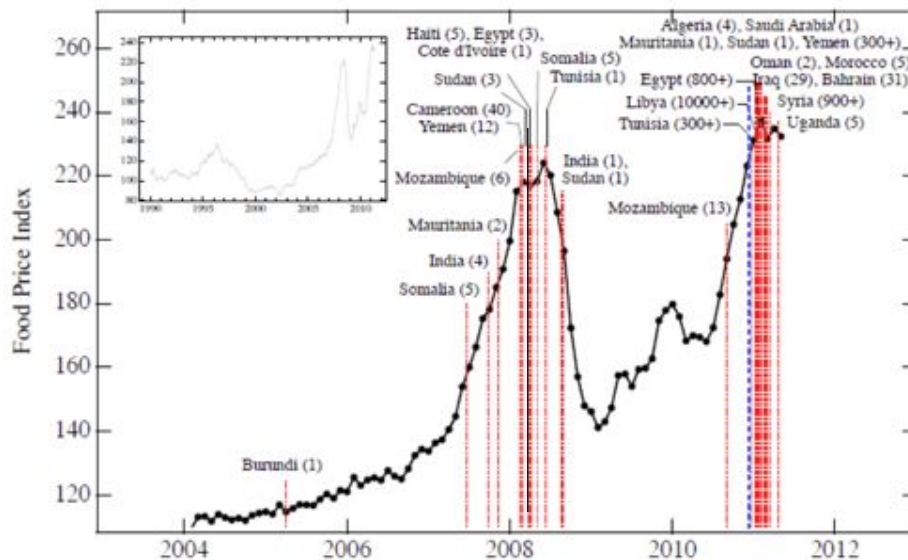
Can we afford to be moving in new directions and expanding our CBR readiness, especially in difficult economic times? Yes, because we can better utilize the resources already in place within the general civilian population, especially if we put greater emphasis on training,

awareness and participation. In fact, if we are to avoid catastrophes that could make many terrorist actions seem small in comparison, we must enable and involve the population. Many responses to CBR incidents will require the use of emergency responses to natural catastrophes such as hurricanes, tornadoes, disease epidemics and earthquakes. Many hazmat and mass-casualty simulations and practice-runs, along with emer-

gency responses to natural disasters, have shown problems in communications and logistics for such basic procedures as setting up triage checkpoints, decontamination zones, clinics, and shelters. Delays and confusion here can be life-takers in a real emergency involving thousands and with potential unknowns.

### Mobility and Global Connections

Most of the new risks result from the increased mixing, travel, transport and proximity of human and animal populations, as well as the supplies of food and energy for both. More people, movement, and density exist in all forms of our human traffic. More foods come from distant sources, with greater intermingling and handling along the supply chain. More basic life-sustenance supplies require a high



**Figure 1. Time dependence of FAO Food Price Index from January 2004 to May 2011.** Red dashed vertical lines correspond to beginning dates of “food riots” and protests associated with the major recent unrest in North Africa and the Middle East. Inset shows FAO Food Price Index from 1990 to 2011. Taken from Lagi et al., 2011, [http://necsi.edu/research/social/food\\_crises.pdf](http://necsi.edu/research/social/food_crises.pdf), accessed 3 Nov 2011.

dependency upon complex technologies for production including harvesting, for processing, for transportation. A breakdown in any of this traffic, whether caused by a CBR event or series of natural disasters, can rapidly create a sudden and widespread drop in food availability. Indeed food availability is considered an index of political unrest and a consequence of the vulnerability of society. Consider figure 1, Changes in Food Price Index after Disasters, from a recent paper [Lagi, M., Bertrand, K.Z., & Bar-Yam, Y., "The Food Crises and Political Instability in North Africa and the Middle East," New England Complex Systems Institute, 2011 - [http://necsi.edu/research/social/food\\_crises.pdf](http://necsi.edu/research/social/food_crises.pdf)]. Although referring to widely differing locations and causal factors, the models have been very accurate, almost to the week, with respect to events from different causes (e.g., CBR attacks, pandemics, natural disasters) can affect any society.

Furthermore, physical transit is only one of the new risk-enhancers. We are now in a globally-connected social-network world, in which traditional media and its fact checking are superseded by the cell phone texts, Tweets, Facebook and email. Rumors spread fast, confusion sets in, and panic can be an enhancer of the spread of any biological pandemic or the disorder of a radiation-exposure incident. The "panic and pandemic" relationship has been increasingly a subject of study (e.g., Joshua Epstein's work at Brookings Institute and Johns Hopkins). [Epstein, J. M., Parker, J., Cummings, D., Hammond, R. A., "Coupled Contagion Dynamics of Fear and Disease: Mathematical and Computational Explorations," Plos One, Dec. 2008, Number 3, Issue 12, e3955]. Public panic can become an "accelerant" for dispersion of a biological agent throughout a region. The "panic factor" can also have a drastically negative effect upon such basics as food supply and distribution. Computer models by Ekici et al at Georgia Tech's Stewart School of Industrial and Systems Engineering have illustrated some of the consequences for a region of Georgia based upon 2009 H1N1 infection projections [Ekici, A., Keskinocak, P., Shi, P. & Swann, J. L., "Modeling Influenza Pandemic and Strategies for Food Distribution," <http://www.scl.gatech.edu/research/humanitarian/files/ModelingInfluenzaPandemicandStrategiesforFoodDistributionpresentation.pdf>].

The evolution of the SARS epidemic from China to other countries worldwide, shows how a transmissible outbreak can spread with ease [Greenfeld, Karl T., "China Syndrome," Harper Collins (2006)]. Information was present, even in the earliest stages, but the Chinese government restricted disseminating that information. Further examples include the slow release of information by Soviet authorities after the Chernobyl incident and even by Japanese authorities after the damage to Fukushima's nuclear plants. Even though many advanced modeling and forecasting tools exist and are used to predict the next regions of infection or imminent impact, the practical implementations

of preventive measures may be met with resistance for economic or social reasons. Using infectious disease as the example, the most extreme forms for protection and limiting infections are quarantines and shutdowns of transit routes and major business, manufacturing and commerce centers. In the case of SARS, quarantining or even basic interviewing, sampling and testing of arriving travelers did not take place at the critical early stages, mostly due to economic concerns limiting business.

Our CBR strategies and protective systems have been designed and implemented to avoid mass casualty incidents have done well to address classical terrorism, i.e., terrorism as it has generally been practiced by organized groups or cells, including individual or "solo" operators but with training. Most are minimally associated with a philosophical temperament, such as those of al Qaeda, Hezbollah, or state-supported terrorism linked with factions in Iran, Afghanistan, or rogue states, such as North Korea. What our defenses do not cover well, at present, are the growing numbers of non-aligned domestic or international terrorists, or the non-terrorist threats from purely accidental or natural causes.

#### **Recent Natural Disasters and Terrorism Lessons**

The recent (March, 2011) disaster in Japan has been an enormous environmental catastrophe resulting from natural causes. One aspect, the resulting damage at the Fukushima Daiichi power plants has affected regions beyond the immediate zone of highest radiation contamination. Despite the availability of a vast array of radiation sensing devices - small, handheld, inexpensive - and software to acquire and compile collected data, there were social, political and organizational barriers that hampered actions to delineate, decontaminate and restore facilities and areas. In one instance, government and corporate organizational confusion limited the deployment of volunteer teams for early-stage surveys of agricultural areas and inland water tables. This was not due to any lack of technologies, equipment, or people who could be part of an ensemble-team, which would have included information gathering, as well as, wide-scale medical response.

The Fukushima nuclear plant contamination issues have a parallel with the possible purposeful release of radiation using "dirty bombs". Large numbers of small quantities of radionuclides, particularly associated with medical and industrial uses, make it possible for one or more groups to accumulate sufficient quantities to create areas of contamination with passive radiation-exposure devices ("PRED"). The impact value for the terrorist, in this case, is social and economic disruption, with or without any significant harm to the health of any individuals. Consider the social impact of "Fukushima-fright" upon some of the population in the USA and consequent rushes, at some health risk, to ingest iodine tablets. Dispersion of radionuclides plays on public ignor-

ance and sensitivities to generate fears that can threaten disruptions to basic services and especially to the food industry. One non-explosive “dusting” of a major shipping port could have similar expensive consequences. Today, the threat of multiple PRED deployments, using a fraction of radionuclide quantities needed to build an explosive “dirty bomb” (much less a true fission bomb), is greater and easier than ever. The damaging effect on any society is certain, particularly if the general population lacks sufficient knowledge of the actual risks from different radiation exposures.

Organization and preparations for possible radioactive releases are similar to those for disaster management that includes use of CB agents, industrial chemical accidents, and pandemics. The organization and education and training to implement disaster management are more critical than any specific detection or protection technologies.

### **Preventing a Recession in Protection**

We cannot avoid the fact that even prior to the economic recession and downturns beginning in 2008, there has been crises deterioration of physical infrastructure systems in many countries, including the USA. The list is long but certainly includes aging water and sewer systems, reservoirs, all aspects of the transportation network, and the electric power grid. In any major metropolitan area with several million inhabitants or more, storms can release infectious diseases and thereby duplicate a major biological disaster similar to the use of WMD. If storms are combined with engineering system breakdowns in the water supply, the ability to prevent epidemic-proportion spread of infectious diseases (e.g., those caused by *Giardia lamblia*, *E. coli*, *Vibrio cholerae*, *Salmonella* bacteria, *Listeria monocytogenes*, etc.) will be near impossible. If simultaneous actions by domestic or foreign terrorists occur, the resulting public health disaster could be amplified.

We are more “on the edge” of potentially catastrophic instabilities than ever before. A CBR event or sequence of such events, even with initial low fatalities, could lead to rapid social and economic breakdowns and grave consequences of additional injury and loss of life, plus economic costs. Our populations are more densely packed together in urban areas, with more sources of toxic substances that could potentially be released into the environment. Add to this, whether for the long-term or only episodically, a high incidence of extreme weather effects including tornados, floods, forest fires and other means, could facilitate releases of hazardous materials, especially into the atmosphere and into waterways.

### **Conclusions and a New “Forward”: Reallocating Resources to Enable and Train**

The responses and deployments of resources that have gone into CBR early-warning, intelligence, counterterrorism and medical responses have advanced. We have more and newer technology, some of it very advanced for forecasting,

detection, containment, and removal for most high-risk toxic substances. We appear to be better positioned for preventing CBR incident. No one can dispute that efforts have been ramped up, awareness increased, technology improved. These are clearly valuable for the new CBR threats of today and looking forward into the next decades.

Now and looking forward, we need to re-examine how we can best use the tools that we have, how we can address a broader range of possible threat-events, and how to do so in an economically and socially practical manner. We are in an era that is intensively, massively enabled by mobile wireless communications. Smartphones and apps are part of the general culture, as is the use of the web for almost every imaginable function in daily life. There is no big barrier to cross with public education and familiarity if we use what people consider to be part of everyday living.

We need nothing radically new in the way of hardware, and only trivially so in terms of software; e.g., some few new apps. Mostly it is a task of engaging and educating an increasingly larger segment of the population to become comfortable and to have confidence in a bi-directional flow of information about potential threats and actual events. It becomes more a question of how to weave and embed the kind of information exchange that is desirable, with respect to a probable or actual CBR event, into the world of commerce, music, and personal activities that on the surface might seem to have nothing to do with health, safety, and security, much less CBR hazards and threats. People will pay more attention and take an interest in something if it is associated, emotionally and in a touch-feel-use way, that is commonplace, everyday, and accepted.

Information dissemination critical to our CBR defensive and responsive capabilities can improve significantly with more involvement by civilian populations. The most basic response and relief is available today with mobile maps, GIS, and GPS. The number and the gravity of casualties may be significantly reduced if more people are alerted through massive and situation-appropriate dissemination of information to those people. But the information needs to be credible, controlled and disseminated quickly in order to avoid the propagation of rumors and misinformation or even disinformation. What type of education-through-use will enable a decentralized system of communication, one that actually enables gathering information as well as distributing such, to be more resilient, more fault-tolerant, and also a more powerful tool for mitigating fear and panic?

Organizational improvements and crisis management that incorporates the larger civilian population and our communication technologies will require education and training. But we have the technologies and tools and our civilian governments practice response and crisis management frequently. Our protection and recovery systems do not need to be compromised even in economic recessions. \*\*

ASA is pleased to offer the **Weekly WMD News Summary**. This will be an on-line offering as part of the ASA Newsletter subscriptions. Please see the Subscription information on page 28.

Each week Anne Monday and her open source researcher staff will provide readers with information on weapons of mass destruction (WMD) issues, as reported in the media. In addition to the report 50 weeks a year, other services are available. These include consulting, drafting of tailored reports for clients, and maintenance of archives of research that will be available -- with prices based on hours spent.

Anne Monday and her staff have been providing open search research on WMDs to US government agencies and private corporations.

## WMD Report 12-11-2011

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- 1.5.7. House Unanimously Passes Rogers' Bill to Protect against Chemical, Biological Weapons
- 1.5.8. Iran is developing low-flying cruise missiles

#### Expanded Samples

##### *Turks deny using chemicals against Kurds*

“The Turkish military denied on Thursday it was using chemical weapons in its fight against the rebel Kurdistan Workers' Party (PKK) and said it did not even possess such arms.... The military was responding to claims published in some media at home and abroad that the army was using chemical weapons in its operations against Kurdish rebels.”

<http://www.news24.com/World/News/Turks-deny-using-chemicals-against-Kurds-20111208>

##### *U.S. Watching Syrian Chemical Arms amid Fear of Attack, Diversion*

“The United States is quietly but closely monitoring the status of Syria's large chemical weapons stockpile amid fears the regime of autocratic ruler Bashar Assad could use the warfare agents to quell continued political protests or divert the materials to extremist groups that operate in the region. Government officials in Washington declined to discuss specifics of the monitoring operation or what intelligence resources were involved, citing the need to maintain secrecy about operational tactics. They acknowledged, though, that there is a great deal of concern in Washington over Syria's chemical arsenal.”

[http://gsn.nti.org/siteservices/full\\_edition.php?Edition=12/05/2011](http://gsn.nti.org/siteservices/full_edition.php?Edition=12/05/2011)

##### *Japanese sarin victim hired by spinoff of Aum Shinrikyo*

“A victim of the deadly 1994 Aum Shinrikyo sarin attack in Matsumoto, Japan, was recently hired by a spinoff branch of the cult to conduct surveys and hold informational meetings with its members. Yoshiyuki Kono, a 61-year-old man whose wife spent years in a coma and eventually died after inhaling the poison, was hired by former Aum mouthpiece Fumihiko Joyu, the leader of the sect called Hikari no Wa, or the Circle of Rainbow Light, according to [JapanTimes.co.jp](http://JapanTimes.co.jp).”

<http://www.bioprepwatch.com/news/297226-japanese-sarin-victim-hired-by-spinoff-of-aum-shinrikyo>

\*\*



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\* U.S. Army Medical Research Institute of Chemical Defense (USAMRIID); E.H. Braue Jr, et. al.; (2008); Efficacy Comparison of RSDL, M291 SDK, 0.5% Bleach and 1% Soapy Water Challenged with Soman, Cyclosarin, VX, and Russian VX (VR)

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The ASA Year 2012 new subscription price = \$200 for individuals; \$250 for libraries. Includes all 2012 issues, plus issues 11-1 and 11-2. A minimum of four issues (quarterly) will be published, except for 2011. All issues are distributed via email. A new weekly WMD news services is available for \$150/year, with a special combination offer of \$300 for both the ASA Newsletter and weekly WMD news summary. If a printed version is required, the subscription price is \$250. For subscriptions, please send wire transfers, checks (on a US Bank) or charge card payments to ASA. Fax orders acceptable. We will be issuing passwords to subscribers to open the secured pdfs and archives in 2012.

The ASA Newsletter was started in 1987 and our goal was to maintain and increase communications between professionals with interests in Chemical, Biological, Radiological, and Nuclear Defense, Disarmament and Verification, and Emergency and Disaster Medical Planning. The ASA Newsletter has achieved much in CBRN defense communications and this core mission remains important to the CBRN defense community. The ASA Newsletter continues to adhere to our core mission; however, we are experimenting with new formats and distribution in order to adapt to new environments and changing interests. ASA has partnered with Peter Lejeune, chairman of the newly formed International of Institute for NonProliferation Studies (IINPS), which will help maintain continuity of communications in critical issues covered by the ASA Newsletter. As part of this partnership, ASA and IINPS now offer a weekly news summary across the areas of WMD and CBR defense and nonproliferation issues. The annual subscription for this service is \$150/year and is sent only by email. As time permits, these summaries will be available on the ASA website and transitioning to the IINPS website.

The 2011 issues were a transition. We are aiming to create more appeal and communication options to attract younger professionals, and so we will be working on our internet presence, via email, website, and discussion groups. We would be very interested in your and your clients' comments and interests.

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