THE DOD CHEMICAL/BIOLOGICAL DEFENSE PROGRAM

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Chemical/Biological Defense Program Mission and Strategy

- ***Mission***

  Oversee a coordinated, jointly integrated chemical and biological defense program which:

  - *Prevents the use of chemical and biological weapons against members of the U.S. Armed Forces*
  - *Ensures that forces exposed to a contaminated battlefield can survive and fight 2 MRCs*
  - *Supports Force Power Projection*

- ***Strategy***

  Provide adequate CB defense training, doctrine and equipment to protect U.S. Forces

Chemical/Biological Global Proliferation

- More than 20 countries working toward CW capability
  - Relatively cheap and readily obtainable
  - Mustard-nerve-cyanide-phosgene
- More than 10 countries developing BW capability
  - Equipment not unique
  - More potent than most deadly chemical agents
  - No need for large stockpiles
- At least 20 countries will have delivery capabilities or be working on them by year 2000
- Legitimate global trade of many precursors and equipment
  - Difficult to limit production with export controls

Threat assessments drive *Requirements* which drive Chemical/Biological Defense *Programs = TRP process*

Joint NBC Defense Concept

- *SITUATIONAL AWARENESS - EARLY WARNING*
  - » **Detection and Identification**
  - » **Warning and Reporting**
  - » **Reconniassance**
- *FORCE PROTECTION*
  - » **Individual Protection**
  - » **Collective Protection**
  - » **Medical Protection**
- *RECOVERY*
  - » **Decontamination**

MAINTAIN COMBAT POWER AND OPTEMPO

Joint NBC Defense Doctrine

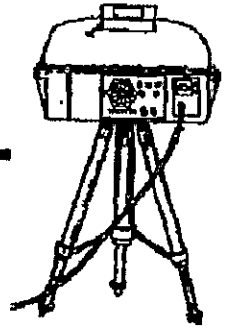
(Joint Pub 3-11, Apr 94)

- CONTAMINATION AVOIDANCE
  - RECONNAISSANCE
  - DETECTION
  - IDENTIFICATION
  - WARNING & REPORTING
- PROTECTION
  - INDIVIDUAL
  - COLLECTIVE
- DECONTAMINATION
  - IMMEDIATE
  - OPERATIONAL
  - THOROUGH

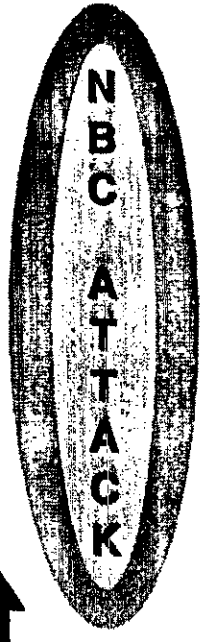
MEDICAL
- PREVENTION
- DIAGNOSIS
- THERAPY

Contamination Avoidance

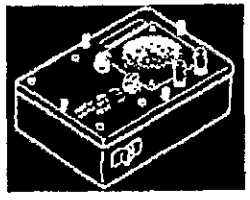
EARLY WARNING - - SURVEILLANCE - - WHERE
STAND-OFF



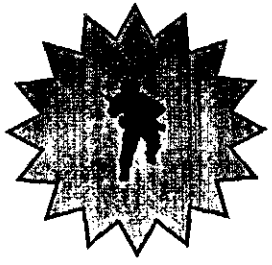
DETECTION - - IDENTIFICATION - - WHAT
PROGRAMMABLE FOR NEW AGENTS

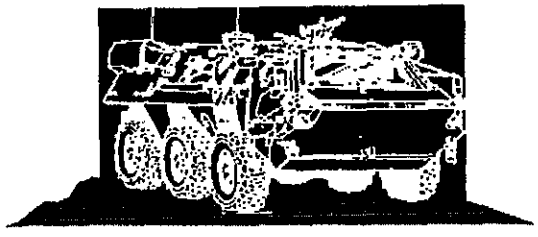


WARNING & REPORTING - SOUND THE ALARM - WHEN
INTEGRATED INTO CMD/CONTROL SYSTEMS



POINT DETECTION
CONTINUOUS MONITORING
REACT - NOW



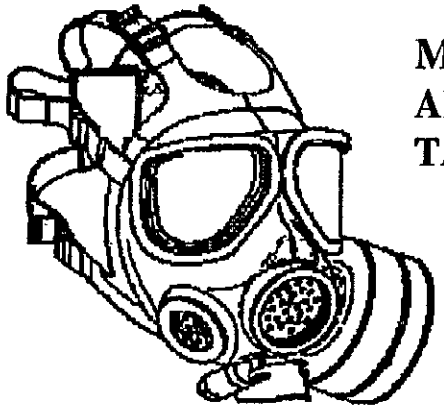


RECON - MAPPING - SAFE PASSAGE
MOBILE PLATFORMS FOR HEAVY/LIGHT
APPLICATIONS

Contamination Avoidance

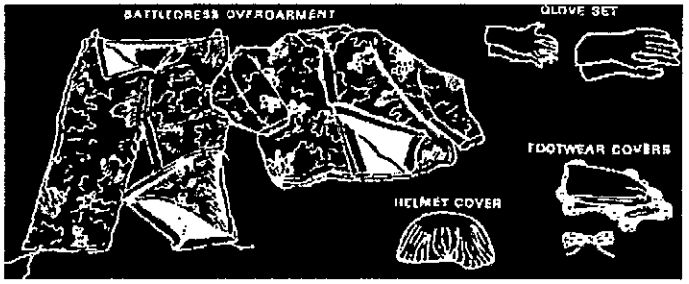
- Shortcomings:
  - limited chemical/biological or toxin point detection
  - "Person-in-the-loop" warning system
  - Limited Reconnaissance
  - Limited CW/BW stand-off
- Needs:
  - Capability to detect, recon, and ID known agents
  - Automatic warning integrated into digitized battlefield
  - Air and ground mobile stand-off detection (identification)
  - Small, lightweight multi-agent detectors
  - Modeling for C^3

Individual Protection



MISSION COMPATIBILITY MEANS DIFFERENT DESIGNS:
APACHE PILOT - M48; JET PILOT- AERP; AIRCREW - XM45/XM49
TANK CREW - M42; INFANTRY - M40; SAILOR - MCU

- **NIGHT VISION - BORE SIGHT - COMMUNICATIONS**



WORKING CONDITIONS MEAN DIFFERENT DESIGNS: SEA - AIR- LAND

- **SALT SPRAY- FIRE - POL SPILLS- MUD**

REDUCED SIZE, WEIGHT & HEAT LOAD OF IPE

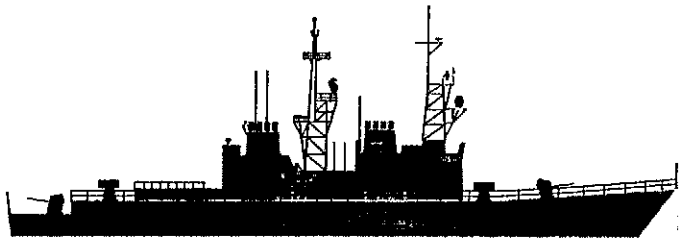
MEDICAL TREATMENT DEPENDS ON THE DIAGNOSIS

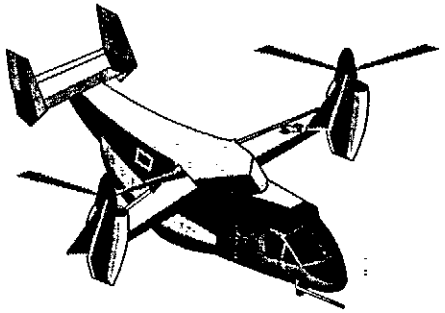
- **VACCINES FOR HARD TO TREAT DISEASES**
- **PRETREATMENT & THERAPY FOR NERVE AGENTS**
- **KIND WORDS FOR RADIATION**

Individual and Medical Protection

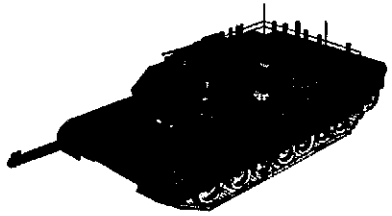
- Shortcomings:
  - Current protective clothing/equipment (degrades performance; vulnerable to future threats)
  - Limited medical countermeasures
- Needs:
  - Improved protection
  - Reduce burden (size, weight, and heat stress)
  - Improved prophylaxis, antidotes, vaccines, and therapeutics

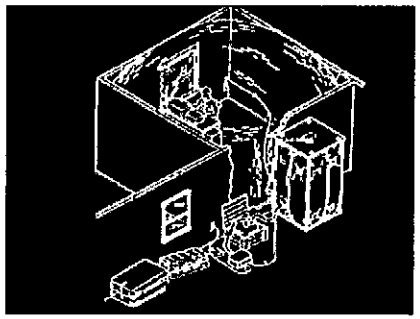
Collective Protection





- SYSTEM TOO DIFFICULT TO OPERATE IN MOPP 4
- PROTECT INTERNAL EQUIPMENT FROM CONTAMINATION
- LONG DURATION OPERATIONS IN CONTAMINATED AREA
- REST AND RELIEF FROM EXTENDED MOPP 4





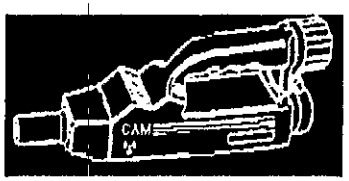
CAN ONLY CONDUCT MEDICAL OPERATIONS IN A CLEAN ENVIRONMENT

Collective Protection

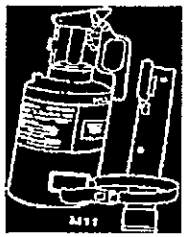
- Shortcomings:
  - Limited rest and relief capability
  - Few systems protected (ships, vehicles & aircraft)
  - Limited "novel agent" protection
  - Not easily deployable
- Needs:
  - Modular systems
  - Protection against new and novel agents
  - Early system integration
  - Reduced logistics, size, weight and power

Decontamination

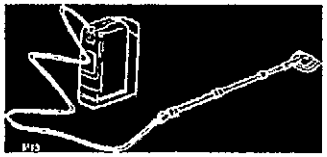
BATTLE DAMAGE ASSESSMENT - TYPE OF CONTAMINATION
- RECON & REPORTING TOLD ME WHAT TO EXPECT



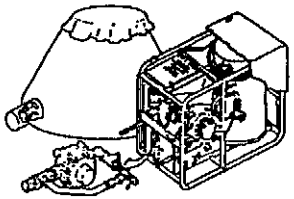
TRIAGE - FIND WHAT IS CONTAMINATED
- CANNOT DECON EVERYTHING



IMMEDIATE DECON
- SKIN & INDIVIDUAL EQUIPMENT - SURVIVAL
- SMALL & NONCORROSIVE



OPERATIONAL DECON
- CREW SERVED EQUIPMENT - CONTINUE THE MISSION
- EASY TO USE



THOROUGH DECON
- RECONSTITUTION - RESTORE MAX COMBAT POWER
- LARGE SCALE RESOURCE COMMITMENT

Decontamination

- Shortcomings:
  - Logistics burden
  - Corrosive
  - Labor intensive
  - Water-based technology
- Needs:
  - Multi-purpose
  - Environmentally safe
  - Reduced logistics, labor, and time burdens
  - New technologies -- Self decon/stripping coatings; Capability to decon avionics/electronics

Operational Concerns

- Joint/Coalition Training and Doctrine
- Modeling and Simulation
- Integrated C^3 System for Early Warning
- NBC Intelligence
- Policy Shortfalls
  - Critical civilians
  - Allied/Coalition forces
  - Host nation support personnel and indigenous population

DoD Chemical/Biological Defense Program Summary

- **All Services' efforts to research, develop, and acquire chemical and biological defense equipment:**

EMPHASIS ON JOINT SYSTEMS

- *CONTAMINATION AVOIDANCE SYSTEMS*
  - » **Detection of chemical/biological agents**
  - » **Warning notification**
  - » **Recon for chem/bio contamination areas**
- *PROTECTION EQUIPMENT*
  - » **Individual Protection - garments, masks**
  - » **Collective Protection - shelters/vehicles/ships**
- *DECONTAMINATION TECHNIQUES/EQUIPMENT*
- *MEDICAL RDA EFFORTS*
  - » **Vaccines**
  - » **Treatment techniques/equipment**