WEAPONS OF MASS DESTRUCTION
Response and Investigation

ABOUT THE AUTHORS

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By

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and

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This book is dedicated to our families.
If it were not for their patience and understanding,
this manuscript would not have been possible.

PREFACE

Law enforcement has faced many new challenges over the years. Today it finds itself preparing for the unthinkable: the intentional release of a chemical, biological, or radiological substance that may kill or seriously injure innocent civilians on a massive scale. In order to meet this challenge, the law enforcement community must provide its officers with the necessary training, procedures, and equipment to safely respond to such an incident *before* the incident actually occurs.

Law enforcement personnel will undoubtedly be among the first responders to an incident involving the use or threatened use of a weapon involving chemical, biological, radiological, explosive, or incendiary materials. The initial actions that they undertake will have a significant effect on the overall outcome of the incident, including the safety of the public, as well as the responders themselves. Law enforcement must assess the threat within their jurisdiction and begin the process of planning for a WMD event. This should include a determination as to what training will be necessary, what equipment may be required, and what response procedures need to be put in place to insure a safe and efficient response.

Because of the potential magnitude and complexity of a WMD incident, law enforcement must be prepared to work side by side with other agencies and disciplines. These may include the fire and emergency medical service communities, as well as other law enforcement agencies from various levels and jurisdictions. A task such as this will require the use of an effective incident management system involving all of the response agencies working together toward a common objective.

A safe and effective emergency response is just one of the challenges facing law enforcement today. The use or threatened use of a weapon of mass destruction is a *crime* and proper police procedures must be established to safely and effectively gather evidence at a crime scene such as this.

The gathering of chemical, biological, and radiological evidence is not a

new science. Verification experts from the Chemical and Biological Weapons Treaty organizations have many established WMD sampling and analytical protocols which may be utilized by law enforcement. The U.S. Department of Energy has also established numerous sampling and analytical protocols for radiological substances. In addition, the criminal environmental enforcement community has developed many safe and legally sufficient procedures for the gathering of chemical, biological, and radiological evidence in a declared hot zone. This book has combined these various scientific and investigative disciplines and in doing so has provided detailed procedures for the gathering of chemical, biological and radiological evidence regardless of its form or matrix. When facing this new challenge, investigative law enforcement personnel must accept the realization that a WMD crime scene is no different from any other type of crime scene *with the exception that the evidence you gather may kill you.*

STEVEN C. DRIELAK
THOMAS R. BRANDON

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Chapter 1

THE THREAT

Regardless of the area covered by a law enforcement agency, it must be prepared for a terrorist event to occur within its jurisdiction. There was little shock in the law enforcement community in 1993 when international terrorists attacked the World Trade Center in New York City. Officials felt that the inevitable had finally occurred in the United States.

It was a different story, however, in 1995, when the United States and the world witnessed the bombing of a federal office building in Oklahoma City, the "heartland" of America. This event showed that no one, not even children in a day-care center, is immune from the effects of terrorism. Whether international or domestic terrorism, all jurisdictions are subject to terrorist acts.

The traditional weapons of terrorism have included explosives, incendiary devices, hostage taking, kidnapping, and other obvious assaults designed to in some way enhance the terrorists' goals. Today's threat includes the potential use of weapons that are chemical, biological, or nuclear in nature. For an assortment of reasons, these new threats are also referred to as weapons of mass destruction (WMD) and are likely to become the choice of terrorists in the near future.

The acronym "B-NICE" is often used to describe the weapons that may be employed by today's criminals. This stands for **B**iological, **N**uclear, **I**ncendiary, **C**hemical, and **E**xplosives. Of these weapons, the use of explosives and incendiary devices still remains the most commonly seen by law enforcement.[1] One of the dangers that exists is that a terrorist may elect to add to the damage and injury caused by a traditional improvised explosive device by adding a biological, chemical, or radiological element to it. This has created significant new challenges for law enforcement officials in both the response to and investigation of these incidents.

Chemical and biological weapons are relatively easy to manufacture in relatively small quantities. Due to today's information explosion where anyone with a home computer and a telephone connection can have access to a world of knowledge, the formulas for WMD are readily available. In many cases, they can be manufactured with limited risk to the manufacturer, unlike traditional improvised explosive devices which frequently took their toll on the bomb

maker.

The actual materials needed to create these weapons are also readily available in a variety of places. While some more exotic materials may need to be obtained from laboratories and scientific suppliers, the typical household can yield many of the materials needed. Chemicals found in the typical garage or basement can be the basis for the creation of a WMD. Nature itself can be the source of the pathogens needed for the creation of a biological weapon.

Chemical and biological weapons have been referred to as the "poor man's" choice for terrorism. Because of their being readily available in everyday commerce, the materials to create an effective WMD make it a relatively low cost way to commit an act of terrorism. In many cases, only a small quantity of a chemical or biological agent is needed to achieve the desired effect. This makes them a relatively inexpensive tool; a large cash supply is not necessary to create a biological weapon that can affect an entire community.

Presently, it is difficult to detect the presence of many of the materials that may be utilized in a WMD. Unlike explosives, for which there are now an assortment of detection devices ranging from specially trained dogs to ion detection devices, the chemical and biological elements that may be used in a weapon are not yet capable of being readily identified. As will be discussed later with regard to responding to a WMD incident, the identification of WMD materials is still in its developmental stage.

As a result of the difficulty in detecting WMD materials, they may be used rather covertly. This creates a host of problems for law enforcement personnel in both preventing a WMD incident and in becoming aware of and responding to a WMD event. A biological weapon could be introduced today, yet its effects may not be realized for hours or even days.

Depending on the objective of the particular terrorist, a WMD may be used to injure a large number of people in a single event. They are well suited to wide spread dissemination via ordinary airflow by either natural means or mechanical ventilation systems. This may result in a large number of casualties that will in turn put a significant burden on the local emergency response system in its attempt to handle the incident. There are very few agencies, whether law enforcement, fire, or EMS that will be able to handle a WMD incident without requesting assistance from other agencies and levels of government beyond their own. The importance of pre-incident planning will be discussed later in order to prepare for a WMD incident (see Chapter 10).

WHERE

Realistically, there is almost no limit to where a WMD incident may occur. Historically, we have seen terrorist acts committed against individuals, organizations, governments, facilities, and a variety of objectives that a terrorist thought worthy of his attention. While "target hardening" will help reduce the opportunity, there is still no shortage of potential terrorism targets.

By their very nature, certain facilities and events are more attractive terrorist targets than others. Law enforcement agencies should do a threat assessment of the potential targets within their jurisdiction. This will serve as a starting place in developing a plan for response to a WMD incident. Once the threat level is identified, steps can be taken to properly train and, if

necessary, equip law enforcement officers to safely and effectively respond to and investigate an incident involving the use or suspected use of a WMD.

POTENTIAL TARGETS

The following is a description of potential terrorist targets against which a WMD may be employed. It is by no means to be considered all-inclusive. Unlike law enforcement, which may find itself limited by jurisdictional boundaries, budgetary constraints, and legal restrictions, terrorists are criminals who know no such limits when its comes to target selection.

- Areas where large numbers of people gather, either on a daily basis or for a special event, are potential targets. Shopping malls, transportation centers, theaters, and congested downtown areas may all present an attractive target to a terrorist.
- Special events such as sporting events, concerts, political rallies, and other high-profile events are likely targets. They are particularly appealing because they may already be the subject of intense media coverage. The bombing that took place during the 1996 Olympics in Atlanta took on added significance because of the venue. A pipe bomb in a park in Atlanta would not have received the attention it did had it not been for the time and place.
- Government buildings and facilities are often the subject of protests. They are often open to the public because of the nature of the business transacted there and are therefore somewhat difficult to safeguard. No level of government should be considered immune from the threat of terrorism. Local, state, and federal facilities should all be identified by law enforcement when conducting a threat assessment in their jurisdiction.
- Organizations that do business with the government such as defense contractors and representatives of foreign governments should also be included in the threat assessment. Military facilities and offices must be included in any target list. Recruiting offices have been threatened and targeted in the past as well as places known to be frequented by military personnel.
- Facilities that are critical to public safety and the everyday operation of government and society must be considered. Power plants, sewage treatment facilities, rail lines, shipping terminals, and communications centers are all sites that may be subject to a WMD attack. These are frequently referred to as the infrastructure and may include police and fire facilities.
- Educational facilities such as colleges and special training centers may be potential targets. Research facilities may also be attractive to a terrorist looking for materials to create a WMD.
- Some facilities, such as abortion clinics and labs involved in research which utilize live animals, have already been threatened and acted against by terrorists having a variety of goals and motivations.
- Law enforcement personnel should pay careful attention to local, national, and international events to determine the possibility of terrorist targets within their area of responsibility. A foreign financial institution with an office in your jurisdiction may suddenly become a terrorist target based on political upheaval on the other side of the world. In today's world of instant communications and world travel, law enforcement officials cannot afford to be unaware of how events occurring else-

where may be related to their own jurisdiction.

- Religious institutions have often been the targets of terrorist actions for a variety of reasons. They are usually highly visible in a community and may be involved in controversial issues that evoke strong emotions. In some cases, religious sites are also centers for community and political activity. Churches, synagogues, mosques, temples, and other places of worship should all be considered possible sites for a WMD event. Other facilities associated with religious groups such as schools, medical facilities, and social centers should also been included.

HOW

One of the aspects of chemical and biological weapons that law enforcement personnel must be aware of are the potential methods of dissemination. These methods may range from simply introducing the substance into an air intake to be spread throughout a facility such as a shopping mall to a more complicated spraying device designed to distribute the material over a large area.

The material to be distributed as well as the intended target will help influence the method of dissemination that a terrorist elects to use. In most cases, the product will have to be transformed into an aerosol state for the most efficient distribution. Some products lend themselves more easily to this than others based upon their physical nature. As with WMD in general, there are various methods of dissemination that can be easily assembled after a visit to the local hardware store. More complicated devices may require an additional trip to a hobby shop or electronics supply store.

METHODS OF DELIVERY/ATTACK

Generally speaking, there are five different types of dissemination devices. Law enforcement personnel should be made aware of these methods as part of their awareness training so that they may recognize them in the course of their response to a WMD incident or take preventative actions before an incident takes place. Investigative personnel in particular should be familiar with these devices to enable them to properly collect and secure valuable evidence left behind at a WMD crime scene.

Due to the nature of the WMD attack, valuable evidence will often remain at the scene in the form of the actual dissemination device or the method used to transport the device. Traditional crime scene evidence such as fingerprints, tire and shoe impressions, and other trace evidence can be recovered at a WMD crime scene in the same manner as a traditional crime scene. The main difference is the potential danger to the investigator when he or she enters the scene. Proper training and the use of personal protective equipment by investigative personnel can, however, reduce this risk.

One type of dissemination device that may be encountered is a spraying device. These devices may employ pressure to spread the agent. Depending on the size of the device, the agent may be spread over a rather large area, particularly if the wind or other air movement is factored into the

operation. These devices can be used directly by the terrorist or they may be set up to function with a time delay or be remotely activated. A common seltzer bottle may also be used to spread a chemical agent.[2]

Another dissemination device involves the use of an exploding or bursting device to spread the material into the atmosphere (see Figure 1). Bomb technicians should be called upon to assist with a device such as this if it is located or intercepted before it is activated. In addition to the traditional hazards that are normally associated with improvised explosive devices such as heat, concussion, and shrapnel, these devices may spread the material over a large area. On the positive side, the explosion may consume a portion of the hazardous substance, thus reducing the spread of contamination. Investigators at the scene of a "bombing" must now be concerned with possible chemical, biological, or radioactive contamination being left behind by a terrorist. This adds another dimension of risk to an already hazardous crime scene. Personnel should be particularly wary of this when the device does not appear to have completely functioned or exploded as might have been expected. Witnesses may report hearing a popping sound or a muffled explosion that may be associated with this type of dissemination.

A very basic method of distribution is to employ a simple breakable container (see Figure 2). This device will usually require the terrorist to actually be present to deploy the device, thus creating a more significant risk of injury and capture. Balloons, glass containers, light bulbs, and thermos bottles may be successfully employed as a dissemination device. A possible variation of this device is to create a "binary" device that

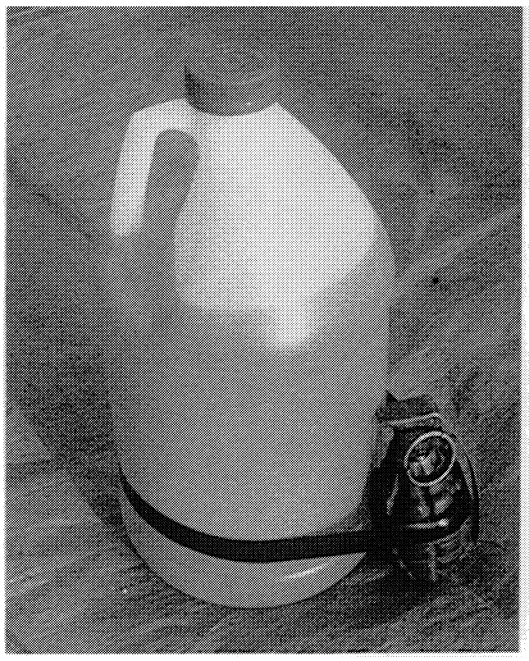

Figure 1. Explosives may be adapted to disseminate chemical, biological or radiological materials.

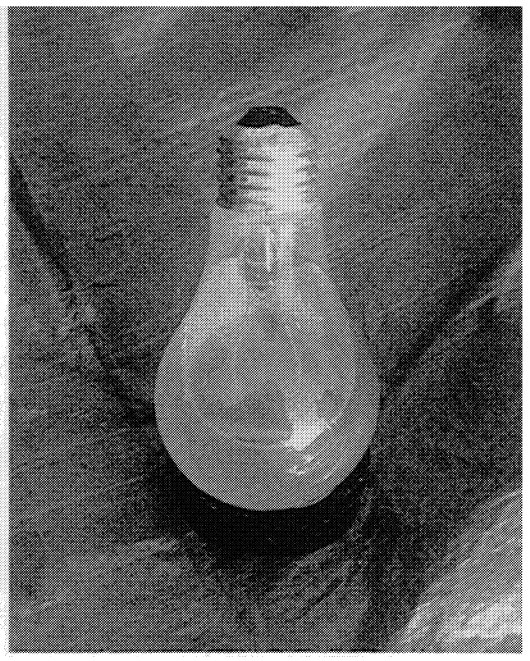

Figure 2. An ordinary light bulb, filled with a hazardous substance, can be used as an improvised dissemination device.