The Way Ahead: National & International Trends in Chemical Management

Shannon E. Cunniff,
Director, Chemical and Material Risk Management
ODUSD(I&E)
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**The Way Ahead: National & International Trends in Chemical Management**


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Bottom-Line Up-Front

- Chemical and material choices have life cycle implications – in terms of risks and costs
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- New regulations and trends spell the need for development and testing of alternative, more sustainable materials
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- Chemical and material choices have life cycle implications – in terms of risks and costs
- We have strategies and processes in place to advance chemical management to improve sustainability
  - ECs – Scan, Watch, Act
  - Sustainable Materials Management
  - Pursue “green” procurement
- New regulations and trends spell the need for development and testing of alternative, more sustainable materials
Bottom-Line Up-Front

- Chemical and material choices have life cycle implications – in terms of risks and costs
- We have chemical management strategy and processes in place
- New regulations and trends spell the need for development and testing of alternative, more sustainable materials

Evolve to remain relevant and ready to meet these challenges
The Global Context

- **Global Environment**
  - Chemical
  - Climate change
  - Energy supplies

- **Global Economy & Society**
  - Global supply chains
  - Control over raw materials
  - Concerns over disposal
The Situation

- The USA and Europe list 100,000 chemicals on their registers.
- Over 75% have yet to receive an assessment for health or environmental impacts.
- Biomonitoring showing bioaccumulation of chemicals in humans and animal kingdom.
- Public concern over chemicals exposure increasing.
- Number of “Green Chemicals & Products” rapidly increasing.
- The majority of consumers have not cut back on green spending, despite the recession (MarketResearch.com).
- Nanotechnology promises a materials revolution.
EU’s Restriction of Hazardous Substances Directive

- Took effect on July 2006;
- Restricts the use of:
  - Lead (Pb)
  - Mercury (Hg)
  - Cadmium (Cd)
  - Hexavalent chromium (Cr^{6+})
  - Polybrominated biphenyls (PBB)
  - Polybrominated diphenyl ether (PBDE)

So what? It’s a European Law …
Another EU Law: REACH

**Goals**
- Reduce the use of toxic & hazardous chemicals in the European Union (EU)
- Expand transparency of human exposure & toxicity information to consumers

**Key Points**
- Effective 1 June 2007
- Covers parts & articles containing regulated materials, chemicals, mixtures
- Toxicological data must be submitted to register chemicals
- Unless registered, chemicals can’t be sold or imported – “No data, no market”
- Focuses on high-volume and most dangerous chemicals first
- Narrow exclusions for specific substances “in the interests of defense”
REACH – First Activities

- Dec 2008 - Preregistration deadline – to stay on the market
  - 66,000 companies submitted pre-registration applications for 150,000 chemicals

- Identification of Substances of Very High Concern
  - 32 SVHCs ‘identified’ in first 2 years
  - More expected – but at what rate?

- Dec 2010 - Full ‘registrations’ for the high priority chemicals due
REACH – So What’s Happened so far?

❖ Pushing manufacturers to select substitutes
  ➢ Restrictions in the EU applies market pressure on manufacturers/distributors to reconsider SVHCs use in non EU market products as well

❖ Changing the design, availability, and costs of traditional chemicals globally
  ➢ Spawning broader adoption of “greener” chemicals
  ➢ REACH compliance already a marketing point
REACH – So What’s been Happening?

- SVHC list growing
- NGO’s Substitute it Now List (aka SIN List)
- DoD has begun scanning/screening for ECHA’s Substances of Very High Concern
- DoD scanning/screening SIN list
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<tr>
<th>EXPECTED OUTCOMES ON COMMERCE</th>
<th>POTENTIAL IMPACTS TO DoD</th>
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<tr>
<td>Limiting/eliminating some chemical availability</td>
<td>Negative effects on U.S. military operations and maintenance in the EU</td>
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<td>Decreased material availability and increased costs for certain chemicals/articles</td>
<td>Disruption to defense supply chains outside the EU due to the global nature of supply</td>
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<td>Undisclosed substitution of chemicals in Commercial, Off-the-Shelf items</td>
<td>Failure or marginal performance of weapon systems or components of weapon systems</td>
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<td>Increased equipment costs passed on to foreign customers when substitute materials are available to satisfy individual country requirements</td>
<td>Increased equipment costs <em>eventually</em> passed on to DoD</td>
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<td>Different interpretations of REACH by each of the EU / participating states (30)</td>
<td>Disruption of U.S. and NATO interoperability (e.g., FMS)</td>
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<td>Accidental release of proprietary information</td>
<td>Accidental disclosure of classified or controlled unclassified information</td>
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<td>Accelerating the need to test and evaluate substitute materials</td>
<td>Increased DoD research and development costs</td>
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Top Goals of DoD’s Strategic Plan for REACH (draft)

- Protecting the Availability of Substances of Significance to the DoD Mission
- Ensuring the Performance of Substitutes
- Guarding Against Disruptions to the Supply Chain

Other Goals
- Supporting defense exemptions
- Minimizing negative impacts to Foreign Military Sales
- Capitalizing on Environment, Safety, and Health improvements
- Capitalizing on chemical management opportunities
- Corroborating acquisition strategies
- Planning for future regulations
REACH – Influencing Regulations Worldwide

- REACH
- New REACH-like
- REACH-like in consideration
- TSCA Reform
REACH v. TSCA

**REACH**
- 3 yrs
- Burden of proof on industry, ‘No data, No market’
- Precautionary principle
- Requires tox. data for all registered chemicals
- Data publically available
- Effectiveness: *tbd*

**TSCA**
- 34 years
- EPA must demonstrate chemical presents “unreasonable risk”
- Of 83,000 in the TSCA inventory, detailed exposure and tox. data required for ~200 (.25%)
- Data hasn’t been available
- States stepping up bans
REACH Influencing Regulations …

- EPA’s Essential Principles for Reform of Chemicals Management Legislation
  - Increased chemical disclosure
  - Setting standard according to science-based risk assessment methods
    - Including cost and risk management decisions
  - Establishing priority chemicals
  - Expanding EPA data call authority to require more testing to fill data gaps
  - Expansion of green chemistry programs
  - Greater transparency (less CBI claims)
## TSCA v. First TSCA reform bill

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<th>REACH</th>
<th>Safe Chemical Act of 2010</th>
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<tr>
<td>• Burden of proof on industry, ‘No data, No market’</td>
<td>• Industry must provide data to prove safety</td>
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<td>• Requires tox data for all registered chemicals</td>
<td>• Ensures safety threshold is met for all chemicals on the market and to enter the market</td>
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<td>• Data publically available</td>
<td>• Creates public data base of reliable chemical information</td>
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<td>• By design, spurs adoption of green chemistry</td>
<td>• Promotes green chemistry</td>
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Climate Change Legislation Driving Chemical Management
(as of May 2010)

- 1997 Kyoto Protocol
- 22 states have GHG emission targets
  - Cap and Trade
- EPA GHG final rule
Regulation of Nanomaterials

- **International Level**
  - REACH
    - Will result in new identifying section in Safety Data Sheet (SDS) or entirely new SD

- **National Level**
  - EPA publishes a proposed Significant New Use Rule (SNUR) for Multi-Walled Carbon Nanotubes in the Federal Register (Feb. 3, 2010)

- **State and Local Level**
  - Range of interests and different initiatives underway by states as well as municipalities
Sustainability Executive Orders Driving Chemical Management

- EO 13514, 5 October 2009

- EO 13423, 24 January 24 2007 - Remains in Effect

  - Chemical Related Requirements
    - Minimize generation of hazardous & non-hazardous waste
    - Advance sustainable acquisition
Remember this Slide?

Chemical and material choices have life cycle implications – in terms of risks and costs.

We have a chemical management strategy and processes in place.

New regulations and trends spell need for development and testing of alternative, more sustainable materials.

Evolve to remain relevant and ready to meet these challenges.
DoD’s Chemical & Material Risk Management Strategy

- **Highly Hazardous Chemicals**
  - Phase out
  - Ex: Treaty or banned chemicals, TRI chemicals, DoD Component Chemical Management Plan Chemicals (e.g., CFCs)

- **Problematic Chemicals**
  - Substitute & reduce use of wherever possible; proactively manage risks
  - Ex: High DoD Mission Risk Chemicals, Action List ECs, known and probable human carcinogens (e.g., Hex Chrome)

- **Chemicals of Uncertain Concern**
  - Close data gaps where mission critical; EC scan for new data and trends in science or regulation
  - Ex: Insufficient data, inadequately characterized ESOH hazards (e.g., CL20)

- **Inherently Safer Chemicals**
  - Give preference to & increase use
  - Ex: Vetted, low risk, recognized as “green” or bio-preferred

Need to understand ESOH hazards, explore substitutes to see if green/bio-preferred can meet mission requirements.
Striking the Right Balance

- Improve Chemical and Material Management
  - Re-formulated products must not be inadvertently used in sensitive applications
  - Re-formulated products must be tested for performance

- Adopt Safer and Greener Alternatives
  - Are we ready to adopt and reap benefits
    - Mission
    - Life cycle cost reductions
    - ESOH
The chemical management world is changing.....

Those who adapt early and smartly will be stronger.