



Substituting Hazardous Chemicals the American Way

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Overview

- Lots of drivers for chemical deselection – in US mostly market based
- Emerging focus on the process of substitution with policies requiring alternatives assessment
- Growing field of science policy discussion
- Lessons learned and areas for collaboration

Regulatory Drivers

ECHA European Chemicals Agency

Search the ECHA Website

Advanced search

About Us | Regulations | Addressing Chemicals of Concern | Information on Chemicals | Chemicals in our Life | Support

ECHE > Regulations > REACH

REACH

REACH is a regulation of the European Union, adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals, while enhancing the competitiveness of the EU chemicals industry. It also promotes alternative methods for the hazard assessment of substances in order to reduce the number of tests on animals.

- Understanding REACH
- Legislation

Substance Identity

Unambiguous substance identification is a pre-requisite to most of the REACH processes. Actors in the supply chain must have sufficient information on the identity of their substance.

Read more

Processes

Companies have the responsibility of collecting information on the properties and the uses of substances that they manufacture or import at or above one tonne per year. They also have to make an assessment of the hazards and potential risks presented by the substance.

Registration

ECHA and the Member States evaluate the information submitted by companies to examine the quality of the registration, dossier and the testing proposals, and to clarify if a given substance constitutes a risk to human health or the environment.

Evaluation

The authorisation procedure aims to assure that the risks from substances of Very High Concern are properly controlled and that these substances are progressively replaced by suitable alternatives while ensuring the good functioning of the EU internal market.

Authorisation

Restrictions are a tool to protect human health and the environment from unacceptable risks posed by chemicals. Restrictions may limit or ban the manufacture, placing on the market or use of a substance.

Restriction

European Commission

GROWTH Internal Market, Industry, Entrepreneurship and SMEs

European Commission > Growth > Single Market and Standards > ... > Harmonised standards > Restriction of hazardous substances

Single Market and Standards | Industry | Entrepreneurship and SMEs | Access to finance for SMEs | Sectors

Restriction of the use of certain hazardous substances (RoHS)

Directive 2011/65/EU

Short name:	Restriction of the use of certain hazardous substances (RoHS)
Base:	Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (OJ L 174 of 1 July 2011)
Modification:	[-]
Directives repealed:	Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment - OJ L of 13 February 2003

5/EC is repealed as from 3 January 2013

EU - Article 26 - Repeal:
EC as amended by the acts listed in Annex VII, Part A is repealed with effect from 3 January 2013 without prejudice to the obligations of the Member States relating to the transposition into national law and application of the Directive set out in

CA.GOV California Department of Toxic Substances Control

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SAFER CONSUMER PRODUCTS (SCP)

Submit questions/feedback on the SCP Program

Safer Consumer Products

- SCP Home
- News Coverage
- Workshops
- SCP Program Overview
- Priority Products
- Chemical Lists
- Alternatives Analysis
- Toxics Information Clearinghouse
- Green Ribbon Science Panel
- Petitions

SAFER CONSUMER PRODUCTS REGULATIONS

The Safer Consumer Products program strives to reduce toxic chemicals in products consumers buy and use. It identifies specific products containing potentially harmful chemicals and asks manufacturers to answer two questions: 1) Is this chemical necessary? 2) Is there a safer alternative?

The program requires manufacturers to conduct a thorough analysis of alternatives to make sure they don't pose environmental or health problems. The result is that consumers will confidence that the products they buy are safe for their families and the environment.

Program Overview

PRIORITY PRODUCT WORK PLAN

DTSC is developing a Priority Product Work Plan which identifies product categories from which Priority Products will be selected over the next three years. DTSC invites you to participate in our workshops to discuss the draft Priority Product Work Plan. Workshops will be held on September 25, 2014 at the CalEPA Headquarters in Sacramento, and on September 29, 2014 at DTSC's regional office in Cypress. For workshop details and registration, please see our workshops web page. The draft Work Plan is available for public comment using our California Safer Products Information Management System (CalSAFER) until 5 p.m. (PDT) on October 21, 2014.

PRIORITY PRODUCTS

What is a Priority Product? A Priority Product is a consumer product that contains one or more chemicals – known as Candidate Chemicals – that have a hazard that can harm people or the environment. A proposed list of three product-chemical combinations was released on March 13, 2014. This initial Priority Products list is the first set of product-chemical combinations to be named for consideration by DTSC to be regulated under the Safer Consumer Products regulations. Publication of this draft list of products imposes no new regulatory requirements on manufacturers until DTSC finalizes it by adopting regulations. Read more

Quick Links:

- SCP Regulations

State of Washington

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Children's Safe Products Act

CHILDREN'S SAFE PRODUCT ACT

Reporting Rule

Rule Development

List of Chemicals

Email Notices (sign up)

For consumers

Search Reported Data

Search Product Testing Data

For manufacturers

Reporting Guidance

Enter Data

Overview of the law

Ecology's [Reducing Toxic Threats](#) Initiative is based on the principle that preventing exposures to toxics is the most important part of this initiative.

The [Children's Safe Product Reporting Rule](#) requires manufacturers of children's products sold in Washington to report product contains a [Chemical of High Concern to Children](#).

The CSPA also limits the amount of lead, cadmium, and phthalates allowed in children's products. These limits were preempted by federal law. Ecology works with the [Consumer Product Safety Commission](#) to ensure compliance with requirements.

Consumers	Manufacturers
Read our FAQs for consumers	Read our guidance for manufacturers
Search the information that manufacturers have reported	Learn how to use the CSPA Reporting Application
Search the information about products Ecology has tested	Report information using the CSPA Reporting Application

Enforcing the law

Ecology tests products for chemicals to ensure manufacturers are reporting accurate information about their child and to make sure that they are complying with laws regulating other chemicals (like [Bisphenol A](#), [polybrominated toxic metals in packaging](#), or [copper in vehicle brake pads](#).) These testing projects are summarized in [Ecology's](#)

You can also search the information from all of Ecology's testing in the [Product Testing Database](#).

News releases

- [Children's products tested for toxic chemicals](#) (April 14, 2014)
- [Two changes made to children's product chemical list](#) (October 29, 2013)
- [Ecology set to carry out children's product reporting law](#) (July 22, 2011)
- [Pilot process will begin field testing state children's product law](#) (January 28, 2010)

More information

Market drivers

C&EN
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Home » Volume 52 Issue 7 » Walmart And Target Take Aim At Hazardous Ingredients

Research & Development, Production and Distribution of API worldwide.

Volume 52 Issue 7 | pp. 19-21
Issue Date: February 17, 2014

Walmart And Target Take Aim At Hazardous Ingredients

Big retailers formulate policies to regulate the chemicals that go into the products they sell

By Melody M. Baumgardner

Department: Business | Collection: Sustainability, Safety
News Channels: Environmental SCENE
Keywords: sustainability, consumer products, toxic chemicals, green chemistry, soaps and detergents, personal care

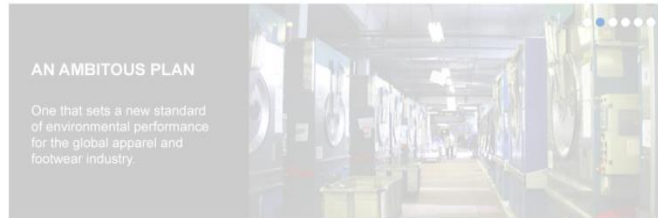
Megaretailers Walmart and Target announced last fall that they would reduce or eliminate ingredients in household goods that they deem harmful to human health and the environment. The policies, which focus on cleaners and personal care products, were applauded by advocacy groups that are pushing companies to disclose ingredients and apply more stringent safety criteria than required by law.

In the months since the announcements, both companies have revised their policies. Matthew Malins of our

Practice Greenhealth

MESSAGE DELIV Medfield, Mass., 4:48-p.m. to a Target store manag

sustainability at 80% proliferation of state c



AN AMBITIOUS PLAN

One that sets a new standard of environmental performance for the global apparel and footwear industry

RØADMAP TO ZERO DISCHARGE OF HAZARDOUS CHEMICALS

ZDHC Group Releases Key Milestone: Manufacturing Restricted Substances List (MRSL)



ZDHC Guidance Sheets Released for Eleven MRSL-restricted Chemicals



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Safer Chemicals and Sustainable Materials

- What are safer chemicals and sustainable materials?
- Why should healthcare suppliers and service providers address safer chemicals and sustainable materials?
- What resources are available to help suppliers and service providers address safer chemicals and sustainable materials?

Related Tools & Resources

- Webinar Calendar
- Business Member Benefits

Questions about Business Membership?

Contact [Lara Sutherland](#) at 866-598-2210

What are safer chemicals and sustainable materials?

Many Practice Greenhealth member GPOs, hospitals, and health care systems are concerned about the toxic chemicals coming into their facilities via the products they buy, as well as the toxic chemicals released into the environment during the production or disposal of the materials used in the products they buy.

This is reflected in some of the [Product- and Service-](#)

Tools & Resources

- Greenhealth Tracker
- Sustainability in Health Care Book
- Hospital Member Toolkits
- Community Health Center Member Toolkit
- Business Member Toolkits
 - Join Practice Greenhealth
 - Safer Chemicals and Sustainable Materials
 - Business Membership Benefits
 - Business Directory Listings
- Sustainability Benchmark Report
- Energy Impact Calculator
- Greenhealth Magazine
- Supplier Directory
- Practice Greenhealth Mentor Program
- Listserv
- Forums
- Greenhealth Careers



Overview
LEED v4
Rating systems
Credits
Levels of certification
Why LEED?
Tools

LEED stands for green building leadership. LEED is transforming the way we think about how buildings and communities are designed, constructed, maintained and operated across the globe.

LEED certified buildings save money and resources and have a positive impact on the health of occupants, while promoting renewable, clean energy.

LEED, or Leadership in Energy & Environmental Design, is a green building certification program that recognizes best-in-class building strategies and practices. To receive LEED certification, building projects satisfy prerequisites and earn points to achieve different levels of certification. Prerequisites and credits differ for each rating system, and teams choose the best fit for their project.

LEED v4 is the newest version of the world's premier benchmark for high-performance green buildings.

Regrettable Substitutions

A Few Examples

EDF Health

About this blog



Science, health, and business experts at Environmental Defense Fund comment on chemical and nanotechnology issues of the day.
Our work: [Chemicals](#)

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Regrettable, if predictable: Bisphenol S mimics estrogen just like its better-studied cousin, bisphenol A

By RICHARD DENISON | BIO | Published: JANUARY 17, 2013

Richard Denison, Ph.D., is a Senior Scientist.

A rule of thumb in chemistry is that chemicals that look alike will more often than not act alike. (If it looks like a duck ...) Indeed, when chemical companies are faced with testing requirements for one of their chemicals, they routinely argue that they should be allowed to submit test data on a structurally related chemical instead.

So when it was revealed that companies making products (such as thermal receipt paper) that contain the estrogen-mimicking compound bisphenol A (BPA) were switching to another chemical called bisphenol S (BPS), many scientists' eyebrows quickly arched.

Take a look at these two chemical structures:



Lynne Peeples ♥ Become a fan ✉ [Twitter](#) [Facebook](#)
lynne.peeples@huffingtonpost.com

New Flame Retardants, Other Replacement Chemicals, Pose Same Problems As Predecessors

Posted: 11/28/2012 12:04 pm EST | Updated: 11/28/2012 10:06 pm EST

Evolution of Alternatives Assessment in the U.S.

- Pollution prevention/cleaner production planning – 1990s (primarily process focus)
- Development of alternatives assessment frameworks and approaches – early 2000s (increasing product focus)
- Hazard assessment tools development – 2000s.
- Increased attention to tools and processes that consider exposure, lifecycle.
- Increased focus on applicability/application among a range of companies.

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Transitioning to Safer Chemicals: A Toolkit for Employers and Workers

Home

Why Transition to Safer Alternatives? Basics of Informed Substitution and Alternatives Assessment

Success Stories Watch Assistant Secretary Michaels' Introductory Video Explore the Steps

Welcome.

American workers use tens of thousands of chemicals every day. While many of these chemicals are suspected of being harmful, only a small number are regulated in the workplace.

As a result, workers suffer more than 190,000 illnesses and 50,000 deaths annually related to chemical exposures. Workplace chemical exposures have been linked to cancer, and other lung, kidney, skin, heart, stomach, brain, nerve, and reproductive diseases.

Establishing a chemical management system that goes beyond simply complying with OSHA standards and strives to reduce or eliminate chemical hazards at the source through informed substitution best protects workers. Transitioning to safer alternatives can be a complex undertaking, but a variety of existing resources make it easier. OSHA has developed this step-by-step toolkit to provide employers and workers with information, methods, tools, and guidance on using informed substitution in the workplace.

By using this toolkit, businesses can improve worker well-being through eliminating or reducing hazardous chemicals, while creating other benefits, including:

- Cost Savings — Reduce expenses and future risks.
- Efficiency — Improve performance.
- Industry Leadership — Invest in innovation to stay competitive.
- Corporate Stewardship — Advance socially responsible practices.

This toolkit can be used by all types of businesses—it is for manufacturers using chemicals in their production processes as well as for

Steps for Transitioning to Safer Chemicals

Evolving Efforts

Table ES-1 Screening Level Toxicology Hazard Summary

This table only contains information regarding the inherent hazards of flame-retardant (FR) chemicals. Evaluation of risk must consider both the hazard and exposure associated with FR chemicals, as well as the hazard and exposure associated with combustion and degradation by products. Refer to Table S-1 for more information on exposure.

The criteria listed in the legend and footnote sections must be taken into account when interpreting the hazard information in the table below.

L = Low hazard H¹ = Moderate hazard H² = High hazard — Endpoints in colored text (L, M, and H) were assigned based on experimental data. Endpoints in black text (L, M, or H) were assigned using estimated values and professional judgment (Structure-Activity Relationships).

Hazard designations, which are based on the presence of epoxy groups, arise from the analysis of low molecular weight oligomers (molecular weight <1,000) that may be present in the original products. The estimated health hazard for higher molecular weight (>1,000) cross-linked, high-molecular weight epoxy groups, are low for these endpoints.

† Concern based on potential inhalation of small particles less than 10 microns in diameter that may be present in varying amounts.

‡ Concern linked to direct lung effects associated with the inhalation of poorly soluble particles less than 10 microns in diameter.

§ Persistent degradation products expected (see found in this report).

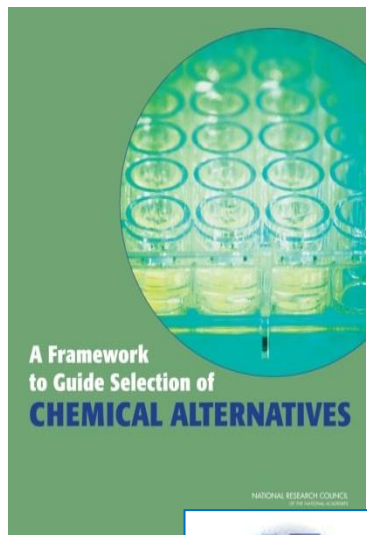
¶ Reactant substance is or contains organics, such as metal ions or elemental oxides, that are expected to be found in the environment >60 days after release.

Chemical	CASRN	Human Health Effects										Exposure Consideration			
		Acute Toxicity	Skin Sensitizer	Cancer Hazard	Reproductive Toxicity	Developmental Toxicity	Neurotoxicity	Synergistic	Genotoxicity	Airway Irritant	Eye Irritant	Respiratory Irritant	Biocorrosion	Availability of FRs throughout the lifecycle for reactive and additive FR chemicals and resin	
Aluminum hydroxide	21645-51-2	L	L	L	M	L	L	M	L	L	H	M	L	L	†
FRs (FR 100 (polyphosphazene), FR 100 (phosphazene), FR 100 (phosphazene), FR 100 (phosphazene)) (Chemical)	122790-34-8	L	L	L	M	L	L	M	L	L	H	M	L	L	†
FRs (FR 900)	122790-34-8	L	L	L	M	L	L	M	L	L	H	M	L	L	†
Melapur 200 (Melamine polyphosphazene) (Chemical)	121275-84-4	L	L	L	M	L	L	M	L	L	H	M	L	L	†
Melapur 200	121275-84-4	L	L	L	M	L	L	M	L	L	H	M	L	L	†
Polysilphobate acid	8017146-1	L	L	L	Z	L	L	M	L	L	H	M	L	L	†
Melanox	108-76-1	L	L	L	Z	L	L	M	L	L	H	M	L	L	†
Silicon dioxide amorphous	7631-86-9	L	L	L	L	L	L	H ¹	L	L	L	L	L	L	†
Silicon dioxide crystalline	1312-95-0	L	L	L	L	L	L	H ¹	L	L	L	L	L	L	†
Magnesium hydroxide	1309-42-8	L	L	L	L	L	L	L	L	L	L	L	L	L	†

Manufacture of FRs throughout the lifecycle for reactive and additive FR chemicals and resin

Manufacture of FRs with Biocorrosion

Manufacture of FRs with Biocorrosion



A Framework to Guide Selection of CHEMICAL ALTERNATIVES

NATIONAL RESEARCH COUNCIL ON ENVIRONMENTAL SCIENCES

FIVE CHEMICALS ALTERNATIVES ASSESSMENT STUDY Executive Summary

June 2016

Prepared by the States for Public Health Institute at the University of Massachusetts Lowell

EPA United States Environmental Protection Agency

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Design for the Environment An EPA Partnership Program

We're redesigning the DfE label.

Frequently Asked Questions

- Where can I find a list of products with the DfE label?
- Where can I find a list of safe ingredients?
- How can I get my chemical on SCL?
- How do I apply to get the DfE label on my products?

Food Products with the DfE Label

- Consumers
- Industrial & Institutional Purchasers
- All Purpose Cleaners
- Window Cleaners
- Fab/Car Cleaners
- Laundry Detergents
- more...

La información sobre los productos más seguros es igual

December 15, 2014 — EPA announced an updated draft report of the DfE Research to Reduce Harmful Substances in Product Chemical Labels. Read the report.

December 8, 2014 — Safe Product Labeling Program announces 2015 Review of the Top Hazards.

November 20, 2014 — DfE has

OECD BETTER POLICIES FOR BETTER LIVES

HOME ABOUT RESOURCES GLOSSARY

OECD Substitution and Alternatives Assessment Toolbox

Welcome to the OECD Substitution and Alternatives Assessment Toolbox (SAAT) — a compilation of resources relevant to chemical substitution and alternatives assessments. Visit the four resource areas below to learn more about chemical substitution and alternatives assessments and get practical guidance on conducting them.

Learn about...

- the current landscape of substitution and alternatives assessment practices in the:
 - OECD Meta-Review of Current Practices

Alternatives Assessment Tool Selector

A filterable inventory of chemical hazard assessment tools and data sources to help you identify tools most relevant to your substitution and alternatives assessment goals. A listing of non-hazard assessment tools is also available.

[Learn more](#)

Alternatives Assessment Frameworks

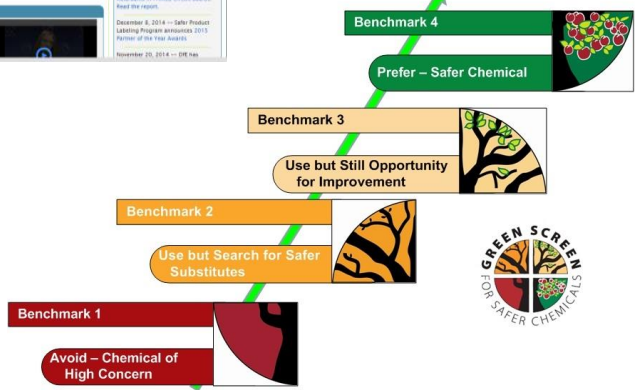
A summary of the current frameworks that can be used to assess alternatives. Guides and other resources for conducting a chemical substitution or alternatives assessment are included.

[Learn more](#)

Case Studies and Other Resources

Links to case studies, toolkits, and product rating systems that provide examples, insights, and lessons learned on substitution and alternatives assessment approaches.

[Learn more](#)



Interstate Chemicals Clearinghouse Alternatives Assessment Guide Version 1.0



Defining Alternatives Assessment

- A process for identifying and comparing potential chemical and non-chemical alternatives that could replace chemicals or technologies of concern on the basis of their hazards, performance, and economic viability
- Action orientation

Informed Substitution – EPA - 2010

- A considered transition from a chemical of particular concern to safer chemicals or non-chemical alternatives. The goals of informed substitution are to minimize the likelihood of unintended consequences, which can result from a precautionary switch away from a chemical of concern without fully understanding the profile of potential alternatives, and to enable a course of action based on the best information - on the environment and human health - that is available or can be estimated.

Focus of Alternatives Assessment

- Alternatives assessment is a step-defined, action-oriented process which may require several iterations
 - Focus on function not the particular chemical
 - Focus on “intrinsic impact reduction”
 - Considers the “necessariness” of a chemical
- Finding a safer alternative and getting industry to adopt the use of it are not the same thing.

The Process of Assessing Alternatives



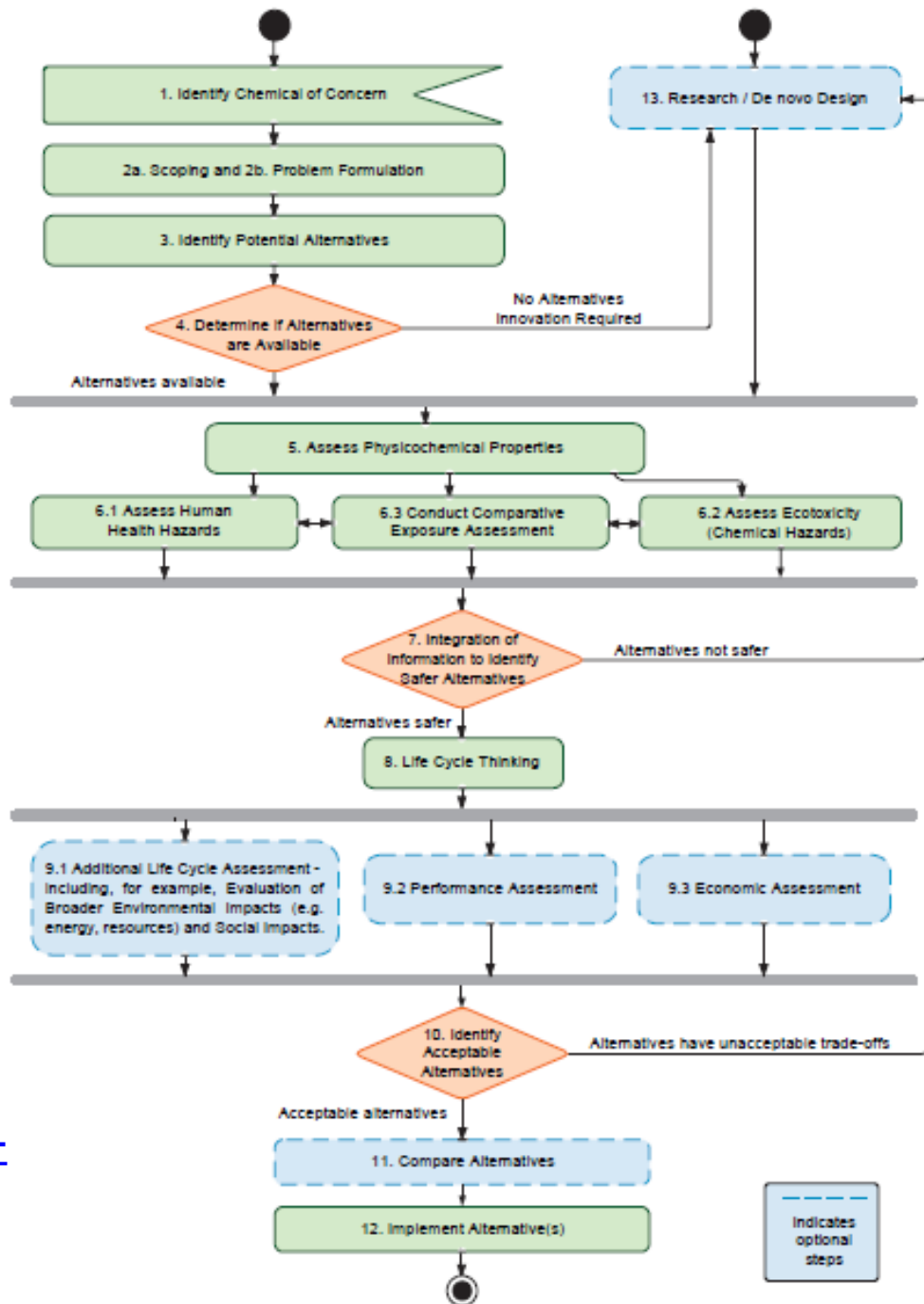
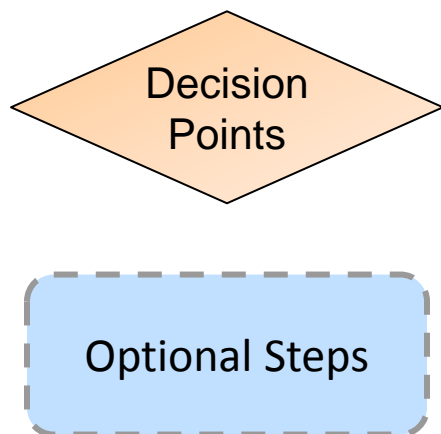
www.theic2.org



**A Framework
to Guide Selection of
CHEMICAL ALTERNATIVES**

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

US National Research Council 13-Step Framework



<http://dels.nas.edu/Report/Framework-Guide-Selection/18872?bname=bcst>

NAS 2014: Alternatives Assessment

is

- is a process for identifying, comparing and selecting safer alternatives to chemicals of concern.
- has a goal of facilitating an informed consideration of the advantages and disadvantages of alternatives to a chemical of concern.

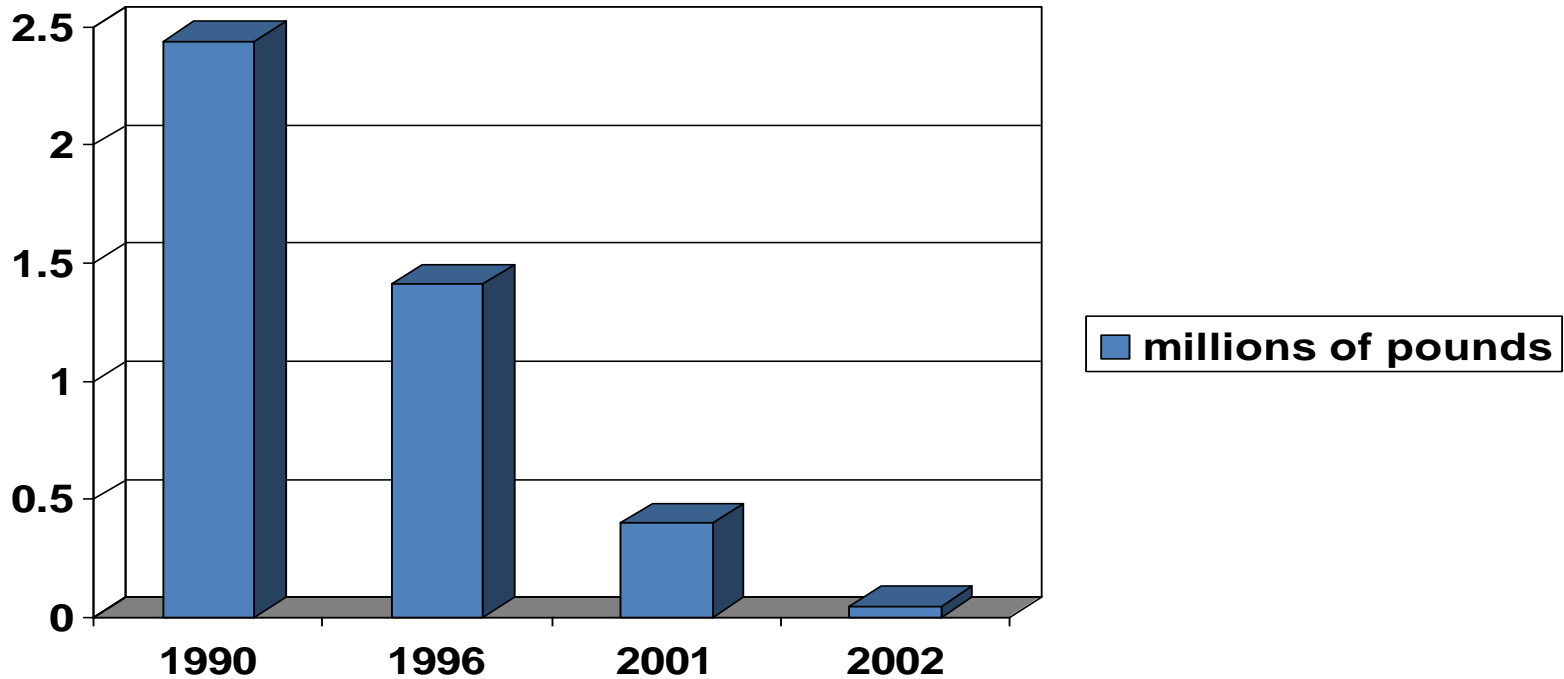
is not

- a *safety assessment*, where the primary goal is to ensure that exposure is below a prescribed standard,
- a *risk assessment* where risk associated with a given level of exposure is calculated
- a *sustainability assessment* that considers all aspects of a chemicals' life cycle, including energy and material use.

Massachusetts Toxics Use Reduction Program - Key elements of success in promoting safer alternatives

- Requirement to understand chemical use and undertake prevention planning
- Strong agency support to companies
 - On-site technical support
 - Research on alternatives
 - Technical evaluation of alternatives
 - Education and training
 - Demonstration sites, supply chains, etc

MA TCE Cleaning Use Data



The Result of the MA Toxics Use Reduction Planning and Technical Support Process

Review of Alternatives Assessment Frameworks, Jacobs, et al, 2015

<http://ehp.niehs.nih.gov/1409581/#tab1>

Framework	Publication Source			Purpose			
	Gov't	NGO	Academic	Regulatory	Guidance	Internal Protocol	Research
BIZNGO 2011		✓			✓		
DG Employment 2012	✓			✓	✓		
German Guide 2011	✓				✓		
Goldschmidt 1993			✓		✓		
IC2 2013	✓	✓			✓		
Lowell Center 2006			✓		✓		
MA TURI 2006/2011	✓					✓	✓
NAS 2014	✓				✓		
Ontario 2012	✓			✓	✓		
Quinn et al. 2006			✓				✓
REACH 2011	✓			✓			
Rosenberg et al. 2001			✓				✓
RSC 2007		✓	✓		✓		
TRGS 600 2008	✓			✓			
UCLA 2009/2013			✓		✓		✓
UNEP POPs 2009	✓			✓	✓	✓	
EPA CTSA 1996	✓				✓	✓	
EPA DFE 2011	✓				✓	✓	
EPA SNAP 2011	✓			✓			

General observations based on evolving frameworks, tools, and efforts

- Alternatives assessment is a robust, growing science policy discipline with evolving frameworks, methods and tools
- There are many commonalities in approaches but also some important differences. Greater consistency is needed in approaches
- There is a need for enhanced, readily available data to conduct alternatives assessments and actionable information for decision-making
- The field would benefit from greater cross-sectoral collaboration and sharing of data, knowledge, and practical case examples

Differences in approach

US

- Market driven
- Focus on process
- Focus on assessment and implementation
- Hazard focus (work on specific endpoints to consider)
- Increasing expansion to other properties – lifecycle, etc.
- Tendency towards prescriptive approach
- Done by government and sometimes industry

EU

- Policy driven (occupational health and environment)
- Focus on outcome
- Focus primarily on assessment
- Risk focus
- Focus primarily on risk, economics, and performance
- Tendency towards guidance
- Done primarily by industry

Research needs moving forward

- Development of core hazard endpoints and criteria
- Data type integration and data gap filling in hazard assessment
- Rapid exposure characterization (to identify potential trade-offs)
- Tools to integrate lifecycle thinking into alternatives assessments and compare chemical and non-chemical alternatives
- Consistent approaches to economic and performance assessment?
- Tools to more effectively integrate multiple attributes into decisions

Lessons learned on alternatives assessment

- Remember solutions-focus and action orientation
- Avoid Paralysis by Analysis – goal is “excellent action” not “excellent paper work”
- Keep it flexible and iterative and adaptable to decision-contexts and different users
- Develop tools for rapid evaluation
- Be comprehensive in choice of alternatives (focus on function) and scope, inclusive, and transparent
- Focus on both assessment and adoption
- Support innovation and new chemical/material design
- Opportunities for US-EU collaboration moving forward

Resources on alternatives assessment

- Massachusetts Toxics Use Reduction Institute – www.turi.org research, training, resources
- Lowell Center for Sustainable Production – www.sustainableproduction.org Alternatives Assessment Framework, alternatives assessments etc.
- US EPA Design for Environment Program – <http://www2.epa.gov/saferchoice> - research, methods, recognition program
- Interstate Clearing House on Chemicals - <http://www.theic2.org/> - guide, completed alternatives assessments
- Clean Production Action – www.cleanproduction.org – GreenScreen, Plastics Scorecard and BizNGO working group for safer chemicals (bizngo.org)
- OECD Alternatives Assessment Tool Selector - <http://www.oecdsatoolbox.org/>
- Subsport Project – www.subsport.eu – database of case studies, evaluations, resources, links

For more information

- Joel Tickner
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- Toxics Use Reduction Institute
www.turi.org
- Green Chemistry and Commerce Council
www.greenchemistryandcommerce.org
- International Symposium on Alternatives Assessment
www.saferalternatives.org