BUSINESS-NGO WORKING GROUP
FOR SAFER CHEMICALS AND SUSTAINABLE MATERIALS

# *Safer Chemicals Reform: Meeting the Needs of Downstream Users*

Roger McFadden, Staples

Robin Guenther, Perkins+Will

Patricia Beattie, Arcalis Scientific

May 27, 2010

CLEAN PRODUCTION ACTION

# BizNGO Webinar

**Safer Chemicals Reform: Meeting the Needs of Downstream Users**

STAPLES Advantage

## Business Perspective of Safer Chemicals Reform

Roger McFadden
Vice President, Senior Scientist
Staples, Inc.

# Presentation Overview

- **Impact of ineffective chemicals management policy**
- What factors are driving chemicals policy reform?
- What chemical questions are consumers asking suppliers to answer?
- Key elements of an effective chemical policy
- What obstacles do businesses face when they set out on a journey of chemicals management policy reform in their organizations?
- What are the benefits of effective chemicals management?

# Ineffective Chemicals Management Impacts People, Planet, Performance and Profit

STAPLES Advantage

- Harms human and animal health
- Harms natural and built environment
- Harms business reputation and brand
- Decreases enterprise return on investments
  - ✓ Supply chain disruption and company remediation costs
  - ✓ Product recall and replenishment costs
  - ✓ Product re-design or modification costs
  - ✓ Increases product life cycle costs
- Increases product cost to consumers
- Increases cost to community
  - ✓ Increases publicly owned treatment and disposal costs
  - ✓ Increases environmental remediation costs
  - ✓ Increases health care costs associated with chemical hazards and exposures

# Example of Ineffective Chemicals Management
# $200 Billion – For just one chemical

STAPLES Advantage

- Asbestos claims have had a heavy impact on businesses and the insurance industry.
- A flood of asbestos lawsuits is swamping the courts and bankrupting scores of U.S. companies
- “The total cost of asbestos claims to U.S. and non-U.S. insurers and corporations is estimated to be more than $200 billion.” according to Tillinghouse-Towers Perrin.

# Presentation Outline

- Impact of ineffective chemicals management policy
- **What factors are driving chemicals policy reform?**
- What chemical questions are consumers asking suppliers to answer?
- Key elements of an effective chemical policy
- What obstacles do businesses face when they set out on a journey of chemicals management policy reform in their organizations?
- What are the benefits of effective chemicals management?

# What is driving the need for effective chemicals management policy in business?

STAPLES Advantage

- **Mainstream media coverage.**
- Social media instantly share information leading to questions about chemicals in products they buy.
- Consumer belief they should have a “right to know” chemicals of concern that are in the products they buy.
- Growing number of stakeholders shifting from take-make-waste towards cradle-to-cradle thinking.
- Proliferation of scientific information, bio-monitoring and body burden studies reveal that manmade chemicals are being found in the cord blood of infants and in the breast milk of their mothers.

# Mainstream Media Coverage

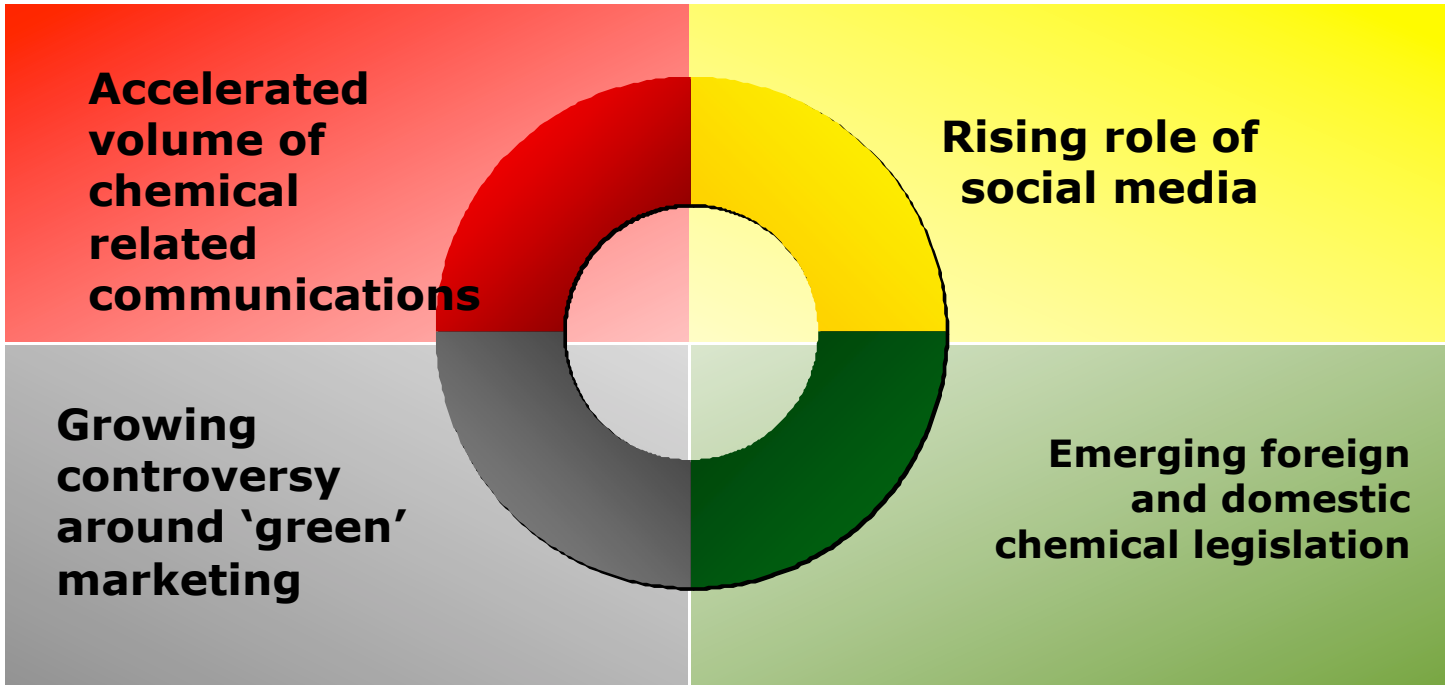


# What is driving the need for effective chemicals management policy in business?

STAPLES Advantage

- Mainstream media coverage.
- **Social media instantly share information leading to questions about chemicals in products they buy.**
- **Consumer awareness about chemicals of concern and belief everyone has a "right to know" chemicals of concern that are in the products they buy.**
- Growing number of stakeholders shifting from take-make-waste towards cradle-to-cradle thinking.
- Proliferation of scientific information, bio-monitoring and body burden studies reveal that manmade chemicals are being found in the cord blood of infants and in the breast milk of their mothers.

# Drivers
# Growing social media awareness



# Growing Public Awareness About Chemicals of Concern

- 1961 Thalidomide babies in Europe (Acute birth defects)
- 1962 Rachael Carson book *Silent Spring* (Pesticide effects on bird eggs)
- 1971 Love Canal NY (High birth defect/miscarriage & liver cancer rates)
- 1982 Times Beach Missouri (Dioxin tainted waste oil sprayed on roads)
- 1990's EPA Indoor air quality study reveals indoor air is polluted
- 2007 Body Burden study reveals 287 man-made chemicals in newborns
- 2008 High levels of lead found in paint on toys in U.S.
- 2009 Bisphenol A in baby bottles and thermal paper
- 2010 Dispersants being used to treat Deepwater Horizon Gulf Oil Spill is four times more toxic than the oil it is dispersing

# What is driving the need for effective chemicals management policy in business?

STAPLES Advantage

- Mainstream media coverage.
- Social media instantly share information leading to questions about chemicals in products they buy.
- Consumer belief they should have a “right to know” chemicals of concern that are in the products they buy.
- **Growing number of stakeholders shifting from take-make-waste towards cradle-to-cradle thinking.**
- Proliferation of scientific information, bio-monitoring and body burden studies reveal that manmade chemicals are being found in the cord blood of infants and in the breast milk of their mothers.

# Cradle to Grave Supply Chain

**Take** → **Make** → **Waste**

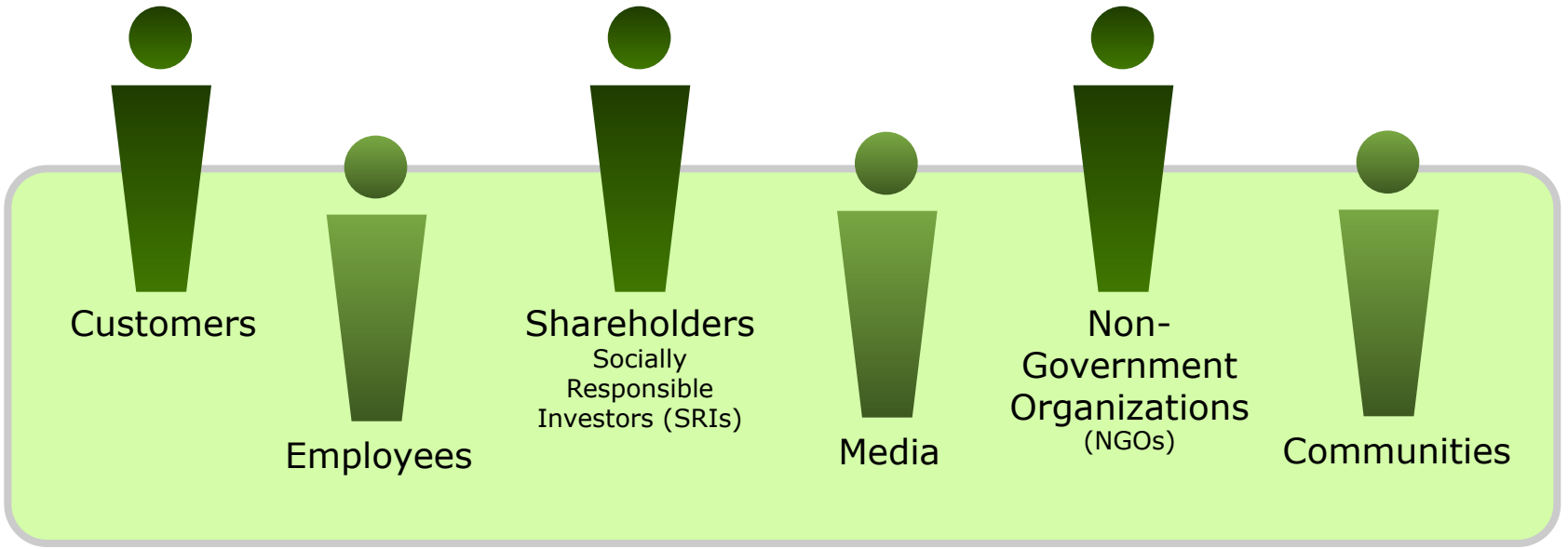
***Raw material extraction and synthesis***

***Manufacturing, production, distribution, use***

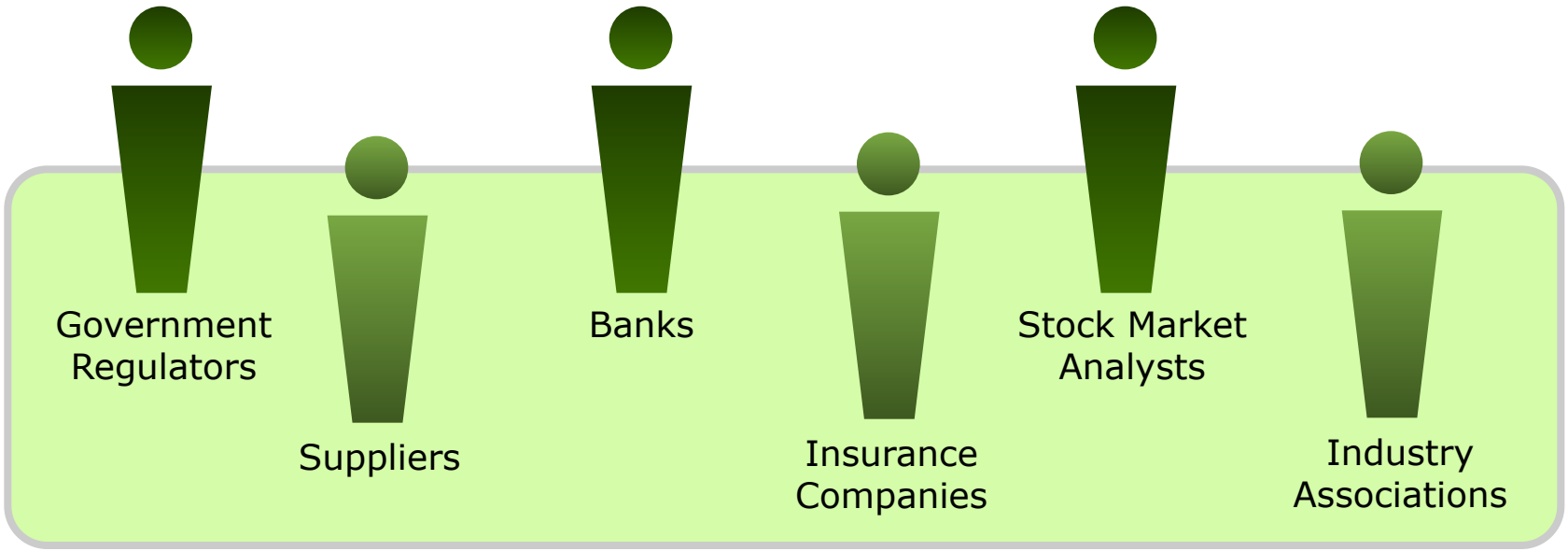
***Landfill, incineration***

Extraction ⟹ Production ⟹ Distribution ⟹ Consumption ⟹ Disposal

# The growing list of stakeholders to engage



# Expanding stakeholders



# What is driving the need for effective chemicals management policy in business?

STAPLES Advantage

- Mainstream media coverage.
- Social media instantly share information leading to questions about chemicals in products they buy.
- Consumer belief they should have a “right to know” chemicals of concern that are in the products they buy.
- Growing number of stakeholders shifting from take-make-waste towards cradle-to-cradle thinking.
- **Proliferation of scientific information, bio-monitoring and body burden studies reveal that manmade chemicals are being found in the cord blood of infants and in the breast milk of their mothers.**

# Chemicals of concern detected in mother's breast milk

## HALOGENATED COMPOUNDS

- chlorodifluoromethane
- chlorotrifluoromethane
- dichlorofluoromethane
- chloromethane
- trichlorofluoromethane
- dichloroethylene
- Freon 113
- methylene chloride
- chloroform
- 1,1,1 – trichloroethane
- carbon tetrachloride
- trichloroethylene
- chloropentane
- chlorobenzene
- iodopentane
- 3-methyl-1-iodobutance
- chloroethylbenzene
- dibromodichloromethane
- dichlorobenzene
- chlorodecane
- trichlorobenzene

## ALDEHYDES

- acetaldehyde
- methyl propanal
- n-butantal
- methylbutanal
- crotoaldehyde
- n-penanal
- n-hexanal
- furaldehyde
- n-heptanal
- benzaldehyde
- n-octanal
- phenyl acetaldehyde
- n-nonanal
- methyl furaldehyde
- n-decanal
- n-undecanal
- n-dodecanal

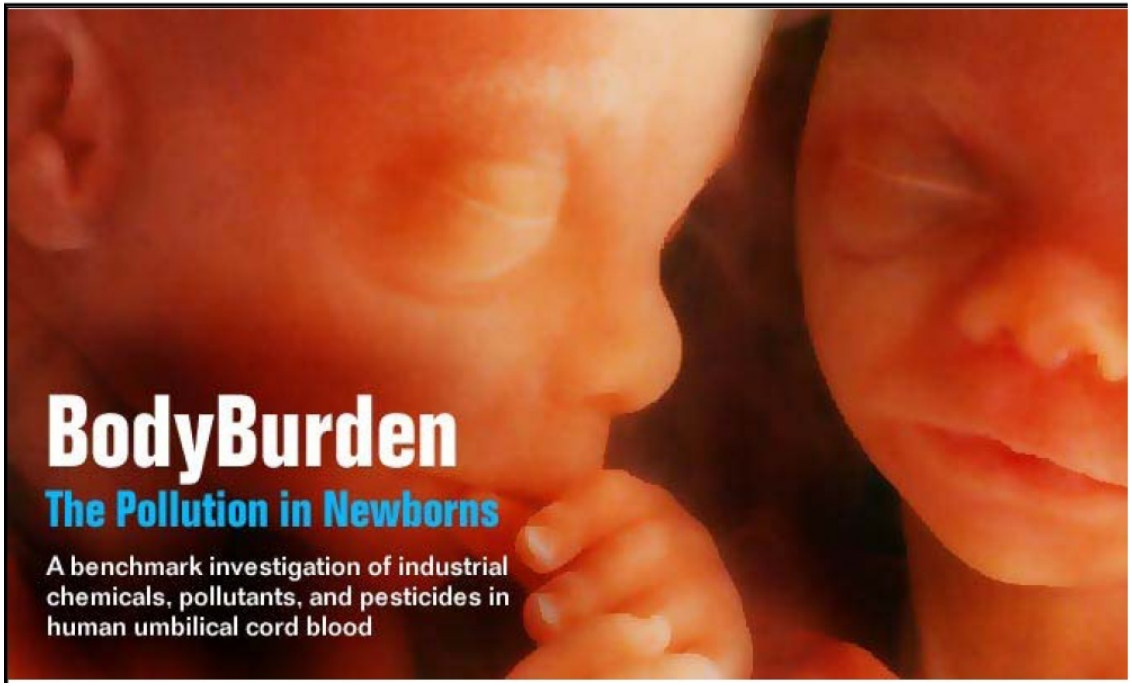
## KETONES

- acetone
- methyl ethyl ketone
- methyl propyl ketone
- methyl vinyl ketone
- ethyl vinyl ketone
- 2-pentanone
- methyl pentanone
- methyl hydrofuranone
- 2-methyl-3-hexanone
- 4-heptaonone
- 3-heptaonone
- 2- heptaonone
- methyl heptaonone
- furyl methyl ketone
- octanone
- acetaphenone
- 2-nonanone
- 2-decananone
- alkylated lactone
- phthalide

## OXYGENATED ISOMERS

- C4H6O
- C4H8O
- C5H10 O
- C4H6O2
- C6H12 O
- C7H10 O
- C7H14 O2
- C6H6O2
- C6H14 O2
- C6H16 O
- C7H8O2
- C7H10 O2

# Chemicals of Concern
# Found in Newly Born Babies Blood




287

- **Tests show 287 industrial chemicals in 10 newborn babies**
- *Among the 287 chemicals found in the study, 134 can cause cancer, 151 can cause birth defects, 154 can cause hormone disruption, 186 are associated with infertility and 130 affect the immune system*

# Presentation Outline

- Impact of ineffective chemicals management policy
- What factors are driving chemicals policy reform?
- **What chemical questions are consumers asking suppliers to answer?**
- Key elements of an effective chemical policy
- What obstacles do businesses face when they set out on a journey of chemicals management policy reform in their organizations?
- What are the benefits of effective chemicals management?

# Forces of Change
## Consumer awareness and higher expectations

STAPLES Advantage

- Many consumers of chemicals, materials and products are beginning to ask their suppliers to work towards eliminating the hazards of chemicals of concern and replace them with safer alternatives.

- Some of these consumers are asking their suppliers to go above and beyond compliance when it comes to the elimination of chemicals of concern from their supply chain.

# Here is a list of questions that supply chain consumers are beginning to ask product providers

STAPLES Advantage

- What chemicals of concern are in the products that you offer?
- Have you eliminated the worst chemicals and replaced them with safer alternatives while committing to continuous improvement on the others?
- Do you fully disclose chemicals and/or ingredients in your product?
- How can we recognize a product made from safer and/or greener alternatives?
- What assurance do we have that a “hazard or safer alternatives assessment” has been done for all chemical components in existing products you are offering us?
- What is your business doing to prevent the extra costs associated with ineffective chemicals management in the supply chain today?

# Presentation Outline

- Impact of ineffective chemicals management policy
- What factors are driving chemicals policy reform?
- What chemical questions are consumers asking suppliers to answer?
- **Key elements of an effective chemical policy**
- What obstacles do businesses face when they set out on a journey of chemicals management policy reform in their organizations?
- What are the benefits of effective chemicals management?

# Key elements of an effective chemical policy

- Know what is contained in products.
- Require a minimum data set of information be provided by suppliers.
- Prescreen all chemicals against a baseline set of criteria before they are selected for use.
- Eliminate the chemicals of high concern first
- Commit to continuous improvement and select safer alternatives whenever feasible.
- Disclose ingredients to consumers.

# Presentation Outline

- Impact of ineffective chemicals management policy
- What factors are driving chemicals policy reform?
- What chemical questions are consumers asking suppliers to answer?
- Key elements of an effective chemical policy
- **What obstacles do businesses face when they set out on a journey of chemicals management policy reform in their organizations?**
- What are the benefits of effective chemicals management?

## Obstacles to Green Chemistry
## Myths and Misperceptions Roadblocks to Overcome

STAPLES Advantage

- Makers of existing chemicals say they are safe and pose minimal threat to human and environmental health.
- Not enough demand for green products to justify investment in green design.
- Safer alternatives assessment is too costly for the amount of potential ROI.
- Environmental sustainability is incompatible with economic prosperity. Safer alternatives are too expensive and lead to higher consumer prices and competitive disadvantage to businesses.
- Safer alternatives result in poor product quality and performance.
- Products made from safer alternatives require re-training and retooling.
- Safer alternatives create higher labor costs because of diminished performance.
- Products made from safer alternatives require infrastructure modifications.
- Fear of being accused of green washing or green hypocrisy.

# Barriers to obtaining comprehensive and credible information about chemicals in products

- Invoking confidential business information (CBI) privilege may protect one businesses' intellectual property while at the same time increasing the risk to a business that buys that product.

- Invoking proprietary ingredient and trade secret privilege for chemicals of concern without disclosing their presence in a product can increase the risk to consumers.

- De minimus level policy to exclude disclosure of chemicals of concern can increase risk to businesses that sell those products.

# Barriers to obtaining comprehensive and credible information about chemicals in products

- Material Safety Data Sheets are the **primary source** that businesses use to collect chemical information and access safety of a product or chemical.
- Studies have shown that many MSD Sheets are **inaccurate, incomplete and ineffective**.
- Many chemical or product **databases are populated from MSD Sheets.**
- The majority of chemicals listed in **databases have serious data gaps** when it comes to human and environmental health impacts.

**One recent study showed that of 150 randomly selected MSD Sheets that more than 75% of them had inaccurate or incomplete information.*

## Risky and Dangerous Information

STAPLES Advantage

"To have no information is risky, but to have the wrong information is dangerous."

# Presentation Outline

- Impact of ineffective chemicals management policy
- What factors are driving chemicals policy reform?
- What chemical questions are consumers asking suppliers to answer?
- Key elements of an effective chemical policy
- What obstacles do businesses face when they set out on a journey of chemicals management policy reform in their organizations?
- **What are the benefits of effective chemicals management?**

# Benefits of Effective Chemical Management Policy

STAPLES Advantage

## ASSURE COMPLIANCE

- Minimize Risk
- Maintain Health
- Protect the Environment
- Control Exposure

## CREATE VALUE

- Improve Productivity
- Build Credibility
- Promote Innovation
- Enable Growth
- Eliminate Hazard

- Prevent human and animal exposure to chemical hazards.
- Sustain and preserve natural and built environment.
- Protect business reputation and brand.
- Avoid costs associated with chemicals of concern remediation.
- Reduce operating costs associated with chemical hazards.

# It is time for effective chemicals management policy and a program of action

"There are risks and costs to a program of action. But they are far less than the long-range risks and costs of comfortable inaction."

*John F. Kennedy*
*35th president of the United States*

# THANK YOU

# Perkins+Will Precautionary List

We believe it is our responsibility to apply the Precautionary Principle when selecting and specifying products and materials… with the understanding that we live in a world without scientific certainty.

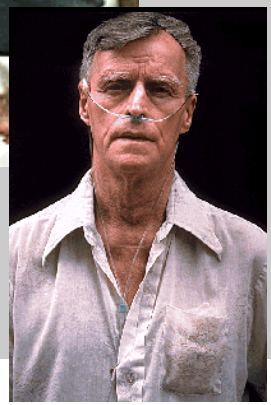
“Depletion of the environment and impairment of human health are the symptoms of a poorly designed and functionally flawed industrial production and consumption economy…“

Kenneth Geiser, PhD


Material
Extraction
Manufacturing
Production
Transportation
Utilization
Reuse
Disposal
Recycling

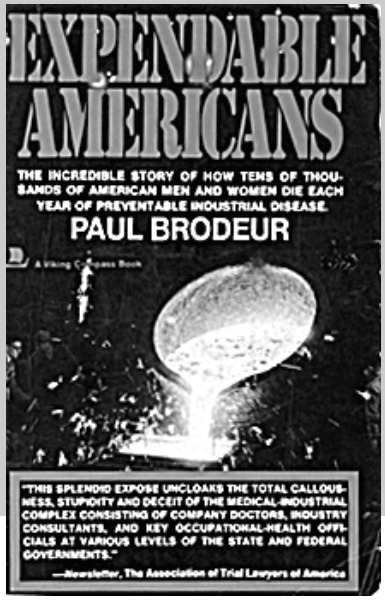
PERKINS
+ WILL

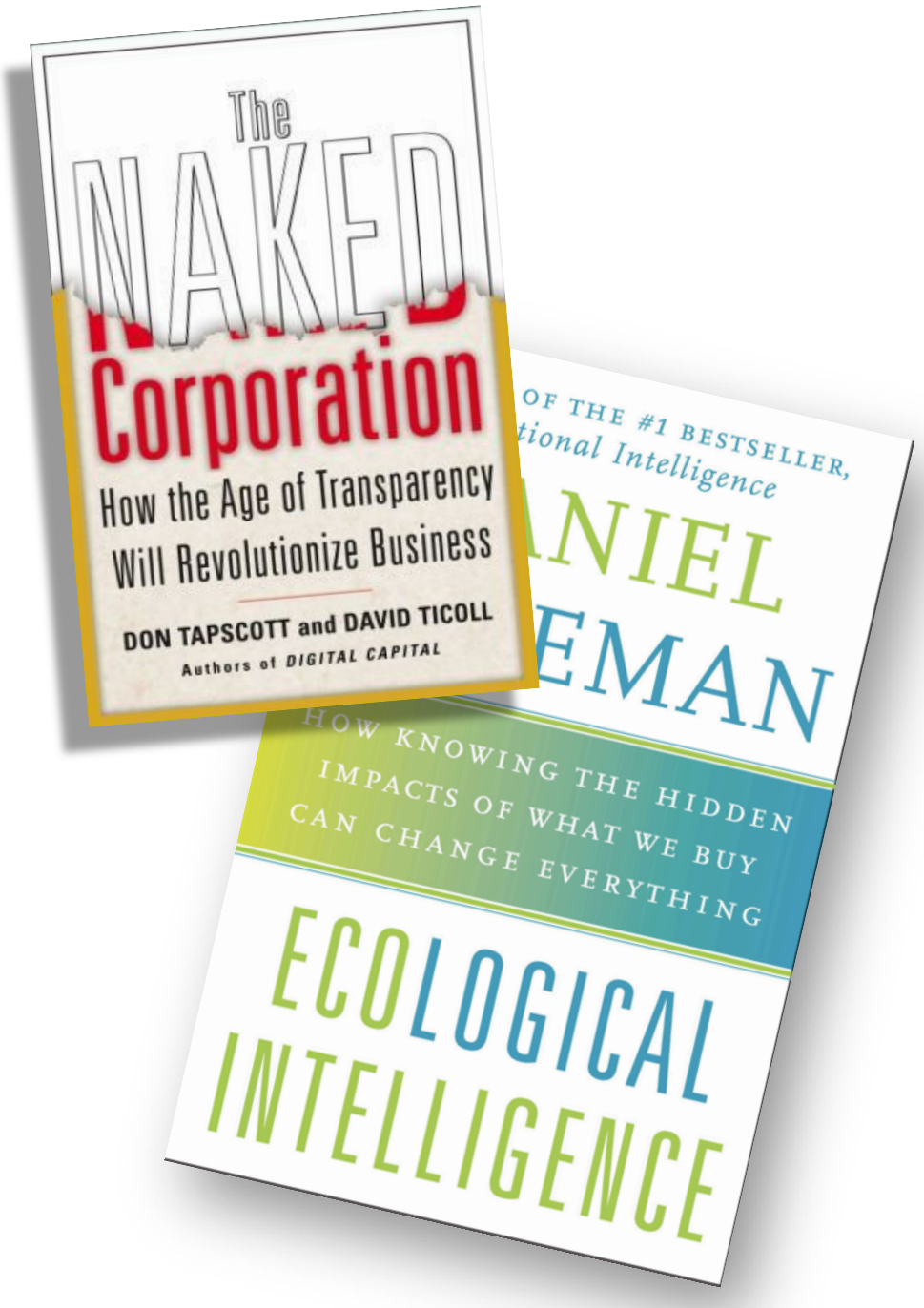
# Late Lessons from Early Warnings



*"But as long as the man is not disabled it is felt that he should not be told of his condition so that he can live and work in peace and the company can benefit by his many years of experience."*

- Dr. Kenneth Smith, medical director, on the policy of not informing workers of their work-related disease




*"…we can train ourselves to think differently - to develop an innate flight instinct when confronted by…*
*a shampoo that contains methylparaben, or*
*a garden chair made from tropical wood."*

PERKINS
+ WILL


PERKINS
+ WILL


# It's *LIVE!*

*transparency.perkinswill.com*

PERKINS
+ WILL

## SEARCH OPTIONS

**Categories**

**A - Z**

A
B
C
H
L
M
O
P
U
V

**Divisions and Sections**

**Health Effects**

**Search**

**REFERENCES**

## CHEMICALS BEGINNING WITH THE LETTER 'C'

Cadmium | Chlorinated Polyethylene (CPE) | Chlorinated Polyvinyl Chloride (CPVC) | Chlorofluorocarbons (CFC)
Chloroprene (2-CHLOR-1,3-BUTADIENE) | Chlorosulfonated Polyethylene (CSPE) | Copper (for Exterior Material) | Creosote

Details for Cadmium (7440-43-9)

| | |
|---|---|
| Category: | Metals and Metal Compounds |
| Origin and Source: | Cadmium is a heavy metal in the periodic table (symbol CD) that is a byproduct of the zinc production process. |
| Health Impact Summary: | Persistent Bioaccumulative Toxic Chemical (EPA); EPA classification: B1 (probable human carcinogen - based on limited evidence of carcinogenicity in humans). |
| Building Products Where Commonly Found: | Batteries, metal alloys, hardware coatings, and paints. |
| Alternative Materials: | For hardware coatings - stainless steel and galvanized finishes. For all other applications there are viable cadmium free options. |
| Divisions and Sections: | Div 07 Intumescent Fireproofing<br>Div 09 Exterior Painting<br>Div 09 High-Performance Coatings<br>Div 09 High-Temperature-Resistant Coatings<br>Div 09 Interior Painting<br>Div 09 Multicolor Interior Finishing<br>Div 09 Staining and Transparent Finishing |
| Known Health Effects / Classification References: | Carcinogen (P65)<br>Developmental Toxicant (P65)<br>Reproductive Toxicant (P65) |
| Suspected Health Effects / Classification References: | Cardiovascular or Blood Toxicant (KLAA) (LADO - L) (RTECS)<br>Endocrine Toxicant (IL-EPA) (KEIT) (WWF)<br>Kidney Toxicant (ATSDR) (EPA-HEN) (HAZMAP) (KLAA) (OEHHA-CREL) (RTECS) (STAC)<br>Respiratory Toxicant (EPA-HEN) (HAZMAP) (NEME) (OEHHA-CREL) (RTECS) |
| Regulatory: | On multiple federal and state chemical watch lists. |
| Green Building Rating System Credits: | Living Building Challenge (1.2)-Prerequiste 5/ Green Guide for Health care-MR Credit 4.3 |
| General Reference: | http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showQuickView&substance_nmbr=0141 |

PERKINS+WILL

# PRECAUTIONARY LIST

RATHER THAN USE HARMFUL PRODUCTS, WE WILL SEEK OUT ALTERNATIVES THAT PROTECT OUR HEALTH AND THE HEALTH OF FUTURE GENERATIONS.
IT IS OUR HOPE THAT THIS LIST WILL BE A CATALYST FOR MARKETPLACE CHANGE.

## SEARCH OPTIONS

**Categories**

**A - Z**

**Divisions and Sections**

**Health Effects**

Carcinogen
Cardiovascular or Blood Toxicant
Developmental Toxicant
Endocrine Toxicant
Gastrointestinal or Liver Toxicant
Immunotoxicant
Kidney Toxicant
Neurotoxicant
Reproductive Toxicant
Respiratory Toxicant
Skin or Sense Organ Toxicant

**Search**

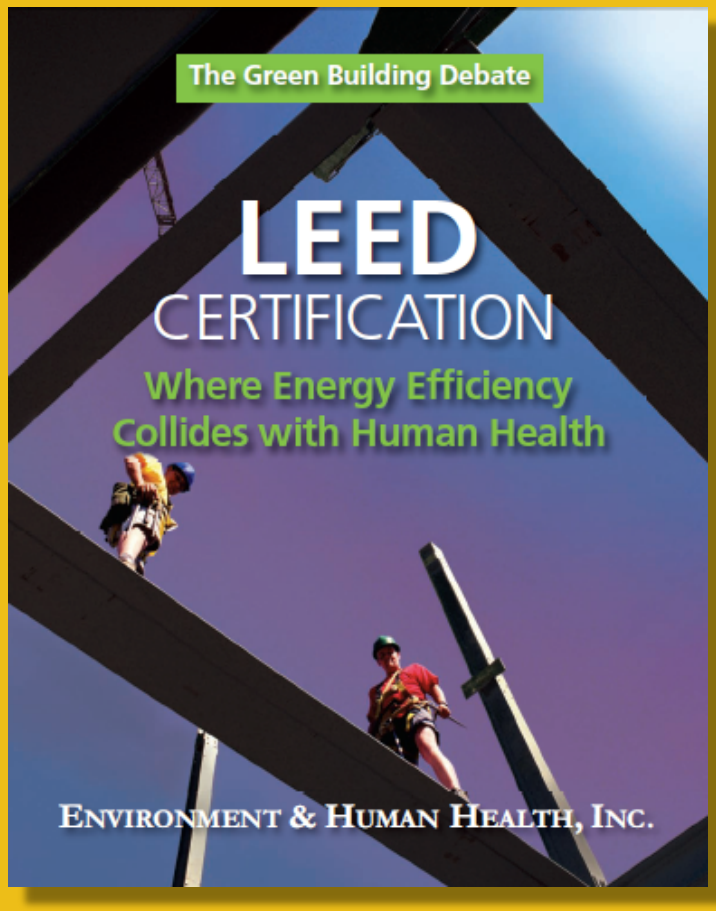
## REFERENCES

## CARCINOGEN

Arsenic | Cadmium | Chlorinated Polyethylene (CPE) | Chlorinated Polyvinyl Chloride (CPVC) | Chloroprene (2-CHLOR-1,3-BUTADIENE) | Chlorosulfonated Polyethylene (CSPE) | Creosote | Hexavalent Chromium (VI) | Lead | Pentachlorophenol | Phthalates | Polyvinyl Chloride (PVC) | Urea-Formaldehyde (HCHO) | Volatile Organic Compounds (VOCs)

Details for Phthalates (EDF-150)

| | |
|---|---|
| Category: | Chemical Compounds |
| Origin and Source: | A plasticizer used mostly in the production of flexible PVC products |
| Health Impact Summary: | |
| Building Products Where Commonly Found: | Pipes, conduits, waterproofing, roofing, siding, door and windows, resilient flooring, carpet backing, wall covering, signage, window treatments, furniture, and wire cable sheathing |
| Alternative Materials: | PET plastic for wiring jacketing; natural and polyolefin materials for wallcovers; Rubber, Linoluem, PVC-free resilient flooring options; Nylon, Polyester for shower curtains; Polyurethane, Nylon, Nylon Microfiber and Polyethylene; Fiberglass base with cotton flocked backing, polyester with arcylic foamed backing, polyester, polyester and cotton, Olefin-coated olefin yarn, and Thermoplastic Olefin. There are many PVC-free options for piping, conduits, flooring, carpet, wall protection systems, windows & doors, backings, and window treatments. |
| Divisions and Sections: | Div 03 Water Stops<br>Div 04 PVC Flashing (Elastomeric Thermoplastic Flashing)<br>Div 04 Unit Masonry<br>Div 07 Dampproofing and Waterproofing<br>Div 07 Membrane Roofing<br>Div 07 Polyvinyl-Chloride (PVC) Roofing<br>Div 07 Self-Adhering Sheet Waterproofing<br>Div 07 Siding<br>Div 08 Gasketing<br>Div 08 Vinyl Window<br>Div 09 Fabric-Wrapped Panels<br>Div 09 Resilient Athletic Flooring<br>Div 09 Resilient Base and Accessories<br>Div 09 Resilient Sheet Flooring<br>Div 09 Resilient Tile Flooring<br>Div 09 Static-Control Resilient Flooring<br>Div 09 Stretched-Fabric Wall Systems<br>Div 09 Tile Carpeting<br>Div 09 Wall Coverings<br>Div 10 Accordion Folding Partitions |




*"The underlying problem is that thousands of different chemicals, many of them well recognized to be hazardous, are allowed by the federal government to become components of building materials.*

*Although the primary stated purposes of the Green Building Council are to promote both energy efficiency and human health, even the Council's most prestigious Platinum award does little to ensure that hazardous chemicals are kept out of the certified buildings."*

# Effective Reform Requires Chemical Users' Input

Patricia Beattie, PhD, DABT

Arcalis Scientific, LLC/ SciVera, Inc

May 27, 2010

# Background

- Manufacturers of "articles"* have historically deferred to the chemical manufacturers whenever new "chemical" regulations were proposed
- State, Federal and global regulations are now focusing on manufacturers of consumer products/ finished goods such as furniture, electronics, automobiles that may contain/ be made of "substances of concern" (SOC)
- Currently, there is no US requirement for comprehensive chemical information on articles, but –
- The government and consumers assume and expect product manufacturers know the substances in their products

*US OSHA and US EPA define "articles" as an object that during production is given a special shape, surface or design which determines its function to a greater degree than its chemical composition.

# Growing Concern

Los Angeles Times

**Study finds a link between BPA plastic and childhood asthma**

THE CANADIAN PRESS

**U.S. regulators announce recall of cadmium-laced kids' jewelry from Walmart**

THE INDEPENDENT

**Warning: toxic leather shoes sold here**


**Your New Car, Is It Toxic?**

# Proposed TSCA Reform - Impacts to Manufacturers

- Should improve access to information from chemical manufacturers, beyond MSDSs
  - Limited CBI; publically available electronic database
- Seems to pull “articles” more clearly into TSCA
  - Previously, TSCA covered ”chemicals, mixtures and products”; “products” is being replaced with “articles”
  - The term “mixture” includes “any mixture contained in or formed into an article”
- Manufacturers will need to provide use and exposure information; may require labeling of articles; fees to submit data; risk reduction plans for substances in articles
- EPA has much broader authority to take action on many more chemicals, which could impact the users of these substances

# Regulatory Impacts

## California "Safer Consumer Product Alternatives" – Draft Outline for Regulations

- Applies to **all** consumer products sold, manufactured, imported, marketed or distributed in California
- State will develop a list of Chemicals under Consideration based on chemical traits, physical properties, volume in commerce, toxicity, potential for public exposure, environmental impacts, persistence, etc.
- From this list, Chemicals of Concern will be identified
  - Greatest threat to public health and the environment
  - Strength of the scientific data
  - Carcinogens, reproductive or mutagenic hazards; persistent, bioaccumulative and toxic in the environment

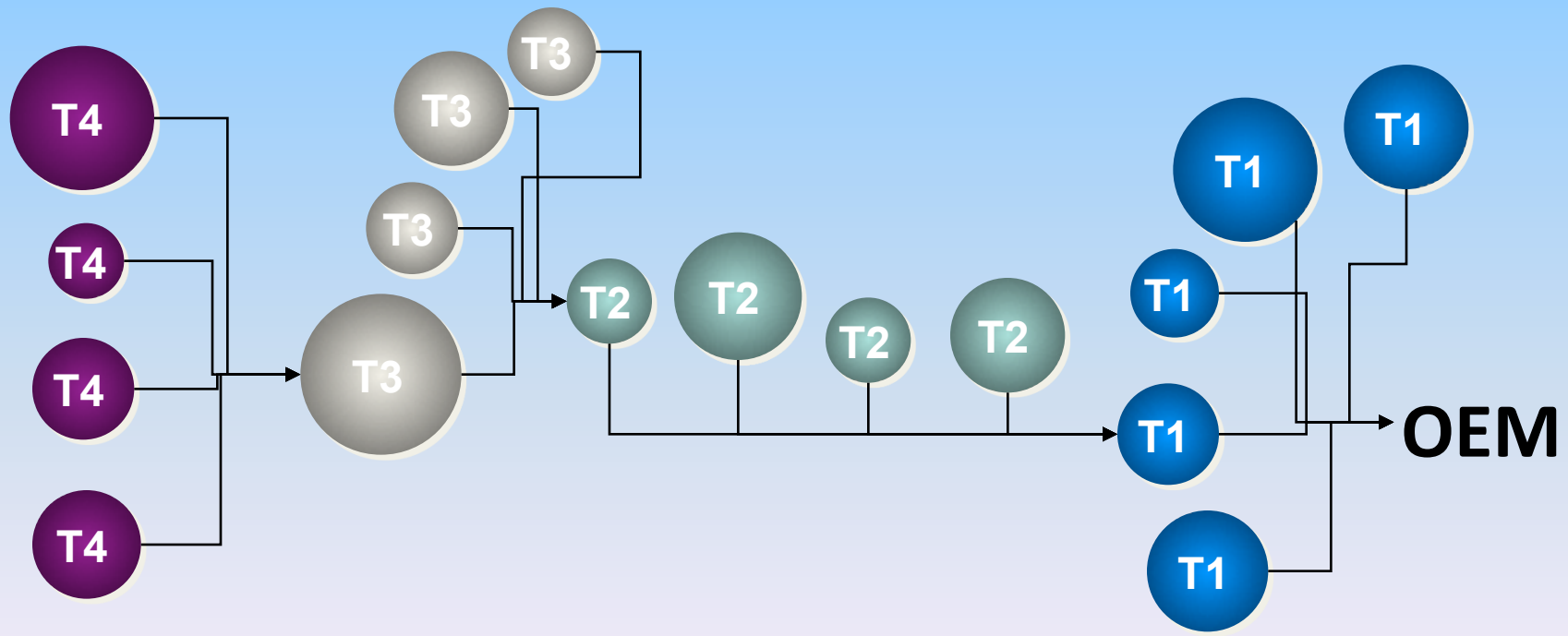
# Regulatory Impacts

## California “Safer Consumer Product Alternatives”, cont.

- State will then identify consumer Products under Consideration that contain Chemicals of Concern
- From the list of Products under Consideration, Priority Products will be identified and information published
- Priority Products will be required to perform an Alternatives Assessment for the product that must be conducted by a Certified Assessor
- This report will be posted in the government website
- A Regulatory Response will be developed by the government
  - Require additional information on the COC and the alternatives
  - Require product information disclosure to consumers
  - Place restrictions on the use of the COC in the consumer product

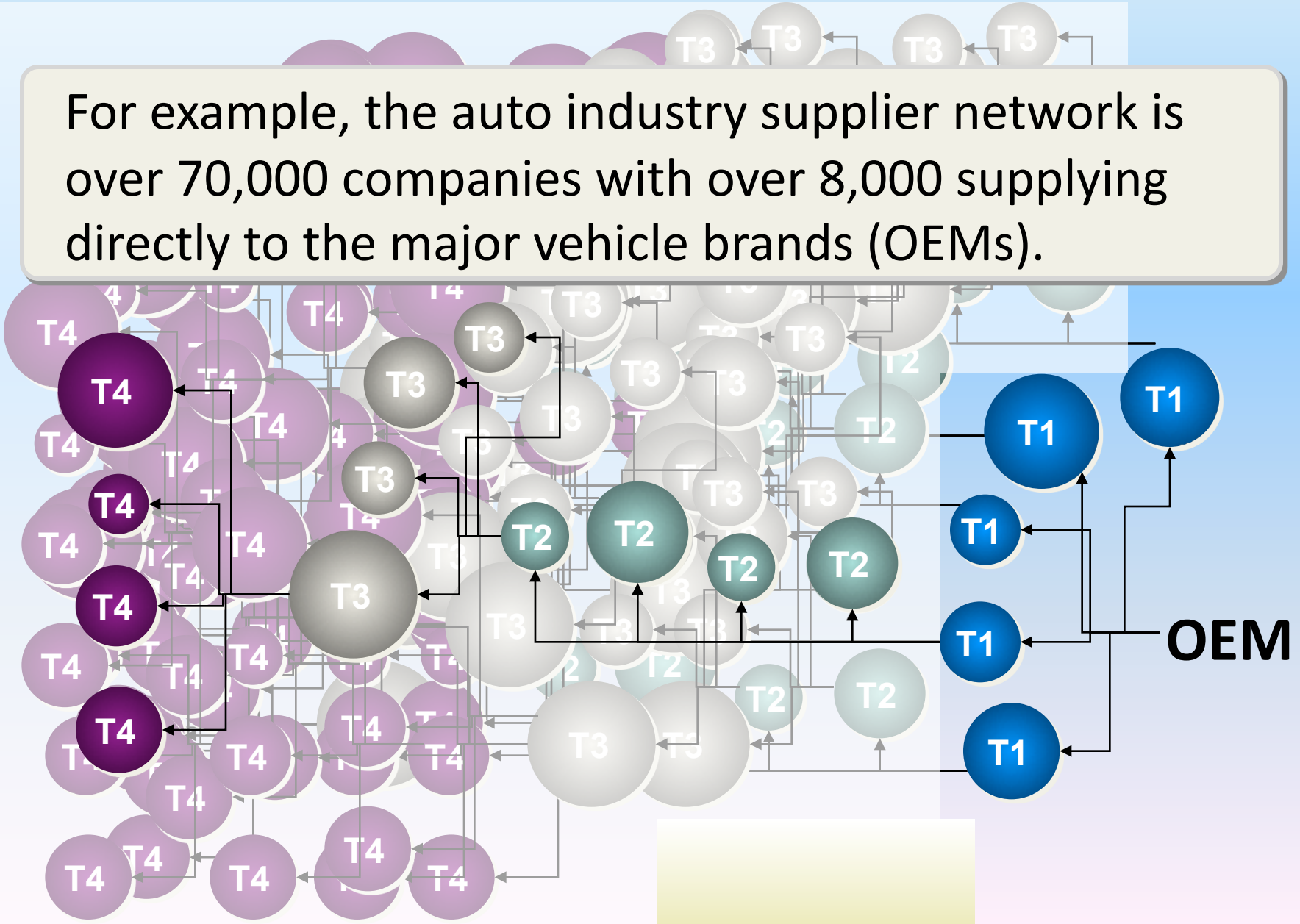
# Challenges - Supply Chain Engagement

Access to better chemical information requires visibility into large and complex supplier networks---by all participants.



# Challenges - Supply Chain Complexity

For example, the auto industry supplier network is over 70,000 companies with over 8,000 supplying directly to the major vehicle brands (OEMs).



# Challenges

Assessment of articles represents a new paradigm for most consumer product/ finished goods manufacturers.

- Manufacturers of articles are not chemical companies
- Limited or no toxicological expertise
- They are used to considering chemicals in formulations, but not articles

# Challenges

## Concern in dealing with SOCs

- EU REACH currently has 30 substances on the SVHC Candidate List
  - List is updated 2x's per year
  - Projected to eventually contain 200-300 substances
- Proposed California Safer Products regulation has potentially several thousand SOCs
- Product development is a long-term process where materials are selected 3-5 years prior to market
- Waiting until a chemical appears on a regulated list is a very tactical and potentially costly approach

# Manufacturers of Articles Need to be Engaged

- Opportunity to influence proposed legislation is now
  - Article labeling, use and exposure information
  - Risk reduction plans
  - Data sharing fees
  - CBI
  - Substances of Concern issues
- Chemical companies will not address the issues of article manufacturers
- Need to assure supply chain information flow from chemical companies up to finished goods manufacturers and to the customers