U.S. Army Research, Development and Engineering Command

Developmental Environment, Safety and Occupational Health Evaluation (DESHE): A Tool for Early Evaluation of Environment, Safety, and Occupational Health Impacts
28 October 2010

US ARMY RDECOM

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

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Environmental Acquisition & Logistics Sustainment Program Elements

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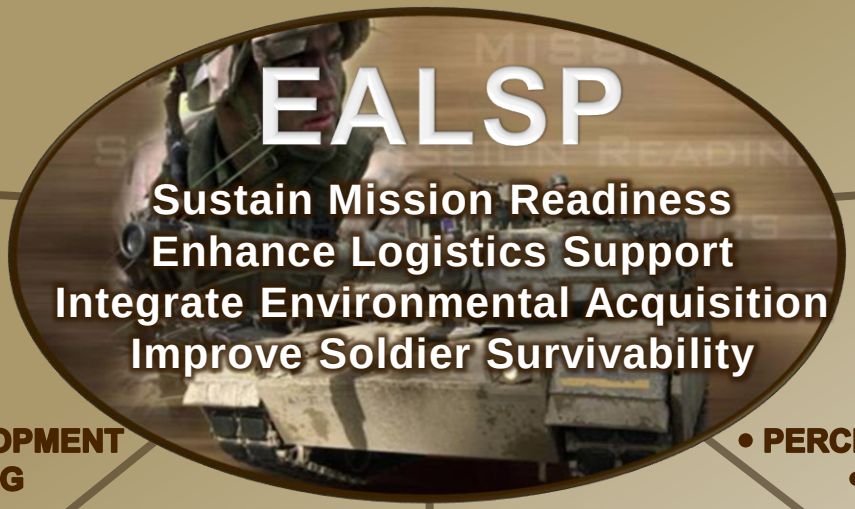
- ORDNANCE ENVIRONMENTAL PROGRAM
- TOXIC METAL REDUCTION PROGRAM
- ZERO FOOTPRINT CAMP
- SUSTAINABLE PAINTING OPERATIONS FOR THE TOTAL ARMY
- STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM
- ENVIRONMENTAL SECURITY TECHNOLOGY CERTIFICATION PROGRAM
- ARMY-INDUSTRY SOLVENTS ALTERNATIVES DATABASE
- ARMY-NAVY CHROMATE ALTERNATIVE TESTING



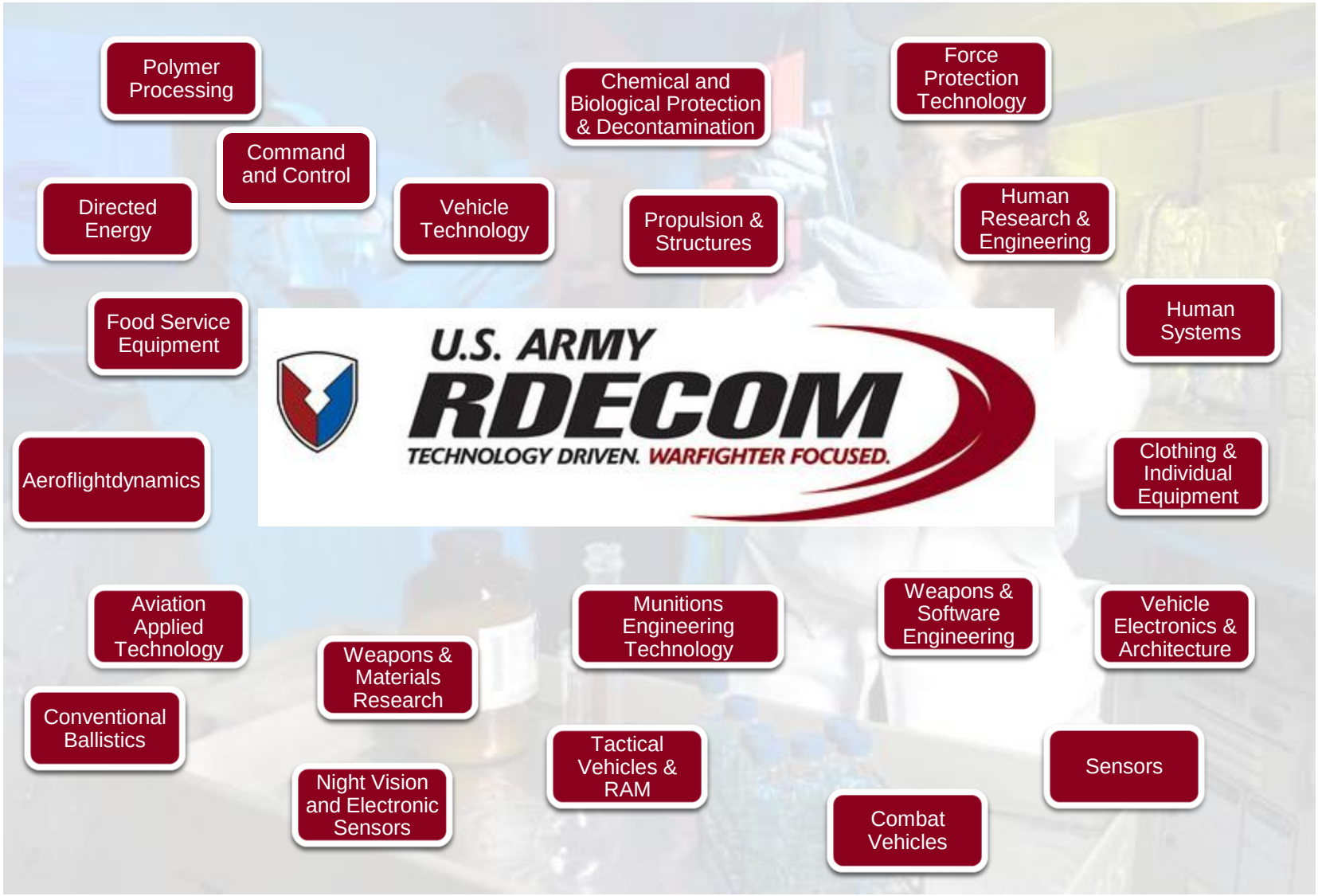
- PROTECTIVE COATING DEVELOPMENT
- MATERIAL DURABILITY TESTING
- NON-METAL RESEARCH

- RDT&E MATRIX SUPPORT
- ENVIRONMENTAL RISK MANAGEMENT
- PROGRAMMATIC INFORMATION INTEGRATION

- PERCHLORATE REDUCTION PROGRAM
- OZONE DEPLETING CHEMICALS
- GREENHOUSE GASES

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

What does RDECOM do?



Materials/processes/technologies should **not** be considered innocent until proven guilty in the court of environmental sustainability

Current Policy and Guidance vs. Changing Regulations

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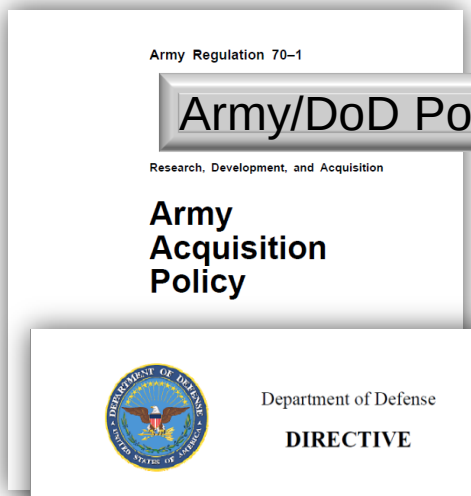
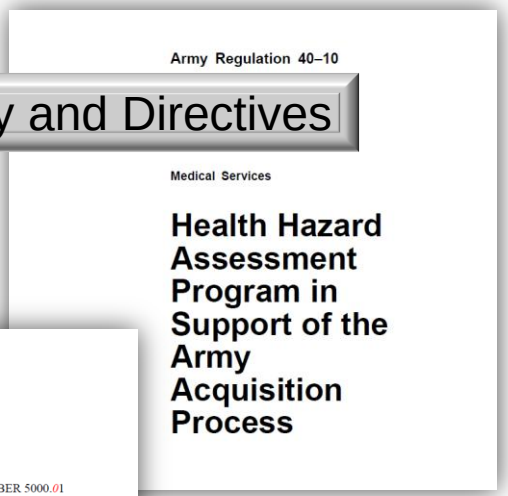

Army Regulation 70–1

Research, Development, and Acquisition

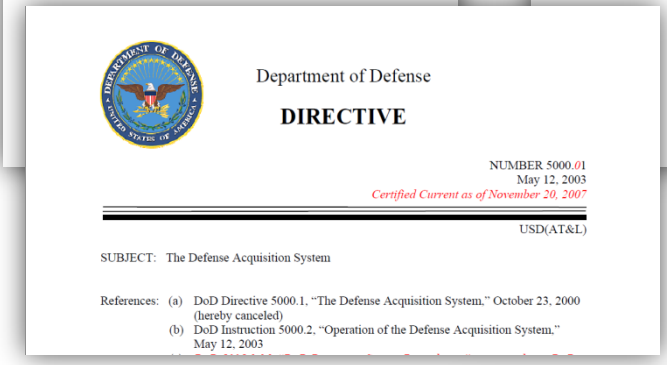
Army Acquisition Policy


Army Regulation 40–10

Medical Services

Health Hazard Assessment Program in Support of the Army Acquisition Process

Army/DoD Policy and Directives


Department of Defense

DIRECTIVE

NUMBER 5000.01
May 12, 2003
Certified Current as of November 20, 2007

USD(AT&L)

SUBJECT: The Defense Acquisition System

References: (a) DoD Directive 5000.1, "The Defense Acquisition System," October 23, 2000 (hereby canceled)
(b) DoD Instruction 5000.2, "Operation of the Defense Acquisition System," May 12, 2003


European Commission

Enterprise & Industry Directorate General — Environment Directorate General

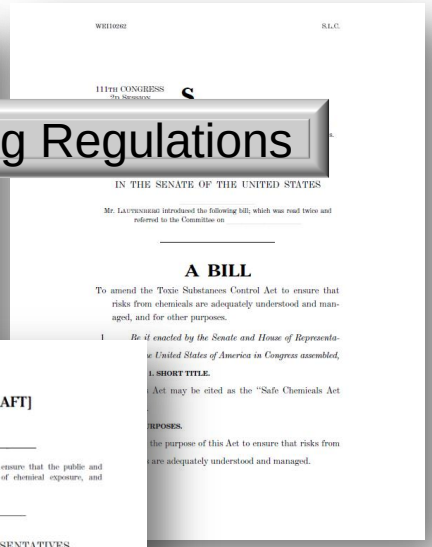
REACH

in brief

Why do we need REACH?

How will REACH work?

What are the benefits and costs?


111TH CONGRESS
2D SESSION

S.

IN THE SENATE OF THE UNITED STATES

Mr. LAUTENBERG introduced the following bill; which was read twice and referred to the Committee on

A BILL

To amend the Toxic Substances Control Act to ensure that risks from chemicals are adequately understood and managed, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE.

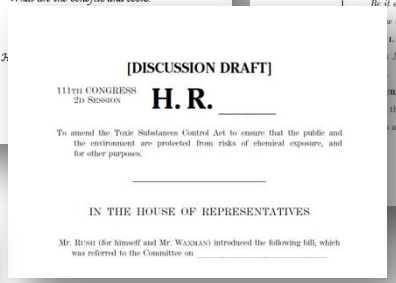
This Act may be cited as the "Safe Chemicals Act

PURPOSES.

It is the purpose of this Act to ensure that risks from

are adequately understood and managed.

Changing Regulations


[DISCUSSION DRAFT]

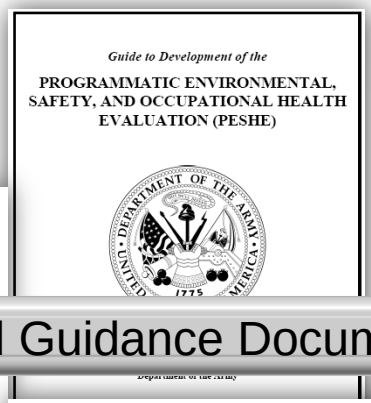
111TH CONGRESS
2D SESSION

H. R. _____

To amend the Toxic Substances Control Act to ensure that the public and the environment are protected from risks of chemical exposure, and for other purposes.

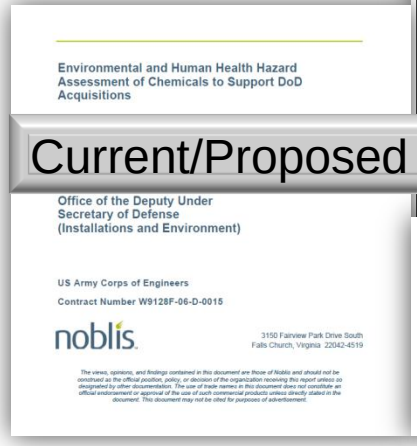
IN THE HOUSE OF REPRESENTATIVES

Mr. RUSH (for himself and Mr. WAXMAN) introduced the following bill; which was referred to the Committee on


Guide to Development of the

PROGRAMMATIC ENVIRONMENTAL, SAFETY, AND OCCUPATIONAL HEALTH EVALUATION (PESHE)

DEPARTMENT OF THE ARMY
UNITED STATES OF AMERICA
1775


Environmental and Human Health Hazard Assessment of Chemicals to Support DoD Acquisitions

Office of the Deputy Under Secretary of Defense (Installations and Environment)

US Army Corps of Engineers

Contract Number W9128F-06-D-0015

noblis

3150 Fairview Park Drive South
Falls Church, Virginia 22042-4519

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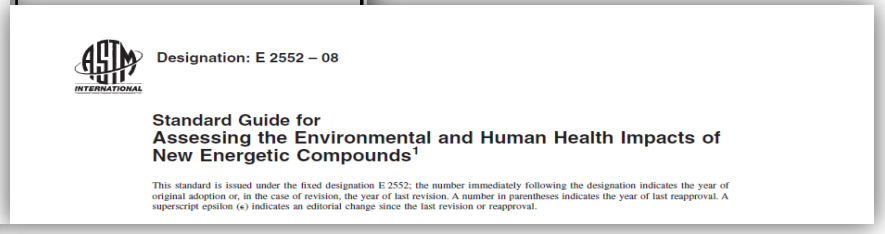

ASTM INTERNATIONAL

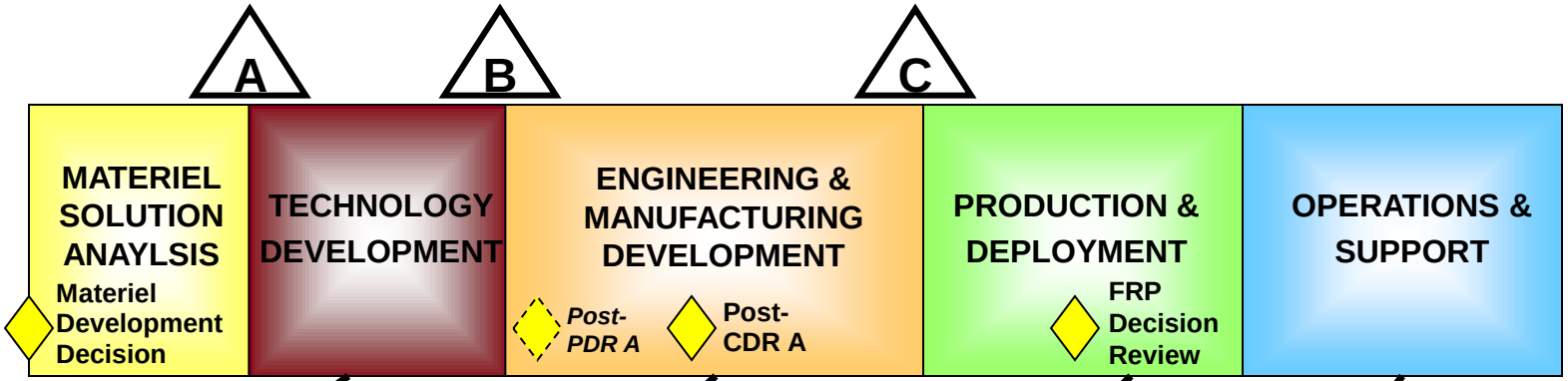
Designation: E 2552 – 08

Standard Guide for
Assessing the Environmental and Human Health Impacts of New Energetic Compounds[1]

This standard is issued under the fixed designation E 2552; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

Current/Proposed Guidance Documents

Why do we need ESOH Guidance?



Bottom Line: Need to make Environment, Safety and Occupational Health (ESOH) a performance characteristic

Examples of Need for ESOH Data Guidance

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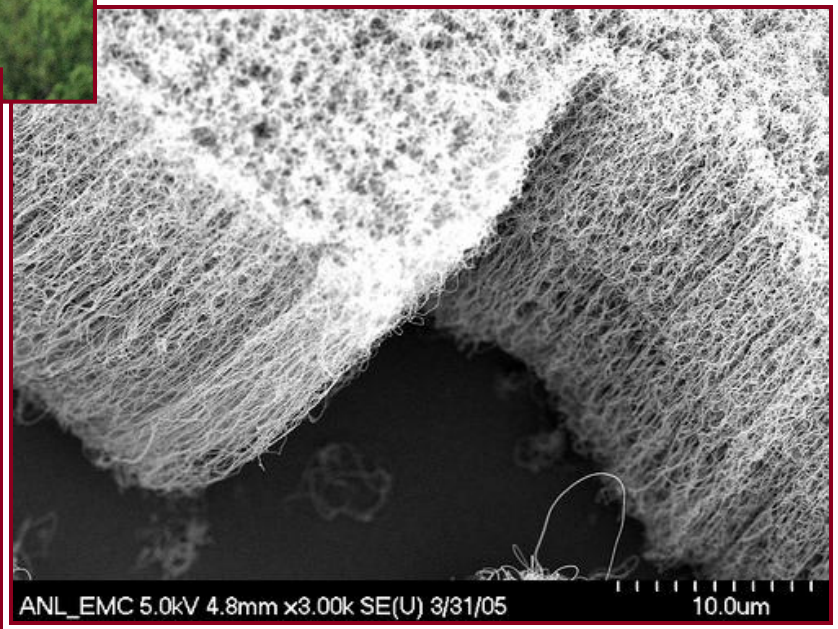

What is DESHE?

- Developmental Environment, Safety and Occupational Health Evaluation (DESHE)
  - Process and not a report or document
- Purpose: Develop and document a baseline level of ESOH performance data for each level of research in order to support risk-based decisions
- Phased approach to gather, develop and document ESOH performance data for materials, processes and technologies during all phases of RDT&E
  - Data requirements determined by Budget Activity (BA) level or technology readiness level (TRL)
  - Early stages - qualitative data
  - Higher maturity technologies - More robust, quantitative data

What is DESHE?

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Scope
All Army RDTE projects (Budget Activity (BA)1-BA4) not part of acquisition program (i.e. pre-system), with some exceptions (e.g. software development)

Applicability
Initially required for all projects funded by EALSP though all Army RDT&E projects can use DESHE process

Driven by Army RDECOM EALSP Designed with the researcher in mind

Use
ESOH performance data should be used to support required ESOH acquisition documentation/support informed decisions

Approach to DESHE

- Separate into 3 focus areas
  - Material – Ex: energetic material, solvent
  - Process – Ex: plating operation, material production
  - Technology – Ex: new engine design, electronic equipment
- Develop basic questions that should be addressed at each stage of development
  - Not prescriptive
  - Heavily rely on professional judgment
- Provide data points to address each of these questions
  - Ex: Water solubility and vapor pressure impact how the material may transport in the environment
- More definitive answers as material, process or technology maturity increases

Guidance Comparison

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Programmatic Environment, Safety and Occupational Health Evaluation (PESHE)

- Scope: All Acquisition programs must maintain a PESHE
- Target Audience: DoD Acquisition community (Program Managers)

ASTM E2552-08 - Standard Guide for Assessing the Environmental and Human Health Impacts of New Energetic Compounds (Army Public Health Command)

- Published May 2008
- Scope: New energetic materials in Research and Development
- Target Audience: Researchers, toxicologists working with new energetic compounds

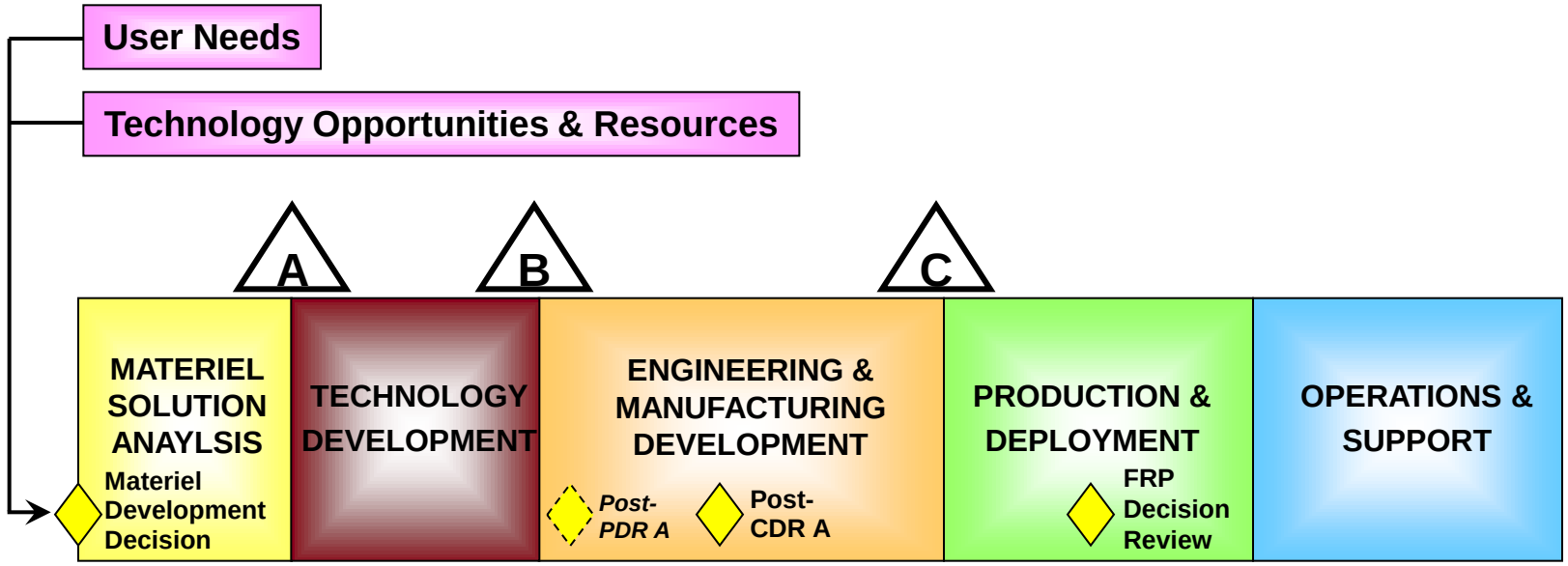
Environmental and Human Health Hazard Assessment of Chemicals to Support DoD Acquisitions (OSD Chemical and Material Risk Management Directorate)

- Draft
- Scope: New materials throughout acquisition
- Target Audience: DoD Acquisition community (Program Managers)

DESHE (Army RDECOM EALSP only)

- Final - September 2010
- Scope: All Army RDTE on materials, processes and technologies
- Target Audience: Army researchers, lab managers, research program directors

Where the DESHE Fits



DESHE (RDECOM EALSP)

PESHE

Environmental and Human Health Hazard Assessment of Chemicals to Support DoD Acquisitions (OSD)

ASTM E2552-08 - Standard Guide for Assessing the Environmental and Human Health Impacts of New Energetic Compounds (Army Public Health Command)

How Does it Work?

Example for Material–based DESHE

BA1

- Computational predictions from chemical/physical performance parameters and toxicity

BA2

- Experimental values of chemical and physical characteristics
- In-vitro toxicity screening methods
- Acute toxicity data
- *Computational predictions from chemical/physical performance parameters and toxicity*
- Professional judgment

BA3

- Biodegradation in various media
- In vivo toxicity testing; acute, sub-acute
- Environmental toxicity
- *Computational predictions from chemical/physical performance parameters and toxicity*
- *Experimental values of chemical and physical characteristics*
- *In-vitro toxicity screening methods*
- *Acute toxicity data*
- Professional judgment

BA4

- Chronic toxicity
- Occupational exposure studies, including absorption tests
- *Computational predictions from chemical/physical performance parameters and toxicity*
- *Experimental values of chemical and physical characteristics*
- *In-vitro toxicity screening methods*
- *Acute toxicity data*
- *Biodegradation in various media and environmental toxicity*
- *In vivo toxicity testing; acute, sub-acute*
- Professional judgment

Acquisition Documentation

- **PESHE**
- **NEPA**
- **HHA**

Path Forward

- Current approach:
  - The DESHE will ONLY be required for research projects funded internally by RDECOM EALSP
  - Distribute DESHE Guide to research community per request
  - Update ASTM E2552-08
- Future plans (Pending successful implementation in the EALSP):
  - Staff through RDECOM for wider use
    - Maintain EALSP as central repository for DESHE support
  - Recommend implementation of the DESHE process in select programs
- Other programs that may fit the DESHE process (recommended):
  - Army RDT&E projects that receive RDT&E dollars (BA1-BA4)
  - Projects not currently included in an Acquisition program
  - Projects that have a structured program review
    - Examples include Army Technology Objective (ATO), Small Business Innovative Research (SBIR) Program, Small Business Technology Transfer (STTR) Program, Strategic Environmental Research and Development Program, Environmental Security Technology Certification Program
  - Projects that are funded over $250K per year

Acknowledgements

- RDECOM
  - Erik Hangeland
  - Kimberly Watts
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  - Sharon Chen
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  - Drew Rak (Noblis)
- U.S. Army Public Health Command
  - Dr. Mark Johnson