ASIA-PACIFIC BIOSAFETY ASSOCIATION

Volume 1 No. 1
August 2008

Our Very First Issue!

The Asia-Pacific Biosafety Association (A-PBA) is committed to fostering, supporting, providing and training on biosafety and biosecurity knowledge in the region. Part of A-PBA's goal has been to develop a Newsletter to keep A-PBA members and regional biosafety professionals and associations appraised of upcoming training, best practices and activities of local (Asia-Pacific) Biosafety Associations.

To meet this goal, A-PBA has assembled a team of regional and international editorial experts from varied specialties and organizations who are volunteering time to develop and produce a bi-annual Newsletter. This inaugural Newsletter marks the start of a regional goal for the Asia-Pacific region. We encourage and ask all biosafety professionals, organizations and entities working with biological agents to submit an article, commentary or information regarding your local biosafety association, available training, best practices or new regulations to this Newsletter.

Again, our goal is to be fully inclusive and educational and we need your help to achieve this goal. To facilitate a goal of open communication and dissemination of knowledge the Newsletter will be posted free of charge at A-PBA and we invite other Biosafety Associations and organizations to link to our site on behalf of their members. Together we learn and progress.

Sincere Regards,
Barbara Johnson
Editor

MESSAGE FROM THE PRESIDENT of the Asia-Pacific Biosafety Association

In the last decade, the Asia-Pacific region has experienced numerous outbreaks of infectious diseases that have affected both humans and animals. These outbreaks resulted not just in the loss of life in the region and around the world, but also caused considerable damage to the fragile economies of many of the developing countries in the region.

This growing threat of possible and frequent outbreaks of emerging and re-emerging diseases in the region has raised concerns on the preparedness of countries in the region in responding to these outbreaks as a collective community, as no one country can be adequately effective in its response to an outbreak if the neighboring country is ill prepared. The experiences from SARS confirms this challenge and the need for a collective and concerted regional approach toward these disease outbreaks.

It was then in October 2004 after returning from the American Biosafety Association (ABSA) Conference in the USA that a small group of friends got together in Singapore with the idea of establishing a regional biosafety association with the primary goal of promoting biosafety in the region and to foster the growth of a regional biosafety community. After a few meetings to draft the constitution and by-laws, the Asia-Pacific Biosafety Association was formally registered on the 22 Feb 2005.

Today, the Asia-Pacific Biosafety Association has grown into a regional organization with membership from 21 countries in the region and around the world. It gives me great pleasure to congratulate and thank the first President of A-PBA, Dr. Ling Ai Ee and the founding members for their vision and contribution to the biosafety community in the Asia Pacific region. The Asia-Pacific Biosafety Association could not have grown so rapidly, had it not been for the support of ABSA and its members such as Ms. Maureen Ellis, Dr. Stefan Wagener and many others that supported us with much encouragement and guidance in that process.

There is still so much to be done in the region to bring Laboratory Biorisk (Biosafety & Biosecurity) Management to a higher level. The publishing of this A-PBA Biosafety newsletter is certainly a step forward in that direction and I like to congratulate the Newsletter Editorial Team for this wonderful job. We hope it will develop further in not just a tool for the dissemination of useful biosafety information, but also serves to provide a forum in bringing our biosafety community in the region closer as we move forward together in promoting a safer environment for all in the region that have to deal with infectious materials.

We would like to encourage each of you to participate in the activities of A-PBA by sharing your experiences and knowledge for the collective interest and benefit of all in the region and around the world.

Thank you.

Dr. Chua Teck Mean
President
Asia-Pacific Biosafety Association

IN THIS ISSUE:

A-PBA CONFERENCE, BANGKOK 2008

Biosafety Issues in Emerging and Re-Emerging Diseases

25th -28th March 2008

Siam City Hotel, Bangkok, Thailand

Biosafety is now an integral part of biological research and has been recognized as a discipline on its own. Recent advances and development in biosafety provide scientists and researchers a safe, secure and conducive working environment.

The conference, with the theme "Biosafety Issues in Emerging and Re-Emerging Diseases" provided a forum for biosafety professionals to exchange views on the various emerging issues and developments in biosafety in the Asia-Pacific Region. The conference addressed issues ranging from design engineering to the management of various issues such as developments in biosafety standards, role of biosafety professionals and operation and maintenance issues.

We are pleased that this year's conference had received interest from regional countries such as China, Hong Kong, Japan, Korea, Indonesia, Brunei, Cambodia, Myanmar, Vietnam, Pakistan and many others, besides countries from the west such as Sweden, Switzerland, Canada and USA.

We are also very grateful to the WHO for their continued participation and attendance in our conference.

The conference garnered numerous interests from both local and overseas sponsors who contributed in kind, apart from exhibiting the latest trends in products, services and technologies in biosafety.

Internationally renowned biosafety experts and professionals, and local and overseas speakers, contributed their time, effort and resources to share their experiences, making this conference a valuable sharing and exchange forum for the delegates.

Finally, we acknowledge the sponsoring agents who sponsored delegates from regional countries, enabling many delegates from these countries to attend the meeting and benefit from the experience-sharing sessions.

With the success of this first A-PBA conference held outside Singapore, A-PBA intends to continue its outreach to the region by holding more conferences in different countries in the Asia-Pacific Region.

Report contributed by Chook Mee Lan.

GUEST EDITORIAL

Medical Surveillance in Biomedical Research

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Occupational Medicine specialists serve as de facto public health officers for the working population. A major part of this service is providing medical surveillance. Workers in the biomedical research industry, in particular, require medical surveillance for a wide variety of workplace hazards. Since the 1930s, the medical literature is replete with studies detailing the mortality and morbidity of biomedical research workers related to such hazards (especially biohazards).

Laboratory-associated illnesses often reflect the specific methodologies utilized in biomedical research (e.g., latex allergies, animal dander hypersensitivity, repetitive motion illness, blood-borne pathogens, B virus, etc.). In addition, the ever changing nature of laboratory-associated hazards, and exposure to workers, reflects the industry's tendency to use novel technologies as well as to study emerging diseases of current public health significance. Some examples of these new technologies and agents are the study of avian influenza, XDR tuberculosis, SARS, Ebola using aerobiology, non-GMP manufacturing processes and nano-technology. As a result, the medical surveillance and management of exposures to biomedical research workers remains problematic at best and often without precedent, given the absence of prophylaxis and/or treatments for many of the current agents studied such as "select" agents, prions, and the hemorrhagic viral diseases.

The primary focus of medical surveillance in biomedical research has largely been on immunosuppression, or hyper-sensitivity and their effects on the worker's risk to a wide variety of biohazards. The unique requirements for prophylaxis of biomedical research workers with various "experimental" vaccines and/or live vaccines makes it critical that these workers be surveyed for contraindications prior to receipt of these vaccines. Examples of these vaccines are vaccinia, botulinum, anthrax, hemorrhagic viral vaccines, Yellow Fever, Flumist, and Rubeola. Several conditions that need to be monitored in these workers are prior allergic reactions, pregnancy, and immuno-suppression. In addition, these workers need to be monitored for adverse reactions following receipt of these vaccines.

Finally, the cutting edge nature of biomedical research necessitates that any medical surveillance program remains a "work in progress." Medical surveillance programs for biomedical research workers that are simply "compliance driven" cannot keep up with the rapidly changing nature of the industry. In my experience, such programs have been inadequate in protecting the workers from both the newer technologies used and the novel hazards studied.

Attached is a list of the updated "guides" that I have found helpful over the past 20 years in tailoring medical surveillance programs for biomedical research companies.

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Epidemiology Program Office. www.cdc.gov/epo/index.htm. (Info on public health surveillance) MMWRs, Prevention Guidelines—all picks from CDC homepage www.cdc.gov. ATSDR. http://atsdr1.atsdr.cdc.gov:8080/atsdrhome.html

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NIH. www.nih.gov

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NIOSH Alert: Preventing Allergic Reactions to Natural Rubber Latex in the Workplace. DHHS

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ABSA Medical Surveillance Course-10/25/98 Office of Health and Safety, Centers for Disease Control and Prevention, 1600 Clifton Road N.E., Mail Stop F05 Atlanta, Georgia 30333. www.cdc.gov/od/ohs/biosfty/bioref.htm

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UPCOMING WORKSHOPS ORGANISED BY ASIA-PACIFIC BIOSAFETY ASSOCIATION

Biosafety Management Course

25-29 August 2008, Temasek Life Science Laboratory

The Biosafety Management Course enables the participants to gain a comprehensive knowledge of the legislation, principles and practices of biosafety. This course is recognised by the Singapore Ministry of Health and is highly recommended for those who are interested to work as biosafety coordinators in a biocontainment level 3 facility in Singapore. This course will also benefit laboratory directors, safety officers, researchers, technologists and anyone interested in biosafety.

This 5-day course combines lectures and hands-on sessions. Participants will have a chance to discuss biosafety issues with the experts. The hands-on session will allow the participants to perform practices in biosafety.

Topics include:

- Biosafety Principles and Practices
- Local Legislations and Regulations
- Risk Management
- Biosafety Management
- Facility Design and Operations
- Shipping, Transportation and Packaging
- Emergency Response
- Biosecurity

…….And a lot more!!

Engineering for Biosafety Course

1-5 September 2008, Temasek Life Science Laboratory

"Engineering for Biosafety" aims to provide the basic knowledge and skills needed for the operation and maintenance of a high containment laboratory. This 5-day course combines lectures and hands-on sessions. It will help the participant to understand the principles in building a biocontainment laboratory and be better equipped to maintain and operate a high containment laboratory.

This course will also benefit laboratory directors, safety officers, researchers, technologists and anyone interested in biosafety.

Topics include the following:

- Basic Microbiology and Biosafety Practices
- Disinfection, Decontamination and Sterilization
- Biocontainment Engineering Principles
- Biosecurity and Codes of Conduct in Biosciences
- Facility Design and Construction Techniques
- Airflow System in a High Containment Laboratory

Further information on both courses is available at www.a-pba.org

CALENDER OF EVENTS

October 19-22, 2008
American Biological Safety Association (ABSA) 51st Annual Conference
John Ascuaga's Nugget, Reno/Sparks, Nevada, USA
Contact: Phone: 847-949-1517; Fax: 847-566-4580;
E-mail: absa@absa.org;
Webpage: www.absa.org

November 9-13, 2008
American Association for Laboratory Animal Science (AALAS)
59th National Meeting
Indianapolis, Indiana, USA
Contact: http://nationalmeeting.aalas.org/future_sites.asp

December 8-9, 2008
Tradeline, Inc
Animal Research Facilities 2008
Renaissance Vinoy Beach and Golf Resort, St. Petersburg, FL, USA
Contact: http://www.tradelineinc.com/conferences/

June 15, 2009 Pre-Conference Workshops
June 16-17, 2009 Conference
European Biological Safety Association (EBSA) 12th Annual Meeting
Stockholm, Sweden
Contact: http://www.ebsaweb.eu/

October 18-21, 2009
American Biological Safety Association (ABSA) 52nd Annual Conference
Hyatt Regency Miami, Miami, Florida, USA
Contact: 847-949-1517; Fax: 847-566-4580;
E-mail: absa@absa.org;
Webpage: www.absa.org

November 8-12, 2009
American Association for Laboratory Animal Science (AALAS)
60th National Meeting
Denver, Colorado, USA
Contact: http://nationalmeeting.aalas.org/future_sites.asp

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BIOSAFETY TIPS

Karen B. Byers
Dana-Farber Cancer Institute, Boston, Massachusetts

Biosafety Tips brings you practical approaches to biosafety or "news you can use." If you are looking for a useful and sensible solution to a biocontainment problem, or perhaps a reference to help convince a skeptical researcher of the need for caution, this is the place to look. In this column, I share biosafety insights for managing a variety of workplace situations. I welcome feedback and suggestions for future topics. Please e-mail any comments or suggestions to karen_byers@dfci.harvard.edu or to Co-Editor Barbara Johnson at barbara_johnson@verizon.net.

A New Virus, A New Pathogen, A New Laboratory-acquired Infection?

Mimivirus was isolated from water samples taken from a cooling tower in Bradford, UK, during the investigation of a 1992 pneumonia outbreak (La Scola et al., 2003). A description of this previously unknown DNA virus was first published in 2003. It is the largest virus known, and electron micrographs reveal an icosohedral structure. Mimivirus is larger than Mycoplasma and stains gram-positive; it was named "mimi" because it "mimics" a microbe. This virus is found inside an amoeba, *Acanthamoeba polyphaga*, and cannot be filtered out of media with a 0.2 micron filter (La Scola *et al*., 2005). Currently, research into the cause of pneumonia focuses on various microbes, including Legionella sp, which resist phagocytosis by amoebas. Both are found in aerosolized water associated with pneumonia infections. This is an important research focus since pneumonia is the leading cause of death from infectious disease, but the cause is unknown in 20%-50% of the cases (La Scola et al., 2005).

In 2005, a Mimivirus seroprevalence study was reported in *Emerging Infectious Diseases* (La Scola, 2005). The serum from 511 healthy Canadians was tested and 12, or 2.3%, had a substantial titer to Mimivirus. In comparison, the 36 of the patients with community-acquired pneumonia had positive serum titers (36, or 9.66%). When the charts were studied in detail, patients seropositive for Mimivirus were statistically more likely to be patients sent to the hospital from a nursing home or patients re-admitted to the hospital due to unsuccessful treatment with antibiotics. Patients seropositive for Mimivirus were also more likely to be older or to have diabetes mellitus; however, that correlation was not statistically significant.

Mimivirus DNA was isolated from a bronchoalveolar lavage specimen taken from a comatose patient who had two episodes of hospital-acquired pneumonia. However, the authors point out that it is not possible to distinguish between colonization and infection. In light of Koch's postulates, the authors state: "As we do not report direct evidence of infection by Mimivirus, these results have to be interpreted with caution" (La Scola et al., 2005).

More evidence for Mimivirus pathogenicity was reported by Raoult in 2006. The 28-year-old laboratory technician who performed Western blots to confirm infection in patient samples developed a dry cough. After 15 days, he developed a fever, chills, weakness, and a productive cough and sought medical attention. Antibiotic therapy was initiated and after 23 days, he required medical attention again because his symptoms had not improved and he had developed chest pain. An x-ray showed bilateral basilar infiltrates in the lung, suggesting viral pneumonia (Raoult, 2006).

Annually, this technician was tested to determine if he had developed antibodies against microorganisms he manipulated in Western blot assays. He was seronegative for all usual pneumonia-causing agents, but his Mimivirus antibody titer went from less than 1:50 before infection to 1:3200 on diagnosis. Electrophoresis confirmed strong reactions to Mimivirus proteins; the serum from a few months prior to infection showed no reaction.

Risk Assessment for Mimivirus

In reporting the laboratory-acquired infection, the authors have responsibly pointed out an error in their initial risk assessment. Because the pathogenicity of Mimivirus had not been established, no specific (biosafety) procedures for manipulation of Mimivirus were in place. The report's conclusion corrects the problem.

"The case presented here provides additional evidence that the mimivirus may be a cause of clinically important infection. The technician was exposed to the virus, developed pneumonia, and exhibited seroconversion to 23 different specific proteins—4 of which were encoded by very specific genes without homologue in the National Institutes of Health GenBank. Therefore, cross-reactions were unlikely. The inefficacy of antibiotic treatment and the negative results of tests performed on other antigens reinforced our opinion. Serologic seroconversion does not establish causality; therefore, further isolation of mimivirus from an infected patient is now mandatory. However, we believe that the mimivirus should be considered a pneumonia agent and should be treated as a class 2 pathogen" (Raoult, 2006).

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11th EUROPEAN BIOSAFETY ASSOCIATION (EBSA) CONFERENCE

Florence, Italy, 2nd - 4th April 2008

More than 300 delegates attended the conference with excellent speakers in the field of biosafety and biosecurity. Both applied and more theoretical presentations were given.

The six pre-conference workshops covered the following topics:

- Biorisk assessment
- Decontamination
- Biorisk management, biosafety programmes and institutional management systems
- Management of a BSL3 facility
- Biosafety audits and inspections
- Training the trainer of hospital healthcare workers on airborne biological risks

On the first day of the conference, the following presentations were given in the morning session:

- What went wrong and lessons learned at Pirbright
- The P4-laboratory in Rome, Italy
- Biosafety-Europe: What did we achieve and what could be recommended to the EU?
- Issues in high containment
- Post polio eradication biosafety
- Emerging Zoonosis
- Occupational issues
- Facility considerations
- Animals in containment

In the afternoon, three break-out sessions were offered, which revolved around the current burning European issues of harmonisation of biosafety and biosecurity legislation, guidance, best practises, inspections, and training programmes:

- Biosafety Europe: Quo vadis?
- Molecular tools for the surveillance of mandatory biosafety requirements
- Laboratory registers of GMOs / pathogens / biological materials: what is good practice?
- Validation of laboratory disinfection procedures
- Training of facility support personnel by BSP
- European Community Biopreparedness Green paper - next steps

The afternoon session was concluded with three topics focusing on engineering and decontamination topics:

- Engineering for biosafety - air changes and distribution
- Decontamination validation of BSL3 agents in industrial facilities
- Study of plasmochemical method to inactivate microorganisms of different groups

The memorable, delicious Italian style conference dinner was enjoyed by the mostly European delegates, with some faces and accents telling a North American or Asian background.

The second day focused on biosecurity, biorisk assessment and management, and new developments:

- BIOSAFE Project – dual use
- Synthetic biology: A perilous goldmine?
- University of Cambridge biosecurity practices
- Biosafety and biosecurity and the biological weapons convention
- Emerging and re-emerging diseases from a Russian central European perspective
- Bio-nanotechnology
- New lines of on-going research on designing means of diagnostics of infectious disease in SRCAMB
- Safety and security management at a research institute – sharing the best practices from the biological, nuclear and chemical fields
- Laboratory biorisk management standard in practice
- Anthrax and African Drums. An investigation into the source of a fatal case of human anthrax

Those interested in more details can visit EBSA's website at: www.ebsaweb.eu

Report contributed by
Dr Felix Gmuender

A lighter side of science...

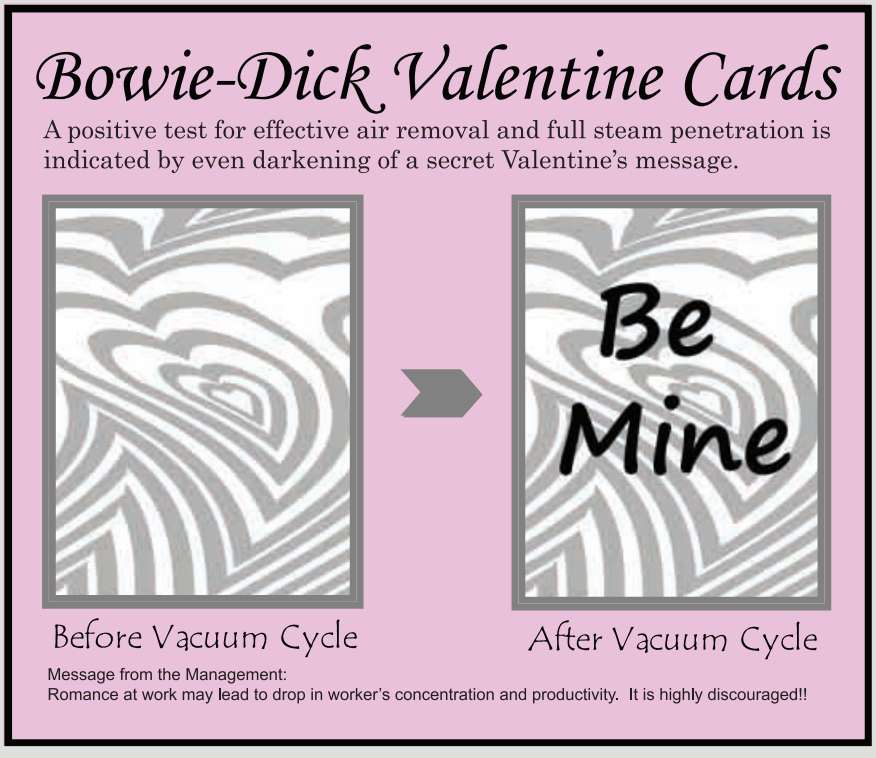
The Bowie-Dick Test

The Bowie-Dick test is a chemical validation for determining air removal and subsequent steam penetration in pre-vacuum autoclaves.

Typically, geometric patterns on the test sheets cover the entire sheet. A change in color or shade in the pattern on the test sheet is a visual indicator to help operators determine how effective the air removal has been in the autoclave during the test pre-vacuum cycle.

Operators look for uniformity of color change over the entire surface of the test sheet. Failure of the test sheet to change color in the prescribed pattern may indicate that there was an air pocket, i.e. ineffective air removal, during the pre-vacuum cycle.

Bowie-Dick test cards come in a myriad of designs depending on the manufacturer.



Cartoon contributed by Kam Wai Kuen