



nuclear material, special nuclear equipment and dual use commodities. Co-operation with IAEA inspectors. Planning and coordinating QA activities, demands for technical, measuring and communication equipment in State Office. Coordinating and conducting work regarding State office web pages. Conducting other activities on Director General demand.

## 16. THE FUTURE OF EMERGING DISEASE

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A recent study has demonstrated that the numbers of emerging infectious diseases has risen dramatically since 1940. Two processes are responsible: microbial adaptation that results in human infection and human exposure to newly adapted microbes that occurs for several reasons including increased human intrusion into tropical forests, lack of access to health care, population growth and changes in demographics, inadequate and deteriorating public health infrastructure, misuse of antimicrobial drugs, urbanization and crowding, modern travel, and increased trade and expanded markets for imported foods. For more than 40 years, methicillin-resistant *Staphylococcus aureus* (MRSA) has been almost impossible to treat. In a recent worldwide study, 54.3% of emerging bacterial infections resulted from drug adaptation resistance. Serious diarrheal infections caused by *Escherichia coli* O157:H7 have become frequent in the U.S. From May 27th to July 1st, 2008, 49 infections occurred in the U.S., and 27 were hospitalized. From its inception in 2003, SARS has resulted in more than 8000 cases and 774 deaths. In 1999, West Nile virus appeared initially in New York City. By 2004 this virus was found in birds and mosquitoes in 48 states and by 2007 in the U.S., there were 3,630 cases including 124 deaths. Before December 1st, 1981, no one ever heard of HIV. It is estimated that 25 million people have died of AIDS. Each emergent disease has its own history of recognition, spread, and severity. Through this review, the future of emergent disease is characterized as highly dependent upon the convergence of human exposures in a modern world and microbial adaptation.

**Key Words/ Phrases:** Emerging disease, Infection, Human exposure, Microbial adaptation



Robert M. DeBell, Ph.D. is a microbiologist and is employed as an independent consultant for his own company, DeBell Associates, Inc. Most of his contract work is for the Defense Threat Reduction Agency (DTRA). His primary responsibilities there are to the DTRA Reachback Organization, and he also assists DTRA's Advanced Systems Concept Office. Dr. DeBell has been an adjunct professor for New Haven University for more than five years. Since retiring

from the U.S. Navy in 1990, he was employed as a biological weapons scientist for several large contracting organizations including Northrop Grumman, L3 Corporation, ANSER's Homeland Security Institute, and Battelle Memorial Institute.

## 17. LONG TERM EFFECTS OF CHEMICAL WEAPONS ON HEALTH IN KURDISTAN OF IRAQ

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Extensive exposure to chemical weapons such as mustard gas, nerve gas and cyanide caused high mortality, morbidity, injuries, and chronic side effects in vital organs, especially the respiratory tract.

Chemical weapons were heavily used by Iraq against Iranian soldiers between 1984-1986. Then, against the Iraqi Kurd in Sheikh Wasan and Balisan valley, during April 1987 and in Halabja on 18th March 1988.

Reports suggested that as many as 2.9% of the Kurdish population have been exposed to chemical weapon at some level. This case report describes a Kurdish lady who was exposed to mustard gas during a chemical attack in sheikh Wasan in Iraq.

A thirty two years old woman wearing black clothes presented to our center at 1999 complaining from shortness of breath (SOB). Her condition started 12 years ago when the Iraqi Government attacked her village Sheikh Wasan by Chemical weapons which included Mustard gas and nerve gases such as Sarin, Tabun and VX in April 1987. She described how the gas smelled like garlic as it spread over the village.

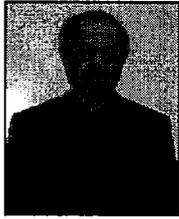
During the attack she suffered from sever SOB, cough, skin burn and eyes irritation and lacrimation. After several days of being without medical care, she received some medical attention by local medical staff at the area because the Iraqi authorities at that time refused and prohibited them from management at the major hospitals. After several days when she returned back to her home she found that several members of her family have died during the exposure to chemical gases. Among the dead people were her husband, her son, her brother in addition to other second and third degree relatives. Since that time she suffered from repeated attacks of cough and SOB and wheezing that were increased by exertion and cold exposure. The attacks were more sever with time and the SOB has interfered with her daily activity and even lastly she was suffering from SOB at rest and during sleep that made her unable to sleep lying down.

Moreover she was suffering from sever depression since that time for which she consulted several doctors but without improvement. In the end of 2001, she suffered from sever cough and hemolytic associated with anorexia and loss of weight. She consulted our center for this purpose and we asked for a medical care for her. She was admitted to hospital and the required investigations were done for her including the blood analysis and radiological investigation. She was diagnosed to have non small cell lung cancer. She was sent for further treatment, but since then she has been disappeared and no more information is recorded about her situation.



This is one example of many of those who suffered from the effect of chemical weapons in Kurdistan of Iraq.

**Key Words:** Chemical weapon, Mustard gas, shortness of breath, Cancer.



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#### 18. WHAT ABOUT THE ANIMALS? DEALING WITH WORKING DOGS, PETS AND OTHER ANIMALS DURING TERRORISM INCIDENTS AND DISASTERS

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It is highly likely that K9 teams (patrol, search and rescue, and cadaver) will be exposed to hazardous materials as a result of an act of CBRN terrorism, and thus require decontamination. Service animals and pets which have been exposed to toxic agents and materials will also need to be decontaminated, along with their owners.

Emergency evacuation and sheltering plans need to consider how service animals, pets and livestock will be handled. The United States has recently made significant changes to focus in this regard, to the extent that caring for animals must now be addressed in disaster preparedness planning. In this paper we describe lessons learned from work done by the Massachusetts Urban Search and Rescue Team (USAR), and the response to hurricane Katrina, concerning the handling and decontamination of animals following major incidents. We discuss: how the new Federal and state mandates have changed evacuation and sheltering concepts; cooperation among government entities, veterinarians, animal facilities, humane societies, animal rescue organizations and animal owners; and describe some practical considerations and solutions to sheltering and mass decontamination of animals along with their humans.

**Key Words/ Phrases:** animals, K9, disaster planning, terrorism, emergency response, decontamination,

shelter, evacuation, CBRN, WMD, hazardous materials.



Gary Eifried has over 46 years experience in chemical, biological and radiological weapons employment and defense. During 27 years service in the U.S. Army Chemical Corps, he was assigned to posts in Germany, Turkey, Vietnam and the United States. As a senior instructor at the Center for Domestic Preparedness, and Vice-President / Chief Technical Officer, EAI Corporation, he is responsible for terrorism response programs, and has been intimately involved in training over 80,000 emergency responders in over 200 locations in the U.S. and overseas in combating chemical, biological and radiological terrorism.

#### 19. MALIGNANT CUTANEOUS T-CELL LYMPHOMA AMONG 1100 IRANIAN VICTIMS, TWO DECADES AFTER EXPOSURE TO SULFUR MUSTARD: A LONG TERM INVESTIGATION

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#### Background

Sulfur Mustard ((SM; 2, 2 –dichlorethyl sulfide)) is a potent chemical warfare agent that was widely used during First World War and Iran –Iraq conflict. Over 100,000 Iranians were injured by sulfur mustard. This vesicant agent has a lot of acute and chronic destructive influences on the skin, eye and respiratory system. SM via the alkilation of DNA and several cellular proteins (structural, cytoplasmic and enzymes) and cell nuclei; produce several toxic, mutagenic and carcinogenic effects on epidermis, dermis, dermal appendix and hypodermis. In acute phases flexural locations and thin epidermal area such as groin, scrotum, and axilla and eyelids showed the most severe complication.

According to scientific studies on chemical victims depression of cell-mediated immunity and also lower percentage of NK cell has been observed in SM exposure furthermore cytokines and other growth factors produced and secreted during epidermal and dermal regeneration of healing skin blisters.