



USA Perspectives after REACH Enactment

Ken Geiser, PhD
Professor of Work Environment Emeritus
University of Massachusetts Lowell

GDCh-Wissenschaftsforum Chemie 2013
September 4, 2013

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*

benzidine 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>

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)

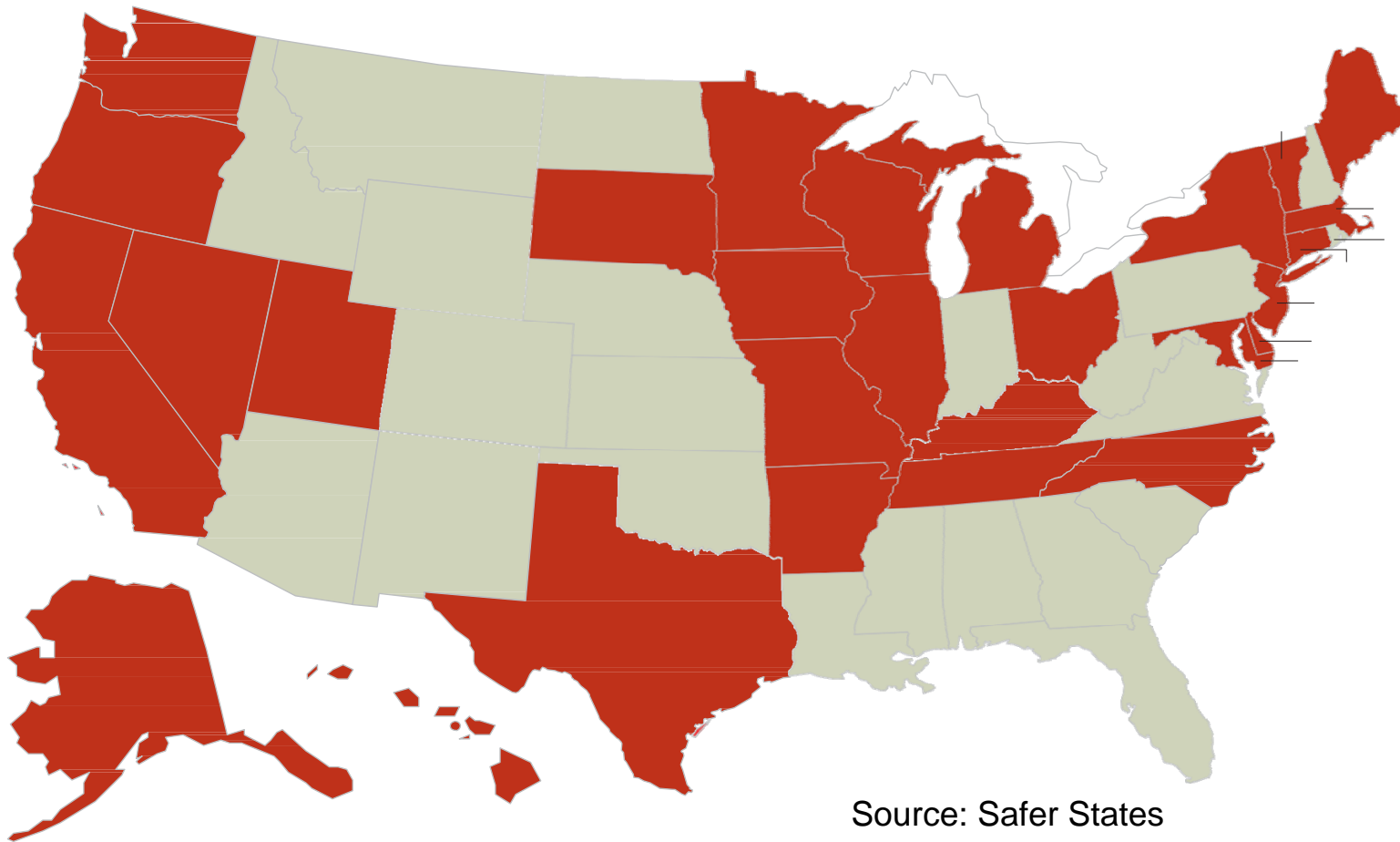
N-Methylpyrrolidone (NMP)

* <http://www.epa.gov/opptintr/existingchemicals/pubs/ecactionpln.html#posted>

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 (PBDE) 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

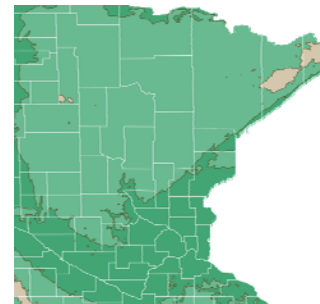
2008 **Washington**-- *Children's Safe Products Act*



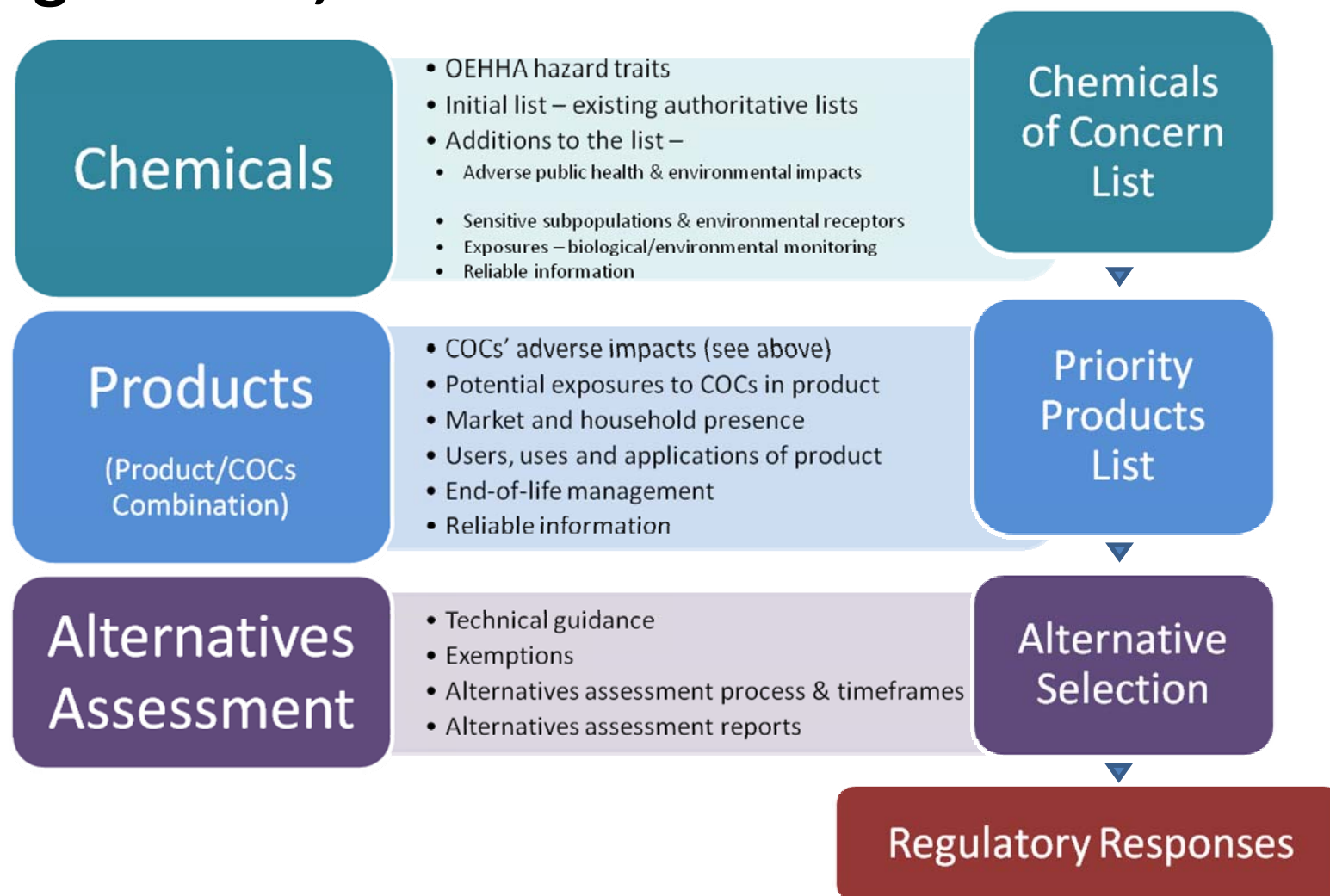
2009 **Maine**-- *Act to Protect Children's Health and the Environment from Toxic Chemicals in Toys and Children Products*



2010 **Minnesota**-- *Toxics Free Kids Act*



California's Safer Consumer Products Regulations, 2011



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

<http://www.newmoa.org/prevention/ic2/projects/chempolicy/>

- 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

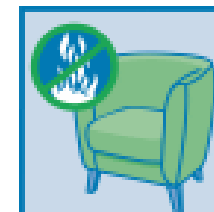
US EPA, Design for Environment Alternatives Assessment, 2006

Furniture Example

Human Health
Hazard Concern

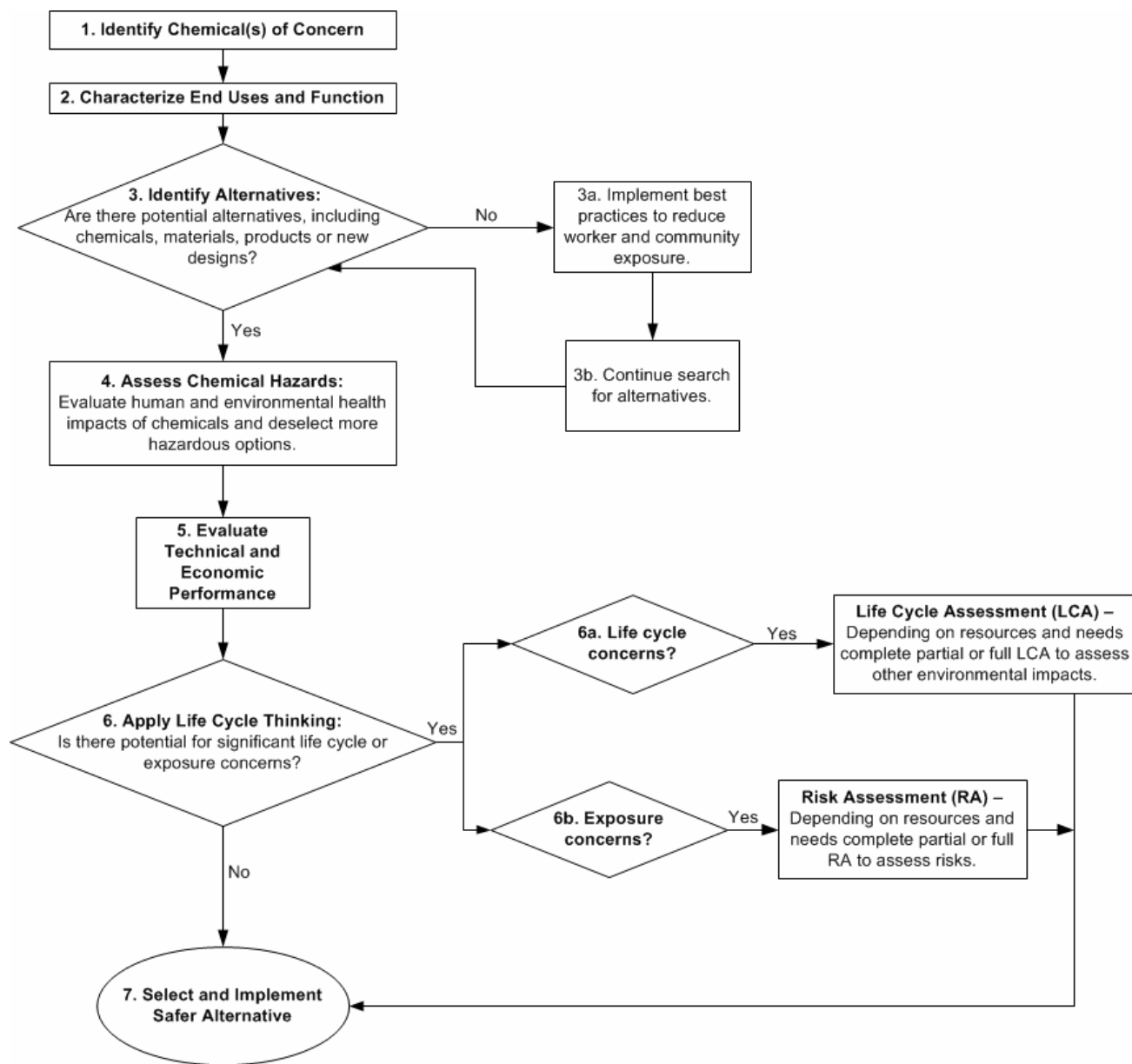
Ecotoxicity
Hazard Concern

Environmental
Concern



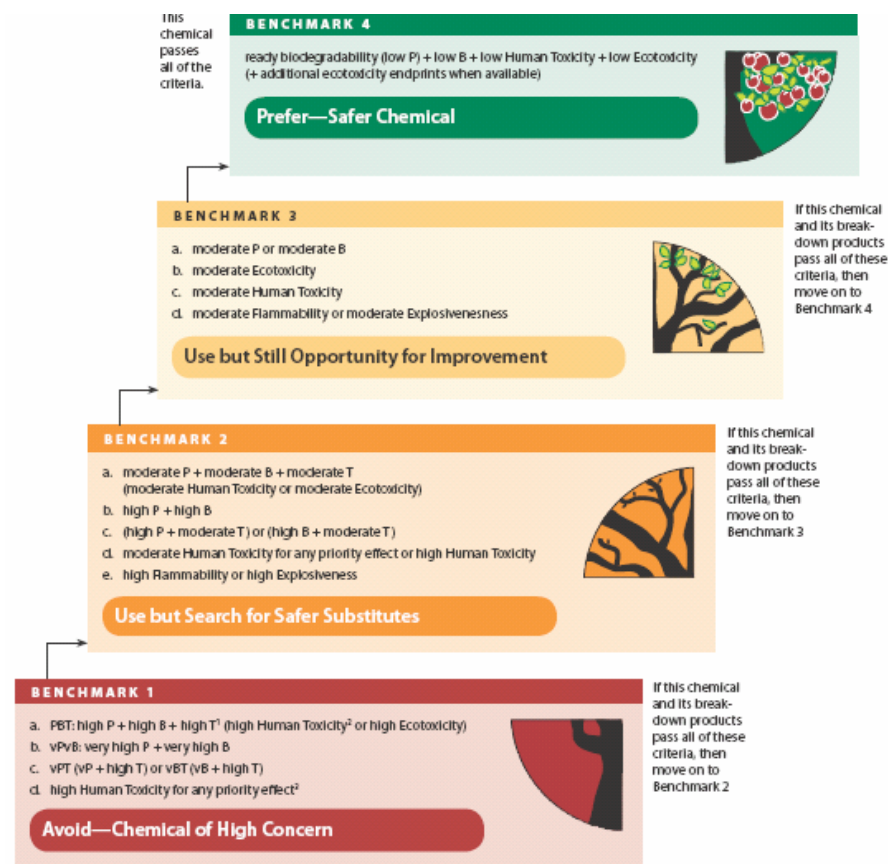
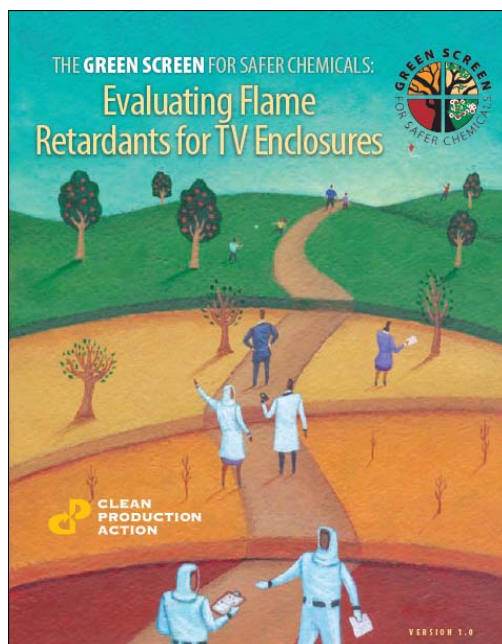
Company	Chemical	% in Formulation ³	Human Health Effects							Ecotoxicity		Environmental		Potential Routes of Exposure							Reactive or Additive?
			Cancer Hazard	Skin Sensitizer	Reproductive	Developmental	Neurological	Systemic	Genotoxicity	Acute	Chronic	Persistence	Bioaccumulation	Worker			General Population			Aquatic	
														Inhalation	Dermal	Ingestion	Inhalation	Dermal	Ingestion		
Albemarle	SAYTEX RZ-243																				
	Proprietary E Tetrabromophthalate diol diester		L	L	L*	L*	L	M*	L	L	H	L?	L	N	Y	Y	N	N	Y	Y	Additive
	Proprietary B Aryl phosphate		L	L	M*	M*	M	M*	L	H	H	L	M	N	Y	Y	N	Y	N	N	Additive
	Triphenyl Phosphate CAS # 115-86-6		L	L	L	L	L	M	L	H	H	L	L	Y	Y	Y	Y	Y	Y	Y	Additive
Ameribrom	FR513																				
	Tribromoneopentyl Alcohol CAS # 36483-57-5		M	L	M	M	M	M	M	M	M	L	L	Y	Y	Y	N	N	Y	Y	Reactive
Great Lakes	Firemaster 550																				
	Proprietary F Halogenated aryl ester		L	L	M	M	L	M	L	H	H	L?	L	N	Y	Y	N	Y	Y	Y	Additive
	Proprietary G Triaryl phosphate, isopropylated		L	L	M*	M*	M	M*	L	H	H	L	M	N	Y	Y	N	Y	N	N	Additive
	Triphenyl Phosphate CAS # 115-86-6		L	L	L	L	L	M	L	H	H	L	L	Y	Y	Y	Y	Y	Y	Y	Additive
	Proprietary H Halogenated aryl ester		L	L	M	M	L	M	L	H	H	L?	L	N	Y	Y	N	Y	Y	Y	Additive

Seven Step Biz/NGO Alternatives Assessment



New Tools

Green Screen for Safer Chemicals



FOOTNOTES:

- 1 Toxicity – "T" = human toxicity and ecotoxicity
- 2 Human Toxicity = priority effects (see below) or acute toxicity, immune system or organ effects, sensitization, skin corrosion, or eye damage
- 3 Priority Effects = carcinogenicity, mutagenicity, reproductive or

ABBREVIATIONS:

B = bioaccumulation P=persistence
T=human toxicity and ecotoxicity
vB=very bioaccumulative vP=very persistent

Green Screen - Benchmarking DecaBDE

Chemical	CAS#	% in Formulation	Human Health Effects											Ecotox.		Fate		Breakdown Products				
			Priority Effects						Acute Toxicity	Systemic/Organ Effects	Sensitization (skin)	Sensitization (respiratory)	Irritation/Corrosion (skin)	Irritation/Corrosion (eyes)	Immune System Effects	Acute	Chronic	Persistence	Bioaccumulation	Metabolites	Degradation Products	
			Carcinogenic	Mutagenic	Reproductive	Developmental	Endocrine Disruption	Neurological														
Decabromodiphenyl ether (decaBDE) - CAS# 1163-19-5																						
DecaBDE	1163-19-5	97	M	L	L	M	M	M	L	L	L	nd	L	L	nd	L	L	vH	M	penta- to nona- BDE	tri- to nona- BDE	
Breakdown Products																						
PentaBDE	32534-81-9		nd	L	M	M	H	M	L	H	L	L	M	M	nd	H	H	vH	vH			
OctaBDE	32536-52-0		nd	L	M	H	M	M	L	H	L	nd	L	L	nd	L	L	vH	M	nd	low er PBDEs	
Bold text = based on experimental data. <i>Black italics text</i> = 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

US-EU Free Trade Agreement Discussions

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