

ISSUE REPORT

# Ready or Not?

PROTECTING THE  
PUBLIC'S HEALTH IN THE  
AGE OF BIOTERRORISM

# 2004



DECEMBER 2004

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PROTECTING PEOPLE.

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# Introduction

The public health system is responsible for the prevention and reduction of disease and injury in the U.S. This includes working to protect the health of communities from natural and manmade threats.

During a biological, chemical, or radiological attack, public health professionals act as first responders, investigators, strategists, and medical care providers, making key decisions about how to diagnose and contain the spread of disease and treat individuals who were injured or may have been exposed to infectious or harmful materials.

## WHAT IS PUBLIC HEALTH? -- THE PREVENTION AND REDUCTION OF DISEASE AND INJURY.

- America's public health system is not a single entity, but rather a loosely affiliated network of approximately 3,000 federal, state, and local health agencies.
- State governments have primary responsibility for the health of their citizens under U.S. law.

In the wake of the September 11, 2001, tragedies and the subsequent anthrax attacks, the nation has recognized the need to improve its bioterrorism response capabilities. At the same time, traditional public health functions have continued to demand attention. These range from responding to infectious disease outbreaks like West Nile virus and the flu to ongoing diseases like asthma and diabetes to managing the health aftermaths of natural disasters such as hurricanes and tornadoes.

The need for greater public health capacity post-9/11 strained a system that was already "structurally weak in nearly every area."<sup>1</sup> After the 2001 tragedies, the U.S. Congress sought to strengthen the system by investing an unprecedented amount in bioterrorism preparedness and the public health infrastructure.

This report examines -- three years later -- the progress that has been made in the nation's ability to respond to public health emergencies, and the vulnerabilities that remain.<sup>2</sup>

In December 2003, Trust for America's Health (TFAH) issued its first study of the nation's response to the bioterrorist threat. Ready or Not? Protecting the Public's Health in the Age of Bioterrorism found that two years after 9/11, states had taken action to protect their citizens but were only modestly better prepared to respond to health threats than they were before the 2001 tragedies.

The 2004 edition of Ready or Not? finds that one year later, **states across the country are still struggling to meet basic preparedness requirements and have inadequate resources to juggle the competing health priorities they face.**

The unprecedented federal investment in bioterrorism preparedness has resulted in important progress in several key areas, most notably in emergency communications and laboratories. However, several areas of serious vulnerability remain. Limited

resources, workforce shortages, and the lack of a comprehensive information network continue to hinder progress. Additionally, a lack of consensus and communication between local, state, and federal efforts and the absence of standardized national performance accountability measures threaten to imperil future readiness initiatives.

This report is intended to serve as a tool to help the nation move toward an improved, strategic, modern “all-hazards” public health system, as most of the same resources and capabilities necessary to respond to accidents or threats posed by nature are needed to respond to terrorist threats. Bioterrorism preparedness cannot be viewed as an isolated problem that can be prepared for alone. Only when the public health system is capable of responding to all threats will it be prepared to respond to any single threat.

**Three years after 9/11, many basic bioterrorism detection, diagnosis, and response capabilities are not in place. While progress has been made, there is still a very long way to go to reach adequate preparedness.**

**States have been left to manage shifting and competing priorities, without enough support to focus on fixing the fundamental, tried-and-true basics that are the backbone of a well-functioning public health system.**

**Bioterrorism preparedness still lacks strategic direction, well-defined priorities, and appropriate levels of resources to match the needs. A review of the remaining gaps that exist, three years after improvement efforts began, begs the conclusion that bioterrorism and public health preparedness have not been treated as serious, top national priorities.**

## **PUBLIC HEALTH POST-9/11**

### **Progress and Concerns from 2003 to 2004**

#### **PROGRESS**

- Clear demonstration that federal bioterrorism funds are having a positive impact
- Initial plans and several critical benchmarks achieved
- Emergency communications systems improved
- Dramatic upgrades in public health laboratory capabilities
- Bolstered natural and accidental public health emergency response preparedness
- Improved flu vaccination and pandemic planning

#### **CONCERNS**

- Shifting federal priorities and programs are distracting from fixing fundamentals
- Insufficient accountability and coordination at the federal, state, and local levels
- Unprepared for vaccine and antidote stockpile distribution and administration
- Stalled upgrades for disease tracking and warning systems
- Impending severe workforce crisis impairing preparedness efforts
- Chemical terrorism preparedness is lagging
- Radiological and nuclear terrorism preparedness have not been adequately addressed
- Lack of adequate funds for many basic improvements

## KEY 2004 FINDINGS

- Nearly one-third of states cut their public health budgets in FY 2003-2004 and federal bioterrorism funding decreased by over \$1 million per state in 2004, while states still do not have adequate resources to address their preparedness gaps.
- Only six states have achieved “green” status for the Strategic National Stockpile, which means being recognized as adequately prepared to administer and distribute vaccines and antidotes in the event of an emergency.
- Only five public health labs report capabilities (facilities, technology and/or equipment,) to adequately respond to a chemical terrorism threat, and only one-third of states report that they have sufficient bioterrorism lab response capabilities (facilities, technology and/or equipment).
- Nearly 60 percent of states report that they do not have adequate numbers of laboratory scientists to manage tests for anthrax or the plague if there were to be a suspected outbreak.
- Two-thirds of the states do not use national standards to track disease outbreak information via the Internet, causing serious delays in reporting and rendering rapid or early warning of disease threats difficult.
- Coordination between federal, state, and local health agencies is still strained, often due to competition for limited resources.
- The public health workforce is on the brink of an urgent “brain drain” as the baby boomers retire and next generation recruitment efforts suffer.
- Concerns remain that states are unprepared to implement a quarantine, although every state except Alaska has adequate statutory authority to quarantine in response to a hypothetical bioterrorism attack.
- Although planning for a flu pandemic (often viewed as requiring a similar response to a bioterrorism attack) has improved, 20 states still do not have publicly available plans in place, and, based on model estimates, an outbreak would still have dire consequences.

## “THE PUBLIC HEALTH SECURITY AND BIOTERRORISM RESPONSE ACT OF 2002”

In June 2002, the U.S. Congress passed the “Public Health Security and Bioterrorism Response Act of 2002,” which reauthorized or updated several grant programs established under earlier legislation, including the Public Health Threats and Emergencies Act and the Public Health Service Act. The legislation was passed in recognition of public health’s essential and expanded role in homeland security. It also established a funding program for state and local jurisdictions to help implement preparedness activities against bioterrorism and to strengthen capabilities against water, agricultural, and foodborne terrorism.<sup>3</sup>

Some have criticized the implementation of the Act, citing the lack of a comprehensive preparedness plan, the failure to appoint a directed leader of the Act’s implementation, the lack of accountability standards to measure progress, an absence of input from first-responders and on-the-ground health personnel, and not enough resources provided to match the improvement needs.

The legislation expires at the end of Fiscal Year (FY) 2006.

## FEDERAL FUNDING FOR STATE AND LOCAL PUBLIC HEALTH AGENCIES VIA CDC BIOTERRORISM PREPAREDNESS “COOPERATIVE AGREEMENTS”

The federal funds for state bioterrorism preparedness are largely in the form of “cooperative agreements” distributed by the Centers for Disease Control and Prevention (CDC) to states, and funds distributed by the Health Resources and Services Administration (HRSA) to hospitals. This report examines the CDC “cooperative agreement” funds distributed for August 2003 to August 2004, since public health departments have the primary responsibility for protecting the health of communities.

In May 2003, the CDC issued guidance to states on how to use their upcoming year’s cooperative agreement funds. (For a list of state-by-state funding amounts, see Appendix B, “Bioterrorism Funding by Source and Year.”) Areas of concentration in the guidance included:

- Preparedness planning, including for the Strategic National Stockpile;
- Surveillance and epidemiology;
- Laboratory capacity for biological agents;
- Laboratory capacity for chemical agents;
- Information technology, including the Health Alert Network;
- Communications about health threats; and
- Education and workforce training.<sup>4</sup>

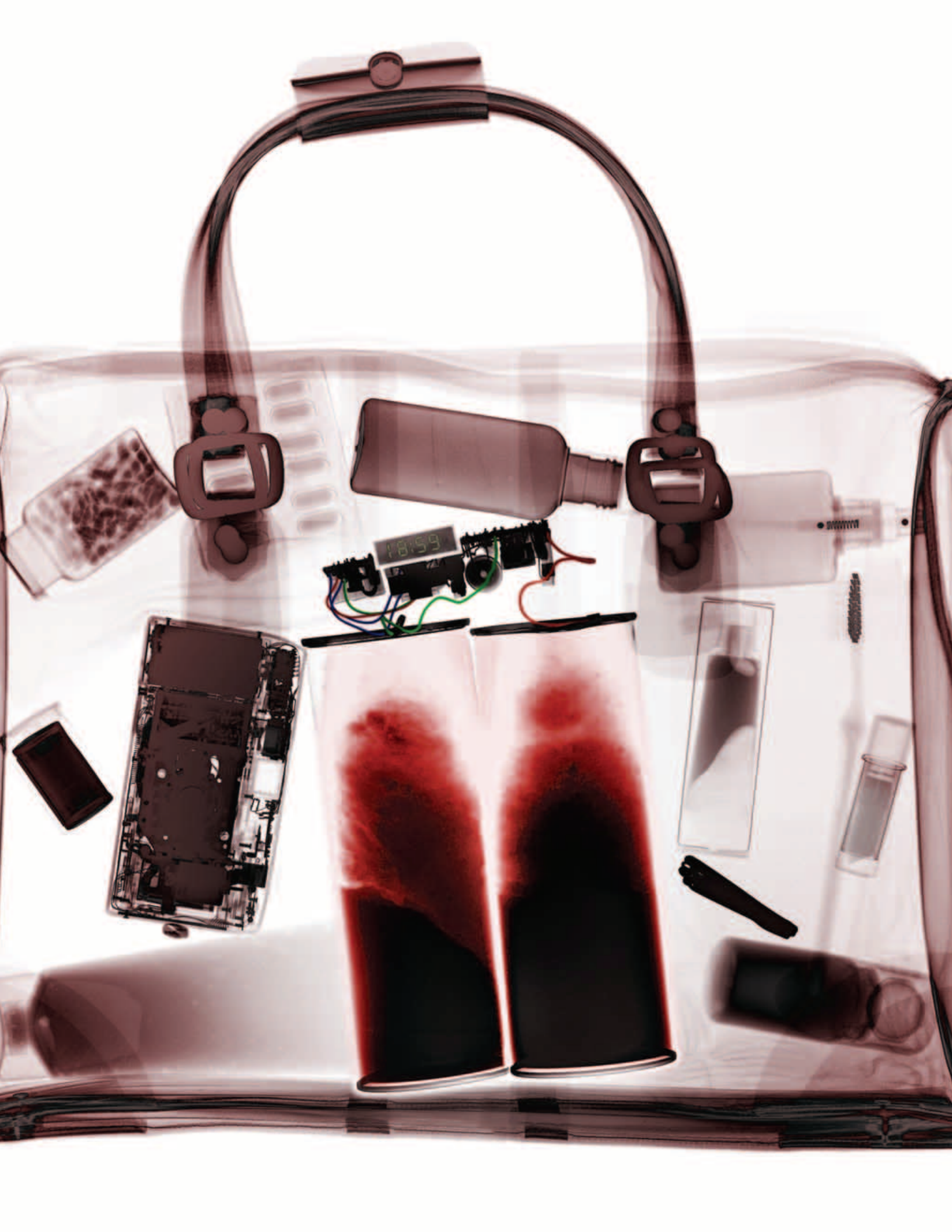
The cooperative agreement funding was \$940 million for FY 2002, \$870 million for FY 2003, and \$849 million for FY 2004. Pre 9/11 funding for bioterrorism preparedness was \$67 million in FY 2001.



## GAO REPORT ON STATES' PREPAREDNESS

A February 2004 Government Accountability Office (GAO) report, HHS Bioterrorism Preparedness Programs: States Reported Progress But Fell Short on Program Goals for 2002, concluded that “states are more prepared now than they were prior to these [CDC and HRSA cooperative agreement] programs, but much remains to be accomplished.”<sup>5</sup>

*“Some of the 14 requirements that CDC considers critical benchmarks of preparedness were more likely to be completed than others. Four critical benchmarks were met by most of the states. These benchmarks included the establishment of a bioterrorism advisory committee and coverage of 90 percent of the state’s population by the Health Alert Network—a nationwide program designed to ensure communication capacity at all state and local health departments. Two critical benchmarks were met by few of the states: development of a statewide response plan and development of a regional response plan. The remaining eight critical benchmarks were met by around half the states. These benchmarks included assessment of emergency preparedness and response capabilities, development of a system that can receive and evaluate urgent disease reports at all times, and development of an interim Strategic National Stockpile plan. In addition, state and local officials reported three main factors that hindered their ability to complete all of CDC’s requirements: (1) redirection of resources to the National Smallpox Vaccination Program, (2) difficulties in increasing personnel as a result of state and local budget deficits, and (3) delays caused by state and local management practices, such as contracting and hiring procedures.”*



## STATE SCORES:

# TFAH Rates Public Health Preparedness

**E**ach state faces unique challenges and resource limitations in meeting preparedness goals. Understanding the difference in capabilities among states is key to knowing how the states would be able to work together in times of emergency and where to target improvement efforts. Despite differences among states, there are fundamental protections that all communities should expect from their public health systems.

TFAH, with input from an advisory committee including state and local officials, developed 10 key indicators to assess the states' public health emergency preparedness capabilities. **These indicators, taken collectively, offer a composite snapshot of capabilities, including areas of improvement and vulnerability.**

TFAH's indicators are divided into three general categories, which are similar to the 2003 report:

- A) Funding.**
- B) "Back to Public Health Basics."**  
**This includes the fundamental components of a comprehensive public health system, including workforce, laboratories, health tracking, and communications systems.**
- C) "All-Hazards."** **This reflects how bioterrorism preparedness efforts are impacting traditional public health functions.**

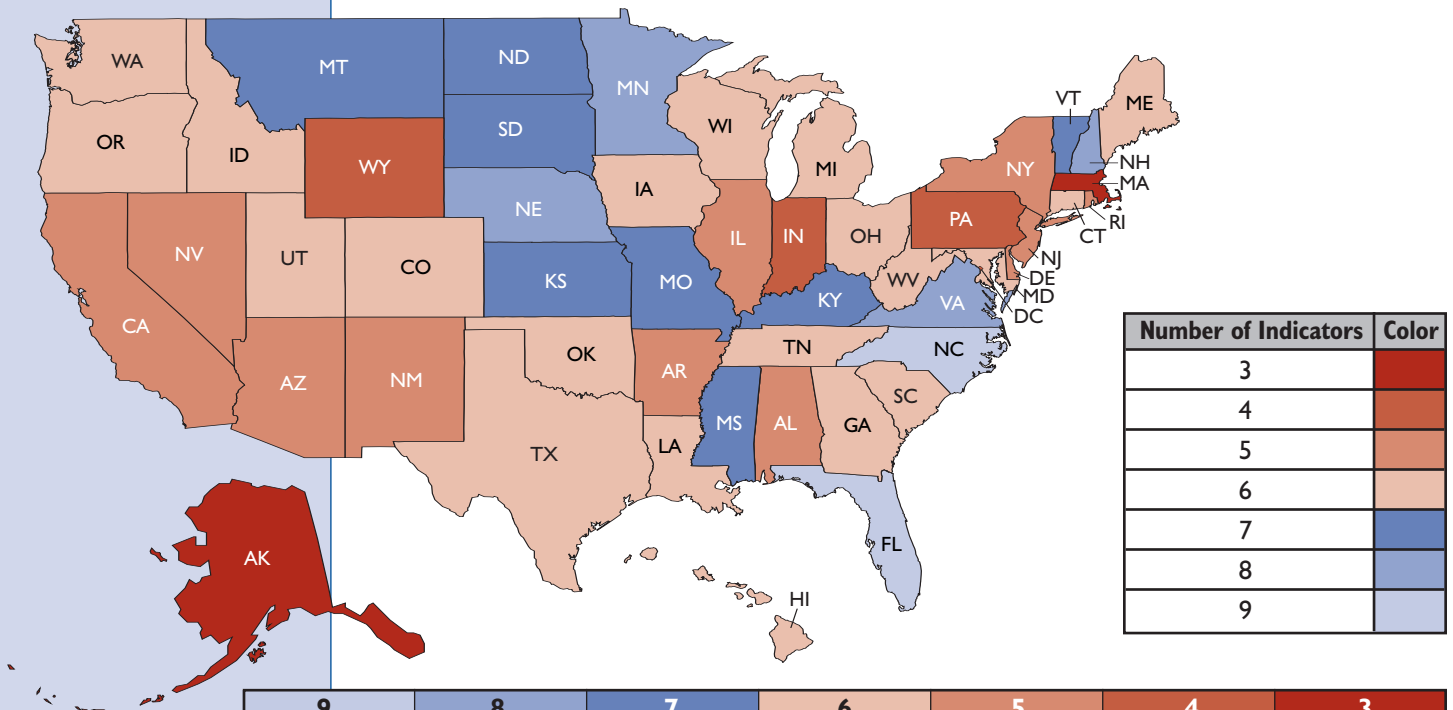
The 2003 report also contained 10 indicators. Several of this report's indicators differ from the 2003 report to reflect changed expectations for levels of preparedness one year later. Preparedness in 2004 should be greater than in 2003, given the additional time and funding that has been devoted toward improvement efforts. For instance, in last year's report, all states demonstrated

that they achieved completion of their initial preparedness plans required to qualify for CDC funds, so this indicator was removed from this year's evaluation.

Each state received a score based on a scale of the 10 indicators. A state received one point for achieving an indicator or zero points if it did not achieve the indicator. Zero was the lowest possible score, and 10 was the highest.

Public health is typically difficult to evaluate due to a general dearth of available, accessible, accurate, and specific information about public health systems and performance, such as a system's ability to properly track the use of taxpayer dollars or measure disease rates in communities. This information should be considered essential for maintaining an accountable, responsive, and coordinated public health system.

This report concentrated on 10 measurable performance indicators from a variety of publicly available sources. The lack of other sets of data to verify or enhance these indicators demonstrates the need for additional accountable and measurable information about the performance of public health in America. In the few case where states failed to provide data for a particular indicator, zero points were given (which is noted in the tables).



9	8	7	6	5	4	3
Florida North Carolina	Minnesota Nebraska New Hampshire Virginia	Kansas Kentucky Mississippi Missouri Montana North Dakota South Dakota Vermont	Colorado Connecticut Georgia Hawaii Idaho Iowa Louisiana Maine Maryland Michigan Ohio Oklahoma Oregon South Carolina Tennessee Texas Utah Washington West Virginia Wisconsin	Alabama Arizona Arkansas California Delaware Illinois Nevada New Jersey New Mexico New York Rhode Island	D.C. Indiana Pennsylvania Wyoming	Alaska Massachusetts

Two states received the highest score, Florida and North Carolina, achieving nine out of the possible 10 indicators. Two states, Alaska and Massachusetts, had the lowest scores with three out of 10.

Over two-thirds of states and D.C. achieved a score of six or less. Although the modified indicators eliminate direct comparisons between the 2003 and 2004 reports, in last year's report, nearly 95 percent (46 states and D.C.) received a score of six or less. In the 2004 report, 34 states and D.C. obtained higher scores, nine states remained the same, and seven declined.

Overall, while the scores demonstrate continued incremental progress, preparedness is

still lagging behind goals and expectations. With most states still in the middle range of the scale and no states achieving the top possible score, there are still major areas of vulnerability that leave Americans at risk.

The scores demonstrate **that bioterrorism preparedness policy is ill-defined and inconsistent.** More than three-years after 9/11, there is no clear definition for what the public should expect as protection in the event of bioterrorist attack or public health emergency, and there are no real performance standards in place to assess how well the public would be protected in the event of such tragedies.



## STATE PREPAREDNESS SCORES

States	Funding		"Back to Basics"					All-Hazards		2004 Total / Score
	1 Spent or obligated at least 90% of FY 2003 federal funds	2 State spending on public health increased or was maintained	3 Local concurrence with state's bioterror preparedness plan	4 Has less than 25% of public health workforce eligible to retire within 5 years	5 Has sufficient BSL-3 labs	6 Has enough lab scientists to test for anthrax or plague	7 Has a disease tracking system in day-to-day use where information can be monitored via Internet	8 Has legal authority to quarantine	9 Increased flu vaccination rates in adults 65 + from '02-'03	
Alabama			✓	✓			✓	✓	✓	5
Alaska	✓		✓			✓				3
Arizona		✓		✓		✓		✓	✓	5
Arkansas		✓	✓	✓				✓	✓	5
California	✓	✓						✓	✓	5
Colorado		✓		✓		✓	✓	✓	✓	6
Connecticut			✓		✓	✓		✓	✓	6
Delaware		✓	✓	✓				✓	✓	5
District of Columbia		✓	✓					✓	✓	4
Florida	✓	✓	✓	✓	✓		✓	✓	✓	9
Georgia				✓	✓		✓	✓	✓	6
Hawaii	✓	✓	✓	✓				✓	✓	6
Idaho			✓	✓	✓			✓	✓	6
Illinois	✓	✓					✓	✓	✓	5
Indiana	✓				✓			✓	✓	4
Iowa	✓	✓	✓	✓				✓	✓	6
Kansas	✓		✓		✓		✓	✓	✓	7
Kentucky		✓	✓	✓		✓		✓	✓	7
Louisiana		✓	✓	✓			✓	✓	✓	6
Maine	✓	✓		✓		✓		✓	✓	6
Maryland	✓		✓	✓				✓	✓	6
Massachusetts								✓	✓	3
Michigan	✓	✓	✓				✓	✓	✓	6
Minnesota	✓	✓	✓	✓	✓			✓	✓	8
Mississippi		✓	✓	✓		✓		✓	✓	7
Missouri	✓	✓	✓				✓	✓	✓	7
Montana		✓	✓		✓	✓		✓	✓	7
Nebraska	✓	✓	✓			✓	✓	✓	✓	8
Nevada	✓	✓		✓	✓			✓		5
New Hampshire	✓		✓	✓	✓	✓		✓	✓	8
New Jersey				✓		✓		✓	✓	5
New Mexico		✓	✓	✓				✓		5
New York	✓		✓				✓	✓		5
North Carolina	✓	✓	✓	✓	✓	✓		✓	✓	9
North Dakota	✓	✓	✓	✓			✓	✓	✓	7
Ohio		✓	✓				✓	✓	✓	6
Oklahoma	✓	✓	✓			✓		✓	✓	6
Oregon	✓	✓				✓		✓	✓	6
Pennsylvania			✓				✓	✓	✓	4
Rhode Island	✓	✓	✓					✓		5
South Carolina	✓		✓	✓			✓	✓	✓	6
South Dakota	✓	✓	✓	✓	✓			✓		7
Tennessee		✓	✓		✓		✓	✓	✓	6
Texas		✓			✓	✓	✓	✓		6
Utah	✓	✓		✓		✓		✓		6
Vermont	✓	✓	✓	✓		✓		✓		7
Virginia	✓	✓		✓	✓	✓		✓	✓	8
Washington	✓	✓	✓					✓	✓	6
West Virginia	✓	✓	✓			✓		✓		6
Wisconsin		✓	✓		✓	✓		✓	✓	6
Wyoming				✓		✓		✓		4
<b>Total</b>	<b>29</b>	<b>35 + D.C.</b>	<b>35 + D.C.</b>	<b>28</b>	<b>16</b>	<b>21</b>	<b>18</b>	<b>48 + DC</b>	<b>38 + D.C.</b>	<b>30</b>



## A. FUNDING INDICATORS

Despite continued federal dollars, nearly one-third of states cut their public health budgets in FY 2003-2004, and states still do not have adequate resources to address their preparedness gaps.

### Indicator 1: State Spending of Federal Funds

**FINDING:** THE NUMBER OF STATES ABLE TO MAKE NEARLY-FULL USE OF FEDERAL BIOTERRORISM FUNDS INCREASED FROM LAST YEAR, AND LESS THAN 10 PERCENT OF FY 2003 FEDERAL FUNDS ARE UNSPENT.

29 states spent or obligated 90 percent or more of their FY 2003 federal bioterror preparedness funding (1 point)	21 states and D.C. did NOT spend or obligate 90 percent or more of their FY 2003 federal bioterror preparedness funding (0 points)
Alaska (100%) California (98%) Florida (92%) Hawaii* (96%) Illinois (99%) Indiana* (100%) Iowa (97%) Kansas (100%) Maine (94%) Maryland (100%) Michigan (91%) Minnesota* (98%) Missouri (95%) Nebraska (99%) Nevada* (97%) New Hampshire* (91%) New York (98%) North Carolina (98%) North Dakota (95%) Oklahoma (100%) Oregon* (100%) Rhode Island (100%) South Carolina* (96%) South Dakota (90%) Utah (100%) Vermont* (97%) Virginia* (100%) Washington (94%) West Virginia* (94%)	Alabama (82%) Arizona* (84%) Arkansas* (71%) Colorado (87%) Connecticut* (88%) Delaware (83%) Georgia* (78%) Idaho* (89%) Kentucky* (89%) Louisiana (68%) Massachusetts* (86%) Mississippi* (75%) Montana* (88%) New Jersey* (80%) New Mexico* (85%) Ohio* (87%) Pennsylvania* (65%) Tennessee (84%) Texas* (88%) Wisconsin* (89%) Wyoming* (85%)

Source: Association of State and Territorial Health Officials (ASTHO), November 2004 survey.

\* – State did not spend or obligate at least 90 percent of its FY 2002 according to last year’s survey.

Note: States have an additional 90 days after August 31, 2004 (the period of time this survey covered) to submit final spending reports, therefore additional states may have spent 90 percent or more of their funds at the time of the release of this report. D.C. did not respond to ASTHO survey and since it did not demonstrate use of funds, did not receive a point for the indicator.

Based on a survey conducted by the Association of State and Territorial Health Officials (ASTHO) in November 2004, 29 states had spent or obligated (mostly through contracts) 90 percent or more of their FY 2003 federal bioterrorism funds.<sup>6</sup> A third of all responding states indicated that they have spent or obligated 98 percent or more of their funds. **As a result, less than 10 percent of the FY 2003 federal bioterrorism funds for states went unspent.**

The 29 states with over 90 percent spending represents an increase from 24 states reaching the 90 percent level in the 2003 Ready or Not? report. One reason for the increase is that FY 2002 was the first year that these funds were made available to states, and during this period many states focused on developing spending plans and assessing needs before spending their funds.

Former U.S. Secretary of Health and Human Services Tommy Thompson expressed concern earlier this year that states may not be spending their federal funds in a timely or effective manner, indicating that this may reflect a lack of need for the funds. In a letter Thompson wrote to the chairs of the Labor, Health and Human Services, and

Education Appropriations Subcommittees of the U.S. House of Representatives and U.S. Senate, he said, "I have been very concerned for over a year about the slow rate at which States are expending available Federal funds to improve homeland defense, and the large unliquidated balances that remain from the FY 2002 and FY 2003 grants."<sup>7</sup>

The data from the ASTHO survey, however, reveal that most states are spending the majority of their federal funds. Additionally, a report released on August 5, 2004, by the Office of the Inspector General of HHS found a "variety of reasons" for some states' inability to obligate portions of the funds:

*Awardee officials indicated that unobligated program funds resulted from delays and difficulties in the following areas: recruiting and hiring personnel, caused by staffing changes and hiring freezes; coordinating the startup of new activities, caused by an extensive needs assessment process; executing contracts; issuing Requests for Proposals and bids for procurement; and purchasing lab equipment, supplies, and other materials. CDC also substantially increased funding from Program Year 3 from \$41 million to \$982 million.<sup>8</sup>*

## Indicator 2: State Public Health Budgets 2003-2004

**FINDING:** NEARLY ONE-THIRD OF STATES CUT THEIR PUBLIC HEALTH BUDGETS IN FY 2003-2004, AND FEDERAL BIOTERRORISM FUNDING WAS CUT BY OVER \$1 MILLION PER STATE IN 2004.

35 states and D.C. increased or maintained level funding for public health services from FY 2003 to 2004 (1 point)		15 states DECREASED funding for public health services from FY 2003 to 2004 (0 points)	
State	Percent Increase	State	Percent Decrease
Arkansas*	6%	Alabama	-14%
Arizona	9%	Alaska*	-15%
California	3%	Connecticut*	-6%
Colorado	13%	Georgia*	-2%
Delaware*	6%	Idaho*	-1%
D.C.*	3%	Indiana	-8%
Florida* (#)	4%	Kansas*	-3%
Hawaii	0.2%	Maryland (#)	-1%
Iowa*	4%	Massachusetts*	-3%
Illinois*	0.3%	New Hampshire (#)	-9%
Kentucky*	1%	New Jersey	-11%
Louisiana	13%	New York (#)	-10%
Maine*	1%	Pennsylvania*	-8%
Michigan* (#)	4%	South Carolina*	-0.4%
Minnesota*	3%	Wyoming	-0.4%
Mississippi*	3%		
Missouri* (#)	4%		
Montana*(+ +)	1%		
Nebraska	2%		
North Carolina*	23%		
North Dakota* (+ +)	0.1%		
Nevada	4.3%		
New Mexico*	0.4%		
Ohio	5%		
Oklahoma*	3%		
Oregon* (#) (+ +)	6%		
Rhode Island	7%		
South Dakota*	1%		
Tennessee	0.2%		
Texas (#)	8%		
Utah* (#)	14%		
Virginia*	0.2%		
Vermont*	1%		
Washington*	5%		
West Virginia	3.5%		
Wisconsin*	11%		

Source: Survey research by TFAH and Health Policy Tracking Service (HPTS).

\* – State cut its public health budget in FY 2003.

(#) – State spending analysis included health care, such as Medicaid, and/or funding for human services such as developmental disabilities.

(++) – State with biennium budget. TFAH allocated state's percentage change in public health spending over the biennium.

Note: Budget numbers for Wyoming are for state FY 2002 and 2003.

The analysis for this indicator is based on a review of state public health budgets conducted by the Health Policy Tracking Service (HPTS) at Netscan iPublishing, Inc., formerly of the National Conference of State Legislatures (NCSL), in conjunction with TFAH from August to November 2004. Appropriations for public health programs and for the agency, department, or division in charge of public health services were considered for state fiscal years 2003 to 2004.<sup>9</sup> States do not have a uniform definition of public health, so direct comparisons across states are unachievable.

In addition, although some states make public health funding numbers available separately, many do not. Public health dollars are often bundled with health care spending such as Medicaid, or human services funding such as disability services. Other states report total budgets that include federal funding dollars. This can lead to an overstatement of public health funding in those states. Several states who received a point for this indicator may not have actually increased their spending on public health programs.

Without separate reporting for public health, there is limited understanding of funding levels for these important programs. The Institute of Medicine (IOM) has recognized this problem and noted in a 2003 report that no reporting system for public health dollars exists and that there is virtually no data available on state public health expenditures and programs. The IOM urged the U.S. Department of Health and Human Services (HHS) to collect such information at the state, local, and federal level. In the past HHS has worked with partner organizations to create a reporting system, but to date, no such system exists. Without such a reporting system, it is difficult to assess the ability of the nation to provide critical public health services to every community.<sup>10</sup>

Further, communities should be given information to understand how their tax dollars are being spent. Such information would allow them to better communicate their public health funding priorities, interests, and concerns with policymakers, and hold them accountable.

Fifteen states cut their public health budgets between FY 2003-2004. The 2003 Ready or Not? report found that 32 states and D.C. had cut their budgets between FY 2002-2003. Eight states decreased their public health funding in both budget cycles (FY 2002-2003 and FY 2003-2004).

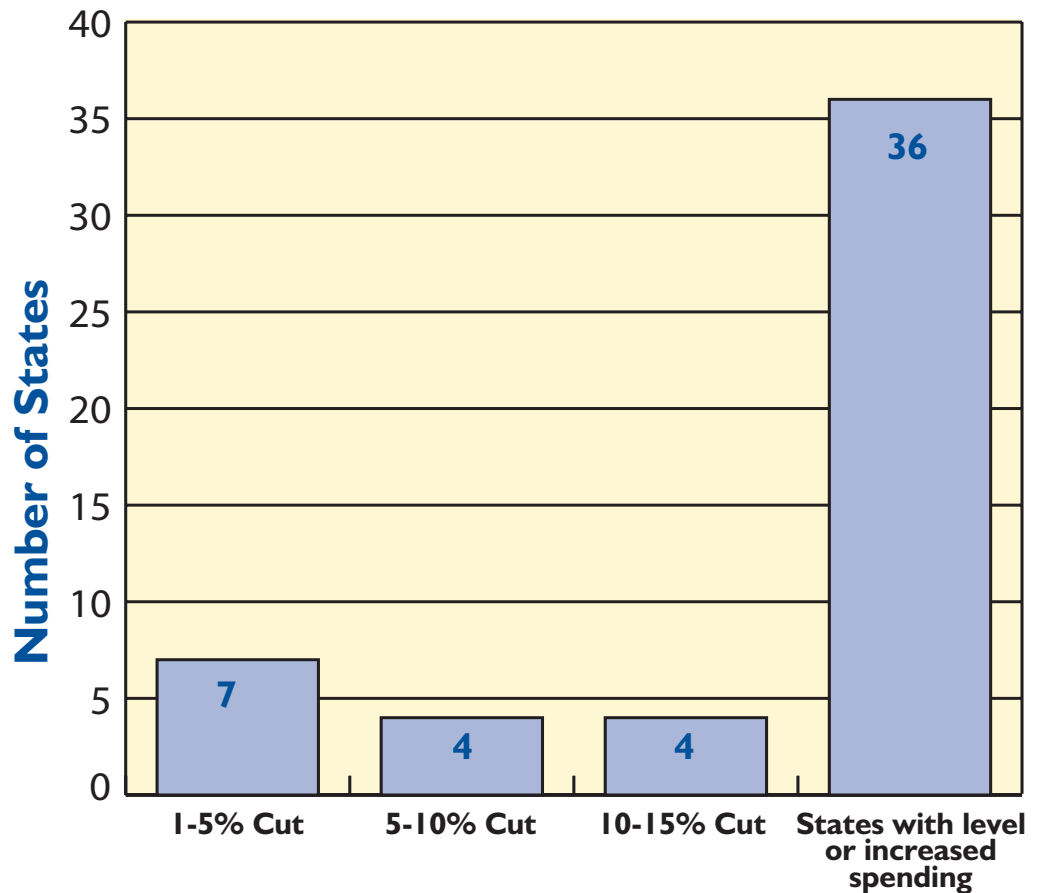
Additionally, all states received over a \$1 million decrease in their federal bioterrorism funding in FY 2004 due to an HHS plan to “reprogram” approximately \$55 million designated to go to the “Cities Readiness Initiative” and to support other federal programs, such as the BioSense initiative. (The Cities Readiness Initiative is discussed further in Chapter Two: Federal Programs Overview).

After three years of severe budget problems that began in FY 2001, state budgets are showing signs of improvement in 2004, according to a recent survey of states by the National Governors Association and the National Association of State Budget Officers.<sup>11</sup> The improving national economy has improved state revenues through increased corporate taxes and sales taxes. This trend may help to explain TFAH’s finding that fewer states cut their public health budgets compared to last year. However, as the national and state financial situations improve, given the gaps in public health programs and preparedness and resultant vulnerabilities to the health of communities, it is concerning that many states are continuing to cut funds to these programs. This analysis does not take inflation into account, so smaller increases may actually be level or even a decrease in real amounts.

Adequate and stable funding are important to providing essential public health services to communities in addition to attempts to make improvements. **Overall public health funding falls far short of the levels needed to support modernization efforts.**

The Public Health Foundation estimates that an infusion of an additional \$10 billion would be necessary to bring the public health system in the U.S. up to an acceptable level of preparedness.<sup>12</sup>

## Changes in States' Spending on Public Health For Fiscal Years 2002 to 2003



### ARE FEDERAL FUNDS SUPPLEMENTING OR SUPPLANTING STATE FUNDS FOR PUBLIC HEALTH? AN INSPECTOR GENERAL INVESTIGATES.

An August 5, 2004 audit report by the HHS Office of the Inspector General stated that, "Bioterrorism program funds, both original and supplemental, were to be used to augment current funding and focus on public health preparedness activities under the CDC Cooperative Agreement. The funds were not to be used to supplant existing Federal, State, or local funds for bioterrorism, infectious disease outbreaks, other public health threats and emergencies, and public health infrastructure within the jurisdiction. [CDC] Program Announcement 99051 states that '... cooperative agreement funds under this program may not be used to replace or supplant any current state or local expenditures.'"<sup>13</sup>

"In response to our questionnaire and during our onsite interviews, officials from all 17 awardees [included in the audit] asserted that Federal bioterrorism program funding had not supplanted existing State and local bioterrorism programs.... We did not validate their assertions."<sup>14</sup> The Inspector General is planning to do follow-up, in-depth reviews on this issue.



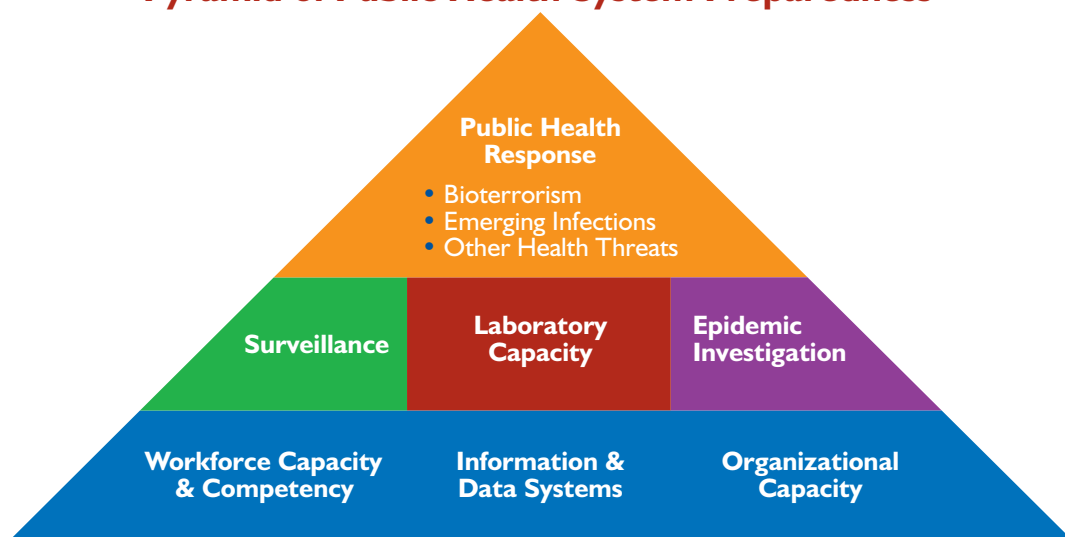
## B: PUBLIC HEALTH “BACK TO BASICS” INDICATORS.

While there has been significant improvement in some public health basics, including laboratory capacity, emergency communications, and planning, other fundamentals have been neglected.

An effective public health defense consists of many components, including:

- Coordination among the key health partners at the federal, state, and local levels;
- A trained and stable workforce, including epidemiologists, public health nurses, and frontline responders;
- Laboratories that can test and diagnose outbreaks and investigate their causes;
- Stockpiles of vaccines and antidotes, and systems to administer them to the public;
- Communications and emergency alert systems which provide information to the public and health workers; and
- Health tracking systems to monitor the health of communities, including rapid detection of outbreaks or attacks.

### Pyramid of Public Health System Preparedness



Source: Centers for Disease Control and Prevention

TFAH examined six “Back-to-Basics” indicators: state-local concurrence; workforce stability; laboratories’ bioterrorism capabilities; lab workforce training and capacity; dis-

ease tracking/surveillance, and quarantine authority. TFAH found troubling shortcomings in most of these six indicators.

## Indicator 3: State-Local Coordination

**FINDING:** COORDINATION BETWEEN STATE AND LOCAL HEALTH DEPARTMENTS IS STILL OFTEN STRAINED. THIRTY PERCENT OF STATES DID NOT OBTAIN “CONSENSUS, APPROVAL, OR CONCURRENCE” FROM LOCAL HEALTH DEPARTMENTS ABOUT HOW THEY USED FEDERAL BIOTERRORISM FUNDS IN ACCORDANCE WITH THE INTENT OF CDC GUIDANCE.

Local representatives in 35 states and D.C. responded that the intent of the concurrence language in the CDC guidance for use of federal bioterrorism funds was satisfactorily fulfilled (1 point)		Local representatives in 15 states responded that the intent of the concurrence language in the CDC guidance for use of federal bioterrorism funds was NOT satisfactorily fulfilled (0 points)
Alabama*	Montana	Arizona (+)
Alaska*	North Carolina (+)	California (+)
Arkansas*	North Dakota	Colorado (+)
Connecticut	Nebraska	Georgia (+)
Delaware*	New Hampshire*	Illinois (+)
D.C.	New Mexico	Indiana (+)
Florida	New York	Massachusetts (+)
Hawaii	Ohio	Maine (+)
Iowa (+)	Oklahoma (+)	New Jersey (+)
Idaho (+)	Pennsylvania	Nevada (+)
Kansas	Rhode Island*	Oregon
Kentucky	South Carolina*	Texas (+)
Louisiana*	South Dakota	Utah
Maryland	Tennessee (+)	Virginia (+)
Michigan	Vermont*	Wyoming (+)
Minnesota	Washington	
Missouri	Wisconsin (+)	
Mississippi*	West Virginia	

Source: National Association of County and City Health Officials (NACCHO).

\* – All or nearly all of the state’s local public health agencies are units of state government.

(+) – No concurrence process, documented in writing, is currently set up in the state.

Coordination among the different levels of government – federal, state, and local – is essential in the event of an emergency, particularly a major or widespread emergency.

The CDC’s “Continuation Guidance for Cooperative Agreement on Public Health Preparedness and Response for Bioterrorism” requires states to demonstrate “consensus, approval, or concurrence between state and local public health” officials and departments concerning the use of the federal bioterrorism funds.<sup>15</sup>

According to a survey conducted by the National Association of County and City Health Officials (NACCHO), local representatives in 35 of the states responded that the intent of the concurrence language was satisfactorily fulfilled. According to NACCHO, in 12 of these states, all or nearly all local public health agencies are units of state government. These states were therefore regarded as being in concurrence (and no respondents were contacted for the survey). Local representatives in 15 states responded that the intent of the concurrence language

was not satisfactorily fulfilled, indicating **that there are still challenges that exist in coordination between state and local agencies.**

The data for this indicator were gathered by NACCHO staff March-May 2004 and pertained to implementation of the HHS guidance for FY 2003 bioterrorism preparedness funding.<sup>16</sup>

The survey also asked if there was a process for consensus or concurrence within the state that was documented in writing, in such a way

that an independent reviewer could conclude accurately whether the state had fulfilled this requirement. Thirty-one states and D.C. either responded that there was such a process in place (or were among the 12 states where nearly all local public health agencies are units of state government and were regarded as being in concurrence). Nineteen states responded that there was not such a process in their state. (These states are designated in the chart above with a (+) mark.)

### TEN-STATE COLLABORATIVE INITIATIVE

An integrated national preparedness effort requires collaboration, best-practice sharing, and recognition that a bioterrorism emergency will transcend specific jurisdictional boundaries.

Recognizing this reality, 10 Midwestern and Plains states announced in August 2004 the beginning of an inter-state alliance to “provide mutual aid in the event of an act of bioterrorism or other public health emergency.”<sup>17</sup> The participating states are Colorado, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. The collaboration will result in the sharing of resources across state lines to strengthen the region’s workforce, laboratory, communications, and response capabilities.<sup>18</sup>

### CASE STUDY: California

A study released in June 2004 by the RAND Corporation examined the response capabilities of the California public health system to major disease outbreaks and bioterror threats. The study examined seven jurisdictions in the state, ranging from rural to urban, and comprising a range of demographics. The report characterized the state as “not adequately prepared to deal with a major disease outbreak and other significant challenges.”<sup>19</sup>

“There was wide variation in the readiness of California’s local public health agencies to detect and respond to a hypothetical smallpox attack... Commonly identified gaps included: lack of information systems, significant training needs for the public health workforce, inadequate numbers of public health professionals, lack of knowledge of potentially vulnerable or difficult-to-reach population subgroups, and lack of community involvement in planning.”<sup>20</sup>

### CASE STUDY: Gauging Progress in Kansas

Kansas conducted a study to gauge the progress of local health department readiness capabilities from 2002 to 2003.<sup>21</sup> They found improved preparedness in 89 of 103 participating counties.<sup>22</sup> However, despite the progress made, the study found that “large disparities persist among different areas of the state,” and that “many state focus area and critical capacity scores remain low.”<sup>23</sup>

The findings of the report are intended to help guide the state’s resource allocation and preparedness planning for future years. The study also offers an example of a model accountability initiative -- the type of feedback mechanism necessary to ensure smart spending to address areas of need.

## Indicator 4: Workforce

**FINDING:** IN NEARLY HALF OF THE STATES, 25 PERCENT OR MORE OF THE STATE PUBLIC HEALTH WORKFORCE WILL BE ELIGIBLE FOR RETIREMENT WITHIN THE NEXT FIVE YEARS, WHICH WILL LIKELY LEAD TO SEVERE STAFFING SHORTAGES. EIGHT STATES ARE FACING CRITICAL RETIREE LEVELS OF 40 PERCENT OR HIGHER.

28 states have 25 percent or less of their state public health workforce eligible to retire within the next five years (1 point)	22 states have more than 25 percent of their state public health workforce eligible to retire within the next five years (0 points)
Alabama (10%) Arizona (18%) Arkansas (25%) Colorado (19.4%) Delaware (17%) Florida (22.8%) Georgia (6.7%) Hawaii (8.5%) Idaho (12%) Iowa (14.4%) Kentucky (20%) Louisiana (20.1%) Maryland (20%) Maine (15%) Minnesota (19.4%) Mississippi (20%) Nevada (15%) New Hampshire (19%) New Jersey (15.7%) New Mexico (5%) North Carolina (12%) North Dakota (19%) South Carolina (23%) South Dakota (10%) Utah (22.9%) Vermont (19.5%) Virginia (18%) Wyoming (10.2%)	Alaska (40%) California (45%) Connecticut (37%) Illinois (26.5%) Indiana (48%) Kansas (41%) Massachusetts (37%) Michigan (26%) Missouri (27%) Montana (33%) Nebraska (45.9%) New York (45%) Ohio (30%) Oklahoma (27.5%) Oregon (32%) Pennsylvania (26%) Rhode Island (31%) Tennessee (38.8%) Texas (26%) Washington (32.6%) Wisconsin (41%) West Virginia (43%)

Source: Association of State and Territorial Health Officials (ASTHO).

Note: D.C. did not respond to the survey question.

The data for this indicator are from a survey conducted by ASTHO, and the results were included in an ASTHO and Council of State Governments report, [State Public Health Worker Shortage Report: A Civil Service Recruitment and Retention Crisis](#). The survey found that the average age of state public health workers is 46.6, compared to the national workforce average of 40.

The survey found that more than 25 percent of the state public health workforce in 22 states is eligible to retire within five years. Eight states are facing potential retiree levels of 40 percent or more: Indiana (48 percent); Nebraska (45.9 percent); California (45 percent); New York (45 percent); West Virginia (43 percent); Kansas (41 percent); Wisconsin (41 percent); and Alaska (40 percent).

## IMPENDING PUBLIC HEALTH WORKFORCE CRISIS

**The impending mass retirement of state public health personnel is a crisis in the making.** Replacing this mature and experienced workforce with an adequate number of well-trained public health professionals in federal, state, and local public health agencies creates a challenge for public health that is unlikely to abate in the foreseeable future. **The problems this engenders will likely dominate the public health policy agenda for the next generation.**

Over the next two decades, the number of retiring public health professionals will continue to grow as the baby boomers retire. Unfortunately, the number of young professionals positioned to take their place is expected to decline at the very same time due to substantially decreased birth rates and limited immigration. Without a vigorous recruitment and retention effort to make public health competitive with the private sector, state health agencies will struggle to meet post-9/11 demands and responsibilities with substantially less human capital. As a result, community programs may be scaled back, if not eliminated; agencies may suffer widespread “brain drain” as retiring employees leave with vast amounts of undocumented institutional knowledge; workforce stress levels may continue to increase; and the ability of public health agencies to react swiftly and effectively to threats may be jeopardized.

- A 2003 report by the Institute of Medicine (IOM) found that public health agencies are suffering shortages of public health nurses, environmental health specialists, health educators, epidemiologists, and administrative personnel. This report also found that the public health system currently lacks the resources and funding to offer salaries that compete with the private sector and is not training workers rapidly enough to replace retiring professionals.<sup>24</sup>
- A March 2003 survey by the Council of State and Territorial Epidemiologists echoed these concerns, finding almost half of the epidemiologists in state health departments have no training in their area of specialty.<sup>25</sup>
- An April 2003 report on bioterrorism preparedness by the federal General Accounting Office (now the U.S. Government Accountability Office) noted that “staffing shortages are a major concern” and that the demands on new emergency planning activities often divert time from the “usual activities” of public health workforce staffers.<sup>26</sup>

On July 7, 2004, Senators Charles Hagel (R-Neb.) and Richard Durbin (D-Ill.) introduced **“The Public Health Preparedness Workforce Act of 2004”** to help address this problem. No additional action was taken on this proposed legislation during the 108th Congress.

## PUBLIC HEALTH WORKFORCE IN ACTION

### September 11, 2001

“...Following the terrorist events of September 11, 2001... Within three days, CDC/ATSDR [Agency for Toxic Substances and Disease Registry] [re-]deployed 34 EISOs [Epidemic Intelligence Service Officers] and many other technical worker safety experts to New York alone and many more across other states. This marked the single largest deployment of EISOs to a single location in [the agency’s] 51-year history. Matched with immediate delivery of medical supplies using the Strategic National Stockpile and an assortment of other services, the nation witnessed the significance of public health’s role in protecting the health and safety of people during a terrorist event.”<sup>27</sup>

### 2004 Florida Hurricanes

In the aftermath of a series of devastating hurricanes to hit Florida in the Fall of 2004, the U.S. Public Health Service dispatched nearly 500 members of its Commissioned Corps to administer to the health and recovery of the region and its population. The Commissioned Corps is a uniformed service comprised of 8,500 public health professionals who travel throughout the nation and world in time of health emergencies.<sup>28</sup>



## Indicator 5: Laboratories – Bioterrorism Capabilities

**FINDING:** WHILE THE CAPABILITIES OF PUBLIC HEALTH LABORATORIES HAVE IMPROVED DRAMATICALLY IN THE PAST THREE YEARS, TWO-THIRDS OF THE STATES STILL REPORT THAT THEY DO NOT HAVE SUFFICIENT BIOTERRORISM RESPONSE CAPABILITIES (FACILITIES, TECHNOLOGY, AND/OR EQUIPMENT).

16 states report that they have sufficient Biosafety Level 3 (BSL-3) laboratory facilities (1 point)	34 states and D.C. report that they do NOT have sufficient Biosafety Level 3 (BSL-3) laboratory facilities (0 points)	
Connecticut Florida Georgia Idaho Indiana Kansas Minnesota ^ Montana ^ Nevada New Hampshire North Carolina South Dakota Tennessee Texas Virginia ^ Wisconsin	Alabama ^ Alaska Arizona Arkansas California Colorado Delaware D.C. Hawaii Illinois Iowa Kentucky Louisiana Maine Maryland Massachusetts Michigan Mississippi	Missouri Nebraska New Jersey New Mexico New York* North Dakota Ohio ^ Oklahoma Oregon Pennsylvania Rhode Island South Carolina Utah ^ Vermont Washington West Virginia Wyoming

Source: Fall 2004 survey by the Association of Public Health Laboratories (APHL).

^ – State reported sufficient capabilities in the 2003 survey.

\* – State did not respond to survey question.

Public health laboratories are central to response efforts in the event of biological, chemical, or radiological terrorist attacks. Lab professionals are charged with identifying agents used in an attack; these findings then drive containment, treatment, and clean-up strategies and decisions.

According to the CDC, “clinical lab personnel will most likely be the first ones to perform preliminary testing on clinical specimens from patients who have been intentionally exposed [to biological, chemical, or radiological terrorism]... and will play a critical role in facilitating rapid identification of [the hazardous substance].”<sup>29</sup>

The term “public health laboratories” actually refers to a “loose network of federal, state, and local laboratories that work in undefined col-

laboration with private clinical laboratories.”<sup>30</sup> There are approximately 2,000 public health labs in the U.S.

In a survey conducted by the Association of Public Health Laboratories (APHL) in the Fall of 2004, states were asked if they have sufficient “Biosafety Level 3” (BSL-3) laboratories, which requires enough equipment and staffing to be able to handle “infectious agents that may cause serious or potentially lethal disease as a result of exposure” via inhalation.<sup>31</sup>

Sixteen states indicated that they did have sufficient facilities, which is an increase from six last year (Alabama, Minnesota, Montana, Ohio, Utah, and Virginia). In 2004, three of these states, Alabama, Ohio and Utah, slid back into the “do not have sufficient facilities” category due to facility and funding shortages.

TFAH’s 2003 Ready or Not? report found 43 states indicating they had at least one laboratory equipped to handle critical biological agents and had a “Biosafety Level-3 (BSL-3) designation. **This demonstrates that labs have made significant progress in having minimal capacity, but that many more improvements and laboratories are still needed for them to be adequately prepared for the range of threats they are responsible for managing.**

Also, in lieu of bolstering laboratory preparedness in each state, a Laboratory Response Network (LRN) was established in 1999 to provide “surge capacity” support to

states. Though overseen by CDC, the LRN is an integrated network of approximately 120 labs, encompassing federal, state and local, veterinary, military, environmental, food testing, and international labs.<sup>32</sup> Through cooperative agreements and collaborative pooling of resources and personnel, the LRN is designed to provide emergency assistance and support -- during the anthrax attacks of 2001, a Florida LRN lab conducted over one million separate anthrax tests.<sup>33</sup> Additionally, some public health experts also note that resources from other arenas, such as police and Federal Bureau of Investigations laboratory facilities would also often be used in an emergency.

## Indicator 6: Laboratories -- Workforce and Testing Capabilities

**FINDING:** 29 STATES AND D.C. REPORT THAT THEY DO NOT HAVE ADEQUATE NUMBERS OF LABORATORY SCIENTISTS TO MANAGE TESTS FOR ANTHRAX OR THE PLAGUE IF THERE WERE TO BE A SUSPECTED OUTBREAK.

21 states report that they have adequate numbers of laboratory scientists to run tests for anthrax or the plague (1 point)		29 states and D.C. report that they do NOT have adequate numbers of laboratory scientists to run tests for anthrax or the plague (0 points)	
Alaska	Utah	Alabama	Massachusetts
Arizona	Vermont	Arkansas	Michigan
Colorado	Virginia	California	Minnesota
Connecticut	West Virginia	Delaware	Missouri
Kentucky	Wisconsin	D.C.	Nevada
Maine	Wyoming	Florida	New Mexico
Mississippi		Georgia	New York
Montana		Hawaii	North Dakota
Nebraska		Idaho	Ohio
New Jersey		Illinois	Pennsylvania
New Hampshire		Indiana	Rhode Island
North Carolina		Iowa	South Carolina
Oklahoma		Kansas	South Dakota
Oregon		Louisiana	Tennessee
Texas		Maryland	Washington

Source: Association of Public Health Laboratories (APHL) survey.

Public health laboratories are facing the same critical workforce shortages as rest of public health. This indicator helps demonstrate the severity of the problem. The anthrax attacks in Fall 2001 and the resultant “worried well” ripple-effect phenomenon overwhelmed labo-

ratories across the country with samples of white powder-like substances people feared might be anthrax and highlighted the importance of maintaining expert public health laboratory scientists.

However, according to data from a survey conducted by APHL in the Fall of 2004, nearly 60 percent of states and D.C. do not currently have adequate numbers of expert laboratory scientists on staff to be able to manage a single sus-

pected anthrax or plague outbreak. The problem would be compounded in the event of a wider scale emergency requiring “surge capacity” where the labs would be inundated with large numbers of suspected samples to test.

**“AS THE ANTHRAX ATTACKS DEMONSTRATED, THE NEW BIO-THREAT RESPECTS NO BORDERS AND KNOWS NO BOUNDARIES.”**

-- MAJ. GEN. LESTER MARTINEZ-LOPEZ, COMMANDING GENERAL, U.S. ARMY MEDICAL RESEARCH AND MATERIEL COMMAND<sup>34</sup>

An April 2002 Pentagon report (not released until March 2004) examined Lessons Learned from the Anthrax Attacks: Implications for U.S. Bioterrorism Preparedness, and found “in a sweeping assessment, [the] report identifies weaknesses in ‘almost every aspect of U.S. biopreparedness and response.’”<sup>35</sup>

### LABORATORIES -- CHEMICAL TERRORISM CAPABILITIES

**FINDING:** PREPARATION FOR A CHEMICAL ATTACK IS LAGGING BEHIND BIOTERROR PREPARATIONS. ALTHOUGH UP FROM ZERO LAST YEAR, ONLY FIVE LABS REPORT CAPABILITIES (FACILITIES, TECHNOLOGY, EQUIPMENT, AND/OR STAFFING) TO ADEQUATELY RESPOND TO A CHEMICAL TERRORISM THREAT.

Five states have sufficient capabilities to test for chemical terrorism (not a point indicator)	45 states and D.C. do NOT have sufficient capabilities to test for chemical terrorism (not a point indicator)	
California Michigan New Mexico New York Virginia	Alabama* Alaska* Arizona* Arkansas* Colorado* Connecticut* Delaware* D.C.* Florida* Georgia* Hawaii* Idaho* Illinois* Indiana* Iowa* Kansas* Kentucky Louisiana* Maine* Maryland* Massachusetts* Minnesota* Mississippi*	Missouri* Montana Nebraska* Nevada* New Hampshire* New Jersey* North Carolina* North Dakota* Ohio Oklahoma Oregon Pennsylvania* Rhode Island* South Carolina* South Dakota* Tennessee* Texas* Utah* Vermont* Washington* West Virginia* Wisconsin* Wyoming

Source: CDC’s “Laboratory Preparedness for Emergencies: Laboratory Network for Chemical Terrorism”<sup>36</sup>

\* – States with at least one “Tier 2” laboratory at this level (41 labs in 39 states and D.C.). (See definition of Tier 2 in the text below).

## THE CHEMICAL THREAT

*“CDC has identified over 60 toxic substances that could be used as chemical weapons by terrorists.”<sup>37</sup>*

According to the GAO, “chemical facilities may be attractive targets for terrorists intent on causing harm and loss of life. Many facilities exist in populated areas where a chemical release could threaten thousands. EPA reports that 123 chemical facilities located throughout the country have toxic ‘worst case’ scenarios where more than a million people in the surrounding area could be at risk of exposure to a cloud of toxic gas if a release occurred. To date, no one has comprehensively assessed the security of chemical facilities.”<sup>38</sup>

In November 2002, the APHL conducted a survey that found that on a 1-to-10 scale measuring preparedness for a chemical incident (with 10 being the most prepared), 34 state labs rated themselves at a “4” or below, while 14 others rated themselves as a “5” or “6.”

In June 2003, the executive director of the APHL commented that “if we have to respond to a chemical terrorism event, it will be a train wreck. Only eight state public health laboratories have a chemical state terrorism plan in place. We don’t have a national plan, or testing methods, or a lead agency for many of the laboratory activities that will be needed when a crisis occurs.”<sup>39</sup>

In the June 2003 TFAH report, Public Health Laboratories: Unprepared and Overwhelmed, one state lab director reported that in the event of a chemical attack, “proper identification of the [chemical] agent [used], which drives treatment, containment, and clean-up decisions, will be haphazard and lengthy.”<sup>40</sup>

States were restricted from using their FY 2002 bioterrorism preparedness funds for chemical terrorism preparedness activities. However, this changed in FY 2003 when the CDC allowed states to use these funds to also support “Focus Area D activities, which develop laboratory chemical testing capabilities. But no new funds were allocated to support these additional improvements, so they were competing for existing resources. In most cases,

these resources were already devoted to other areas.

Since then, there have been dramatic improvements. According to the CDC, five states now have emergency chemical response capabilities. These states were targeted to be the first labs to gain chemical testing capabilities and to serve as “surge capacity” facilities to support the CDC in different regions of the U.S. Five additional states have been targeted for a second phase for capacity building; however, progress in this phase has been stalled due to inadequate resources.

There are also now 62 state, territorial, and metropolitan public health laboratories participating in a “chemical laboratory response network.” Similarly to bioterrorism preparedness capabilities, participating labs receive cooperation and shared resources from other participating states. All of these labs have developed response plans and have the capability to collect, package, and ship possible chemical terrorism specimens from hospitals to the CDC for analysis. In addition, 41 laboratories now have the ability to test limited types of agents in blood or urine samples, such as cyanide or toxic metals.

Also similar to bioterrorism preparedness, many public health experts note that resources from other arenas, such as HAZMAT capabilities and private, FBI, police, defense, energy, and environmental protection laboratories would also often be used in an emergency.

## TESTING HUMANS FOR EXPOSURE TO CHEMICALS

*The ability to test people who may have been exposed to a chemical terrorist attack or other chemical exposures is called “biomonitoring” in the scientific community.*

*Biomonitoring is the testing of human samples, such as blood or urine, for chemicals or their metabolites. This capability is central to the core functions of an effective public health laboratory. Without biomonitoring, the diagnosis and treatment of chemical exposures can be delayed.*

*Biomonitoring is also an important tool in disease prevention. Biomonitoring helps identify and measure which chemicals actually get into people’s bodies and determine any potential links to environmental factors.<sup>41</sup> For instance, while advancing chemical terrorism preparedness capabilities, the public health laboratories in Maine also are able to use the equipment to screen expectant mothers for mercury levels in their bloodstream, which can be elevated to unsafe levels due to frequent consumption of some types of fish.*

## Indicator 7: Disease Tracking/Surveillance

**FINDING:** TWO-THIRDS OF THE STATES DO NOT USE THE INTERNET TO COLLECT DISEASE OUTBREAK INFORMATION BY NATIONAL STANDARDS, CAUSING SERIOUS DELAYS IN REPORTING AND RENDERING RAPID OR EARLY WARNING OF DISEASE THREATS DIFFICULT.

18 states do have a disease tracking system in day-to-day use where information can be collected and monitored electronically via the Internet (1 point)	32 states and D.C. do NOT have a disease tracking system in day-to-day use where information can be collected and monitored electronically via the Internet (0 points)	
Alabama Colorado Florida Georgia Illinois Kansas Louisiana Michigan Missouri Nebraska New Jersey New York North Dakota Ohio Pennsylvania South Carolina Tennessee Texas	Alaska Arizona Arkansas* California Connecticut Delaware D.C. Hawaii Idaho* Indiana Iowa Kentucky Maine Maryland Massachusetts Minnesota Mississippi	Montana Nevada* New Hampshire New Mexico North Carolina Oklahoma Oregon* Rhode Island South Dakota Utah Vermont* Virginia* Washington West Virginia Wisconsin Wyoming

Source: CDC.

\* – State is expected to go live with the NEDSS Base System in January 2005.

Delivering effective public health services depends on timely and reliable information. Health departments cannot protect people from existing or emerging health threats, such as a new disease outbreak, without the right information.

Disease surveillance, also known as health tracking, involves the ongoing, systematic collection, analysis, and interpretation of health-related information. Disease surveillance provides statistics on illness, disability, and death from acute and chronic conditions; injuries; personal, environmental, and occupational risk factors; preventive and treatment services; and program costs.

Health tracking is essential for prevention efforts by functioning as an early warning signal for new and emerging conditions and by finding connections to possible causes and contributing factors for disease. When data are not available or are missing, health problems may not be identified in high-risk populations or interventions may not be timely. Disease surveillance also could be valuable for early detection of disease outbreaks resulting from a bioterrorist attack.

Effective surveillance involves active cooperation among federal, tribal, state, and local health care agencies, private organizations, and the general public. Federal agencies take the lead in establishing national standards for col-



lecting public health data. However, these agencies are only a fraction of the many partners that collect, analyze, and translate the data.

**The lack of timely data causes delays that are highly problematic, particularly in situations that warrant immediate public health investigations and interventions,** such as a possible foodborne disease outbreak.

Within the CDC's efforts to create an overarching Public Health Information Network, the agency relies on the National Electronic Disease Surveillance System (NEDSS) to integrate a variety of surveillance activities and the reporting systems for diseases such as HIV/AIDS, tuberculosis, vaccine-preventable diseases, and infectious diseases. The system also is intended to facilitate more accurate and timely disease reporting to the CDC and state and local health departments.

The NEDSS system allows clinicians, laboratories, or local health department investigators to enter data on the Web and input the data directly into a health department database. This approach makes information on a reported case available to health departments without the delays encountered using other data entry systems or the traditional mail-in forms.

*"[The] NEDSS initiative created standards to facilitate data collection, management, transmission, analyses, access and dissemination. Using NEDSS, CDC/ATSDR [Agency for Toxic Substances and Disease Registry] will promote the use of data and information system standards to advance the development of efficient, integrated, and interoperable surveillance systems at federal, state, and local levels. A primary goal of NEDSS is the ongoing, automatic capture and analysis of data that are already available electronically. NEDSS will take advantage of current IT advances and the use of data standards to improve our ability to monitor public health conditions of importance."*<sup>42</sup>

According to data from the CDC, only 18 states currently perform surveillance using the possible Internet-data entry system. Six additional states -- Arkansas, Idaho, Nevada, Oregon, Vermont, and Virginia -- are expected to go live with the NEDSS Base System in January 2005.

Additionally, according to the CDC, 20 states and New York City have mechanisms that allow for automatic electronic laboratory result reporting (ELR) about communicable diseases from clinical diagnostic labs to state and local health departments. This approach has been shown to increase the timeliness of reports (from 26 days to three to four days) and the number of cases being tracked by two to three times. For the states that have adopted NEDSS, there are also concerns for maintaining a trained workforce that is able to interpret data and measure its use and impact.

Experts have called for increased NEDSS funding and specific federal mandates to boost state readiness and for ending the fragmented usage described above. NEDSS funding was \$28.7 million for both FY 2003 and FY 2004. Funding for NEDSS was reduced to \$24.5 million in FY 2005.<sup>43</sup> Some public health officials argue that other tracking systems would be preferable to NEDSS, however, most generally agree about the strong need for standards and interoperability and that there needs to be greater urgency placed on expediting achieving such a system nationwide.

According to the GAO, "Some state officials told us that even though they have developed electronic systems that comply with the NEDSS standards, they have not been able to transfer data to CDC using their systems because the systems are still not compatible. CDC officials said that the national industry standards on design, development, and data transport have continued to evolve and they are working with the states to receive data from those who opted to use the NEDSS architecture to develop their own compliant software."

<sup>44</sup>

## Indicator 8: Quarantine Authority

**FINDING:** 49 STATES AND D.C. HAVE ADEQUATE STATUTORY AUTHORITY TO QUARANTINE IN RESPONSE TO A HYPOTHETICAL BIOTERRORISM ATTACK.<sup>45</sup>

49 states and D.C. have adequate statutory authority to quarantine in response to a hypothetical bioterrorism attack scenario (1 point)	1 state does NOT have adequate statutory authority to quarantine in response to a hypothetical bioterrorism attack scenario (0 points)
Alabama* Arizona* California Colorado Connecticut* Delaware* D.C.* Florida* Georgia* Hawaii* Idaho* Illinois* Indiana* Iowa* Kansas Kentucky Louisiana* Maine* Maryland* Massachusetts* Michigan* Minnesota* Mississippi Missouri Montana*	Nebraska Nevada* New Hampshire* New Jersey New Mexico* New York North Carolina* North Dakota Ohio* Oklahoma* Oregon Pennsylvania* Rhode Island* South Carolina* South Dakota* Tennessee* Texas Utah Vermont Virginia* Washington ^ West Virginia* Wisconsin* Wyoming* Alaska

Source: TFAH with analytic and research support from the Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities.

\* – State has statutory quarantine powers that may be enhanced or capable of expedited performance during general or public health emergencies.

Note: Washington state has regulatory versus statutory quarantine authority.

See Appendix C for caveats to the quarantine analysis.

TFAH, in conjunction with the Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities, developed a brief, test case fact pattern for a hypothetical bioterrorist attack.

### TEST CASE HYPOTHETICAL FACT PATTERN:

A hotel is hosting an annual, three-day meeting of business persons, many of whom arrive and stay at the hotel from out-of-town locations. On the second day of the meeting, public health authorities receive very credible information that suggests that an infectious agent has intentionally been released at the hotel at a specific time. The fast-acting, potentially deadly agent is easily transmitted person-to-person via airborne and other environmental means. Can state or local public health authorities, with assistance from public safety authorities, immediately quarantine the occupants within the hotel?

TFAH and the Center examined each state's quarantine statutes concerning its application to the scenario and found that 49 states and D.C. have sufficient statutory authority to use quarantine powers during the described event. Alaska presently lacks adequate quarantine statutory authority.

This analysis is based solely on information about the states' existing quarantine statutes collected by Health Policy Tracking Service (HPTS) at NETSCAN iPublishing Inc. for TFAH, as well as the most current legislative tracking of the Model State Emergency Health Powers Act and the Turning Point Model State Public Health Act available through the Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities.<sup>46</sup>

This analysis responds only to whether the state may quarantine persons within a defined setting because they may have been exposed to an infectious condition. It does not address the state's capacity to isolate persons who are known to be infected.

Isolation and quarantine are two common public health strategies designed to protect the public by preventing exposure to infected or potentially infected individuals. Generally, isolation refers to the separation of people who are known to be infected with a contagious condition from persons who are not infected, or the restriction of their movement to stop the spread of that illness. Isolation is a standard procedure used in hospitals for patients with tuberculosis and certain other infectious diseases.

In contrast, quarantine usually refers to the separation and restriction of movement of people who are not yet ill but who have been exposed to an infectious agent and are, therefore, potentially infectious. Quarantine of exposed individuals, like isolation, is intended to stop the spread of infectious disease.

Mass quarantine was common in the United States in the 19th and early 20th-centuries when outbreaks of smallpox, scarlet fever, cholera, and tuberculosis occurred more frequently than today. The practice of quarantine raises significant issues related to balancing civil liberties with communal goods. The U.S. Supreme Court upheld government's ability to quarantine individuals in 1909, saying quarantine "does not thwart constitutional rights, since individuals have no right to harm others."<sup>47</sup>

In recent decades, large-scale quarantines have largely disappeared. A 2001 study in *The Journal of the American Medical Association* found no instance of large-scale quarantine within U.S. borders since the "Spanish" flu of 1918.<sup>48</sup> As a result, "professional medical and public health familiarity with the practice of quarantines has faded."<sup>49</sup>

That nearly every state has quarantine statutory authority to respond to the posed hypothetical scenario is partially the result of greater legislative attention since 9-11. In the wake of the tragedies, there was a great deal of uncertainty and calls for modernizing quarantine laws were widespread. However, **some public health officials express concern that states are still unprepared for implementing quarantine.**

On April 4, 2003, President George W. Bush signed an executive order adding severe acute respiratory syndrome (SARS) to the list of quarantinable communicable diseases under the Public Health Service Act. This authority would only be used if someone posed a threat to public health and refused to cooperate with a voluntary request.<sup>50</sup> Agricultural quarantines are more common in the U.S., an example being the 2003 quarantine of cow herds considered potential carriers of Mad Cow disease.<sup>51</sup>

The widespread emergence of SARS in Toronto forced Canadian authorities to wrestle with the “real-world” impact of modern quarantine, in addition to the important legal and medical implications. Among the logistical difficulties associated with quarantine include enforcement and compliance issues -- how to account for individual behavior among a large and diverse population.

A recent journal article studying the impact of Toronto’s SARS quarantine during the 2003 outbreak identified individuals’ stress, boredom, and wage concerns; communications difficulties among the large-scale population and between jurisdictions; and difficulty monitoring compliance as significant challenges to the quarantine’s intent.<sup>52</sup> The study also found that, among the population that complied with quarantine, concern over transmitting the disease was a considerably more popular rationale for compliance than fear of penalties or enforcement measures.<sup>53</sup>

## COMMUNICATIONS CAPABILITIES

The CDC funds the Health Alert Network (HAN), which is a system for electronic communication among health departments and the CDC using the Internet. The information transmitted over the network allows state, local, and federal health departments to rapidly share details about current, pending, or possible threats.

According to TFAH’s December 2003 report, *Ready or Not? Protecting the Public’s Health in the Age of Bioterrorism*, approximately 89 percent of the U.S. population is linked to the HAN via a continuous, high-speed Internet connection.

The next stage is to ensure rapid communications with key health partners, such as laboratories, hospitals, and pharmacies. In May 2004, the CDC found that states still had considerable room for improvement in emergency outreach; only eight percent of states were able to contact their partners within 20 minutes, while 55 percent could contact most partners and 37 percent could contact only some partners in that same time period.

### **Example of the Use of HAN: Public Health Precautions Related to Mass Trauma**

From an official CDC Health Advisory distributed by the HAN in March 2004:

“Based on recent events in Spain [the Madrid train bombings] and Pakistan, clinicians, hospitals, and public health agencies should ensure that they are prepared to respond to mass trauma related to terrorist bombings... Mass trauma is defined as the injuries, death, disability, and emotional stress caused by a catastrophic event, such as a large-scale natural disaster or a terrorist attack. In the event of mass trauma, clinicians, hospitals, and public health agencies should be prepared to treat injuries, disability, and psychological (individual and community) stress. Clinicians, hospitals, and public health agencies need to also be prepared for a large number of fatalities.”<sup>54</sup>

## C: “ALL-HAZARDS” INDICATORS

**Bioterrorism funds are helping to enhance other public health capabilities, but many gaps remain in the states’ ability to respond to unexpected natural or accidental emergencies.**

“All-hazards” indicators reflect how recent bioterrorism funding has impacted traditional public health functions such as disease and injury prevention, environmental health, food and water safety, community health promotion, and diagnosis and response measures.

The public health system faces a diverse range of challenges and threats. However, there is significant overlap between bioterrorism readiness and preparedness for traditional public health functions. Seasonal and pandemic flu response capabilities are examples of how planning and services for traditional functions are related to bioterrorism preparedness.

Prior to 2001, officials concerned about bioterrorism regarded pandemic flu planning as a good model for bioterrorism preparedness. Now, the reverse is the case. Bioterrorism planning is emphasized, and it is considered as a model for pandemic flu preparedness. The onset of either type of crisis would require rapid

and collaborative mobilization to diagnose, respond to, and contain the emergency. ASTHO refers to the capabilities required for effective bioterror response as the “scaffolding” upon which the unique capabilities required to deal with pandemic flu can be built.

Annual flu vaccinations also demonstrate a central preparedness function. The seasonal nature of the flu makes it a somewhat predictable event, yet the vaccine production problems and the ongoing difficulties in vaccinating 20 to 40 percent of one of the most at-risk populations for flu complications (adults 65 years and older) help demonstrate possible similar problems that could arise in exponential proportions during a bioterror event or major disease outbreak. The emergence of a deadly form of avian flu in Asia combined with the U.S. flu vaccine shortage in Fall 2004 illustrates the importance of moving beyond a siloed approach to bioterrorism planning.

### EXAMPLES OF PUBLIC HEALTH CRISES/EVENTS

#### AUGUST 2003-DECEMBER 2004

- Tornadoes in the Midwest.
- Hurricanes hit points along the Southeastern coast, including Florida, Louisiana, Alabama, Mississippi, North Carolina, Virginia, Maryland, South Carolina, and D.C.
- West Nile virus hit Southwest and West Coast hard for the first time.
- First case of Mad Cow disease discovered in the U.S.
- Lead levels in the Washington, D.C., water supply exceed maximum U.S. Environmental Protection Agency (EPA) recommendations, according to announcements.
- Norovirus outbreak in Maryland.
- Newhouse News Service article investigating a previously unreported memo about improvements needed for preparedness. The memo, written by CDC Director Julie Gerberding at the request of Senator Arlen Specter (R-Pa.), estimated that with “robust” funding, the CDC could “prevent 43,000 amputations, 165,000 kidney failures and more than 10,000 cases of eye disease among diabetics each year, reduce traffic deaths by 9,000 annually, halve the 40,000 new HIV cases that occur each year, reduce alcohol-exposed pregnancies by two-thirds, and eliminate childhood lead poisoning by 2010.”<sup>55</sup>
- Announcement that half of expected flu vaccine for the U.S. would not be available this season.

“CDC/ATSDR is committed to leading the public health effort to protect people from all forms of public health hazards. By investing in resources and activities that improve public health... we ensure that as emergency public health capacity improves, non-emergency public health improves as well.”<sup>56</sup>



## Indicator 9: Flu Vaccination Rates for Seniors

**FINDING:** THREE-QUARTERS OF THE STATES AND D.C. INCREASED FLU VACCINATION RATES FOR ADULTS 65 YEARS AND OLDER, A LEADING AT-RISK GROUP, FROM 2002 TO 2003.

38 states and D.C. increased flu vaccination rates for adults 65 years and older from 2002 to 2003 (1 point)			12 states did NOT increase flu vaccination rates for adults 65 years and older from 2002 to 2003		
State and Increase %	2002 %	2003 %	State and Decrease %	2002 %	2003 %
Alabama (+5.4%)	64.8	70.2	Alaska (-3%)	69.5	66.5
Arkansas (+2%)	69	71	Arizona (-0.8%)	69.7	68.9
California (+1%)	71.5	72.5	Delaware (-1.5%)	71.5	70
Colorado (+0.9%)	73.3	74.	Indiana (-0.2%)	66.3	66.1
Connecticut (+2.9%)	71.4	74.3	Michigan (-0.2%)	67.7	67.5
D.C. (+4.3%)	58.7	63	Nevada (-0.3%)	60.3	60
Florida (+8.9%)	57	65.9	New Jersey (-1.9%)	69.	67.2
Georgia (+7.7%)	59.3	67	North Dakota (-0.9%)	73.9	73
Hawaii (+2.5%)	73.9	76.4	Pennsylvania (-1.4%)	70.5	69.1
Idaho (+5.2%)	65.1	70.3	South Carolina (-0.1%)	69.4	69.3
Illinois (+2.2%)	61.1	63.3	Tennessee (-2.5%)	71.	69.1
Iowa (+4%)	73.5	77.5	Wisconsin (-1.9%)	74	72.1
Kansas (+2.2%)	68.	70.8			
Kentucky (+3.4%)	65.7	69.1			
Louisiana (+11%)	57.3	68.3			
Maine (+1%)	73.8	74.8			
Maryland (+2.5%)	65.9	68.4			
Massachusetts (+2.3%)	72.6	74.9			
Minnesota (+3.7%)	76.6	80.3			
Mississippi (+6%)	63	69			
Missouri (+1.3%)	68.6	69.9			
Montana (+5.1%)	67.7	72.8			
Nebraska (+5.3%)	68.3	73.6			
New Hampshire (+1.6%)	72.3	73.9			
New Mexico (+5.8%)	66.6	72.4			
New York (+3.4%)	64.6	68			
North Carolina (+0.6%)	68.2	68.8			
Ohio (+1.4%)	66.6	68			
Oklahoma (+3.1%)	72.7	75.8			
Oregon (+2.5%)	68	70.5			
Rhode Island (+2.6%)	73.	76.2			
South Dakota (+3.7%)	72.4	77.9			
Texas (+6.7%)	61	67.7			
Utah (+3.7%)	71.1	74.8			
Vermont (+0.5%)	73.	74.1			
Virginia (+4.3%)	65.3	69.6			
Washington (+8.4%)	65	73.4			
West Virginia (+3.3%)	65.8	69.1			
Wyoming (+2%)	70.6	72.6			

Source: CDC, BRFSS data 2003 and 2002. Data from 2003 are the most recent CDC data.

According to the CDC, five-to-20 percent of Americans contract the flu, more than 200,000 people are hospitalized from flu complications, and approximately 36,000 people die from the flu each year.<sup>57</sup>

People in certain at-risk groups are more vulnerable to complications from the flu, including children six months to two years old and adults 65 years and older. In the 2000-2001 flu season, adults 65 years and older accounted for more than 90 percent of deaths.<sup>58</sup> The CDC annually recommends that high-risk populations and their caretakers receive a vaccine at the beginning of the flu season.

The data for this indicator are part of the CDC's Behavioral Risk Factor Surveillance System (BRFSS), an annual telephone survey of adults over 18 years old conducted by the health departments of all states and D.C. The BRFSS is the primary source of infor-

mation for states and the nation on the health-related behaviors of adults.<sup>59</sup>

Between 2002-2003, three-quarters of the states and D.C. improved their vaccination levels, with the most dramatic increases coming in Louisiana (11 percent), Florida (8.9 percent), and Washington (8.4 percent).

This indicator measured improvements; however, the baseline vaccination levels vary significantly between states. The states with the highest percentage of adults 65 years and older vaccinated in 2003 were Minnesota (80.3 percent), South Dakota (77.9 percent), and Iowa (77.5 percent.) The states with the lowest percentages were Nevada (60 percent), D.C. (63 percent, although it had a 4.3 percent increase in vaccination rates for adults 65 years and older from 2002 to 2003), and Illinois (63.3 percent).

### FLU VACCINE CRISIS OF 2004

The October 2004 announcement that approximately half of the expected flu vaccine for the U.S. would not be available heightened public awareness about the fragility of the public health system's vaccine development system and national readiness for a fast-moving influenza epidemic.

In early October, Chiron Corporation announced it would not be able to meet demand for its flu vaccine after problems at a British plant halted production of millions of doses. The dose shortage highlighted the fact that the U.S. relies on very few manufacturers to deliver the country's "projected need of 100 million doses."<sup>60</sup> As a result, CDC officials were forced to encourage changes in the nation's distribution procedures for the flu vaccine supply, reserving doses only for the populations most in need.

The shortage resulted in a focus of media and public attention on the issue, long lines at health clinics around the country, and calls for incentives, liability reforms, and other measures to encourage a broader range of vaccine producers.

## VACCINES: U.S. AGAINST THE WORLD?

The 2004 flu vaccine shortage underscored two problems: The U.S. is reliant on international vaccine manufacturers and is in “competition” with other nations for a limited supply. This problem would be amplified significantly during a pandemic flu crisis or another severe infectious disease outbreak, when other countries would be seeking limited supplies of vaccines.

As a result, initiatives such as the Global Alliance for Vaccines and Immunization, an international coalition to support the production and delivery of children’s vaccinations, are important models for potential widespread international vaccine collaboration during times of emergency.<sup>61</sup> The need for collaboration, along with reforms to encourage more vaccine producers through incentives and liability reforms, are bound to gain increased attention and relevance as planners seek to prevent a repeat of 2004.

## WHY ARE VACCINES IMPORTANT?

Vaccines are often cited as one of the top public health accomplishments of the 20th century.<sup>62</sup> Immunizations are very cost-effective; prevention of illness saves direct and indirect medical costs.

According to the CDC, every dollar spent on immunizations, including flu vaccinations, saves \$6.30 in direct medical costs, with an aggregate savings of \$10.5 billion. When including indirect costs to society (a measurement of losses due to missed work, death, and disability) as well as direct medical costs, the CDC found that every dollar spent on immunizations saves \$18.40, producing an aggregate savings of \$42 billion.<sup>63</sup>

Flu vaccines similar to those currently in use were first introduced during the 1940s. “Since that time, they have been improved in terms of their standardization and purity. Throughout, they have been produced by inoculating the current influenza virus strains into embryonated hens’ eggs for vaccine production.”<sup>64</sup> The influenza vaccine available each year is carefully engineered to respond to the particular strains of flu judged most likely to emerge based on projections and prior outbreaks’ genetic composition. However, the creation of a vaccine to combat a particular flu season is an annual “best guess” by virologists. It takes approximately six to eight months to develop yearly seasonal flu vaccines or vaccines for new strains of the disease.

In 1976, 37 U.S. companies manufactured vaccines. In 2002, there were only three. Reasons given for the decline are mostly economic. Vaccine production can take decades of research and development and, according to industry estimates, costs about \$800 million per licensed vaccine. Concerns about potential liability impact manufacturers’ decisions to avoid vaccine production, especially after the huge compensation claims that followed the swine flu immunization program in the mid-1970s. Some companies also cite insufficient market size as a reason to stay out of the vaccine market, due to the current low incidence of many diseases in the U.S., such as malaria and tuberculosis. Providing liability protection for vaccines against bioterrorism threats such as smallpox is separate from the existing liability protection under the National Vaccine Injury Compensation Program created in 1988 for individuals who may be thought to be injured by routine childhood vaccines.

## Indicator 10: Pandemic Flu Plans

**FINDING:** MORE THAN HALF OF THE STATES HAVE PUBLICLY AVAILABLE PANDEMIC FLU PLANS IN PLACE, A SIGNIFICANT INCREASE FROM 13 STATES IN 2003.

30 states report having a publicly available plan for confronting the emergence of a new lethal strain of influenza, often referred to as “pandemic flu” (1 point)		20 states and D.C. did NOT have a publicly available plan for confronting the emergence of a new lethal strain of influenza, often referred to as “pandemic flu” (0 points)	
Arizona*	Missouri*	Alabama	South Dakota
California*	Montana	Alaska	Texas
Connecticut	Nebraska	Arkansas	Utah
Delaware	New Hampshire*	Colorado	Vermont
Florida*	New Jersey*	D.C.	West Virginia
Georgia*	North Carolina	Hawaii	Wyoming
Idaho	North Dakota	Illinois	
Indiana*	Ohio	Iowa	
Kansas	Oregon	Louisiana	
Kentucky	Pennsylvania	Maine	
Maryland*	South Carolina*	Nevada	
Massachusetts*	Tennessee*	New Mexico	
Michigan	Virginia*	New York	
Minnesota*	Washington	Oklahoma	
Mississippi	Wisconsin	Rhode Island	

Source: CDC and survey of states conducted by TFAH.

\* – State received a point for having a pandemic flu plan in the 2003 Ready or Not? report.

The arrival of a major influenza pandemic would cause mass casualties and disorder to the U.S. health and economic systems. Today, a pandemic flu outbreak in the U.S. could cause an estimated 88,000 to 227,000 deaths<sup>65</sup> and the estimated economic impact would be “\$71.3 to \$166.5 billion, excluding disruptions to commerce and society.”<sup>66</sup> (See the estimated state death and hospitalization rates in the chart below).

The seasonal flu that emerges each year is typically a strain of the virus similar to previous strains. However, new strains can emerge that people are less resistant to, leading to more severe levels of illness and to a “pandemic” of the disease. It would require scientists approximately six months or more to develop and produce a vaccine for a new strain of the flu. The “Spanish” flu pandemic of 1918 killed 550,000 Americans in 10 months and 30 million people worldwide.<sup>67</sup>

New strains of infectious disease often emerge from animal populations, such as birds or pigs. The recent emergence of the avian or “bird” flu, given the ability of this specific strain of influenza to exchange genes with a human flu virus, has public health officials worried about the emergence of a pandemic capable of causing chaos and casualties in the hundreds of thousands.<sup>68</sup>

Most public health officials call the emergence of a new lethal strain of the flu “an inevitability.”<sup>69</sup> During a news conference announcing his resignation, departing HHS Secretary Tommy Thompson called a pandemic flu “a really huge bomb out there that could adversely impact on the health care of the world.”<sup>70</sup> Despite these concerns, 20 states and D.C. **do not** have publicly available plans in place to respond to a pandemic flu outbreak that meet recommended

guidelines. In 2003, only 13 states had plans meeting recommended guidelines. The public availability of the plans is important to ensure that members of the public and other stakeholders (such as hospitals and doctors) who would be central to the

response efforts are well-informed, prepared, and integrated into planning. The data for this indicator are from the CDC and self-reports by state health departments to TFAH. There was no analysis performed to evaluate the quality of the plans.

“AS CHAIRMAN OF THE GOVERNMENT REFORM COMMITTEE, I HELD A HEARING [IN FEBRUARY 2004] TO EXAMINE WHAT ACTIONS AND PLANNING PROCEDURES HAVE BEEN TAKEN BY FEDERAL, STATE, AND LOCAL HEALTH OFFICIALS TO HANDLE THIS YEAR’S FLU SEASON AND OTHER COMMUNICABLE DISEASE OUTBREAKS. THE MAIN QUESTION I ASKED WAS, ‘ARE WE READY FOR A LARGER SCALE OUTBREAK, WHETHER IT’S A FLU EPIDEMIC OR A BIOTERRORIST ATTACK?’ WHILE I DON’T WANT ANYONE TO PANIC, THE ANSWER IS SIMPLY NO.”

-- U.S. REP. TOM DAVIS (R-VA.)<sup>71</sup>

“THE PUBLIC HEALTH RESPONSE TO OUTBREAKS OF EMERGING INFECTIOUS DISEASE SUCH AS SARS COULD BE IMPROVED BY THE COMPLETION OF FEDERAL AND STATE INFLUENZA PANDEMIC RESPONSE PLANS THAT ADDRESS PROBLEMS RELATED TO THE PURCHASE, DISTRIBUTION, AND ADMINISTRATION OF SUPPLIES OF VACCINES AND ANTIVIRAL DRUGS DURING AN OUTBREAK.”

-- GAO<sup>72</sup>

COMPARING A BIOTERRORISM ATTACK TO PANDEMIC FLU	
Bioterrorism	Pandemic Influenza
<ul style="list-style-type: none"> <li>▲ Little to no warning</li> <li>▲ Event will be in specific, initially concentrated areas</li> <li>▲ Transmission mainly at or near exposure source</li> <li>▲ Casualties expected: Hundreds to thousands</li> <li>▲ First responders vulnerable</li> <li>▲ Assistance available from unaffected states</li> </ul>	<ul style="list-style-type: none"> <li>▲ Warning: Days or weeks</li> <li>▲ Event will be nationwide and worldwide</li> <li>▲ Transmission will be unlimited by geography</li> <li>▲ Casualties expected: Tens of thousands to hundreds of thousands</li> <li>▲ First responders vulnerable</li> <li>▲ All states affected, all states’ resources will likely be strained and unavailable to assist others</li> </ul>

Source: CDC



## FEDERAL PANDEMIC FLU PLAN DRAFT RELEASED FOR PUBLIC COMMENT IN 2004

In August 2004, HHS released a draft plan of U.S. strategy to combat the emergence of a pandemic influenza. The plan minimally offers technical assistance, an overview of proposed collaboration among jurisdictions, and preparedness and response guidance for federal, state, and local health officials and related private-sector partners.<sup>73</sup>

Officials began work to update the initial 1978 pandemic flu plan in 1993. Coordinated by the National Vaccine Program Office, the U.S. Working Group on Influenza Pandemic Preparedness and Emergency Response updated the plan to account for technological breakthroughs and lessons learned in the past 25 years.<sup>74</sup> While the draft plan is comprehensive and contemporary, the 11-year gap between the plan's conception and release is unsettling.

### **The plan is designed to:**

1. Decrease the burden of disease;
2. Minimize social disruption; and
3. Reduce economic impact.<sup>75</sup>

The draft plan is accessible on the HHS Web site at [www.dhhs.gov/nvpo/pandemics](http://www.dhhs.gov/nvpo/pandemics).

## Estimated Impact of a Pandemic

The National Vaccine Program Office at the CDC has a computer model that estimates a range of impacts of a pandemic flu on specific states. Called FluAid, this software offers a variety of preparedness planning functions, including state-by-state estimated death and hospitalization figures for different levels of contraction rates. Though FluAid is speculative and makes no attempt to project the specific spread of a pandemic through a population, it provides a much needed illustration that a pandemic would be a devastating nationwide occurrence, taking a massive toll on the nation's health and economy.<sup>76</sup>

According to an article by CDC scientists: "Using death rates, hospitalization data, and outpatient visits, we estimated 89,000 to 207,000 deaths; 314,000 to 734,000 hospitalizations; 18 to 42 million outpatient visits; and 20 to 47 million additional illnesses. Patients at high risk (15% of the population) would account for approximately 84% of all deaths. The estimated economic impact would be \$71.3 to \$166.5 billion, excluding disruptions to commerce and society."<sup>77</sup>

## THE ESTIMATED DEATHS AND HOSPITALIZATIONS PER STATE OF A PANDEMIC FLU HITTING 35 PERCENT OF THE U.S. POPULATION

Most Likely Numbers of Deaths and Hospitalizations at 35 Percent Rate of Contraction

State	Projected Number of Deaths	Projected Number of Hospitalizations
Alabama	4,146	18,008
Alaska	414	2,127
Arizona	4,305	18,515
Arkansas	2,496	10,574
California	28,409	127,442
Colorado	3,356	15,390
Connecticut	3,292	13,969
Delaware	703	3,062
D.C.	539	2,321
Florida	16,667	66,447
Georgia	6,372	29,359
Hawaii	1,142	4,933
Idaho	1,064	4,740
Illinois	11,070	48,411
Indiana	5,515	24,133
Iowa	2,908	12,175
Kansas	2,505	10,745
Kentucky	3,700	16,216
Louisiana	3,890	17,336
Maine	1,237	5,288
Maryland	4,647	20,767
Massachusetts	6,130	26,151
Michigan	9,158	40,136
Minnesota	4,342	19,032
Mississippi	2,503	10,982
Missouri	5,261	22,512
Montana	841	3,634
Nebraska	1,606	6,859
Nevada	1,513	6,745
New Hampshire	1,089	4,808
New Jersey	7,924	33,970
New Mexico	1,513	6,768
New York	17,594	75,828
North Carolina	6,994	30,631
North Dakota	640	2,704
Ohio	10,825	46,657
Oklahoma	3,188	13,709
Oregon	3,138	13,555
Pennsylvania	12,686	52,573
Rhode Island	1,042	4,323
South Carolina	3,487	15,392
South Dakota	727	3,080
Tennessee	5,075	22,250
Texas	16,391	74,968
Utah	1,584	7,423
Vermont	552	2,433
Virginia	6,115	27,474
Washington	5,091	22,685
West Virginia	1,890	7,939
Wisconsin	4,956	21,393
Wyoming	427	1,907

Source: TFAH calculations using HHS FluAid computer program.<sup>78</sup>

## MAJOR NEW FLU OUTBREAKS OF THE 20TH CENTURY

**1918** -- “Spanish” flu pandemic killed 500,000 in the U.S., 30 million worldwide.

**1957-58** -- Outbreak spread from China across the globe, killing approximately 70,000 in the U.S.

**1968-69** -- “Hong Kong” flu killed approximately 34,000 in the U.S.<sup>79</sup>

**1997** -- The first identification of the avian “bird” flu, which remains active in Asia.<sup>80</sup>

Based on historical trends and projections, virologists and epidemiologists speculate a new flu pandemic will emerge three to four times each century.<sup>81</sup>





# An Overview of Federal Bioterrorism Preparedness

The federal government's \$3-billion investment in bioterrorism preparedness demonstrates how national leaders understand the seriousness of the bio-threat and are committed to the concept of preparedness. To fully maximize the nation's protection, however, bio-preparedness initiatives must further incorporate accountability, transparency, and feedback mechanisms.

Despite the investment in dollars, there is still little consensus about the identity of the nation's most pressing bio-preparedness problems, about priorities, and the cost of fully funding the solutions. Federally directed bio-preparedness must be based upon:

■ **Accountability:** Three years after a series of landmark laws were enacted to fund bio-preparedness, there are still no formal, consistent national performance measures for usage and tracking of federal bioterrorism funds. Performance measures are needed to provide a clear view of preparedness and to determine which programs need improvement.

■ **Clear Consensus of Bio-threat Priorities:** The lack of an articulated "bio-game plan" and a clear understanding of needs have led to a reliance on stopgap, high-profile initiatives. It is critically important to develop a shared vision of planning, benchmarks, and goals, and to clearly delineate roles and responsibilities. Several new initiatives have led to a shuffling of funds at the state level and a resultant scramble to re-focus state and local planning and priorities.

■ **Recognition of Vital Services:** The emphasis on high-profile bio-preparedness initiatives, such as the smallpox

immunization campaign of 2003, has obscured the persistent gaps in the basic protections needed to defend against a terrorist attack. The GAO, IOM, and CDC have been among the groups citing the continued weaknesses in the essential components of a prepared national public health system.

■ **Consistent Stakeholder Input:** The adoption of several preparedness initiatives has been conducted without clear input from state and local experts, the actual implementers of the policies directed from the federal level. As a result, imposed guidelines are often developed without knowledge of what they will mean in specific jurisdictions.

"COMMENTING ON THE PUBLIC HEALTH PREPAREDNESS SIDE, I WOULD SAY THE GREATEST CHALLENGE IS GETTING AND KEEPING AGREEMENT ON THREATS AND PRIORITIES OF THE THREATS."

-- DR. WILLIAM F. RAUB, ACTING ASSISTANT SECRETARY FOR PUBLIC HEALTH EMERGENCY PREPAREDNESS, HHS<sup>92</sup>



## KEY INITIATIVES

During the past three years, federal officials have unveiled a series of high-profile bio-preparedness programs such as BioWatch, BioSense, Project BioShield, the Cities Readiness Initiative, the Strategic National Stockpile, and the smallpox immunization campaign. Each initiative has been greeted with a mixture of commendation and criticism.

### BioWatch

BioWatch is a system that tests the air in several major metropolitan areas for biological agents that terrorists might use. The system uses special filters on existing EPA air-quality monitoring stations.<sup>83</sup> The filters routinely collect air samples which technicians then ship to public health laboratories for testing. BioWatch is administered by the Department of Homeland Security (DHS), in partnership with the EPA and HHS. Funding for BioWatch and related biosurveillance activities amounts to \$118 million in FY 2005.<sup>84</sup> While “consequence management” guidelines have recently been developed for managing response activities to “positive” BioWatch warnings, additional guidance is still needed.

### BioSense

BioSense is a public health surveillance initiative administered by the CDC and launched in October 2003. Its goal is to rapidly detect biological terrorism or a disease outbreak. BioSense is intended to serve as a “coordinated multi-departmental biosurveillance program... for early detection and quantification of a bioterrorism event or disease outbreak, based on the analysis of diagnostic and pre-diagnostic health data from which patient identifiers have been deleted.”<sup>85</sup> Such data include over-the-counter drug sales, clinical laboratory tests ordered, diagnoses from doctors visits, nurses calls, and laboratory information from the Departments of Defense, Veterans Affairs, and the CDC’s Laboratory Response Network.<sup>86</sup>

A recent report from the GAO cited BioSense and other syndromic surveillance systems as “costly to maintain and still large-

ly untested.”<sup>87</sup> Additionally, the GAO noted that syndromic surveillance systems’ sensitivity “makes them more likely to issue false alarms, which in turn have the potential to overtax public health systems.”<sup>88</sup>

The President’s proposed FY05 budget included \$130 million for BioSense; Congress provided slightly less than \$80 million for biosurveillance activities, including the BioSense initiative.<sup>89</sup>

### Project BioShield

Enacted in July 2004, Project BioShield is a 10-year, \$5.6-billion program to develop and produce new vaccines and countermeasures against potential bioweapons.<sup>90</sup> It provides private industry with incentives to research and develop bioterrorism countermeasures, expedites research and development at the National Institutes of Health (NIH), gives the Food and Drug Administration (FDA) approval to administer unproven drugs in the event of a crisis, and creates a fund for government purchase of vaccines needed to respond to an attack.<sup>91</sup>

The first initiative enacted under Project BioShield was an \$877-million agreement with VaxGen, Inc., to produce 75 million doses of anthrax vaccine.<sup>92</sup> Future plans for Project BioShield include federal purchases of a plague vaccine, botulinum vaccine, anti-radiation drugs, and chemical antidotes.<sup>93</sup>

An October 2004 study by the Center for Biosecurity of the University of Pittsburgh Medical Center and the Sarnoff Corporation characterized BioShield as “a first step” and “not sufficient to fully engage industry or produce the countermeasures” needed to protect the U.S. from a biological attack or natural epidemic. A common concern about the project is that it does not address liability concerns of the manufacturers developing the vaccines, drugs and antidotes who could be subject to lawsuits due to adverse side effects or lack of efficacy.<sup>94</sup> Less than 100 companies have expressed an interest in pursuing the development of biolog-

ics, according to Senator Judd Gregg (R-N.H.), chairman of the Senate Committee on Health, Education, Labor and Pensions.<sup>95</sup>

Many public health experts express concern that there was no corresponding effort to improve readiness for distribution or administration of vaccines and antidotes in the event of emergencies.

## Cities Readiness Initiative

In June 2004, a coalition of federal agencies led by HHS announced a new plan aimed at enhancing the nation's ability to respond to public health emergencies. The plan, the Cities Readiness Initiative, involves a pilot program that is helping 21 cities across the U.S. to put in place well-developed and coordinated plans for responding to terrorist attacks or other public health emergencies. In addition to HHS, the other agencies involved are DHS and the U.S. Postal Service (USPS).<sup>96</sup>

According to HHS, "[T]he goal of this initiative will be to aid cities in increasing their capacity to deliver medicines and medical supplies during a large-scale catastrophic event. There are six objectives that need to be met in order to reach this goal:

- Build and sustain the capacity to provide antibiotics to a city's entire population within 48 hours of a decision to do so.
- Integrate distribution of antibiotics between the Points of Dispensing System and, if appropriate, federal assets such as the USPS.
- Institute communications systems to direct, mobilize, and continually inform the public about antibiotic distribution.
- Integrate all relevant emergency plans and services within a city (for example, fire, police, emergency medical, and public health departments).
- Sustain long-term capacity to distribute medicines through exercise, training, technical assistance, and other tools.
- Establish security procedures to protect the people, locations, and materials involved in the delivery of antibiotics.<sup>97</sup>

To fund the Cities Readiness Initiative, HHS redirected a portion of FY04 state bioterrorism preparedness funds intended for states to 21 cities.<sup>98</sup> The total amount HHS redirected from state preparedness funds in June 2004 was \$54.9 million. Of this amount, \$39 million went to the Cities Readiness Initiative, \$27 million of which was returned to states to administer to cities. The remainder was allocated to BioSense and to build toward the goal of increasing the number of the CDC's Quarantine Stations from eight to 25 to guard against infectious diseases such as SARS or avian flu.<sup>99</sup>

One aspect of the Cities Readiness Initiative calls for a reliance on U.S. postal workers to distribute emergency antibiotics, which can be viewed as an example of shifting funds and focus away from public health fundamentals. While it may be creative, this component of the plan fails to acknowledge or address the real problem: Public health and emergency response workforces are understaffed and underfunded.

Most public health officials agree that there is a strong remaining need to bolster local preparedness and to provide additional support for areas that are considered particularly at-risk targets. Dr. William F. Raub, acting assistant secretary for public health emergency preparedness, HHS, points out that "all terrorism is local" and that "local preparedness is vital" since "neither state nor federal government resources will be available immediately" in the event of an attack.<sup>100</sup>

However, concern was expressed by a number of public health experts that while the need to provide more support for cities and communities is critical, that this funding should not come at the expense of already stretched funds that were intended for states. The National Governors Association, the American Public Health Association, and the Association of State and Territorial Health Officials were among the groups issuing statements opposing the reprogramming, calling instead for supplemental funds to support cities and localities.

**“WE SHOULDN’T HAVE TO CHOOSE  
BETWEEN FILLING THE NATIONAL  
VACCINE STOCKPILE OR HAVING A  
WARNING SYSTEM AT THE STATE AND  
LOCAL LEVEL,”<sup>101</sup>**

**-SENATOR EVAN BAYH (D-IND.), AS QUOTED  
IN *THE WASHINGTON POST*, MAY 21, 2004**

## **Biodefense for the 21st Century**

On April 21, 2004, President Bush signed a classified directive to coordinate existing bioterrorism government programs and initiatives. This directive, *Biodefense for the 21st Century*, aims to integrate the national homeland security, medical, public health, intelligence, diplomatic, and law enforcement communities.<sup>102</sup> The directive is the result of the Bush Administration’s review of the government’s response to September 11 and the anthrax attacks.<sup>103</sup>

The directive includes 59 instructions for government agencies, ranging from determining effective strategies for communicating evacuation orders to individuals, including non-English speakers, to analyzing intelligence from unrelated sources. The directive also instructs agencies on how to best shore up the nation’s defenses against a biological attack. For example, the directive instructs the NIH to anticipate the possible use of genetically engineered pathogens that could be used as weapons and to develop vaccines that offer protection against several diseases with one shot.<sup>104</sup>

This plan also directs the DHS to establish a National Biosurveillance Group to track and assess threats, conduct a biological net assessment of biodefense effectiveness every four years, perform a bi-annual risk assessment of

new threats, expand international prevention efforts, and develop an early-warning system to detect threats against the water supply.<sup>105</sup>

## **Strategic National Stockpile**

The Strategic National Stockpile (SNS) is a national repository of antibiotics, chemical antidotes, antitoxins, other pharmaceuticals, and medical supplies and equipment to be used in the event of a terrorist attack or major natural disaster.<sup>106</sup> The stockpile is managed jointly by HHS and the DHS. The stockpile was originally operated under HHS’s jurisdiction. In FY2003 it was shifted to the DHS. In FY2004, the SNS became a joint initiative. In 2004, the stockpile responsibility was given back to HHS. The stockpile can be deployed through “12-hour Push Packages” or “vendor management inventory (VMI)” supplies. Push Packages can be delivered anywhere in the U.S. within 12 hours.

State and local first responders and health officials can use the SNS to bolster their response to a national emergency. Once SNS supplies arrive, the HHS transfers authority for distribution to state and local officials. A team of five to six federal technical advisors, a unit consisting of pharmacists, emergency responders and logistics experts, helps advise local authorities about receiving, distributing, and replenishing SNS material. The federal government is coordinating the “roll out” schedule based on a three-year time line for the evaluation of states’ stockpile distribution and administration preparedness capabilities.

Currently, only six states have achieved “green” readiness status with adequate capacity to deliver and administer vaccines and antidotes from the stockpile in the event of an emergency – Florida, Illinois, Louisiana, and three undisclosed states.

“As an SNS package is delivered, a CDC/ATSDR team of technical advisors will also deploy. Known as a Technical Advisory Response Unit (TARU), this team is comprised of emergency responders and logistics experts that will advise local authorities on receiving, distributing, dispensing, replenishing, and recovering SNS materials. Success Story: On September 11, 2001, the Strategic National Stockpile (formerly the National Pharmaceutical Stockpile) delivered fifty tons of medical supplies, including prophylaxis and intravenous fluid, to New York City within seven hours of the attack on the World Trade Center. Between October 15 and December 30, the stockpile helped deliver 3.79 million tablets of three key antibiotics -- amoxicillin, ciprofloxacin and doxycycline -- for postexposure preventive treatment of postal workers, mail handlers, and other occupants of affected buildings. Established in 1999, these were the stockpile’s first-ever deployment.”<sup>107</sup>

## Smallpox Vaccination Initiative

On Jan. 24, 2003, the CDC launched a national campaign to vaccinate emergency and medical workers, on a voluntary basis, against smallpox. The disease was eradicated worldwide in the 1970s, but samples of the virus were kept at two World Health Organization (WHO) repository labs (one at the CDC and one in Koltsovo, Russia). According to the CDC, there is concern that the samples could be obtained by terrorists and used as a bioweapon.<sup>108</sup>

The goal of the smallpox vaccination campaign was to immunize 500,000 health workers in 30 days and up to 10 million additional health workers and emergency response personnel (including fire and police) over a one-year period.<sup>109</sup> However, as

of October 2004, less than 40,000 medical and emergency personnel had received the vaccine.<sup>110</sup> According to the GAO’s April 2003 report, *Smallpox Vaccination: Implementation of National Program Faces Challenges*, health workers were concerned about the health risks of the vaccinations to themselves and their families.<sup>111</sup>

The HHS is now requiring states to be prepared to immunize their entire population in 10 days. Public health officials in several states have said that the 10-day goal would be challenging.<sup>112</sup> Enough smallpox vaccine has been acquired to immunize an estimated 300 million individuals and this vaccine is now included in the national stockpile.

### **There have been concerns that the smallpox vaccination effort may have diverted attention from other public health priorities.**

In order to achieve the smallpox vaccination goals, state and local public health officials reportedly redirected staff and resources to the vaccination effort. For example, Arlington County, Va., reduced home visits to at-risk infants and pregnant women and cut staff at family planning clinics in an attempt to meet established vaccination timelines. In Michigan, officials diverted funding from the development of a statewide public health surveillance system.<sup>113</sup>

***Smallpox is an extremely contagious disease that can lead to skin lesions, permanent scarring and serious illness. Fatality rates can be as high as 30 percent.***

The following is a breakdown of the number of individuals vaccinated by each state during the smallpox initiative and the per capita rate this represents.

State	Number of individuals vaccinated <sup>114</sup>	Approximate number vaccinated per capita
	COB 10/31/04	One in every...
Alabama	503	8,948
Alaska	96	6,759
Arizona	39	143,098
Arkansas	1,138	2,395
California	1,854	19,139
Colorado	224	20,316
Connecticut	704	4,948
Delaware	109	7,500
D.C.	105	5,366
Florida	4,041	4,212
Georgia	175	49,627
Hawaii	181	6,948
Idaho	200	6,832
Illinois	376	33,653
Indiana	765	8,099
Iowa	492	5,984
Kansas	448	6,079
Kentucky	848	4,856
Louisiana	1,107	4,062
Maine	63	20,726
Maryland	752	7,326
Massachusetts	177	36,347
Michigan	925	10,897
Minnesota	1,476	3,428
Mississippi	403	7,150
Missouri	1,253	4,553
Montana	144	6,372
Nebraska	1,470	1,183
Nevada	17	131,833
New Hampshire	331	3,890
New Jersey	671	12,874
New Mexico	238	7,877
New York	1,167	16,444
North Carolina	1,312	6,408
North Dakota	415	1,527
Ohio	1,921	5,953
Oklahoma	376	9,339
Oregon	115	30,953
Pennsylvania	308	40,148
Puerto Rico	29	133,742
Rhode Island	36	29,893
South Carolina	998	4,155
South Dakota	737	1,037
Tennessee	2,429	2,405
Texas	4,632	4,775
Utah	288	8,165
Vermont	130	4,762
Virginia	914	8,081
Washington	554	11,068
West Virginia	734	2,466
Wisconsin	763	7,172
Wyoming	414	1,211
<b>TOTAL</b>	<b>39,597</b>	

Source: Smallpox Vaccination Program Status by State, CDC.



## WHAT ABOUT THE CHILDREN?

### PEDIATRIC PREPAREDNESS FOR A BIOTERRORISM EVENT

*“Dr. Marianne Gausche-Hill, a Torrance, Calif., emergency physician, said she is occasionally confronted with a child who has shrunken pupils, lips coated in saliva, and clothes soaked with urine. In most cases, the diagnosis is accidental fertilizer poisoning. But these days she can’t help but wonder: Could this signal a chemical attack? Are more sick children on the way? ‘You typically don’t look at children as targets....But you have to think they could be.’”<sup>115</sup>*

Pediatricians often say, “children are not small adults.” Children are anatomically, physiologically, developmentally, and psychologically more vulnerable to a bioterrorism event.

- Some chemical warfare agents, like sarin, are heavier than air which allows them to accumulate closer to the breathing area of children while their increased rate of breathing exposes them to larger doses of aerosolized bioterrorism agents when compared to adults. They have thinner and therefore more permeable skin than adults which leaves them more vulnerable to chemical irritant agents that are absorbed through the skin. Children have decreased fluid reserve which puts them at greater risk for dehydration resulting from vomiting and diarrhea and are at higher risk for shock after even small amounts of blood loss.
- Children may have difficulties fleeing the site of a terrorist attack either because they cannot walk or run as swiftly or they may have trouble figuring out different ways to escape or understanding instructions they may receive.
- In a mass casualty incident, children are more likely to experience post-traumatic stress disorder (PTSD) and more likely to suffer psychological trauma after witnessing injury and death than an adult.
- are often ill-prepared to handle the influx of pediatric patients that may present following a bioterrorist attack, especially considering that children possess unique vulnerabilities to a bioterrorism event that place them at higher risk for disability when compared to adults.
  - ◆ Only 20 percent of American hospitals have Pediatric Emergency Medicine-trained physicians,<sup>116</sup> and, as of 2001, less than half of hospital emergency departments were reported to have the necessary equipment to stabilize multiple ill and injured children.<sup>117</sup>
  - ◆ Children typically require different dosages or formulations of antibiotics and antidotes than adults, however most medical providers are not familiar with the differences required.

With these unique risks and needs in mind, the Public Health Security and Bioterrorism Preparedness and Response Act, enacted in 2003, arranged for the formation of a committee to advise HHS on the impact of terrorism on children. The National Advisory Committee on Children and Terrorism (NACCT) was created and comprised of experts and professional organizations from the fields of public health, pediatrics, psychiatry, emergency management, and child advocacy. In June of 2003, the NACCT made the following recommendations to the HHS:<sup>118</sup>

1. “There is a need for a comprehensive public health strategy to meet needs of children in planning and responding to terrorism with specific focus on children and families;
2. Funding decisions should specifically account for children’s needs;
3. Create structures for oversight and response in HHS to needs of children and families;
4. Significant new pediatric and psychosocial initiatives are needed to address the needs of the nation’s children and families in light of continued threat of terror events;
5. Addressing the needs of children and families in the face of terrorism should be recognized as an essential part of America’s national security response to terrorism.”

The NACCT stressed the importance of the preparedness of the healthcare system, from the schools to the hospitals to the community to the government itself, to respond to terrorism as it relates to children. The committee also made recommendations regarding the Strategic National Stockpile (SNS) and the changes necessary to be able to accommodate appropriate antibiotic and antidote formulations and doses for pediatric victims of a bioterrorism event.

Using these recommendations, funding has been requested for FY 2005 for the Public Health and Social Services Emergency Fund, which will provide support for a number of pediatric preparedness initiatives to protect America’s children, however a stronger mechanism should be established to ensure the committees recommendations are carried out.

## A WORD OF CAUTION: APPLICATION OF NATIONAL PLANNING

Preparedness plans are only as effective as their implementation. Real-world decisions by the general public and local health officials will decide if a protocol is adhered to or ignored. For this reason, plan development must take into account the feedback and input of these populations in structuring specific plans.

A study by the Center for the Advancement of Collaborative Strategies in Health found that during a “dirty bomb” or smallpox attack, preparedness protocols would not be widely followed:

“Our study found that far fewer people than needed would follow protective instructions in these terrorist attack situations... The reason is not that they are ignorant or misinformed or that they want to be uncooperative. We found, instead, that there are critical problems with the plans. Because current plans have been developed without the direct involvement of the public, they do not account for all the risks people would face. Consequently, the plans make it very difficult for people to decide on the best course of action to protect themselves and their family.”<sup>119</sup>

-- Testimony of Dr. Roz D. Lasker before the Council of the District of Columbia Committee on the Judiciary

## MENTAL HEALTH CONSIDERATIONS

The mental health impact of a bioterrorism event is an important, but often-overlooked, component of bioterrorism preparedness. Retired head of HHS’s Substance Abuse and Mental Health Services Administration (SAMHSA) Emergency Coordination, Dr. Brian Flynn, called the “footprint of behavioral health consequences...far greater than the medical footprint in terrorist and bioterrorist events.”<sup>120</sup> The FY 2003 budget allocated \$10 million to SAMSHA to enable planning for the psychological and behavioral impact of a major threat or attack.<sup>121</sup>

The IOM and Center for Biosecurity are among several experts calling for increased attention and resources towards the psychological aftermath of an attack:

“The nation’s mental health, public health, medical, and emergency response systems currently are not able to meet the psychological needs that result from terrorism...Management of the psychological consequences of terrorism will require a range of interventions at multiple levels involving a variety of service providers.”<sup>122</sup>

# Recommendations

**W**hile the federal funds for bioterrorism preparedness have resulted in rapid and substantial improvements, many striking gaps and vulnerabilities remain. TFAH is calling for an increased sustained, ongoing commitment to modernizing public health preparedness -- including the continuing and extension of the federal, state, and local bioterrorism funds and programs -- to better protect the health and safety of all Americans.

## I. BUILD A BETTER BIO-GAME PLAN

*Now is the time to figure out what isn't ready and to ask if we're getting what we've been paying for. Reauthorization of the Bioterrorism Preparedness Act should focus on maximizing return of investment of every funding dollar.*

Congress should immediately undertake a review of the Public Health Security and Bioterrorism Preparedness Response Act of 2002 (Public Law 107-188), which must be reauthorized by the end of FY 2006. The Act needs adjustments and improvements.

Given the current strains on federal, state, and local budgets, greater emphasis must be placed on leveraging bioterrorism preparedness funds to maximize their effectiveness in improving the overall health of communities. Additionally, Congress and the public deserve more information about the impact of bioterrorism funding in order to measure how much safer these dollars are making us. Investing in preparedness and prevention makes economic sense; avoiding disease and destruction will save the catastrophic costs of treating Americans for illness and injury suffered in a public health emergency.

Assessments and improvements to the current law should include:

- A systemic review of ongoing preparedness gaps and a better understanding of how to target resources to “jump start” improvements.

- An assessment of essential preparedness programs and services, how much support these require on a continuing basis, and how to ensure that these programs keep pace with and employ technological advances.

- Strike a better balance between state and local needs, so that efforts complement rather than compete for limited resources, and ensure that efforts are efficient and streamlined, while respectful of jurisdictional authorities.

- Avoid unfunded mandates.

- Require measurable performance standards of accountability to demonstrate progress and use of funds. In order to be eligible to continue receiving federal bioterrorism preparedness funds, states should be required to demonstrate 1) how they have used these federal funds to make tangible improvements based on the developed standards, and 2) how they have assured a “maintenance of effort,” meaning that they are supporting their state’s ongoing public health needs and programs. Linking performance and accountability to funding also provide important incentives for achieving progress.

### ◆ Improving Community Participation in Preparedness and the Public's Right to Know.

As part of these measurable standards, information about the states' readiness should be shared with the public in order for communities to understand preparedness programs and plans, to know how their tax dollars are being spent, and to ultimately hold their public officials accountable.

Policies need to be carefully developed to ensure as much transparency as possible, yet

balance the public's right to know with the need to protect classified information and keep it out of the hands of potential terrorists. Currently, information about basic public health programs, such as flu emergency plans or communications readiness capabilities, are not being shared with the public because security implications have been taken to the extreme. These actions actually put the public at increased risk by keeping them uninformed and ill-prepared in the event of emergencies.

## 2. PRACTICE MAKES PERFECT: CONDUCT MORE DRILLS ON A ROUTINE BASIS TO ASSESS CAPABILITIES AND VULNERABILITIES.

Most public health and emergency response experts agree that practice exercises are the best way to assess and increase preparedness. In fact, early draft versions of CDC preparedness standards, final versions of which were expected to be released in 2004 but are still unavailable, call for drills based on hypothetical attacks or outbreaks as the optimal form of measuring readiness. Drills must be developed and conducted with specific standards in place to measure performance and abilities and ensure that public health is integrated into emergency management systems. Practice scenarios are needed to:

- Allow states and localities to understand the application of their quarantine and isolation laws. Learning how to apply these laws should include practicing the best ways to communicate with the public during different types of scenarios to minimize exposure to threats, spread of disease, and unnecessary

fear and anxiety. Often complex, these laws can be hard to implement, particularly across jurisdictions. Experts often cite these laws as a major flaw in preparedness planning.

- Improve coordination and communication between the public and private sectors, especially public and private health care workers. Preparation is key; understanding roles and capabilities before an emergency strikes is crucial. There is also a great need to improve advanced planning and involvement by other sectors, ranging from schools to local businesses.
- Learn how to prioritize "at-risk" populations and deliver services to them while also managing the needs and expectations of the rest of the community.

Drills can also include "all-hazards" situations that help improve the health of the community.

## 3. LIMIT LIABILITY TO ENCOURAGE VACCINE DEVELOPMENT AND PROTECT HEALTH CARE WORKERS

Congress should move to limit bioterrorism-related liability concerns. Liability protection and additional incentives are needed to encourage private industry to invest in crucial research and development for vaccines and to provide protection for both public health and private health care workers who

could be putting themselves in harm's way or exposing themselves to disease.

The IOM has called for "regulatory harmonization" as essential for re-engaging production and development of vaccines, which is currently not a profitable endeavor for most pharmaceutical companies. TFAH

calls for the immediate creation of a bi-partisan panel of experts to explore the complications of vaccine policy and to help rein-vigorate vaccine research, development, and delivery in the U.S. Some measures that must be considered include:

- Providing liability protection and expedited or temporary approvals for antidotes and vaccines related to potential emergency threats. For instance, the “investigate” trial status of the smallpox vaccine was a serious factor in the reluctance or refusal of a large number of health care workers to be immunized.
- Breaking the “double-bind” for vaccine manufacturers under current Securities and Exchange Commission require-

ments. Companies cannot count produced vaccines as assets until they are used, which works against the need to create stockpile inventory of vaccines and antidotes for emergency uses.

- Creating financial stability in the vaccine market to ensure the stockpile is ready for emergencies.

Health professionals, particularly those in first responder and direct care positions, expose themselves to risk in the event of a crisis. They are put in a position where they must wonder about the repercussions to their own health and possible implications for their families. Liability protection and adequate workers’ compensation issues must be factored into emergency planning.

#### 4. GET BACK TO BASICS: FOCUS ON FIXING THE FUNDAMENTALS AND AVOID BIO-DISTRACTIONS

The good news in public health is that experts know what works:

- **Investigative capabilities** to assess the health of communities -- people, air, water, and food -- by having enough trained scientists and health experts equipped with the tools they need, including health tracking, communications systems, and laboratory capacity; and
- **Containment, treatment, and intervention capabilities** to stop the spread of disease and other health threats through the development and administration of vaccinations or isolating and caring for infectious patients.

The bad news is that the basics of public health are currently not adequate to protect the public from the range of health threats. Since all of the basic protections are essential, this has resulted in a situation of relevant priorities competing for limited resources and attention. Complicating this problem are the recent shifts in priority-setting and targets for funding, which have resulted in new or untested programs distracting funding and attention from persistent and fundamental weaknesses.

TFAH recommends taking a “back to basics” approach, which involves providing a clear, coherent, consistent strategy that addresses the core requirements for preparedness. A national summit, attended by experts in public health, representatives of the health care industry, and other impacted sectors, should be convened to ensure this strategy is implemented in a way that makes the best use of limited public health dollars and that addresses both emergency and ongoing challenges. The following public health basics must be addressed to achieve better preparedness:

- **Bolstering the Workforce.** The new Congress should consider reintroduction and passage of the Public Health Preparedness Workforce Act of 2004, originally sponsored by Senators Chuck Hagel (R-Neb.) and Dick Durbin (D-Ill.). The future of public health is contingent on recruiting a new generation of workers. Minimum staffing thresholds for states and communities must be set and met, such as the CDC recommendation that there be one epidemiologist for every 500,000 people.



- **Real Nationwide Health Tracking.** For a decade, there have been fits and starts toward developing a system to track the public's health to identify the causes of diseases, understand disease patterns, and learn how to prevent them. It is time to make a genuine investment in a state-of-the-art health tracking network that is compatible among states and ensures individual privacy, but allows for the true evaluation of the nation's health by serving as a warning system for the emergence of new problems and diseases. This should be linked to the tracking of the nation's food, water, and air supplies. Recent attempts at new types of surveillance systems are simply a distraction from building a genuine, comprehensive tracking system since they do not build upon the existing infrastructure or toward a comprehensive, integrated system. At a bare minimum, all states should be expected to be compliant with the CDC's National Electronic Surveillance System (NEDSS) by the end of 2005.
- **Improving Stockpile Development, Distribution and Administration Systems.** With only six states at verified "green" status to distribute and administer vaccines and antidotes in a crisis, most of the nation would be left scrambling in the event of a major outbreak or emergency. A prioritized national goal should be required for all states to achieve green status within two years.
- **Modernizing Laboratory Capabilities.** All states should be required to achieve sufficient bio-response capabilities within two years and 10 additional states should be required to achieve chemical-response capabilities by the end of 2005. This will require bolstering capacity of these labs with the necessary technological advances.
- **Strengthening Planning and Coordination.** With health officers' time and resources stretched thin, planning has not received adequate attention, and local, state, and federal officials have often been at odds over available resources. This has led to friction at a time when we need to look for ways to leverage resources and to improve efficiency.

## WHAT DOES PREPAREDNESS LOOK LIKE? WHAT SHOULD AMERICANS EXPECT?

Numerous evaluations of the nation's public health system, including those conducted by the CDC, IOM, and GAO, have found serious deficiencies.<sup>123</sup>

### A 2003 IOM study on the public health infrastructure found:

- “Vulnerable and outdated health information systems and technologies;
- An inadequately trained public health workforce;
- Antiquated laboratory capacity;
- A lack of real-time surveillance and epidemiological systems;
- Ineffective and fragmented communications networks;
- Incomplete domestic preparedness and emergency response capabilities; and
- Communities without access to essential public health services.”<sup>124</sup>

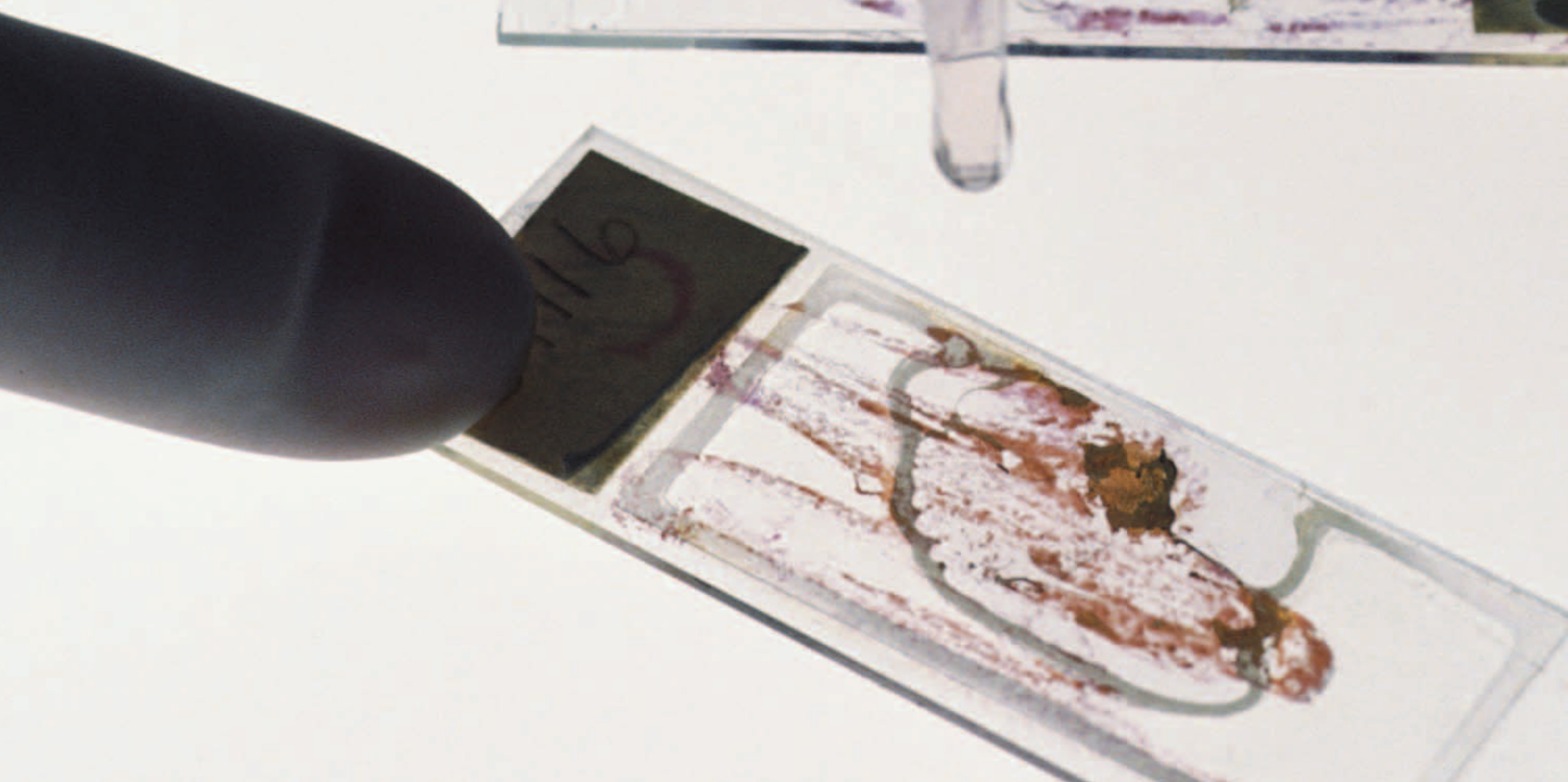
This raises the question: What are the components of a basic system capable of protecting a community's health?

### 24x7 Emergency Response Capabilities Must Include:

- Rapid **detection** of a bioterror act or other emerging disease threats;
- Intensive **investigative** capabilities to quickly determine the bio- or chemical agent used in an attack or to diagnose a new disease;
- Mass **containment** and treatment strategies, including plans, surge workforce and equipment, and pharmaceuticals needed for **wide-scale vaccination or antidote administration** and **isolation and quarantine** when necessary;
- Streamlined and clear **communications** channels so that health workers can communicate with each other and be able to accurately and swiftly inform members of the public about 1) the nature of an attack or emergency; 2) their risk of exposure and how to seek treatment when needed; 3) any actions that they or their families need to take.

### What It Will Take to Achieve Adequate Preparedness:

- **Leadership, Planning, and Coordination:** An established chain-of-command and well-defined roles and responsibilities for seamless operations between different medical and scientific functions during crisis situations.
- **Expert and Comprehensive Workforce:** Highly trained and full staffs of experts, scientists and other public health professionals.
- **Modernized Technology:** State-of-the-art laboratory equipment and information collection and health tracking systems.
- **Pre-Planned, Safety-First Rapid Emergency Response Capabilities and Precautions:** Tested plans and safety precautions to mitigate potential harm to communities and public health professionals and first responders.
- **Immediate, Streamlined Communications Capabilities:** Coordinated, integrated communication among all parts of the public health system and with the public.



# Appendix A:

## BIOLOGICAL, CHEMICAL, RADIOLOGICAL, AND NUCLEAR THREATS

“THE BIO-THREAT IS PARTICULARLY WORRISOME BECAUSE WE KNOW SO LITTLE ABOUT TERRORIST CAPABILITIES. WE DON’T KNOW NEARLY AS MUCH AS WE WOULD LIKE ABOUT THEIR MOTIVATIONS AND THEIR INTENTIONS TO EMPLOY BIOLOGICAL WEAPONS. YET WE ALSO KNOW THAT A BIO-ATTACK COULD RESULT IN A CATASTROPHIC LOSS OF LIFE.”

-- U.S. REP. CHRISTOPHER COX (R-CALIF.), CHAIRMAN OF THE HOUSE SELECT COMMITTEE ON HOMELAND SECURITY DURING A JUNE 2004 HEARING<sup>125</sup>

### Range of Biological Threats

#### Agroterrorism

Agroterrorism is defined as the “deliberate introduction of an animal or plant disease with the goal of generating fear, causing economic losses, and/or undermining stability.”<sup>126</sup>

Experts say that “Agroterrorism not only affects the animal or plant food chain that it attacks but the public confidence in the product as well. It has a psychological impact on the public’s trust in government to provide adequate quality control over foodstuffs. And ultimately it could affect the trade of agricultural products with the rest of the world.”<sup>127</sup>

#### Foodborne Diseases

Of the over 75 million reported cases of foodborne diseases that occur each year in the U.S., most are relatively mild and pass within a few days. However, a minimum of 325,000 hospitalizations and 5,000 deaths are caused by foodborne diseases each year, although the number of cases are believed to be much higher since some cases are not counted due to poor tracking capabilities.<sup>128</sup> The Foodborne Disease Active Surveillance Network (FoodNet) is a system that relies on collaboration among the CDC, the FDA, and the U.S. Department of Agriculture (USDA).<sup>129</sup> FoodNet relies on more frequent collection of incidence data to more

quickly and accurately detect trends and outbreak statistics. Currently, FoodNet operates in only nine states.<sup>130</sup>

In recent years, experts have cited the nation’s food supply as a potential target for terrorists. In a news conference announcing his resignation as Secretary of HHS in early December 2004, Tommy Thompson said, “for the life of me, I cannot understand why the terrorists have not attacked our food supply, because it is so easy to do.”<sup>131</sup> The concern is not far-fetched; in 2000, a restaurant employee in China killed 40 people by deliberately poisoning customers’ food.<sup>132</sup> Experts have warned that a bioterrorist attack targeting food could be particularly devastating as our nation’s production system becomes increasingly centralized.<sup>133</sup>

The CDC classifies potential bioterrorist agents into three categories of severity.<sup>134</sup> Anthrax and botulism are viewed as the most devastating potential agents in a foodborne attack and are classified as “Category A” agents.<sup>135</sup> (They are also inhalation threats as well as foodborne threats). **Anthrax** is caused by a spore-forming bacterium that enters the body through inhalation, a cut or abrasion on the skin, or eating infected meat.<sup>136</sup> Anthrax’s viability as a biological weapon is clear -- mailings sent to government figures during the



fall of 2001 contained anthrax spores, sickening and killing several mail-handlers in the Washington, D.C., area. **Botulism** is a bacterial disease that paralyzes muscles, causing the individual to stop breathing.<sup>137</sup> Botulism is a major bioterrorism threat because of its “extreme potency and lethality; its ease of production, transport and misuse; and the potential need for prolonged intensive care in affected persons. Botulinum toxin is the single most poisonous substance known.”<sup>138</sup>

“Category B” agents include the more commonly occurring **salmonella** and **E. coli** bacteria. Salmonella’s potential as a weapon of terror was illustrated by the purposeful contamination of a salad bar in The Dalles, Ore., in 1984, when 750 individuals were sickened by cult members hoping to seize control of the county’s elections.<sup>139</sup>

### Vector-borne and Zoonotic (Animal-borne) Diseases

A vector is an organism that carries disease. The spread of illnesses such as Lyme disease, dengue fever, West Nile virus, yellow fever, certain encephalitides, and plague are contingent upon vectors. The CDC’s Division of Vector-Borne Infectious Diseases oversees federal surveillance and control efforts related to these diseases.<sup>140</sup>

Animal-borne (also called zoonotic) diseases are a sub-category of vector-borne diseases, consisting of diseases spread by animals. Recent headline-grabbing diseases such as SARS, mad cow disease, and West Nile virus are all classified as zoonotic diseases.

### Waterborne Terrorism

Deliberate contamination of the nation’s water supply is of critical concern to homeland security officials. During 2001-2002, the CDC estimates that 1,020 persons contracted illnesses from drinking water and 2,536 persons contracted illnesses from recreational water disease outbreaks.<sup>141</sup> A purposeful contamination could affect a much larger population.

In recognition of the dangers of a terror attack targeting the water supply, the American College of Preventive Medicine convened a June 2003 conference to discuss control, detection, and response strategies.<sup>142</sup> The conference focused particularly on the role of local physicians and medical officials in diagnosing cases of contamination and rapidly spreading information.

A Web site designed to assist local medical communities’ water terrorism preparedness can be found at [www.waterhealthconnection.org](http://www.waterhealthconnection.org).

## Chemical Threats

The CDC “has identified over 60 toxic substances that could be used as chemical weapon by terrorists.”<sup>143</sup> And the EPA reports that “123 chemical facilities located throughout the country have toxic ‘worst case’ scenarios where more than a million people in the surrounding area could be at risk of exposure to a cloud of toxic gas if a release occurred.”<sup>144</sup>

On Feb. 12, 2003, the DHS warned that “Al Qa’ida operatives also may attempt to launch conventional attacks against the U.S. nuclear/chemical-industrial infrastructure to cause contamination, disruption, and terror. Based on information, nuclear power

plants and industrial chemical plants remain viable targets.”<sup>145</sup>

### Ricin

In early February 2004, ricin was detected in a U.S. Senate mailroom serving the office of Majority Leader Bill Frist, MD. Though no illnesses were reported in the mailroom or in Sen. Frist’s office, death can result from as little as one milligram of ricin exposure.<sup>146</sup> Ricin, a toxin extracted from waste products of the castor bean, prevents cells from acquiring necessary proteins needed to function. Individuals poisoned with ricin are not contagious.<sup>147</sup>



A famous case of ricin poisoning which also illustrates ricin's potency occurred in 1978 when Bulgarian playwright Georgi Markov was killed in London. The assassin injected a small ricin pellet from a specially modified umbrella into Markov's leg. Markov, a Communist defector, was dead within four days.<sup>148</sup>

## Sarin

Sarin is a synthetic chemical warfare "nerve" agent originally developed in Germany in 1938.<sup>149</sup> Sarin is clear, colorless, and odorless and can evaporate into a vapor and spread throughout the immediate area. The agent impacts the body by preventing the "operation of the chemical that acts as the body's 'off switch' for glands and muscles. Without an 'off switch,' the glands and muscles are constantly being stimulated. They may tire and no longer be able to sustain breathing function."<sup>150</sup>

The most notable terrorist usage of sarin occurred on March 20, 1995, when members of a Japanese cult released the agent in the Tokyo subway system, killing 12 and injuring nearly 4,000.<sup>151</sup> Japanese law enforcement officials charged members of the Aum Shinrikyo cult with the attacks, which were simultaneously carried out at five points on the subway system.

The subway attacks followed the group's earlier sarin attack in June 1994, which killed seven and injured 500 residents of an apartment and dormitory cluster in Matsumoto, Japan.<sup>152</sup> The cult, which is accused of trying to overthrow the Japanese government through the attacks, also experimented with biological terrorist agents such as ebola, anthrax, and botulin, in addition to other forms of chemical attacks.<sup>153</sup>

## 2002 Terrorist Attack at a Moscow Theater: A Chemical Response

On October 23, 2002, in the middle of an evening performance at a Moscow theater, Chechen rebels equipped with firearms and explosives took 800 patrons hostage. The militants threatened to kill all the hostages unless Russia granted independence to Chechnya. Over the next few days, negotiations with Russian authorities stalled, and the rebels declared that they would execute each hostage, one by one.

Just before dawn on October 26, Russian forces pumped an incapacitating gas into the theater. Every rebel was killed, and the majority of the theater patrons were freed. However, the gas caused many casualties among the hostages; 117 died from the effects and many more had serious reactions.<sup>154</sup>

It was later disclosed that the gas was a chemical compound that included the anesthetic fentanyl. However, at the time of the incident, poor communication with medical personnel led to confusion about what chemical was used and the proper course of treatment. U.S. Ambassador to Russia Alexander Vershbow said:

"We regret that the lack of information simply contributed to the confusion after the immediate operation to free the hostages was over. It's clear that perhaps with a little more information at least a few more of the hostages would have survived."<sup>155</sup>

## Radiological Threats

Counterterrorism strategists have long discussed the dangers of a possible terrorist attack involving radioactive material. The scattering of radioactive materials by using explosives (“dirty bomb”), the destruction of a nuclear facility, the introduction of radioactive material into a food or water supply, and the explosion of a nuclear device near a population center are all potential radiological disasters.<sup>156</sup> Radiation fallout from a radiological emergency can cause both immediate injury and a long-term rise in cancer prevalence.<sup>157</sup>

The Federal Radiological Emergency Response Plan (FRERP) unites several federal agencies under a response plan to a potential nuclear disaster or attack. In the advent of an emergency, a lead federal agency would be tasked with response and control at the site of the danger. The affected state would

have responsibility beyond the accident site, with other federal agencies assisting.<sup>158</sup>

A recent study conducted by the EPA, Johns Hopkins University’s Bloomberg School of Public Health, and the Public Health Foundation evaluated the status of radiation information services available for public health agencies as well as the agencies’ abilities to answer a range of radiation-related questions from the public. The findings discovered a lack of protocols to ensure consistent information and the need for strengthened collaborations with the media and first responders -- critical information providers during a time of emergency. The study also recommended “a more readily accessible, robust, science-based and balanced information source that state, local and tribal health officials can utilize to meet communities’ needs.”<sup>159</sup>

## Agency Responsibilities: Moving Beyond DHS and HHS

Although civilian biodefense spending is largely managed through HHS, DHS also plays an obvious role in coordinating and designing the nation’s response to a range of terrorist threats.<sup>160</sup> Responding and preparing to the range of biological, chemical, and radiological threats requires the input, expertise, and expenditure of other agencies. Responsibility for food, agriculture, and water safety initiatives are largely delegated to USDA and EPA.

### ■ Foodborne and Agriculture Defense

The USDA is the lead agency responsible for defense of the nation’s food and agriculture supply. Due to a new “Food and Agriculture Defense Initiative,” the USDA will receive a dramatic increase in biodefense funding in FY05. Its food

defense budget has risen from \$10 million in FY 2003 to \$14 million in FY 2004 to \$5 million in the FY 2005 budget.<sup>161</sup>

The agricultural defense budget has also received a dramatic boost, largely due to a new laboratory at the BSL-3 level in Ames, Iowa, to diagnose animal diseases.<sup>162</sup> USDA agricultural defense dollars have ranged from \$194 million in FY 2003 to \$64 million in FY 2004 to an estimated \$247 million in FY 2005.<sup>163</sup>

### ■ Waterborne Terrorism

The EPA has “spent about \$42 million on water safety critical infrastructure protection in FY 2003 and 2004. In FY 2005, funding for this program was cut to zero. The EPA dispensed nearly \$15 million in water safety grants to states from FY 2003-2005.”<sup>164</sup>

# Appendix B:

## FEDERAL BIOTERRORISM FUNDING BY SOURCE AND YEAR

State	FY 2003			State	FY 2004			% Change FY 03 - FY 04
	CDC	HRSA	Total		CDC	HRSA	Total	
Alabama	\$14,056,645	\$7,762,315	\$21,818,960	Alabama	\$12,910,651	\$7,762,315	\$20,672,966	-5%
Alaska	\$6,284,107	\$1,958,803	\$8,242,910	Alaska	\$5,205,459	\$1,958,803	\$7,164,262	-13%
Arizona	\$15,755,035	\$9,030,450	\$24,785,485	Arizona	\$16,470,314	\$9,030,450	\$25,500,764	3%
Arkansas	\$10,461,043	\$5,077,591	\$15,538,634	Arkansas	\$9,339,265	\$5,077,591	\$14,416,856	-7%
California	\$55,589,662	\$38,773,726	\$94,363,388	California	\$59,319,441	\$38,773,727	\$98,093,168	4%
Colorado	\$13,979,790	\$7,704,930	\$21,684,720	Colorado	\$13,654,314	\$7,704,930	\$21,359,244	-2%
Connecticut	\$11,960,524	\$6,197,207	\$18,157,731	Connecticut	\$10,828,647	\$6,197,207	\$17,025,854	-6%
Delaware	\$6,614,378	\$2,205,406	\$8,819,784	Delaware	\$5,518,506	\$2,205,406	\$7,723,912	-12%
D.C.	\$11,162,901	\$2,868,302	\$14,031,203	D.C.	\$11,985,069	\$2,868,302	\$14,853,371	6%
Florida	\$38,181,999	\$25,775,967	\$63,957,966	Florida	\$37,583,527	\$25,775,967	\$63,359,494	-1%
Georgia	\$22,034,847	\$13,719,390	\$35,754,237	Georgia	\$21,575,121	\$13,719,390	\$35,294,511	-1%
Hawaii	\$7,486,672	\$2,856,721	\$10,343,393	Hawaii	\$6,384,925	\$2,856,721	\$9,241,646	-11%
Idaho	\$7,676,282	\$2,998,297	\$10,674,579	Idaho	\$6,588,258	\$2,998,297	\$9,586,555	-10%
Illinois	\$24,923,148	\$15,875,995	\$40,799,143	Illinois	\$23,718,971	\$15,875,995	\$39,594,966	-3%
Indiana	\$17,416,386	\$10,270,929	\$27,687,315	Indiana	\$16,262,765	\$10,270,929	\$26,533,694	-4%
Iowa	\$10,941,890	\$5,436,624	\$16,378,514	Iowa	\$9,816,873	\$5,436,624	\$15,253,497	-7%
Kansas	\$10,476,095	\$5,088,830	\$15,564,925	Kansas	\$9,354,215	\$5,088,830	\$14,443,045	-7%
Kentucky	\$13,245,815	\$7,156,894	\$20,402,709	Kentucky	\$12,105,282	\$7,156,894	\$19,262,176	-6%
Louisiana	\$14,059,595	\$7,764,518	\$21,824,113	Louisiana	\$12,913,581	\$7,764,518	\$20,678,099	-5%
Maine	\$7,603,092	\$2,943,648	\$10,546,740	Maine	\$6,600,682	\$2,943,648	\$9,544,330	-10%
Maryland	\$15,915,365	\$9,150,163	\$25,065,528	Maryland	\$14,756,853	\$9,150,163	\$23,907,016	-5%
Massachusetts	\$17,972,524	\$10,686,180	\$28,658,704	Massachusetts	\$17,640,158	\$10,686,180	\$28,326,338	-1%
Michigan	\$25,278,581	\$16,141,386	\$41,419,967	Michigan	\$26,896,854	\$16,141,386	\$43,038,240	4%
Minnesota	\$15,101,600	\$8,542,551	\$23,644,151	Minnesota	\$14,701,780	\$8,542,551	\$23,244,331	-2%
Mississippi	\$10,795,501	\$5,327,321	\$16,122,822	Mississippi	\$9,671,470	\$5,327,321	\$14,998,791	-7%
Missouri	\$16,424,504	\$9,530,322	\$25,954,826	Missouri	\$15,952,563	\$9,530,322	\$25,482,885	-2%
Montana	\$6,834,837	\$2,370,015	\$9,204,852	Montana	\$5,775,627	\$2,370,015	\$8,145,642	-12%
Nebraska	\$8,485,811	\$3,602,747	\$12,088,558	Nebraska	\$7,377,335	\$3,602,747	\$10,980,082	-9%
Nevada	\$9,251,219	\$4,174,253	\$13,425,472	Nevada	\$8,927,588	\$4,174,253	\$13,101,841	-2%
New Hampshire	\$7,552,202	\$2,905,650	\$10,457,852	New Hampshire	\$6,465,014	\$2,905,650	\$9,370,664	-10%
New Jersey	\$22,248,528	\$13,878,940	\$36,127,468	New Jersey	\$21,047,364	\$13,878,940	\$34,926,304	-3%
New Mexico	\$8,710,551	\$3,770,553	\$12,481,104	New Mexico	\$8,803,295	\$3,770,553	\$12,573,848	1%
New York	\$27,794,404	\$18,019,873	\$45,814,277	New York	\$28,493,781	\$18,019,873	\$46,513,654	2%
North Carolina	\$21,630,396	\$13,417,400	\$35,047,796	North Carolina	\$20,433,395	\$13,417,400	\$33,850,795	-3%
North Dakota	\$6,290,025	\$1,963,221	\$8,253,246	North Dakota	\$5,223,458	\$1,963,221	\$7,186,679	-13%
Ohio	\$28,082,405	\$18,234,914	\$46,317,319	Ohio	\$27,626,951	\$18,234,914	\$45,861,865	-1%
Oklahoma	\$12,031,404	\$6,250,131	\$18,281,535	Oklahoma	\$10,899,049	\$6,250,131	\$17,149,180	-6%
Oregon	\$12,039,235	\$6,255,978	\$18,295,213	Oregon	\$10,906,827	\$6,255,978	\$17,162,805	-6%
Pennsylvania	\$29,933,326	\$19,616,940	\$49,550,266	Pennsylvania	\$30,735,407	\$19,616,940	\$50,352,347	2%
Rhode Island	\$7,147,493	\$2,603,466	\$9,750,959	Rhode Island	\$6,048,030	\$2,603,466	\$8,651,496	-11%
South Carolina	\$13,232,255	\$7,146,769	\$20,379,024	South Carolina	\$12,091,813	\$7,146,769	\$19,238,582	-6%
South Dakota	\$6,536,811	\$2,147,489	\$8,684,300	South Dakota	\$5,441,461	\$2,147,489	\$7,588,950	-13%
Tennessee	\$16,651,663	\$9,699,934	\$26,351,597	Tennessee	\$15,488,192	\$9,699,934	\$25,188,126	-4%
Texas	\$48,310,184	\$33,338,368	\$81,648,552	Texas	\$51,803,533	\$33,338,368	\$85,141,901	4%
Utah	\$9,618,011	\$4,448,125	\$14,066,136	Utah	\$8,501,910	\$4,448,125	\$12,950,035	-8%
Vermont	\$6,242,254	\$1,927,552	\$8,169,806	Vermont	\$5,198,685	\$1,927,552	\$7,126,237	-13%
Virginia	\$19,584,849	\$11,890,053	\$31,474,902	Virginia	\$19,924,893	\$11,890,053	\$31,814,946	1%
Washington	\$17,146,134	\$10,069,141	\$27,215,275	Washington	\$16,978,969	\$10,069,141	\$27,048,110	-1%
West Virginia	\$8,649,835	\$3,725,218	\$12,375,053	West Virginia	\$7,540,254	\$3,725,218	\$11,265,472	-9%
Wisconsin	\$15,955,629	\$9,180,227	\$25,135,856	Wisconsin	\$14,811,846	\$9,180,227	\$23,992,073	-5%
Wyoming	\$6,000,636	\$1,747,144	\$7,747,780	Wyoming	\$4,908,897	\$1,747,144	\$6,656,041	-14%
	<b>CDC Total FY 03</b>	<b>HRSA Total FY 03</b>	<b>Grand Total FY 03</b>		<b>CDC Total FY 04</b>	<b>HRSA Total FY 04</b>	<b>Grand Total FY 04</b>	<b>% Change FY 03 - FY 04</b>
	\$870,000,000	\$498,000,000	\$1,368,000,000		\$849,596,000	\$498,000,000	\$1,347,596,000	-1%

# Appendix C:

## NOTES ON DATA AND METHODOLOGY

The sources for the indicators come from a variety of publicly available sources. The data were therefore collected at different times and using different methodologies and standards. The indicators are intended to serve as a composite snapshot rather than as a uniform evaluative study.

### INDICATOR 1: STATE EXPENDITURES OF FEDERAL BIOTERRORISM FUNDS<sup>165</sup>

“In early November 2004, the Association of State and Territorial Health Officials (ASTHO) surveyed the nation’s state and territorial public health agencies to obtain information regarding the extent to which their CDC and HRSA preparedness cooperative agreement funds for FY 2003 had been “spent;” were contractually “obligated;” or remained “unspent,” with an assumption that requests would be submitted to carry-over unspent funds for use in FY 2004. The date chosen for analysis was Aug. 31, 2004, the last day of the official project year for these cooperative agreements.”<sup>166</sup>

“While these data represent the best currently available fiscal estimates as to the states’ use of public health preparedness funds, months from now, when final audited numbers become available, there will be difference between this data set and those numbers. Hopefully at the national level these variances will not be major. These figures do represent the most comprehensive review of fiscal data available at this time. Unlike in reporting of the fiscal status of FY 2002 funds, in the FY 2003 figures where possible states have made account for carry-over from the prior project year.”<sup>167</sup>

### INDICATOR 2: STATE PUBLIC HEALTH BUDGETS

TFAH conducted an analysis of state spending on public health programs for two of the 50 states’ recent budget cycles, fiscal years

2003 and 2004. The analysis is based on a review of state public health budgets conducted by the Health Policy Tracking Service (HPTS) at Netscan iPublishing, Inc., formerly of the National Conference of State Legislatures (NCSL), in conjunction with TFAH from August to November 2004. Appropriations for public health programs and for the agency, department, or division in charge of public health services were considered for state fiscal years 2003 to 2004.

States were asked to provide HPTS with state budgets -exclusive of federal funds- during the states’ FY 2003 and 2004 budget cycles for major public health programs. These programs included: infectious disease control and epidemiology; laboratories; cancer and other chronic diseases, maternal and child health, immunization; Tuberculosis; HIV/AIDS and other STDs; restaurant inspections; and food safety and testing. If the data indicated an increase in state budgets from FY 2003 and FY 2004, states received a point. If the data indicated a decrease, HPTS and TFAH researched publicly available budget and appropriations information for the department, agency or division in charge of public health. The purpose was to verify the decrease was accurate and not the result of a budget issue such as a transfer of funds to another budget account, or a reorganization or restructure of the department responsible for public health. This review was conducted by searching budget documents on state websites, and attempting to contact states to verify findings.

TFAH used the state-reported budget data to construct representative state budgets for public health. This approach excluded health care dollars such as Medicaid funds, State Children’s Health Insurance Program (SCHIP) funds, and pharmaceutical assistance programs because these programs are traditionally viewed as separate from public

health programs. The approach also helped to exclude federal dollars which many states provide publicly, bundled with state funding. In addition, spending on social services programs could also be excluded using this approach.

In several cases when TFAH used the public health budget for the department, agency or division in charge of public health, the public health dollars were often bundled with health care spending or social services funding. Other states report total budgets that include significant federal dollars. This may have led to an overstatement of public health funding in these states. Several states who received a point for this indicator may not have actually increased their spending on public health programs.

The goal of the analysis was not a precise accounting of state public health spending but to seek an indication of trends in state level discretionary budgets for public health. Moreover, states do not have a uniform definition of public health, so comparisons across states is difficult to achieve.

In addition, there also was variation in the fiscal years covered by the reports because of different budget cycles. While the majority of states budgets are for FY 2003 and 2004, Montana's budget figures, for example, are from the state's 2003 and 2005 budget biennium. TFAH allocated the change in state public health spending over two budget cycles for Montana and the two other states with biennial budget cycles, Oregon and North Dakota.

## INDICATOR 8: QUARANTINE ANALYSIS

### Caveats to the Analysis

- An examination of state statutory quarantine authority, while relevant, does not completely address whether public health authorities have adequate quarantine powers. Additional authorization to engage quarantine powers maybe derived from state administrative regulations, specific ordinances at the local levels, or even case law.
- Enhanced, expedited quarantine authority in some jurisdictions may be dependent upon the declaration of a state of emergency or public health emergency. The “emergency powers” designation (\*) in the indicator chart attempts to classify those states where some quarantine authority may be contingent on such declaration(s).
- Whether a state allows quarantine via statutes does not suggest that its health authorities would or could use these powers under the given facts. Multiple other factors are important to consider, including:
  - ◆ Whether (and what) procedures must be followed to seek prior approval for the action through administrative or judicial tribunals;
  - ◆ Whether the use of quarantine is fully substantiated by the facts (e.g., how credible is the information?; how sure are public health authorities as to the infectious nature of the agent?; could all (or even most) persons in the hotel have been exposed?);
  - ◆ Whether federal agents may utilize their own limited quarantine powers; and
  - ◆ Whether other powers, such as a limited period of civil confinement during a public health investigation, may be authorized or more appropriate to address the identified threat to the public's health.
- Statutory authority to quarantine may not fully delineate the laws and policies that dictate how a public health authority implements a quarantine measure. Thus, for example, in the Center's Model State Emergency Health Powers Act, quarantine involves a bundle of legal responsibilities that include providing due process and respecting individual civil liberties. Some states may statutorily authorize the use of quarantine but fail to specify the terms of its performance.



# Appendix D:

## STATE-BY-STATE 2004 SCORES COMPARED TO 2003 SCORES

The 10 indicators viewed collectively help assess the states' public health emergency preparedness capabilities. The indicators in the 2003 and 2004 reports differed to reflect changed expectations for levels of prepared-

ness, given the additional time and funding that has been devoted toward improvements efforts. Therefore, direct comparisons of the scores cannot be made.

States	2004 Total / Score	2003 Score
Alabama	5	6
Alaska	3	3
Arizona	5	5
Arkansas	5	2
California	5	7
Colorado	6	5
Connecticut	6	4
Delaware	5	5
District of Columbia	4	3
Florida	9	7
Georgia	6	3
Hawaii	6	4
Idaho	6	3
Illinois	5	5
Indiana	4	4
Iowa	6	3
Kansas	7	3
Kentucky	7	2
Louisiana	6	5
Maine	6	3
Maryland	6	7
Massachusetts	3	5
Michigan	6	3
Minnesota	8	5
Mississippi	7	2
Missouri	7	4
Montana	7	3
Nebraska	8	6
Nevada	5	5
New Hampshire	8	5
New Jersey	5	5
New Mexico	5	2
New York	5	6
North Carolina	9	5
North Dakota	7	5
Ohio	6	4
Oklahoma	6	3
Oregon	6	3
Pennsylvania	4	3
Rhode Island	5	6
South Carolina	6	4
South Dakota	7	4
Tennessee	6	7
Texas	6	4
Utah	6	4
Vermont	7	3
Virginia	8	5
Washington	6	6
West Virginia	6	4
Wisconsin	6	2
Wyoming	4	4

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