USA Perspectives after REACH Enactment

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Potential Effects

US Chemical Industry $720 billion industry
US Chemicals that fall under REACH $234 billion (2004 est.)
US REACH Chemical Exports to the EU $13.7 billion per year (2004 est.)*
Potential Job Effects 54,000 jobs

*Ackerman, Stanton and Massey, European Chemical Policy and the United States: The Implications of REACH, Global Development and Environment Institute, Tufts University, 2006.
Direct Effects

Direct effects have been modest

• US-based firms do not have to register under REACH

• However, firms exporting products to EU moved to comply
  • Some joined SEIFs

• Chemical manufacturers report significant work efforts to comply, but most complied on time

• Complying with REACH has been easier for firms such as Dell and HP that have previously complied with RoHS

• Effects on retailers such as Staples has been minimal
Indirect Effects

Indirect effects have been more significant, although difficult to isolate from other factors

• effects on Federal Government
• effects on state government
• effects on NGOs
• effects on Industry
• effects on Congress
Federal Initiatives

EPA Initiatives

Actions to advance data transparency

• Changes to Confidential Business Information
• Posting of TSCA Inventory on Internet
• Changes in Chemical Data Rule (IUR)

Formed a Formulators Initiative under the Design for Environment Program, including:

• DFE Safer Product Labeling Program
• List of 600 safer chemical ingredients

ChemView—a “one stop” information portal for all information on TSCA chemicals (to be launched this fall)
Federal Initiatives

EPA Initiatives: Chemical Action Plans

2009—EPA announced “a comprehensive program to enhance the Agency’s current chemicals management program”.

• Prepared Chemical Action Plans for 10 chemicals*

  - benziidine dyes
  - hexabromocyclododecane ((HBCD)
  - nonylphenol & nonylphenol ethoxylates
  - phthalates
  - short chain chlorinated paraffins
  - bisphenol A
  - methylene diphenyl diisocyanate (MDI)
  - perfluorinated chemicals (PFCs)
  - penta, octa and decabromodiphenyl ethers in products
  - toluene diisocyanate (TDI)

* [http://www.epa.gov/opptintr/existingchemicals/pubs/ecactionpln.html#posted](http://www.epa.gov/opptintr/existingchemicals/pubs/ecactionpln.html#posted)
Federal Initiatives

**EPA Initiatives: Work Plan Chemicals**

2010—EPA expanded the program

- Prepared a list of 83 Work Plan Chemicals with 4 now in risk assessment
  - 2-Ethylhexyl ester 2,3,4,5-tetrabromobenzoate (TBB)
  - 1,2-Ethylhexyl 3,4,5,6-tetrabromo-benzenedicarboxylate or (2-ethylhexyl)-3,4,5,6 tetrabromophthalate (TBPH)
  - Tris(2-chloroethyl) phosphate (TCEP)
  - Hexabromocyclododecane (HBCD)

- Two more chemicals are now identified for risk assessment
  - Dichloromethane (DCM)
  - N-Methylpyrrolidone (NMP)

* [http://www.epa.gov/opptintr/existingchemicals/pubs/ecactionpln.html#posted](http://www.epa.gov/opptintr/existingchemicals/pubs/ecactionpln.html#posted)
State Initiatives

States Chemical Policies, 2013
States considering or enacting policies on chemicals in 2013

Source: Safer States
State Initiatives

**States Enacting Chemical-by-Chemical Laws**

**Mercury** in Products Laws
32 states have enacted or proposed legislation to ban mercury in products

**Brominated Flame Retardant (PDBE)** Laws
12 states have enacted laws to prohibit PBDEs in products

**Lead** in Products Laws
14 states have enacted laws to ban lead in various products

Additional state laws prohibit chrominated copper arsenate, phthalates, bisphenol A, perchloroethylene and formaldehyde
State Initiatives

**State Safe Chemicals Policy**

Introducing a new approach—chemical management process-focused rather than chemical-by-chemical focus

2008 **Washington**— *Children’s Safe Products Act*

2009 **Maine**— *Act to Protect Children’s Health and the Environment from Toxic Chemicals in Toys and Children Products*

2010 **Minnesota**— *Toxics Free Kids Act*
California’s Safer Consumer Products Regulations, 2011

- OEHHA hazard traits
- Initial list – existing authoritative lists
- Additions to the list –
  - Adverse public health & environmental impacts
  - Sensitive subpopulations & environmental receptors
  - Exposures – biological/environmental monitoring
  - Reliable information

- COCs’ adverse impacts (see above)
- Potential exposures to COCs in product
- Market and household presence
- Users, uses and applications of product
- End-of-life management
- Reliable information

- Technical guidance
- Exemptions
- Alternatives assessment process & timeframes
- Alternatives assessment reports

Chemicals of Concern List

Priority Products List

Alternative Selection

Regulatory Responses

Department of Toxic Substances Control  November 2011
State Initiatives

Interstate Chemicals Clearinghouse (IC2)

Mission

The IC2 is a partnership of states that promotes a clean environment, healthy communities, and a vital economy through the development and use of safer chemicals and products.

Goals

• Avoid duplication and enhance efficiency and effectiveness of state initiatives on chemicals through collaboration and coordination
• Build state capacity to identify and promote safer chemicals and products
• Ensure that states, businesses and the public have ready access to high quality and authoritative chemicals data, information and assessment methods
State Initiatives

Interstate Chemicals Clearinghouse (IC2)

• 11 state members
  CA, CT, ME, MA, MI, MN, NJ, NY, OR, VT, WA

• Hosts a database of state chemicals policies

• Coordinates a database of priority chemicals identified by states

• Developing a Guidance Document for Alternatives Assessments
Industry Initiatives

Corporate Chemical Restriction Policies

Many leading US-product manufacturers have developed corporate **Restricted Substance Lists** (RSLs--some tiered) on chemicals that are to be avoided

**Supplier Compliance Programs.** Leading Brand product manufacturers have active (compliance and/or training) programs with foreign suppliers to avoid restricted chemicals and to disclose chemicals in products in the supply chain

**Retailer Initiatives.** Wal-Mart, Staples and other major retailers have established RSLs and certification programs for assuring the absence of restricted chemicals
Industry Initiatives

Corporate Hazard Screening Systems

Examples:

• **S.C. Johnson** developed the “GreenList” for rating chemical ingredients against a set of criteria on a scale of 1-3.

• In its “Considered Chemistry” Program, **Nike** is using a “positive list” of preferred chemicals which are not listed as harmful to human health or the environment.

• **Interface Fabrics (now True, Inc.)** developed a protocol for screening all of its dyes and colorants to identify substances to avoid.
Industry Initiatives

Chemical Management Frameworks

Examples:

• Outdoor Industry Association Chemical Management Framework—an industry collaboration growing out of the Joint Roadmap of Zero Waste of Hazardous Chemicals that has created a Roadmap, an index (the Higg Index) and, now, a framework for chemical management.

• U.S. Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED)—this private standard for the building construction industry set up before REACH has now created a new Healthy Materials Credit.
NGO Initiatives

NGO-Business Alliances

Green Chemistry and Commerce Council
Association of 70 firms organized by the Lowell Center for Sustainable Production

American Sustainable Business Council
Some 1600 businesses and business associations

Green Chemistry Pharmaceutical Roundtable
Sponsored by the ACS Green Chemistry Institute

Business/NGO Working Group on Safer Chemicals and Products
Organized by Clean Production Action
NGO Initiatives

Green Chemistry and Commerce Council

Hosted by the Lowell Center for Sustainable Production

Current projects:
• Advancing Green Chemistry Education
• Business & Academic Partnerships for Safer Chemicals
• Engaging Retailers in the Adoption of Safer Products
• Facilitating Chemical Data Flow Along Supply Chains
New Tools

Chemical Alternatives Assessment

Chemical Alternatives Assessment is a process for identifying and comparing potential chemical and non-chemical alternatives that can be used as substitutes to replace chemicals or technologies of high concern.

Required by California Safe Consumer Product Regulation

Goals –

- Reduce risk by reducing hazard
- Encourage adoption of safer chemicals
- Avoid regrettable substitutions
### US EPA, Design for Environment Alternatives Assessment, 2006

#### Furniture Example

<table>
<thead>
<tr>
<th>Company</th>
<th>Chemical</th>
<th>% in Formulation</th>
<th>Human Health Effects</th>
<th>Ecotoxicity</th>
<th>Environmental</th>
<th>Potential Routes of Exposure</th>
<th>Reactive or Additive?</th>
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<td></td>
<td>Proprietary E. Tetraethylphthalate diepoxide</td>
<td>L L I I I I I</td>
<td>L L L L</td>
<td>L</td>
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<td>N Y Y N Y Y N N Y Y</td>
<td>Additive</td>
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<td></td>
<td>Proprietary B. Aryl phosphate</td>
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<td>H M L L</td>
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<td>L</td>
<td>Y Y Y Y Y Y Y Y</td>
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<tr>
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<td>Triphenyl Phosphate</td>
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<td>L</td>
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<td>Y Y Y Y Y Y Y Y</td>
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<td>Tribromoneopenty alcohol</td>
<td>M L M M M M M M</td>
<td>M L L L</td>
<td>L</td>
<td>L</td>
<td>Y Y Y N N N Y Y</td>
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<td>Great Lakes</td>
<td>Firemaster 350</td>
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<td>Proprietary F. Halogenated aryl ester</td>
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<td>L</td>
<td>N Y Y N Y Y Y Y</td>
<td>Additive</td>
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<td>L L L L</td>
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<td>Y Y Y Y Y Y Y Y</td>
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<tr>
<td></td>
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<td>L</td>
<td>Y Y Y Y Y Y Y Y</td>
<td>Additive</td>
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<td>Proprietary H. Halogenated aryl ester</td>
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<td>L L L L</td>
<td>L</td>
<td>L</td>
<td>N Y Y N Y Y Y Y</td>
<td>Additive</td>
</tr>
</tbody>
</table>
Seven Step Biz/NGO Alternatives Assessment

1. Identify Chemical(s) of Concern

2. Characterize End Uses and Function

3. Identify Alternatives:
   Are there potential alternatives, including chemicals, materials, products or new designs? 
   - Yes
   - No

   3a. Implement best practices to reduce worker and community exposure.
   3b. Continue search for alternatives.

4. Assess Chemical Hazards:
   Evaluate human and environmental health impacts of chemicals and deselect more hazardous options.

5. Evaluate Technical and Economic Performance

6. Apply Life Cycle Thinking:
   Is there potential for significant life cycle or exposure concerns?
   - Yes
   - No

   6a. Life cycle concerns?
   - Yes
   - No

   Life Cycle Assessment (LCA) – Depending on resources and needs complete partial or full LCA to assess other environmental impacts.

   6b. Exposure concerns?
   - Yes
   - No

   Risk Assessment (RA) – Depending on resources and needs complete partial or full RA to assess risks.

7. Select and Implement Safer Alternative
New Tools

Green Screen for Safer Chemicals
# Green Screen - Benchmarking DecaBDE

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS#</th>
<th>% in Formulation</th>
<th>Priority Effects</th>
<th>Human Health Effects</th>
<th>Ecotox.</th>
<th>Fate</th>
<th>Breakdown Products</th>
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<td>Carcinogenic</td>
<td>Mutagenic</td>
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<td>Reproductive</td>
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<td>Endocrine</td>
<td>Disruption</td>
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<td>Neurological</td>
<td>Acute Toxicity</td>
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<td>Systemic/Organ Effects</td>
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<td>Sensitization (skin)</td>
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<td>Sensitization (respiratory)</td>
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<td>Irritation/Corrosion (skin)</td>
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<td>Irritation/Corrosion (eyes)</td>
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<td>Immune System Effects</td>
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<td>Chronic</td>
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<td>Persistence</td>
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<td>Metabolites</td>
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<td>Degradation Products</td>
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<td>Decabromodiphenyl ether (decaBDE)</td>
<td>1163-19-5</td>
<td>97</td>
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<td>PentaBDE</td>
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<td>nd</td>
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</tbody>
</table>

**Bold text** = based on experimental data. **Black italics text** = based on analog data or expert judgment.
Green Chemistry Initiatives

• Presidential Green Chemistry Awards Continue
• Annual National Green Chemistry and Engineering Conference

• Michigan and Oregon Green Chemistry Executive Orders
• Universities set up Green Chemistry Centers:
  • Yale, Oregon, Berkeley
• Beyond Benign launched “The Green Chemistry Commitment”

• U.S. Congress, H.R. 1215, Green Chemistry Research and Development Act, pending
For 40 years the United States has stalled on reforming its national chemicals policies

Finally, new legislation to reform TSCA has been filed
Congressional Initiatives

Safe Chemicals Act (Proposed)

2012---Senate Environment and Public Works Committee, approved the Safe Chemicals Act (S. 696)

- Improves EPA’s authority to reduce risk from toxic chemicals
- Requires industry to submit to EPA a **basic set of chemical information** on all chemicals

- Requires firms to certify that their chemicals meet a defined **safety standard**
- Phases out several **high priority PBTs**

- Requires **biological monitoring** of chemicals of high concern
- Promotes **green chemistry** research and development

- Addresses vulnerable population exposure of toxic chemicals in certain “**toxic hot spots**”
Congressional Initiatives  
Chemical Safety Improvement Act (CSIA)

2013---A bi-partisan, compromise bill is filed that would follow SCA, but…

• Only requires chemical information from industry for Priority Chemicals

• Eliminates deadlines for EPA action

• Pre-empts state action on High Priority and Low Priority Chemicals

• Eliminates Green Chemistry support

• Eliminates biomonitoring provisions

• Eliminates special programs for vulnerable populations in “hot spots”

This bill may pass the Senate, but its future in the House is uncertain
June, 2013--US and EU announce formation of a Transatlantic Trade and Investment Partnership (T-TIP) to reduce tariff and non-tariff barriers to trade and investment, including:

“Significantly reduce the cost of differences in regulations and standards by promoting greater compatibility, transparency, and cooperation, while maintaining our high levels of health, safety, and environmental protection.”

July 8-12 --First round of negotiations took place in Washington
• 350 participants
• talks covered market access for agricultural and industrial goods, government procurement, investment, energy and raw materials, regulatory issues, sanitary and phytosanitary measures, services, intellectual property rights, sustainable development, small- and medium-sized enterprises, dispute settlement, competition, customs/trade facilitation, and state-owned enterprises.

October 7-10—Next round of negotiations will be in Brussels
Summary

REACH has had a direct effect on US-based firms that export products to Europe. The work has ranged from modest to significant depending on previous compliance with EU Directives and size of firm.

Indirect effects have been more significant:
- States have been encouraged to pass many new chemicals laws
- Some leading firms are now well beyond regulatory compliance in managing chemicals
- NGO’s have been active in building collaborative relations with firms and developing tools for chemical management assistance

Only recently, and haltingly, has the Congress begun to consider amending national chemicals laws—that future remains uncertain.