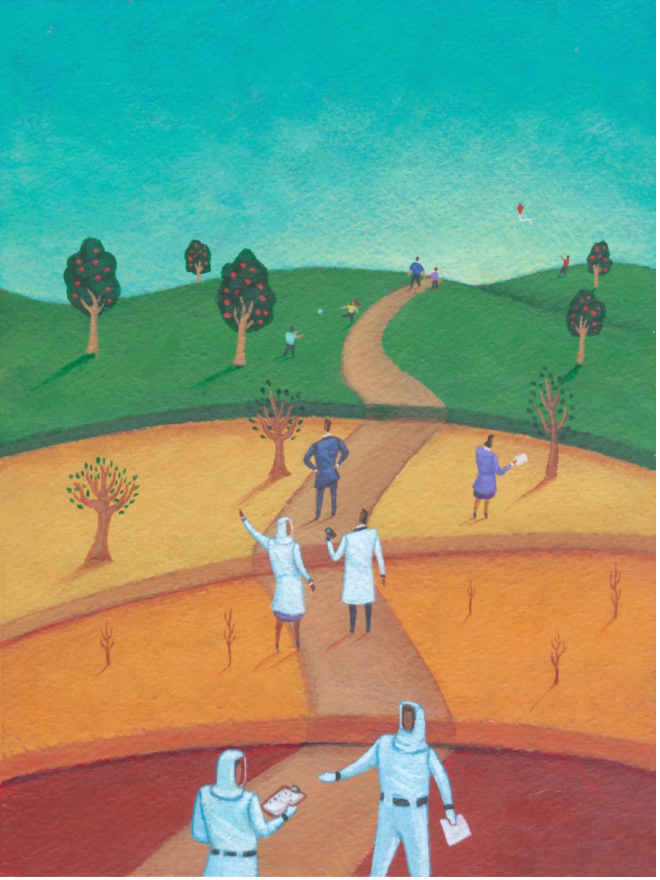

Safer Chemical Strategies: BizNGO & Green Screen

October 7, 2011

Mark Rossi, PhD

CLEAN PRODUCTION ACTION

A non profit organization that collaborates with industry, government and other NGOs to design and deliver strategic solutions for:

Green chemicals

Sustainable materials

Environmentally preferable products

BizNGO
FOR SAFER CHEMICALS AND SUSTAINABLE MATERIALS

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GREEN SCREEN FOR SAFER CHEMICALS

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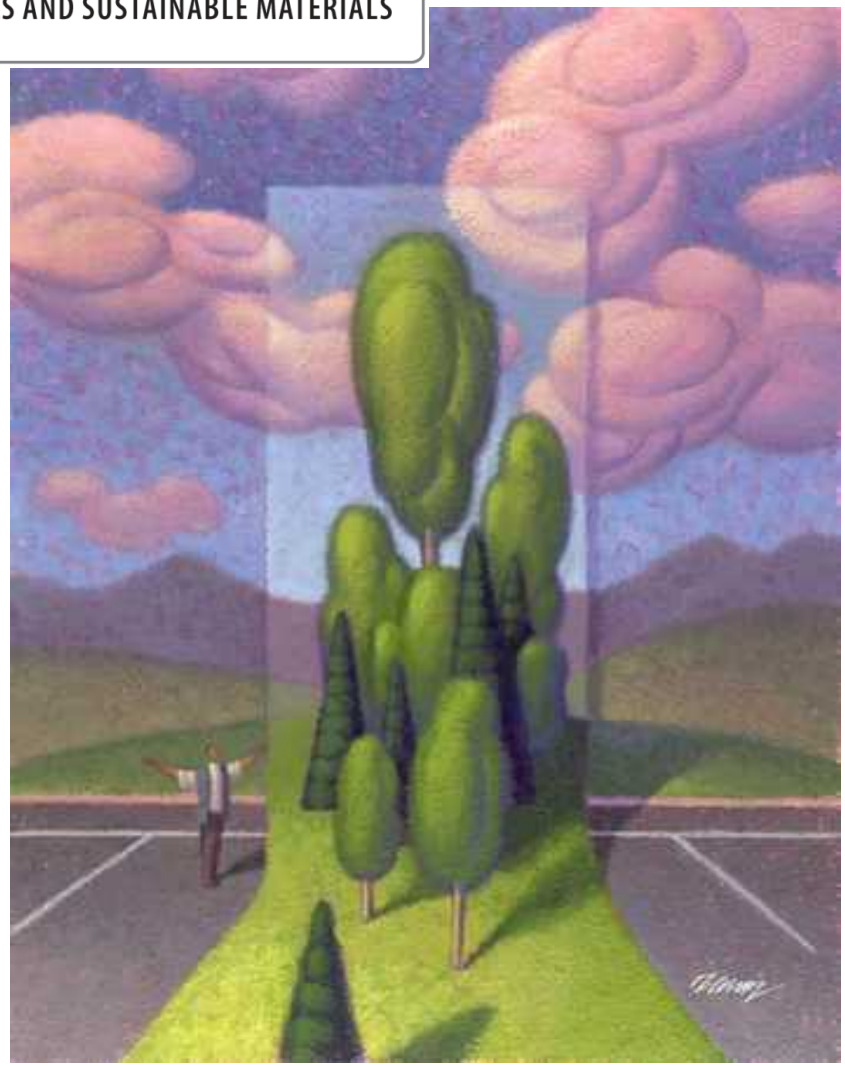
Our mission

To promote the creation and adoption of safer chemicals and sustainable materials in a way that supports market transitions to a healthy economy, healthy environment, and healthy people.



Our objectives include …

- Model new type and degree of collaboration
- Develop tools and continuous improvement criteria
- Advance policy initiatives

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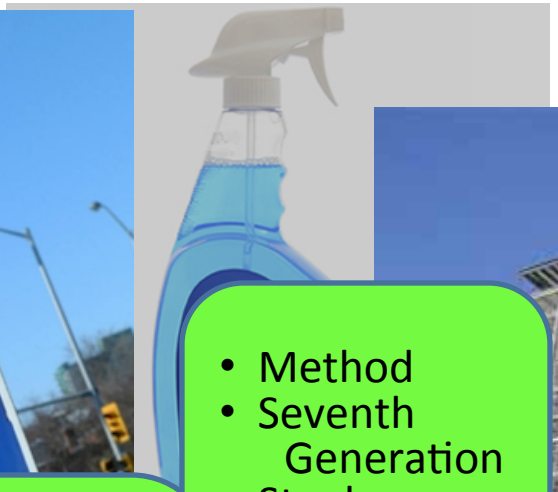

- Dell, Inc.
- Electronics Take Back Coalition
- Hewlett-Packard
- Seagate

- Method
- Seventh Generation
- Staples
- Whole Foods

- Catholic Healthcare West
- Kaiser Permanente
- Health Care Without Harm
- Hospira, Inc.
- Practice Greenhealth
- Premier, Inc.

- Breast Cancer Fund
- Clean Water Action
- Ecology Center
- EDF
- Env'l Health Strategy Center
- Investors Env'l Health Network
- NRDC

- Construction Specialties
- Healthy Building Network
- Perkins+Will

BizNGO Projects

Chemicals

- BizNGO Guide to Safer Chemicals

Materials

- Principles for Sustainable Plastics
- Plastics Scorecard - tool for integrating green chemistry into material assessments

Policy

- Gov't Initiatives – TSCA, CA Green Chemistry
- Industry Standards – GRI, Sustainability Consortium, ULE

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BizNGO Principles for Safer Chemicals

Endorsers include …

- Brooks Sports
- Catholic Healthcare West
- Construction Specialties, Inc.
- Health Care Without Harm
- Hewlett-Packard Company
- Hospira, Inc.
- Kaiser Permanente
- Method
- Novation
- Perkins+Will
- Practice Greenhealth
- Premier, Inc.
- Seventh Generation
- Staples, Inc.
- Whole Foods Market, Inc.

1. Know and disclose product chemistry

2. Assess and avoid hazards

3. Commit to continuous improvement

4. Support public policies and industry standards

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Demand for Safer Chemicals

WAL★MART®

bypasses federal regulators to ban controversial flame retardant (2/26/11)

STAPLES®

Race to the Top: The Staples Supplier Collaboration Initiative

KAISER PERMANENTE®

Launches health care industry's first sustainability scorecard (5/4/10)

Latex-free? PVC-free? Phthalate-free?

RoHS-free? Chlorine-/Bromine-free? BPA-free?

California Proposition 65 chemical?

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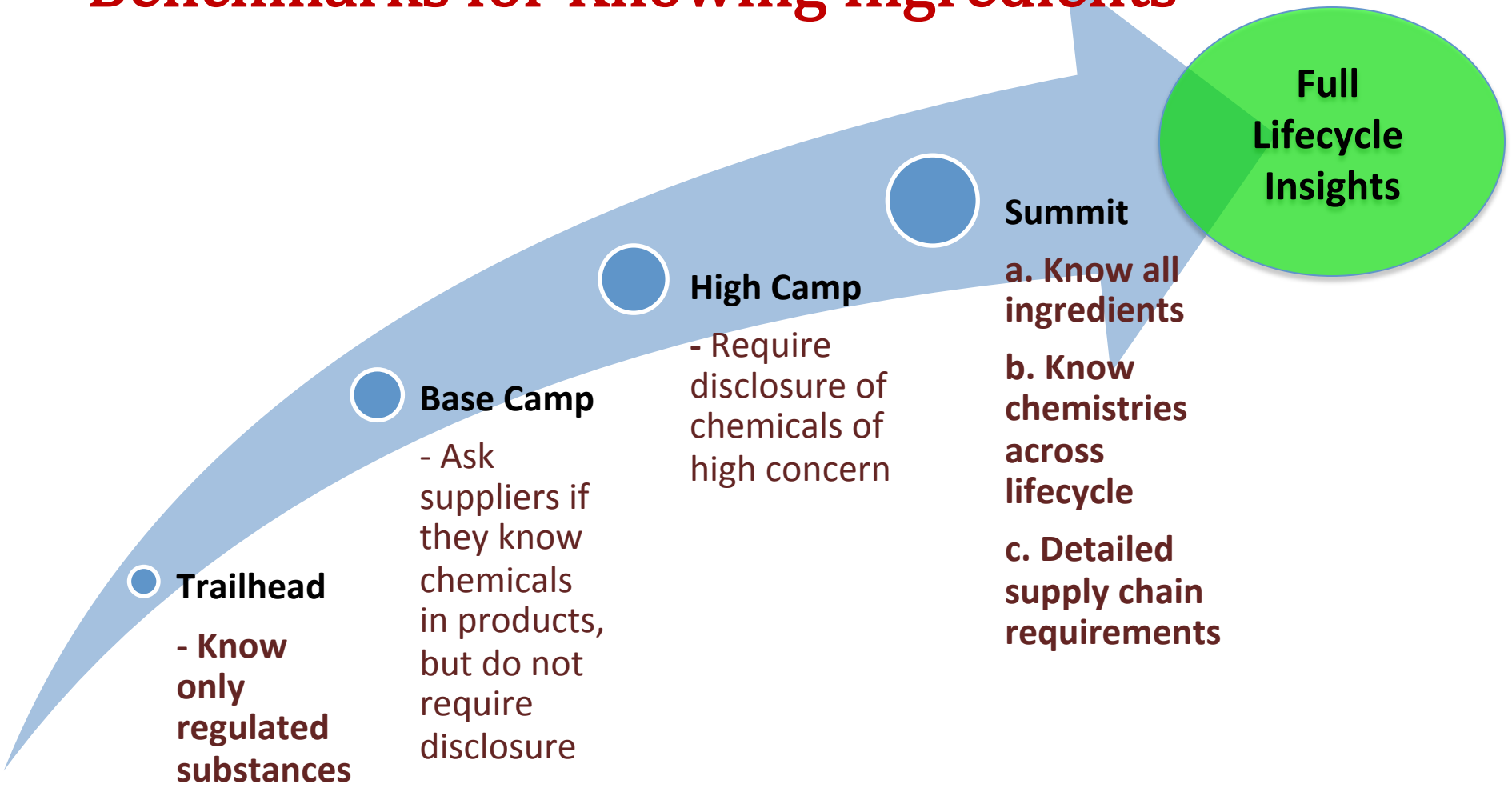
BizNGO Guide to Safer Chemicals –

Benchmarks for Knowing Ingredients



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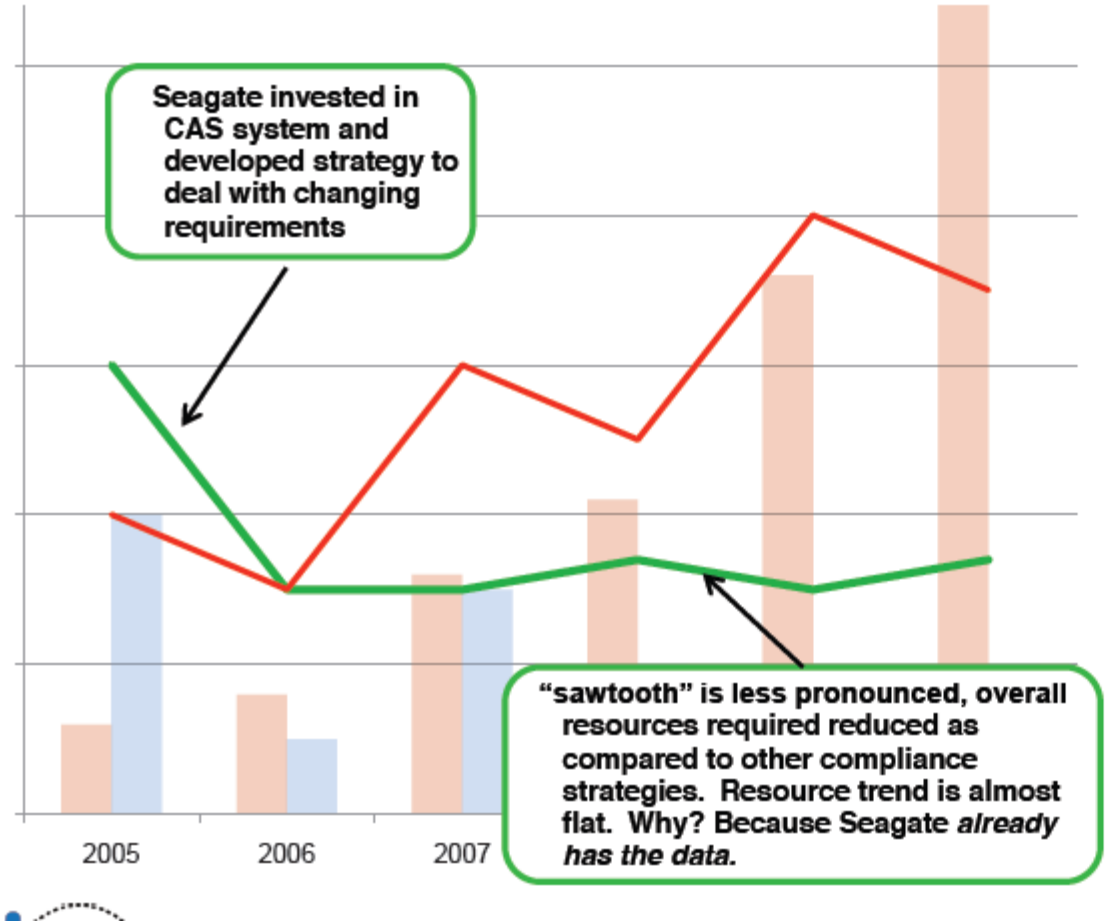
By investing 'early' in full data disclosure, Seagate has been able to flatten the 'sawtooth' in resource requirements for gathering substance data



Seagate is able to respond to new substance restrictions within current resources

Seagate manages substance restrictions at low overall cost and with high credibility

Slide courtesy of Brian Martin, Seagate

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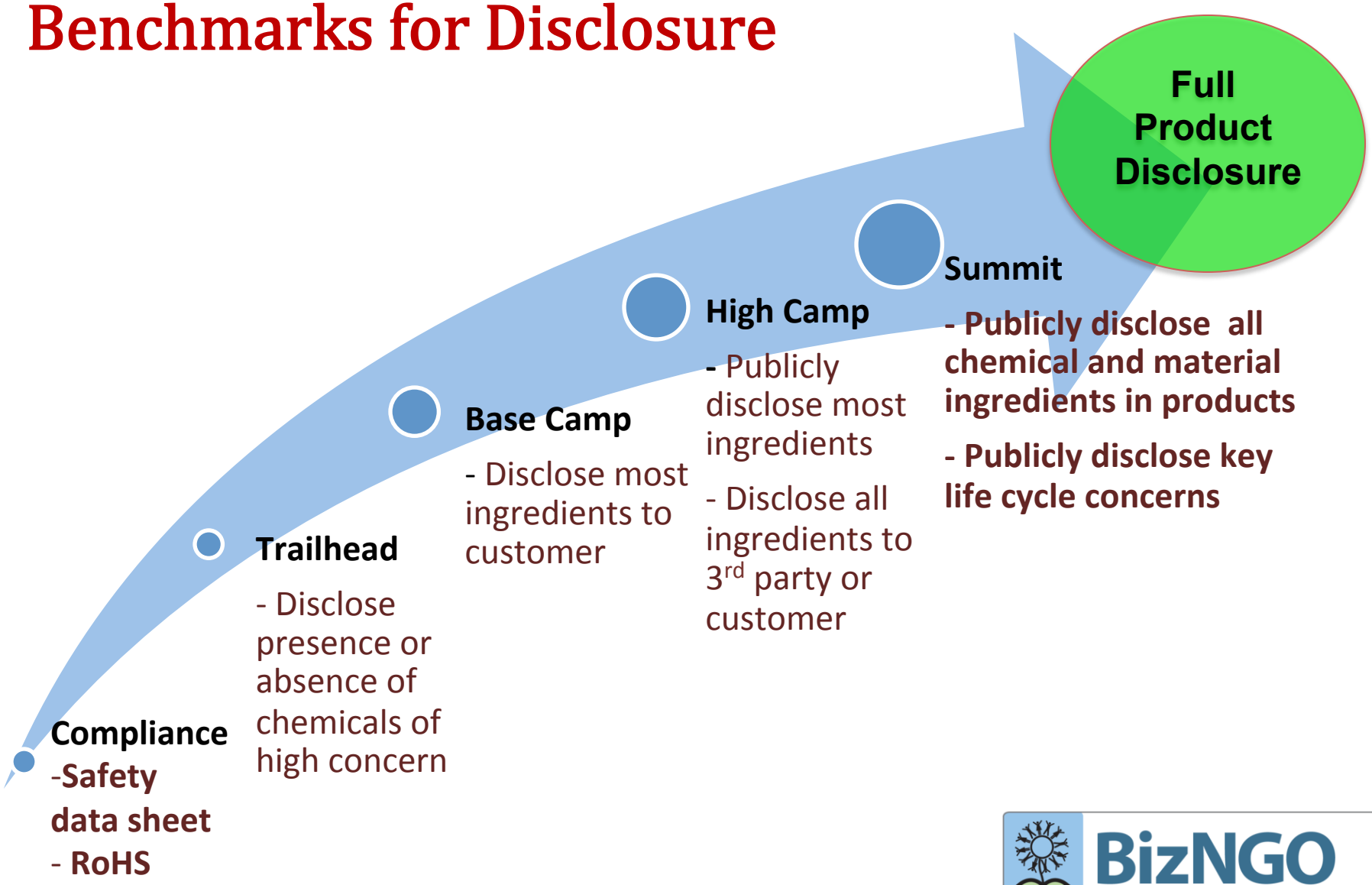
BizNGO Guide to Safer Chemicals –

Benchmarks for Disclosure



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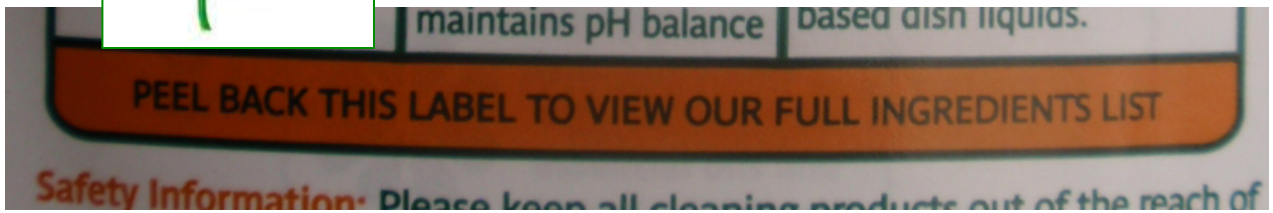
Disclosing Ingredients in Products

BOMcheck.net

IMDS Advanced Solutions Powered by hp

seventh GENERATION

GreenWERCS™



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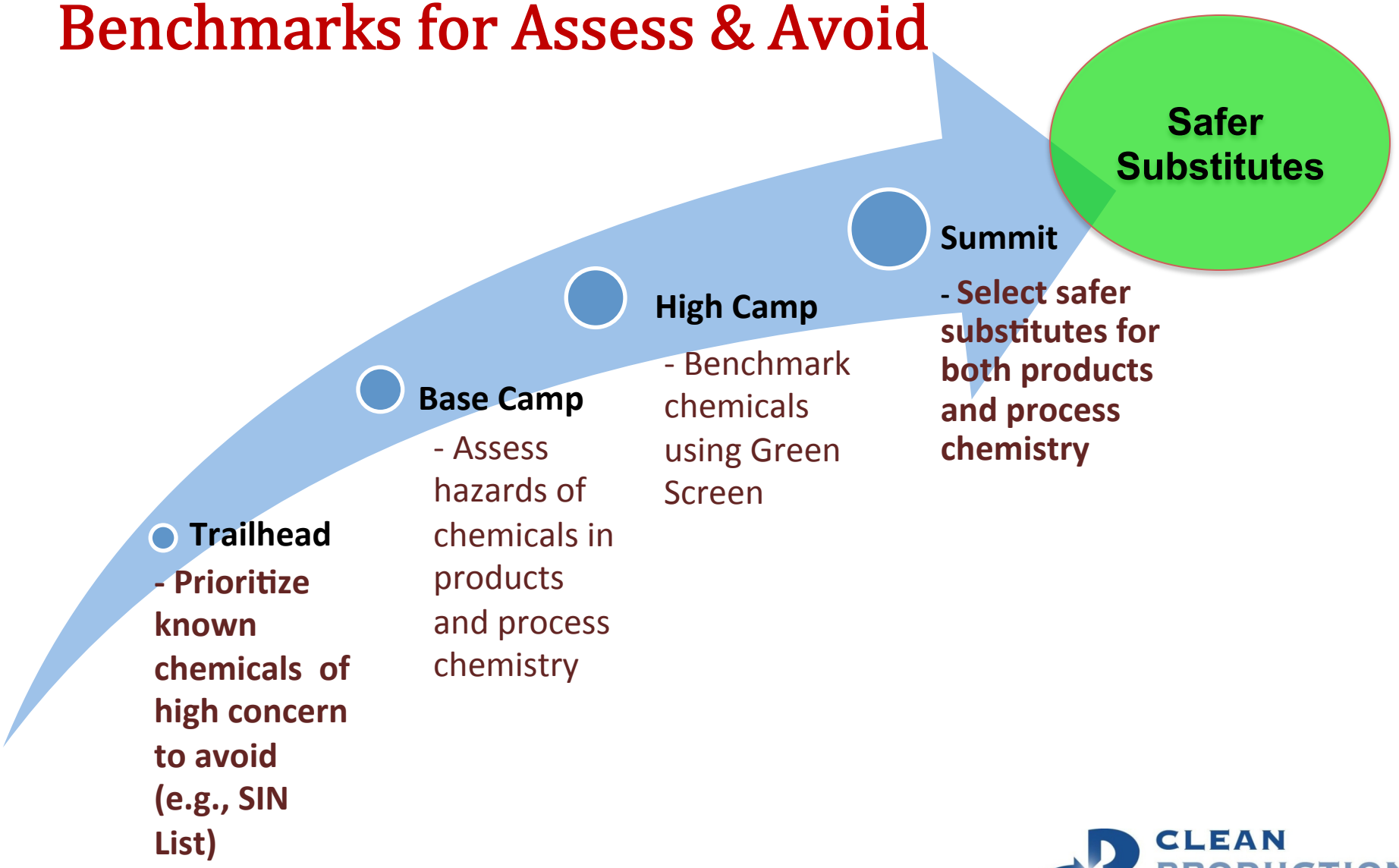
BizNGO Guide to Safer Chemicals –

Benchmarks for Assess & Avoid



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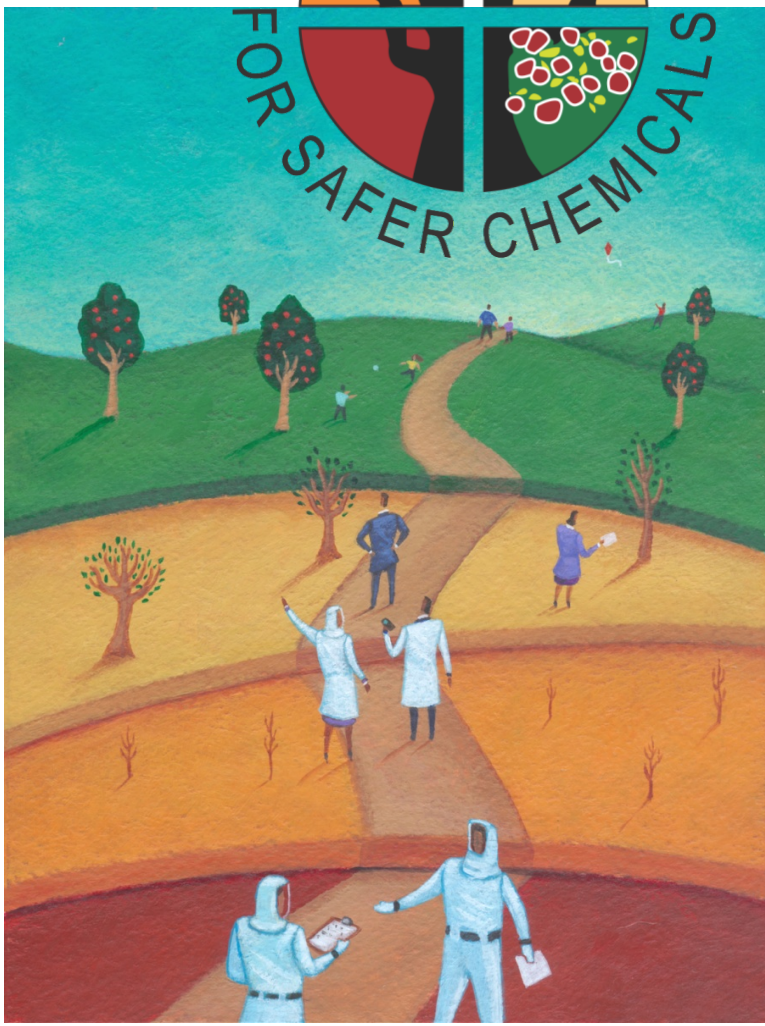
Green Screen

- Comparative chemical hazard assessment tool
- Open source and transparent
- Data driven, systematic and scientifically robust
- Necessary but not always sufficient for sustainability
- Builds from:
  - 12 Principles of Green Chemistry
  - US EPA DfE Alternatives Assessment model



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Identifying safer substitutes for BFRs, CFRs and PVC

Platform for Walmart chemical screening program

Basis for alternative assessments in state regulatory programs

Aligning hazard thresholds with EPA

How it works

1. Assess and classify hazards
2. Apply the benchmarks
3. Make informed decisions

Hazard Summary Table

Chemical	CAS#	% in Formulation	Human Health Effects													Ecotox.		Fate		Breakdown Products	
			Priority Effects																		
			Carcinogenic	Mutagenic	Reproductive	Developmental	Endocrine Disruption	Neurological	Acute Toxicity	Systemic/Organ Effects	Sensitization (skin)	Sensitization (respiratory)	Irritation/Corrosion (skin)	Irritation/Corrosion (eyes)	Immune System Effects	Acute	Chronic	Persistence	Bioaccumulation	Metabolites	Degradation Products
Decabromodiphenyl ether (decaBDE) - CAS# 1163-19-5																					
DecaBDE	1163-19-5	97	**M**	**L**	**L**	**M**	**M**	**M**	**L**	**L**	**L**	nd	**L**	**L**	nd	**L**	**L**	**vH**	**M**	penta- to nona-BDE	tri- to nona-BDE
Breakdown Products																					
PentaBDE	32534-81-9		nd	**L**	**M**	**M**	**H**	**M**	**L**	**H**	**L**	**L**	**M**	**M**	nd	**H**	**H**	**vH**	**vH**		
OctaBDE	32536-52-0		nd	**L**	**M**	**H**	**M**	**M**	**L**	**H**	**L**	nd	**L**	**L**	nd	**L**	**L**	**vH**	**M**	nd	low er PBDEs

Bold text = based on experimental data. ***Black italics text*** = based on analog data or expert judgment.

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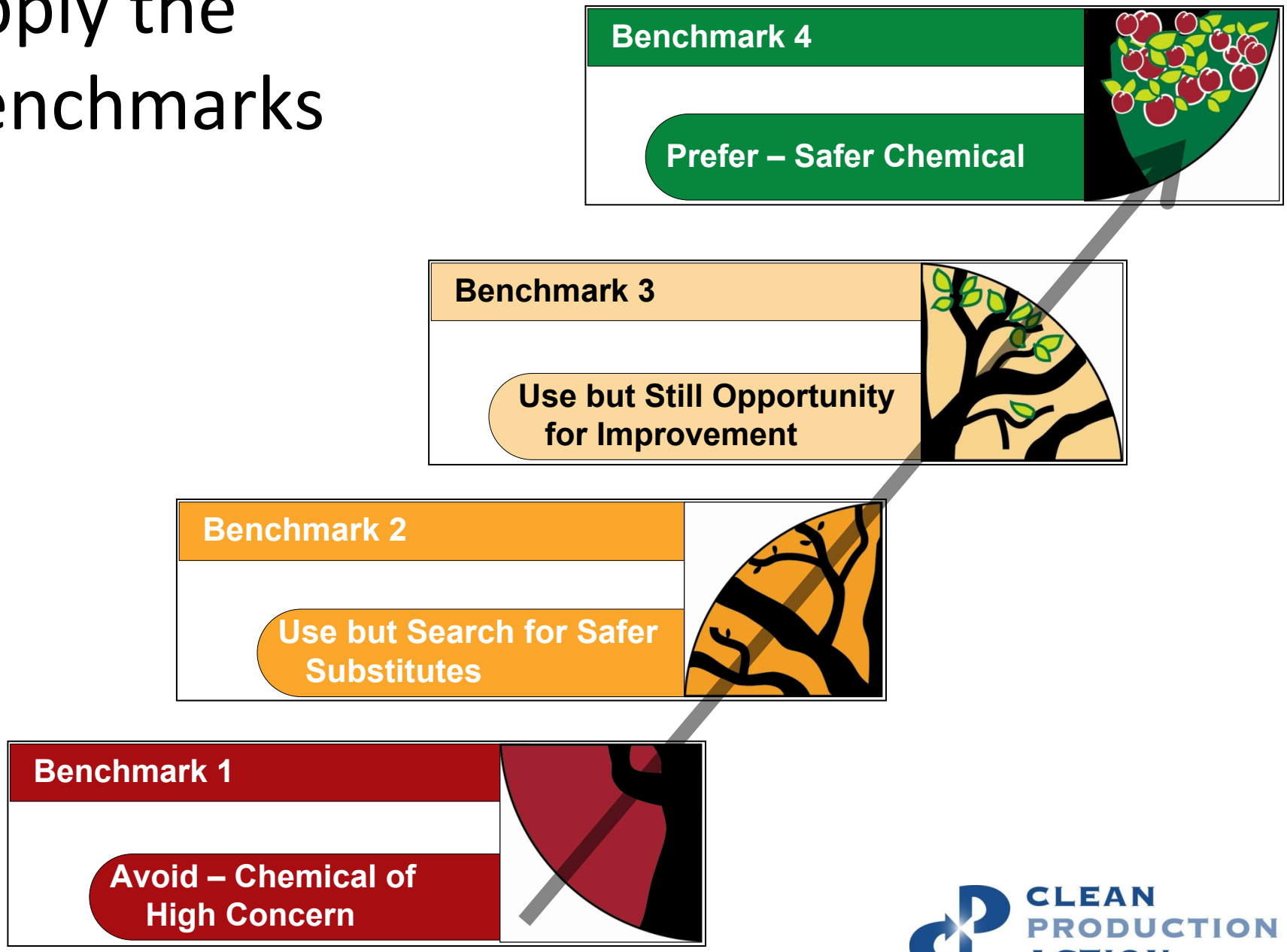
Apply the Benchmarks



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Benchmarking DecaBDE

Chemical	Reason for Benchmark	Benchmark
DecaBDE and Breakdown Products		
CAS# 1163-19-5 (decaBDE)	• vH - persistence • M - bioaccumulation • M - cancer, development, endocrine, neurological	Benchmark 2(a), 2(c), 2(d)
CAS# 32536-52-0 (pentaBDE)	• vH - persistence + bioaccumulation • H - acute + chronic ecotox. • H - endocrine disruption	Benchmark 1(a), 1(b), 1(c), 1(d)
CAS# 32536-52-0 (octaBDE)	• vH - persistence • H - reproductive effects	Benchmark 1(c), 1(d)

Chemical	Reason for Benchmark	Final Benchmark
DecaBDE and its breakdown products	Breakdown products: • ***pentaBDE*** = PBT, vPvB, vPT, vBT, + H-endocrine -- Benchmarks 1(a),(b),(c),(d) • ***octaBDE*** = vPT + H-developmental -- Benchmark 1(c), (d)	Benchmark 1: Avoid - Chemical of High Concern

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Make Informed Decisions

- Scores can be used without toxicology training
- Drives wider adoption of preferred materials across the supply chain
  - White list
  - Guide new product development
- Replacing materials multiple times is expensive

Trends in Chemical Management

- ↑ Transparency – disclose chemicals in products
- ↑ Responsibility -- Supply Chain and Life Cycle
- ↑ Demand for comprehensive hazard data on chemicals
- ↑ Demand for safer alternatives
- Leadership across many sectors, including: Health Care, Electronics, Buildings, Retail, Cleaning Products, Personal Care Products, Apparel & Footwear, Outdoor Industry

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Thank You!

Mark Rossi, PhD

Co-Director, Clean Production Action

Chair, BizNGO

Mark@CleanProduction.org

t) 781.391.6743