

Emerging Contaminants - The New Frontier -

Acquisition, Technology and Logistics

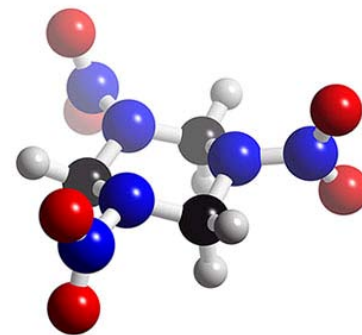


Paul Yaroschak
Deputy Director for Emerging Contaminants
Office of the Secretary of Defense

What is an Emerging Contaminant?

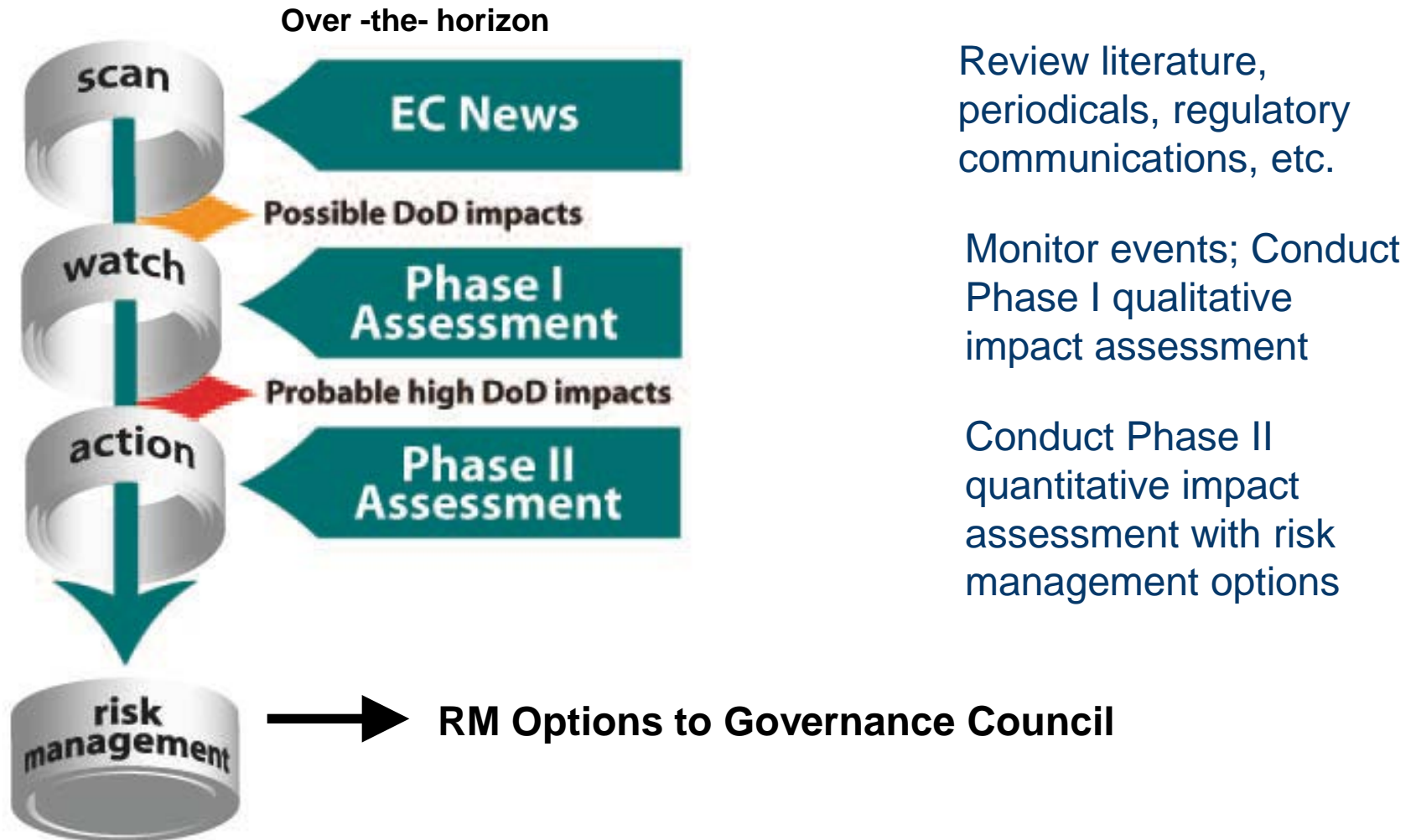
Acquisition, Technology and Logistics

- **Chemicals & materials with:**
 - Perceived or real threat to human health or environment
 - **Either no peer reviewed human health standard or an evolving standard**
- **May have:**
 - Insufficient human health data/science
 - New detection limits
 - New exposure pathways



EC “Scan-Watch-Action” Process

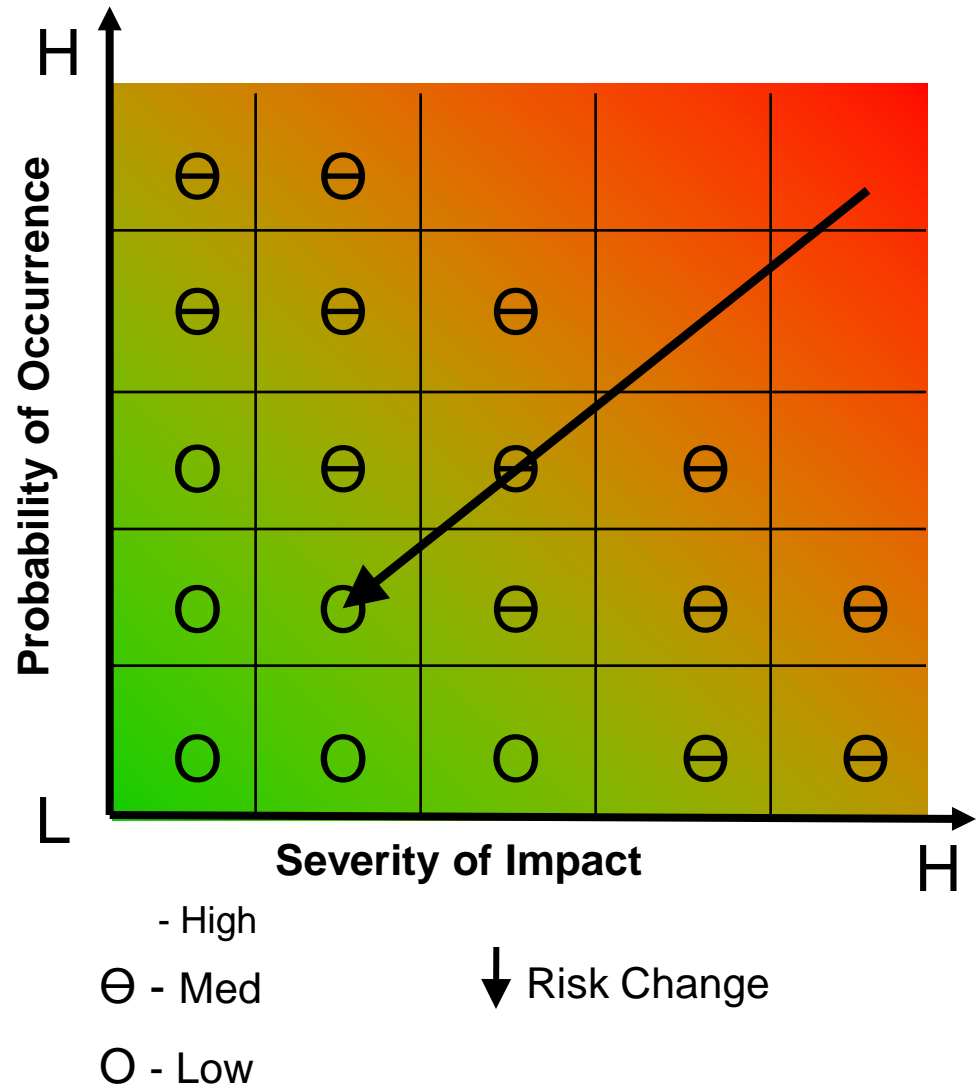
Acquisition, Technology and Logistics



Plotting EC Risks to DoD

Acquisition, Technology and Logistics

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



ECOS-DOD-EPA

EC Work Group History

Acquisition, Technology and Logistics

- 2003 – ECOS-DoD Sustainability work group formed
 - EC work group evolves from GW work group
- Nov 2005 – National EC Forum
 - 150+ reps from 28 states
 - Many issues grouped into 22 priorities
- Dec 2005 – EC working definition developed
- Feb 2006 – EC Work Group
 - EC definition agreed
 - WG decides to tackle three top issues via white papers plus state survey of EC issues/actions

ECOS-DoD-EPA Work Group Products

Acquisition, Technology and Logistics

- **Issue: How do states define ECs? What are ECs of concern?**
 - Product: State EC Survey ✓ *Done*
- **How can states & federal agencies send a consistent risk message to the public?**
 - Product: Risk communication paper ✓ *Done*
- **What values should be used if no IRIS value?**
 - Product: Provisional toxicity values paper ✓ *Done*
- **What conditions, requirements, authorities influence the decision to expend funds on EC response when threat to human health is not clear?**
 - Product: Action triggers paper *Underway*

EC Action Triggers Issue Paper

- Background -

Acquisition, Technology and Logistics

- Existing laws provide authorities & flexibilities to both DoD and regulators to act
 - CERCLA provides authority to respond to releases or threats of releases of HS, or
 - Releases or *substantial* threats of releases from “pollutants and contaminants” which may present *an imminent & substantial danger* to public health or welfare.
- Response actions comply with ARARs, but there may not be ARARs for an EC
- Thus, considerable professional judgment required when toxicity information/standards are lacking, sparse, or conflicting.

EC Action Triggers Issue Paper

- Myth Busters -

Acquisition, Technology and Logistics

- Myth: A DoD installation cannot sample for an EC or take other actions if no federal/state promulgated standards exist.
- Fact: CERCLA provides the authority under the conditions specified.
- Fact: States have laws designed to protect public health & give regulators varying degrees of authority to compel action.

EC Action Triggers Issue Paper

- Key Issue -

Acquisition, Technology and Logistics

- Must there be risk before applying ARARs??
 - Baseline human health risk assessment determines threat and need for response actions
 - Response actions must comply with ARARs unless waived
- “Chemical specific standards that define acceptable risk (e.g., MCLs) also *may be considered* in determining the risk to human health.....”

Typical EC Scenarios

	ECs Present at Levels Requiring Action¹	ECs Present But Necessity for Action Uncertain
Other contaminants present at levels requiring action	Scenario 1	Scenario 2
Other contaminants not present or at levels not requiring action	Scenario 3	Scenario 4

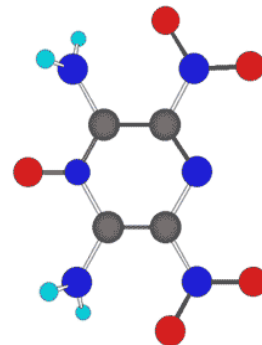
¹ Requiring action means that EC levels are such that the parties agree

EC Action Triggers Issue Paper

Acquisition, Technology and Logistics

- Based on site history, determine if real or suspected release
- If real/suspected release, develop sampling plan and DQOs
- Determine toxicity – use Provisional Values Issue Paper
 - Identify science gaps, if any, to regulators
- Determine if pathway & receptor exist
 - If yes, assess risk using best data and take appropriate response actions
 - If no...it depends
 - Possible delay in action if toxicity unclear
 - Possible interim response & risk management actions
- Where agreement can't be reached, parties reserve rights under existing laws

Questions & Discussion



Backup Slides

U.S & International Interest

Acquisition, Technology and Logistics

- U.S. National Geographic Magazine - Oct 06

- U.S. ES&T Magazine - Dec 06

- USGS Survey of 139 streams in 30 states

- ECs found in 80% of streams

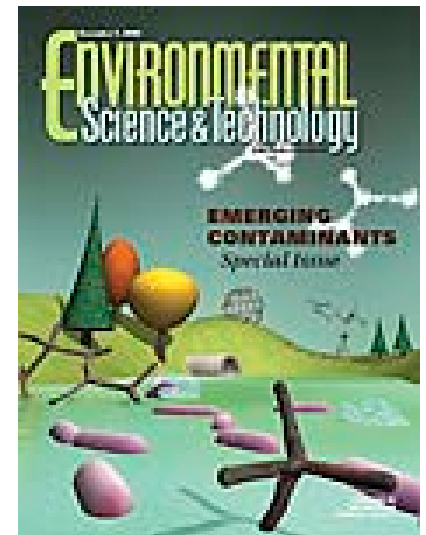
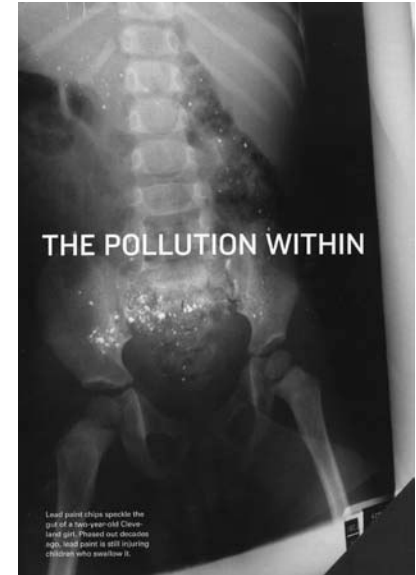


- U.S. Executive Order 13423 (January 24, 2007)

- DoD Chemical Management Plan

- European Union – **REACH**

- Registration, Evaluation, Authorization & Restriction of Chemicals



DoD Vision

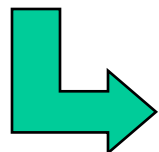
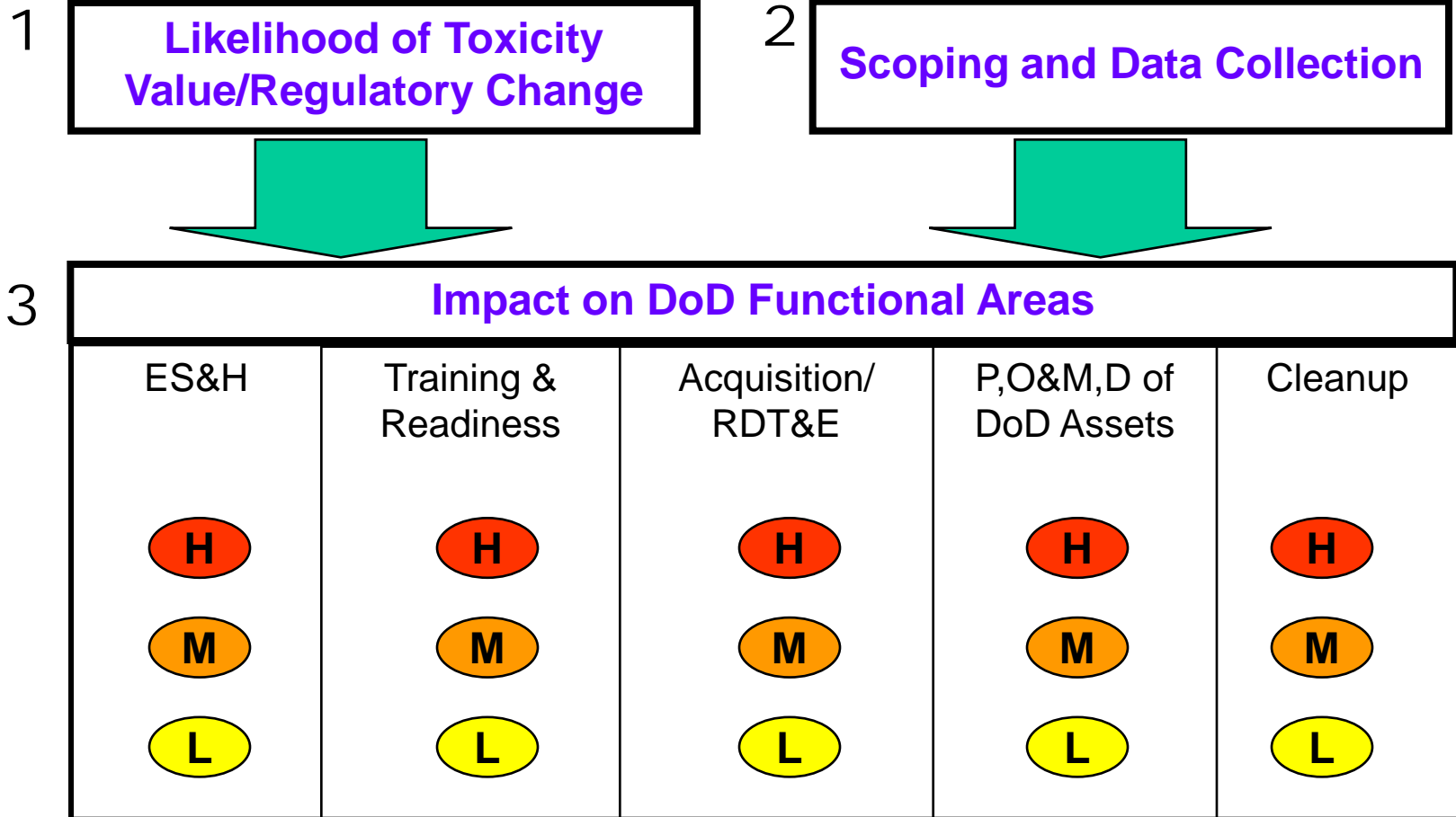
Imagine if the largest industrial complex in the nation could...

Acquisition, Technology and Logistics

- *Predict* which chemicals we use, or might use, have evolving science that may change the regulatory status and pose health or environmental risks.
- *Develop* a consensus evaluation of types & magnitudes of the risks in using/releasing such chemicals.
- *Develop* risk management options and invest in high-payback actions.
- *Achieve and measure* risk reduction.

Phase I Impact Assessment Process

Acquisition, Technology and Logistics



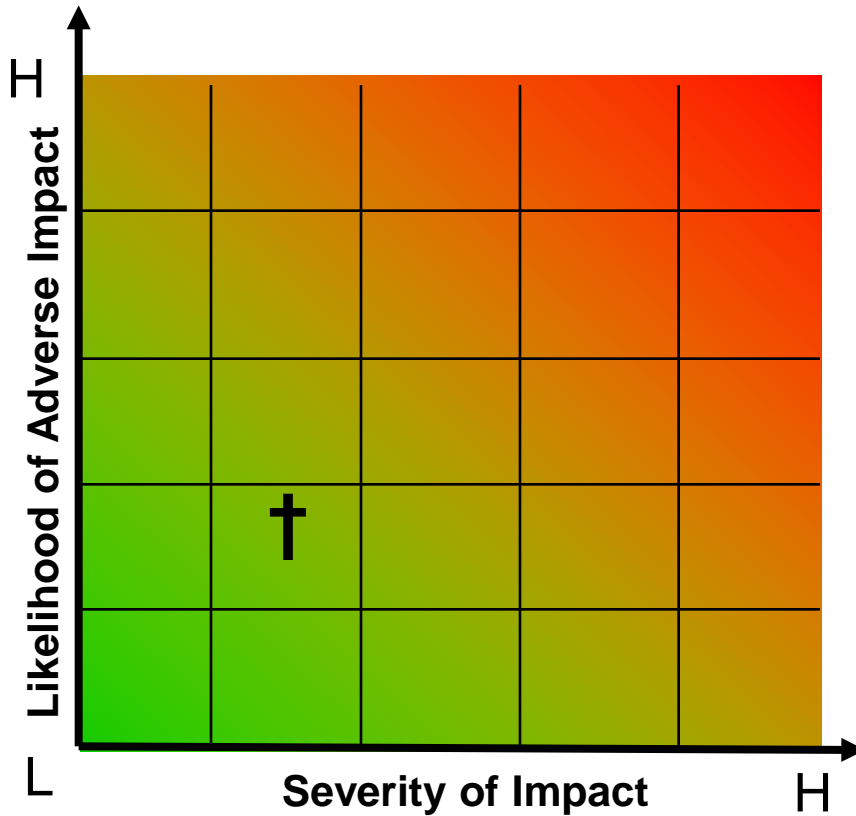
Results:

- Recommendation – Move to Action List?
- Initial Risk Management Options

Example: PFOA Phase I Impact Assessment

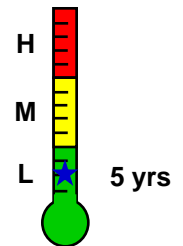
Completed January 2007

Acquisition, Technology and Logistics

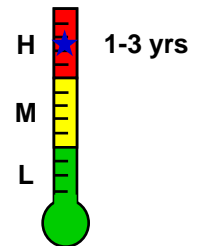


Likelihood of Regulatory/Policy Change

1. Probability the USEPA will establish IRIS toxicity benchmarks for PFOA



2. Likelihood that PFOA will become unavailable in the marketplace



ES&H

O&M of Assets

Readiness & Training

† Cleanup

Acquisition/RDT&E

Summary

- **EC management requires new thinking**
 - Proactive vice reactive...a paradigm shift
 - Make targeted investments before regulatory action
 - Base decisions on life cycle costs
- **Efficient process established for identifying & assessing ECs & developing risk management options**
 - Leverages existing DoD assets/resources
- **Potential large payback**
 - Protects people, mission and assets

EC Action List

Acquisition, Technology and Logistics

- Perchlorate
 - Royal Demolition eXplosive (RDX)
 - Cyclotrimethylenetrinitramine
 - Trichloroethylene (TCE)
 - Hexavalent Chromium
 - Naphthalene
 - Perfluorooctanoic acid (PFOA)
 - Beryllium
- } Elevated from Watch List 9-06
- } Elevated from Watch List 9-07

Notes: - Some risk management actions underway including research on toxicity, substitutes, & treatment.

EC Watch List

Acquisition, Technology and Logistics

- ✓ Tungsten
- ✓ Tetrachloroethylene (PCE)
- ✓ Dioxin
- ✓ 1,4-dioxane
- Nanomaterials
- ✓ Perfluorooctyl sulfonate (PFOS)
- ✓ Di-nitrotoluenes (DNT)
- ✓ Lead (Added 3-07)
- ✓ Nickel (Added 3-07)
- Cerium (Added 7-07)
- Cobalt (Added 7-07)
- Cadmium (Added 12-07)
- Manganese (Added 12-07)
- Sulfur Hexafluoride (SF6) (Added 12-07)

✓ Phase I Impact assessments completed

- Turning Options to Actions - Risk Management Examples

Acquisition, Technology and Logistics

- **\$114M in Perchlorate RDT&E**
 - Drinking water treatment...southern California
 - Cleanup technologies
 - **Sources & analytical procedures...isotopic analysis**
 - Material substitution...simulators, flares, rocket fuel
- **\$2M in RDX toxicity studies**
 - Cancer studies completed & reviewed by EPA
 - Non-cancer studies to be completed end of 2007
- **Small Business Innovative Research solicitation for naphthalene dosimeter**
 - Two proposals accepted

EC Risk Communication Paper

Acquisition, Technology and Logistics

- **Issue: How should we communicate EC issues & risks consistently to the public?**
- DoD and regulators need to engage early and develop a common message
- We need to be transparent on what is known and not known (e.g., uncertainties)
- The paper contains a template for developing EC information for the public

EC Provisional Values Issue Paper

Acquisition, Technology and Logistics

- **Issue: How should we determine toxicity for ECs not in IRIS?**
- EPA Hierarchy provides starting point
 - IRIS
 - Provisional Peer Reviewed Toxicity Values (PPRTVs)
 - Other Federal/state values (ATSDR-MRLs, CA-EPA)
- Agencies free to use best available, *peer reviewed* data...avoid use of non-peer reviewed
- Toxicity assessments should be transparent, publicly available, & consistent with duration of exposure being assessed