

Emerging Contaminants - Trends & Program Update -

Acquisition, Technology and Logistics



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Report Documentation Page

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Part 1 – Trends & EC Program Update

Trends

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- **Use of Precautionary Principle**
 - Must understand health & environmental effects before using chemicals
- **Biomonitoring – What’s showing up in humans?**
 - Center for Disease Control’s *National Health & Nutrition Examination Survey*
 - Calif. voluntary biomonitoring program
- **Evolving Risk Assessment Process**
 - Increasing transparency...showing uncertainty range
 - Shift from animal dose/response → toxicogenomics with human cells
 - Use of computational sciences
 - Application of Age-Dependent Adjustment Factor (ADAF)
 - National Academy of Sciences report released 3 Dec 08



NAS Risk Assessment Report Findings

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- **Characterize and communicate uncertainty and variability in all key computational steps**
 - E.g., exposure assessment and dose-response assessment
- **Unify cancer and non-cancer risk assessment approaches**
 - RfD and Hazard Index for non-cancer
 - Cancer slope factors for cancer
- **Develop tools for conducting cumulative risk assessments**
- **Identify risk management options up-front & use to help scope risk assessment**



Where Are the Trends Leading?

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Answer: Robust Chemical Management & Green Chemistry

- European Union's *REACH* regulation
- E.O. 13423
 - Expand purchases of environmentally-sound products
 - Reduce use of toxic chemicals & materials
- EPA Initiatives
 - ChAMP - Chemical Assessment & Management Program
 - High Production Volume Challenge
 - ToxCast
 - » High throughput chemical screening
 - » Move from in-vivo, animal studies to in-vitro

What is an Emerging Contaminant?

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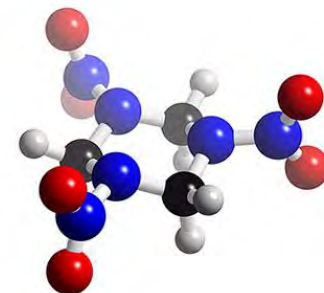
- Chemicals & materials that have pathways to enter the environment and present potential unacceptable human health or environmental risks...

and either

- do not have regulatory peer-reviewed human health standards

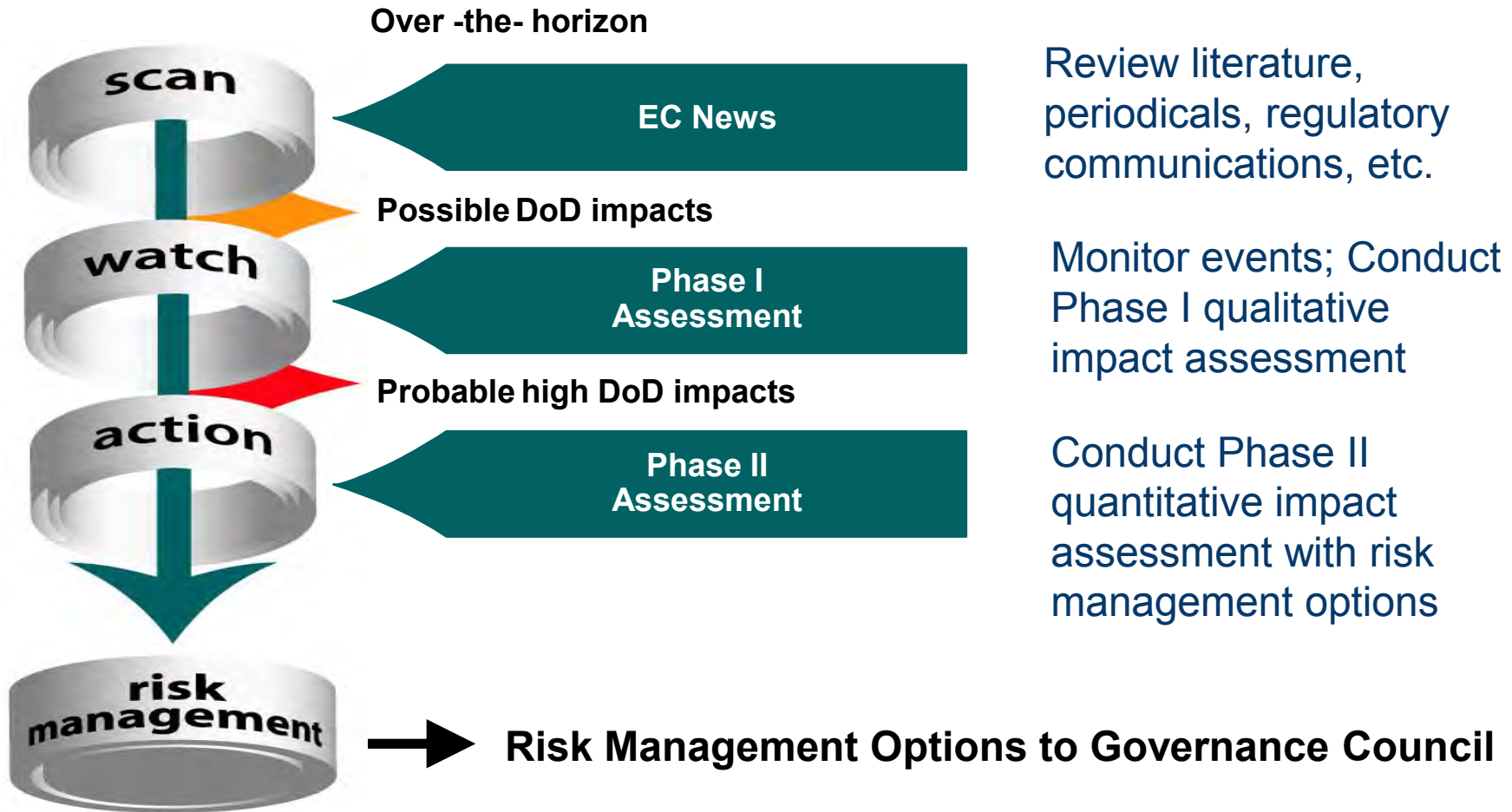
or

- the regulatory standards are evolving due to new science, detection capabilities, or pathways.



EC “Scan-Watch-Action” Process

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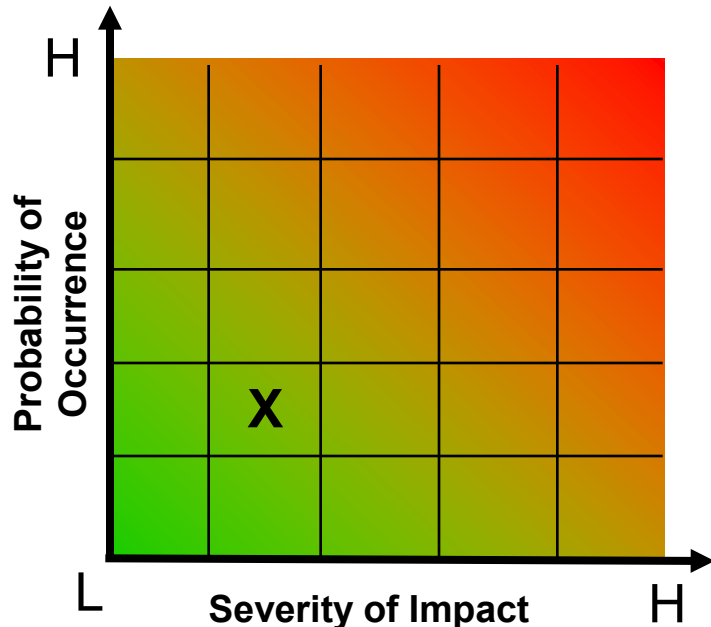


SF6 Phase I Impact Assessment

Completed January 2008

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Sulfur Hexafluoride (SF6) is used in radar systems; helicopter rotor-blade leak tests; discharge testing in fire suppression systems; electrical switch gear; and propulsion systems for specific weapons in service and under design.



ES&H

PO&MD of Assets

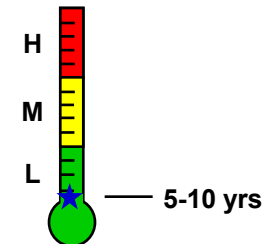
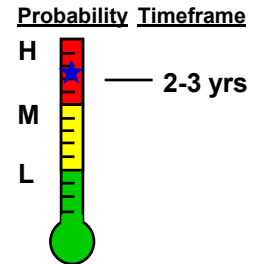
Training & Readiness

X Cleanup

Acquisition/RDT&E

Likelihood of Toxicity Value/Regulatory Change

1. Probability that Greenhouse Gas emission initiatives will restrict use/availability of SF6
2. Probability the OSHA will revise the permissible exposure limit (PEL) for SF6

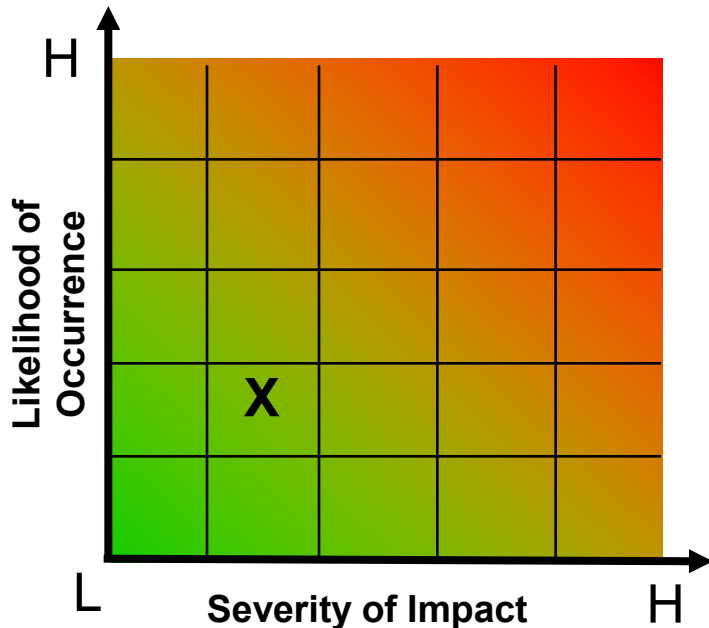


PFOA Phase I Impact Assessment

Completed January 2007

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PFOA: Perfluorooctanoic acid, also known as C8, used to produce fluoropolymers and fluoroelastomers which are used to make high performance gaskets, o-rings, seals, protective coatings/finishes, and wiring insulation. Also was a component in some PFOS-based AFFF. Undergoing IRIS assessment.



ES&H

Readiness & Training

Acquisition/RDT&E

O&M of Assets

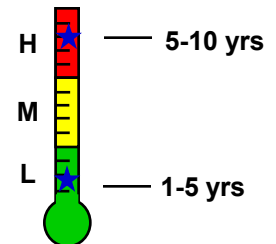
X Cleanup

Likelihood of Toxicity Value/Regulatory Change

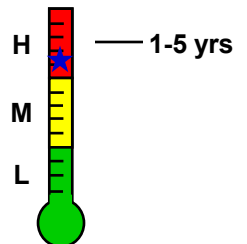
1. Probability the USEPA will establish IRIS toxicity benchmarks for PFOA

In the absence of federal guidelines, states are establishing guidance levels for PFOA (e.g., Minnesota, North Carolina, New Jersey, West Virginia)

Probability Timeframe



2. Likelihood that PFOA will become unavailable in the marketplace



EC Watch List

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- ✓ Tungsten alloys
 - Sodium Tungstate
- ✓ Tetrachloroethylene (PCE)
- ✓ Dioxin
- ✓ 1,4-dioxane*
- Nanomaterials
- ✓ Perfluorooctyl sulfonate (PFOS)
- ✓ Di-nitrotoluenes (DNT)*
- ✓ Lead
- ✓ Nickel
- ✓ Cadmium
 - Manganese
 - Cerium...recently added
 - Cobalt
- ✓ Perfluorooctanoic acid (PFOA)...moved from action list

Dropped After Assessment:

- Polybrominated biphenyl ethers (PBDEs)
- 1,2,3-trichloropropane (TCP)
- N-nitrosodimethylamine (NDMA)
- Dichlorobenzenes

✓ Phase I Impact Assessment completed

* To be re-assessed

EC Action List

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- ✓ Perchlorate
- Royal Demolition eXplosive (RDX)
 - Cyclotrimethylenetrinitramine
- ✓ Trichloroethylene (TCE)
- ✓ Hexavalent Chromium (Cr6+)
- ✓ Naphthalene
- ✓ Beryllium (Be)
- Sulfur Hexafluoride (SF6)

Hear Details at 1100 AM

✓ **Phase II Impact Assessment completed. All others initiated.**

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

***Part 2 –
Accomplishments & New
Initiatives***

EC Program Highlights

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- **Completed 21 Phase I Impact Assessments**
 - Qualitative assessments
- **Completed 6 Phase II Impacts Assessments**
 - Quantitative assessments + Risk Management Options (RMOs)
- **Completed state survey + 3 policy papers with EPA & the Environmental Council of States**
 - Minimizes field disputes at DoD installations
- **RMO - Hexavalent chromium minimization policy**
- **RMO - Comprehensive perchlorate policy**
- **Internal & External web sites**

Hear Details at 8:30 AM

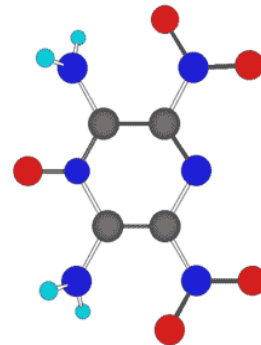
On-Going EC Program Improvements

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- **Toxicity Values for ECs of DoD interest not in IRIS**
 - Eliminates duplication across DoD in determining values
- **Deployment of groupware for Phase I Assessments**
 - Improves group analysis/decisions
- **Physical, chemical, & toxicity criteria for chemicals in development & acquisition**
 - What physical/chemical/toxicological properties do we need to know about a chemical/material....and when?
 - Goal: Standardized, mandatory criteria for development and acquisition stages

Hear Details at 1000 AM

Questions & Discussion



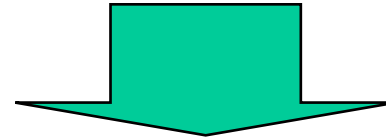
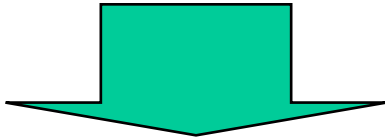
Backup Slides

Phase I Impact Assessment Process

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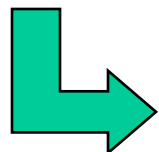
1 Likelihood of Toxicity
Value/Regulatory Change

2 Scoping and Data Collection



3 Impact on DoD Functional Areas

ES&H	Training & Readiness	Acquisition/ RDT&E	POMD of DoD Assets	Cleanup



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