Joint Program Manager
Individual Protection
Nuclear, Biological, Chemical Defense
Overarching Model

Charleston, SC
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PURPOSE

❖ Mission
  – To Develop A Functional And Useful Overarching Model (OAM) And Toolkit To Support Requirements Development, Testing, And Fielding Of Chemical, Biological, Radiological, Nuclear (CBRN) Individual Protective Equipment (IPE)

❖ Stakeholders
  – Joint Requirements Office (JRO)
  – Program Office
  – Testing Agency (OTA)
  – Test Location (DPG, ECBC, NATICK, Commercial)
WHAT CAPABILITIES ARE IN AN OAM?

- Different Needs For Different Stakeholders
- Common Data Sets Support Different And Multiple Needs
REQUIREMENTS DETERMINATION

JRO

- Identification Of Areas Of Over/Under Protection
- Realistic Requirements Determination And Validation
- Evolve Requirements As Absolute Toxicological Effects Are Integrated
- Evaluate Performance As Additional Threat Protection is Introduced TIC/TIM, etc.
- Fielding Dates, Quantities, Distribution Alternatives
REQUIREMENTS DETERMINATION

Program Office

- Are Requirements Attainable?
- Are Requirements Affordable?
- What Are Cost/Schedule/Performance Attributes To Requirements?
- Are There Life Cycle Implications To Design Elements?
- Are There Life Cycle Impacts Due To ECPs or Changes?
- What Is The Most Cost Effective Change Implementation Sequence?
- What Materials Have Been Previously Proven?
  - Against What Threats?
Testing Agency (OTA)

- What Tests Must Be Done To Demonstrate Effectiveness?
- What Procedures Are Documented?
- Are All Planned Tests Fully Defined?
- Does The Infrastructure Support The Test Needs?
REQUIREMENTS DETERMINATION

Test Location (DPG, ECBC, NSC, Commercial)

- What Assets Are Needed?
- Are All Assets Needed Available?
- Are Equipments Within Calibration?
- Are Equipments Operational?
- Are Procedures Fully Defined?
- Scheduling
- Manpower
- Automated Data Collection
- Meteorological Conditions
IPE DEVELOPMENT

Program Office

- Ability To Conduct Trade Studies (Performance vs. Cost)
- Risk Management
- Cost Benefit Analysis
- Early Material Evaluation
- Comparison Of Data To Absolute Toxicological Effects
- Balance CBRN Protection With Heat Stress And Other Physiological Issues
Program Office

- Manufacturing Processes Consistent With Requirements And Production Rates

- Prototyping
  - Ability To Model Garment In Three Dimensions
  - Sizing/Fitting Against Standard Human Forms

- Material And Design Selection
  - Evaluate Impact Of Material Characteristics On Garment Comfort, Durability, Protection

- Evaluate Impact Of Ancillary Equipment
IPE DEVELOPMENT

Test Agency

- Expand IPE Testing Scope Without Incurring Excessive Costs Or Logistical Burden
- Integrate Data Across All Testing Phases
- Provide A Basis For Assessment Of Operational Effectiveness
- Interact With Testing Process To Identify Data Gaps And Required Re-Testing or Additional Tests
- Testing Regimen Tailored To Extent Of Unknowns And Divergence From Normal
DATA MINING

- Correlation Of Data To Real World Results

- Intelligent Prediction And Selection Criteria
  - Materials Selection Consistent With Threat

- Basic Data Repository
  - Data Repository For All Data Associated With CBRN IPE
  - Intelligent Search Engine For Data Mining (Knowledge Management)
Chemical And Material Databases

- Data Repository For All Existing Chemical and Material Test Data Sets

- Chemical D/B
  - Physical Properties
  - Toxicological Effects On Humans
  - Interaction With Atmospheric Conditions

- Material D/B
  - Historical Test Results For Various Materials Used In IPE Systems
  - Physical Properties
  - Hazard Analysis
DATA MINING (cont.)

- Test Traceability Matrix
  - Data Repository For Existing Test Data Sets Mapped To Standard Operating Procedures (SOPs), Test Plans, Test Methodologies, Industry Standards

- Lot Variability And Shelf Life Analysis
  - Data Repository For All Production Lot Testing (PLT) For Variability Analysis And Prediction
  - Shelf Life Analysis And Confidence Based On Surveillance Testing Data Sets

- Simulant Vs. Agent Comparative Data
  - Data Repository And Analysis Of Simulant Versus Agent Comparisons
  - Intelligent Selection Of Simulant For Specific Test Purposes
Technical Approach

- Modular Structural Approach
- Use An Open Architecture To The Maximum Extent Possible
- Detailed Examination Of Data Requirements And Data Throughput
- Reuse Or Revise Existing Databases
STRATEGY

❖ FY 06 Effort
  – Survey Current Models/Databases (e.g., Body Region Hazard Analysis (BRHA), Agent Simulant Knowledgebase)
  – Survey DPG/ECBC/NSC Historical Results
  – Determine Gaps In Data And Models And Upgrade
  – Certify Model (With Limitations)
  – Determine Preliminary Architecture

❖ FY 07 And Beyond
  – Finalize Architecture
  – Determine Implementation Sequence And Dependencies
  – Implement Strategy
Verification, Validation & Accreditation (VV&A)

- The OAM/Toolkit Will Adhere To Established VV&A Procedures
- Some Models And Simulations Will Be Accredited
- Data Certification Will Be Conducted
THE END!