floor covering were procured and stored. 3. System—These areas include: (a) activation procedures; (b) communication plans; (c) safety measures; (d) casualty transfer protocols; and (e) handling radiologically contaminated waste and materials. 4. Space—Potential care areas, such as radiation isolation rooms were designated. An algorithm was devised to guide casualty management. **Conclusions:** Facility preparedness for radiological MCIs requires multidisciplinary involvement and the creation of trusting partnerships. More research is needed to identify the metrics to measure success objectively and aid protocol revisions.

Prehosp Disaster Med 2011;26(Suppl. 1):s57–s58
doi:10.1017/S1049023X11001993

(A210) Chemical Sensor Trial for Nerve Agent Differentiation: Impact of Hydrogen Bonds on Detection

A. Oztuna,[1] H. Nazir[2]

1. Department of Medical CBRN Defence, Ankara, Turkey
2. Department of Chemistry, Ankara, Turkey

Chemical warfare agents (CWAs) are a growing concern for many countries. The uses of CWAs as they can be synthesized by simple chemical reactions, and often have an extremely high toxicity. Conventional, analytical techniques for the detection of nerve agents from environmental and biological samples include gas chromatography, liquid chromatography, gas chromatography–mass spectrometry, ion chromatography, atomic emission detection, capillary electrophoresis, etc. These methods have very high sensitivity, reliability, and precision. However, in spite of these advantages, these techniques require expensive instrumentation and highly trained personnel. They also are time-consuming and unsuitable for field analysis. To meet these prerequisites of rapid warning and field deployment, more compact, low-cost instruments are highly desirable for facilitating the task of on-site monitoring of nerve agents. a quartz crystal microbalance (QCM) sensors could be a reliable and promising alternative to routine methods because of their simplicity, ease of use and high sensitivity and selectivity.1,2 In this study, we prepared QCM sensors functionalized with –NH2 and –COOH groups for differentiate diethyl ester phosphonic acid (DEHP) from diethyl phthalate (DEP), which are known as G and VX agent stimulants respectively. Infrared spectroscopy (FT-IR) was performed in order to characterize the surface of the sensor after modification and the detection. Furthermore, impact of hydrogen bonds on detection will be discussed.

References: [1] Hill, H.H., Martin, S.J., Pure Appl. Chem., 74 (2002) 2281–2291. [2] Arshak, K., et al., Sensor Review, 24 (2004) 181–198.

Prehosp Disaster Med 2011;26(Suppl. 1):s58
doi:10.1017/S1049023X11002007

(A211) Nanosciences and CBRN Threats: Considerations about the Potential Risk of Illicit Use of Nanosystems

A. Rossodivita,[1] M. Guidotti,[2] M. Ranghieri[3]

1. Cardiovascular and Thoracic Diseases, Milan, Italy
2. Istituto Di Scienze e Tecnologie Molecolari, Milan, Italy
3. Milan, Italy

In the history of humankind, any new scientific discovery has shown the risk of a "dual use" for peaceful purposes or for warfare. In regard to non-conventional weapons, the recent exponential development of nanosciences and nanotechnology can provide efficient tools for counteracting these threats, by improving the detection, protection, and decontamination capabilities in the field of CBRN defence. Nevertheless, these disciplines also may offer novel, uncontrolled means of mass destruction, leading to the synthesis of new, intentionally toxic systems. Furthermore, several points of concern are linked to the new concepts of "nanotoxicology" and "nanopathology: If a multidisciplinary approach is needed to study nanosciences and nanotechnologies, a multidisciplinary approach also is needed to have a strict control on potential illegal uses of nanosystems. Experts active in various fields, such as academic, industrial, military, and health protection institutions, must work cooperatively to constantly follow the state of the art, note which kind of critical emerging technologies may lead to illicit uses, and control the diffusion of hazardous nanosystems that may be potential precursors of weapons of mass destruction, and cooperate with CBRN emergency prevention organizations in order to plan suitable countermeasures. This presentation will cover some examples of nanosystems applied to defense from non-conventional warfare agents and answer questions regarding potential misuses of basic nanoscience and nanotechnology findings.

Prehosp Disaster Med 2011;26(Suppl. 1):s58
doi:10.1017/S1049023X11002019

(A212) The 2008 Mumbai Terrorist Attacks and the Changing Pattern of Violent Injuries

Y. Tanwar,[1] V. Kaushik,[1] N. Roy,[2] S. Sinha,[1] B. Guru[1]

1. Tata Institute of Social Sciences, Mumbai, India
2. Public Health, Mumbai, India

Introduction: The 26–29 November 2008, terrorist attacks in Mumbai, have been referred to as "India's 9/11". Violent events in Mumbai over the past six decades were researched to understand the changing pattern of violent injuries.
Methods: A complex, retrospective, descriptive study on terrorist events was performed, using event reports, legal reports, newspaper reports, and police and hospital lists. The distribution of victims to various city hospitals, the critical radius, surge capacity, and nature of interventions required were assessed. The profile of those killed in the attacks was noted by sex, nationality, and occupation. Besides the overall mortality and case-fatality ratio, the critical mortality was calculated based on the death rates among the critically injured.
Results: In 51 violent events in Mumbai over a 60-year period (1950–2009), 1,582 people were killed and 4,145 were injured. In the Mumbai terrorist attacks of 2008, the financial loss due to direct physical damage was INR 847,612,971 (US$18.5 million). Among those killed, the average age was 33.4 years, 80% were male, and 12% were foreign nationals. The case-fatality ratio for this event was 36.2% and the mortality among the critically injured (critical mortality rate) was 11%. Among the injured, 79% were male and the average age was 33.21 years (three months–85 years); 38.5% of patients arriving at the hospitals required major surgical intervention.
Conclusions: The injuries of violent events in Mumbai have been changing due to the use of heavy firepower and explosives. Strengthening the public hospitals for trauma care is a