

The Institute of Environmental and Human Health



Texas Tech University
Texas Tech University Health Sciences Center

Countermeasures to Chemical and Biological Threats: Critical Role for Research, Education, and Training

Briefing for Margaret Hamburg, M.D.

Assistant Secretary for Planning and Evaluation Department of Health and Human Services

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Chemical/Biological Terrorism

- Delivery of biological, chemical, or physical agents to humans, plants, and/or animals with the intent of creating fear, panic, confusion, economic hardship, illness, and/or death.

Terrorism by international groups

- State sponsors of terrorism (Iran, Iraq, Syria, Sudan, Libya, Cuba, North Korea) are heavily financed
- Organized extremist groups (Lebanese Hizballah, Egyptian Al-Gama' Al-Islamiyya, Palestinian Hamas) have supporters in the U.S. to support an act of terrorism
- Loosely affiliated extremists (Ramzi Ahmed Yousef, Usam bin Laden) are difficult for law enforcement to track

Terrorism by domestic groups

- Right-wing extremist groups (militias, white-separatist groups, anti-government groups) -issues include gun laws, state laws, law enforcement, taxes, United Nations, white supremacy, Christian Identity, Armageddon, etc.
- Puerto Rican extremist groups
- Special interest extremists (Animal Liberation Front, Earth Liberation Front)

Presidential Decisional Directives 39, 62, and 63

- Clarifies the role of federal agencies in counterterrorism
- FBI leads the federal response to domestic terrorist incidents
- FBI works with the Federal Emergency Management Agency (FEMA) for consequence management

Other Federal Partners

- Departments of Energy (DOE)
 - Departments of Defense (DOD)
 - Department of Justice
 - National Guard Bureau
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- Environmental Protection Agency (EPA)
 - State and local responder communities

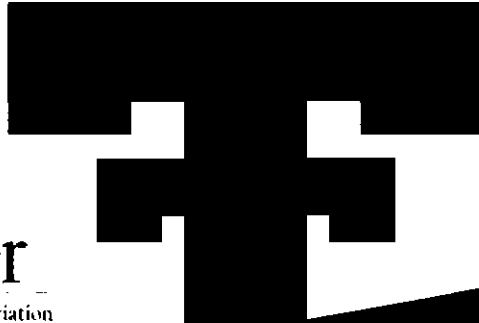
Janet Reno recently discussed counter-terrorism planning

- State and local input is essential
- Must work to integrate plans
- Education, exercising and training process must include senior level officials to achieve senior level interagency coordination
- Must have right tools and personnel to improve capabilities for CB response



Reese Center

Research Technology Business Aviation



- Texas Tech and Reese Center are in a unique position to offer a critical service to the nation

Texas Tech and Reese Center

- Centrally-located, both regionally and nationally
- Prototype interactions that emphasize University, military, and federal agency cooperation
- Part of large Texas initiative involved in research, education, and training for CBW defense



Reese Center

Research Technology Business Aviation

- Former Air Force base in transition for civilian purposes
- Hospital, theater, airport, housing etc., intact and in excellent condition
- Infrastructure and organization of small town, perfect for CBW scenario training
- Low-cost for government

CB threats differ from traditional threats

- Problem may not be immediately obvious
- Identification takes time, which may hinder efforts at containment
- Public is not familiar with disease countermeasures or with the threats
- Bioterrorism mimics natural events

Incidental, accidental, or intentional?

- Chemical plant leak in
- Bhopal, India
- Anthrax leak from CB facility in Russia
- Dioxin contamination of herbicides in Vietnam
- Multiple exposure sources in Gulf War
- Yellow rain in Afghanistan
- Cyanide poisonings in Jonestown massacre
- Salmonella poisoning of salad bars in Oregon
- Anthrax scares in the U.S.
- Sarin attack in Tokyo subway
- Ebola outbreaks in Africa and Reston, VA

TTU/TTUHSC excels

TIEHH is a joint project between TTU and TTUHSC

- Highly experienced at evaluating complex risk assessment problems (Base remediation issues, Superfund sites)
- Environmental and human health issues and threats are integrated
- Many established public, private, government and military partnerships
- Excels at Multidisciplinary team problem-solving

Rigorous research agenda

- Research and Development Directed at Countermeasures to CBW Threats
 - Detection
 - Biological Mechanisms of Environmental Disease
 - Physical and Medical Management
 - Modeling (Epidemiological, Toxicological, Physiological, and Physical)
- Education and Training

Multiple R & D Partners Involved

- Government-Dept. of Justice, FEMA, Institute for Defense Analysis, Texas Dept. of Health
- Private industry, international experts
- University campuses (Texas Tech Medical Center, UT-Austin, UT-Southwestern Medical School, UT at Galveston, U. South Florida)

Multiple Disciplines

- Medicine and Law
- Epidemiology
- Microbiology
- Pharmacology and Physiology
- Toxicology and Chemistry
- Environmental Sciences
- Engineering
- Computer Science and Mathematics
- Textiles
- Communications
- Education

Multiple disciplines give perspective & power

- Most environmental threats not related to biowarfare
- Essential for proper differential diagnoses
- Environmental changes/threats often impact on human health and vice versa
- Public needs to be empowered in health and safety decisions. How to disseminate intelligence information about risk? How to enforce quarantine?
- Need to gather expertise in real time
- Health risks associated with the war arena will continue to change, requiring further research and training

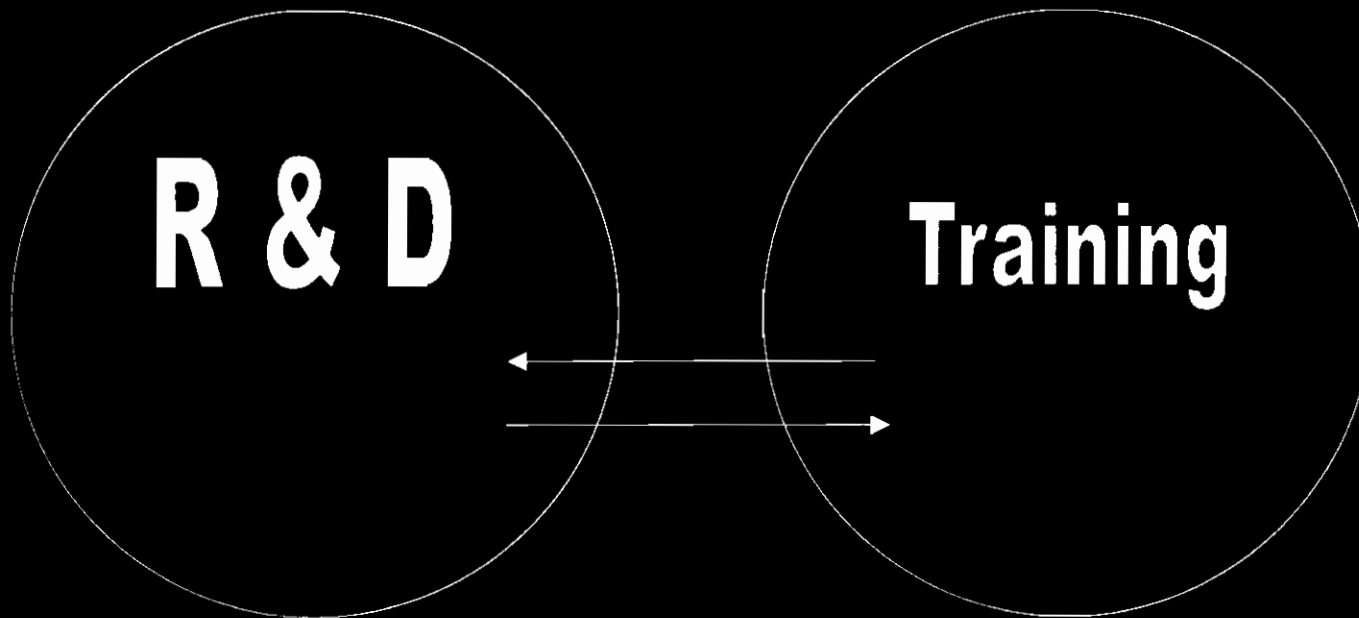
Important to consider both research
and training to counter CBW threat

Improve tools

Identify risk factors

Develop and evaluate prevention
and control strategies

R & D improves Training
Training drives R & D



Issues for Education and Training

- Critical need for properly educated and trained personnel to prepare for and respond to a potential bioterrorist attack
- Very few dedicated programs available
- No designated facilities for interagency, or interactive (federal + state) training in investigative and medical response

Training audience

- Firemen, police, and other first responders
- Health departments, hospital and medical personnel
- National Guard
- Interagency federal, state, and local response teams
- Civic leaders, the media, teachers, volunteer organization leaders

Objectives of Education and Training Subgroup

- Develop an education and training program that is integrated across agencies/organizations and technologies.
- Develop training scenarios and modules based upon past or anticipated real-life accidents or disasters.

Technology

- High performance computing at Reese Center through The Institute of Environmental and Human Health
 - Virtual Reality Center
 - Modeling
 - epidemiological
 - physical
 - toxicological
 - physiological



Training scenarios and modules

- Detection (early problem-recognition, prompt diagnosis, timely coordination with necessary “outside” support, use of new technologies)
- Case or site investigation techniques
- Safety and protective mechanisms training
- Public and community preparedness training
- High performance computer for modeling and virtual reality training in theater-setting
- Satellite and telemedicine up-link for training and for medical outreach in crisis situation

- Centralized geographic location, regionally and nationally
- Year-round operational capability at Reese Center
- State-of-the-art facilities for toxicological research at TIEHH
- Texas Department of Health and community support
- Secure access facility, low cost
- Room for development and expansion; full-scale operational capacity possible if CBW threats escalate
- State-of-the-art communication capability for medical and training outreach;
- Virtual reality center and high performance supercomputer for complex modeling on-site
- Classroom space at South Plains College-Reese Center
- Housing and dining facilities on-site; plus excellent area restaurants in a University town
- Excellent hospital facility(not in operation) for scenario training and supporting laboratory services

High Performance Computer Fiber Optic Connections



**TIEHH Headquarters
Reese Center**



**Reese Center
Lubbock, Texas**



**Texas Tech University/
Texas Tech Medical Center**



**City of
Lubbock**