Israel's Preparedness for High Consequence Terrorism

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Since its creation in 1948, Israel has had to contend with the constant threat of terrorism. To meet this challenge, Israel has created and maintained an elaborate counterterrorism system. Much of the Israeli effort has focused on developing defensive measures designed to prevent attacks on the civilian population and minimize casualties. Israel has developed this strategy for two reasons. First, most Palestinian terrorist attacks, as well as a smaller yet significant number of attacks by Lebanese groups, have been random attacks against civilians. Second, all Israeli governments have been highly sensitive to civilian casualties.

In this paper, the term "high-consequence terrorism" refers to terrorist attacks that result in high numbers of casualties. To maximize casualties, terrorists may use large amounts of conventional explosives (e.g., car bombs); apply unique methods, such as crashing a hijacked airliner into a city neighborhood; or employ weapons of mass destruction (WMD), specifically chemical and biological agents. The focus of this paper is preparedness against WMD attacks.

The paper consists of four main sections. The first section is a review of Israel's experience with terrorism. It examines the form and scope of the problem and the countermeasures Israel has adopted to deal with this persistent threat. The second section describes Israel's effort to prevent high-consequence conventional attacks. The third section examines Israel's preparedness for WMD attacks. This section describes the organization, responsibilities, and procedures related to the management of a WMD attack. The fourth section considers the debate in Israel concerning investment in preparations against a WMD attack. The paper ends with some observations on preparations.

AN OVERVIEW OF THE TERRORIST THREAT AND ISRAEL'S RESPONSES

The Palestinian-Arab struggle against Israel has taken many forms: civil disobedience, riots, guerilla warfare, several conventional wars fought by Arab states with minor Palestinian participation, and of course terrorism.[1]

[1.] There are many definitions of terrorism that emphasize different aspects of this form of warfare. For an extensive survey and comparative analysis, see A. P. Schmid and A. J. Jongman, Political Terrorism (Amsterdam: North-Holland, 1988). In this paper, the main differences between terrorism and guerrilla warfare are the following: (1) terrorists do not try to establish control of a territory (e.g., create "liberated zones"); (2) guerrillas use relatively large units in operations-- platoons, companies, or sometimes battalions or brigades--whereas terrorist operations involve very few people; and (3) guerrillas use mainly regular armies' weapons and tactics, whereas terrorists employ specialized weapons and techniques (e.g., car bombs, improvised explosive charges, hijacking, and sophisticated bombs onboard aircraft).

Palestinian Terrorism

In the last quarter-century, the terrorist campaign against Israel has been carried out mainly by organized Palestinian groups.[2] These groups have maintained offices and bases in Arab countries, which have also been their main source of financial and logistical support.

The Palestinian organizations have been among the largest insurgent groups in the world, considerably larger than West European groups, and similar in size and military capability to the Mujahedeen in Afghanistan and the Union for the Total Independence for Angola (UNITA). If other constituents of power that contribute to the overall strength of an organization, such as international political support and economic strength are factored in, the Palestinian organizations probably have been unparalleled worldwide.

Since 1971, the annual number of Palestinian terrorist incidents has ranged from less than 200 to nearly 600.[3] About 80 percent of the attacks have been directed against civilians; the rest have targeted military installations and personnel. Forty-five percent of the attacks on civilian targets have consisted of explosive bombing; 28 percent, fire bombing; 14 percent, artillery shelling of towns and villages from across the border; and 5 percent, armed assaults. Two types of incidents have had particularly deep psychological and political impact: hostage incidents (18 since 1974) and suicide bombing attacks (34 in Israel and the Territories since 1993). A relatively low number of indiscriminate, spectacular terrorist attacks account for many of Israel's high-casualty incidents. In 1974, for example, there were several such incidents, including the explosion in midair of a TWA airliner (88 fatalities), the Kiryat Shmona attack[4]

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[2] Since 1982, Israel has also had to cope with Shiite groups. This strife, however, has been almost exclusively conducted in the form of guerrilla warfare on Lebanese territory.

[3] From June 1967 until their expulsion from Jordan in September 1970, the Palestinian groups' main effort took the form of a guerrilla campaign against Israel, waged from neighboring Arab countries, particularly from Jordan. Their attacks included shelling across the border, mining roads, and ambushing. During that period there were 3,425 incidents along the Jordanian border, 346 incidents along the Syrian border, and 181 incidents along the Lebanese border. These figures exceeded by far the number of incidents inside Israel and the Territories. SeeYehoshua Raviv, "Bitkhon Israel Ba'shana Ha'shlishit Le'milkhemet Sheshet Ha'yamim" [Israel's security in the third year after the Six Day War], *Ma'arachot*, January 1970, (Hebrew); and Hanan Alon, *Countering Palestinian Terrorism in Israel: Towards a Policy Analysis of Countermeasures* (Santa Monica, Calif.: Rand Corporation, 1980).

[4.] On April 11, 1974, a team of three members of the Popular Front for the Liberation of Palestine General Command penetrated the Israeli border town of Kiryat Shmona from Lebanon. Although they had apparently been instructed to take hostages, they instead entered an apartment building and killed all eighteen residents they found there, including nine children. The terrorists then barricaded themselves in one of the apartments and were eventually killed in an exchange of fire with Israeli forces.

(18 fatalities), and the Ma'alot incident[5] (24 fatalities). In 1978, 35 of the 63 fatalities reported were passengers massacred on a bus hijacked along the coastal highway, between Haifa and Tel Aviv.

Palestinian terrorist operations can be divided into three categories: domestic attacks, operations launched against Israel from bases across the border, and international attacks.

Domestic Terrorism

This category includes attacks by local Palestinians within Israel and in the Administered Territories. Domestic terrorism accounts for about 85 percent of all terrorist incidents directed against Israel since 1970.[6] Most of these attacks have involved the placement of improvised explosive charges in public places. Until 1985 almost all domestic incidents in this category had been perpetrated by individuals or cells recruited, directed, and supplied by one of the Palestinian organizations--most often Fateh (the military arm of the Palestinian Liberation Organization [PLO]). From 1985 until the end of the *intifada* (or popular uprisings), however, the proportion of "spontaneous" attacks--that is, incidents perpetrated by individuals affiliated with an organized group--grew steadily and constituted more than half of all domestic terrorist incidents. Since the signing of the 1993 Oslo agreement between Israel and the PLO, the majority of the attacks (including all spectacular, high-casualty incidents) have been perpetrated by organized groups, especially the fundamentalist Hamas and Palestinian Islamic Jihad (PIJ).

The Border Arena

Attacks in this category have comprised about 11 percent of total anti-Israeli terrorist activity. They consist of two main forms: shelling across the border and incursions of terrorist teams into Israel. Cross-border shelling has been more common, but incursions have been considerably more disturbing. From 1974 until 1994 practically all Palestinian organizations at one point or another attempted to infiltrate terrorist teams into Israel to carry out barricade-hostage incidents or engage in mass-killing operations. Almost all of these attacks were thwarted in process. Of those that did succeed, some resulted in high casualties and caused a great shock in Israel.

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5. On May 15, 1974, a team of three members of the Democratic Front for the Liberation of Palestine crossed the border into Israel from Lebanon and took more than ninety high school students hostage. A military rescue operation was launched when the terrorists, who had threatened to kill the hostages and commit suicide, refused to extend the deadline they had set. During the rescue mission, one of the terrorists threw hand grenades at the hostages and sprayed them with automatic fire.

6 Estimates of domestic and border rates of terrorist attacks are based on IDF press releases, IDF intelligence directorate reports, Israel police reports, and the database of the Political Violence Research Unit at Tel Aviv University.

International Terrorism

This category includes attacks by Palestinian groups on Israeli, Jewish, Western, and Arab targets outside the borders of Israel and the Territories. The attacks started in 1968 and waxed and waned over the years for various reasons.[7] Their number ranged from 13 in 1975 to 85 in 1986. Since 1968, there have been 748 international Palestinian terrorist incidents, but only 206 of these were directed against Israeli targets. Since 1984 there have been only 7 attacks against Israeli targets by Iranian-sponsored groups, especially Hizballah, outside Lebanon and Israel.[8]

Israeli Countermeasures

In many respects the Israeli public and government have regarded terrorism as a war, rather than as a problem of law and order that merely requires suitable police measures. Israel has perceived Palestinian terrorism as an existential problem, an extension of the comprehensive Arab struggle against Israel. This perception, which has influenced all aspects of Israel's response to terrorism, was the result of (1) the declared goal of the Palestinian groups to annihilate Israel, (2) the fact that the Palestinian struggle was taking place within the broader political-strategic context of the Arab confrontation with Israel, and (3) the assistance that Arab states provided to the Palestinian groups.

As surprising as it may seem, Israel has never formally devised a comprehensive doctrine or strategy for dealing with Palestinian political violence. In agglomeration, however, the measures that Israel has taken to fight terrorism amount to a *de facto* strategy. For better or for worse, Israel has developed countermeasures to respond to problems as they have arisen, rather than conducting an assessment of the overall threat and then planning a comprehensive set of responses.[9] The result has been an extremely practical and efficient policy of combating terrorism. This policy has at least three major drawbacks, however.

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[7] See John W. Amos, *Palestinian Resistance: Organization of a Nationalist Movement* (New York: Pergamon Press, 1980); Ariel Merari and Shlomi Elad, *The International Dimension of Palestinian Terrorism* (Boulder, Col.: Westview Press, 1986); and Yezid Sayegh, *Armed Struggle and the Search for State: The Palestinian National Movement, 1949-1993* (Oxford: Clarendon Press, 1997).

[8] Data for the period 1968-1983 are based mainly on IDF press releases. The data after 1983 are derived from the database of Tel Aviv University's Political Violence Research Unit.

[9.] According to Alon, "The countermeasures taken by Israel were introduced gradually, in response to innovations taken by the Palestinian terrorists; countermeasures were introduced as crash programs, without a detailed analysis." Alon, *Countering Palestinian Terrorism in Israel,* p. viii.

First, it reflects an apparent lack of strategic planning: Israel has always preferred to leave the conceptual initiative to its adversaries. As a result, Israel was surprised and unprepared when Palestinian organizations started a campaign of international terrorism in 1968, and when the PLO shifted its main arena of operations from Jordan to Lebanon in 1971. In addition, Israel was caught off guard politically, strategically, and logistically when the *intifada* erupted in December 1987. Israel has demonstrated a similar lack of foresight in the tactical domain. For example, only after an Israeli aircraft was hijacked in July 1968 (Israel's first such incident) were sky marshalls put on board El Al airliners and measures taken to better screen passengers. Only after an El Al airliner was attacked on the tarmac, just six months later, did Israel invest in security measures for airplanes and passengers on the ground.

Second, Israel's lack of comprehensive strategic planning can be linked to its overall investment in the struggle against Palestinian terrorism and the allocation of resources to deal with this struggle. With regard to the relative proportion of funds for combating terrorism in the national budget, Hanan Alon has noted that Israeli countermeasures "were designed mainly to minimize the number of casualties inflicted by terrorism. Yet there seems to be a gross inequality between the amount of resources invested by Israel to counter terrorism and those allocations to counter other sources of casualties."[10]

Third and most important, Israel has not engaged in a strategic overview of its ad hoc counterterrorism policymaking procedures. In some cases, these policies have become institutionalized--despite their failure.[11] The most notable example is the policy of retaliation, which is discussed later. Finally, Israel's extremely practical approach and the absence of a planned, comprehensive set of policies have resulted in its counterterrorism responses.

Defensive Measures

Israel's greatest investment in combating terrorism has been, by far, in the development of defensive measures in all three categories of terrorist operations. Altogether, these measures have resulted in the thwarting of a high proportion of planned terrorist attacks and have undoubtedly been the single most effective category for coping with the terrorist threat.

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10. Ibid.

11. Ibid., pp. viii-ix

Target Hardening

Efforts to harden potential targets have focused on two types of terrorist operations: cross-border raids and attacks on Israeli installations abroad. This emphasis has been the result of the terrorist preference for launching spectacular raids in both types of operations, and, again, has been reactive rather than proactive. In practically all cases, Israeli investment in antiterrorist measures came only after a terrorist attack.

Along its borders Israel has built, at great cost, a complex counterterrorist system comprising of electronic fences, minefields, detection devices, and patrols. Israel has also invested in fortifying its diplomatic missions abroad in response to the rise in international Palestinian terrorism. The main investment to counter international terrorism, however, has been in civil aviation security. Measures designed to prevent terrorist attacks on passengers and aircraft from takeoff to landing have been instituted piecemeal in response to a series of terrorist attacks in the late 1960s and early 1970s.

Target hardening within Israel has centered mainly on border villages. In this area, too, decisions have been made on the basis of actual experience rather than on foresight. Border villages have been fortified only after they became an evident target for terrorist attacks. Public places, such as theaters, museums, supermarkets, government buildings, and schools (including kindergartens) have guards posted at their entrances to check visitors' bags.

Public Participation

Public participation has been one of the cornerstones of Israeli defensive measures against terrorism in the domestic arena. In July 1974, in the wake of a series of hostage incidents earlier that year, the government established a civil guard. Designed as a civilian volunteer force, subordinate to the national police, the guard established units in all urban locales. In 1982, the civil guard had 84,000 volunteers, and 1,200 commanders and paid staff.[12] The guard's ranks began to dwindle when it became clear that spectacular terrorist attacks inside the country were rare. In recent years the civil guard has been used increasingly as an auxiliary police force, undertaking ordinary police duties. In addition to its law enforcement functions, the guard has probably acted as a substitute to vigilantism, by furnishing the public with a controlled, legal outlet for responding to domestic threats.

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12. *Yediot Aharonot*, January 15, 1982, p. 15.

Much of Israel's success in thwarting terrorist bombings can be attributed to public awareness. The majority of explosive devices placed in public sites such as bus stations, supermarkets, and shopping centers have been discovered by civilians who were able to alert the police before the bombs went off. Public alertness has been encouraged by police advertisements on television and other media, but the main reason for this high-level awareness has undoubtedly been the Israeli public's identification with the struggle against terrorism.

Two generalizations can be made concerning Israel's massive defensive effort. First, it has been reactive; new defensive measures or the expansion of existing ones always followed in the wake of some terrorist success. Second, the primary, almost only criterion for instituting new defensive measures, is their level of effectiveness in preventing casualties. Cost has not been a limitation, and no resources have been spared in an effort to deny any terrorist success.

Preemptive Strikes

Preemptive strikes are intended to thwart terrorist operations eliminating the personnel and/or the physical infrastructure involved in the preparation of a terrorist attack. In the Israeli-Palestinian struggle, in which the terrorist infrastructure has been located by and large in Arab states, outside Israeli-controlled territory, preemptive operations have ordinarily taken the form of military strikes rather than police actions. These strikes have included commando raids or air force bombings of headquarters and bases used by Palestinian organizations for preparing attacks on Israel. The success of this policy depends on the availability, in real time, of extremely accurate intelligence. Although Israel has engaged in preemptive strikes, there are no comprehensive statistical data on the scope of these srikes, nor is there an easy way to assess their effectiveness. The value of thwarting a terrorist attack is self-evident. In addition, preemptive strikes are morally and legally justified when carried out against terrorists on enemy territory. Problems arise, however, when clandestine antiterrorist operations are carried out on neutral or friendly countries' territory.

Legal Measures

With some modifications, Israel's antiterrorist measures are legally based on the 1945 British Defence Regulations (State of Emergency). The British mandatory government designed these measures to address Palestine's worsening internal strife. The regulations placed certain types of offenses under the jurisdiction of military courts and allowed for the imposition of severe punishment for terrorism-related offenses. For example, carrying a firing weapon or an explosive device may be punishable by death

(Article 58);[13] unauthorized production or possession of weapons or explosives is punishable by life imprisonment (Article 59), as is the unauthorized wearing of a police or military uniform (Article 60). The regulations empower authorities to censor mail, press, and books that contain material which, if disseminated, could jeopardize state security, public security, or public order (Articles 86-91). In addition, the measures allow authorities to restrict a person's movement or area of residence (articles 108-110); to confiscate and destroy by military commander's order any house that was used for terrorist activity (Article 119); to confiscate the property of a person engaged in such activity (Article 120); and to impose, again by a military commander's order, curfew on any area (Article 124).

The British mandate's regulations proscribed “unlawful associations,” defined as groups that advocate, incite, or encourage the bringing down of the government by violence, or that carry out acts of terrorism against the government or its employees (Article 84). In 1948, Israel's Provisional State Council enacted the Directive for Prevention of Terrorism, which defined a terrorist organization as "a group of people which uses acts of violence that may cause the death or injury of a person, or threats to carry out such acts."[14] Membership in a terrorist organization is punishable by five years imprisonment, and a leadership role is punishable by twenty years.[15] Article 8 of the directive authorized the government to declare certain groups as terrorist organizations until otherwise proven. In 1986, in accordance with this article, the Israeli government declared twenty-one Palestinian insurgent groups, including the PLO, to be "terrorist organizations." Despite the existence of a legal provision, no attempt has been made to challenge this declaration in court.

PREPAREDNESS FOR CONVENTIONAL MASS-CASUALTY ATTACKS

Scenarios of terrorist attacks resulting in high casualties have included such esoteric methods as the use of a LNG cloud. To date, however, all terrorist attacks that have produced high fatalities (say, more than 100) have involved explosives. With the exception of bombs placed on board airliners, large amounts of explosives are generally necessary to kill a lot of people. This has usually been achieved by

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13. It should be noted, however, that no terrorist has ever been executed in Israel. In one case, a terrorist (Mahmud Hijazi) was sentenced to death, but his sentence was commuted to life imprisonment. Prosecutors in Israel do not seek capital punishment even in trials of terrorists accused of multiple murders of civilians. The policy has apparently been adopted by the government on the recommendation of security agencies, despite public sentiment.

14. Directive for Prevention of Terrorism, 1948 (No. 33), Article 1.

15. Ibid., Articles 3 and 2, respectively.

using car bombs.[16] In Israel, most of the terrorist attacks that caused numerous casualties have been suicide bombing attacks. Strangely, however, the incident that has resulted in the largest number of fatalities in Israel (35) was the 1978 hijacking of a bus, which ended in a wild exchange of fire between the terrorists and Israeli security forces.

The intentional crashing of an airliner into an urban area has never occurred, yet since the 1970's Israeli intelligence has issued warnings that some Palestinian groups have contemplated taking such actions. In a couple of cases, members of the Abu Nidal Organization (ANO) carried out attacks designed to culminate in the crashing of a hijacked airliner on Tel Aviv, but were prevented from carrying through with their plot. In the first instance, members of ANO who staged the attack on El Al ticket counters at Rome Airport on December 27, 1985, said under interrogation that this had been their ultimate objective.[17] The same organization commandeered a Pan Am airliner in Karachi Airport on September 5, 1986 with the same purpose. The damage estimate of an airliner crashing in the middle of a city does not differ from that caused by a large bomb, so no special preparations had to be made for damage control in such an eventuality. However, Israel has been ready to go to great lengths to prevent attacks of this kind. In 1973 a Libyan airliner that entered Sinai Peninsula airspace by mistake was shot down by Israeli combat airplanes when its pilots ignored orders to land. Nearly all of the passengers and crew perished.

As a routine matter, Israel has made an effort to prevent the smuggling of explosives. Systematic and thorough searches are conducted at all border-crossing points between Israel and the Territories. At times, the practice has had negative consequences, including extremely long lines of trucks hauling goods from the Gaza Strip, damage to the Palestinian economy, and perturbation among the Palestinian population. Despite these repercussions, the searches have continued and should probably be credited with the fact that, unlike in Lebanon, no sizable car bomb has ever been detonated in Israel.[18]

Presumably, the inability of terrorist groups to smuggle car bombs through the border has been a major factor in their decision to use suicide "human bombs" as their preferred mode of spectacular

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[16] In some cases, terrorists were able to smuggle large quantities of explosives into buildings (e.g., the bombing of the King David Hotel in Jerusalem by the Irgun in 1946).

[17] Yaakov Perry, *Strike First* (Tel Aviv: Keshet, 1999), p. 285 (Hebrew).

[18] Most car bombs in Lebanon have contained between 70 and 150 kg of explosives. Some, however, have contained considerably more (e.g., the truck bomb that destroyed the U.S. Marines' barracks in October 1983).

terrorist attacks inside Israel.[19] The amount of explosives used in these attacks is limited to what a person can carry in a handbag or wrap around his body, which is usually less than 10 kilograms. In the worst attacks of this kind, the number of casualties was about 20 fatalities and more than 100 wounded, compared with hundreds of fatalities in large car bomb attacks.

Searches of Palestinian cars at random roadblocks inside Israel are also conducted. These are generally rare, except when tensions are running high--for example, when intelligence information indicates that an attack is imminent.

Searches of bags at entrances to public places such as theaters, sports stadiums and arenas, museums, and universities have been routine for more than twenty-five years.

Following a series of suicide bombings in March 1996, the United States gave Israel $100 million in emergency aid--half in 1996 and the other half in 1997--mainly to purchase counterterrorism equipment. By the end of 1999, Israel had spent only $61 million of this sum. Thirty million dollars were earmarked for detection equipment at border-crossing points, including 16 explosives detection systems, eight of which are located at the Karni border crossing, the main point of entry for merchandise coming in from the Gaza Strip. The remaining eight detection systems are designated for use at the permanent border crossings from the West Bank into Israel, which have not yet been determined. On July 31, 1996, the government decided to improve border control by introducing a "smart system" for documenting persons entering the country. This project was supposed to include a computerized system that would connect all entry points to the country and all security organizations involved in border control. A supplementary project was begun to equip police patrol vehicles with computers that are connected to a central data bank and contain information on suspects. The United States has financed both projects, which are being directed by the planning division of the police. To date, however, neither project has been completed. A third project, which is expected to be completed in two years, involves screening large containers at seaports.[20]

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[19] Hamas and the Palestinian Islamic Jihad have used car bombs inside the Territories, where they can move around without being exposed to systematic scrutiny.

[20] Alex Fishman, "Terrorist Attacks Can Wait," *Yediot Aharonot*, February 18, 2000.

PREPAREDNESS FOR ATTACKS USING WEAPONS OF MASS DESTRUCTION

Attacks by weapons of mass destruction have several characteristics that make them more difficult to manage than conventional terrorist attacks. These include the following:

1. WMD attacks can potentially cause significantly higher numbers of casualties.
2. They can affect a large area.
3. They require detection and identification equipment and trained personnel.
4. The units at the scene of event must use protective clothing and gas masks.
5. The symptoms of exposure are less clear than the effects of a conventional injury, resulting in large number of unaffected people seeking treatment.
6. WMD attacks have a much greater psychological impact on the public.

With the exception of an unsuccessful attempt to pour parathion into Israel's water system in 1965, no other attempts have been made to use WMD weapons in Israel. Israel's defense against WMD attacks has developed within the context of its wars with its Arab neighbors, not in the context of terrorism. To manage a terrorist WMD attack, Israel would rely on its existing wartime civil defense system. It has not developed a separate system for managing WMD events caused by terrorists, as opposed to states. The logic behind this decision is that the worst terrorist attack would presumably still be less severe than a barrage of Iraqi or Syrian missiles carrying chemical or biological warheads.

Organization and Responsibilities

In terrorist incidents lasting days or weeks, such as hijackings and kidnappings, political-strategic decision making has been done at the cabinet level. This was true, for example, during the hijacking of an El Al airliner to Entebbe in 1976.[21] Similarly, policy decisions in the Gulf crises were made at the top. In the February 1998 crisis, for example, the top-level decision making was conducted among a small group, including Prime Minister Benjamin Netanyahu, Minister of Defense Yitzhak Mordechai, and Chief of Staff, Shahak. The prime minister also consulted with cabinet members Ariel Sharon and Rafael Eitan, whose advice he valued because of their military experience, although their formal responsibilities were not relevant to the preparedness issue. The cabinet and the government were kept informed of events. The actual management of the situation was handled by the minister of defense with a team that included the chief of staff and his deputy, the director of military intelligence, the director general of the ministry of defense, and his special assistant, Maj. Gen. (res.) David Ivri. The team met frequently and dealt with

[21] Itzhak Rabin, *Pinkas Sherut* (Tel Aviv: Sifriat Ma'ariv),1979, pp. 526-527.

issues of intelligence, public information, civil defense, coordination with the United States, and preparation of proposals for military responses in case Israel was attacked.[22]

Incidents of short duration, such as major bombings and even hostage crises that last less than several hours, have been managed at the operational level with minimal or no intervention at the political level. Although the minister of defense was on site during several barricade-hostage incidents, the decisions were usually made by the supreme military echelon at the scene, ordinarily the chief of staff and the regional commanding general. Major bombing incidents have been managed by the police. On-site decisions have usually been made by the district commander.

Operational Responsibility for the Management of Terrorist Incidents

A 1974 government decision charged the police with responsibility for handling terrorist incidents within Israel's borders. It also made the Israeli Defense Forces (IDF) responsible for managing incidents up to five kilometers from the borders, in the Negev Desert, which encompasses the southern half of the country (with the exception of cities and towns there), and in the Territories. The minister of defense, however, may declare a "limited state of emergency," thereby transferring comprehensive responsibility for managing an incident to the military. The declaration of a state of emergency allows military authorities to take actions to ensure public security and the uninterrupted supply of vital services. It allows the military to force people to stay in bomb shelters, to obtain means of defense as determined by the military, and to shut down schools and other public services and workplaces. The state of emergency cannot restrict the written or electronic media. By law, the declaration must be made public through radio, television, and newspapers as soon as possible. It can remain in effect for a maximum of five days. After that, it must be endorsed by the Knesset.

To date, all hostage incidents have been managed by the military, including those that have taken place within the designated area of police authority. This departure from the formal regulation has been done without a declaration of a state of emergency, and is the result of several factors, including the military's superior capabilities for handling these situations and the higher esteem in which key government figures--namely the minister of defense and the prime minister--hold the Israeli military.

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[22] Benziman, *Ha'aretz*, February 27, 1998.

In conventional terrorist incidents, the police are capable, in principle, of assuming comprehensive responsibility.This is not the case, however, in unconventional incidents such as terrorist WMD events. At present the police are unable and unequipped to manage an unconventional incident. For instance, they are neither trained nor equipped to detect and identify chemical substances At present the army's Home Front Command (HFC) is the only organization that can manage an unconventional incident and would be in charge in a case of this kind. Judging from experience, however, the management of a WMD incident would not belong solely to the HFC, which would have to rely heavily on other IDF resources. The chief of staff and general headquarters would probably be directly involved in managing the event. In peacetime the IDF can afford to allocate these resources, but this may not be true in wartime.

Maj. Gen. Meir Dagan, until recently the head of the Combating Terrorism Headquarters in the office of the prime minister, maintained that the police should assume full responsibility for managing terrorist WMD incidents, and that it could do so if given the means.[23] Other recommendations have implied major organizational changes. After the Gulf War, a committee headed by Maj. Gen. (res.) Herzl Shafir concluded that in a time of general war, the military command would be too busy at the front to attend to civil defense. The committee therefore recommended the establishment of a national guard that would incorporate the HFC as well as fire brigades and other rescue services. Another commission, headed by Lt. Gen. (res.) Moshe Levi, reexamined civil defense in a workshop initiated by the minister of defense in 1998 for reviewing Israel's security conception. Like the Shafir report, the 1998 review recommended that as a first step HFC be transferred from the ministry of defense and eventually be placed within the ministry of internal security (whose main responsibilities include the police and prisons).[24] One commentator suggested enacting a "home defense law" that would give local municipalities the authority and responsibility for managing all kinds of emergencies.[25] As of now, HFC is still part of the IDF.

Organization and Responsibilities of the Home Front Command

The Home Front Command has a comprehensive responsibility to be prepared for and manage states of emergency within Israel's borders (excluding the Territories, where regional commands are in

[23] Personal interview, January 14, 2000.

[24] Amnon Barzilai, *Ha'aretz*, November 25, 1998.

[25] Avirama Golan, *Ha'aretz*, April 25, 1996.

charge). Although HFC is part and parcel of the IDF, most of its budget comes directly from the treasury, not from the ministry of defense.[26] HFC has a national command and three regional commands—north, center, and south—that report to the national command, which is currently headed by Maj. Gen. Gabi Ofir.

In performing its duties, HFC relies by and large on Israel's extensive system of readiness for war rather than on its own standing force. This gives HFC access to Israel's manpower and equipment reserves. Like other components in the Israeli army, HFC is made up mostly of reserve soldiers, who can be called up immediately in a state of emergency. The same rule applies to certain kinds of equipment. For example, in Israel all heavy mechanical equipment (e.g., tractors, bulldozers, cranes, etc.) is registered with the military and may be requisitioned for service in an emergency. In addition, bus companies must maintain a predetermined number of buses to evacuate victims of a mass-casualty attack, and to transport forces to the site of the incident. For research and development, HFC relies on the special means branch of the ministry of defense, which is responsibile for developing the means to deal with unconventional warfare for both the IDF and the civilian population.[27]

HFC is responsible for establishing operating procedures, planning and supervising exercises, and monitoring the preparedness of organizations that respond to high-consequence attacks, including the medical system, municipalities, transportation, and electricity. The procedures set forth by HFC are very specific. With regard to medical treatment, for example, HFC issues binding directives for treating individuals exposed to any number of chemical substances.

HFC preparedness has three main organizational goals:

1. It seeks to create a common terminology among all of the agencies that would be called upon in the event of high-consequence attack. This step is essential for ensuring rapid, mistake-free mutual understanding of people coming from different organizations. This objective is achieved primarily through HFC’s development of standard operating procedures that are issued to all organizations responding to an incident, and through the use of joint exercises.

[26] Interview with Maj. Gen. Uzi Dayan, deputy chief of staff of IDF, January 14, 2000; and *Ma'ariv*, February 2, 98.

[27] Amnon Barzilai, *Ha'aretz*, February 18, 1999.

2. The HFC is responsible for establishing a central command post to control all resources and ensuring that it functions smoothly.

3. It must establish a clear delineation of responsibility at every stage of crisis management.

For the detection, identification, and decontamination of chemical warfare substances, HFC maintains a company at constant readiness in the Tel Aviv area. Similar but smaller units are located in the less-populated northern and southern districts. In addition, civilian teams trained and equipped to detect and identify harmful chemical substances, including chemical warfare substances, are housed within the ministry of environmental protection, and can be called up if needed. Like other first-response forces, these units are equipped with gas masks and protective clothing.

The Home Front Command is in charge of communicating with the public in the event of an attack and maintains a unit for this purpose. The unit is assisted by HFC's regular duty and reserve psychologists. All media outlets, including television and radio stations and newspapers, are required by law to provide the military immediate access to their broadcasting and publication outlets in an emergency. Presumably, however, a mass-casualty incident, particularly a WMD event, would have such enormous national and international significance that it would quickly overwhelm HFC's resources. Under these circumstances, HFC's communication with the public would probably be limited to issuing instructions for behavior in the affected area.

Operational Procedures

A terrorist incident in an urban area is usually reported first to the police, who immediately distribute a report of the attack to other agencies on a predetermined distribution list, including IDF's headquarters operations branch and HFC. Following a preliminary assessment of the nature of the incident and its apparent scope, IDF's operations branch may decide to activate HFC and/or allocate other units and resources as necessary. Once activated, HFC sends first response units to the site. Concurrently, it sets up two types of command posts:

- An inner-perimeter command post at the site of the incident that controls rescue activities, including fire fighting, detection and identification of chemical substances, search for victims, search for explosives and deactivation of explosive devices, preliminary triage, decontamination, and evacuation to hospitals.

- An outer-perimeter command post that has general command of the incident. It controls all contacts with other organizations, including the political echelon, military and police headquarters, municipal authorities, medical services, and public communication outlets. This command center ensures the sealing of the affected area, allocation of forces to the incident, distribution of casualties to hospitals, and so on.

The outer-perimeter command post includes key people from HFC headquarters (logistics, intelligence, spokespeople, legal advisers, etc.), as well as representatives from all other agencies and organizations that have a role in managing the incident, including:

- medical services, with representatives from the ministry of health and the ambulance service
- fire fighters
- an evacuation unit
- police, in charge of sealing off the area of the incident and securing routes for the transportation of forces, casualties, and evacuees
- municipal civil engineering department with information on buildings plans, telephone lines, electricity, water pipelines, gas stations, and so forth
- municipal welfare department which allocates temporary housing to evacuees and provides other basic necessities such as mattresses, blankets, and food

Every representative maintains constant contact with his parent organization and direct computer access to his organization's data and systems.

The command and control structure described above is imposed in incidents involving a chemical warfare substance and/or a very large amount of explosives. Biological attacks are distinct in several crucial respects and require different, generally simpler, organization and procedures. In such incidents, there is no need for an inner-perimeter command post, and some of the elements of the outer-perimeter command post are unnecessary. The time frame for detecting a biological incident, identifying its parameters, and managing it is considerably longer.

The Medical System

Like other components of the preparedness system, the medical complex relies on procedures designed to deal with the greater threat of unconventional attacks by regular armies and does not

maintain special readiness for WMD terrorist attacks. Although the capability of states such as Syria to spread chemical or biological warfare substances is immensely greater than that of any terrorist group, the number of casualties in an unconventional attack by an enemy state would not necessarily be greater than the number of casualties in a terrorist incident.

A WMD attack by a state would probably be preceded by a warning period. People would presumably keep their Gas Defense Kits (GDKs) within reach, shelters would be prepared, and an attack would find most of the population well protected. Even in the case of a surprise attack, the approaching missiles would be detected by radar, and sirens sounded. In this case, part of the population would have a few minutes to find shelter, although presumably would not be able to reach their GDKs.

A terrorist WMD attack, on the other hand, would occur without warning, leaving people no time to protect themselves. The number of casualties per fixed quantity of chemical or biological substance (i.e., the effectiveness ratio) would therefore be considerably higher than in the case of a state-sponsored WMD attack. This difference is even more pronounced with regard to unannounced biological terrorist attacks. In wartime an enemy missile carrying biological warfare material would likely be immediately identified as such, leaving enough time for preventive treatment. An unannounced terrorist biological attack, on the other hand, could cause many casualties before the source is identified and the exposed population gets proper treatment.

Israel's capacity for hospitalizing victims of a massive terrorist chemical attack, as estimated by senior officials in the medical system, is barely sufficient, with Shiba Hospital (the largest in Israel) taking up to 600. Israel's medical system can handle several thousand casualties. The hospital would need four hours to reach maximum capacity. In the Tokyo sarin attack, about 5,000 persons applied for medical treatment although supposedly only about 200 were actually affected by the gas.[28]

Israel's health ministry maintains a rotation list of hospitals for an event involving mass casualties. In a declared state of emergency HFC has authority over hospitals and other medical facilities. In consultation with the ministry of health and the IDF's medical corps, it would also determine the distribution of casualties to hospitals.

[28] John Parachini, presentation, Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University, February 25, 2000.

In the event of an attack, the hospital next on the rotation list receives notification. It is also notified if a chemical agent is suspected, even before detection and identification have been performed. The hospital then sets in motion its emergency procedures.

The initial sorting out and decontamination of casualties is performed on site by an HFC medical team. A senior HFC medical officer supervises the evacuation of those needing further treatment. The evacuation is carried out by civilian and military ambulances and, if necessary, by buses called up for emergency service. The police make sure that evacuation routes to the hospitals have been cleared. Upon reaching the hospital's entrance, the casualties are assessed by the medical staff. Chemical attack victims requiring hospitalization are taken to the vicinity of the emergency room where two dozen showers have been set up for decontamination.[29] Treatment by type of substance is given according to binding orders of HFC. Long-range treatment and follow-up is provided by the civilian community medical services (sick funds).

For Israel's medical system, preparedness for a biological attack means awareness of symptoms and readiness for treatment. The ministry of public health monitors the incidence of contagious diseases throughout the country, particularly those diseases that could be used in biological warfare. By law, hospitals must immediately report the occurrence of such diseases.

In the event of a biological incident, HFC can call upon teams of soldiers to canvass the affected area. Going door to door, the teams give residents the appropriate medicines and printed follow-up instructions.

Maintaining a sufficient stock of medicines for full WMD warfare preparedness constitutes an economic burden. At times when there is no palpable danger, the natural tendency is to allocate resources to other needs. In the 1990-91 Gulf War, for example, Israel would have had enough antibiotics to treat victims of an anthrax attack. In the 1998 tension in the Gulf, however, it was reported that the stock was outdated. Only after the report was published did HFC receive 183 million shekel to buy masks and other equipment, and another 57 million for medicines.[30]

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[29] Interview with Mordechai Shani, director-general of Shiba Hospital, January 11, 2000; and interview with Shaul Mukhtar, head of Shiba Hospital's Emergency System, January 12, 2000.

[30] Yoav Limor, *Ma'ariv*, February 2, 1998. With regard to the anthrax inoculation, see also Zeev Schiff, *Ha'aretz*, February 1, 1998.

A Recent Test of a Limited State of Emergency

The organizational limitations of Israeli preparedness were tested in early February 2000. At the height of tensions along the Israeli-Lebanese border, the threat of Hizballah rocket attacks prompted the minister of defense to declare a state of emergency in northern border towns. On February 8 the towns' inhabitants were ordered into bomb shelters. Although the state of emergency lasted only forty-eight hours, it was long enough for management problems to surface, even though no rockets were ever launched. Citizens and municipal officials complained about the inefficient distribution of food and mattresses to the people in the shelters. Doctors (except for emergency medical teams) were also required to stay in shelters and were unable to attend to patients. In a meeting of HFC commanders and municipal officials, it was decided that in future states of emergency the command posts in the main towns should be manned by representatives of the prime minister's office, northern command, HFC, ministry of labor and public works, and the ministry of industry and commerce. Food distribution will be coordinated by the municipalities with the participation of the military.[31]

THE DEBATE ON INVESTING IN HOME FRONT PREPAREDNESS AGAINST UNCONVENTIONAL WEAPONS

Awareness of the threat of missile attacks on Israeli cities has stimulated public debate on the need to invest in the defense of the civilian population. The debate has intensified when danger has seemed more imminent, most recently during the 1998 tension in the Persian Gulf and in the wake of U.S. punitive actions against Iraq. At no time has the focus of this debate been on the likelihood of a WMD attack by a terrorist group. Rather, it has always been on the use of WMD against the civilian population by an enemy state such as Iraq, Syria, or Iran.

For many years Israel has emphasized an offensive rather than a defensive policy. Since the 1967 war, Israeli military planners have assumed that the air force would be able to guarantee a "clean sky" over Israel. This position became untenable, however, once enemy states acquired missiles capable of reaching Israeli population centers. The development of a chemical and biological warfare capability by Syria, Iraq, and Iran has made the WMD threat more ominous. The existence of missiles equipped with chemical warheads in the arsenals of enemy states has spurred a debate in Israel on whether to continue investing in defense measures to protect the civilian population.[32] Opponents of investing in civilian

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[31] *Yediot Aharonot*, February 11, 2000.

[32] The term "passive defense" as used here refers to measures that are designed to protect the population after an attack has occurred, as opposed to measures to prevent the missiles or bombs from reaching their target.

defense argue that the number of casualties in attacks on civilian population centers has been very small. Iraqi Scud attacks resulted in only one fatality in the Gulf War, and hundreds of Katyusha rockets fired on Israeli towns along the Lebanese border in the last two decades caused very few casualties. According to the opponents, the best way to cope with this threat is through deterrence, that is, to threaten to respond to an attack with an overwhelming counterattack.This is the position of David Klein, who also argues that a passive defense should have only a secondary role: limiting the damage once an attack has occurred.[33] In Klein's view, because even a huge additional investment in home front defense will decrease the number of casualties by only a very small margin, expenditures on home front defense should be reduced.

Some proponents of investment in home front defense have underscored public sensitivity to attacks, citing, for example, damage that can be done to the economy when people feel that an attack is imminent.[34] During the Gulf War, many people left the Tel Aviv area for safer places. Although only 38 Scud missiles reached Israel and just one person was killed, the government reacted hysterically, recommending that people stay at home, unless they were employed in vital services. Kindergartens, schools, and even universities shut down for a week, and then reopened only partially. On September 4, 1996, after a U.S. punitive cruise missile attack against Iraq, Israelis again began exhibiting heightened anxiety, manifested, for example, in long lines at GDK distribution centers. Presumably, an unconventional weapons attack would result in all but complete paralysis of the economy for the duration of the threat. In all likelihood, a very large number of inhabitants in areas under attack or likely to be attacked would be able to reach safer places, and those that remained could stay home, near a shelter. Against the backdrop of this assessment, investment in home front defense is necessary for a psychological reason: to give people a sense of security, so they will continue to function in an emergency.

Yair Evorn has offered another reason for investment in home defense.[35] In his view, a chemical or biological attack on Israeli civilians resulting in mass casualties could put public pressure on the Israeli government to retaliate with nuclear weapons. Strategically, this would be

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[33] David Klein, Home Front Defense: Examination of the National Investment, *Strategic Assessment*, The Jaffee Center for Strategic Studies, Vol. 2, No. 2 (September 1999), pp. 1-7.

[34] LTC Avi Bitzur, The Home Front in the Israeli National Security Conception. *Ma'arachot,* No. 354, (1997), pp. 25-28. (Hebrew).

[35] Yair Evron, "Leave Nuclear Weapons Aside," *Ha'aretz*, February 23, 19998.

disastrous and could hasten the acquisition of nuclear weapons by enemy states, as well as dangerously alter the Middle Eastern military balance, among other things. To prevent such an eventuality, Israel's home front must have the defensive means necessary to minimize losses in an unconventional attack, and thus remove the temptation of nuclear retaliation.

Israel began preparing for unconventional attacks in the early 1980s, at a time when enemy capability for attacking civilian population centers with missiles carrying chemical warheads became possible. People began buying kits for defense against gas attacks. A typical kit included a gas mask and an atropine syringe. Purchases were funded by the National Social Security. In 1986, however, Israel decided that the stock was sufficient and procurement was halted. Preparations were resumed in 1990, following Iraq's invasion of Kuwait. At that time, against the backdrop of an acute threat of Iraqi missile attacks on Israel, the government began distributing GDKs to the population. People were instructed to prepare a sealed room in their homes to prevent the penetration of gas from the outside. The recommended method of sealing was simple: cover windows with nylon sheets taped to the wall, and block spaces under doors with a wet rag. The IDF medical corps has determined that GDKs also offers good defense against biological weapons (e.g., anthrax). The HFC found that a sealed room provided a defense against chemical and biological weapons that is ten times more effective than staying outside in the open air, and that the combined defense of a sealed room and a gas mask is 1,000 times more effective than staying outside with no mask.[36]

THE DEBATE ON DISTRIBUTING GDKS TO THE POPULATION

A strong argument in favor of distributing GDKs to the general population before the outbreak of hostilities in the gulf was, of course, that this was the only way to ensure prompt access to them in case of a chemical attack. Reluctance to distribute the GDKs stemmed from the notion that GDKs are better maintained in government storage than in citizens' hands, and therefore should be distributed to the public only when the danger is clearly imminent. Thus the argument against the distribution of GDKs was essentially related to costs, and reflected a downgraded estimate of the likelihood of a chemical attack. In more recent periods of tension, when the threat of an Iraqi attack seemed much less concrete than it had been in the Gulf War, questions concerning the political-strategic repercussions of distributing GDKs to the public were again raised. An argument in favor of distribution was that it might, in fact, reduce the likelihood of unconventional weapons attacks, because it signals to the potential users that such attacks would not be effective. Some, however, were concerned that enemies may interpret the distribution in a

[36] Yoav Limor, *Ma'ariv*, February 2, 1998.

different way. One commentator suggested that distributing GDKs was not only a waste, but politically unwise, because it signaled to potential WMD users that Israel is extremely sensitive to this form of warfare.[37]

The Home Front Command was established as a response to some of the lessons of the Gulf War. The government initially decided to allocate to HFC about 1 billion Shekel annually for civil defense equipment. This would allow for the periodical renewal of gas kits held by the population, so as to maintain constant readiness. In 1996, however, the government decided to suspend this program. In the wake of this decision, Yossi Sarid, at the time an opposition member of the Knesset's Security and Foreign Affairs Committee, appealed to the Supreme Court in a move to force the government to continue maintaining these gas kits .The government agreed to continue the program, but the funds to keep it going were not allocated; as a result, the program suffered. The gap between existing equipment, and what was needed gradually increased, so that by early 1998 the stocks were in short supply. Hundreds of thousands of Israeli citizens and permanent residents, in addition to about 200,000 foreign workers lacked gas kits.[38] At the time, Maj. Gen. Gabi Ofir, commander of HFC, said that only two-thirds of the population had satisfactory defenses against missile attacks. Problems with facilities and equipment were detected in hospitals, schools, and residences, and billions of Shekels would be needed to correct the situation. One-third of the schools did not have sufficient shelters.[39] The ministry of defense estimated that the 220 million Shekel would be needed annually to properly maintain the entire population's GDKs.[40]

Public opinion weighed heavily in the political echelon's decision to refurbish the GDKs held by the population. Then Minister of Defense Yitzhak Mordechai, responding to criticism about the refurbishing of GDKs held by the public, bluntly stated in February 1998: "I would like to see the wise guy who would be able to explain to the public why we had not distributed kits, had there been 200 fatalities here."[41] According to a media account of the decision making process the IDF's chief medical

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[37] Uzi Benziman, *Ha'aretz*, February 27, 1998.

[38] Yoav Limor, *Ma'ariv*, February 2, 1998.

[39] *Ha'aretz*, February 20, 1998, quoting Col. Yuri Sufrin, head of HFC's Defense Department; *Ma'ariv*, February, 1998, quoting Maj. Gen. Gabi Ofir, HFC's commanding officer.

[40] *Ha'aretz*, February 27, 1998.

[41] Quoted in Amos Harel, *Ha'aretz*, February 27, 1998.

officer pressed to provide the public with all available means of civil defense.[42] His main concern, however, was psychological as well physical. He argued that a chemical or biological attack would result in immense public panic, which could be reduced by early distribution of a means of defense. The decision to refurbish the GDKs held by the public was the result of presumed public pressure and the IDF's determination that it could not complete distribution to the entire population within thirty-six hours of a war. Defense against biological attacks were also considered.

Yehoshua Matza, the minister of public health, and the ministry's professional staff, objected to early distribution of antibiotics in the event of an anthrax attack. They argued that, unlike the effects of a gas attack, the effects of an attack with a biological agent like anthrax are not immediate, and that antibiotics would be effective as long as the first dose is taken within a day of exposure to the germs. In their judgment, it would be possible for the health services to distribute antibiotics to the affected population within this critical time frame, a view supported by the IDF's Center for System Analysis. The Home Front Command, however, refusing to take any risks, recommended the inclusion of two doses of antibiotics in each GDK. The government adopted the HFC's cautious position, choosing to include antibiotic pills for adults and syrup for children. The minister of the treasury suggested that payment for the antibiotics would be levied from the public, but the government adopted the public health minister's position that the antibiotics should be distributed free of charge. The decision was not implemented, however, when the tension in the gulf subsided.

CONCLUSION

Given its unique experience managing significant terrorist events and its nationwide readiness for a state-sponsored chemical and biological attack, Israel is probably better prepared than any other country for an unconventional terrorist attack. From the point of view of civil defense, it may be argued that the Scud missile attacks during the 1991 Gulf War was a strategic gift to Israel. They provided the Israelis both an opportunity to test its defense system and a demonstration of the problems involved in this kind of warfare at a cost of well below the actual damage.

In addition, Israel is probably the only country in which every citizen, including infants, is supposed to have a chemical defense kit at home. This should make the country better prepared to deal with a terrorist WMD attack. Having GDKs at home are of little value, however, in the event of a chemical terrorist attack, because of the element of surprise. In time of war, or even during a period of high tension that precedes war, people keep their GDKs within reach at all times. Furthermore, even with

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[42] Uzi Benziman, *Ha'aretz*, February 27, 1998.

the short ranges of Israel's strategic arena, missiles launched from enemy territory can be detected in time to allow sirens to be sounded a few minutes before the missiles reach population centers. A chemical terrorist attack, on the other hand, will surely find the population unprepared and without their GDKs. For the same reason, the majority of the population in the affected area is unlikely to reach in a terrorist attack. A terrorist biological attack also poses greater difficulties than a biological attack by enemy state's missiles. Whereas biological warfare material carried by an enemy missile is likely to be detected and identified soon after landing, leaving enough time for preventive treatment, a terrorist biological attack would probably be identified as such only after the symptoms relating to the attack have been diagnosed.

A surprise chemical attack is likely to induce large-scale panic in the affected area. People will not only be undefended at the time of attack but also frightened and disoriented. Developing an authoritative mechanism for issuing immediate instructions is, therefore, of utmost importance. The speed at which this mechanism can operate will be a major factor in the management of the incident.

A critical problem stemming from any chemical incident is the potentially large number of "sham" casualties, who are likely to flood the evacuation and medical systems and hinder their ability to handle genuine casualties. Immediate initial diagnosis at the site of incident and along hospital routes is necessary to reduce this problem. Sufficient medical manpower should be trained and organized for this purpose.

Finally, unlike other kinds of terrorist events (e.g., hostage incidents), it is practically impossible to exercise the management of terrorist WMD attacks under near-realistic conditions, because in a WMD exercise the critical factor of public response cannot be simulated. Models of public behavior in panic-generating situations should be developed on the basis of data collected on non-malicious disasters and epidemics and incorporated into the crisis management plans as estimates.

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JOHN F. KENNEDY SCHOOL OF GOVERNMENT
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