

Urban Hazards Forum  
John Jay College of Criminal Justice  
Biological and Chemical Weapons

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# Why Discuss Chemical and Biological Weapons in the Track on Terrorism?

- events of September 11
- dissemination of anthrax spores
- evidence of stockpiles of biological and chemical weapons
- previous use by non-governmental groups of biological and chemical weapons
- lack of integration of public health into “bioterrorism preparedness”

# “Integration in National Security”

“This is the first time in American history in which the public health system has been integrated directly with the national security system.”

Donna Shalala

U.S. Secretary of Health and Human Services

January 22, 1998

# “Public Health”

“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or disability.”

(Charter of the World Health Organization, 1948)

“Public health is what we, as a society, do collectively to assure the conditions in which people can be healthy.”

(Institute of Medicine, 1987)

# Risks to Health From Infection and Environmental Hazards

Each year in the United States:

- 60,000 chemical spills, leaks, explosions, 8000 “serious,” with over 300 deaths
- 76 million episodes of food-borne illness, 325,000 hospitalizations and 5000 deaths
- 110,000 and hospitalizations and 20,000 deaths from influenza
- 400,000 deaths related to smoking

# Other Risks to Health in NYC

- Every day 311 babies are born in NYC--  
22 are born to mothers with inadequate care  
28 are born with low birthweight  
3 die before her/his first birthday
- Every day 147 children are reported abused or neglected
- Every 4 days a person under age 19 is murdered

# “Public Health in America”

(Public Health Functions Project, 2000)

- Vision: Healthy People in Healthy Communities
- Mission: “Promote Physical and Mental Health and Prevent Disease, Injury, and Disability”
- Public Health (6 functions listed):

Prevents epidemics and the spread of disease

Promotes and encourages healthy behaviors

Assures the quality & accessibility of health services

- Essential Public Health Services (10 listed)

Monitor health status to identify community health problems

Inform, educate & empower people on health issues

Link people to needed personal health services and assure the provision of health care when otherwise unavailable

# Resources for Public Health

- Institute of Medicine report in 1987 found U.S. public health severely underfunded
- The Clinton Health Reform proposal in 1993 estimated that the resources for essential services constituted only 55 percent of needed resources
- Impending Federal, state, and local budget cuts, except for bioterrorism funding

# Resources for Public Health in New York City

- New York City in the past had what was reputed to be the one of the best municipal health departments in the world
- Budget cuts over the past three decades have caused major reductions in personnel and services
- Further budget cuts of 15% or more for the NYC Dept of Health are contemplated

# Priority Setting for Response to Public Health Risks

- Evaluation of Risk
- Effectiveness and Cost of Prevention
- Effectiveness and Cost of Treatment
- Consequences of Actions and Inactions

# Evaluation of Risk

- Nature of the potential hazard
- Likelihood of occurrence
- Number of potential victims
- Degrees of potential harm

# “Terrorism”

Terrorism is an imprecise term that refers to the use of weapons to attempt to produce personal fear or economic or social destabilization and to force a change in attitude, practice or policies. Terrorism often targets civilian personnel indiscriminately. Those termed “terrorists” by one side in a controversy may be viewed as “freedom fighters” or “servants of god” by the other.

# Weapons Used for Terrorism

- Small arms and light weapons
- Explosives
- Incendiaries
- Nuclear
- Chemical
- Biologic
- Information Systems

# “Bioterrorism”

Bioterrorism is used to describe terrorism conducted by use or threat of use of chemical or biological weapons. Use or threat of use of radiologic or nuclear weapons may be included in the definition. These weapons, “bioweapons,” may add further elements of unpredictability and defenselessness and make their use especially abhorrent and terrifying.

# Biological Weapons

Used by Japan during World War II

Biological Weapons Convention of 1952  
banned production, transfer and use

Production and weaponization allegedly  
continued in several nations

“Defensive” research continued

Dissemination of anthrax

Risk of use of other weapons

# Biological Agents Alleged To Have Been Weaponized

## Bacteria

Anthrax

Plague

Glanders

Tularemia

Brucellosis

Q fever

## Viruses

Smallpox

Hemorrhagic Fevers

(Ebola and Marburg)

## Toxins

Botulinus Toxin

Ricin

# Anthrax

Non-transmissible human-to-human

Stockpiled and tested during WWII

Production outlawed by the BWC

Accidental release in Sverdlovsk

Alleged weaponization by Iraq

Immunization of U.S. troops

Dissemination of spores by mail

Respiratory and cutaneous infection

# Response to Anthrax

- Prevention of dissemination
- Immunization
  - Effectiveness
  - Adverse effects
- Prompt Diagnosis
- Treatment with antibiotics

# Smallpox

Transmissible human-to-human

Global eradication in 1979

Cessation of vaccination against smallpox

Destruction of stocks of virus (except in the  
USSR and the US)

Alleged weaponization by USSR and Iraq

Increased vaccine production in the US

Decision on prospective use in the US

# Response to Smallpox

- Prevention of infection
  - Eradication of the smallpox virus
  - Immunization (vaccination)
- Diagnosis
- Isolation
- Treatment with anti-viral agents

# Chemical Weapons

Used extensively during World War I

Geneva Protocol of 1925 banned use

Production during World War II

Use in Iran-Iraq War

Use by Aum Shinrikyo in Tokyo subway

Chemical Weapons Convention ratified

Risk of use as weapons of terror

# Types of Chemical Weapons

- Acetylcholinesterase inhibitors (“nerve agents”)
  - Sarin (used by Aum Shinrikyo)
- Vesicants (“choking agents”)
  - Chlorine and phosgene (used in WWII)
- Tear gasses (“harassing agents”)
  - CN and CS (used in “riot control”)

# Response to Chemical Weapons

- Prevention of dissemination
- Detection
- Protection of skin and respiratory passages
  - Protective clothing
  - Gas masks
- Treatment
- Decontamination

# Effectiveness and Cost of Prevention

- Primary Prevention

Preventing the occurrence

Removal of cause

Immunization

- Secondary Prevention

Preventing the progression

Early detection and treatment

Immunization

# “Dual Use”

- Advocates of major funding for “bioterrorism preparedness” argue that the resources could be used for preparedness for other forms of public health and medical emergencies.
- Those who question this funding argue that it will divert attention, financial resources, and personnel from other urgent public health and medical needs.

# Effectiveness and Cost of Treatment

- Reassurance

  - Accurate Information

  - Effective Communication

- Emergency Care
- Ambulatory Care
- Hospital Care
- Rehabilitation

# Availability of Treatment

- Personnel for education and reassurance
- Personnel for counseling, psychological, and psychiatric care
- Stockpiles of drugs and immunizations
- Medical care infrastructure

# Consequences of Action and Inaction

- Action

Costs (including “opportunity costs”)

Unintended consequences

(“collateral damage”)

- Inaction

Failure to prevent preventable damage

Psychological

Political

# Collateral Damage

- Loss of protection of confidentiality
- Suspicion of the information released by and the motives of public health agencies and professionals
  - Misinformation and exaggeration
  - Experimentation
- Association of public health with law enforcement and military agencies

# “War”

- The U.S. Constitution names the President of the United States the “Commander-in-Chief of the Army and Navy of the United States” but limits the power to declare war to the U.S. Congress. For example, in December 1941, after the bombing of Pearl Harbor, the Congress declared war on Japan, Germany and Italy. The Congress has not declared war since then.

# “War on Terrorism”

- In September 2001 the U.S. President declared that a war against terrorism had begun and stated that the war would be directed not only against “terrorists” but also against nations that “harbor terrorists.” Congress (with one opposing vote) approved specific “war powers” for the President but has not declared war against Afghanistan or against any other nation.

# Impact of War on Resources, Priorities & Services

- Resources: Personnel, Finances
- Priorities: Security, Civil rights
- Services: Medical care, Public health, Social services

# Collateral Damage (2)

- Model State Emergency Health Powers Act
- USA Patriot Act
- Statements by Attorney General Ashcroft equating legitimate political dissent with unpatriotic and un-American acts
- In response, the ACLU called “free speech” the “main engine of justice”

# Supplementary Material

# Nuclear Weapons

Blast, heat, ionizing radiation

Used on Hiroshima and Nagasaki in 1945

Thermonuclear weapons tested by the U.S. and the USSR in the 1950s

Collapse of the USSR and possible dispersal of weapons and fissile materials

Bush-Putin proposed stockpile reductions

Risk of use as weapons of terror: attack on nuclear power plants; “dirty” bombs)

# Response to Nuclear Weapons

- Prevention of use
  - Reductions in nuclear weapons stocks
  - Making fissile and radioactive materials and ignition devices unavailable
  - Protection of nuclear power plants
- Prevention of health consequences
  - “Fallout shelters”
  - Radiation protection, including KI