Threat credibility and weapons of mass destruction

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Individual or collective preparedness for an attack involving weapons of mass destruction (WMD) must be based on an analysis of the threat. In threat assessment one takes many factors into account, including the physical and psychological parameters of the attacker. Although the potential devastation caused by WMD is significant, there are many limitations to the effective use of such weapons. Casualty rates will likely be measured in the thousands rather than millions because of factors that will be discussed. The psychological ramifications, it should be noted, the permutations of which have not yet been defined, will be much longer lasting. In this paper the author discusses these and other characteristics of the current threat.

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The possession of unlimited resources will allow an individual or a nation to deter any threat. Because resources in the real world are limited, however, planners must complete a threat assessment to allocate those resources properly.² The threat must be assessed in terms of likelihood of occurrence and the potential outcome. In evaluating "threat credibility" analysts deal with the former, taking into account the availability of weapon precursors and manufacturing plants, access to delivery systems, development of deployment plans, acquisition of and training in self-protection, and willingness to use WMD. Although each of these factors can be considered separately, they are quite interrelated.

THREAT CREDIBILITY AND WEAPONS OF MASS DESTRUCTION

Weapons Precursors

A credible threat requires that the adversary have available the "precursor" items and facilities for manufacture, purification, concentration, and final processing. Such

precursor items for biological warfare are easily available in some forms, although purification into weapons-grade agents is technically challenging. Precursor reagents for chemical warfare can be purchased in small to moderate quantities from commercial manufacturers. In *Scientific American* it was reported that Dr. James Tour ordered enough chemicals to create 280 g of sarin, the nerve agent used in the Tokyo subway attack.³ The chemicals were ordered from commercial chemical supply houses and shipped to Dr. Tour's home by overnight mail. The ability to purchase quantities of different reagents from multiple manufacturers creates a situation in which law enforcement has difficulty linking intent in advance of actual use. Radioactive material is closely monitored, particularly weapons-grade sources, but some breaches in security in the former Soviet Union call into question the stability of this international safeguard. Additionally, lower-grade radioactive waste material has been stolen on numerous occasions. This material can easily be used to create a "dirty bomb" in which conventional explosives are used to disperse radiation products throughout a populated area.

Manufacturing Plants

The ability to keep secret the production of biological and chemical weapons is made easier by the "dual-use"

Abbreviation used in this paper: WMD = weapons of mass destruction.

concept. Biotechnology facilities used for legitimate scientific projects can be reconfigured to produce biological weapons. Manufacturing plants designed to produce harmless pesticides can be quickly and easily converted to those in which chemical weapons are produced. Photographs of seemingly harmless pesticide-manufacturing plants that have been bombed by coalition aircrafts have been used for propaganda purposes. Additionally, if the threat of international inspection becomes evident, the manufacturing process can be reconverted to one in which commercial products are made.

Delivery Systems

To be a credible threat, a delivery system must be available to the user. Delivery systems may be as complex as an intercontinental ballistic missile or as simple as the placement of a few grams of powder into a postal envelope. Typically, increased complexity and cost will result in a higher casualty rate if all other factors are equivalent. The disadvantages of increased complexity include cost, recruitment of sufficient technical experts, extensive time to implementation, and much greater requirements for secrecy. Simple delivery systems, however, can be rapidly and inexpensively deployed and are extremely difficult to detect in advance. Application devices for industrial and agricultural chemicals, such as crop dusting aircraft or hand-held aerosolizers, can be reengineered to disperse biological or chemical weapons.

Deployment Plans

Deployment of WMD requires development of substantial and sometimes extraordinarily complex plans. Intelligence agencies have relied on the fact that the more complex the plans, the greater the number of individuals involved. Proportionally, as more individuals are involved, the greater the likelihood that secret information will be leaked. Loosely connected cells and highly compartmentalized information sharing among terrorist networks, however, provide security for both individual members and related cells. Strong religious and philosophical goals shared by members can enhance the level of secrecy by preventing infiltration by outsiders. We can expect that much more complex deployment plans, such as those for the hijacking and piloting of several commercial jetliners, will continue to be developed.

User Self-Protection

Previously it was believed that the deployment of WMD would require the user to provide for self-protection. It is now obvious that some potential users of WMD have little or no concern for their own lives, or at least the lives of their subordinates. Therefore, the issue of whether the attackers have provided for self-protection should not limit assessment of their threat credibility. Defense against an attacker or group of attackers willing to die in the assault requires a much greater level of preparedness and intelligence.

Willingness to use WMD

The attacker must possess the will to use WMD. Here again, in previous assessment algorithms substantial re-

straint was assumed. A nation state would likely be reluctant to use WMD because of the possibility of becoming an international pariah. Because current terrorist adversaries possess no such psychosocial limitations, it must be assumed that possession of a weapon implies willingness to use it.

Deterrents Against WMD

The classic deterrents against the use of WMD are numerous but do not necessarily apply to our current enemies. Whereas fear of retaliation prevents the majority of civilized nations from engaging in the use of WMD, dispersed terrorist organizations have limited fear of retaliation. Weapons of mass destruction are nonspecific—contact with enemy or friendly individuals produces the same effects, demanding the need for protection of friendly forces. The protection of forces, however, is only important if these forces are expected to be used more than once. Civilized nations have established serious moral constraints surrounding the use of WMD. The ability of WMD to destroy cities, to create wasteland for years or decades, and to kill large civilian populations indiscriminately is generally considered repugnant. Philosophies openly voiced by terrorist organizations clearly indicate that the lives of people opposed to the terrorists' goals are of no value. Finally, civilized nations rarely employ WMD in major conflicts because they are largely inefficient forms of neutralizing a large enemy force. In 1977 approximately 10 kg, an enormous quantity, of military-grade anthrax was released in the former Soviet Union in a processing plant accident. This anthrax spread throughout a city of approximately 1.2 million people, primarily in the water supply, but resulted in only 66 reported pulmonary deaths.⁴ Compared with the cost of development and deployment of conventional weapons, WMD often inflict very little actual damage, and thus nations are better off using less expensive and more easily justifiable conventional arms. In the modern era, the only well-documented use of WMD by a nation state occurred in the 1980s. Iraq used blister and nerve agents against Iran, and international investigators and physicians confirmed the signs and symptoms of these agents. Additionally, unexploded devices containing these agents were found on the battlefield after Iraqi attacks. Because psychological damage may be devastating, however, even with a small number of casualties, WMD can be very effective in creating the type of media and public disturbance the terrorist seeks.

Psychological Impact

Despite the limited potential in terms of the ratio of actual casualty/cost, the overall impact of WMD can be devastating when the short- and long-term psychological consequences are considered. In a 1-month period in 1991 Iraqi scud missiles were responsible for 1000 admissions to Israeli hospitals. At the time, there was a great concern that these missiles might contain chemical or biological agents, and 230 admission cases were coded as atropine overdose. Five hundred forty-four admissions were coded as anxiety related, and there were two scud missile-related deaths. Clearly, the impact on society can be much greater than initial casualty rates might imply. The long-

term psychological impact of the use or even threat of WMD is difficult to predict. Changes in daily activity, depression and suicide rates, and economic impact can last for years or even decades, and current disaster experts have no models to predict the ultimate need for counseling services.¹

Genetic Weapons

Gene-based weaponry is not currently a credible threat. The sophisticated methods which we now have to probe the human genome, however, introduce the possibility that these techniques may be used to create weapons. Viruses may be developed that can be genetically targeted to a particular nationality or race based on certain genetic characteristics. Biological weapons may be created that are tailored to produce symptoms weeks after exposure but are contagious much earlier, allowing the agent to spread for extended periods prior to medical experts becoming aware that an epidemic has started. Biological agents may be used to produce debilitating but not fatal diseases, requiring the use of tremendous resources for palliative care.⁵ The strain on the medical resources and psychological strength of a society could potentially be crippling.

CONCLUSIONS

In summary, threat assessment for WMD is a complex task, requiring many assumptions. As a general rule, WMD are expensive, complex, and difficult to use. It is not likely that any current terrorist group has the capability to strike the United States with a weapon capable of producing millions of casualties. Smaller scale attacks with WMD, however, may result in significant disruption due to social and psychological changes, even though actual casualty rates would likely be quite low.

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Appendix

<http://www.nbc-med.org/SiteContent/HomePage/WhatsNew/MedAspects/contents.html>

Provides access to Acrobat encoded Textbook of Military Medicine: Medical Aspects of Chemical and Biological Weapons.

<http://www.nbc-med.org/others/Default.html>

Provides access to The Army Surgeon General's site for medical education pertinent to weapons of mass destruction.

<http://www.emedicine.com>

Commercial Continuing Medical Education website; at time of publication it provided free information from thousands of weapons of mass destruction resource books and journals

<http://www.phppo.cdc.gov/phtn/default.asp>

Centers for Disease Control Public Health Training Network—information on threats, diagnosis, and treatment.

<http://www.cdc.gov>

Centers for Disease Control homepage.

<http://www.afrrri.usuhs.mil/index.html>

Website of the Armed Forces Radiobiology Research Institute, with information on radiation casualties. Free download of the *Medical Management of Radiological Casualties Handbook*.

<http://www.usamriid.army.mil>

Website of the US Army Medical Research Institute for Infectious Diseases.

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