Annals of Health Law

Volume 14
Issue 1 *Winter 2005*

Article 5

2005

Reconsidering the Model State Emergency Health Powers Act: Toward State Regionalization in Bioterrorism Response

Matthew E. Brown
Pepper Hamilton, LLP

Reconsidering the Model State Emergency Health Powers Act: Toward State Regionalization in Bioterrorism Response

Matthew E. Brown[*]

INTRODUCTION

As you read this, a man passes through the worn turnstile of a Manhattan subway. He sits on a bench and waits patiently. With his head resting on a wall tile that has been graffitied "Remember 9-11," he brushes his hair back and adjusts his rimless eyeglasses to watch commuters buzz past on their way to or from their offices. He is virtually invisible with his rather insignificant looks, one of perhaps a million people to scuttle across the dirtied tiles of the New York City subway system today. From a bench, he stands to stretch his legs. He glances left and right, and deftly threads himself between a mother and her child as he meanders toward the platform ledge. "Pardon me." As he leans on a pillar, a woman bumps into him but barely notices as she scoots along. Across three sets of train tracks, he sees an identical sea of bustling people before they are cut from view by a passing train.

With a smooth motion, he removes his backpack from around his shoulder, placing it by his feet. He flicks his gum to the tracks below and bends to unzip his bag. A young man peeks down at him from behind a magazine, but returns instantly to the more captivating matters of celebrity gossip. Reaching into his backpack, he removes a small glass bottle, no larger than a jelly jar. With a flick of his wrist, he sends the jar tumbling to the tracks below, where the shards of scattered glass disrupt a snacking rodent. The man brushes off his hands, gathers his bag, and leaves the subway unnoticed. The event is drowned out by people's everyday affairs.

For the past several years, major media outlets have described similar situations that potentially result in the deaths of tens of thousands of people.[1] The CBS Evening News, for instance, reported in 1999 that "a

* Associate, Pepper Hamilton, LLP. B.A., LaSalle University; J.D., College of William & Mary School of Law. Mr. Brown can be contacted at brownme@pepperlaw.com.

1. *See, e.g., NPR: Talk of the Nation, Politics of Biological War* (NPR radio broadcast

light bulb-sized container [of smallpox] unleashed in the New York City subway would infect everyone in the system within hours . . . [and] people riding these trains could . . . [spread] the virus throughout the country and even the world."[2] While stories such as this are intended to increase public awareness about potential terrorist events, they also incite fear that such an event is likely. Certainly, since the anthrax attacks in 2001, the public has been acutely aware of our vulnerability to bioterrorism.[3] In fact, a *Time*/CNN/Harris Interactive poll conducted in October 2001 indicated that seventy percent of the public believed that a subsequent biological or chemical attack on the United States would occur before October 2002.[4] As recently as May 2004, a similar poll indicated that seventy-nine percent of those surveyed believe that a bioterrorist attack is likely to occur somewhere in the world within the next five years.[5]

In the wake of September 11th and the 2001 anthrax attacks, the federal government was very receptive to popular public concerns.[6] It also was aware of our complete lack of preparedness for a biological attack.[7] The anthrax attacks demonstrated local, state, and federal confusion, in addition to a lack of clear leadership, resources, and manpower.[8] They highlighted a public health infrastructure plagued by decreasing budgets, poor facilities, inadequate laboratories, and shortages of properly trained employees. Although the need to reexamine state public health law infrastructure has been apparent for many years, the terrorist events in 2001 led the Centers for Disease Control and Prevention (CDC) to hasten its effort to develop model emergency public health legislation.[9] The result was the Model State Emergency Health Powers Act (MSEHPA), which aims to correct

---

Nov. 24, 1997) (interview by Ray Suarez with Richard Preston, author of THE COBRA EVENT (1998)) (transcript on file with ANNALS OF HEALTH LAW); *ABC News: Good Morning America, Saddam's Biological Weapons Bio-Chem Weapons: A Whole New Level of Terror* (ABC television broadcast, Nov. 17, 1997), *available at* 1997 WL 15444471.

2. *See CBS News: Evening News with Dan Rather, Smallpox Could Be Making a Comeback* (CBS television broadcast, June 24, 1999), *available at* 1999 WL 16009378.

3. For a definition of bioterrorism, see *infra* note 45.

4. *Public Expects More Terrorist Attacks, Snapshots*, USA TODAY, Oct. 25, 2001, at 1A.

5. *See* Alexander Grimwade, *Many Mindsets on Bioterrorism*, THE SCIENTIST, May 24, 2004, at 12, *available at* http://www.the-scientist.com/yr2004/may/bench_040524.html.

6. *See* GEN. ACCOUNTING OFFICE, PUB. NO. GAO-03-373, BIOTERRORISM: PREPAREDNESS VARIED ACROSS STATE AND LOCAL JURISDICTIONS 1 (2003).

7. *See id. at 33-35.*

8. *Id.* at 5-6; BD. ON HEALTH PROMOTION & DISEASE PREVENTION, INST. OF MED., THE FUTURE OF THE PUBLIC'S HEALTH IN THE 21ST CENTURY 124, 126 (2003) [hereinafter IOM Report].

9. Daniel S. Reich, *Modernizing Local Responses to Public Health Emergencies: Bioterrorism, Epidemics, and the Model State Emergency Health Powers* Act, 19 J. CONTEMP. HEALTH L. & POL'Y 379, 383 (2003).

shortcomings in current state public health law, and to provide state public health departments more guidance in responding to acts of bioterrorism.[10] The effort was designed to quickly affect state public health departments' practices in order to "facilitate the detection, management and containment of public health emergencies . . . ."[11]

However, MSEHPA was hastily drafted and has been the subject of great criticism.[12] One fundamental problem with MSEHPA is that it directs state officials to act as the principal responders to a bioterrorist attack, yet individual state health departments are grossly underfunded, understaffed, and undertrained to successfully manage the fallout from a bioterrorist attack.[13] Despite this and several other flaws, thirty-four states and the District of Columbia have already passed some version of the Act, and nine other states are presently considering it.[14]

Operating from the premise that the goal of a sound bioterrorist preparedness and response plan is disease containment and protection of the most number of people possible, this article argues that the United States' present course of action is poorly conceived and that recent efforts to improve state public health departments have failed. Rather than focusing on individual states' efforts, as envisioned by MSEHPA, an optimal plan for the United States must include state regionalization for the initial response to a bioterrorist attack.

This argument proceeds in four parts. Part I outlines the major provisions of MSEHPA and presents some initial criticisms. Part II discusses the nature of bioterrorism by briefly describing its history and evaluating the present threat to the United States, and concludes that rushed state and federal policy-making efforts are unnecessary. Recognizing the need to define our present preparedness despite facing no imminent threat of harm, Part III examines the United States' response capabilities and

10. *See id.* at 382-83; Denise Rios Rodriguez, *Liberties vs. Disease*, NAT'L L.J., Aug. 30, 2004, *available at* WL 08/30/04 NLJ 13, *2; Press Release, Statement by HHS Secretary Tommy G. Thompson Regarding the Model Emergency Health Powers Act, Dep't Health & Human Servs. (Oct. 30, 2001), *available at* http://www.hhs.gov/news/press/2001pres/20011030.html (stating that MSEHPA "will be an important tool for state and local officials to respond to bioterrorism and other public health emergencies.").

11. Lawrence O. Gostin, *The Model State Emergency Health Powers Act: Public Health and Civil Liberties in a Time of Terrorism*, 13 HEALTH MATRIX 3, 16 (2003) [hereinafter Gostin 1].

12. *See, e.g.*, George J. Annas, *Blinded by Bioterrorism: Public Health and Liberty in the 21st Century*, 13 HEALTH MATRIX 33, 47 (2003) (noting that "[t]he act was written under extreme time pressure and in the state of high emotion.").

13. *See* discussion *infra* Part III.D.

14. CTR. FOR LAW & THE PUB.'S HEALTH, THE MODEL STATE EMERGENCY HEALTH POWERS ACT STATE LEGISLATIVE ACTIVITY (July 1, 2004), *available at* http://www.publichealthlaw.net/MSEHPA/MSEHPA_Legis_Activity.pdf.

shortfalls in light of simulated bioterrorist attacks and the 2001 anthrax attacks. Part IV discusses recent efforts to improve local and state health departments, arguing that little progress has been made and that state regionalization represents a better mechanism by which to optimize bioterrorism responsiveness.

I. THE MODEL STATE EMERGENCY HEALTH POWERS ACT

Many state public health laws date back to the early twentieth century.[15] Consequently, they do not reflect the advances made in public health science and management in the last century, like surveillance of, prevention of, and response to disease.[16] Many of these statutes also predate changes in constitutional and statutory law, and conflict with contemporary notions of due process rights and modern disability law.[17] Moreover, because individual state health codes have developed independently, state public health departments vary greatly in their structures, functions, and in the procedures they use to carry out these functions.[18] MSEHPA represents an attempt to address these shortcomings while also expanding states' power in the event of a bioterrorist attack.[19]

On October 6, 2001, the General Counsel for the Centers for Disease Control and Prevention (CDC) invited the Center for Law and Public's Health (CLPH), a public health resource center run by Georgetown and Johns Hopkins Universities, to draft a model emergency response code.[20] On October 30, 2001, the CLPH submitted its first draft of MSEHPA to Secretary of Health and Human Services (HHS) Tommy Thompson.[21] As of July 1, 2004, thirty-four states and the District of Columbia had passed some form of MSEHPA and it is presently under consideration in nine other states.[22]

MSEHPA contains five major provisions. First, health care officials must report "all cases of persons who harbor any illness or health condition that may be potential causes of a public health emergency" to a public health authority within twenty-four hours of observing such an illness or

15. Gostin 1, *supra* note 11, at 10.

16. *Id.*

17. Reich, *supra* note 9, at 383.

18. Gostin 1, *supra* note 11, at 11; Rodriguez, *supra* note 10, at *1.

19. Rodriguez, *supra* note 10, at *2; Reich, *supra* note 9, at 383; Gostin 1, *supra* note 11, at 16-17.

20. Lawrence O. Gostin, *Law and Ethics in a Public Health Emergency*, HASTINGS CTR. REPORT, Mar.-Apr. 2002, at 9, 10 [hereinafter Gostin 2].

21. *See* Press Release, *supra* note 10.

22. CTR. FOR LAW & THE PUB.'S HEALTH, *supra* note 14.

health condition.[23] Additionally, pharmacists are required to report any unusual or increased use of prescription drugs.[24] By themselves, these provisions do not seem unusual; however, the amount of detail that medical professionals must report is quite alarming. Pharmacists must report the name, address, medical condition, location, and any other information that is considered relevant to the "potential causes of a public health emergency."[25] Such a detailed reporting requirement associated with such a broad qualifying standard raises personal privacy concerns and has come under harsh criticism.[26] One commentator has gone so far as to note the irony "that there are no provisions for the protection of confidentiality or privacy written into the statute, although . . . the authors have had the foresight to immunize public officials from liability for exceeding their powers."[27]

The second major provision of MSEHPA authorizes governors to declare states of emergency.[28] While this grant of power is not itself significant,[29] the power MSEHPA grants associated with this provision is problematic. Allowing the governor to declare a state of emergency under MSEHPA triggers Articles V and VI, which confer extraordinary powers of confiscation and coercive medical treatment.

Article V authorizes the confiscation and rationing of personal property[30] by allowing state officials to acquire and/or destroy personal property, use privately owned facilities and materials, and ration items such as "food, fuel, clothing, and other commodities."[31] Although section 506 requires just compensation for confiscated property,[32] this provision has nonetheless been the center of criticism, being called "[p]erhaps the most dangerous and unprecedented provision[ ]" of MSEHPA."[33]

---

23. THE MODEL STATE EMERGENCY HEALTH POWERS ACT § 301(a), (c) (Ctr. for Law & the Pub.'s Health, Draft for Discussion Dec. 21, 2001), *available at* http://publichealthlaw.net/MSEHPA/MSEHPA2.pdf (last visited Nov. 20, 2004) [hereinafter MSEHPA].

24. *Id.* § 301(b)

25. *Id.* § 301(b), (c).

26. *See, e.g.*, Annas, *supra* note 12, at 49-50; Ken Wing, *Policy Choices and Model Acts: Preparing for the Next Public Health Emergency*, 13 HEALTH MATRIX 71, 74-75 (2003).

27. Wing, *supra* note 26, at 75.

28. MSEHPA, *supra* note 23, § 401.

29. In fact, governors already have the power to declare states of emergency under natural disaster statutes. Wing, *supra* note 26, at 76.

30. MSEHPA, *supra* note 23, §§ 501-507.

31. *Id.* § 502(c).

32. *Id.* § 506.

33. Jennifer King, *Power Grab: The State in a State of Emergency, The Model Emergency Health Powers Act*, ALEC ISSUE ANALYSIS (Jan. 2002).

The fourth major provision of MSEHPA, Article VI, allows health officials to use "every available means to prevent the transmission of infectious disease and to ensure that all cases of contagious disease are subject to control and treatment."[34] To this end, public health officials can force citizens to undergo physical examinations and/or tests as necessary to diagnose the individual.[35] Additionally, officials can forcibly vaccinate citizens or quarantine those who refuse to comply, including those who object on religious or philosophical grounds.[36] The quarantine provision is most troubling, as it allows for a maximum of fifteen days of quarantine before an individual has a right to be heard by a court, although the public health authority may petition for an extra ten days of isolation.[37]

Finally, as mentioned above, MSEHPA contains an immunity provision protecting "the State, its political subdivisions . . . the Governor, the public health authority, or any other State or local official referenced in this Act" from liability for death, injury or property damage, unless those individuals have engaged in gross negligence or willful misconduct.[38] The same immunity extends to private citizens, firms and corporations, along with their employees and agents both during the performance of a contract with the state or its political subdivisions, and when any of these groups assist or advise at the state's request.[39]

In response to pressures resulting from an acute public sense of vulnerability,[40] the federal government quickly encouraged state legislatures to update their existing statutes or replace them entirely with MSEHPA.[41] The hastened drafting of MSEHPA and the subsequent race to the state legislature to enact it, however, is quickly leading the United States down the wrong path to properly prepare for a bioterrorist attack. Moreover, this course of action creates the false impression that the United States is better prepared for a bioterrorist attack than actually is the case.

MSEHPA cannot optimize the United States' response to a bioterrorist attack. By authorizing individual states to act as primary responders in a bioterrorist attack, MSEHPA overlooks issues that will ultimately minimize its effectiveness. The speed with which disease spreads in the twenty-first century,[42] coupled with gaping differences between funding, staffing, and

34. MSEHPA, *supra* note 23, § 601.
35. *Id.* § 602.
36. *Id.* § 603(a).
37. *Id.* § 605(a).
38. *Id.* § 804(a).
39. *Id.* §§ 804(b)(2), (3).
40. *Public Expects More Terrorist Attacks*, *supra* note 4, at 1A.
41. Press release, *supra* note 10.
42. SARS (Severe Acute Respiratory Syndrome), for example, spread throughout the

resource levels of state and local public health departments, dictate the need for a broad, uniform response that is readily available through state regionalization.[43] Further, as demonstrated below, the history of bioterrorism and the inherent difficulties of developing and successfully disbursing a biological agent suggest that the United States is not in imminent danger of a bioterrorist attack and has little to lose by reevaluating its current bioterrorism response strategy.

II. THE NATURE OF BIOTERRORISM

A. History of Bioterrorism

Bioterrorism and biowarfare[44] are not recent phenomena. The use of biowarfare has been documented as early as the sixth century B.C. when the Assyrians poisoned enemy wells with rye ergot, and Solon of Athens used skunk cabbage to poison the water supply of Krissa.[45] In the fourth century B.C., Scythian archers attempted to poison their enemies by dipping arrows in tainted blood and manure.[46] Presenting enemies with disease-laden clothing and contaminating enemy water supplies with human and animal corpses were also common tactics from the twelfth century to as late as the Civil War.[47]

---

world in less than one month. *See NPR: Talk of the Nation/Science Friday, Analysis: Disease Surveillance* (NPR radio broadcast Oct. 15, 2004) (interview by Ira Flatow with Maryn McKenna, author of BEATING BACK THE DEVIL: ON THE FRONT LINES WITH THE DISEASE DETECTIVES OF THE EPIDEMIC INTELLIGENCE SERVICE (2004), *available at* 2004 WL 59468868, at *13).

43. See discussion *infra* Parts III.D. and IV.A. for a more detailed discussion of each of these factors.

44. The CDC defines "bioterrorism" as the intentional release of viruses, bacteria, or toxins for the purpose of harming or killing civilians, as distinct from chemical weapons attacks, which involve, *inter alia*, fertilizer bombs or the release of deadly gases. CTRS. FOR DISEASE CONTROL AND PREVENTION, U.S. DEP'T OF HEALTH AND HUMAN SERVS., THE PUBLIC HEALTH RESPONSE TO BIOLOGICAL AND CHEMICAL TERRORISM 43 (2001), *available at* http://www.bt.cdc.gov/Documents/Planning/PlanningGuidance.pdf. Throughout this article, "biowarfare" will refer to the use of bioterrorism during periods of war; "biodefense" refers to the use of prophylactic measures, such as biological screening tools, used to defend against bioterrorism or biowarfare; "biopreparedness" refers to the availability of administrative mechanisms in the event of bioterrorism or biowarfare; and "bioresponse" is the use of the biopreparedness mechanisms in the event of bioterrorism or biowarfare.

45. Biological Terrorism Response Manual, History of Bioterrorism, *at* http://bioterry.com/HistoryBioTerr.htm (last visited Nov. 11, 2004) (on file with ANNALS OF HEALTH LAW) [hereinafter History of Bioterrorism].

46. GUY B. ROBERTS, UNITED STATES AIRFORCE INSTITUTE FOR NATIONAL SECURITY STUDIES, OCCASIONAL PAPER NO. 49, ARMS CONTROL WITHOUT ARMS CONTROL 15 (2003), *at* http://www.usafa.edu/inss/OCP/OCP49.pdf.

47. ROBERTS, *supra* note 46, at 15; History of Bioterrorism, *supra* note 45.

Modern biowarfare began in 1932, when Japanese physician Shiro Ishii undertook the first scientific studies of biological agents to develop them as weapons.[48] Dr. Ishii erected a 150-building complex called Unit 731, where he tested his biological weapons on Chinese soldiers and civilians.[49] As a result of Dr. Ishii's experiments, tens of thousands of Chinese died from strains of plague, cholera, and anthrax from 1936 to 1941.[50]

In 1946, after U.S. investigation of the Unit 731 program, several Japanese scientists were granted immunity from war crimes prosecution in exchange for the data obtained from their research.[51] The United States used this information to boost its own bioweapons development, which began in 1942 at Camp Detrick, Maryland.[52] During the Korean War, the United States' bioweapons program expanded greatly as technological innovation allowed for "large-scale fermentation, concentration, storage, and weaponization of microorganisms."[53] Beginning in 1953, the United States also began experimenting with biowarfare countermeasures including vaccines, anisera, and therapeutic agents.[54] Despite amassing approximately five thousand biological bombs and developing numerous agents that could induce crop failure, President Nixon directed that the program be dismantled in 1969.[55] In 1975, President Ford signed the Biological Weapons Convention, which forbade the development, production, or stockpiling of bioweapons.[56]

48. History of Bioterrorism, *supra* note 45.

49. History of Bioterrorism, *supra* note 45; *see* Nova, History of Biowarfare, *at* http://www.pbs.org/wgbh/nova/bioterror/hist_nf.html (last modified Feb. 2002) [hereinafter "Nova website"].

50. *See* Sheldon Harris, *Japanese Biological Warfare Research on Humans: A Case Study of Microbiology and Ethics*, *in* 666 ANNALS OF THE N.Y. ACAD. OF SCI.: MICROBIOLOGIST AND BIOLOGICAL DEFENSE RESEARCH: ETHICS, POLITICS, AND INTERNATIONAL SECURITY 21, 30-31 (Raymond A. Zilinskas ed., 1992); History of Bioterrorism, *supra* note 45; Nova website, *supra* note 49.

51. *See* ROBERTS, *supra* note 46, at 16; History of Bioterrorism, *supra* note 45; Nova website, *supra* note 49.

52. *See* COMM. ON RESEARCH STANDARDS & PRACTICES TO PREVENT THE DESTRUCTIVE APPLICATION OF BIOTECHNOLOGY, NAT'L RESEARCH COUNCIL, BIOTECHNOLOGY RESEARCH IN AN AGE OF TERRORISM 20 (2004).

53. ROBERTS, *supra* note 46, at 16.

54. *See id.*; History of Bioterrorism, *supra* note 45.

55. *See* ROBERTS, *supra* note 46, at 16-17; History of Bioterrorism, *supra* note 45.

56. The Biological Weapons Convention is also known as the Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological and Toxin Weapons and on their Destruction. *See* ROBERTS, *supra* note 46, at 16-17; History of Bioterrorism, *supra* note 45.

B. Current Biological Weapons Threat to the United States

The actual threat of bioterrorism is rather nebulous, difficult to quantify, and hotly contested.[57] As demonstrated below, from a theoretical standpoint, the threat of bioterrorism is very real. Recent political activity by several state actors, as well as reported activity by several non-state actors, can be interpreted to corroborate this threat. Yet, historical evidence indicates that the use of biological weapons against the United States is very unlikely.

In theory, biological weapons are attractive to terrorists and enemy states alike. First, biological weapons seem relatively easy to develop. Several of the most daunting biological agents can be found in nature, such as the plague, anthrax, and tularemia.[58] It has also been asserted that many biological agents may be purchased from countries with bioweapons programs more easily and cheaply than either a chemical or nuclear weapon.[59] With access to the proper technology, moreover, a potential terrorist may be able to genetically manipulate bacteria or viruses to increase their virulence and their resistance to drug therapy.[60] Further, because a potential bioweapon could be small and portable, there may be a low risk of detection for those attempting to smuggle weapons into the United States.[61] Finally, with a successful bioterrorist attack, there exists the potential for a large number of casualties. For example, a single gram of anthrax, approximately one-thirtieth of an ounce, contains one trillion

57. *Compare, e.g.*, Gostin 1, *supra* note 11, at 8-9 (discussing the ease of biological weapons development), *and* Thomas V. Inglesby et al., *Preventing the Use of Biological Weapons: Improving Response Should Prevention Fail*, 30 CLINICAL INFECTIOUS DISEASES 926, 927 (2000) (discussing increased risk of bioterrorism), *and* ROBERTS, *supra* note 46, at 23-24 (noting that despite casualties, disruption and panic may motivate bioterrorist attacks), *with* Leitenberg, *infra* note 65, at 12 (describing the low probability of bioterrorist attacks), *and* Jennifer Barrett, *Scared of Smallpox*, NEWSWEEK (WEB EXCLUSIVE), Oct. 18, 2001, at National Affairs (discussing the difficulty of acquiring and delivering a bioweapon), *at* http://msnbc.msn.com/id/3067525.

58. David T. Dennis et al., *Tularemia as a Biological Weapon: Medical and Public Health Management*, 285 JAMA 2763, 2764-65 (2001); Thomas V. Inglesby et al., *Plague as a Biological Weapon: Medical and Public Health Management*, 283 JAMA 2281, 2282 (2000); Ctrs. for Disease Control and Prevention, Anthrax, *at* http://www.cdc.gov/ncidod/dbmd/disease/info/anthrax_g.htm (last visited Nov. 11, 2004).

59. Lawrence O. Gostin, *When Terrorism Threatens Health: How Far Are Limitations on Personal Economic Liberties Justified?*, 55 FLA. L. REV. 1105, 1116 (2003) [hereinafter Gostin 3].

60. Christopher J. Davis, *Nuclear Blindness: An Overview of the Biological Weapons Programs of the Former Soviet Union and Iraq*, 5 EMERGING INFECTIOUS DISEASES 509, 510-11 (1999); ROBERTS, *supra* note 46, at 18 n.54.

61. Barry Kellman, *Biological Terrorism: Legal Measures for Preventing Catastrophe*, 24 HARV. J.L. & PUB. POL'Y 417, 428 (2001).

spores, which, if properly dispersed, is enough to kill 100 million people.[62] If a terrorist evenly disbursed one gram of crystalline botulinum toxin, more than one million people could die.[63] More realistically, an attack with smallpox has the potential to infect hundreds of thousands of people and kill tens of thousands of people.[64]

Presently, eleven countries have clandestine biological weapons programs, including Iran, Syria, and North Korea.[65] In addition to the threats posed by countries possessing and developing biological weapons, the threat of terrorists buying or stealing biological agents also exists.[66] As early as 1998, al Qaeda threatened to use biological and chemical weapons in attacks against the United States.[67] As discovery and examination of over sixty sites in and around Afghanistan demonstrate, they have been trying actively to develop their capabilities to use biological weapons against the United States.[68]

Despite the advantages and apparent ease of obtaining biological weapons, terrorist organizations have used them very infrequently. Since 1993, five comprehensive databases have compiled detailed biological and chemical weapons use worldwide during the twentieth century.[69] All summarize the same findings:

> •[t]here is an extremely low incidence of real biological (or chemical) events, in contrast to the number of recent hoaxes . . . [;]
>
> •[t]hose events that were real, and were actual examples of use, were overwhelmingly chemical, and even in that category, involved the use of easily available, off-the-shelf, non-synthesized industrial products. Many

62. ROBERTS, *supra* note 46, at 21.

63. Stephen S. Arnon et al., *Botulinum Toxin as a Biological Weapon: Medical and Public Health Management*, 285 JAMA 1059, 1059 (2001).

64. Tara O'Toole et al., *Shining Light on "Dark Winter,"* 34 CLINICAL INFECTIOUS DISEASES 972, 975 (2002).

65. Milton Leitenberg, An Assessment of the Biological Weapons Threat to the United States, Address at the Conference on Emerging Threats Assessment (July 7-9, 2000), *available at* http://engineering.dartmouth.edu/~ethreats/whitepapers/DARTMTHB.DOC, at 4. Leitenberg cites twelve countries with biological weapons programs, including, at the time of his presentation, Iraq. *See also* ROBERTS, *supra* note 46, at 17, 19.

66. ROBERTS, *supra* note 46, at 19; Gostin 3, *supra* note 59, at 1116.

67. ROBERTS, *supra* note 46, at 24; *see* Kimberly McCloud et al., *Chart: Al-Qa'ida's WMD Activities* (Dec. 22, 2002), *at* http://cns.miis.edu/pubs/other/sjm_cht.htm (on file with ANNALS OF HEALTH LAW) (last visited Nov. 11, 2004).

68. *See Possible Weapons Labs Found in Afghanistan*, CNN.COM, Mar. 23, 2002, *at* http://archives.cnn.com/2002/WORLD/asiapcf/central/03/23/ret.afghan.weapons (last visited Nov. 11, 2004).

69. *See* Leitenberg, *supra* note 65, at 8 (listing sources for all five databases).

> of these were instances of personal murder, and not attempted as mass casualty use.... [E]xactly one person had been killed in the United States in the 100 years between 1900 and 2000 as a result of an act of biological or chemical terrorism[; and]
>
> •[e]xcluding the preparation of ricin, a plant toxin that is relatively easy to prepare, there are only a few recorded instances in the years 1900 to 2000 of the preparation of biological pathogens in a private laboratory by a non-state actor.[70]

This low incidence of bioterrorism is not an oversight by terrorist organizations. Contrary to popular belief and media representation, effective biological weapons are extraordinarily difficult to produce. Producing biological weapons requires mastery of five essential elements: 1) one must obtain an appropriate strain of the biological agent; 2) know how to handle the agent properly; 3) know how to culture the agent so that it delivers the desired effect; 4) know how to store and produce sufficient quantities of the agent; and 5) know how to disperse the agent properly.[71]

Historically, these criteria have proven extraordinarily difficult to fulfill. For example, during the course of the United States' biological weapons program, scientists gathered approximately 675 strains of Clostridium botulinum, but only one strain ultimately proved satisfactory for weapons development.[72] Moreover, Doctor Jerzy Mierzejewski, the former director of Poland's biological defense laboratories, spent his entire career working with Clostridium botulinum.[73] At two NATO[74] Advanced Research Workshops, Dr. Mierzejewski described his ongoing difficulties with consistently growing cultures with lethal levels of toxin.[75] The doctor recounted that even minor variations in growth parameters would seriously alter toxin levels of the cultures.[76] While former Central Intelligence Agency director James Woolsey stated that "a B-plus high school chemistry student" could produce large quantities of virulent biological agents,[77] such a claim seems incredulous given Dr. Mierzejewski's extensive professional experience and his expressed frustration with producing consistent, virulent cultures.

---

70. *Id.* at 9 (listing detailed results of each study).
71. *See id.* at 18.
72. *Id.*
73. *Id.* at 19.
74. North Atlantic Treaty Organisation
75. Leitenberg, *supra* note 65, at 19.
76. *Id.*
77. *Id.* at 20.

Professors Jonathon Tucker and Amy Sands of the Center for Nonproliferation Studies describe the difficulty of effectively dispersing a biological agent:

> The capability to disperse microbes and toxins over a wide area as an inhalable aerosol – the form best suited for inflicting mass casualties – requires a delivery system whose development would outstrip the technical capabilities of all but the most sophisticated terrorists. Not only is the dissemination process for biological agents inherently complex, requiring specialized equipment and expertise, but effective dispersal is easily disrupted by environmental and meteorological conditions.[78]

Not only is it exceedingly difficult to obtain, handle, grow, store, produce, and disperse the appropriate strain of a biological agent, but those wishing to carry out a biological attack must also possess the knowledge with which to complete these tasks. Consider that the Soviet Union's biological weapons program was comprised of roughly sixty thousand people, three thousand of whom were senior-level scientists. [79] Although those senior scientists were experts who knew the details of their respective stages of the weapons development process, only one hundred of them knew how to carry a biological agent from its beginning stages to the final stages of weapons production.[80] Yet, in order for terrorists to successfully develop a biological weapon, they must acquire the information entrusted to none but the top scientists in a very sophisticated bioweapons program.

Perhaps the most compelling example of the difficulty terrorists face in producing bioweapons comes from the Japanese religious cult, Aum Shinrikyo. Headed by former Japanese Parliament candidate Shoko Ashahara, the cult reportedly had amassed $1.5 billion through donations, religious seminar fees, and revenues from commercial enterprises by the mid-1990s. [81] Beginning in 1989, Aum Shinrikyo scientists and engineers began working to develop biological weapons, experimenting with botulinum toxin, anthrax, cholera, and Ebola.[82] After failing to successfully release botulinum toxin and anthrax in several different Japanese cities, they spent millions of dollars attempting to purchase information from

78. Jonathan B. Tucker & Amy Sands, *An Unlikely Threat*, 55 BULL. OF THE ATOMIC SCIENTISTS 4, 51 (1999).

79. Leitenberg, *supra* note 65, at 20.

80. *Id.*

81. Kyle B. Olson, *Aum Shinrikyo: Once and Future Threat?*, 5 EMERGING INFECTIOUS DISEASES 513, 514-16 (1999), *available at* http://www.cdc.gov/ncidod/EID/vol5no4/olson.htm (last visited Nov. 20, 2004).

82. *Id.* at 514; Leitenberg, *supra* note 65, at 12.

unemployed or poorly salaried, former Soviet bioweapons experts.[83] Their efforts were unsuccessful, however, and it was not until 1995 that the cult was able to isolate a disease strain suitable to weaponize. Although Aum isolated an appropriate disease strain, they were unable to properly disperse the agent, and in their nine bioterrorist attacks on Japan, no fatalities or mass illnesses resulted.[84]

Aum Shinrikyo and contemporary fundamentalist terrorist groups like al Qaeda share many of the same characteristics. They are well-funded, well-educated, patient, and perhaps most importantly, their terrorist motivations are not irrational, but are "perfectly logical within the context of their value system."[85] Despite these characteristics, however, Aum Shinrikyo was unable to mount a single successful bioterrorist attack.

The Aum Shinrikyo attacks on Japan, along with the 2001 anthrax attacks, represent the only bioterrorist attacks occurring worldwide in the past twenty years.[86] Aum Shinrikyo's failure to successfully mount a bioterrorist strike in Japan, moreover, should be highly instructive to our national leaders as they develop a bioterrorism response policy. Given this history of bioterrorist attacks and the extreme difficulty of successful biological weapons development, it seems that fear of an imminent bioterrorist attack is unfounded.

III. UNITED STATES' BIOTERRORISM RESPONSE CAPABILITIES

In developing an optimal bioterrorism response strategy, it is necessary to consider the breadth of a bioterrorist attack's potential effects. Not surprisingly, however, the effects of such an attack are exceedingly difficult to approximate for several reasons. First, many different biological agents could potentially be used as biological weapons, each with different infection and fatality rates.[87] Also, susceptibility to infection may be

83. Olson, *supra* note 81, at 514; Leitenberg, *supra* note 65, at 11; ROBERTS, supra note 46, at 23.

84. Hiroshi Takahashi et al., Bacillus anthracis *Incident, Kameido, Tokyo, 1993*, 10 EMERGING INFECTIOUS DISEASES 117, 119 (2004), *available at* http://www.cdc.gov/ncidod/EID/vol10no1/03-0238.htm. Aum Shinrikyo did launch a successful multi-point *chemical* attack in March 1995. Olson, *supra* note 81, at 513. They released sarin gas in five Tokyo subway trains simultaneously, killing thirteen people and injuring several hundred. *Id.*

85. Olson, *supra* note 81, at 516.

86. In 1984, the Rajneeshee religious group released salmonella in salad bars in ten Oregon restaurants, causing 751 people to become ill, but no fatalities resulted. ROBERTS, *supra* note 46, at 23; Leitenberg, *supra* note 65, at 9.

87. *See generally* CTRS. FOR DISEASE CONTROL AND PREVENTION, U.S. DEP'T OF HEALTH AND HUMAN SERVS., BIOTERRORISM AGENTS/DISEASES, *available at* http://www.bt.cdc.gov/agent/agentlist-category.asp (last visited Nov. 11, 2004) (listing anthrax, botulism, plague, smallpox, tularemia, and viruses like Ebola as high-priority agents

greater among children, the elderly, and individuals with compromised immune systems,[88] which could alter the projected number of infections.[89] Additionally, biological agents used as weapons can be genetically altered to increase virulence or to increase resistance to drug therapy, which researchers may not accurately predict.[90]

The method of release, moreover, affects the rate of infection.[91] For example, some biological agents manifest themselves differently when insects transmit them. When fleas transmit the plague to humans, it manifests as bubonic plague, but plague released as an aerosol manifests as the more deadly pneumonic plague.[92] Finally, meteorological and environmental conditions can make it impossible to predict whether a biological agent will be transmitted effectively.[93] For example, direct sunlight can kill anthrax spores, and indirect solar radiation can reduce their potency.[94] Wind can also displace aerosolized particles, shortening the period of time during which people can contract the disease.[95]

Aside from determining how quickly and how far a disease is likely to spread in any given period of time, assessing the public health system's ability to handle a large-scale biological attack is critical to determining an optimal response strategy. Assessing local and state health departments' responsiveness is critical because public health officials are among the primary initial responders to an epidemic, and a quick, effective response is the key to saving people's lives.[96]

There have been several comprehensive studies examining hypothetical biological attacks and the public health system's responsiveness to these

---

that can be easily transmitted, can result in high mortality rates, and might cause public panic; listing brucellosis, epsilon toxin, salmonella, glanders, Q fever, ricin, viral encephalitis and others as second-degree diseases that are moderately easy to disseminate but result in low mortality rates).

88. Such as individuals with HIV/AIDS, cancer, or other illnesses.

89. *See* Donald A. Henderson et al., *Smallpox as a Biological Weapon*, 281 JAMA 2127, 2130 (1999); Gostin 3, *supra* note 59, at 1124-25.

90. Gostin 3, *supra* note 59, at 1124-25.

91. *See id.* at 1125 n.114.

92. *See* Demetres Velendzas & Susan Dufel, *CBRNE – Plague*, *at* http://www.emedicine.com/emerg/topic428.htm, section 2 (last updated June 29, 2004) (stating that pneumonic plague has 100% a mortality rate if untreated in twenty-four hours, whereas bubonic plague has a 40-60% mortality rate if untreated).

93. *See, e.g.*, Takahashi et al., *supra* note 84, at 119; Tucker & Sands, *supra* note 78, at 51.

94. Takahashi et al., *supra* note 84, at 119.

95. *See* Tucker & Sands, *supra* note 78, at 51.

96. *See* IOM Report, *supra* note 8, at 141; Matthew B. Stannard, *Experts Laud U.S. Program to Counter Bioterror Attack*, S.F. CHRON., July 23, 2004, at A19.

attacks.[97] Two of the most instructive of these simulated tabletop exercises, *TOPOFF* and *Dark Winter*, are examined below, along with an analysis of the 2001 anthrax attacks.[98]

A. TOPOFF

In May 2000, the Department of Justice conducted an exercise to engage top officials in a simulated bioterrorist attack (*TOPOFF*).[99] *TOPOFF* was designed to test those officials' responsiveness to three simultaneous terrorist attacks. The attacks included a chemical weapons attack on Portsmouth, New Hampshire; a radiological event in Washington, DC; and a biological attack in Denver, Colorado.[100] The *TOPOFF* team released an aerosol form of Yersinia pestis in Denver, a city chosen because of its prior bioterrorism preparedness training.[101] Despite the Denver officials' previous training, problematic leadership and decision-making issues arose.[102] Officials expressed difficulty prioritizing and distributing scarce resources, managing the crises in health care facilities resulting from the attack, and developing effective disease containment measures to prevent fearful Denver residents from fleeing the state.[103]

Within three days of the attack, 500 cases of the plague had been reported by Denver area hospitals.[104] The Colorado Department of Public

97. For information regarding the various outbreak investigations, see David A. Ashford et al., *Planning Against Biological Terrorism: Lessons from Outbreak Investigations*, 9 EMERGING INFECTIOUS DISEASES 515 (2003), *available at* http://www.cdc.gov/ncidod/eid/vol9no5/02-0388.htm (last visited Nov. 20, 2004).

98. From May 12-16, 2003, the largest, most comprehensive national terrorism exercise took place, depicting detonation of a radiological dispersal device in Seattle, WA, and dispersal of pneumonic plague in Chicago, IL. DEP'T OF HOMELAND SECURITY, TOP OFFICIALS (TOPOFF) EXERCISE SERIES: TOPOFF 2, at 2 (2003), *available at* http://www.armymars.net/ArmyMARS/EmergencyOps/Resources/TOPOFF2_Report_Final_Public.PDF (last visited Nov. 20, 2004). This article does not discuss *TOPOFF 2* because it provided participants both notice of the specific scenario in the exercise, as well as a pre-exercise roundtable discussion to explore intergovernmental strategies, and a series of pre-exercise seminars focusing on bioterrorism, national direction issues, and national control issues. *Id. TOPOFF* was a no-notice exercise. Thus, because *TOPOFF 2* participants were aware of the scenario before the exercise began, and had formal discussions and seminars regarding their anticipated response, it did not represent a true simulated biological attack. *Id.*

99. Thomas V. Inglesby et al., *A Plague on Your City: Observations from TOPOFF*, 32 CLINICAL INFECTIOUS DISEASES 436, 436 (2001).

100. *Id.*

101. *Id.* Yersinia pestis is the bacterium that causes the plague. *Id.*

102. *Id.* at 439; Thomas May, *Political Authority in a Bioterror Emergency*, 32 J.L. MED. & ETHICS 159, 160 (2004).

103. Inglesby et al., *supra* note 99, at 437.

104. *Id.*

Health and Environment notified the CDC of the increased volume of sick patients, and the CDC confirmed the outbreak of the plague.[105] By the end of the next day, 1,871 cases of the plague had been reported throughout the United States, England, and Japan.[106] When the exercise was terminated six days later, approximately 4,000 people were infected and the estimated number of fatalities ranged from 950 to 2,000.[107] At least eleven states and two other countries had reported outbreaks of the plague.[108] Participants noted that inadequate medical facilities and supplies contributed to the rapid spread of the disease and the high number of deaths.[109]

Most significantly, *TOPOFF* highlights the need for leadership and definitive decision-making processes following bioterrorist attacks. Throughout the exercise, participants noted their confusion as to who had ultimate decision-making authority regarding issues such as implementing curfew, initiating quarantines, closing city and state borders, and maintaining security for and access to medical facilities.[110] Lack of clear leadership, moreover, led to indecision.[111] For instance, one participant noted that decisions made on one day were reversed the next morning, and reversed again that afternoon.[112] Some senior health officials thought the state public health agency was the highest authority, while others could not definitively say who was in charge.[113] It was also noted that the FBI assumed that the state Attorney General's office was in charge.[114]

B. Dark Winter

On June 22-23, 2001, the Johns Hopkins Center for Civilian Biodefense Strategies conducted a tabletop exercise to study challenges that senior-level federal and state policy makers[115] would address in the event of a bioterrorist attack on the United States.[116] Authors of the *Dark Winter*

105. *Id.*
106. *Id.* at 438.
107. *Id.*; May, *supra* note 102, at 160.
108. Inglesby et al., *supra* note 99, at 438, 441.
109. *See* May, *supra* note 102, at 160.
110. *Id.*
111. *See id.*
112. *Id.*
113. *Id.*
114. *Id.* The state Attorney General's office is the office to which the FBI must report in times of crisis. Inglesby et al., *supra* note 99, at 439.
115. Twelve participants, who themselves were high-level government or military officials, portrayed members of the National Security Council. O'Toole et al., *supra* note 64, at 972.
116. *Id.* The exercise was also held in collaboration with the Center for Strategic and International Studies, the Analytic Services Institute for Homeland Security, and the

exercise chose to examine smallpox, historically perceived to be the most feared biological agent available because of its disfiguring side effects, its highly contagious nature, its thirty percent fatality rate, and its resistance to treatment.[117]

In the *Dark Winter* scenario, the smallpox virus was released simultaneously in three separate shopping malls in Atlanta, Oklahoma City, and Philadelphia.[118] Three thousand people initially were infected.[119] Although transmission rates of diseases are affected by many factors, the authors conservatively estimated that each infected victim would transmit the virus to at least ten others.[120] Even at this conservative transmission rate, the first 3,000 people infected would infect another 30,000 people at the second-generation stage, spreading to twenty-five states and ten other countries.[121] Although the exercise ended a few days after the second-generation infection, the authors estimated that, at worst, the 1:10 transmission rate would continue through the third and fourth generation stages, thus infecting approximately 3.3 million people.[122] Considering that smallpox has a thirty percent mortality rate, more than one million people potentially could have died from the *Dark Winter* smallpox outbreak.[123]

The authors of *Dark Winter* drew several conclusions about the United States' bioterrorist response capabilities, two of which are most relevant for this discussion. First, they recognized that federal and state leaders are "unfamiliar with the character of bioterrorist attacks, available policy options, and their consequences."[124] Specifically, decision makers were familiar with neither the events that would follow a bioterrorist attack, nor with public health strategies used to care for a large number of sick people.[125]

Second, "[f]ederal and state priorities may be unclear, differ, or conflict; authorities may be uncertain; and constitutional issues may arise."[126] There were several specific contexts in which tensions developed between federal and state authorities over disease-containment decisions, such as the

---

Oklahoma National Memorial Institute for the Prevention of Terrorism. *Id.*

117. *Id.*

118. *Id.* at 974.

119. *Id.*

120. O'Toole et al., *supra* note 64, at 974-75. The researchers based their estimates on an analysis of thirty-four instances of smallpox infections that occurred in Europe between 1958 and 1973. *Id.* at 974.

121. *See id.* at 975, 979.

122. *Id.* at 975-76.

123. *Id.* at 975.

124. *Id.* at 980.

125. *Id.*

126. O'Toole et al., *supra* note 64, at 982.

imposition of quarantines and mandatory vaccination, whether to close state borders to all transportation, and whether to close airports.[127] Federal officials argued that such issues were within the domain of the federal government, which needed to ensure the safety and defend the interests of the entire country.[128] Understandably, however, state leaders representing states most affected by smallpox wanted every resource and vaccine available to the citizens of their respective states.[129] Thus, there was tremendous tension between individual states' interests and national interests over safeguards and access to limited resources.

C. Anthrax Attacks

The 2001 anthrax attacks are more instructive of state and federal bioterrorism responsiveness than either *Dark Winter* or *TOPOFF*. In late September 2001, an individual in a Florida office building was reportedly exposed to anthrax.[130] On October 2, another 63-year-old Florida man was admitted to the hospital with a high fever, vomiting, and incoherent speech.[131] The doctor examined that patient's spinal fluid, suspected an anthrax infection, and notified the Florida Department of Health, which confirmed the doctor's diagnosis on October 4.[132] Within a month of the first reported case, twenty-three cases of anthrax had been reported in Connecticut, Florida, Maryland, Nevada, New Jersey, New York, and Washington, DC.[133] Twenty-two cases of anthrax were reported, and five people eventually died.[134]

Although there were few confirmed anthrax infections, the response effort stretched state and federal resources thin. Officials interviewed over five thousand people,[135] tested over 120,000 lab samples,[136] decontaminated numerous buildings,[137] and administered antibiotics to more than 30,000

127. *Id.*

128. *Id.*

129. *See id.*

130. *See* James G. Hodge, Jr., *Bioterrorism Law and Policy: Critical Choices in Public Health*, 30 J.L MED. & ETHICS 254, 255 (2002).

131. Marc S. Traeger et al., *First Case of Bioterrorism-Related Inhalational Anthrax in the United States, Palm Beach County, Florida, 2001*, 8 EMERGING INFECTIOUS DISEASES 1035, 1035 (2002).

132. *Id.*

133. Hodge, Jr., *supra* note 130, at 255.

134. Julie Louise Gerberding et al., *Bioterrorism Preparedness and Response: Clinicians and Public Health Agencies as Essential Partners*, 287 JAMA 898, 898 (2002).

135. *Developments in Anthrax Scare*, KANSAS CITY STAR, Sept. 27, 2001.

136. An expense that totaled over $13 million. *See id.*

137. *Id.*

people.[138] Thankfully, these acts of bioterrorism did not result in massive casualties, although they served as "a giant field exercise"[139] for much of the country's local governments as well as much of the federal government's manpower and resources.

D. Public Health Departments' Response Capabilities

As *Dark Winter* and *TOPOFF* demonstrated, the capacity of many agencies to respond was severely diminished during a bioterrorist attack. In their assessment of state and local public health departments in relation to the 2001 anthrax attacks, Professors Keck and Erme[140] identified several significant shortcomings. First, a properly trained staff is essential for the proper functioning of a public health department.[141] Most public health departments, however, did not have staff members who were trained for communicable disease control, let alone likely bioweapons agents.[142] The CDC, moreover, estimated that approximately eighty percent of public health employees lacked formal training in public health.[143] They were unable to "provide information on anthrax to the media, medical personnel, or the general public."[144] They lacked "training on bioterrorism agents and have little background in microbiology or the epidemiology of infectious diseases."[145] As a result, these departments likely will have difficulty implementing timely control measures and working with the local medical community, particularly as "major changes in technology, biomedical knowledge, informatics, and community expectations . . . continue to challenge and redefine the practice of public health . . . ."[146]

The second criterion for proper public health functioning is a properly sized staff.[147] Yet during the anthrax attacks, most public health departments were staffed at levels that only allowed timely response to problems anticipated from previous experience.[148] Thus, because these

138. *See* Anthony S. Fauci & H. Clifford Lane, *Bioterrorism on the Homefront: A New Challenge for American Medicine*, 286 JAMA 2595, 2595 (2001).

139. *See* C. William Keck & Marguerite A. Erme, *Strengthening the Public Health System* 245, 248-49, *in* TERRORISM AND PUBLIC HEALTH (Barry S. Levy & Victor W. Sidel eds., 2003).

140. Director and member, respectively, of the Office of Public Health Practice at Northeastern Ohio Universities College of Medicine [NEOUCOM].

141. *See* IOM Report, *supra* note 8, at 116.

142. Keck & Erme, *supra* note 139, at 251.

143. *See* IOM Report, *supra* note 8, at 116.

144. Keck & Erme, *supra* note 139, at 252.

145. *Id.*

146. IOM Report, *supra* note 8, at 116; s*ee id.* at 251.

147. *See* IOM Report, *supra* note 8, at 116.

148. *Id.*

departments had never experienced a bioterrorist attack, they were grossly understaffed to meet what the situation demanded.

In its 1997 survey of local health departments, the National Association of County and City Health Officials found that nationwide, health departments had an average of seventy-two full-time equivalent personnel, while the median was only sixteen full-time equivalent personnel.[149] The large gap between the mean and median figures is significant, indicating that although health departments on average had seventy-two full-time equivalent personnel, at least half of all health departments had sixteen or fewer full-time equivalent personnel.[150] In 1999, moreover, individual states reported a range of employees from 1.4 to 89 staff per 1 million people.[151] Therefore, not only were there wide gaps in the number of employees between local health departments within any given state, but there also were tremendous differences in the number of employees from state to state relative to the population. Furthermore, more recent information shows that public health department staff levels are declining, with the nationwide average down to sixty-seven full-time equivalent personnel and a median of only thirteen.[152]

Although this change may not seem significant, Professors Keck and Erme note that this difference in staff size is drastic.[153] In response to the 2001 anthrax attacks, for instance, public health departments' response capabilities were evaluated.[154] The results of the January 2002 survey indicated that due to very limited staff, health departments were unable to provide timely responses to community needs and were quickly "burned out" from attempting to provide around the clock support.[155] In Ohio, public health department employees were working around the clock because of staff limitations and were understandably less effective at providing the level of assistance demanded under the circumstances.[156]

The public health departments' facilities are a third critical component of their success,[157] but deficiencies were evident during the 2001 anthrax attacks. For example, many local public health departments had neither the

149. *See* Keck & Erme, *supra* note 139, at 247.

150. This great difference likely reflects the number of employees in rural local health departments versus the number of employees in a major metropolitan health department.

151. IOM Report, *supra* note 8, at 138 n.11.

152. *See* Keck & Erme, *supra* note 139, at 247.

153. *Id.*

154. *Id.*

155. *See id.* at 251.

156. *See id.*

157. *See* IOM Report, *supra* note 8, at 137; Keck & Erme, *supra* note 139, at 251.

resources nor the technical training to implement newer technology.[158] Consequently, these departments had great difficulty keeping apprised of important new anthrax-related information.[159] Indeed, only half of all state and local public health departments had Internet availability.[160] This alone was crippling given that there were frequent electronic anthrax updates.[161]

Public health laboratories are the most important tools to detect, identify, and monitor disease within a community. As of the General Accounting Office's 1999 survey, there were 158,000 clinical laboratories nationwide, 100,000 of which were either privately owned, or located in physicians' offices.[162] Every state public health department had at least one clinical laboratory, but many local public health departments had no laboratories.[163] This problem was exacerbated by having a laboratory staff that was not trained to identify biological weapons agents.[164] Because many of the local laboratories were limited in their ability to perform microbiological tests, they were forced to request additional support from state laboratories.[165] During the anthrax attacks, this was indeed the case, as state health department laboratories were flooded with requests from the local health departments to test substances for anthrax.[166] This resulted in pushing state laboratories to maximum capacity, leaving little room to perform other regular and necessary functions.[167] The insufficiency of laboratory facilities does not end at the local level, however. During the 1999 West Nile Virus outbreak in New York, both the state's labs and the CDC's lab were pushed to capacity.[168] In fact, federal officials stated that if another outbreak had occurred during that time, the CDC would have been unable to respond.[169]

Dark Winter, *TOPOFF*, and the 2001 anthrax attacks illustrate areas in which state and local public health infrastructure needed reform. There was lack of clear leadership among state and federal authorities, which frequently led to indecision or tension between federal and state authorities

158. *See* IOM Report, *supra* note 8, at 134.

159. *Id.*

160. *See id.*

161. *See id.*

162. *See* GEN. ACCOUNTING OFFICE, PUB. NO. GAO/HEHS-99-26, CONSENSUS ON NEEDED LABORATORY FACILITIES COULD STRENGTHEN SURVEILLANCE 7 (1999).

163. *See id.*

164. *See* Keck & Erme, *supra* note 139, at 251.

165. *See id.*

166. *See id.*

167. *See id.*

168. *See* GEN. ACCOUTING OFFICE, PUB. NO. GAO/HEHS-00-180, WEST NILE VIRUS OUTBREAK: LESSONS FOR PUBLIC HEALTH PREPAREDNESS 29-30 (2000).

169. *See id.* at 30.

during times when quick decisions were demanded.[170] Resources at the local, state, and federal levels were grossly insufficient to respond to a bioterrorist attack. In *Dark Winter*, the CDC was in short supply of the smallpox vaccine, which led to a struggle between local and federal authorities as to the proper allocation of the medicine.[171] In *TOPOFF*, there was a short supply of the antibiotics and ventilators needed to treat plague victims.[172] During the anthrax attacks, local health departments were unable to provide sufficient support to their communities because of limited training, experience, manpower, facilities, and laboratory support.[173] Although reform efforts are continuing, many of the state and local public health problems persist today.

IV. TOWARD STATE REGIONALIZATION

A. Individual States Are Ill-Equipped to Respond to a Bioterrorist Attack

After the 2001 anthrax attacks, the public health infrastructure came under heavy scrutiny, and policymakers identified many weaknesses including: outdated health information systems, poorly trained public health employees, insufficient laboratory facilities, ineffective and fragmented communications networks, and incomplete bioterrorism preparedness and response.[174] In 2002, Congress granted $1.8 billion to state and local health departments to improve these deficiencies and promote overall public health preparedness.[175]

In 2003, the Centers for Disease Control and Prevention (CDC) and Trust for America's Health (TFAH) each conducted surveys evaluating state and local health departments' progress since the 2001 anthrax attacks.[176] The results of these surveys indicate that while there was some baseline improvement in all states, there was great disparity in preparedness between individual public health departments.[177] Moreover, despite $1.8

170. *See* discussion *supra* Part III.A. – III.C.

171. *See* O'Toole et al., *supra* note 64, at 976-79.

172. *See* Inglesby et al., *supra* note 99, at 437-38.

173. *See* Keck & Erme, *supra* note 139, at 251.

174. *See* IOM Report, *supra* note 8, at 3. These issues were discussed *supra* Part III.C.

175. TRUST FOR AMERICA'S HEALTH, READY OR NOT? PROTECTING THE PUBLIC'S HEALTH IN THE AGE OF BIOTERRORISM 1 (2003), *available at* http://healthyamericans.org/state/bioterror/Bioterror.pdf (last visited Nov. 20, 2004).

176. *See generally* GEN. ACCOUNTING OFFICE, PUB. NO. GAO-04-360R, HHS BIOTERRORISM PREPAREDNESS PROGRAMS: STATES REPORTED PROGRESS BUT FELL SHORT OF PROGRAM GOALS FOR 2002 (2004) [hereinafter GAO-04-360R]; *id.* Trust for America's Health is a non-profit, non-partisan organization that researches public health from the perspective of community-based prevention and protection.

177. GAO-04-360R, *supra* note 176, at 3; TRUST FOR AMERICA'S HEALTH, supra note

billion in federal aid, state and local public health departments are still underprepared for a bioterrorist attack.[178]

The CDC surveyed local and state public health departments throughout the country from February 2002 to August 2003 to assess their progress in bioterrorism preparedness after the 2001 anthrax attacks and receipt of the $1.8 billion federal grant.[179] Prior to this assessment, the CDC designated fourteen requirements as critical benchmarks for tracking public health departments' progress.[180]

The CDC data showed that most states improved with respect to four of the most critical factors, including improved laboratory facilities, increased Health Alert Network (HAN) coverage, risk communication and health information dissemination, and education and training.[181] For example, during the 2001 anthrax attacks, only sixty-six percent of the U.S. population was covered by HAN, a system that has since expanded to cover ninety percent of the population, greatly improving the ability of local, state, and federal officials to quickly share critical information during an epidemic.[182] On the other hand, few states have developed statewide or regional emergency response plans;[183] only about half of the states met the remaining eight objectives.[184]

TFAH's December 2003 report also found that while most states have made improvements in some critical preparedness areas, they have failed to

---

175, at 7.

178. *See* GAO-04-360R, *supra* note 176, at 4; TRUST FOR AMERICA'S HEALTH, *supra* note 175, at 26.

179. *See* GAO-04-360R, *supra* note 176, at 9.

180. The CDC examined whether states had (1) designated an executive director of the bioterrorism preparedness and response program; (2) established a bioterrorism advisory committee; (3) assessed their epidemiological capacities and staffed at least one epidemiologist for each Metropolitan Statistical Area; (4) expanded the Health Alert Network to cover 90% of its population; (5) developed a statewide response plan for incidents of bioterrorism and other public health threats and emergencies, and provisions for exercising the plan; (6) developed a regional response plan across state borders for incidents of bioterrorism and other public health threats and emergencies; (7) assessed emergency preparedness and response capabilities; (8) assessed statutes, regulations, and ordinances that provided for credentialing, licensure, and delegation of authority for executing emergency public health measures; (9) developed an interim plan to receive and manage items from the Strategic National Stockpile; (10) developed a system to receive and evaluate urgent disease reports at all times; (11) developed plan to improve working relationships and communication between clinical and public health laboratories; (12) developed a communications system that provides for flow of critical health information at all times; (13) developed an interim plan for risk communication; and (14) prepared a timeline to assess training needs. *Id.* at 28-30.

181. *See id.* at 28.

182. *See id.* at 3; TRUST FOR AMERICA'S HEALTH, *supra* note 175, at 20.

183. GAO-04-360R, *supra* note 176, at 3.

184. *See id.*

make many essential improvements, "reveal[ing] that state public health agencies are facing fundamental, structural problems that threaten the nation's ability to respond to a large-scale public health emergency."[185] TFAH's advisory committee of state and local officials and public health experts assessed states' improvements and vulnerabilities in ten areas that it identified as "key indicators" of preparedness.[186] The indicators address funding issues, health infrastructure issues, and whether a state can balance its responsibilities to deal with naturally occurring threats and terrorist threats.[187] Eighty-three percent of the states satisfied five or fewer of the ten indicators.[188] The surveyors concluded that "while states have achieved piecemeal progress . . . [t]he scores indicate that, despite the surge in federal funds, states are only modestly more prepared to respond to health emergencies than they were prior to 9/11."[189]

TFAH also found that despite the $1.8 billion federal assistance to states, public health budgets are declining.[190] Before developing their 2003 budgets, states collectively faced $49.1 billion in deficits; over the course of the year, they incurred an additional $17.5 billion deficit.[191] TFAH estimated, moreover, that the 2004 budget deficit would climb to $78 billion.[192] It is no surprise, therefore, that public health departments are in the midst of hiring freezes, skilled worker shortages, and a resultant diminished preparedness capacity.[193] Despite these figures, eighteen states were able to maintain or increase their pubic health budgets, widening the increasingly evident gap between different state health departments' preparedness capabilities.[194]

Although the report found that public health laboratories have improved since 2001, only six states indicated that their facilities presently allow for sufficient emergency surge capacity, a dramatic demand for resources in an

185. TRUST FOR AMERICA'S HEALTH, *supra* note 175, at 5.

186. The key indicators examined (1) whether a state spent or obligated at least 90% of federal funds allocated in FY 2002; (2) allocated at least 50% of federal funds to local health departments; (3) increased or maintained its public health spending; (4) whether the state health department has a sufficient amount of workers to distribute Strategic National Stockpile supplies; (5) has at least on e Biosafety Level-3 Lab; (6) has enough Level-3 labs to handle a public health emergency; (7) has 3 or fewer counties without emergency alert capabilities; (8) had an initial bioterrorism plan; (9) has a pandemic flu plan; and (10) had state-specific information about SARS during the crisis. *Id.* at 7.

187. *Id.* at 9.

188. *See id.* at 6.

189. *Id.* at 6.

190. *Id.* at 9.

191. TRUST FOR AMERICA'S HEALTH, *supra* note 175, at 12.

192. *Id.*

193. *Id.* at 9.

194. *Id.* at 12.

emergency.[195] A primary area of concern is the need to develop and improve data exchange systems, which would facilitate the dissemination of current information among local, state, and federal agencies in a bioterrorism response situation.[196] Although the $1.8 billion federal allocation undoubtedly has led to some public health reforms, because of state budget constraints and workforce shortages, laboratories will likely continue to struggle to meet the demands of bioterrorism response without sustained federal financial aid.[197]

B. State Regionalization for Initial Bioterrorism Response

State public health law itself is partly to blame for states' inability to prepare for a bioterrorist attack. Much of state public health law is antiquated.[198] Public health departments developed in the early nineteenth century as rudimentary, voluntary groups organized to educate the public about hygiene, lobby for administrative reform, and help eliminate unsanitary living conditions, largely as a result of city overcrowding.[199] Throughout the second half of the nineteenth century, public health departments were given broad investigative authority, and developed a complex legal and administrative structure composed of food safety laws, building codes, and social welfare programs.[200] During their shift from social effectors to medical actors in the mid-twentieth century, public health departments implemented communicable disease law mirroring the form in which it largely exists today.[201] Thus, the bulk of states' public health law is forty to one hundred years old and does not reflect modern legal norms or contemporary mechanisms of disease prevention and control.[202]

Public health law is not only antiquated, but also is comprised of multiple layers of law.[203] Most states have enacted layers of statutes and amendments to reflect changes in health threats over the last one hundred years.[204] Additionally, because state public health laws have evolved independently, they "show profound variations in their structure, substance,

195. *Id.* at 19.

196. *Id.*

197. TRUST FOR AMERICA'S HEALTH, *supra* note 175, at 9.

198. Lawrence O. Gostin et al., *The Law and the Public's Health: A Study of Infectious Disease Law in the United States*, 99 COLUM. L. REV. 59, 102 (1999) [hereinafter Gostin 4].

199. GEORGE ROSEN, A HISTORY OF PUBLIC HEALTH 209-11 (expanded ed., Johns Hopkins U. Press 1993) (1958); *id.* at 77.

200. Gostin 4, *supra* note 198, at 77.

201. *See id.* at 77-78.

202. *See* IOM Report, *supra* note 8, at 104.

203. *Id.* at 105.

204. *Id.*

and procedures for detecting, controlling, and preventing injury and disease."[205] These differences, however, hinder public health departments' abilities to respond quickly in emergency situations, creating a major liability during an age of diseases like SARS (Severe Acute Respiratory Syndrome), which can spread throughout the world within a month's time.[206]

MSEHPA offers a single, uniform model act by which states can seek to avoid the problems associated with antiquated and layered state public health laws that have evolved independently of one another. By offering clear guidelines, MSEHPA seeks to avoid the problems of indecision, lack of clear leadership authority, and lack of clear decision-making processes, which troubled participants of *TOPOFF* and *Dark Winter*. However, because MSEHPA focuses on *individual* states, each of which has a different resource level and response capability, it does little to strengthen the *United States'* bioterrorism responsiveness.

Consider the travel habits of Americans in the twenty-first century. Today, people travel across state lines with great frequency. Thousands of flights take place, carrying people to cities throughout the country and to nearly one hundred countries each day.[207] Additionally, trains transport thousands of business people daily between Boston, New York, Philadelphia, Baltimore, and Washington, DC, for instance.[208] Consequently, diseases spread much more quickly, and reach a much larger population than in the nineteenth and early twentieth centuries. In 1913, for example, the Spanish flu spread throughout the world in eleven months, whereas in 2003, SARS took less than one month.[209] The *Dark Winter* scenario also demonstrated that a bioterrorist attack initially affecting 3,000 people can spread to over 30,000 people in twenty-five states and ten countries in only three days.[210]

Given the speed with which diseases are capable of spreading, and the ever-widening public health department resource-level differences identified by the recent CDC and TFAH reports, any bioterrorism response strategy must be implemented with some level of uniformity in order to

205. *Id.*

206. *See NPR: Talk of the Nation/Science Friday, supra* note 42, at *13.

207. *See, e.g.,* U.S. Airways, *at* http://usair.com/about/corporate/profile/factsheets/index.htm (last visited Nov. 11, 2004).

208. *See, e.g.,* Amtrak, *at* http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/am2Copy/Title_Image_Copy_Page&c=am2Copy&cid=1081442674300&ssid=174 (last visited Nov. 11, 2004).

209. *NPR: Talk of the Nation/Science Friday, supra* note 42, at *13.

210. O'Toole et al., *supra* note 64, at 979.

strengthen the *United States'* responsiveness.[211] Consider two adjoining states that have greatly different resource levels. The first state has fewer laboratories, fewer full-time employees relative to the state's population, is faced with budget deficits, a hiring freeze, and untrained workers. The second state, on the other hand, is one of the six states identified by TFAH as having laboratories capable of handling surges during emergencies, has more full-time employees relative to the state's population, has been given an increased public health budget, is able to continue hiring employees, and is presently implementing programs to educate current employees about potential bioterrorist agents. In the event of a bioterrorist attack, under the MSEHPA model, the second state is obviously much better prepared to effectively respond, and the first state is likely to suffer a greater number of casualties. If situations like this scenario were spread throughout the United States, our national responsiveness would be quite poor with many states faced with containment problems, scarce resources, overwhelmed laboratories, and high casualty rates.

Thus, recognizing both the need for model legislation to combat antiquated and layered state public health law, as well as the need to offset the present public health resource imbalance within and between states, this article urges that legislators consider developing a model act that encourages a regionalized response effort among states. A state regionalization model act could provide clear leadership authority and decision-making processes, like MSEHPA, as well as help normalize the response capabilities of states regardless of individual state resource levels, ultimately helping to optimize national response capabilities.

Regionalization is not a new concept. Local public health departments already are regionalized, as are many federal agencies.[212] Responsibilities of regionalized agencies fall within one of three possibilities: sub-state, multi-state, and federal.[213] Local health departments, for instance, operate on a sub-state level and are regionalized by either municipal boundaries, as in the northeastern United States, or by counties, more common in western states.[214] The Federal Emergency Management Agency (FEMA), the Department of Health and Human Services (HHS), and the Environmental

211. Indeed, under the MSEHPA model, states that have fewer resources and lesser response capabilities might become attractive targets for potential bioterrorists because of the potential for greater casualties.

212. STANFORD-UCSF EVIDENCE-BASED PRACTICE CTR., AGENCY FOR HEALTHCARE RESEARCH AND QUALITY, AHRQ PUB. NO. 04-E016-2, REGIONALIZATION OF BIOTERRORISM PREPAREDNESS AND RESPONSE 37, 44-45, 47 (2004), *available at* http://www.ahrq.gov/clinic/evrptpdfs.htm#bioreg (last visited Nov. 20, 2004) [hereinafter AHRQ Report].

213. *See id.* at 37.

214. *Id.*

Protection Agency (EPA) are all regionalized in the same multi-state jurisdictions, generally comprised of between four and eight states.[215]

The recent CDC survey revealed that after receiving $1.8 billion in federal aid, states have failed to adequately: develop preparedness planning and readiness assessment; develop a communications system that provides for flow of critical health information at all times; prepare a statewide response plan; and prepare a regional response plan, among other things.[216] Likewise, the TFAH report highlighted the disparities between state health departments, driven primarily by vast differences in states' budgets, laboratories, staffing, and technology within their facilities.[217]

Regionalizing bioterrorism response among local health departments within each state, as well as between neighboring states' health departments[218] would serve to alleviate many of the problems identified by the CDC and TFAH reports. [219] Pooling resources in preparation of a bioterrorist attack would aid states developing preparedness planning and readiness assessment, communication systems, and response plans. By helping one another develop and implement the same systems to be applied uniformly throughout the region, states would significantly reduce both the amount of money needed to implement a comprehensive plan and the amount of time necessary to develop a comprehensive plan. Administrative costs are also likely to be lower because rather than having four to eight individual systems within any given region, there would be only one uniform system applied throughout. Pooling resources would also implicitly combat the problems associated with unequal resource levels across states. Thus states with lower public health budgets, fewer laboratories, less staffing, or inadequate technology would be aided by states within their regions, such that a uniformity in resources and response capabilities would result. [220]

---

215. *See id.*

216. *See* GAO-04-360R, *supra* note 176, at 3.

217. See *supra* notes 185-197 and accompanying text.

218. States would ideally copy the federal framework in defining their regions in order to facilitate eventual federal aid during a bioterrorist attack.

219. One way to accomplish this regionalization is to utilize the Emergency Management Assistance Compact, a model compact that has been adopted by every state except California and Hawaii, to form contractual regions that mirror those used by FEMA, HHS, and the EPA. NAT'L EMERGENCY MGMT. ASS'N, EMERGENCY MGMT. ASSISTANCE COMPACT, *available at* http://www.emacweb.org/EMAC/About_EMAC/What_is_Emac.cfm (last visited Nov. 11, 2004).

220. Taxpayers are likely to object that their wealthier state is paying to aid a state with fewer resources rather than reinforcing its own, thus weakening its responsiveness. Such an argument cannot stand, however, if one conceptualizes the tax contribution as providing the best bioterrorism preparedness strategy available, such that the tax contribution, although aiding another state, results in a better defense for the taxpayer's state than had the money

Finally, by implementing regions of states that mirror the framework already used by many federal agencies, state regionalization would facilitate the federal government's eventual aid during a bioterrorist attack. Unlike MSEHPA, which envisions fifty states that need federal assistance, each of which has a different resource level and therefore a different level of need, state regionalization suggests using the federal ten-region system already in place. Thus, the federal government must only assess the needs of ten separate regions and may be able to administer aid from its agencies' offices representing the region in need.

Operating from the premise that the goal of an optimal bioterrorist preparedness and response plan is disease containment and protection of the greatest number of people possible, it seems unlikely that MSEHPA is the best option available. Rather, a state regionalization model act presents an opportunity to offer the benefits of MSEHPA, as well as to correct the problems that MSEHPA cannot. State regionalization would ease individual states' burdens of developing response plans and communication systems, levels resource imbalances, and would facilitate federal aid through its structure.

CONCLUSION

The Institute of Medicine recently concluded that state and local public health infrastructures are as disordered now as they were in 1988.[221] The 2001 terrorist events, along with the *TOPOFF* and *Dark Winter* exercises, further highlighted this disarray.[222] Despite nearly $2 billion in federal aid since 2002, the CDC and TFAH indicate that improvements in public health departments are marginal, reporting varying degrees of progress, resource levels, and bioterrorism preparedness among local and state public health departments.[223] Both organizations conclude that states remain underprepared to sufficiently respond to a bioterrorist attack.[224]

The bioterrorism response plan that MSEHPA offers cannot correct the shortcomings in the public health system, nor can it hope to provide an optimal national response to a bioterrorist attack. By focusing on individual states' responses rather than recognizing that a bioterrorist attack is likely to affect many states, drafters of MSEHPA ignore both the problems identified

---

been spent in-state. Furthermore, if regionalization does indeed lower administrative costs, then the taxpayer's contribution to another state might be offset by the savings realized in-state.

221. IOM Report, *supra* note 8, at 100.

222. *See* discussion *supra* Part III.A. – III.C.

223. *See* GAO-04-360R, *supra* note 176, at 3; TRUST FOR AMERICA'S HEALTH, *supra* note 175, at 5.

224. *See* GAO-04-360R, *supra* note 176, at 3.

by the CDC and TFAH reports and the need for a *national* level of responsiveness. Unfortunately, the hastily-drafted act is quickly leading individual states and the nation down the wrong path for an optimal bioterrorism response strategy.

This article has suggested a state regionalization model act framework that would maximize states' resources on a national level, provide a uniform mechanism for bioterrorism response, and facilitate federal aid in the event of a bioterrorist attack. Moreover, this Article has argued that because there is little likelihood of a bioterrorist attack occurring in the foreseeable future, states should not feel bound by any present bioterrorism response policy simply because of the popular belief that a bioterrorist attack is foreseeably imminent. Therefore, even in the event that the state regionalization model proferred by this Article is ultimately rejected, states should nonetheless carefully reconsider their current bioterrorism response policies and their ability to ultimately improve our national responsiveness to a bioterrorist attack.