REAChing Towards Safer Chemicals: The Role of REACh and other chemicals initiatives in promoting safer chemicals and products

Joel A. Tickner, ScD
Lowell Center for Sustainable Production
UMASS Lowell
NIEHS Worker Education and Training Program Workshop, October 20, 2009
Joel_tickner@uml.edu
www.chemicalspolicy.org

Overview

- REACh is here to stay and will significantly change chemicals management globally
- Other international, state, federal and corporate policies will play an increasingly important role in shifting chemical product markets towards greater transparency and safer materials
- Transitioning to safer chemistry is not simple and will require new tools and collaborations.
- There is a unique opportunity to guide the transition towards safer materials in a way that protects worker and community heath and leads towards innovation and job creation.

Problems of Current Approaches to Chemicals Management

1. Lack of information on many chemicals in commerce or their uses through supply chains
2. Unequal treatment of new/existing chemicals
3. Slow, burdensome, reactive, inefficient chemical by chemical risk assessment/ management processes
4. Lack of incentives to stimulate development of safer substitutes
5. Lack of public confidence in government and industry

http://www.norden.org/pub/sk/showpub.asp?pubnr=2008:596

norden

Toxic Substances in Articles: The Need for Information

Challenges of our current approach

- Chemicals safe until demonstrated dangerous
- Lack of evidence and information being (mis-) interpreted as evidence of safety
- Uncertainty in risk assessments a reason for delay – manufactured uncertainty
- Segmented chemical by chemical approach leads to potential trade-offs (no lifecycle thinking)

- Ultimately there a failure of design and responsibility
- Responsibility being dumped down the supply chain

Cultural Change of REACH

- No data = No market
- Responsibility on companies to develop safety data, define safe uses of chemicals, and communicate with supply chain (up and down)
- Responsibility on manufacturers/importers to ask for permission (authorization) to use chemicals of very high concern
- Greater sharing of information on substances in products (preparations and articles). Greater supply chain dialogue
- Forced cooperation on testing

The impacts of REACH (and other European initiatives) in the US

- Companies will need to comply with registration, authorization and data requirements.
- Withdrawal of substances from the market is inevitable. What will the replacements be.
- Impacts on imports into the EU; importers and customers will require help (scientific, technical etc)
- Opportunities: information, public confidence, safer products/reduced liability
- Highlights lack of US leadership

REACh in the context of other initiatives

- GHS – greater hazard information exchange
- State level chemicals policies – ME, WA, CA, MN, CT, MA
- Industry initiatives on safer products – market leaders becoming defacto “regulators”
- Early stages of TSCA reform
- A new movement towards green chemistry

California Green Chemistry Initiative - Mozilla Firefox
File Edit View History Bookmarks Yahoo! Tools Help
http://www.dtsc.ca.gov/PollutionPrevention/GreenChemistryInitiative/index.cfm?CFID=7923642&CFTOKEN=62697228
california green chemistry
Most Visited Getting Started Latest Headlines
Search Web Mail Shopping Personals My Yahoo! News Games Travel Finance Answers Sports

QUICK LINKS

- DTSC Data
- EnviroStor
- Permit Appeals
- Fact Sheets, Publications and Forms
- Laws, Regs & Policies
- News Room

RESOURCES

- Regulatory Assistance
- Employment
- Decisions Pending and Opportunities for Public Participation
- DTSC Events Calendar

Welcome

New! California Green Chemistry Wiki

Participate in the Green Chemistry Wiki! This innovative tool was created to spur informal collaboration on the Safer Alternatives Regulations development process. News Release

The Green Chemistry rule development process will detail how DTSC implements Assembly Bill 1879 and Senate Bill 509.

News on California's Green Chemistry Initiative

Find recent news and videos on California's Green Chemistry Initiative. Find out what others are saying about Green Chemistry.

Green Ribbon Science Panel

New! Green Ribbon Science Panel Agenda released! View the public notice on the Green Ribbon Science Panel meeting. View the latest (April 27, 2009) background information and staff presentations/additional documents provided to the panel members. Read about California's new Green Ribbon Science Panel or view the news release on the panel members.

Done
Draw AutoShapes
Slide 12 of 20 Ripple gc3 overview 2009 May draft English (U.S.)

CA Legislation - AB 1879 and SB 509, building off recommendations

- DTSC to adopt regulations by January 2011 which establish a process to identify and prioritize chemicals which are “chemicals of concern”
- January 2011 rulemaking to establish process for: Evaluating chemicals of concern in consumer products; Identifying potential alternative; Determine how to limit exposure or reduce hazards
- Web-based Clearinghouse for collection, maintenance and distribution of chemical hazard trait and environmental/toxicological end-point data
- Existing: Prop 65, labeling requirements
- Safe Cosmetics Program – report CRs, public disclosure, safety actions http://www.dhs.ca.gov/ohb/Cosmetics

PLEASE NOTE: Legislative Information ***cannot*** perform research, provide legal advice, or interpret Maine law. For legal assistance, please contact a qualified attorney.

An Act To Protect Children's Health and the Environment from Toxic Chemicals in Toys and Children's Products

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 38 MRSA §1609, sub-§10, as enacted by PL 2007, c. 296, §1, is repealed.

Sec. 2. 38 MRSA c. 16-D is enacted to read:

CHAPTER 16-D

TOXIC CHEMICALS IN CHILDREN'S PRODUCTS

§ 1691. Definitions

As used in this chapter, unless the context otherwise indicates, the following terms have the following meanings.

1. Alternative. "Alternative" means a substitute process, product, material, chemical, strategy or combination of these that serves a functionally equivalent purpose to a chemical in a children's product.

2. Chemical. "Chemical" means a substance with a distinct molecular composition or a group of structurally related substances and includes the breakdown products of the substance or substances that form through decomposition, degradation or metabolism.

http://www.mass.gov/legis/bills/house/185/ht00pdf/ht00783.pdf
act for a healthy
dependent Liv... Latest Headlines verizon wireless aren...
husetts finalagenda.pdf (application/pdf Object) GRANHOLM - EXECUTIVE DIRECTIVE ... ht00783.pdf (application/pdf Obj...
2 / 25 130% Sign Find

In the Year Two Thousand and Seven.

AN ACT FOR A HEALTHY MASSACHUSETTS SAFER ALTERNATIVES TO TOXIC CHEMICALS.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. Title. This Act shall be known and may be cited as "An Act for a Healthy Massachusetts: Safer Alternatives to Toxic Chemicals."

SECTION 2. Legislative findings.

Whereas, Article 97 of the Constitution of Massachusetts provides that the people shall have the right to clean air and water; and

Whereas, scientific evidence increasingly links many chronic diseases with repeated and increased exposure to toxic substances. These diseases and disorders include: asthma, autism, birth defects, cancers, developmental disabilities, diabetes,

lliance for a Healthy Tomorrow - Mozilla Firefox
Edit View History Bookmarks Yahoo! Tools Help
http://www.healthytomorrow.org/
comisiones obreras istas
ost Visited Getting Started
http://www.healthytomorrow.org/
Search Web Mail Shopping Personals My Yahoo! News Games Travel Finance Answers Sports
Alliance for a Healthy Tomorrow

The Alliance for a Healthy Tomorrow

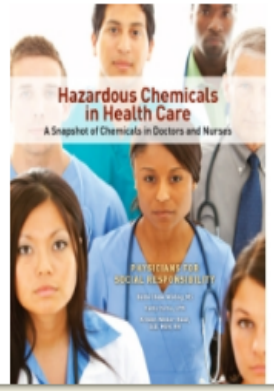
Everyone Has the Right to a Healthy Environment

The Alliance for a Healthy Tomorrow (AHT)

A broad coalition in Massachusetts working to pass laws and policies that prevent harm to our health from toxic chemicals. Our top priorities are to create a groundbreaking program in Massachusetts to systematically replace toxic chemicals with **safer alternatives** that are better for workers and the environment, and to compel the Massachusetts Department of Health to use its authority to protect the health of children and vulnerable adults from the toxic chemical **bisphenol A**. Please **join the effort**.

Toxic Chemicals found in bodies of Mass Nurse and Doctor

Posted on Oct 8, 2009



Earlier this year, Mimi Pomerleau and Sean Palfrey did a bold thing: they had their blood and urine tested for the presence of toxic chemicals.

Mimi is a OB nurse at Massachusetts General Hospital and an Assistant Clinical Professor at Lawrence Memorial Regis College. Sean is professor of pediatrics and public health at Boston University School of Medicine, and medical director of Boston's Lead Poisoning Prevention Program. Both participated in the Hazardous Chemicals in Health Care bio

Google™ Custom Search Search

About Us
Making a Healthy Tomorrow
Get Involved
Toxics & Our Health
Recent News

Action Alert

Tell Governor Patrick why you want children's products to be BPA free. **Sign the petition!**

Twitter

US State Level Chemicals Policies - Mozilla Firefox
File Edit View History Bookmarks Yahoo! Tools Help
http://www.chemicalspolicy.org/uslegislationsearch.php
Most Visited Getting Started Latest Headlines
Search Web Mail Shopping My Yahoo! News Games Travel Finance Answers Sports Sign In

US STATE LEVEL CHEMICALS POLICY DATABASE

The database can be searched by state, region, status (e.g., enacted, proposed, and failed), policy category (e.g., pollution prevention, single chemical restriction, etc.), chemical, and product type (e.g. children's products, cleaning products, etc.).

To search the database, use the six pull-down menus below to make selections in one or more of the pull-down menus. When making selections in multiple pull-down menus, the results will include only entries that contain all of the selections highlighted. The database can also be searched by making multiple selections from one pull-down menu. In order to select more than one item in each menu, hold down the command key (Mac) or control key (PC) while making the selections. When making multiple selections in one pull-down menu, the results will include entries that contain any of the selections highlighted.

Additionally, the entire database can be searched by entering a bill number, word, or phrase into the box located below the pull-down menus. This will search the full database entries of each policy for the entered word or phrase, although it will not return results where the entered word or phase is found solely in the full-text document (word or pdf) of the policy.

To print the results of the search, click on the print icon located at the top of the returned results. To search again, click on "new search" located below each entry to reset the menus.

To let us know about legislation or policies that are not represented in the database, any mistakes in the entries, or if you have any other comments, please click here.

Passed and Pending State Level Chemicals Legislation

BACK TO INTRO PAGE
RESET FORM

To select more than one item in each list, hold down the command key (Mac) or control key (PC) while making your selections.

STATE	REGION	STATUS	CHEMICAL
All	All	All	All
Alabama	Arctic	Proposed	2-ethyl-1-hexanol
Alaska	Midwest	Enacted	4-phenylecyclohexene
Arizona	Northeast	Failed	Alkylphenol
Arkansas	Pacific		Arsenic
California	Southeast		benzyl butyl phthalate (BBP)

POLICY CATEGORY	PRODUCT TYPES
All	All
Alternatives Assessment	Children's Products
Biomonitoring	Cleaning Products
Data Collection	Cosmetics
Design for the Environment	Electronics Equipment
Environmental Health Tracking and Surveillance Systems	Furniture

Done
start Inbox for joel_tickner... 7 Microsoft Office P... Tickner_GlobalReg01... US State Level Chemi... EN 10:02 PM

Essential Principles for Reform of Chemicals Management Legislation | Existing Chemicals | OPPT | US EPA - Mozilla Firefox
File Edit View History Bookmarks Yahoo! Tools Help
http://www.epa.gov/oppt/existingchemicals/pubs/principles.html
epa principles tsca
Most Visited Getting Started Latest Headlines
Search Web Mail Shopping Personals My Yahoo! News Games Travel Finance Answers Sports
Essential Principles for Reform of Ch...

Existing Chemicals Home
Basic Information
Enhancing EPA's Chemicals Management Program
Managing Chemical Risk
Collecting and Assessing Information on Chemicals
International Activities
Related EPA Activities
Finding Public Information on Chemicals

Essential Principles for Reform of Chemicals Management Legislation

Download in PDF format. (2 pp, 28 kb)

The U.S. Environmental Protection Agency (EPA) is committed to working with the Congress, members of the public, the environmental community, and the chemical industry to reauthorize the Toxic Substances Control Act (TSCA). The Administration believes it is important to work together to quickly modernize and strengthen the tools available in TSCA to increase confidence that chemicals used in commerce, which are vital to our Nation's economy, are safe and do not endanger the public health and welfare of consumers, workers, and especially sensitive sub-populations such as children, or the environment.

The following Essential Principles for Reform of Chemicals Management Legislation (Principles) are provided to help inform efforts underway in this Congress to reauthorize and significantly strengthen the effectiveness of TSCA. These Principles present Administration goals for updated legislation that will give EPA the mechanisms and authorities to expeditiously target chemicals of concern and promptly assess and regulate new and existing chemicals.

Principle No. 1: Chemicals Should be Reviewed Against Safety Standards that are Based on Sound Science and Reflect Risk-based Criteria Protective of Human Health and the Environment.

EPA should have clear authority to establish safety standards that are based on scientific risk assessments. Sound science should be the basis for the assessment of chemical risks, while recognizing the need to assess and manage risk in the face of uncertainty.

Principle No. 2: Manufacturers Should Provide EPA with the Necessary Information to Conclude That New and Existing Chemicals are Safe and Do Not Endanger Public Health or the Environment.

Manufacturers should be required to provide sufficient hazard, exposure, and use data for a chemical to support a determination by the Agency that the chemical meets the safety standard. Exposure and hazard assessments from manufacturers should be required to include a thorough review of the chemical's risks to sensitive subpopulations

Where manufacturers do not submit sufficient information, EPA should have the necessary authority and tools, such as data call in, to quickly and efficiently require testing or obtain other information from manufacturers that is relevant to determining the safety of chemicals. EPA should also be provided the necessary authority to efficiently follow up on chemicals which have been previously assessed (e.g., requiring additional data or testing, or taking action to reduce risk) if there is a change

COVER STORY

The New Regulators

Retailers and States Take the Lead

The U.S. chemical industry has seen a new trend emerge on the regulatory front in recent years—the environmental initiatives of "big box" retailers and other downstream customers have become *de facto* regulatory requirements. This is a shift from the aggressive federal rules of the 1980s and 1990s that were the industry's primary concern. Instead, retailers as well as individual states appear to be shaping environmental policy.

Federal officials have issued relatively few regulations in recent years. One example is the 1976 Toxic Substance Control Act (TSCA), which provides EPA with authority to ban hazardous substances. EPA has used the law to ban only five compounds since TSCA's creation, however.

Most of the significant environmental rules in the last 10 years have come from states, a trend that sometimes requires industry to comply with a maze of overlapping rules. The industry has also had to manage a long list of retailer demands, including calls for more sustainable packaging and the elimination of certain chemicals from finished products.

Wal-Mart (Bentonville, AR), one of the U.S. industry's most powerful customers, surprised industry executives in 2006 when it announced that it would ban three substances: propoxur and permethrin, both used in household insect-control products; and nonylphenol ethoxylates (NPE), an ingredient in some cleaning products. Wal-Mart has not said when it will fully phase out those products, however. "Wal-Mart has worked with its suppliers and developed a timeline for elimination of these three chemicals of concern from our products and to replace them with less harmful alternatives," the company says.

Wal-Mart had also planned to announce restrictions on 17 other substances used in "chemical-intensive" products by the end of 2008, but that may take longer than anticipated, the company says. Wal-Mart is in the process of developing a screening tool to help it assess and prioritize product restrictions. "The process to prioritize the list of harmful chemicals is labor-intensive and robust

Boots Policy on the use of Chemicals in Consumer Products

March 2003

The health and safety of our customers is a priority in the development of our products. We are confident that Boots products present no significant risk either to our customers or to the environment.

However, with the increasing concern over the potential for certain chemicals to adversely affect human health and the environment, we accept that issues such as bioaccumulation, persistence and endocrine disruption, may well present problems for future generations. For this reason we have identified the use of chemicals in our products as one of our key sustainable development indicators.

We will continue to use chemicals in a responsible manner by identifying those chemicals that may present an unacceptable risk for future generations and, building on our traditional precautionary approach, we will:

- set objectives and targets for action on these chemicals,
- engage with our stakeholders to ensure we are addressing the right issues in the right timeframe,
- continually review our approach to ensure it meets both business needs and stakeholder expectations,
- publish our progress regularly.

We believe that as a result of this policy, we will build on the trust associated with the Boots Brand, as we deliver products and services to our customers around the world that promote healthy living.

Dell's Chemical Use Policy

Dell's vision is to avoid the use of substances in its products that could seriously harm the environment or human health and to ensure that we act responsibly and with caution.

To act responsibly, Dell believes that if reasonable scientific grounds indicate a substance (or group of substances) could pose significant environmental or human health risks, even if the full extent of harm has not yet been definitively established, precautionary measures should be taken to avoid use of the substance(s) in products unless there is convincing evidence that the risks are small and are outweighed by the benefits. Dell considers these to be "substances of concern."

Dell identifies substances of concern with consideration for legal requirements, international treaties and conventions, specific market demands, and by the following criteria:

- Substances with hazardous properties that are a known threat to human health or the environment;
- Substances with hazardous properties that show strong indications of significant risks to human health or the environment;
- Substances with hazardous properties that are known to biopersist and bioaccumulate in humans or the environment.

To enforce the company's precautionary measures, Dell strives to eliminate substances of concern in its products by:

- Maintaining a Banned and Restricted Substance Program,
- Choosing designs and materials that avoid the use of substances of concern,
- Prohibiting supplier use of these substances contractually, and
- Substitution of viable alternate substances.

If alternatives are not yet viable, Dell works with its industry partners to promote industry standards and the development of reliable, environmentally sound, and economically scalable technical solutions.

To demonstrate our commitment, Dell is committed to eliminate in our new products all remaining uses of brominated flame retardants (BFRs) and polyvinyl chloride (PVC) by 2009, as acceptable alternatives are identified that will not compromise product performance and will lower product health and environmental impacts. We will review a phase out plan yearly or when required and evaluate available technical, environmental and scalable solutions. Dell is open to discuss these plans and is committed to continuously improve the environmental quality of our products.

Restricted Substances List (RSL)

February 2008
Release 2

To download a copy of the RSL Introduction 2007 Final Release 2 , please click HERE
To download a copy of the AAFA RSL Final Release 2, please click HERE
To Receive Updated Information, including future RSL releases, Please click HERE
To download a list of AAFA member companies who test for restricted substances on the RSL, please click HERE

Introduction

This Restricted Substances List (RSL) was created by a special working group of the American Apparel & Footwear Association's (AAFA) Environmental Task Force. The RSL is intended to provide apparel and footwear companies with information related to regulations and laws that restrict or ban certain chemicals and substances in finished home textile, apparel, and footwear products around the world.

It is our hope that this RSL will serve as a practical tool to help those individuals in textile, apparel and footwear companies, and their suppliers, responsible for environmental compliance throughout the supply chain, to become more aware of various national regulations governing the amount of substances that are permitted in finished home textile, apparel and footwear products.

Our effort is to create a dynamic and useful instrument. The RSL will be updated on a regular basis and will be supplemented with additional resources to help officials in these companies undertake responsible chemical management practices in the aforementioned finished products.

Edit View History Bookmarks Tools Help

http://www.greenbiz.com/news/news_third.cfm?NewsID=34194

walmart chemical

GreenBiz News | ... | Star-Telegram | 12/0... | ES&T Online News: ... | Summary of Results ... | TheStar.com - A toxi... | BBC NEWS | Health |...

GreenBiz.com BUSINESS. THE ENVIRONMENT. THE BOTTOM LINE

view current issue GreenBuzz
FREE WEEKLY E-NEWSLETTER
Enter email SUBSCRIBE

ot Topics | News | Resources | JobLink | Our Sites | About

Google Search this site GO

ews Center
ews
eatures
olumns
ffiliates
reenBuzz Archives
ND US YOUR NEWS
E NEWS FOR YOUR SITE
Resource Wizard
k a Topic
Search for:

News

Printer-friendly version | Email this document

Wal-Mart to Use Preferred Substances in Chemical Intensive Products

Source: GreenBiz.com

BENTONVILLE, Ark., Oct. 31, 2006 - Wal-Mart Stores says it plans to begin implementing its "Preferred Chemical Principles" to establish a clear set of preferred chemical characteristics for product ingredients.

The purpose is to drive the development of more sustainable products for "mother, child, and the environment," according to the company. The first three of these priority chemicals are being announced at the Molecule-to-Molecule meeting, a two-day event hosted by the Chemical Intensive Product Network (CIP), a group designed to engage suppliers, NGO's, government, academics and other subject matter experts on issues and opportunities around product sustainability.

"One of our environmental goals at Wal-Mart is to sell products that sustain our resources and our environment," said John Westling, senior vice president and general merchandise manager, Merchandise Division, Wal-Mart Stores, Inc. "We are

Ads by Google

The Dow Chemical Company
The leading chemical and plastics manufacturer.
www.dow.com

Cosmetic Ingredients
Innovative Beauty Care technology Sign up for free eNewsletter!
www.dowcorning.com/personalca

Chemical Logistics

GS1 Global Data Synchronisation Network (GDSN) - Mozilla Firefox
File Edit View History Bookmarks Yahoo! Tools Help
http://www.gs1.org/productssolutions/gdsn/
gdsn
Most Visited Getting Started Latest Headlines
Search Web Mail Shopping Personals My Yahoo! News Games Travel Finance Answers Sports Sign In

GS1 The global language of business

GS1 GDSN® is the GS1 Global Data Synchronisation Network

The GDSN is built around the GS1 Global Registry®, GDSN-certified data pools, the GS1 Data Quality Framework and GS1 Global Product Classification, which when combined provide a powerful environment for secure and continuous synchronisation of accurate data.

With GDSN, trading partners always have the latest information in their systems, and any changes made to one company's database are automatically and immediately provided to all of the other companies who do business with them.

When a supplier and a customer know they are looking at the same accurate and up-to-date data, it is smoother, quicker and less expensive for them to do business together. The GDSN provides a single point of truth for product information.

Learn more here about Data Synchronisation (GDSN), Data Quality (DQF) and Product Classification (GPC).

Data Synchronisation (GDSN)

- What is data synchronisation?
- Get started on a data sync programme
- Get more from your

Data Quality (DQF)

- What is data quality?
- Get started on a data quality programme
- Resource Library

Product Classification (GPC)

- What is Product Classification
- Get started with Product Classification
- Resource Library

QUICK LINKS

- News & Events
- Statistics & Facts
- List of GDSN-certified Data Pools
- Support Area for GDSN Data Pools
- Standards

Join our User Groups

Done
start Inbox for joel_tickner... gc3 overview 2009 M... GC3Strateg 4-21 final... GS1 Global Data Sync... EN 10:29 AM

Moving toward safer design – Green Chemistry

- The utilization of a set of 12 principles that reduces or eliminates the use or generation of hazardous substances in the design, manufacture and application of chemical products.
- Seeks to unite government, academic and industrial communities by focusing on environmental impacts at the earliest stage of innovation and invention.
- Open and interdisciplinary view of materials design. Design based on natural principles, small number of materials.
- It is better to prevent waste than to treat or clean up waste after it is formed.
- Efforts of the ACS Green Chemistry Institute and other academic centers

EDUCATION

SEPTEMBER 8, 2008 | VOLUME 86, NUMBER 36 | PP. 64-66

The Ivory Tower Goes Green

Green chemistry in the curriculum boosts student interest in science

Corinne Marasco

A FEW YEARS AGO, one of Irv Levy's students told him she wanted to write her organic chemistry research paper on green chemistry. Levy was skeptical. He didn't think green chemistry sounded like "real chemistry."

"It sounded like touchy-feely tree hugging," he recalls. "I recommended that she consider another topic, but she insisted." So he reluctantly agreed.

In the meantime, Levy, an organic chemistry professor at Gordon College, in Wenham, Mass., attended a panel discussion on green chemistry at the 2003 American Chemical Society national meeting in New Orleans, prompted by his student's interest. He says he came out of the session with a totally new outlook.

"I felt like my career had changed," he says. "Green chemistry went from two words to something that I couldn't ignore." He was so motivated by the session that he applied to attend a workshop on green chemistry in education at the University of Oregon, an experience he calls "transformational."

Gordon College is a member of the Green Chemistry Education Network (GCEdNet), a clearinghouse for green chemistry educational materials created by Julie A. Haack of the University of Oregon (C&EN, May 28, 2007, page 38). GCEdNet is made up of regional networks of "ambassador sites," where peer-led teams collaborate to develop and disseminate curriculum materials.

Because of its high concentration of colleges and universities integrating green chemistry principles in their science classes, New England is one of GCEdNet's four ambassador sites.

The nexus of green chemistry in New England is the

MORE ON THIS TOPIC

Introduction: Communities Of Practice
This year's education supplement looks at green chemistry curricula.

The Ivory Tower Goes Green
Green chemistry is transforming the curriculum.

Web Exclusive: Green Education
Online Green Chemistry Resources

Rocky Mountain Green
News from the sixth annual ACS Summer School on Sustainability & Green Chemistry.

Staying Alive
A cadre of scientists is trying to revitalize the nuclear and radiochemistry fields.

Small-Scale Chemistry
Primarily undergraduate institutions provide students with a quality chemistry education.

A Purposeful Break
Recharge your academic career—and your life—with a sabbatical.

RELATED STORIES

» Grassroots Green

http://www.greenchemistryandcommerce.org/home.php

Google

Headlines

GC3 Green Chemistry & Commerce Council

Moving Business Toward Safer Alternatives

About the GC3
How to Participate
Green Chemistry & DfE
News / Updates / Events
About the Lowell Center
Links
Contact Us

Participants Only

GC3 Green Chemistry & Commerce Council

Chemicals, alone or in combination, are the platform upon which key elements of the global economy have been built, and have been incorporated into millions of products used every day. Many chemicals may have inherently harmful characteristics that can impact ecological and human systems as they are used throughout supply chains.

A growing number of companies are discovering that the approaches of green chemistry and Design for Environment (DfE) allow for a transition to safer alternatives. The Green Chemistry and Commerce Council provides open conversation about the challenges to and opportunities for this successful transition.

Lowell Center for Sustainable Production

University of Massachusetts Lowell
UMASS Lowell

© 2008 Lowell Center for Sustainable Production • Email • Back to top

A Resource Guide for States and Higher Education

2009

Growing the Green Economy Through Green Chemistry and Design for the Environment

http://www.michigan.gov/printerFriendly/0,1687,7-168-36898-153806--,00.html
michigan green
arted The Independent Liv... Latest Headlines verizon wireless aren...
s policy in Massachusetts | finalagenda.pdf (application/pdf Object) | GRANHOLM - EXECUTIVE DIRECTIVE ... | EXECUTIVE DIRECTIVE No. 2006-6
www.michigan.gov
To Print use your browser's print function)
Release Date:
Last U

EXECUTIVE DIRECTIVE No. 2006-6

PROMOTION OF GREEN CHEMISTRY FOR SUSTAINABLE ECONOMIC DEVELOPMENT AND PROTECTION OF PUBLIC HEALTH

WHEREAS, Section 1 of Article V of the Michigan Constitution of 1963 vests the executive power of the State of Michigan in the Governor;

WHEREAS, under Section 8 of Article V of the Michigan Constitution of 1963 each principal department of state government is under the supervision of the Governor unless otherwis he Constitution;

WHEREAS, Section 52 of Article IV of the Michigan Constitution of 1963 declares that the public health and general welfare of the People of the State of Michigan are matters of prin oncern;

WHEREAS, the use by persons and entities in Michigan of hazardous substances that can threaten human health and our environment should be reduced;

WHEREAS, "green chemistry" is the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances;

WHEREAS, "green chemistry" can be an effective approach to pollution prevention because it applies innovative scientific solutions to real-world environmental situations;

WHEREAS, the field of "green chemistry" holds promise as a way to both reduce the use of hazardous substances and to promote sustainable economic development in Michigan;

NOW, THEREFORE, I, JENNIFER M. GRANHOLM, Governor of the State of Michigan, by virtue of the power and authority vested in the Governor by the Michigan Constitution of 19 Michigan law, direct the following:

DEFINITIONS

As used in this Directive:

A. "Department of Environmental Quality" means the principal department of state government created under Executive Order 1995-18, MCL 324.99903.

B. "Green chemistry" means chemistry and chemical engineering to design chemical products and processes that reduce or eliminate the use or generation of hazardous substance producing high quality products through safe and efficient manufacturing processes. Green chemistry is based upon the following 12 principles:

1. Prevent waste: Design chemical syntheses to prevent waste, leaving no waste to treat or clean up.

2. Design safer chemicals and products: Design chemical products to be fully effective, yet have little or no toxicity.

Challenges inherent in these initiatives

- On the alternatives
  - Technical barriers exist that can compromise product performance
  - They may cost significantly more
  - Rarely “drop-in” substitutes – often process and work organization changes occur.
  - May not have good toxicity data on them
- How to define “safer”?
- Prioritizing 1000s of chemicals and 100s of uses for some (little data on supply chain uses).
- Limited programs to distinguish preferable materials or support innovation – still an environmental rather than an economic issue

CamelBak BPA-free water bottles - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.camelbak.com/betterbottle/?gclid=CPPAh9OooZQCFQUrHgodASe2tg

bisphenol-a

Getting Started Latest Headlines

Broad challenges

- Thinking beyond single chemical substitution assessment – changing the way we think about chemical hazards
- Thinking holistically about alternatives – not as simple as a ban
- Developing consistent, inclusive, and usable criteria for safer alternatives and processes for alternatives assessment
- *How to ensure transition from higher hazard to lower hazard chemicals in a way that unintended consequences on workers and communities are minimized and opportunities for innovation and job creation are maximized*

Starting with a paradigm shift in the way we think about chemical problems

- From knowledge first science to sustainable solutions agenda
- From accepting problems as inevitabilities to setting broad goals for the future
- From risk assessment to alternatives assessment
- From reaction to proactive innovation
- Ultimately from toxics policy to comprehensive chemicals policy

Alternative Ways of Thinking about Problems

Goals and alternatives

nvironmental Objectives Portal - Home - Mozilla Firefox
Edit View History Bookmarks Tools Help
http://www.miljomal.nu/english/english.php
swedish environmental quality ob

Sveriges miljömål
OFFICIELL PORTAL FÖR VÅRA 16 MILJÖMÅL

Search GO

Objectives | More Information | Contact us

SVENSKA

Home /

Environmental Objectives Portal

Illustrations by Tobias Flygar.

The Environmental Objectives Portal is a gateway to information about Sweden's environmental objectives and progress towards achieving them.
In 1999, 15 environmental quality objectives were adopted by Parliament. A 16th objective, on biodiversity, was adopted in November 2005. They define the state of environment which environmental policy aims to achieve and provide a coherent framework for environmental programmes and inititatives at national, regional and local level.

The fifth annual report of the Swedish Environmental Objectives Council *Sweden's environmental objectives - Buying into a better future, de Facto 2006* is available from the Swedish Environmental Protection Agency's on line bookstore.

ferring data from www.miljomal.nu...

Mission Zero - - Mozilla Firefox

File Edit View History Bookmarks Yahoo! Tools Help

http://missionzero.org/about

Most Visited Getting Started Latest Headlines

Search Web Mail Shopping Personals My Yahoo! News Games Travel Finance Answers Sports Sign In

mission beta

News | Groups | Missions | Q & A | Events | Blogs | Widgets | About

Search

Join Mission Zero | Login username go forgot password? Invite a Friend | View Site Activity

What is Mission Zero all about?

Mainly, it's all about enlisting the support and energy of millions of people who can help correct the world's environmental course.

It's about a big goal of zero environmental impact that is achieved through little actions that make a difference. It's about hope and commitment. It's about challenging ourselves to greatness. It's about collective action.

Ray Anderson, the Chairman and Founder of Interface, Inc. speaks about his vision for Mission Zero.

Here's what the Mission Zero community offers the daring:

- **Community**: A vibrant place where like-minded people go to meet, share and swap fresh ideas and valuable resources.
- **Thought Hub**: A place to find out about current sustainability best practices and to learn ways to put those practices into action in your life, at home, and at work.

Mission Zero will inspire you.
It will compel you. It will inform & delight. It will move all of us in a new direction, step-by-step, act-by-act, day-by-day, person-by-person.

A Common Agenda
for Health & Environment

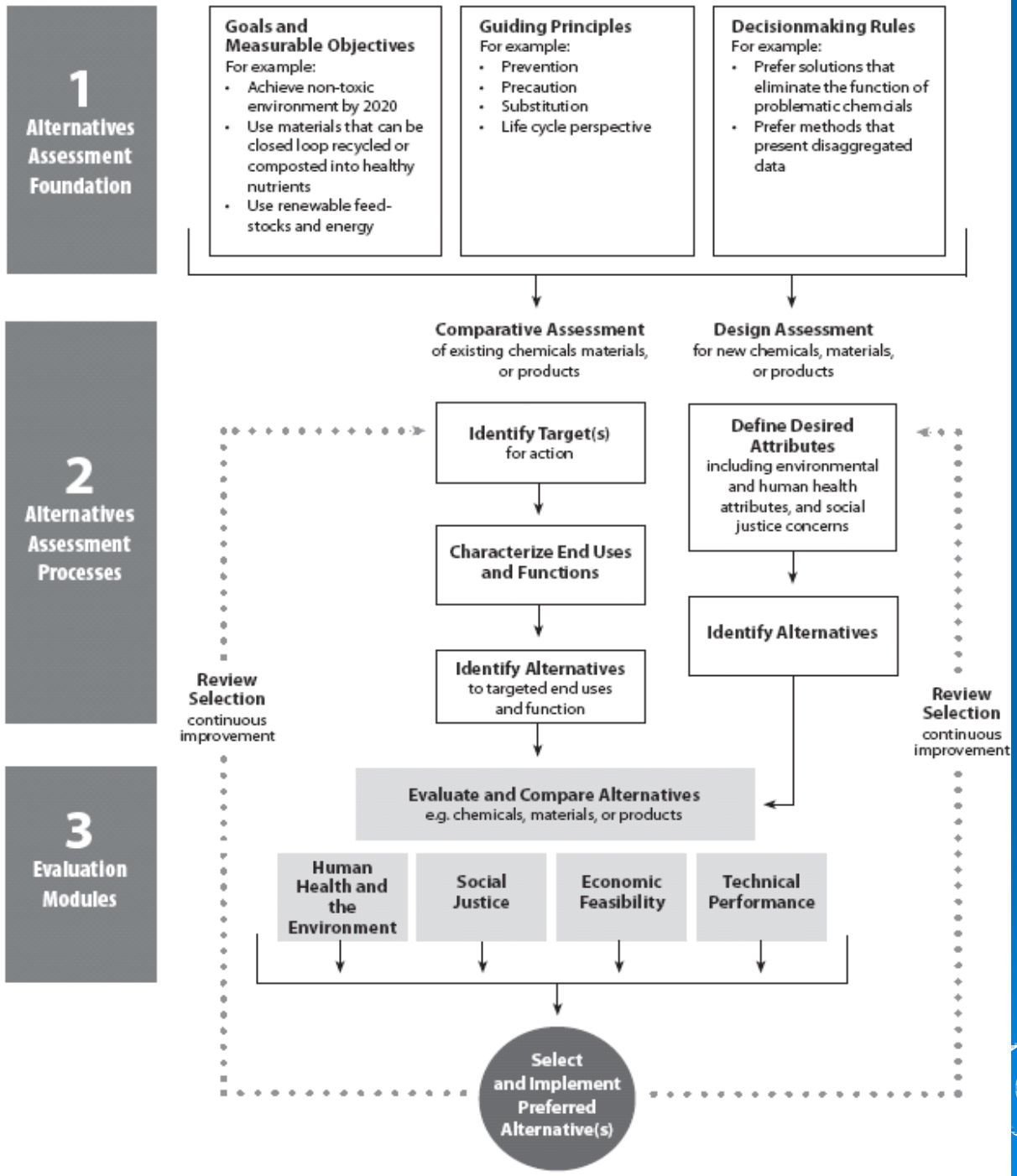
Goals for the Next Generation
and Steps to Get There

Alternatives Assessment – Core to a more precautionary Approach

- Definition: A flexible, holistic analysis of alternatives and opportunities to prevent impacts from potentially harmful activities.
- Focus on options and solutions rather than simply studying problems. Transition without sacrificing technological functions – lower stakes associated with change
- Multi-risk reduction opportunities
- Avoid jumping from the “frying pan into the fire”
- Developing comprehensive understandings of new technologies and activities – technology assessment

What to consider in Alternatives Assessment

- The purpose of the activity – need, service/ functionality
- Develop criteria (presumptions) for activities that should be avoided or principles that guide tech. development –(eg. Green nano)
- Understand flow of the material or activity, characterize process/lifecycle/systems
- Brainstorm a wide range of potential (existing/ on horizon) alternatives to meet a need or function – “move from just a little less bad”
- Implement/transition to the best alternative – understanding the research and tech support and safety measures that need to be implemented
- Monitor and change course as needed – identify early warnings and continuous improvement



Lowell Center Alternatives Assessment Framework

Need tools to transition to safer chemicals

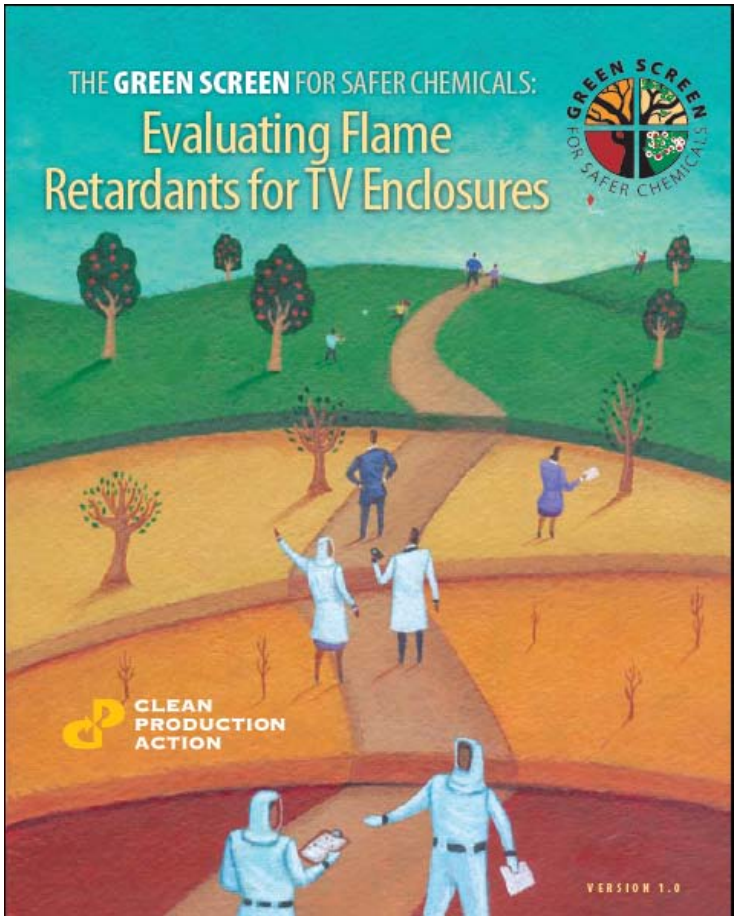
- Disaggregate hazard, use, and exposure potential information
- Ability to make relatively rapid, robust decisions.
- Ability to rapidly access data (or surrogates) on various characteristics related to health, safety, and environment and alternatives
- Ability to consider entire product lifecycle (embedded hazardousness) and trade-offs that could occur
- Easy to use without substantial support
- Defensible for government and other stakeholders and ability to communicate to the public, suppliers, and designers.

Tools for substitute comparison

- Numerous public/private tools available
- Green Screen – Clean Production Action
- Column Model - Germany
- Dutch Quick Scan
- COSHH Essentials – UK HSE
- McDonough Braungardt Materials Protocol
- Swedish PRIO
- CleanGredients
- Many firms developing own protocols – eg, SC Johnson Greenlist

The Green Screen for Safer Chemicals – NGO leadership

- Guidance for selecting greener chemicals
- Case Study: FRs used in television casings
  - decaBDE,
  - RDP
  - BPADP



Download at: http://www.cleanproduction.org/Green.Greenscreen.php

This chemical passes all of the criteria.

BENCHMARK 4

ready biodegradability (low P) + low B + low Human Toxicity + low Ecotoxicity
(+ additional ecotoxicity endprints when available)

Prefer—Safer Chemical

If this chemical and its break-down products pass all of these criteria, then move on to Benchmark 4

BENCHMARK 3

a. moderate P or moderate B
b. moderate Ecotoxicity
c. moderate Human Toxicity
d. moderate Flammability or moderate Explosivenesness

Use but Still Opportunity for Improvement

If this chemical and its break-down products pass all of these criteria, then move on to Benchmark 3

BENCHMARK 2

a. moderate P + moderate B + moderate T
(moderate Human Toxicity or moderate Ecotoxicity)
b. high P + high B
c. (high P + moderate T) or (high B + moderate T)
d. moderate Human Toxicity for any priority effect or high Human Toxicity
e. high Flammability or high Explosiveness

Use but Search for Safer Substitutes

If this chemical and its break-down products pass all of these criteria, then move on to Benchmark 2

BENCHMARK 1

a. PBT: high P + high B + high T[1] (high Human Toxicity[2] or high Ecotoxicity)
b. vPvB: very high P + very high B
c. vPT (vP + high T) or vBT (vB + high T)
d. high Human Toxicity for any priority effect[3]

Avoid—Chemical of High Concern

GREEN SCREEN FOR SAFER CHEMICALS

Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://www.kemi.se/templates/PRIOEngframes___4144.aspx
kemi prio
Most Visited Getting Started Latest Headlines

KEMI
Swedish Chemicals Agency

PRIO – a Tool for Risk Reduction of Chemicals

PRIO is a web-based tool intended to be used to preventively reduce risks to human health and the environment from chemicals. PRIO replaces the Swedish Chemicals Agency's Observation (OBS) list.

The aim of PRIO is to facilitate in the assessment of health and environmental risks of chemicals so that people who work as environmental managers, purchasers and product developers can identify the need for risk reduction. To achieve this PRIO provides a guide for decision-making that can be used in setting risk reduction priorities.

The target groups for PRIO are primarily Swedish actors but also include chemical suppliers to Sweden in other countries. PRIO also provides a source of knowledge for environmental and health inspectors, environmental auditors, risk analysts and those who in some other way can influence the use and handling of chemicals

The recommendations on which chemicals are prioritised for risk reduction measures are based on the environmental quality objective "A non-toxic environment" adopted by the Swedish parliament, work towards sustainable development and are in line with the objectives in the new EU chemicals legislation, REACH. Throughout PRIO reference is made to Swedish legislation and other Swedish considerations.

Linked to PRIO are a number of environmental and health criteria for the substances to be prioritised in the risk reduction work, as well as a database containing examples of such substances.

PRIO allows users to:

- *search for substances and obtain information on properties hazardous to the environment and health*
- *obtain information on prioritised health and environmental properties*
- *identify substances contained in chemically characterised substance groups and product types*
- *obtain help in developing routines for purchasing, product development, risk management etc.*

PRIO can provide help in preparing for REACH and in the work towards sustainable development.

The Swedish Chemicals Agency has produced PRIO. The views of chemical users and

Photo: Thomas Henrikson

Done

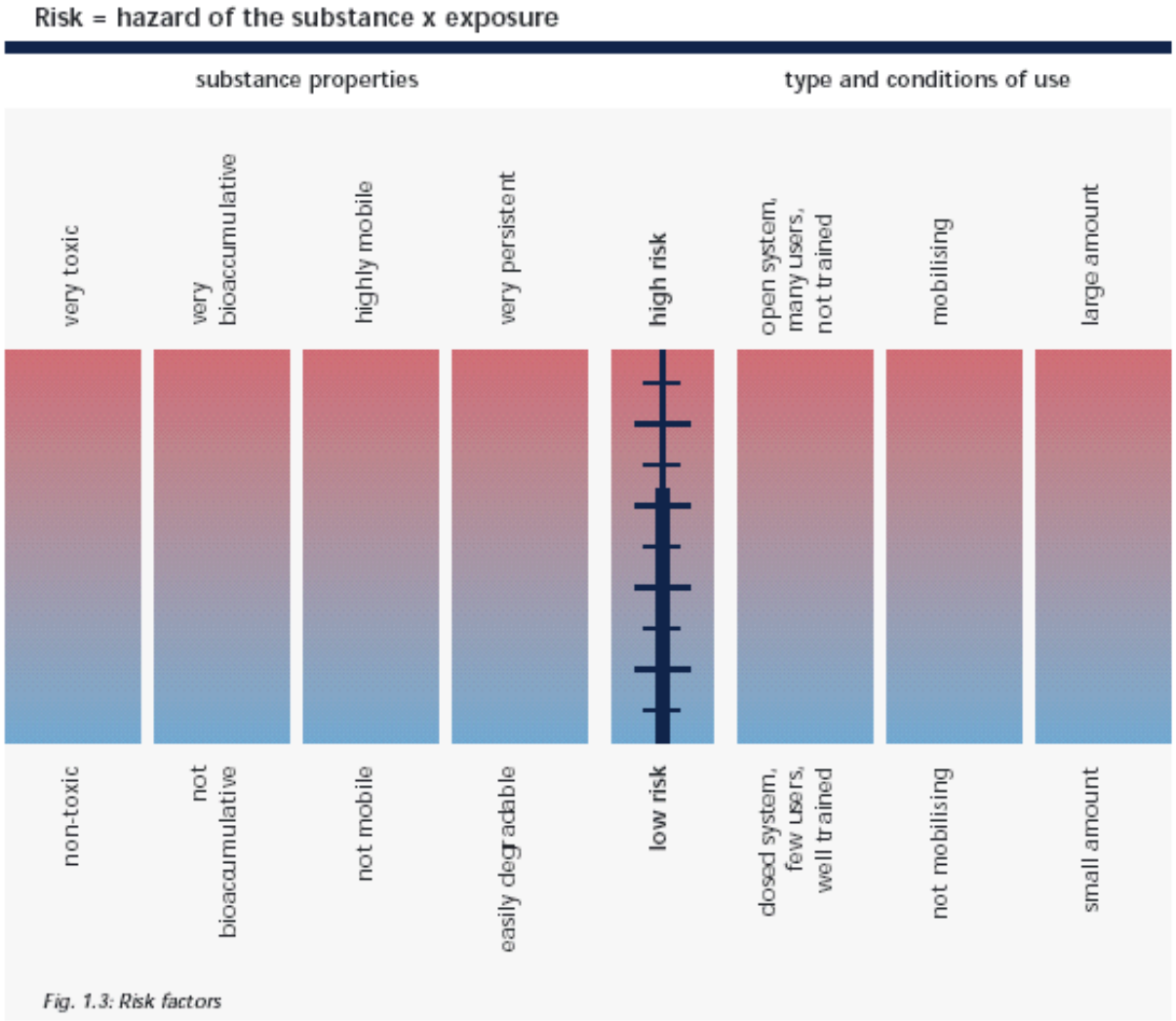


Fig. 1.3: Risk factors

COSHH ESSENTIALS - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.coshh-essentials.org.uk/

cosshessentials

Most Visited Getting Started Latest Headlines

Health & Safety Executive
Reducing risks, protecting people

COSHHESSENTIALS

Easy steps to control health risks from chemicals | hsedirect | Help | Feedback

- Home
- About COSHH Essentials
- Help
- Worked Example
- HSE
- hsedirect
- DTI Small Business Service
- Environment Agencies

COSHH ESSENTIALS

Easy steps to control health risks from chemicals

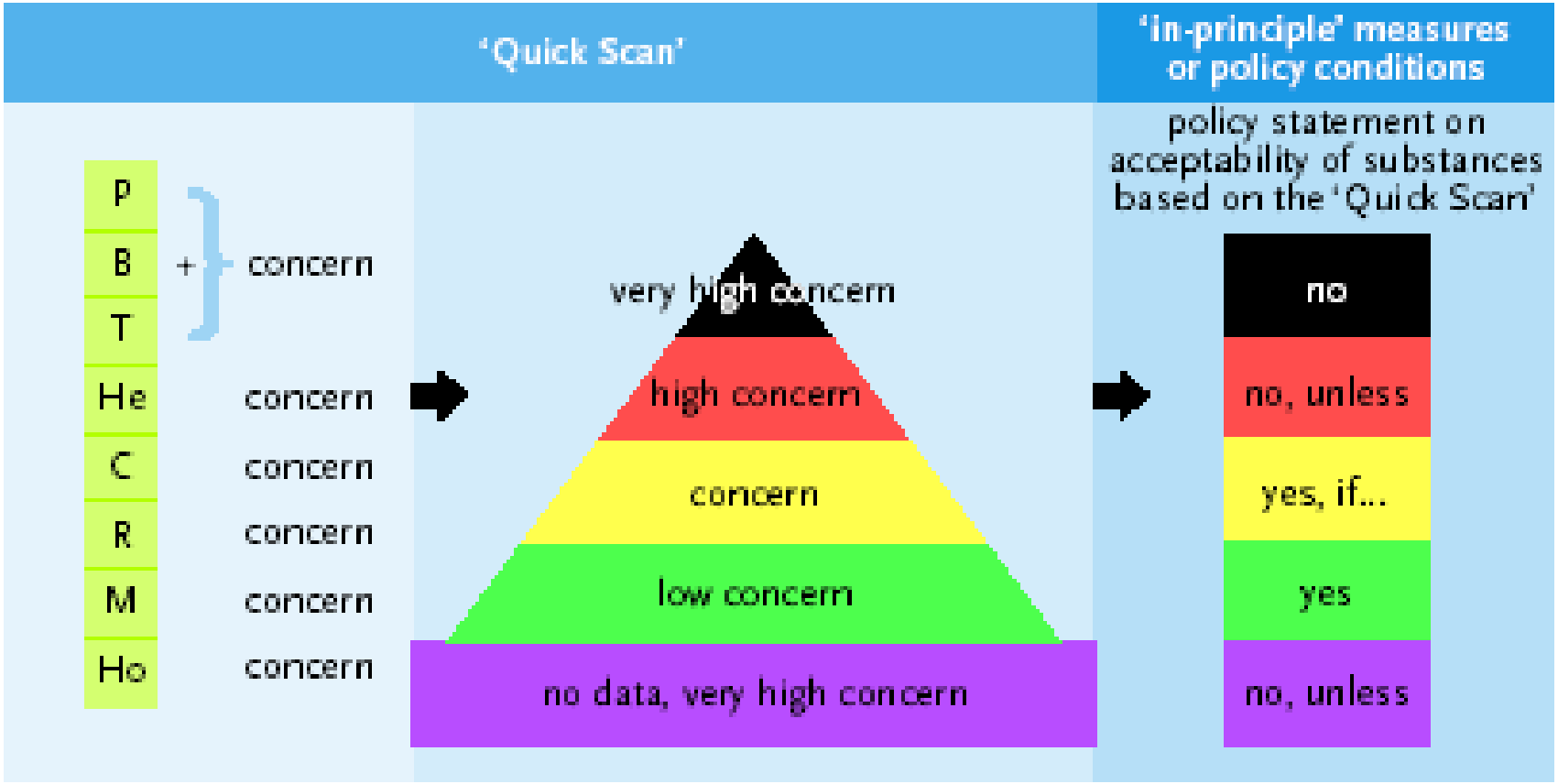
- COSHH Essentials provides advice on controlling the use of chemicals for a range of common tasks, eg mixing, or drying. Click here for an example of the type of advice you will receive.
- For most tasks this website will take you through a number of steps and ask for information about your tasks and chemicals. This assessment will take several minutes to complete.
- But for some processes, tasks or services you can now get direct advice. Click here for an example of the type of advice you will receive.

Click here to get started

Done

start | Establishing too... | Establishing too... | ipc conference ... | Inbox for joel_t... | Calendar - Micr... | 2 Reminders | COSHH ESSENT... | EN | 11:26 PM

Screening Method: Quick Scan



*Dutch Strategy on Management of Substances, 2001

Dutch Quick Scan - 2002

Substances in concern category on basis of hazard and use[22]

CONCERN ON BASIS OF HAZARD / EXPOSURE ON BASIS OF USE	Use of substances as indication of exposure			
	Site limited intermediate substances	Substances in industrial applications	Open professional use of substances	Substances in consumer applications
	Low Exposure	Exposure	High exposure	Very high exposure
Very high concern	High concern	High concern	Very high concern	Very high concern
High concern	Concern	Concern	High concern	High concern
Concern	Concern	Concern	Concern	High concern
Low concern	Low concern	Low concern	Low concern	Concern
No data, very high concern	Very high concern	Very high concern	Very high concern	Very high concern

Search

Solvents - beta

Surfactants

You can search for ingredients using various search criteria. Select your first attribute in the top select box to the right. After you select an attribute from the drop-down menu, enter your search criteria in the input area immediately below it. Once you finish specifying your search criteria, click the Search button to retrieve the search results. If you are having problems finding search results, try specifying fewer criteria. To view the largest number of search results, do not enter any search criteria.

Supplier

- [ ] Air Products and Chemicals
- [ ] Akzo Nobel Surface Chemistry LLC
- [ ] BASF
- [ ] Burlington Chemical Company, Inc.
- [ ] CLER
- [ ] Cognis Corporation
- [ ] Croda
- [ ] DeForest Enterprises, Inc.
- [ ] Generic
- [ ] McIntyre Group, Ltd.
- [ ] Stepan Company
- [ ] Vitech International Ltd.

DfE Screen

- [x] Yes
- [ ] No
- [ ] Under Review
- [ ] DfE Screen under Development

Applications

- [x] Carpet
- [x] Hand Dish Soap
- [x] Hard Surface Cleaner
- [x] Laundry

Charge Class

- [x] Nonionic
- [ ] Anionic
- [ ] Cationic
- [ ] Amphoteric
- [ ] Blend

Physical Form

- [ ] Gel
- [ ] Granular
- [ ] Liquid
- [ ] Liquid/Paste
- [ ] Paste
- [ ] Powder
- [ ] Slurry
- [ ] Solid

ISTAS, Instituto Sindical de Trabajo Ambiente y Salud - Mozilla Firefox
File Edit View History Bookmarks Yahoo! Tools Help
http://www.istas.ccoo.es/
comisiones obreras istas
Most Visited Getting Started Latest Headlines
Search Web Mail Shopping Personals My Yahoo! News Games Travel Finance Answers Sports
ISTAS, Instituto Sindical de Trabajo ...

riesgo químico
Principios de actuación
Agentes Químicos peligrosos
Efectos sobre la salud y el medio ambiente
Alternativas
La Química Verde
Base de datos de alternativas
Criterios de selección de alternativas
Criterios positivos
Criterios negativos
Métodos de evaluación de alternativas
Evalúa y compara lo que usas
Intervención sindical

Criterios de selección de alternativas

¿Qué características deben tener las sustancias, productos, procesos o tecnologías para ser consideradas posibles alternativas? ¿Se pueden definir cualidades intrínsecas que permitan seleccionar las alternativas?

En este capítulo se proponen criterios a seguir por parte de los delegados y técnicos de prevención en la selección de alternativas en las empresas.

Los criterios pueden ser positivos o negativos. Los criterios positivos serían las cualidades intrínsecas que hacen que una sustancia, producto o proceso sea preferible. Los criterios negativos serían cualidades intrínsecas por las que debe rechazarse una sustancia, producto o proceso.

Los contenidos de esta sección son:

Criterios positivos

Criterios negativos

Willingness AND Capacity are necessary for transition to safer alternatives

- Need for tools/mechanisms for getting good data for analysis
- Need for research and development support to firms
  - Training in planning/application of alternatives
  - Demonstration projects/sites
  - Networking of firms
  - Research support
  - Technical assistance to firms
- Workers and communities need tools and understanding of chemical hazards and alternatives and how to effect transition
- Need government/academic institution support for advancing development and implementation of alternatives and for supporting various communities

Moving towards comprehensive chemicals policy reform

- Advance movement towards the Generational Goal outlined at the 2002 World Summit on Sustainable Development…that nations should “Renew the commitment…aiming to achieve, by 2020, that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment…which says that threats posed by toxic chemicals should be eliminated within one generation.”
- Health and ecosystem protective, while enhancing innovation in more sustainable practices, safe, well performing and cost-effective products, and jobs creation.

Features of comprehensive chemicals policies

- Take a comprehensive, integrated approach to all chemicals and impacts through lifecycles
- Address chemicals on the basis of intrinsic hazard and uses, functions, and potential exposures
- Ensure adequate data collection and dissemination providing open access to information.
- Establish processes that allow rapid chemical assessment, prioritization, and decision-making
- Maximize information sharing and responsibility through supply chains
- Establish processes to transition from more dangerous chemicals to safer alternatives
- Promote green chemistry and safer product design, by promoting research and innovation

Conclusion

- Many challenges in the transition to safer chemicals and products
- Many opportunities for workers and communities to be involved in and play a key role in directing the transition to safer chemistry
  - Setting forth a vision for the future and articulating that vision
  - Identifying innovations that can reduce chemical hazards
  - Training on chemical hazards, tools for assessing, alternatives assessment, and green chemistry
  - Playing a key role in legislative/policy discussions at the state and federal level to ensure that these move in the right direction

- Use the opportunity REACh has provided us to take the time and engagement necessary to not just do a little less bad but really change the rules so that we move in a sustainable direction and aren’t having to continue cleaning up messes 100s of years into the future