

Abstracts

Operational techniques used to maximize product lifespan and efficacy will also be discussed.

Key words: Terrorism, Nerve Agent, Response, Public Health Emergency, Critical Medical Assets, Deployable

22. FIT FACTOR OF RESPIRATORS AGAINST CBR AGENTS OF NANOPARTICLES DIMENSIONS (5)

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Personal protective equipment including respiratory protective devices is generally considered to provide adequate protection efficiency for exposures to nanosized CBR particulates, but at the other side no one is certain how effective are respiratory protective devices against CBR nanoparticles contaminants. Methodologies that are currently used in the aim of measuring particle exposures were in the most of cases not sufficiently sensitive to measure occupational or ambient nanoparticle aerosol concentrations, whether in terms of particle mass, particle numbers, or surface area.

There are two different mechanisms of inward leakage into respirator: (1) filter penetration, and (2) leakage flow through orifices and cracks between face and facepiece, in exhalation valve, and in facepiece body. Filter penetration is recently investigated, electret filter are much more efficient than mechanical filters for protection against CBR nanosized particles. Filter efficiency is better for inhalation flow of 30 lpm than 85 lpm. Uncertainties related to efficiency of respiratory protective devices against CBR nanoparticles are primary due to face seal leakage or it may be underlined that methods and methodology of fit factor of respirator determination in domain of CBR nanosized particles must be more investigated.

In this paper it is discuss distribution of protection factor of RPD measured on two respirators for one male and one female subject, test is repeated 30 times for both of subjects. Distribution of PF for male and female subjects was compared with distribution of PF for population, measured on 30 subjects. Challenge atmosphere was polydisperse aerosol of NaCl with MMD=0.47 μ m, σ g = 2.21, CMD= 0.071 μ m.

23. DETERMINATION OF ACETYLCHOLINESTERASE AND BUTRYLCHOLINESTERASE ACTIVITIES IN WHOLE BLOOD AND PLASMA FROM DIFFERENT COMMUNITIES OF KHOSASTAN PROVINCE (IRAN –IRAQ WAR AREA) EXPOSED TO ORGANOPHOSPHATE COMPOUNDS (4)

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It is well known that Organophosphate Compounds are widely used as pesticides. Therefore while handling, applying or using these compounds care and safe use should be considered. The main mechanism of toxicity action of Organophosphate Compounds is the inhibition of Acetylcholinesterase and Butrylcholinesterase enzymes. It is well known that the activity measurement of Acetylcholinesterase in whole blood and Butrylcholinesterase in plasma samples are potential biomarker of exposure to Organophosphates compounds. In this study AchE and BchE activities were determined in whole blood and plasma samples of farmers from two different area of Khosestan province of Iran Gotvand and Dashte Azadegan (Iran –Iraq war zone). Determination of enzymes activities were based on the Ellman colorimetric method which was modified by Worek et al.

The results obtained in this study showed that Gotvand area showed lower than normal value and Dashte Azadegan (war area) were significantly lower than the mean of activities in reference group ($P < 0.05$).

Also results of this study showed Acetylcholinesterase and Butrylcholinesterase inhibition can provide a good biomarker of exposure to OP pesticides in field studies in human population with consideration of other different parameters and factors which will be discussed.

24. THE 4th CIVIL SUPPORT TEAM (WEAPONS OF MASS DESTRUCTION) (11)

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The 4th CST (WMD) is a 22 person joint staffed AGR (Active Guard Reserve) unit of the Georgia National Guard. The team is one of 55 CSTs that are charged with responding to a CBRNE (Chemical, Biological, Radiological, Nuclear, and High Yield Explosive) incident within the United States and its Territories. The mission statement of the CST is to support civil authorities at a domestic CBRNE incident by identifying CBRNE agents/substances, assessing current and projected consequences, advising on response measures, and assisting with appropriate requests for state support.

The team possesses the capability to deploy by sea, air, and land in response to a terrorist attack or natural disaster. The team is comprised of seven officers and fifteen non-commissioned officers who are cross trained in a variety of military disciplines. Equipment assigned to the team includes an Analytical Lab, Communications Suite, Tactical Operations Center, closed and open circuit breathing gear, portable and handheld detectors, and decon support.



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The CSTs are activated through a state's emergency response network.

25. SCIENTIFIC SUPPORT OF TERRORIST ACTIONS BY COMMERCIAL GREY AREA LITERATURE (14)

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The publication of the Al-Quaida handbook and time and time again notes of the possibility for getting special scientific knowledge from the internet have decreased the attention for an other important source of scientific support for terrorist education and/or actions. This is the commercial available and distributed grey area literature provided by a huge amount of (book) sellers and publishing houses. Most of this literature (hardcopies and CDs) with dangerous subject matter is published in the US and may be ordered fast and with low costs using the internet. This kind of support for real and potential terrorists stands strongly in contradiction to the official policy and the "unconditional" war against terrorism.

With the presented poster the above described problem should be a little bit put in the focus of the CBMTS community and so to the authorities, too.

By means of selected examples from different branches, such as Narcotics, Explosives, unusual Killing Methods, special Poisons / Toxins and, last not least, CW agents inclusive application methods and devices the highly charged situation is tried to shown.

26. TOXIC EFFECTS OF PERACETIC ACID USED AS A CHEMICAL WEAPON DURING WORKERS RIOTS (9)

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Peracetic acid (PAA) is a mixture of acetic acid and hydrogen peroxide, often used as antimicrobial agent on food processing equipment. It may explosively decompose on shock, friction or concussion. PAA is a strong oxidant, corrosive to the eyes, skin, respiratory and digestive tract. Depending on concentration, contact may cause severe burns of the skin or the eyes, and inhalation may cause lung edema. We report toxic effects of PAA used as a chemical weapon in workers riots.

Group of workers attacked the security guards in beverage plant, throwing out beer bottles filled with PAA. Bottles exploded, producing irritant mists and fumes, and splashing some of the guards with acid. After about 20 minutes of exposure in the closed space, 30 persons were transported to the emergency room; 22 of them were transferred to the hospital. After the initial treatment, 10 patients were admitted for further treatment. The symptoms of exposure

included burning sensation and pain of the eyes, throat and skin, cough and shortness of breath. Effects on the eyes included redness and corneal erosions. Pulmonary disturbances were prolonged expirium and wheezing by auscultation, and hypoxemia. Skin burns were ranged as grade I-III. Treatment included rinse of eyes and skin, systemic therapy with corticosteroids, beta adrenergic drugs and theophylline. Surgical treatment was necessary in grade III skin burns.

A variety of common industrial chemicals may be misused as a chemical weapon. We point out the hazards of serious toxic effects of PAA if used in riots or terrorists attacks.

Key words: Peracetic Acid, Toxic Effects, Misuse Hazards

27. REMOTE DETECTION AND LOCATION OF ILLEGAL RADIOACTIVE MATERIALS AND UNITS IN UZBEKISTAN (1)

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Uzbekistan is a checkpoint for transportation between Russia and some Asian countries, such as Iran, Pakistan, Afghanistan and Tajikistan that might be attractive destinations for those smuggling nuclear materials or weapons. Currently there are over 200 border crossing points. Most of them have equipped with monitors able to reliably detect nuclear materials. Uzbekistan also has substantial radioactive ore mining, and these monitors also allow the Customs Service to maintain safe conditions for their inspectors as well as for population of Uzbekistan and its neighbors. But it is very important to detect radioactive materials inland, their location and travel. This task cannot be solved by using stationary detectors which are used at border crossing points.

New method, electronic scheme and software for remote detection, location and travel of radioactive sources were developed. The operation principle lies in detection of radiation by 6 detectors situated in a leaden cylindrical shield collimating gamma-radiation in 6 directions. Besides the detection system contains 6 amplifiers, 6 counters and JPS-system connected with computer. The detection system is transported by car. Field tests of the detection system have shown that the detection limit is $5 \cdot 10^5$ Bq and $4 \cdot 10^6$ Bq for Co^{60} and Cs^{137} respectively when the radioactive sources distance is 400 m.

Key words: remote detection, illegal nuclear materials

28. DEMONSTRATION EXERCISE OF A VALIDATED SAMPLE COLLECTION METHOD FOR POWDERS SUSPECTED OF BEING BIOLOGICAL AGENTS IN GEORGIA 2006 (5)



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