DEPARTMENT OF DEFENSE
MERIT
Materials of Evolving Regulatory Interest Team

Emerging Contaminants (EC) Directorate

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So. Colorado Sustainable Communities & Fed. Network for Sustainability
Sustainable Procurement Workshop, Fort Carson, CO
Nov. 20-21, 2008

Chemical and Material Risk Management at DoD: Challenges and Strategies

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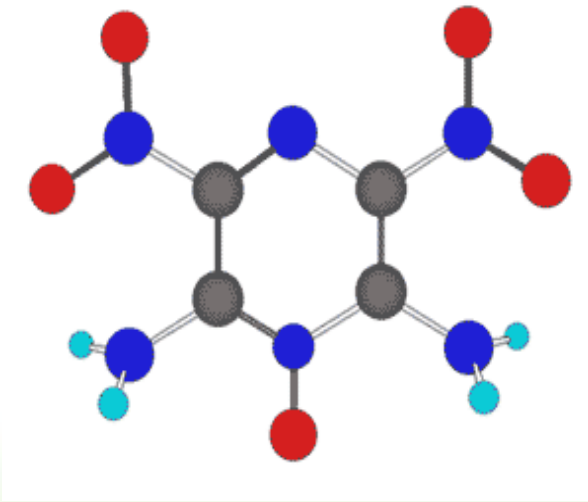
Office of the Deputy Under Secretary of Defense (Installations & Environment)

First, Some History: What Is an Emerging Contaminant?

- Chemicals and Materials with
  - Perceived or real threat to human health or environment
  - Either no peer reviewed health standard or an evolving standard



Emerging Contaminants (ECs)

PFOA
1,4 Dioxane
Naphthalene
TCE
PFOA
Chromium VI
TCP
Nickel
Cobalt
Cerium
PFOS
RDX
Asbestos
NDMA
Tungsten
PCE
Lead
PBDEs
DNT
Beryllium
Perchlorate
Dioxin
Nanomaterials

Which of these are especially important to DoD?

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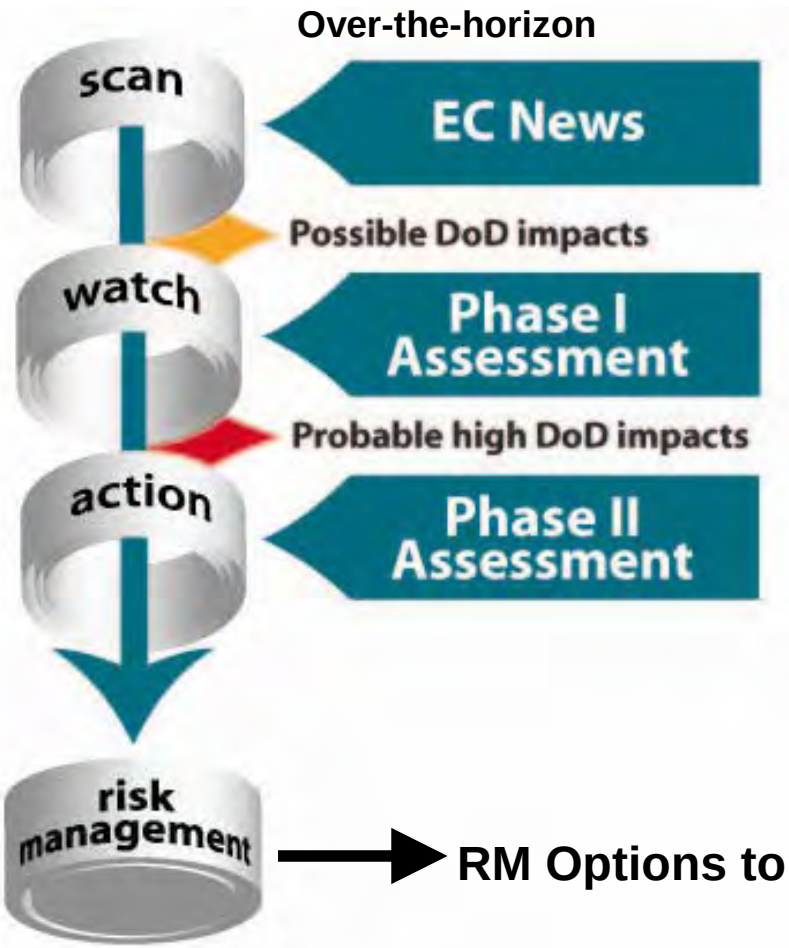
EC's Affects to the Department of Defense

- Adverse health effects on operating forces, DoD employees and/or public
  - Human health protection paramount
- Reduced training/readiness
  - Restrictions on use of ranges
- Restricted or non-availability of material
  - Adverse impact on mission-critical industrial base applications
- Increased Operations and Maintenance (O&M) and/or cleanup costs
  - Resource drain from mission needs

EC "Scan-Watch-Action" Process



- Review of literature, periodicals, regulatory communications, etc. to provide early warning of ECs of possible interest to DoD
- Qualitative impact assessment to assess impacts to DoD by Subject Matter Experts (SMEs) within Dept.
- Quantitative impact assessment with Risk Management (RM) options to create strategic investment options for enterprise consideration (SMEs and Material Champions within DoD)

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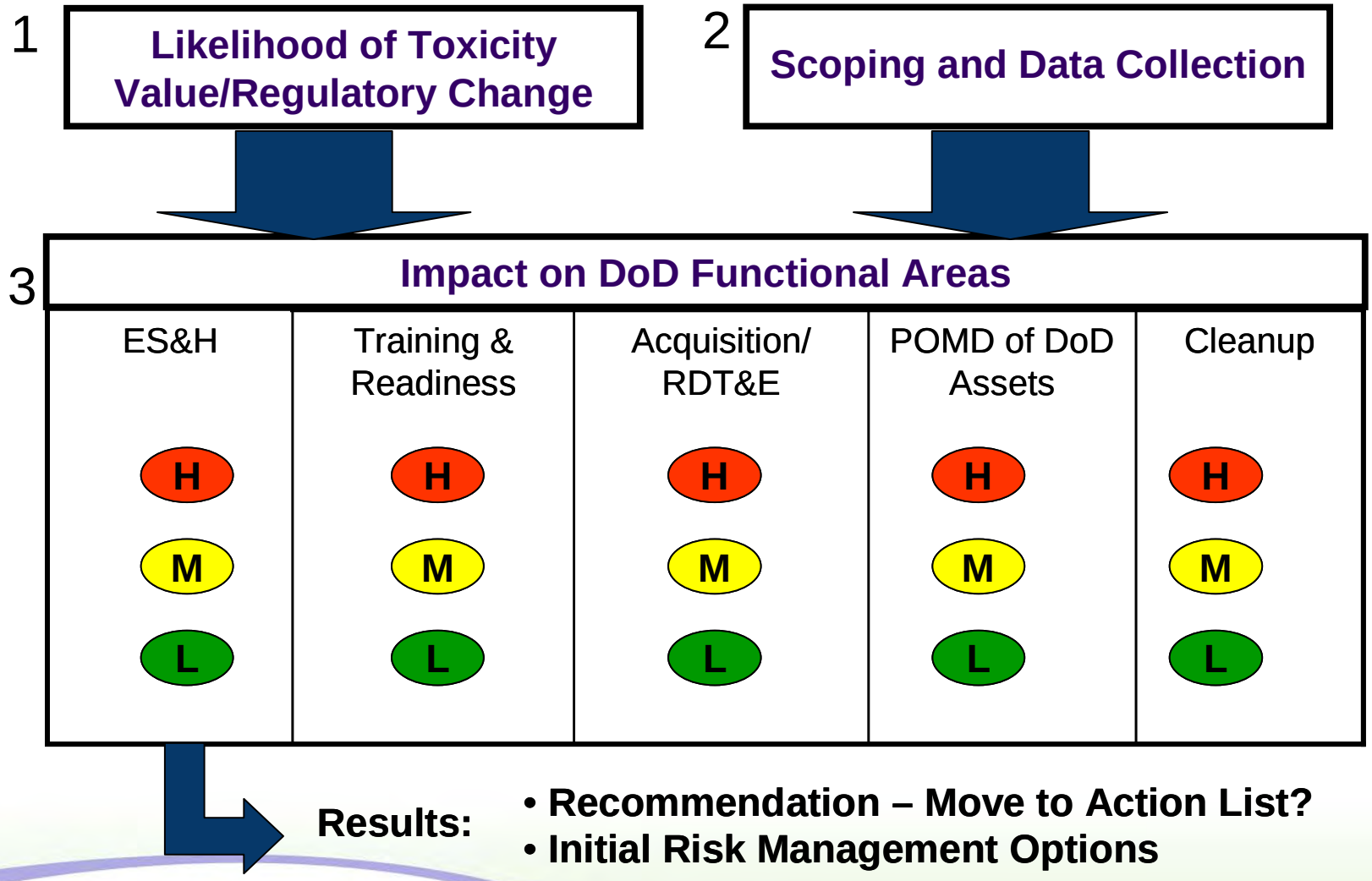
Phase I Impact Assessment Process



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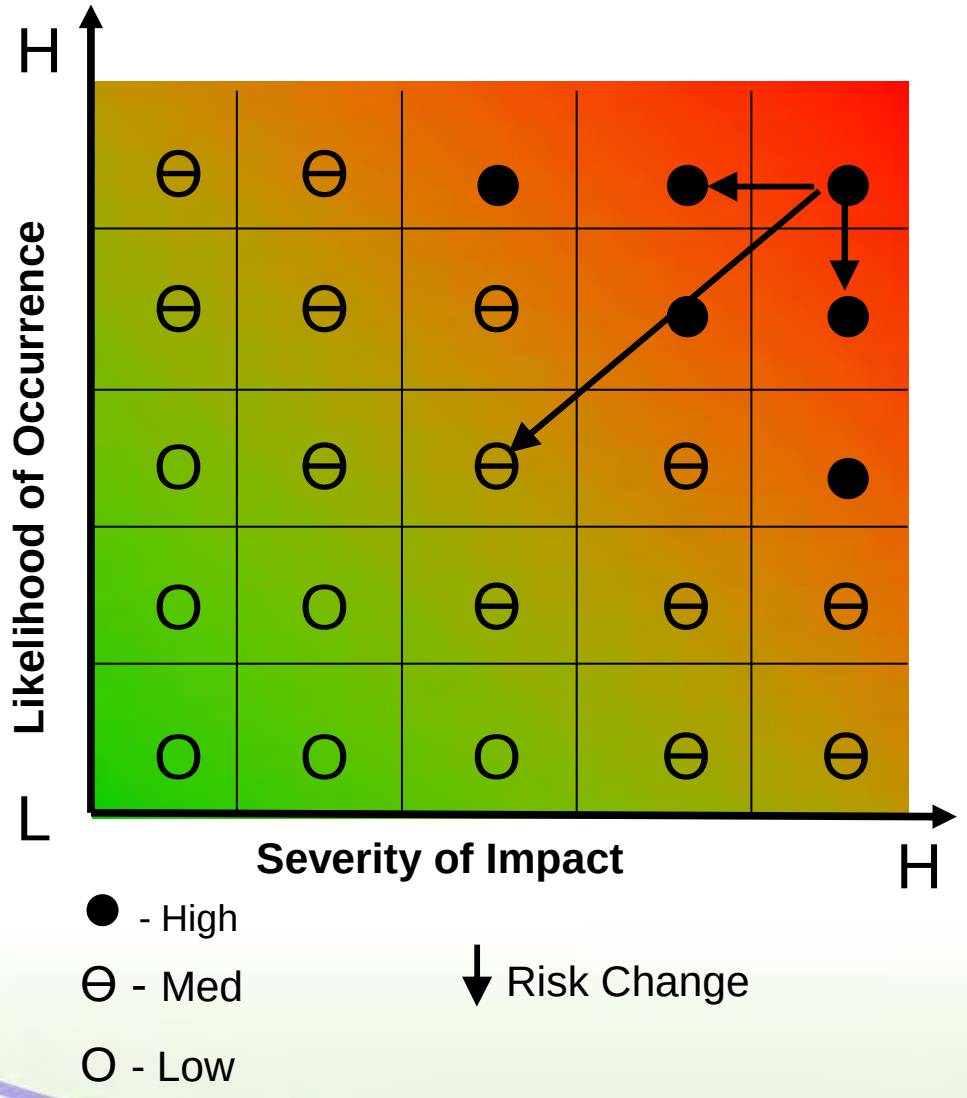
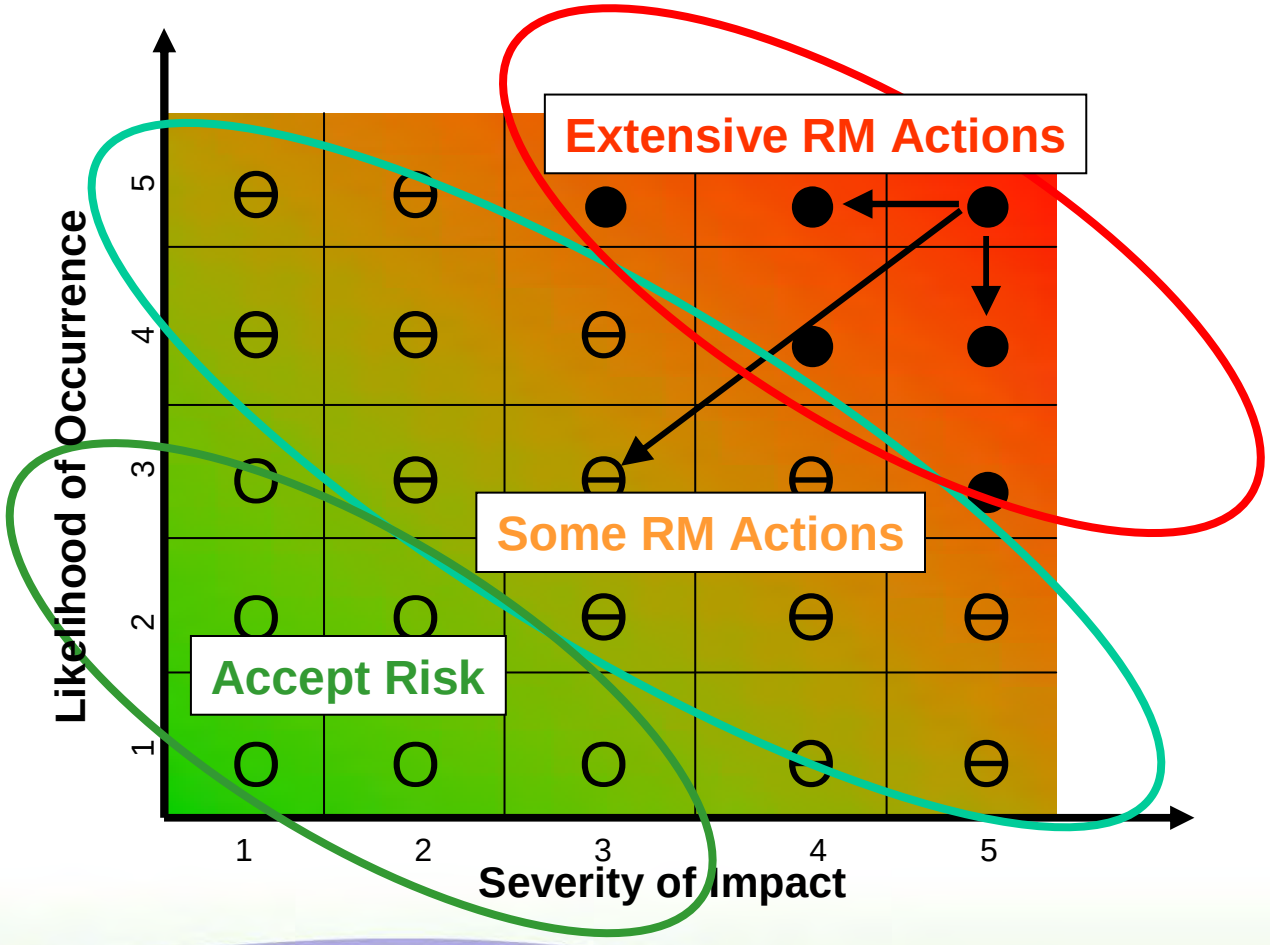
Plotting EC Risk to DoD

- High risk at top right
- Risk management actions move ECs to lower left… lower risk
- Seek to quantify risk reduction



Integrated Risk Management



RM Options

- Fill tox science gaps
- RDT&E
- Material substitution
- Process changes
- Regulatory engagement
- Stockpile material
- Exposure assessment & monitoring
- Personal Protective Equipment (PPE)
- Acquisition changes
- Benchmark with industry
- Risk communication
- Training

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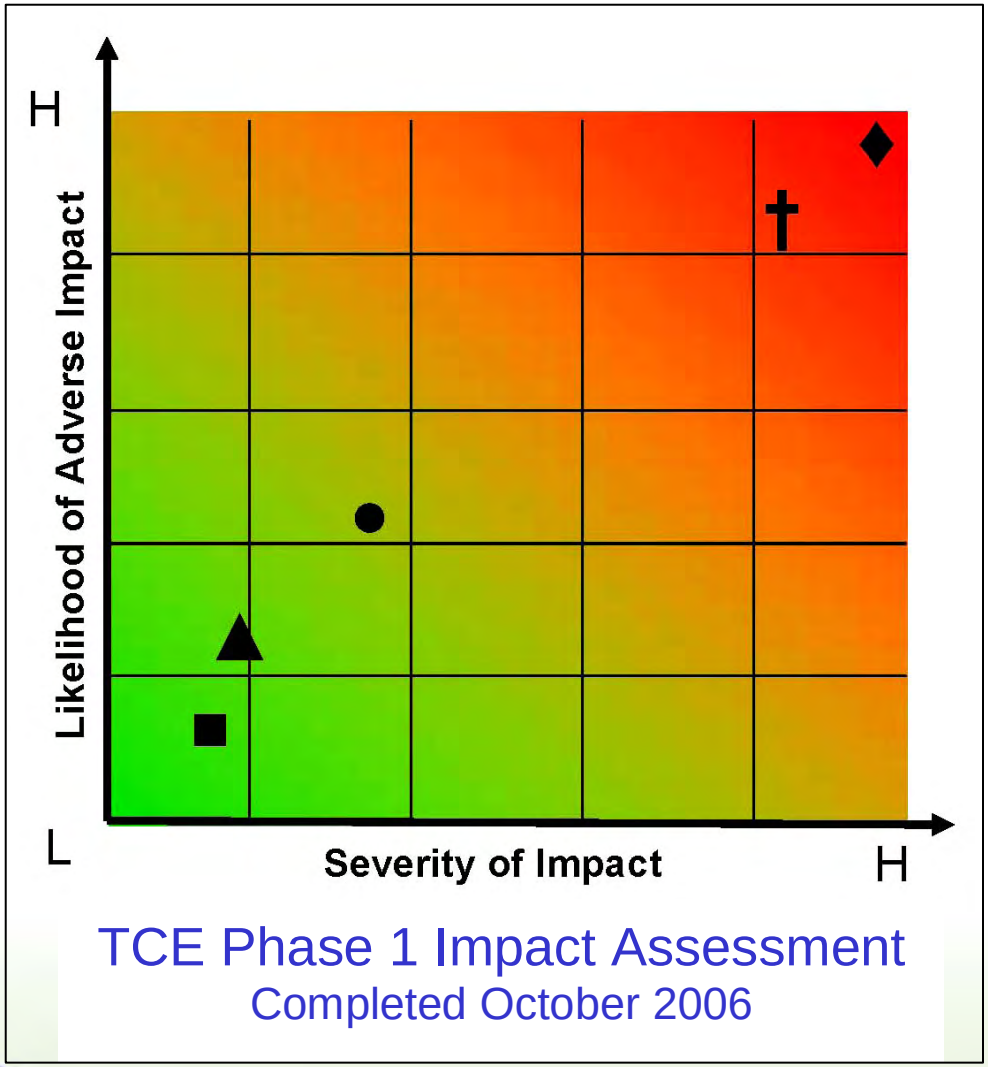
Example: TCE and the Relative Risks to EH&S and Cleanup

Legend
- ♦ ES&H
- ■ Readiness & Training
- ▲ Acquisition/RDT&E
- ● O&M of Assets
- † Cleanup



TCE Phase 1 Impact Assessment
Completed October 2006

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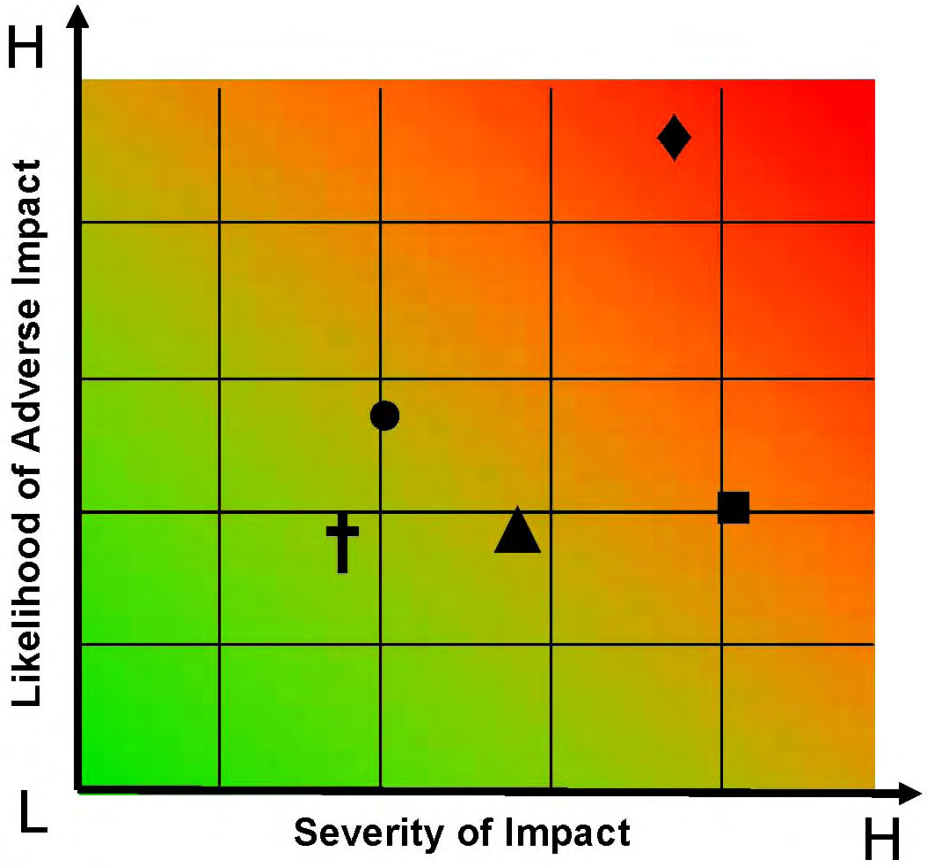
Example: Beryllium and the Relative Risks to EH&S and Readiness & Training

Legend
- ♦ ES&H
- ■ Readiness & Training
- ▲ Acquisition/RDT&E
- ● O&M of Assets
- † Cleanup



Beryllium Phase 1 Impact Assessment
Completed March 2007

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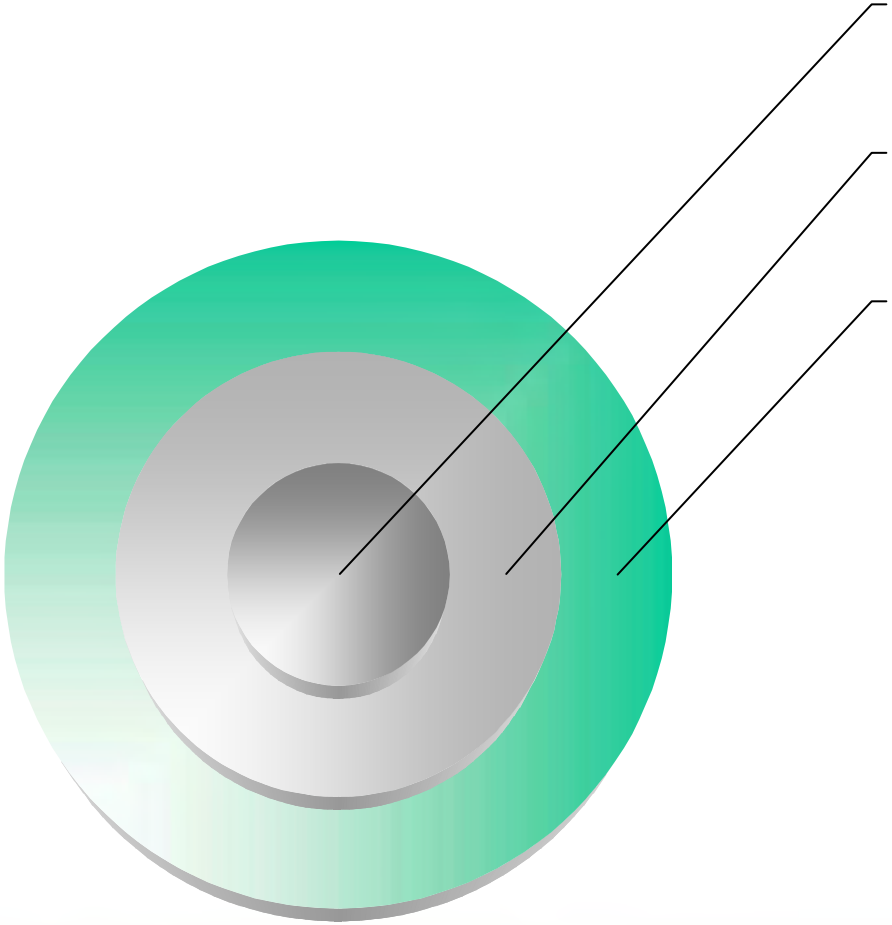
Some Newer Challenges

- **Executive Order 13423, "Strengthening Federal Environmental, Energy and Transportation Management"**
  - Goal: toxic and hazardous chemical reductions should be based on lifecycle assessment
- **Nanotechnology and 'Synthetic' Biology**
  - Goal: consider the role of uncertainty in the face of an entirely new science!
- **European Union's 'REACH': the Registration, Evaluation, Authorisation and Restriction of Chemical Substances**
  - Goal: avoid costly interruptions to DoD's global supply chain

Who Needs To Be Involved?



Communities within DoD
Systems Designers, O&M, Supply Chain, Researchers (Material, Toxicologists, Chemists, etc), Risk Assessors… You name it!

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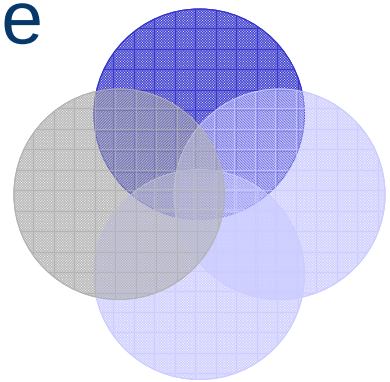
Strategies to Improve Chemical and Material Risk Management at DoD

- *Catalyze* organizational changes to improve enterprise integration and governance
- *Facilitate* exchange of ideas and information to identify and resolve challenges
- *Identify* the potential unacceptable impacts of emerging contaminants on training and readiness and mission assets
- *Foster* cooperation and enhances mutual understanding, and then creates agreement on means to *reduce* severe risks



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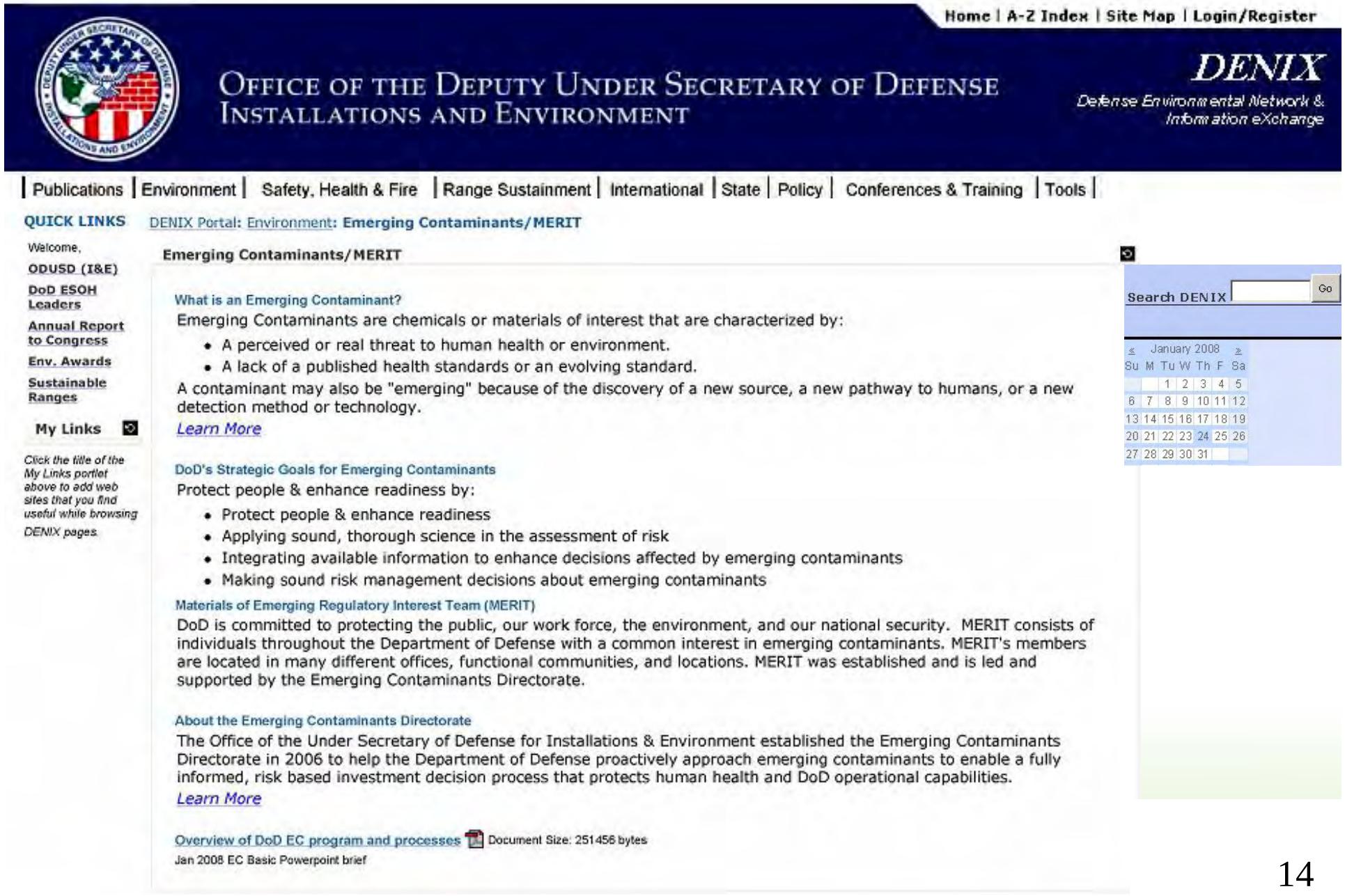

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Questions?

THANK YOU FOR YOUR ATTENTION!