



# Is Toxics Use Reduction Enough?

Presented to the Toxics Use Reduction  
Institute Continuing Education Conference

November 13, 2018

# Outline

- Introduction
- An Appreciation
- What Is Safe?
- Creating a New Paradigm
- Some Examples
- Questions and Discussion





Introduction

# Our Name



**HAUDENOSAUNEE**  
MOHAWK - ONEIDA - ONONDAGA - CAYUGA - SENECA - TUSCARORA

“In our every deliberation,  
we must consider the impact  
of our decisions on the next  
seven generations”

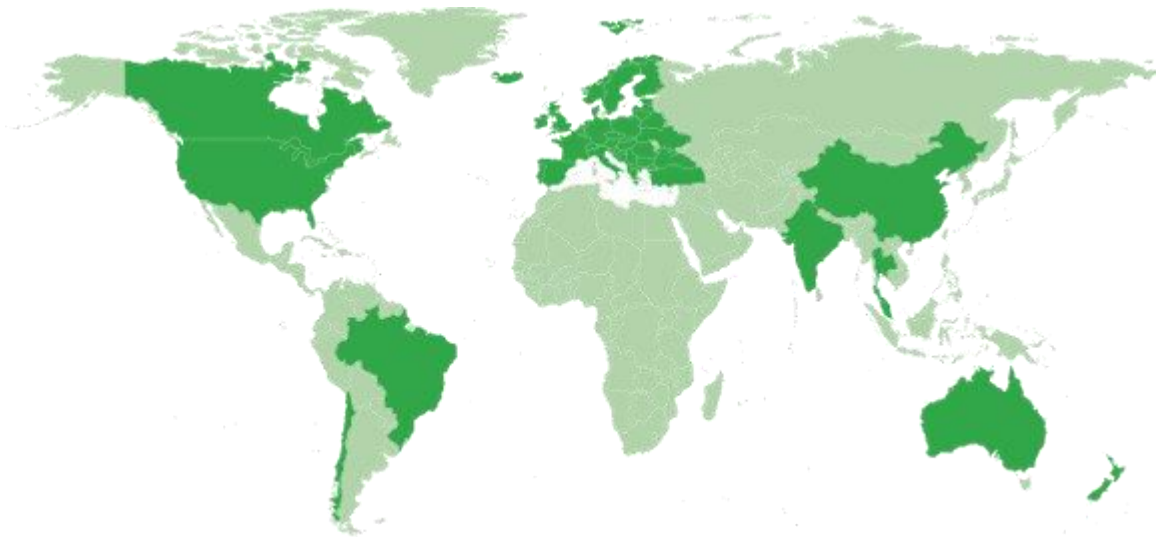
- *Great Law of The Iroquois  
Confederacy*

Traditional values:

- sharing labor
- duty to their family, clan and nation
- thankful to nature and the Creator
- the Seventh Generation value
  - consideration to those not yet born but who will inherit the world.

# Our Mission

TO TRANSFORM THE WORLD into a HEALTHY,  
SUSTAINABLE & EQUITABLE PLACE FOR THE  
NEXT SEVEN GENERATIONS







An Appreciation



## Companies In Massachusetts Reducing Toxics Use

- Shawmut Corporation, West Bridgewater, MA  
Completely eliminated the use of TCE
- Saved 95 percent annually on hazardous waste disposal costs (\$1 million per year).
- Stainless Steel Coatings, Lancaster, MA  
Reduced the use of xylene by 57 percent and eliminated the use of hexavalent chromium.
- Professional Wet Cleaning Workgroup  
*Eliminated PERC, a carcinogen, from dry cleaning*



# Companies In Massachusetts Reducing Toxics Use

- **Independent Plating Inc., Worcester, MA**

*Protecting worker health, saving money by reducing toxics*

- Reduced the use of toxic chemicals by more than 500,000 pounds, including:
  - Cyanide compounds by 95 percent
  - Hexavalent chromium compounds by 88 percent
  - Hydrofluoric acid by 100 percent
- Reduced the use of acids, bases and other reportable metal compounds.
- Made the switch from hexavalent chromium to trivalent chromium on several production lines, with assistance from a TURI incentive grant.

- **Ophir Optics LLC, North Andover, MA**

*Employee culture of continuous improvement*

- Reduced volatile organic compounds by 70 percent, saving \$15,000 per year.
- Reduced the quantity of hazardous waste shipped by two-thirds, saving \$60,000 annually in associated costs.
- Achieved \$1 million in efficiency improvements by implementing a standardized workflow in manufacturing.



# Companies In Massachusetts Reducing Toxics Use

- [ChemGenes Corporation, Wilmington, MA](#)
  - Reduced the use of chloroform by more than 55 percent and hexane by more than 35 percent.
  - Improved manufacturing efficiency, saving \$215,000 in chemical purchases, regulatory fees and disposal costs.
  - Reduced solid waste from 25,000 to 8,000 lbs. per year.
  - Anticipates reducing the use of hexane and ethyl acetate by 27,000 lbs., or 70 percent annually, through the installation of a new solvent recovery and recycling system, purchased with help from a TURI incentive grant.
- [Columbia Manufacturing Inc., Westfield, MA](#)
  - Recovers and reuses 98 percent of the nickel and chromic acid plating chemistry from a modern, efficient plating line.
  - Recovers all wastewater to use as deionized water in the rinse baths.
  - Saving \$3 million in water and sewer fees, \$3.85 million in nickel purchases and \$800,000 in chromium purchases.



## Companies In Massachusetts Reducing Toxics Use

- [Franklin Paint Company, Franklin, MA](#)
- Eliminated use of xylene and methanol.
- Reduced use of three other chemicals below reporting thresholds while increasing paint production.
- Reduced use of lead by more than 100,000 pounds, chromium compounds by 100,000 pounds, and toluene by 500,000 pounds.

## Companies In Massachusetts Reducing Toxics Use

- Allston Collision Center, Allston

*Small business goes green*

- Third generation family-owned business uses water-based paints, reducing the need for solvents.
- Reduced emissions of volatile organic compounds (VOCs) by more than 1,200 lbs. annually.
- Recycles paint thinner for reuse, reducing waste and worker exposure to harmful chemicals.
- Recycles solvents, aluminum, sheet metal, plastic bumpers and batteries.

- Analog Devices, Inc., Wilmington

- Reduced the use of sodium hydroxide and hydrochloric acid for resin regeneration in deionized water production processes.
- Newsweek magazine ranked Analog Devices as among the top 50 greenest companies in the United States in 2014.



What Is Safe?

# What Is Safe?

- Safe = acceptable risk of harm.
- Acceptable to whom?
  - Regulators
  - Industry
  - Consumers
- Different individuals have different tolerances for risk.



# The Specious Argument of Risk Versus Hazard

- Risk is a function of hazard and exposure.

$$*Risk = Hazard \times Exposure*$$

- Risk can be controlled by limiting hazard or limiting exposure.
- Both approaches are scientifically sound.
- The claim using only hazard is not “sound science” is misleading and undermines trust.

# Safe Under Conditions of Use

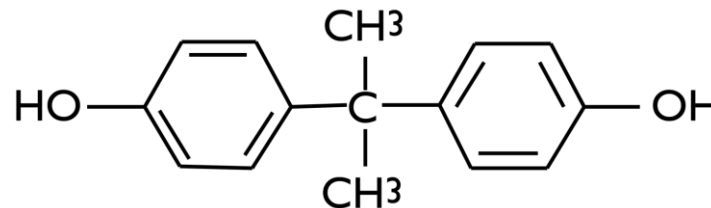
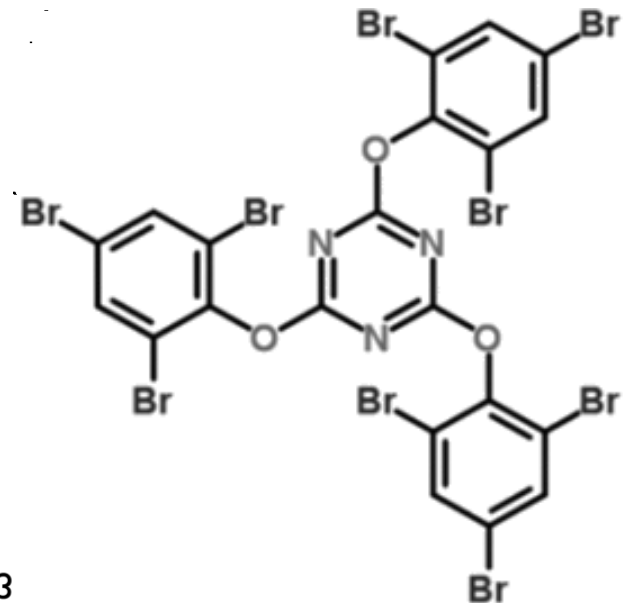
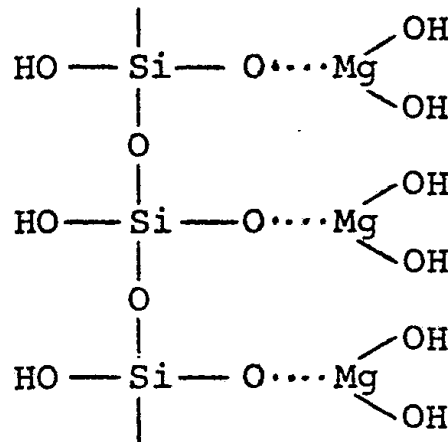
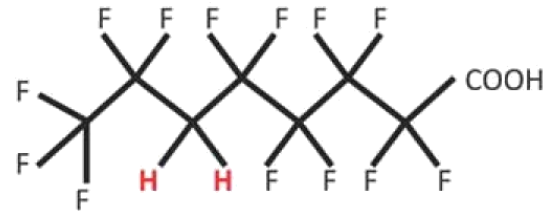
ISSUE	INDUSTRY RESPONSE
Lead in gasoline	Safe under conditions of use
Lead in paint	Safe under conditions of use
Lead in children's jewelry	Safe under conditions of use
Lead in drinking water	Safe at levels present





# It's Not Just Lead...

- Asbestos
- Brominated flame retardants
- PFOA, PFOS
- BPA, BPS
- Triclosan
- Phthalates
- Chlorpyrifos
- Fragrance ingredients



The problem is these substances don't remain "under the conditions of use."

# The Current Paradigm Isn't Working



- Entropy
  - Toxic chemicals just don't stay where we put them!
- Trust
  - The constant barrage of news about toxics erodes trust in our industries
- Human Health
  - Growing evidence of harm
- Environmental Health
  - Irrefutable evidence of harm

# The circular economy shouldn't circulate toxics

- 1 lb of BPA-treated receipts can contaminate 1 ton of recovered paper at >10 ppm
- 1 PVC bottle with phthalates can contaminate 300,000 PET bottles at 1 ppm



We need to find a better way



Creating a New Paradigm

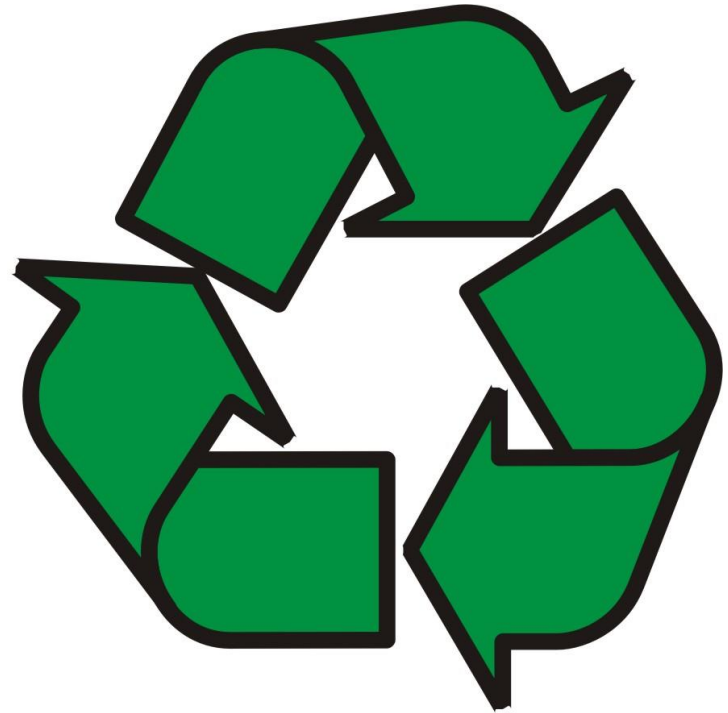
# Design for Circularity

The resources available today are  
the resources that were here 4.5 billion years ago  
are  
the resources that will be here for the foreseeable future



# Support Recovery and Reuse

- Use recovered materials to the greatest extent possible
- Make your products reusable or recyclable
- Provide clear instructions on how to recycle
- Take responsibility for your product after use





# Eliminate Toxics

- Use GreenScreen to identify toxics
- Use Alternatives Assessments or CleanGredients or EPA SCIL to identify safer alternatives



# Demand Transparency, Be Transparent

- Demand your suppliers disclose all ingredients (or at least hazardous ones)
- Disclose all ingredients to your customers

## WHAT'S INSIDE OUR SAFE\* & EFFECTIVE FORMULA

Sodium citrate  
Sodium carbonate  
Laureth-6  
Hydrated silica  
Cocos nucifera (coconut) oil  
Protease  
Amylase  
Mannanase  
Cellulase  
3-hexenol  
Cedrenol  
Citronellol  
Citrus aurantium dulcis (orange) peel oil  
Citrus nobilis (mandarin orange) peel oil  
Fusanus spicatus (sandalwood) oil  
Gamma-decalactone  
Juniperus mexicana (cedar) oil  
Pelargonium graveolens (geranium) flower oil  
Pogostemon cablin (patchouli) oil

### Film:

Polyvinyl alcohol  
Glycerin

d-Limonene is a component of these fragrance ingredients.

Gluten Free. Phosphate Free

*Learn more at [seventhgeneration.com](http://seventhgeneration.com)*

**It's USDA Certified Biobased Product (94%).**

*plant-derived water softener  
mineral-based cleaning agent  
plant-derived cleaning agent  
mineral-based flow aid  
plant-derived anti-foaming agent  
plant-derived enzyme blend soil remover  
plant-derived enzyme blend soil remover  
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plant-derived enzyme blend soil remover  
plant-derived fragrance  
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plant-derived fragrance*

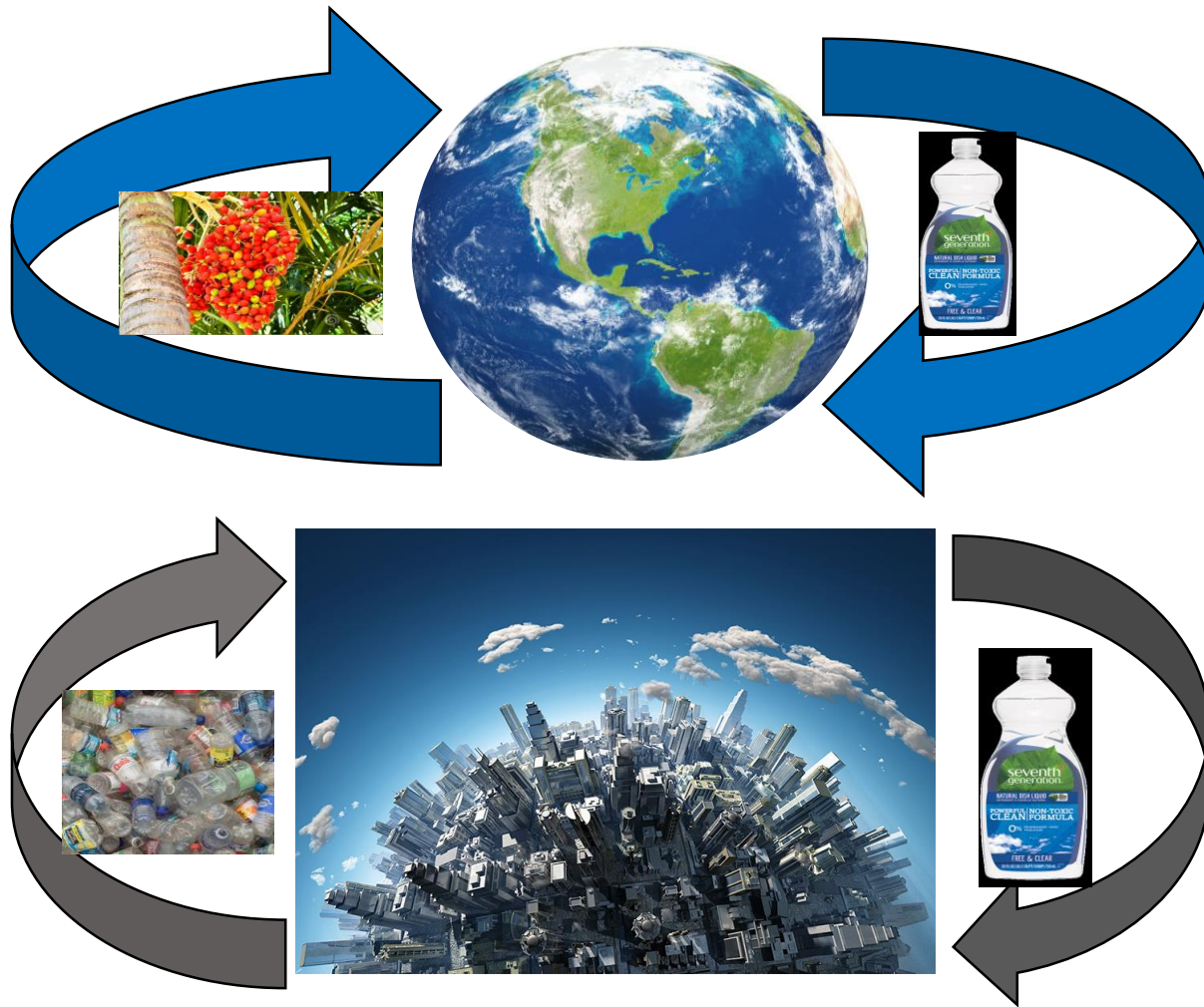
*synthetic water-soluble film  
plant-derived processing aid*





An Example

# Design for Circularity



# Support Recovery and Reuse



# Eliminate Toxics



# Demand Transparency

- **Typical Composition, substances added or present in the raw material**
- Please provide the typical composition for the raw material.
- Identification of ingredients with CAS Number for all components
  - INCI
  - If INCI is not available please provide technical or common chemical pr IUPAC name.
- Please list any intentionally added substances (additives, processing aids etc.), at any concentration, and incidental substances, byproducts, contaminants known to be present above 0.01% (100 ppm). If none, please state so.
- If the raw material is a mixture, please indicate the function of each component in the mixture. This helps us determine which components have active function in our end product.
- Please list any preservative(s) intentionally added to the raw material. If none, please state so.

# Be Transparent

## WHAT'S INSIDE OUR SAFE\* & EFFECTIVE FORMULA

Sodium citrate  
Sodium carbonate  
Laureth-6  
Hydrated silica  
Cocos nucifera (coconut) oil  
Protease  
Amylase  
Mannanase  
Cellulase  
3-hexenol  
Cedrenol  
Citronellol  
Citrus aurantium dulcis (orange) peel oil  
Citrus nobilis (mandarin orange) peel oil  
Fusanus spicatus (sandalwood) oil  
Gamma-decalactone  
Juniperus mexicana (cedar) oil  
Pelargonium graveolens (geranium) flower oil  
Pogostemon cablin (patchouli) oil  
**Film:**  
Polyvinyl alcohol  
Glycerin  
d-Limonene is a component of these fragrance ingredients.

Gluten Free. Phosphate Free  
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*synthetic water-soluble film*  
*plant-derived processing aid*







Questions and Discussion



Thank you!

Martin Wolf

Director, Sustainability & Authenticity

[Martin.Wolf@seventhgeneration.com](mailto:Martin.Wolf@seventhgeneration.com)