Abstracts

65. BIOLOGICAL THREATS DETECTION TECHNOLOGIES *(5)*

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Among many decisive factors, which can have the influence on the possibility of decreases the results of use biological agents should be mentioned obligatory: rapid detection and identification of biological factor used, the proper preventive treatment and the medical management.

The aims of identification: to identify the factor used, to estimate the area of contamination, to evaluate the possible countermeasure efforts (antibiotics, disinfectants) and to assess the effectiveness of the decontamination efforts (decontamination of the persons, equipment, buildings, environment etc.).

The objects of identification are: bacteria and bacteria's spores, viruses, toxins and genetically modified factors. The present technologies are divided into: based on PCR techniques (ABI PRISM, APSIS, BIOVERIS, RAPID), immuno (BADD, RAMP, SMART) PCR and immuno techniques (APDS, LUMINEX) and others (BDS2, LUNASCAN, MALDI).

The selected technologies assigned to field conditions, mobile and stationary laboratories will be presented.

Key words: Detection, Biological Threats

66. BORDER CONTROL OF NUCLEAR AND OTHER RADIOACTIVE MATERIALS *(4)*

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In the second half of year 2006, stationary detection systems for nuclear and other radioactive materials were installed on Border Crossing Bregana, Croatia. Yantar 2U, which is the commercial name of the system, is integrated automatic system capable of detection of nuclear and other radioactive materials prepared for fixed-site customs applications (Russian origin). Installed system contains portal monitors, camera, communication lines and communication boxes and server.

Two fully functional separate systems has been installed on BC Bregana, one on truck entrance and another one on car entrance. In this article the operational experience of installed system is presented. This includes statistical analysis of recorded alarms, evaluation of procedures for operational stuff and maintenance and typical malfunction experience, as well as some of the recommendation for future use of detection systems.

Key words: Yantar, Border control, Nuclear and other radioactive materials

67. ALUMINUM PHOSPHIDE; THE MOST FATAL RODENTOCIDE AND FUNGUCIDE *(13)*

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Introduction

Aluminum phosphide (AP) is a fumigate agent, which is also used to control rodents and pests in grain storage facilities. This agent is commonly used in low income and agricultural communities. AP is easily available, cheap and highly toxic. Ingestion of even half a fresh tablet invariably results in death. Its suicidal or accidental poisoning is a medical emergency, while in some low income countries it reaches to more than two third of poisoning deaths.

Methods

PubMed was systematically searched (December 2006) for articles related to aluminium phosphide poisoning. 24 articles were finally included. Mechanism of action; AP on exposure to *moisture*, liberates highly toxic gas, phosphine. In animal and human models AP rapidly inhibits cytochrome-c oxidase leading to inhibition of mitochondrial oxidative phosphorylation and inhibits mitochondrial respiration and has cytotoxic action.

Clinical Findings

Initial findings of intoxication may be nonspecific and transient. The symptoms may resolve within several hours after removal from exposure. It, however, produces phosphine gas, which is a mitochondrial poison.

Its manufacturing and application pose risks of inhalation of phosphine. CNS; GCS is fine at the beginning.

Biochemistry: Metabolic acidosis and liver dysfunction are reported. Shock is frequent.

Respiratory-Tract: Acute dyspnoea, hypotension, bradycardia and other signs of intoxication were also stated.

Gastrointestinal: Reported short-segment esophageal strictures in the upper and mid esophagus, successfully managed by endoscopic dilatation.

In sub-chronic use, degenerative changes in liver, heart and kidney of rabbits are reported.

Cardiovascular: The ECG abnormalities are common and include hypotension, bradycardia, ST-T changes, Supraventricular tachycardia, ventricular ectopics, life threatening ventricular tachycardia, ventricular fibrillation, atrial flutter/fibrillation, variable degrees of heart block and toxic myocarditis.

Haematoogic: Chronic administration may lead to significant decreases in Na-K-ATPase activities in renal, hepatic and cardiac tissues, decreases of Ca-ATPase and Mg-ATPase in liver, and decreases in hematocrit, red blood cell count, hemoglobin and platelets.