

BW Threat & Vulnerability

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Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE 16 JUN 1998		2. REPORT TYPE N/A		3. DATES COVERED Jun 1998 - Jun 1998	
4. TITLE AND SUBTITLE BW Threat & Vulnerability				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Dr. F. Prescott Ward				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Midwest Research Institute, 425 Volker Boulevard, Kansas City, MO 64110.				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited					
13. SUPPLEMENTARY NOTES The original document contains color images.					
14. ABSTRACT See brief.					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 12	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

BW Threat and Vulnerability

Briefing Outline

- BW Exploitation
- Area Coverage
- Threat Agents and Delivery Systems
- Differences between BW and CW
- Countermeasures



Biological Warfare Threat



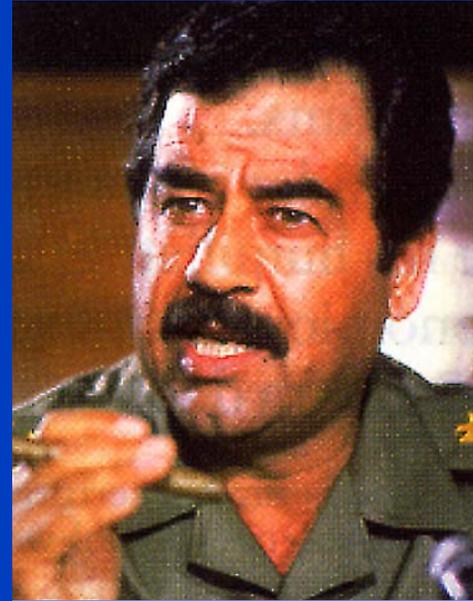
“The one that scares me to death perhaps even more so than tactical nuclear weapons, the one we have less capability against, is biological weapons. And this was my greatest concern during Operation Desert Storm, knowing that the Iraqis had been working on such a capability.”

General Colin Powell
Chairman, JCS
Testimony to House Armed Services Committee
30 March 1993

Biological Warfare Threats

Reasons to Exploit BW

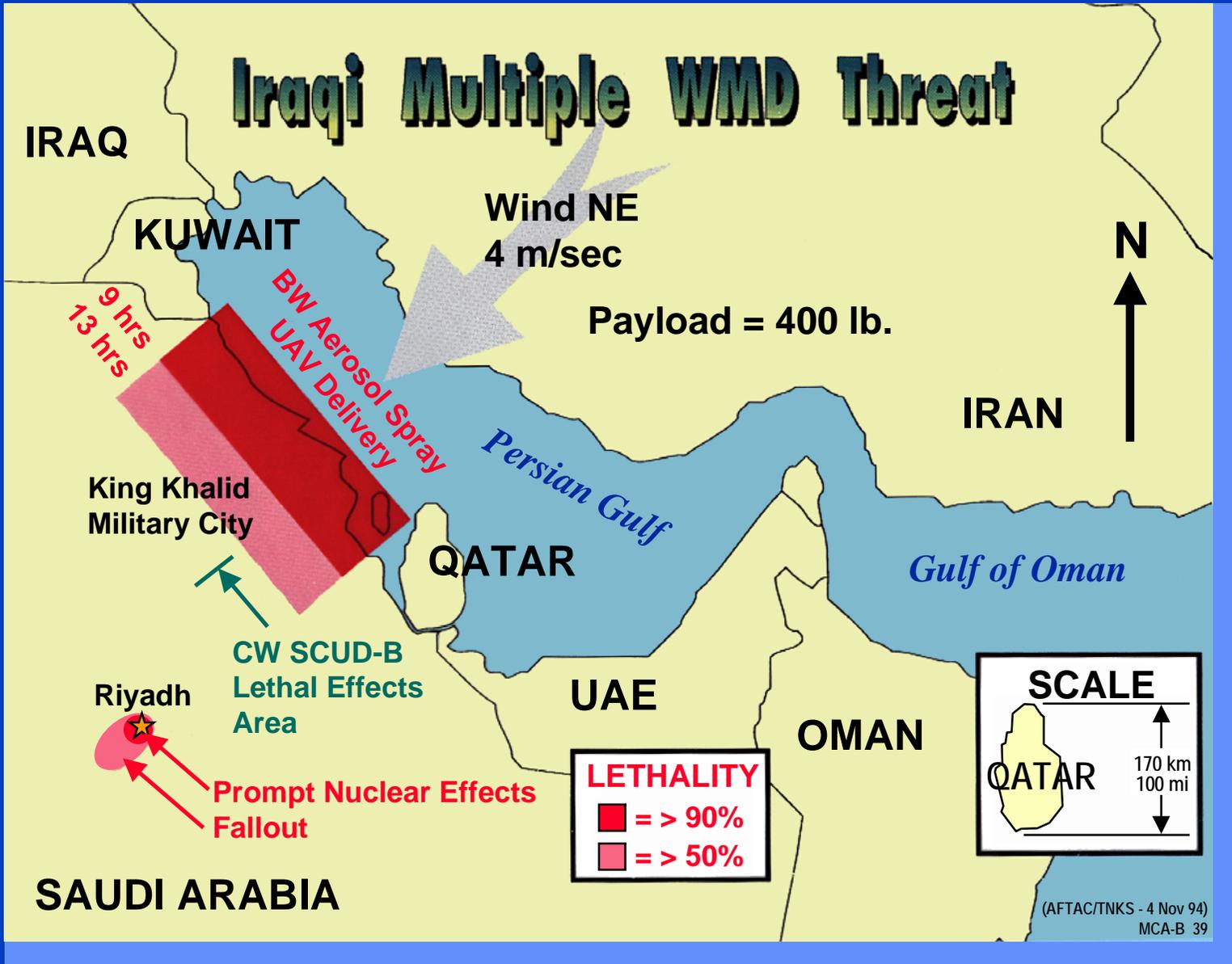
- Military options diminishing
- Formidable deterrence value
- U.S. vulnerable
- Massive casualties over huge area
- Plausible denial of use
- Cheap, available industrial base, easy to disseminate



Iraqi BW Threat

- Huge stockpile
- Weaponized
- Verified by UNSCOM

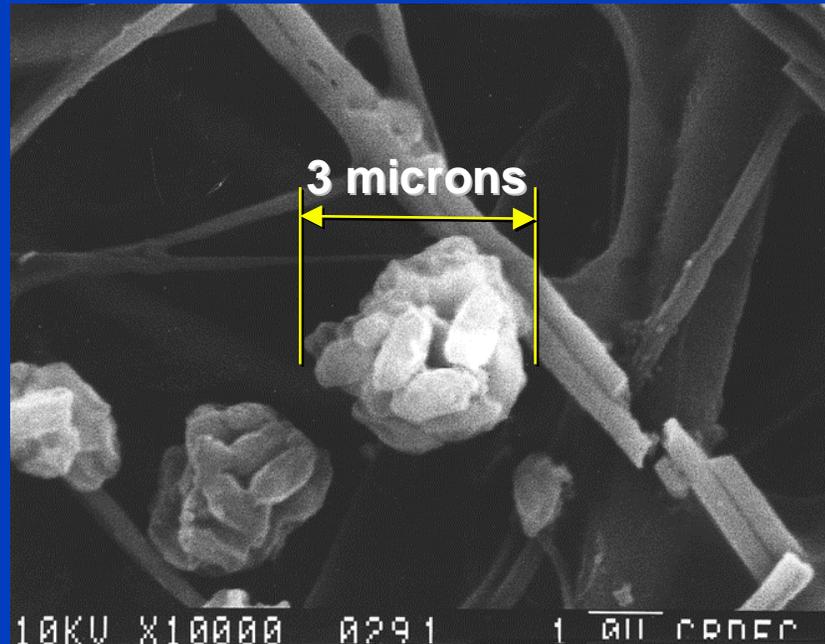
Iraqi Multiple WMD Threat



Threat List

Bacteria

- Anthrax
- Plague
- Tularemia
- Brucellosis



Toxins

- Botulism
- Ricin

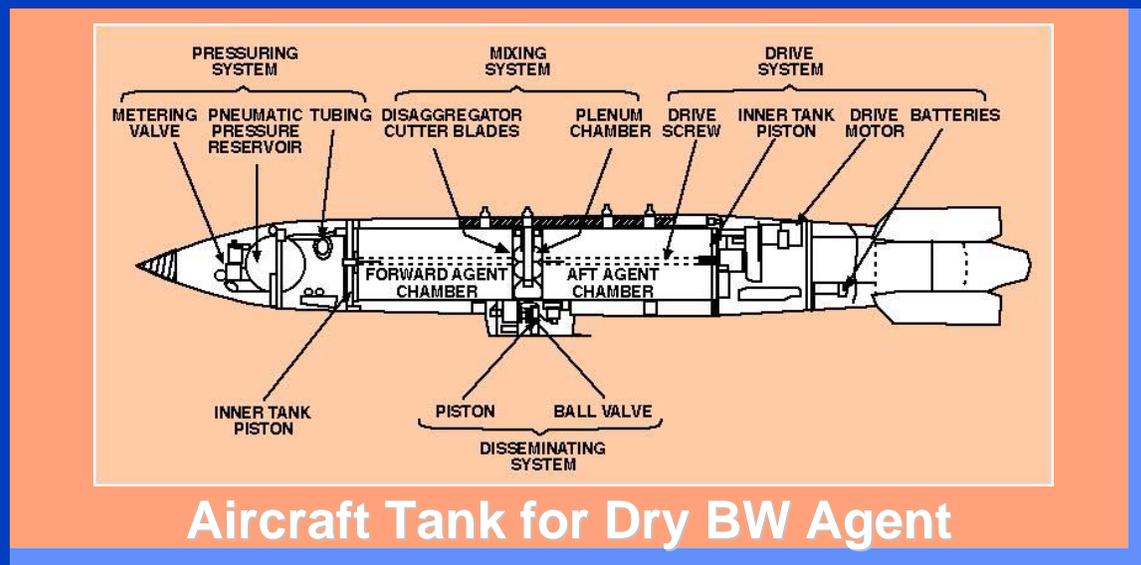
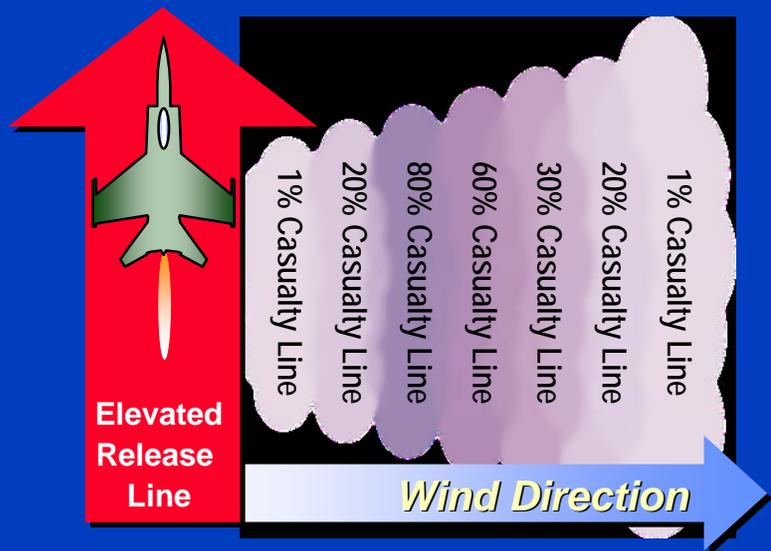
Viruses

- Smallpox
- Marburg
- Ebola
- Equine encephalitis

Enemy BW Delivery Systems

Spray Tanks Cruise Missiles

Low altitude,
line-source delivery
of wet or dry BW agents



Threat

- Large coverage area
- Very high dissemination efficiencies
- Cruise missiles difficult to intercept

BW Delivery Options



Agricultural sprayers

- Widely available
- Relatively inexpensive
- High dissemination efficiency

Iraqi exploitation

- Purchased several dozen just prior to Gulf War
- Delivery scenarios
 - Offshore dissemination
 - Pick-up truck



Enemy BW Delivery Systems



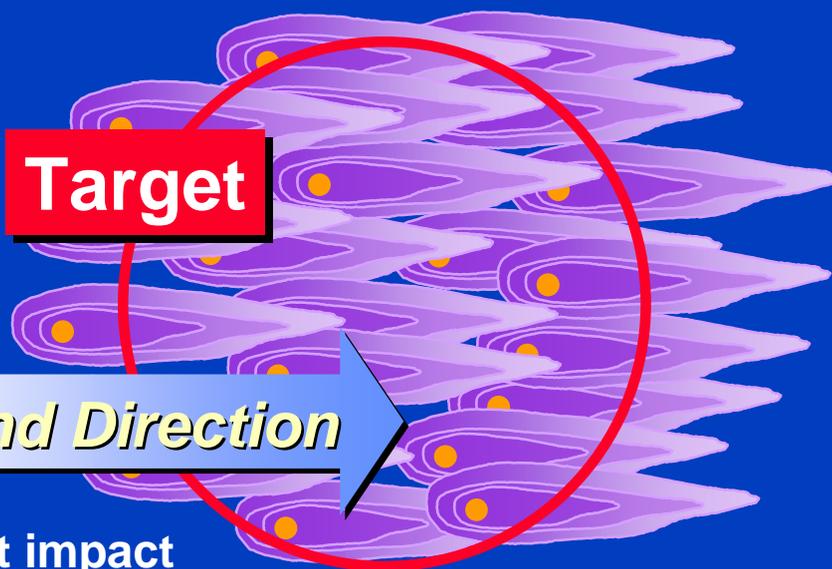
Missile Warhead with Bomblets

Threat

- Difficult to intercept
- On-target delivery of BW
- Theater or strategic weapon

Coverage Area

SCUD-B with powdered anthrax = 50 sq. mi.



● = Bomblet impact

Biological Threat in the Persian Gulf

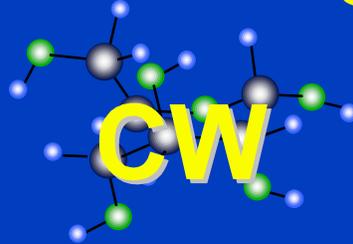
Favorable attack conditions

- Wind speed ≥ 4 mps
- Atmospheric inversion
- Wind from N or NE

Line-source dissemination
in January or February

Time	Wind Speed (mps)	% of Time	
		Inversion	Wind N-NE
2000-0200	3.2	100	13
0300-0900	3.5	86	9
1000-1400	4.5	45	18
1500-1900	4.6	79	20

Chemical vs. Biological Agents



Area coverage	< 10 km ²	100's to 1000's km ²
Quantity/km ²	500 to 1000 kg	1 to 5 kg
Cost/km ²	\$600	\$1
Onset time	Minutes (nerve agent) to hours (mustard)	Days (anthrax) to weeks (Q fever)
Agent form	Gas or liquid	Solid
Targets	Tactical	Rear area, theater, strategic
US preparedness	Adequate	Inadequate

BW Force Protection

Summary

- Reasons for enemy to use BW are compelling
- Iraq had large, weaponized stockpile
- Delivery systems: simple to sophisticated
- Threat list is diversifying
- BW causes massive casualties over large areas
- BW completely different from CW
- Successful biodetection is strongest link in biodefense chain