Aspects of a National Defense Against Chemical and Biological Terrorism

Moore D.H.
Battelle Memorial Institute, MD 21010, USA

Abstract. The use of chemical and biological agents as tools for terrorist use has resulted in expanded preparedness and response programs in the U.S. and around the world. In the United States, agencies of the Federal Government have organized to better respond to threats that include terrorist use of weapons of mass destruction. This chapter will discuss several specific aspects of the U.S. program to defend against chemical and biological attacks. Specifically, programs addressing the needs for preparedness, situational awareness, and detection/identification.

Keywords. Bioterrorism, medical countermeasures, biosurveillance, biodetection

1.1. Introduction

Acts of terrorism are now a fact of modern life. The potential of chemical and biological terrorism are real and images of Japanese commuters poisoned by sarin gas in the Tokyo subway remain reminders of what can happen when toxic agents are deployed against innocent civilians [1]. The spread of anthrax spores through the U.S. postal system has been the impetus for expanded preparedness and response programs throughout the U.S. and planning for the next incidents is a major effort for Governments around the world. Following the events of September 11, 2001, agencies of the U.S. Government were reorganized to better respond to threats to the homeland. The Department of Homeland Security was established as a cabinet level department and over the past decade enormous emphasis has been placed on domestic preparedness for possible use of weapons of mass destruction [2]. In a recent interview, Secretary of Homeland Security Michael Chertoff cited his concern for the possible terrorist use of a biological agent against the U.S. In the interview he highlighted his department’s efforts to detect biological agents and to distribute countermeasures to an incident [3].

1.2. Preparedness

1.2.1. The National Response Framework

In the United States, the National Response Framework (NRF) establishes a comprehensive, all-hazards approach to enhance the ability of the U.S. to manage domestic
incidents [4]. The NRF is designed to help prevent terrorist attacks within the U.S., including terrorist use of chemical and biological agents, and to minimize the damage and assist in the recovery from such incidents. The plan incorporates practices and procedures for security, emergency management, law enforcement, firefighting, public works, public health, responder and recovery worker health and safety, emergency medical services, and attempts to integrate them under a unified structure. The NRF is the basis of how the Federal Government coordinates with state, local governments and the private sector during an emergency. Congressional legislation has specifically directed the establishment of a designated telephonic link to a designated source of relevant data and expert advice for the use of state or local officials responding to emergencies involving a weapon of mass destruction. The National Response Center [5] provides emergency technical assistance from a variety of Federal agencies. Assistance is provided on a wide array of subjects that include personal protective equipment, decontamination systems and methods, toxicology information, and medical symptoms and treatment for exposure to chemical and biological agents.

1.2.2. The Strategic National Stockpile

The Strategic National Stockpile (SNS) was established in 2002 and is managed by the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services [6]. The SNS program works with governmental and non-governmental partners to upgrade the Nation’s public health capacity to respond to a national emergency and give rapid access to large quantities of pharmaceuticals and medical supplies that few State or local governments would have the resources to create and manage.

The SNS is a national repository of antibiotics, chemical antidotes, antitoxins, life-support medications, IV administration, airway maintenance supplies, and medical items. The SNS is designed to supplement and re-supply State and local public health agencies in the event of a national emergency anywhere within the U.S. or its territories. The stockpile now has antibiotics to treat anthrax and treatments for radiation poisoning, chemical agent exposure, and other biological pathogens. There is currently enough smallpox vaccine for every person in the United States.

The first deployable support is the immediate response, “12-hour Push Packages”. These are caches of pharmaceuticals, antidotes, and medical supplies designed to provide rapid delivery of a broad spectrum of products for an ill-defined threat in the early hours of an event. These “Push Packages” are positioned in strategically located, secure warehouses ready for immediate deployment to a designated site within 12 h of the Federal decision to deploy SNS assets.

If an incident requires additional pharmaceuticals or medical supplies, they will be shipped to arrive within 24–36 h. If the agent is well-defined, the supplies can be tailored to provide pharmaceuticals, supplies, and products specific to the suspected or confirmed agent.

1.2.3. Development of Countermeasures

In order to ensure that adequate sources of drugs, vaccines and supplies are available to the SNS, the Department of Health and Human Service Office of Emergency Preparedness [7]