Environmental & Economic Benefits of Green Chemistry (from the perspective of “downstream users”)

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A non profit organization that collaborates with businesses, governments and NGOs to design and deliver strategic solutions for:

- Green chemicals
- Sustainable materials
- Environmentally preferable products
PBTs

- Persistent
- Bioaccumulative
- Toxic
Widespread Exposure to Chemicals with Reproductive & Developmental Toxicity

Based on analysis of representative sample of U.S. population by NHANES 2003-2004. Note, not all women were tested for all chemicals.

Chronic Disease Burden: Percent from Chemicals

- 3% of developmental disabilities**
- 5% of childhood cancer***
- 10% of diabetes, Parkinson’s Disease and neuro-developmental disabilities****
- 10% of children’s neurobehavioral disorders***
- 30% of childhood asthma*

* European Commission  
** National Research Council  
*** Mt. Sinai School of Medicine Center for Children’s Health and the Environment  
**** Environment Canada
Unique windows of vulnerability

- NUTRITION
- GENETICS
- SOCIAL ENVIRONMENT
- TOXICANTS
- INFECTIONS

Childhood health, illness

Adult health, illness

Cancer
Neurodegenerative disease
Cardiovascular disease
Diabetes
Etc.
Environmental Benefits of Implementing Green Chemistry

• Reduced exposure to chemicals of concern to human health & environment across life cycle
  – Feedstocks
  – Manufacturing
  – Use
  – End of life Management

• Reduced exposure across the globe

• Healthier Communities, Materials, Products, People & Planet
PASSIVE TO ACTIVE

All unrestricted replacements are accepted

Focus on cost, performance, reliability

Not screening replacements for environment
PASSIVE TO ACTIVE

Growing consumer concern
PASSIVE TO ACTIVE

Growing consumer concern

Shifting regulatory environment
By investing early in full disclosure data, Seagate has been able to flatten the ‘sawtooth' in resource requirements.

Seagate invested in CAS* system and developed full disclosure (Bill of Substances) strategy to deal with changing requirements.

“sawtooth” is less pronounced, overall resources required reduced as compared to other compliance strategies. Resource trend is almost flat. Why? Because Seagate collects full content data up front, and software is used to grade against new specifications.

Seagate is able to respond quickly to changing substance restrictions.

Seagate effectively manages substance restrictions at low, predictable cost and resource levels.

*CAS – Compliance Assurance System, Seagate’s materials content compliance system

Slide courtesy of Brian Martin, Seagate
Passive to Active

Need

Growing consumer concern
Shifting regulatory environment
Cost of multiple substitutions
PASSIVE TO ACTIVE

Stay ahead of regulatory & market uncertainty

Use safer alternatives / green chemistry

Create positive lists to avoid unintended consequences
HP Uses GreenScreen™ to Choose Alternatives to Substances of Concern

- Select alternatives that won’t be restricted in the future
  - E.g., Low toxicity
- Helps articulate materials goals to suppliers
  - Not simply saying what HP doesn’t want
  - Defining what HP does want in its products
Our business customers approach chemicals management and pollution prevention in different ways

**Legal Compliance**
- Led by Legal
- Most Companies
- Don’t get in legal trouble

**Corporate Social Responsibility, Environmental Protection, Philanthropy**
- Led by staff (e.g. CSR, PR)
- Separate from the business
- Be a good corporate citizen

**Good for business**
- Good for the world

**Business Value from Smaller Footprint and Solving World’s Challenges**
- Driven from the top
- Led by line management
- Integrated into the business
- Tap into new sources of value

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*Courtesy of Roger McFadden, Staples*
Economic Benefits of Green Chemistry for Downstream Users

• Ahead of market & regulatory demands
  – Laws and customer demand can change faster than product design cycle

• Risk management
  – Protect market share
  – Protect brand reputation
  – Know potential life cycle liabilities—upstream manufacturing to downstream use and disposal

• Lower costs
  – Avoid costly recalls

• Better supply chain management

• Increase market share and revenues
Solutions for Downstream Users

RØADMAP TO ZERO DISCHARGE OF HAZARDOUS CHEMICALS
Thank You

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