

SESHA--Graduate Lecture Series--Emerging Issues

- Elizabeth Aton
- Washington University School of
Medicine



Elizabeth Aton

Division of General Medical Sciences, Department
of Internal Medicine, Campus Box 8051

Washington University School of Medicine

660 South Euclid Avenue

Saint Louis, MO 63110

(314) 454-8245

eaton@imgate.wustl.edu

Microelectronics Workplace Epidemiology Challenges

- Reproductive Studies
 - Cancer Study?

Microelectronics Workplace Other Health Challenges

- Musculoskeletal Injuries and Repetitive Motion/Cumulative Trauma Illnesses
- Multiple Chemical Sensitivity
 - Endocrine Modulators
- Behavioral Safety Initiatives

Emerging Agents

(Weapons of Mass Destruction)



- EH&S Specialist role
- Terrorist motivation
 - Visceral fear
 - Morbidity and mortality; denial of use
- U.S. government initiatives



Consider--

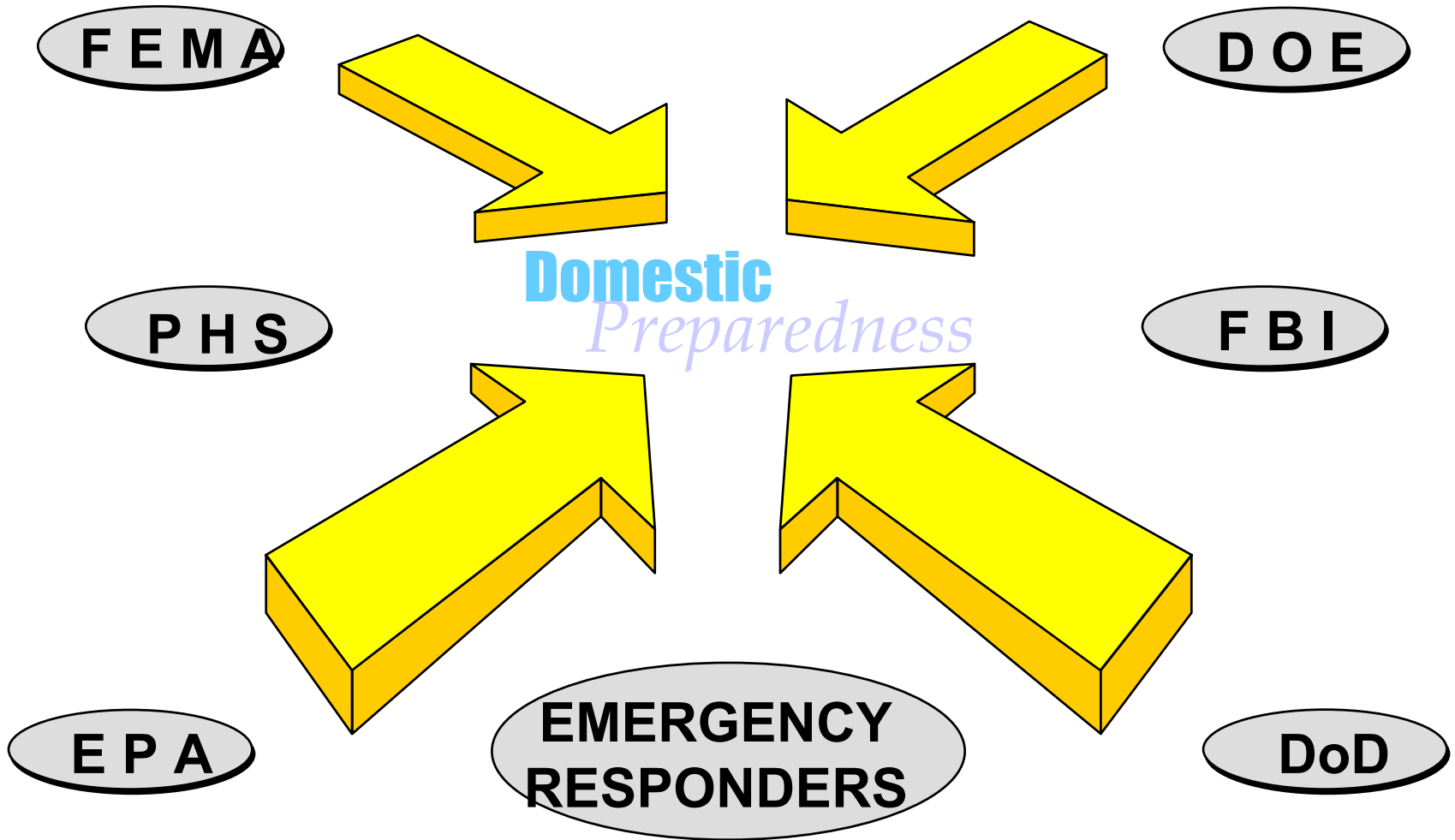
- Community health and safety risk--
WMD (nuclear, biological, chemical)
- New applications and content for
existing challenges

Emerging Agents

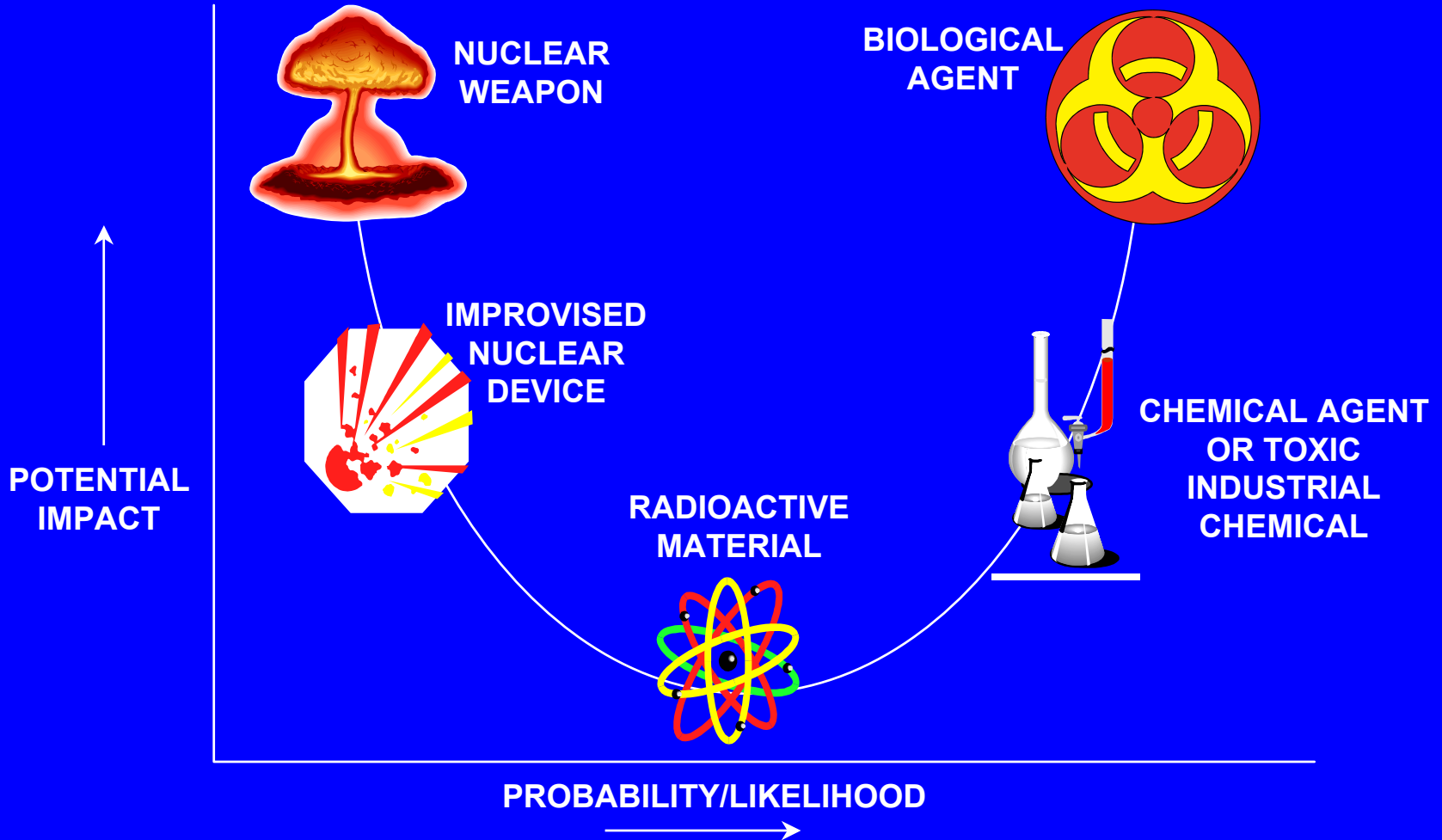
(Weapons of Mass Destruction)

- Biological
- Nuclear
- Chemical
- Incendiary
- Explosive
- BeNICE!

Partnership



Potential Probability Vs. Impact



Why Is The Risk Increasing?

- Information explosion - Internet, etc
- Biotechnology renaissance - greater availability of biological material and information
- Changing goals of terrorists - trends toward a desire for greater death tolls

Sources of Terrorism

- State-sponsored programs
 - Former Soviet biological program & Iraq
- Ideological extremists
 - International (e.g. Osama bin Laden)
 - Domestic (e.g. anti-government, militia)
- New world terrorists
 - Religious extremists (e.g. Aum Shinrikyo)
- Lone wolves
 - “Unabombers” with biology training

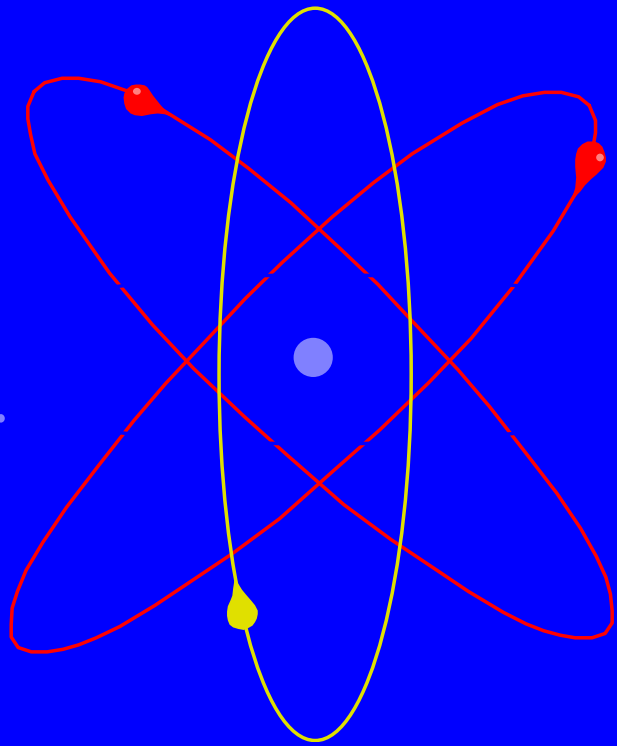
United States PDD 39

- Acknowledges threat
- Classifies risk
- Identifies process
 - Designates resources
- Defines roles
- Region preparations may include WMD curriculum development and MMRS

Why Use Chemical or Radiation Weapons?

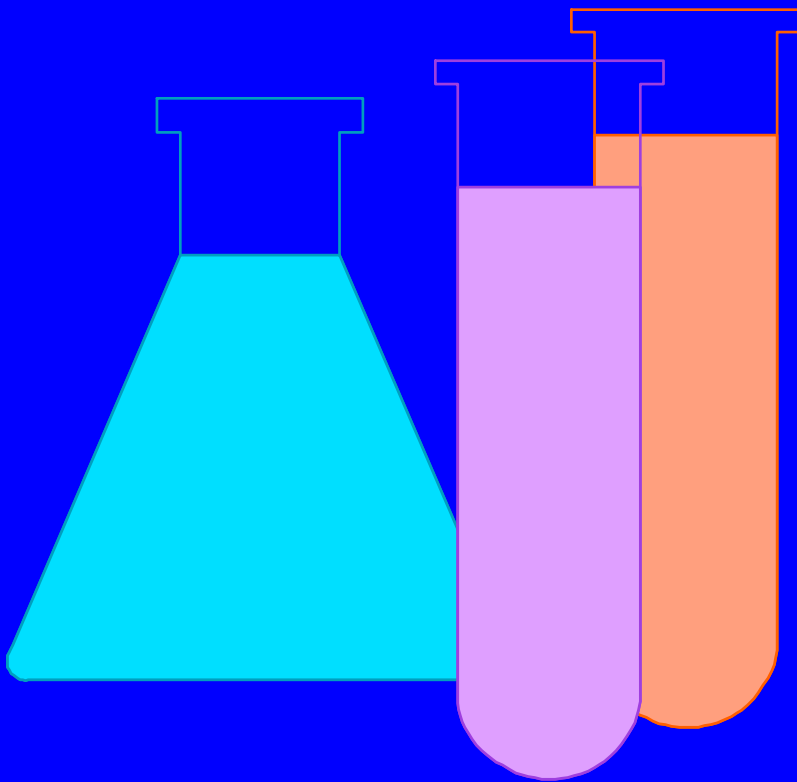
- Inexpensive and relatively easy to produce
- May be stolen or diverted from industrial sources or transport
- Threat alone may create panic
- Large attack areas may be covered
- Detection may be difficult
 - Specialized instrumentation and/or materials
- Perpetrators may protect themselves and escape before effects are felt

WMD--Radiologic ("Nuclear")



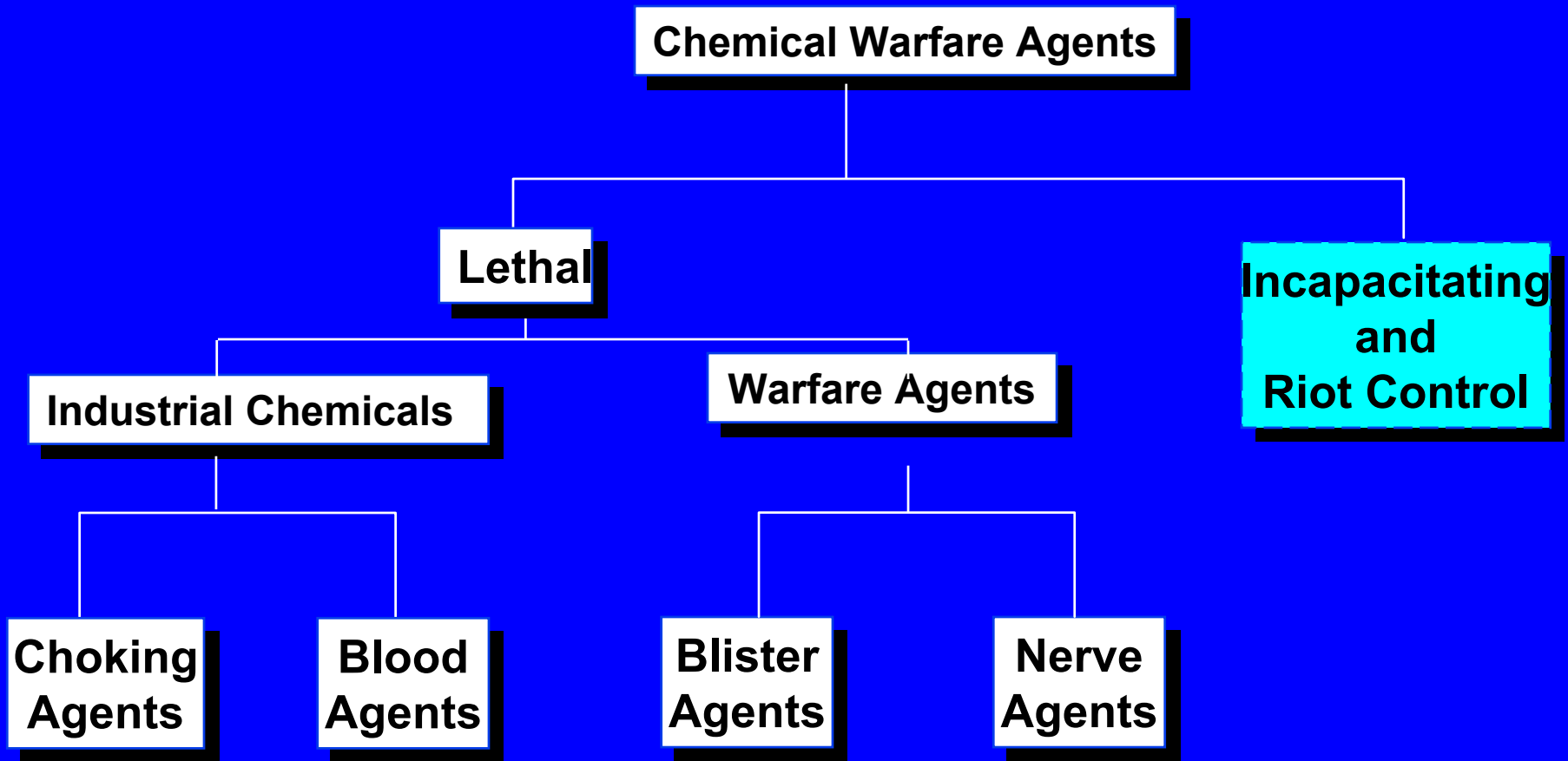
- Thermonuclear Device Unlikely
- Secondary Sources
 - "Dirty"
 - Denial of Use

WMD--Chemical



- Classification
- Morbidity and Mortality
- Protection

Classes of Chemical Agents



Mustard Agent

Physical Appearance	Oily liquid - clear when pure, brownish when impure, freezes at 57 ° F
Odor	Garlic or mustard
Symptoms	<ul style="list-style-type: none">• Eyes: Burning, gritty• Skin: Delayed blisters• Lungs: Raspy cough, severe damage
Protection	Respiratory and skin
First Aid	Decontaminate

Nerve Agents

Physical Appearance	Normally liquid; clear when pure, tan / brown when impure; some may readily vaporize
Odor	Fruity or sulfur
Symptoms	<ul style="list-style-type: none">• Pinpointing of pupils• Vomiting/diarrhea• Difficulty in breathing• Salivation• Twitching• Convulsions
Protection	Respiratory and skin
First Aid	Decontaminate

Why Use Biological Weapons?

- *Inexpensive and relatively easy to produce*
- *Threat alone may create panic*
- *Large attack areas may be covered*
- *Detection may be difficult*
 - Odorless, colorless, tasteless
- First sign of attack is human illness
 - Some pathogens are highly contagious
- *Perpetrators may protect themselves and escape before effects are felt*

WMD--Biological



- Bacterial
 - Viral
- Rickettsial
 - Toxins
- Hindrance to Recognition
- Morbidity and Mortality

Bacteria

	Anthrax	Plague
Incubation period	1-7 days	2-3 days
Contagious	NO	YES (pneumonic) NO (bubonic)
Signs and Symptoms	Chills, fever, nausea, swollen lymph nodes	Chills, high fever, headache, spitting up blood, SOB
Protection	BSI	BSI

Viruses

	Small Pox	Viral Hemorrhagic Fevers (i.e. Ebola)
Incubation period	7-17 days	3-21 days
Contagious	YES	YES (Ebola)
Signs and Symptoms	fever, rigors, vomiting, headache, pustules	fever, vomiting, diarrhea, mottled/blotchy skin
Protection	BSI	BSI

Training Overview



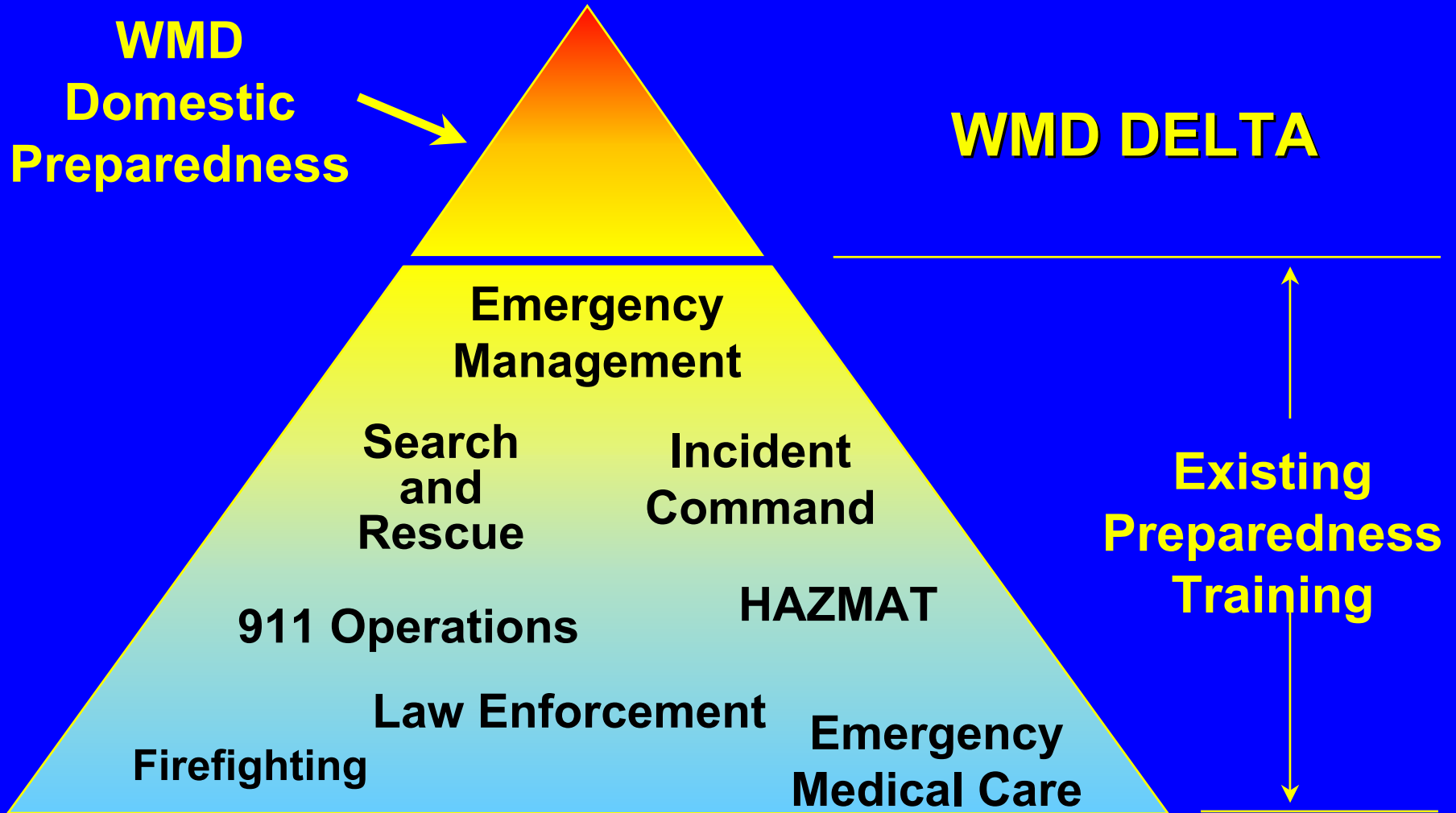
**U.S. ARMY SBCCOM
ATTN: AMSSB-RDP
5183 BLACKHAWK ROAD
ABERDEEN PROVING GROUND
MARYLAND 21010-5424**

**DOMESTIC
PREPAREDNESS
TRAINING TEAM**

**HELPLINE: (800) 368-6498
FAX: (410) 612-0715**

E-MAIL: cbhelp@apgea.army.mil

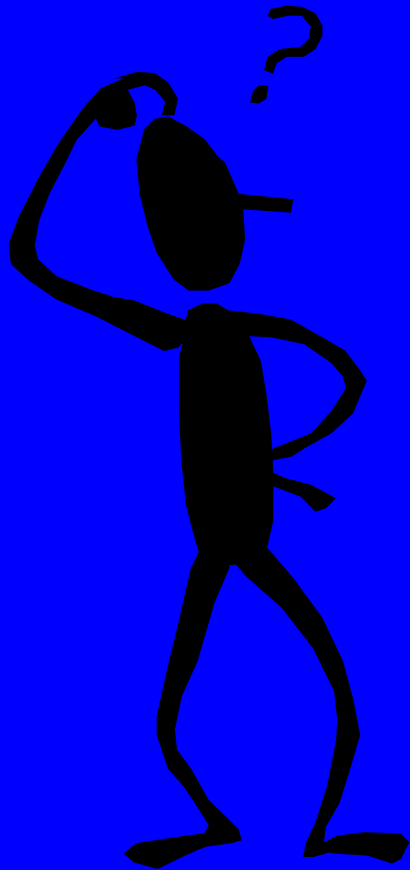
WMD "Delta"



WMD--Preparation

- Planning
 - Target Hardening
 - Intelligence
 - Resource Allocation
- Enhanced Recognition in Incident
 - Multi-Disciplined Response

EHS Participation

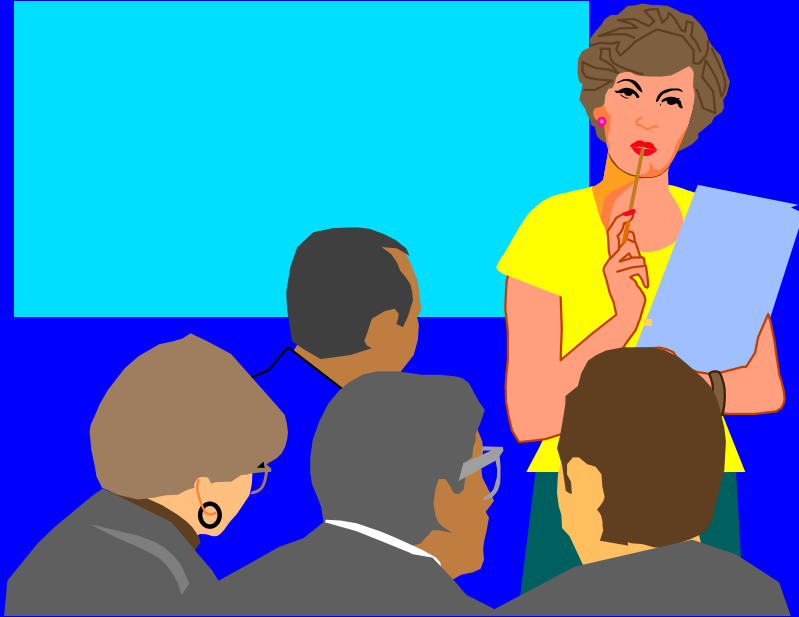


- Critical to decreasing population morbidity and mortality
- Have no "extra" resources
- Need creative approaches

EHS Considerations

- Integrated Emergency Response
- Shared Resources
- Utilities
- Decontamination
- Segregation
- Flexibility
- Different approach to planning!
- Different approach to doing!

WMD Conclusions



- The United States and its citizens are targets for terrorism
- Terrorists may use non-traditional weapons
- Planning, training and exercising can protect our community

Emerging Issues Questions?

