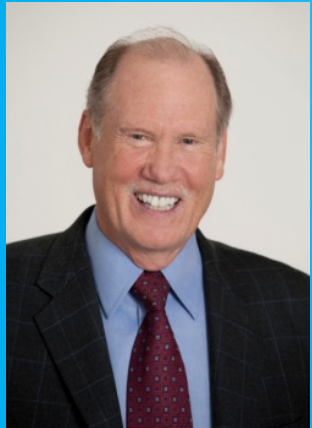


# TUR Planners Continuing Education Conference

April 12, 2012

# STAPLES®



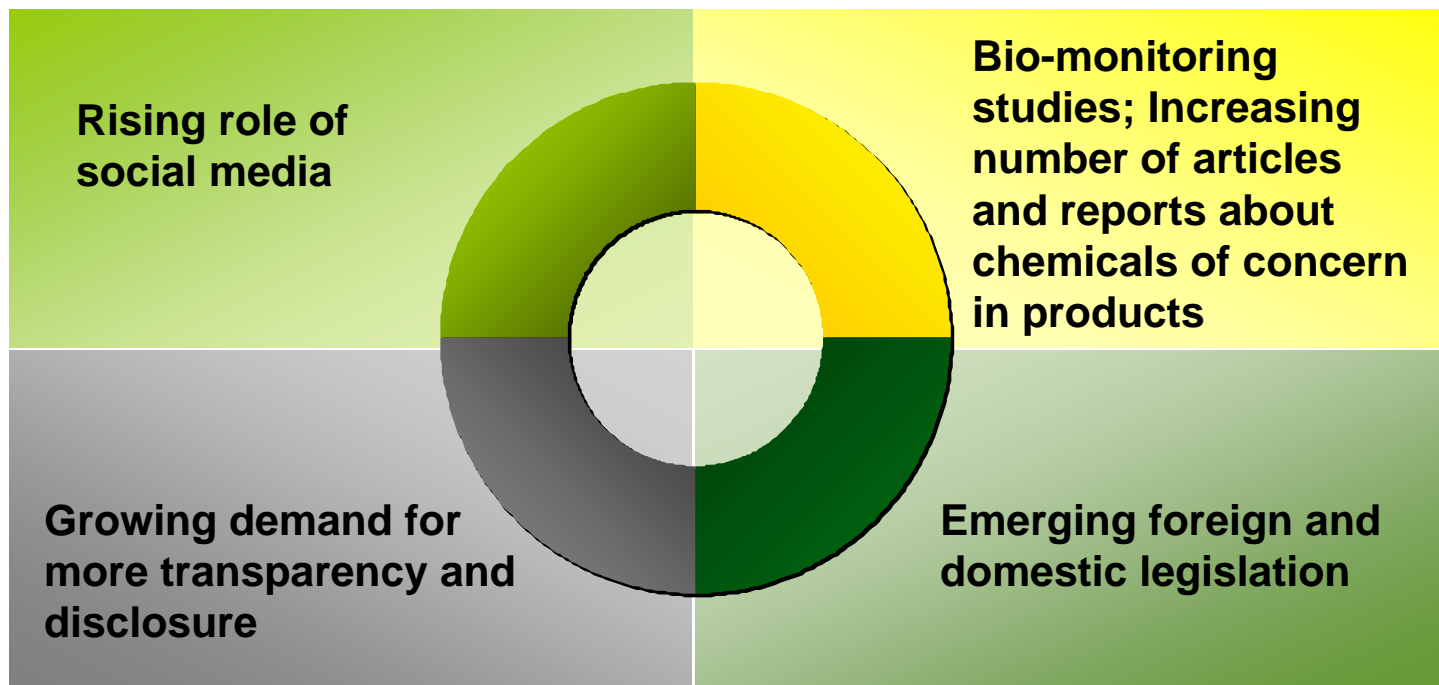
## Preventing Product Based Pollution

Roger McFadden,  
Vice President, Senior Scientist,  
Staples, Inc.

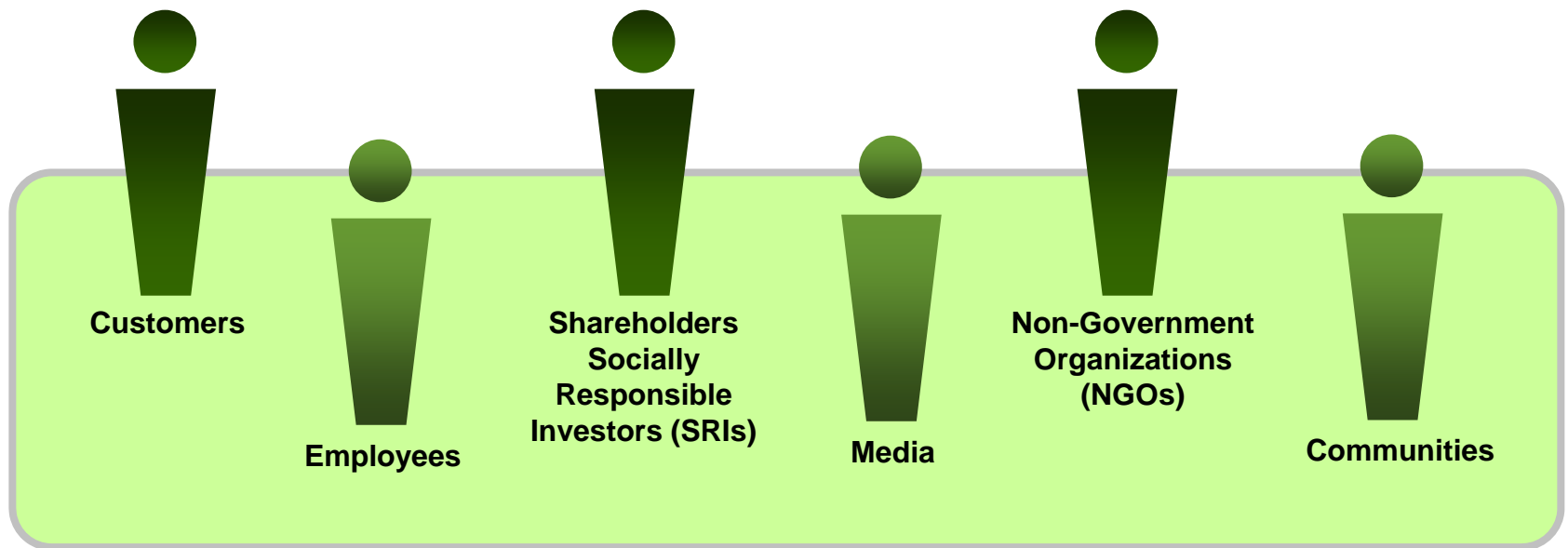


that was easy.™

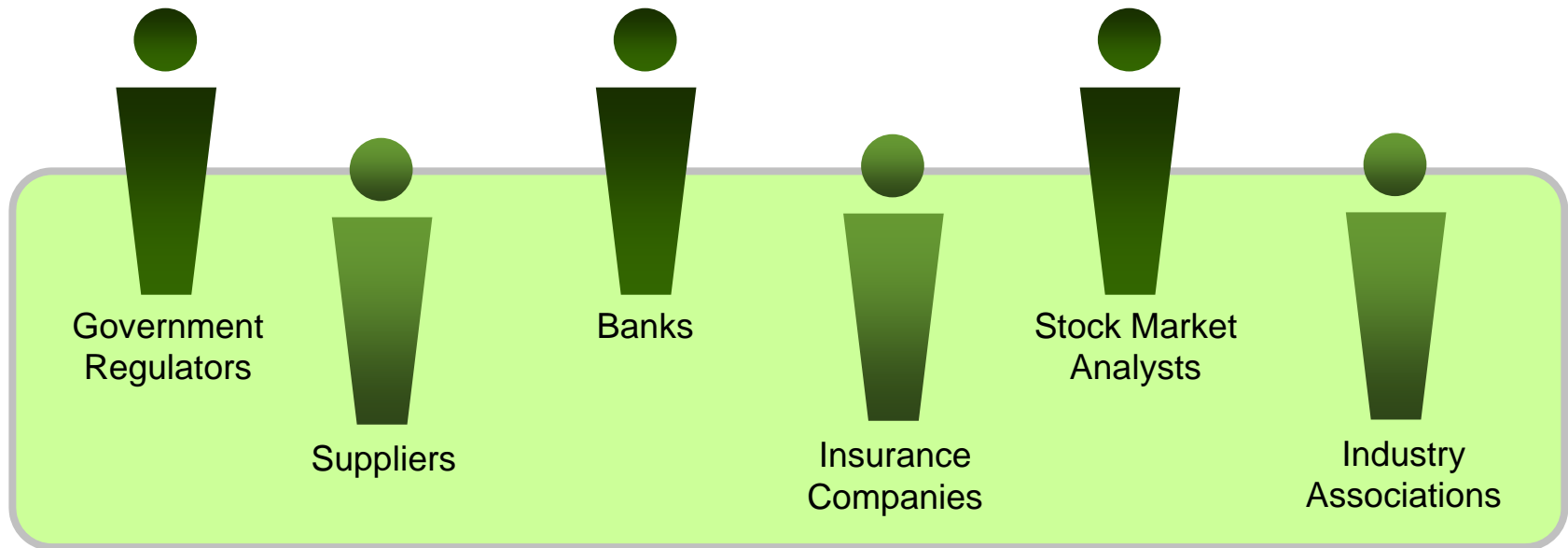
# Trends impacting chemicals management and product based pollution



# Growing list of stakeholders to engage



# Expanding number of stakeholders asking to be included



# 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

# 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-iodobutane
- chloroethylbenzene
- dibromodichloromethane
- dichlorobenzene
- chlorodecane
- trichlorobenzene

## ALDEHYDES

- acetaldehyde
- methyl propanal
- n-butanal
- methylbutanal
- crotoaldehyde
- n-pentanal
- 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-heptanone
- 3-heptanone
- 2-heptanone
- methyl heptanone
- furyl methyl ketone
- octanone
- acetophenone
- 2-nonanone
- 2-decanone
- alkylated lactone
- phthalide

## OXYGENATED ISOMERS

- C<sub>4</sub>H<sub>6</sub>O
- C<sub>4</sub>H<sub>8</sub>O
- C<sub>5</sub>H<sub>10</sub>O
- C<sub>4</sub>H<sub>6</sub>O<sub>2</sub>
- C<sub>6</sub>H<sub>12</sub>O
- C<sub>7</sub>H<sub>10</sub>O
- C<sub>7</sub>H<sub>14</sub>O<sub>2</sub>
- C<sub>6</sub>H<sub>6</sub>O<sub>2</sub>
- C<sub>6</sub>H<sub>14</sub>O<sub>2</sub>
- C<sub>6</sub>H<sub>16</sub>O
- C<sub>7</sub>H<sub>8</sub>O<sub>2</sub>
- C<sub>7</sub>H<sub>10</sub>O<sub>2</sub>

# Man-made chemicals detected in 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*

# Untested chemicals in the environment

*“With all the untested chemicals in the environment, we’re conducting a vast uncontrolled experiment and children are the guinea pigs.”*

Source: Dr. Philip Landrigan Quoted in May 2008 Issue of DISCOVER



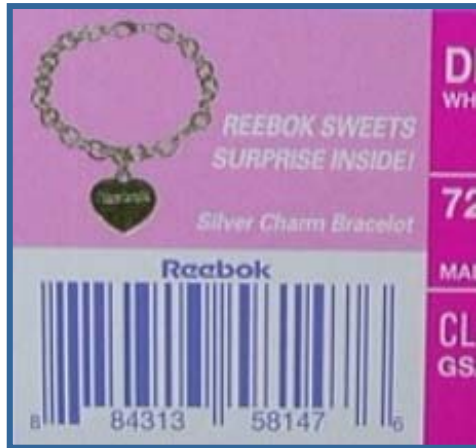
# Disturbing Growth in Several Childhood Diseases

Autism	10X Increase	Since 1980
Childhood Asthma	2X Increase	Since 1982
Acute Lymphocytic Leukemia	62% Increase	Since 1973
Childhood Brain Cancer	40% Increase	Since 1973

# High levels of lead detected in the paint used to decorate kids toys



# Toxic level of lead in charm bracelet takes the life of a four-year old boy



EXAMPLE: Lead Poisoning: February 2006

- A four year old boy died of lead poisoning after swallowing the charm from a 'silver' bracelet that came with a pair of children's athletic shoes.
- While the Consumer Products Safety Commission advises no more than 0.06% lead in jewelry sold in the US, the charm consisted of 99% lead.
- There was no disclosure of the lead being in the product.

# High levels of lead found in women's handbags

## EXAMPLE:

ABC News Report January 24, 2010 – High Levels of Lead Found in Women's Handbags

The Center for Environmental Health tested purses from 100 of the nation's top retailers and found what they call disturbingly high levels of lead.



- A landmark agreement involving two big retail chains establishes, for the first time, limits on lead in women's handbags and wallets.
- The Center for Environmental Health went to 100 of the nation's top retailers -- including Target, Macy's, Wal-Mart and Kohl's -- and bought purses.
- The group had the bags tested for lead at an independent lab. Two separate tests were conducted. Some bags were wiped to see how much, if any, lead would simply rub off the material. The bags also were tested for the total lead content of the products.
- The tests came back showing disturbingly high levels of lead, the Center for Environmental Health said.
- "This is something every woman of childbearing age ought to be paying attention to," said Dr. Alan Greene, a lead expert and pediatrician at Stanford University.

# Cadmium found in kid's jewelry

## EXAMPLE:

### NY Senator Calls for Cadmium Ban in Kids' Jewelry

By BEN DOBBIN  
*The Associated Press*  
ROCHESTER, N.Y.



(AP Photo/Tony Dejak)

- In this Dec. 17, 2009 photo, Jeff Weidenhamer, professor of chemistry at Ashland University, holds a "Rudolph the Red-Nosed Reindeer", charm in Ashland, Ohio.
- Barred from using lead in children's jewelry because of its toxicity, some Chinese manufacturers have been substituting the more dangerous heavy metal cadmium in sparkling charm bracelets and shiny pendants being sold throughout the United States, an Associated Press investigation shows.
- Reports of high cadmium content in children's jewelry imported from China have prompted a senior U.S. senator to press for legislation that would ban the toxic heavy metal as a hazardous substance from those products and toys.
- New York Democrat Charles E. Schumer was to present details of his proposal Wednesday. It is the first specific legislative fix promised by a member of Congress following an Associated Press investigation that documented high levels of cadmium in jewelry bought at major chain stores in the United States.

# Impact of Product Based Pollution on Companies, Customers and Communities

- Risk to human health and/or well-being
- Harm to the natural and built environments
- Damage to business reputation and brand
- Decreased ROI for businesses
- Higher consumer product prices
- Increased costs to communities and taxpayers

Chemicals are a key element of life and the global economy.

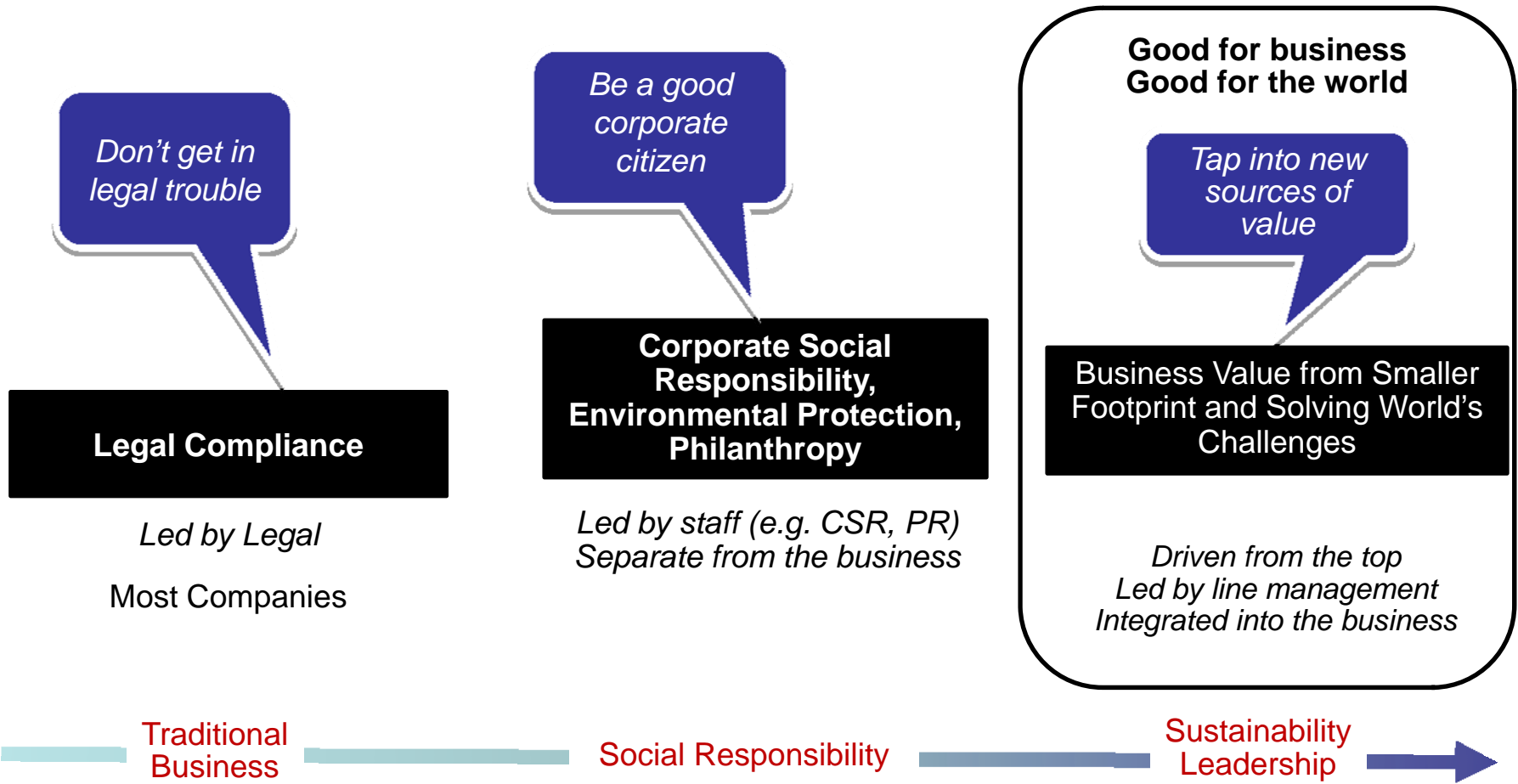
- But not all chemicals are created equal when it comes to human and environmental health.
- One chemical is designed to help cure cancer while another chemical may cause cancer.

# How do we decide who to protect?

- Some members of a population will be highly sensitive to a chemical of concern;
- Some members of a population will be very resistant to the same chemical of concern;
- And most members of a population will be neither sensitive nor resistant to the chemical of concern.



# Businesses approach chemicals management, pollution prevention and toxic use reduction in different ways



# Typical Supply Chain for Large Retailer or B2B Distributor



>100,000 products

>10,000 chemicals

>1,000 suppliers

**Business customers are identifying one or more of the following as value and asking suppliers to provide products and information that help them:**

Identify and transition to safer alternatives

Prevent pollution

Avoid toxins

Reduce emissions

Eliminate waste

Conserve energy

Lower total life-cycle costs

Eliminate product duplication

Green their supply chain

Measure and report success



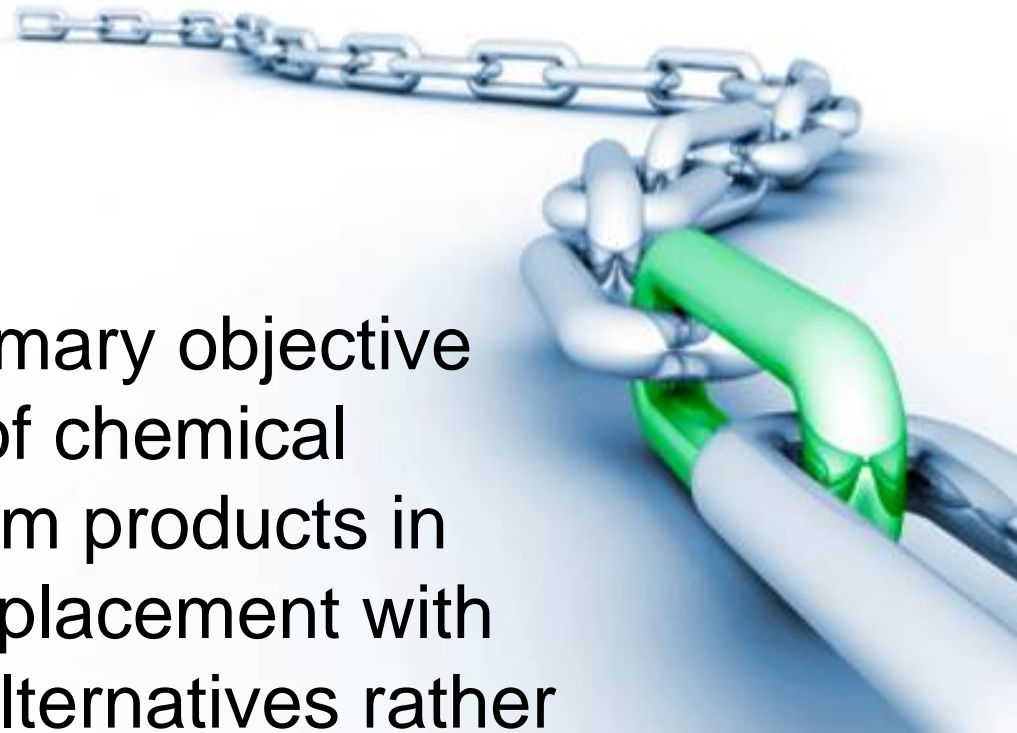
*Each of these objectives requires more transparency and communication throughout the chain supply*

You never change something by fighting with the existing reality. To change something, build a new model that makes the existing model obsolete.

Buckminster Fuller

Let's challenge the status quo by considering some "what if" scenarios

What if a businesses' primary objective became the elimination of chemical hazards and pollution from products in their supply chain and replacement with safer more sustainable alternatives rather than defaulting to “exposure control” schemes?

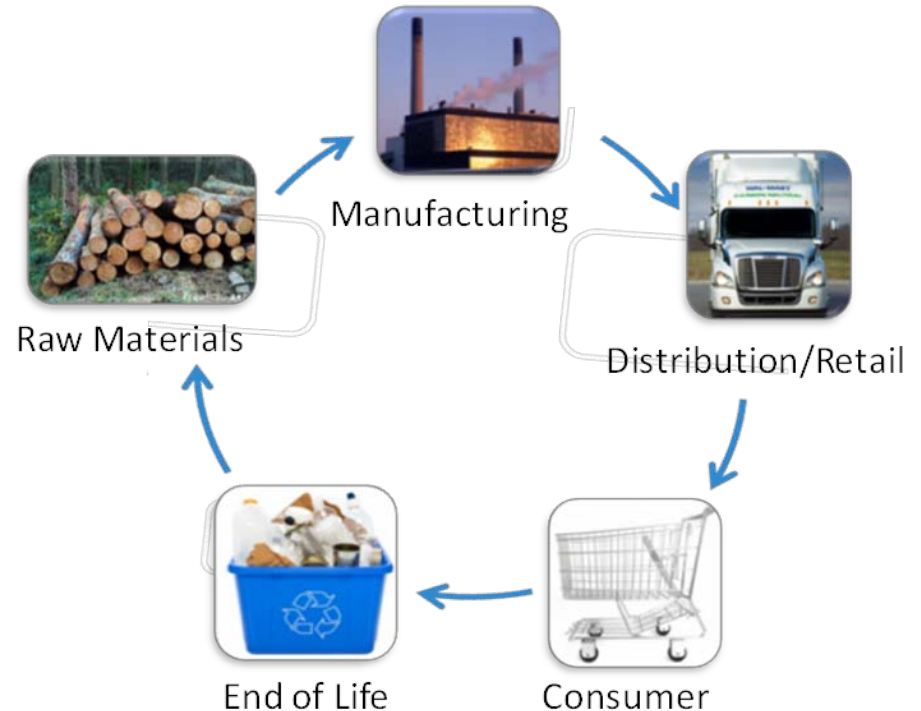


What if businesses considered toxins and chemicals of concern in products to be:

- Pollutants
- Contaminants
- Defects

# Value of framing chemicals of concern as product based pollution

- Engages proven pollution prevention tools and strategies.
- Helps businesses view pollution from a life cycle perspective.
- Challenges businesses to take a closer look at chemicals, materials and products in their supply chain.
- Inspires businesses that they can go beyond compliance and encourage suppliers to identify or design safer alternatives.



# What if businesses applied a modern day Hippocratic Protocol?

- Fundamental product design objective will be **“To do no harm”**
- Priority on **pollution prevention** at product design stage
- Make **hazard elimination** a top priority in product design



What if businesses took a precautionary approach and were guided by the following?

When there is credible evidence that a chemical in a product may result in harm to human and/or environmental health, we should strive to eliminate the chemical and replace it with a quality, affordable, safer and more sustainable alternative.

What if businesses considered direct and indirect exposure on vulnerable sub-populations such as children when they designed or selected chemicals and products ?

“Children and workers are two groups within the population who are particularly vulnerable to toxic hazards in the environment. ... It is imperative that we develop policies that will protect the health of our children now and in the future. ... Primary prevention of occupational disease requires elimination or reduction of hazardous exposures.”

Landrigan P and Garg A. *Vulnerable Populations*. In: McCally M, editor, *Life Support: The Environment and Human Health*, Cambridge, MA: The MIT Press, 2002



What if businesses that claim chemicals of concern in their products as trade secrets or confidential business information placed at least equal value on their customer's:

- Right-to-Know
- Right-to-Choose



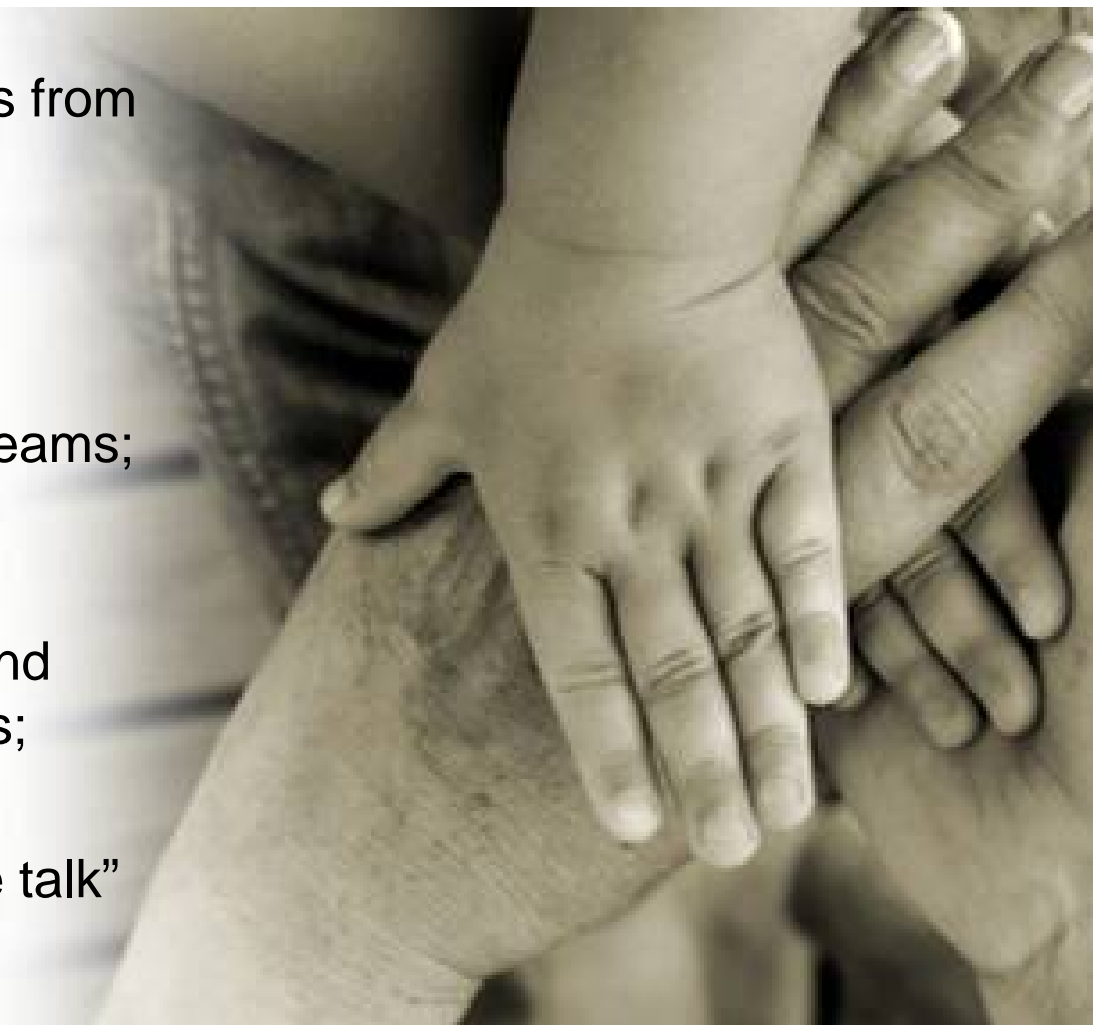
What if businesses considered the true life-cycle cost of a product containing chemicals of concern rather than only the initial price tag of a product?

- 1. Initial cost of the product**
- 2. Cost of use and product handling**
- 3. Cost of disposal**



## Implementing Pollution Prevention and Green Chemistry Principles at Product Design Stage Yields Shared Value

- Prevents chemical hazards from entering our indoor air and outdoor environment;
- Eliminates the impact of chemicals in our waste streams;
- Prevents toxic chemical exposure to our children and vulnerable sub-populations;
- Communicates a “walk the talk” image to the communities.



# The Values of Transitioning to “Safer Alternatives”

- Assures compliance
  - Pollution prevention/control
  - Worker safety regulations
  - Transportation regulations
  - Environmental regulations
  - Waste management
  - Chemical exposure control
- Creates value
  - Improve productivity
  - Lowers costs
  - Build trust and credibility
  - Stay ahead of regulations
  - Be viewed as a trusted supplier or advisor
  - Eliminate chemical hazard



- Eliminates exposure to chemical hazards
- Prevents pollution
- Promotes wellness
- Encourages extended producer responsibility
- Attracts and retains associates with an environmental conscience

# “Race To The Top”

Our Commitment To Collaborate With Our Suppliers To Eliminate Product-Based Pollution and Make an Orderly Transition to Safer Alternatives and Reduced Packaging



that was easy.

# Guiding Principles for Our “Race to the Top”

- Place high priority on elimination of hazard;
- Chemicals of concern are assessed as product-based pollutants and defects;
- Precautionary approach is taken when assessing chemicals;
- Direct and indirect exposure to vulnerable sub-populations such as children and women of child-bearing age are considered throughout the entire product life cycle;
- Life-cycle costing is considered at product design stage; and
- Supplier chemical trade secret and CBI exemptions are carefully scrutinized



"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

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