How Top Companies are Using GreenScreen

Hewlett-Packard Inc. and Steelcase

Webinar 1 - February 22, 2017

CLEAN PRODUCTION ACTION

Clean Production Action

Together, we're creating a safer and healthier future

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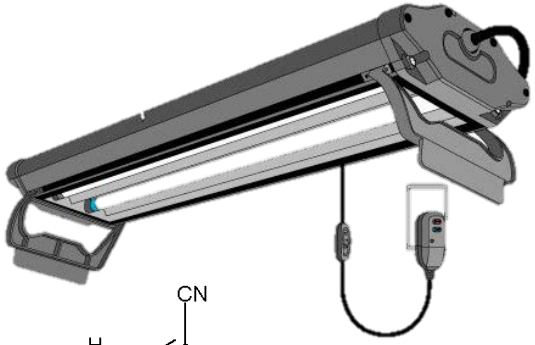
Webinar Objectives

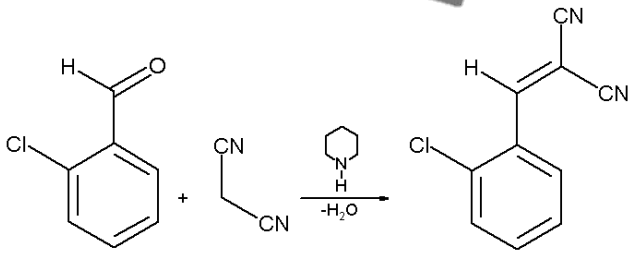
- Hear directly from leading businesses that use GreenScreen for Safer Chemicals about the value of GreenScreen to their business.
- Become familiar with GreenScreen training courses available to you, and the value of the training courses to attendees.

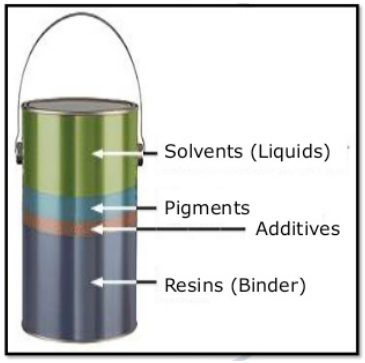
Webinar Agenda

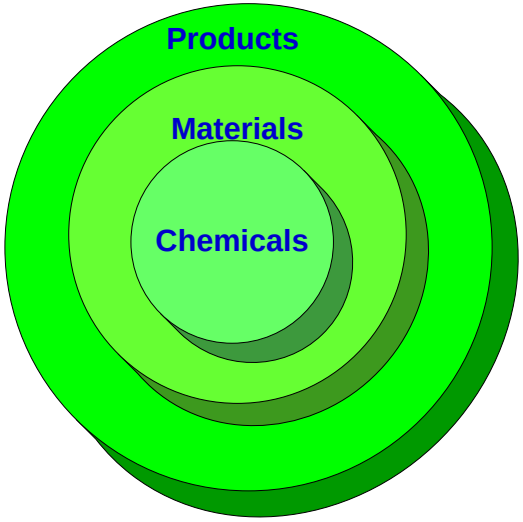
1. Introduction to GreenScreen
2. Industry Speakers
   - Jon Smeija, Steelcase
   - Cory Robertson, Hewlett-Packard Inc.
3. GreenScreen Training Offerings
4. Questions & Answers

Everyone Chooses Chemicals









- Chemicals are building blocks
- Chemical selection
  1. Direct
  2. Indirect

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Why Consider Chemical Hazard when Choosing Chemicals?

Avoid business risks

- Regulatory
- Financial
- Reputational

Save money

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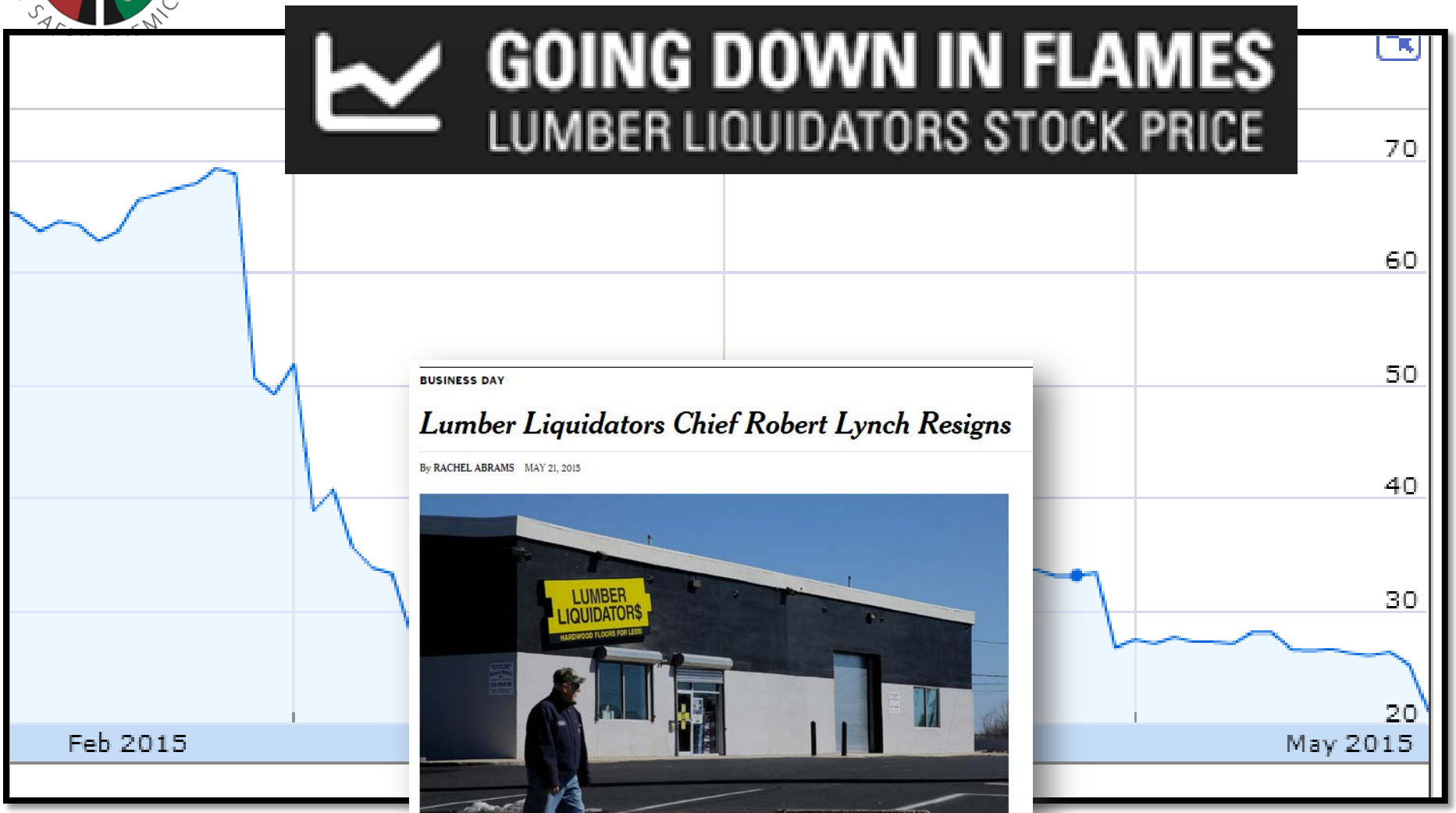
Example: Business Risk



BUSINESS DAY

Lumber Liquidators Chief Robert Lynch Resigns

By RACHEL ABRAMS MAY 21, 2015

A Lumber Liquidators store in Philadelphia. The company is battling accusations that it sold laminate flooring, manufactured in China, with unacceptably high levels of formaldehyde. Mart Slocum/Associated Press

Lots to Consider

Chemical Hazard is Complex

1. How toxic?

2. To humans? In what way(s)?

3. To the environment?

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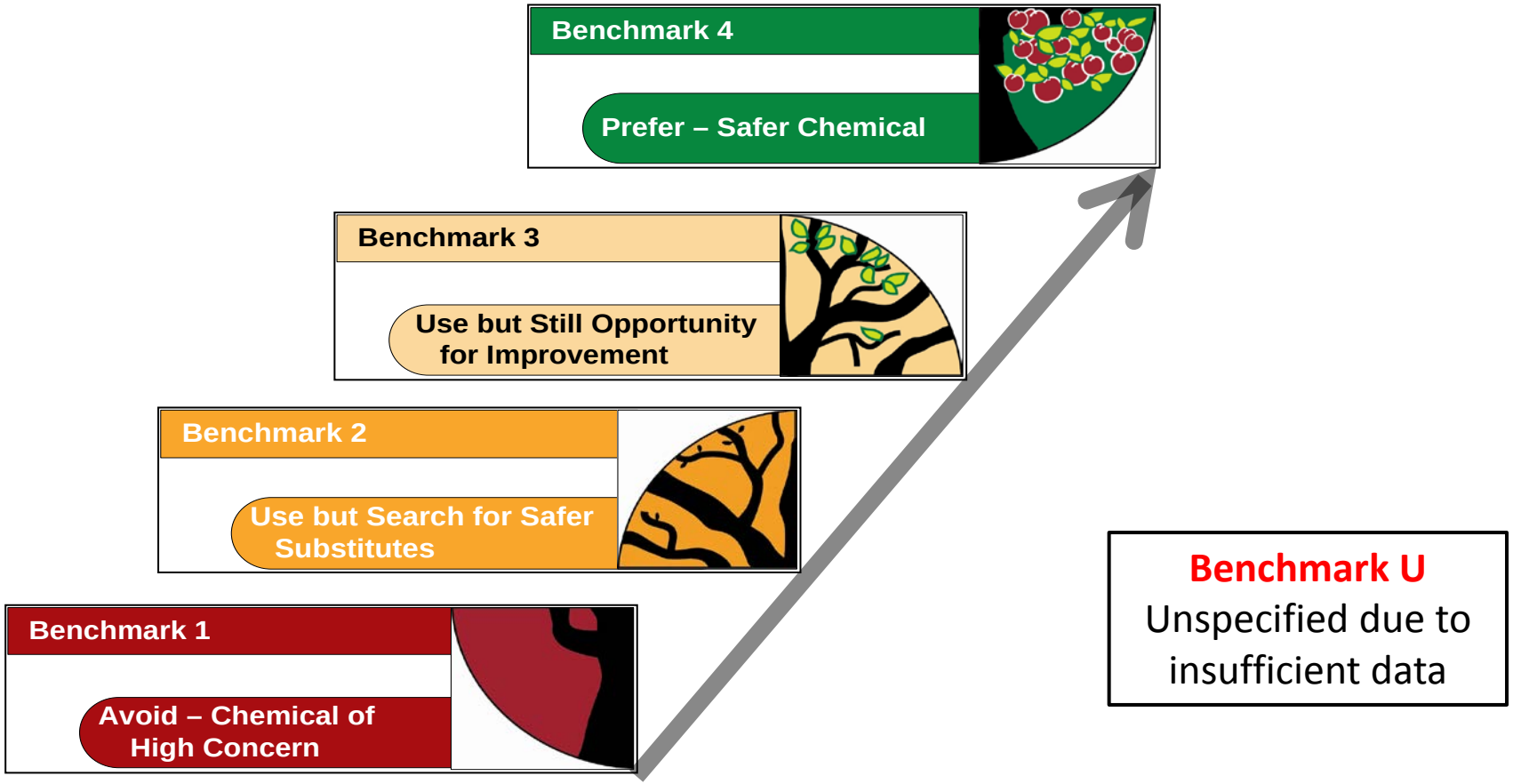
GreenScreen: Simple Score

GreenScreen provides a simple and consistent way to talk about chemical hazard.



Benchmark U
Unspecified due to insufficient data

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Hazard First Approach

Risk is a function of hazard and exposure

Reduce Risk by Reducing Hazard as a Priority

Hazard Assessment answers the question:

Which chemical is inherently safer/lower hazard?

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Value of Hazard First Approach

"A basic premise of Green Chemistry is that chemical risk is most effectively managed by reducing hazards because exposure controls can and do fail, products are used in unintended ways and end-of-life management of obsolete equipment is often problematic."

-H.A. Holder, P.H. Mazurkiewick, C.D. Robertson, C.A. Wray. Hewlett-Packard's Use of the GreenScreen® for Safer Chemicals. Chemical Alternatives Assessments. Royal Society of Chemistry Publishing. 2013

E-waste end of life fate and dioxin generation is a global concern (POPs)

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GreenScreen Tools
for Chemical Hazard Assessment

1. GreenScreen List Translator
   - Identifies many problematic chemicals
   - Review of lists only
   - Minimal time and expertise
   - Automated databases available

2. GreenScreen for Safer Chemicals
   - Identifies all problematic chemicals and safer alternatives
   - Review of all data and information
   - High level of time and expertise required to assess

Why GreenScreen?

- GreenScreen simplifies complex information.
  - It is designed to effectively identify and communicate the overall hazard profile of chemicals in a product or raw material.
- GreenScreen charts a path to safer chemicals economy.
  - The information output from this tool offers a clear pathway for assessing and decision making with respect to substituting safer chemicals and mitigating risk.
- GreenScreen builds confidence and collaboration in the supply chain.
  - This tool helps ensure the trust and confidence paramount to customer expectations for the safest products and materials.

Key Attributes of GreenScreen

- Transparent
- Comprehensive
- Scientifically robust
- Hazard-based
- Requires rigorous disclosure
- Developed by an NGO

Key Attributes of GreenScreen Results

- Offers standard approach for comparing chemicals based on intrinsic hazards
- Identifies hazardous chemicals AND safer alternatives
- Summarizes complex hazard information into straight-forward Benchmarks that facilitate clear communication
- Provides information to avoid *regrettable substitutions*
- Provides information to avoid *unintended consequences*

Steelcase and GreenScreen

Jon Smieja, PhD
Sustainable Design & Development Leader

Steelcase

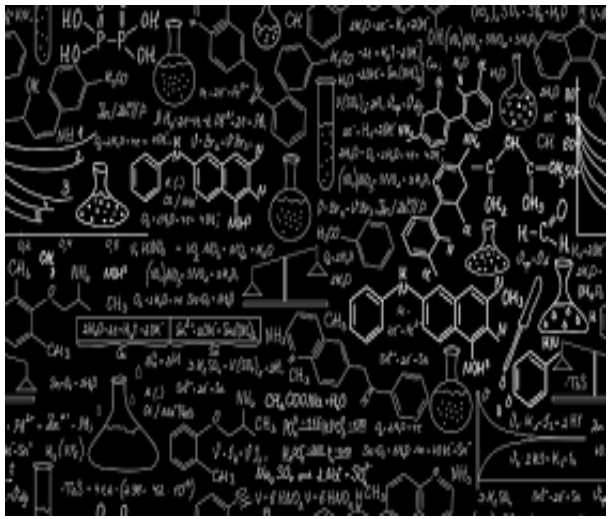
Steelcase: An Overview

For over 100 years, Steelcase Inc. has helped create great experiences for the world's leading organizations, across industries. We offer a comprehensive portfolio of architecture, furniture and technology products and services designed to unlock human promise and support social, economic and environmental sustainability. We are globally accessible through a network of channels, including over 800 dealer locations. Steelcase is a global, industry-leading and publicly traded company with fiscal 2016 revenue of $3.1 billion. We demonstrate all this through our family of brands – Steelcase, Coalesse, Designtex, PolyVision and turnstone.

Steelcase

JON SMIEJA

My role at Steelcase



- Joined the Global Sustainability team in 2013 in the role of Environmental Chemist
- In that role, served to connect with suppliers, product development teams, and customers on all things chemistry, hazard and toxicity
- Have since transitioned, slightly, to a Leader of Sustainable Design and Development role
- Now I lead our North American team responsible for product sustainability (chemistry/toxicity, life cycle assessments, recyclability, circular economy, etc.)

Steelcase

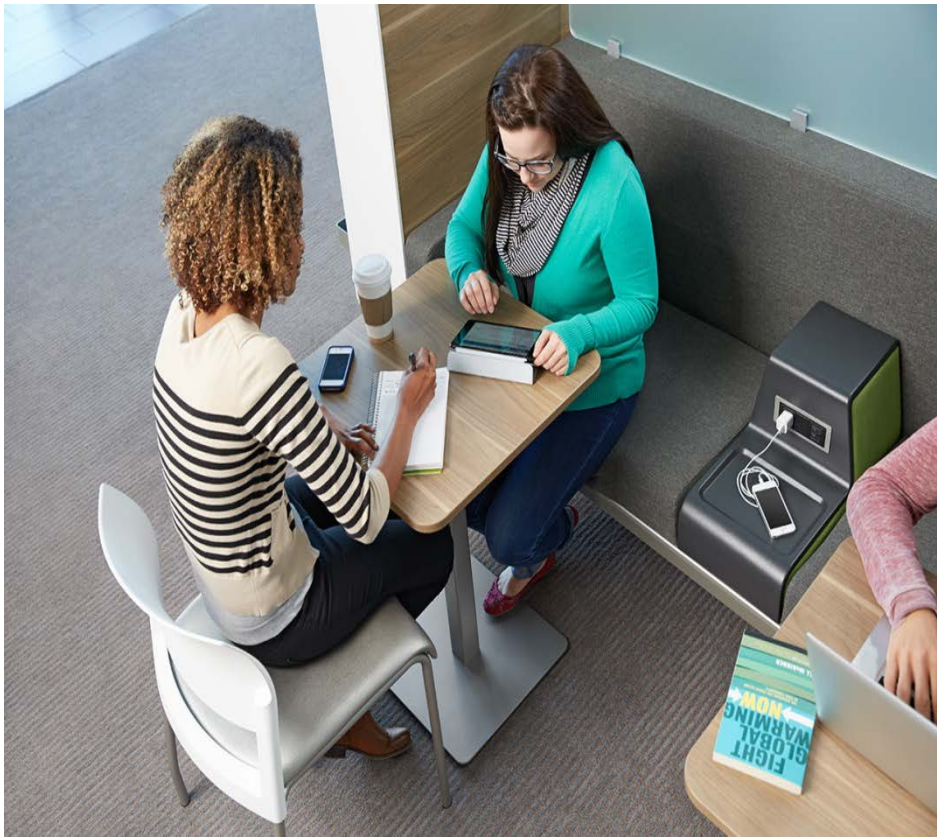
Drivers for GreenScreen

NOW

- Quick screens of chemicals
- Customer demands
- Product development questions… this material or that material?

FUTURE

- Regulatory demands
- Larger scale deployment of GreenScreen?



Steelcase

How Steelcase selected GreenScreen

- I participated in a full day GreenScreen training at a conference in Chicago before I got my job at Steelcase, and brought that experience with me.
- At Steelcase, we have a 10+ year history of working with the Cradle to Cradle program and assessing our materials and have >1,800 materials assessed and 50+ products certified.
- Our internal aspirations as well as demands from customers brought us to GreenScreen as a methodology because it is robust, transparent, and widely accepted in the market. We needed a way to tell our story in our own words.

Steelcase

How Steelcase uses GreenScreen

- Steelcase uses GreenScreen in some fashion every day:
  - What are the toxicity endpoints for this chemical?
  - What data exists to support that endpoint designation?
  - Between these two options, which chemical has a more favorable toxicity profile?
  - Are the claims we (and our competitors) are making supported by the data?
- We also use GreenScreen assessments completed by others as a means to compare chemicals. If looking beyond the benchmark score itself, expertise is needed to dig into the data by endpoint.

Steelcase

Value of GreenScreen to Steelcase

Steelcase has long been concerned about the chemicals in our products and how they affect environments and the people in them.

GreenScreen provides us with a tool to communicate our challenges, our progress, and our ideas about materials chemistry.

Steelcase

Value of GreenScreen Education

TO ME:

- More language to speak across industries
- Get brought into a lot of discussions as a result and have something to contribute
- More effective in my job

TO STEELCASE:

- Able to quickly screen chemicals to weed out worst actors and put data behind arguments to optimize
- Provides credibility to turning down other programs and propositions

Steelcase

Thank You

Steelcase

HP Inc.’s use of GreenScreen®

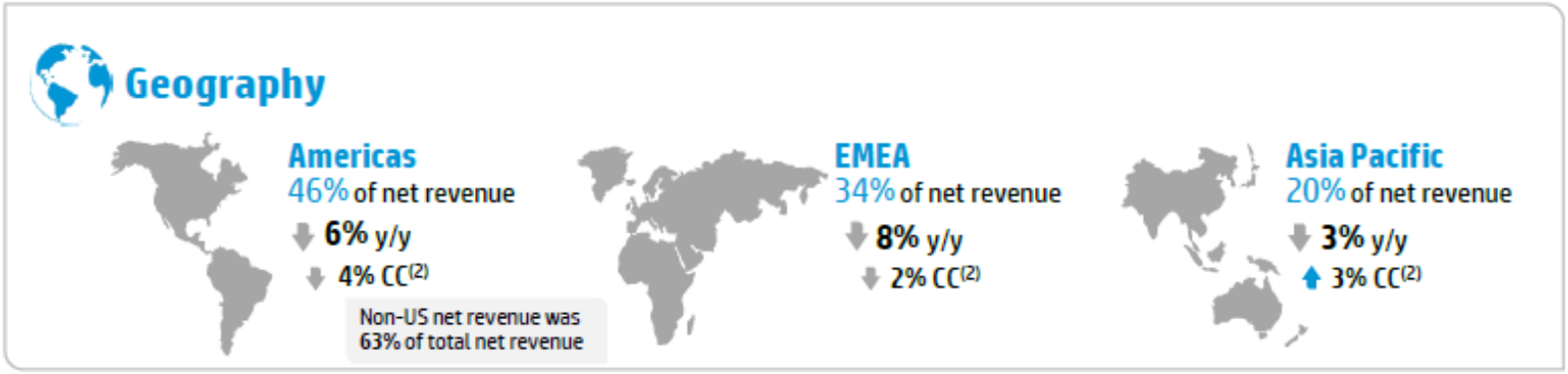
Cory Robertson
Environmental Chemist
Sustainability & Product Compliance Organization
February 2017

About HP

- Electronics Sector
- $50B revenue
- Consumer, SMB & Enterprise
- ~50,000 employees
- HP shipped 64M PCs and 52M Printers in 2010
- 14,400 per hour

75 YEARS

Make it matter



My Role at HP

- Environmental Chemist
- Materials Sustainability and Compliance Org.
- Subject Matter Expert for materials
  - Restricted Substances
  - Alternative Materials
  - Substances of Concern (example REACH SVHCs)
- Battery Compliance

Restriction of Hazardous Substances Directive (RoHS)

The Law That Changed Everything

EU 2006

Lead (Pb)

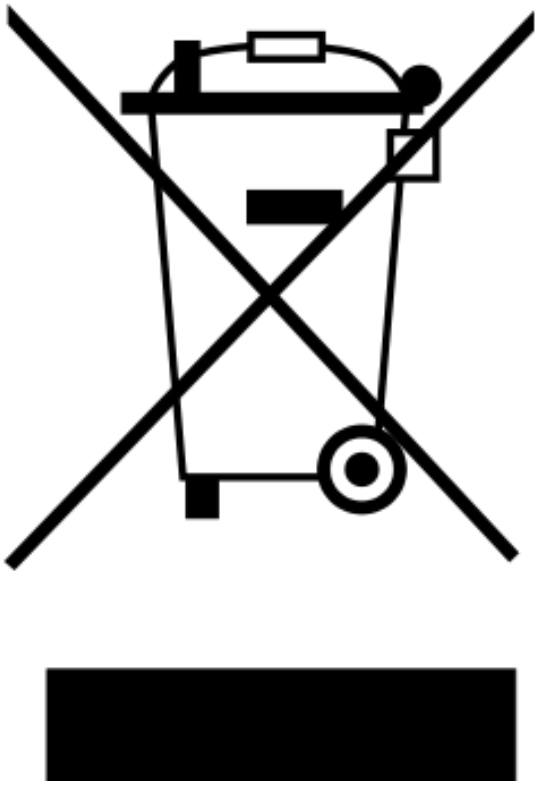
Mercury (Hg)

Cadmium (Cd)

Hexavalent Chromium (Cr^{6+})

Polybrominated Biphenyls (PBB)

Polybrominated Diphenyl Ethers (PBDE)



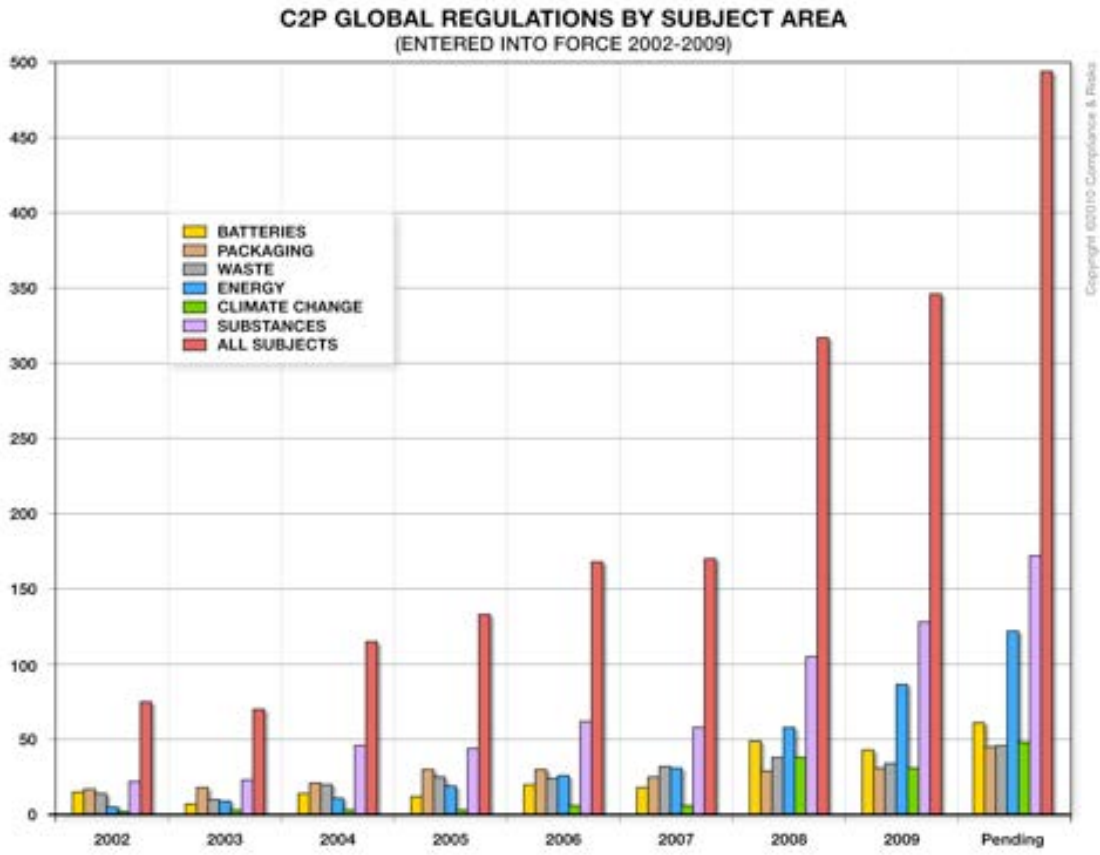
Logo from companion regulation Waste Electrical and Electronic Equipment (WEEE) Directive

Are the alternatives better?

More Regulations Coming

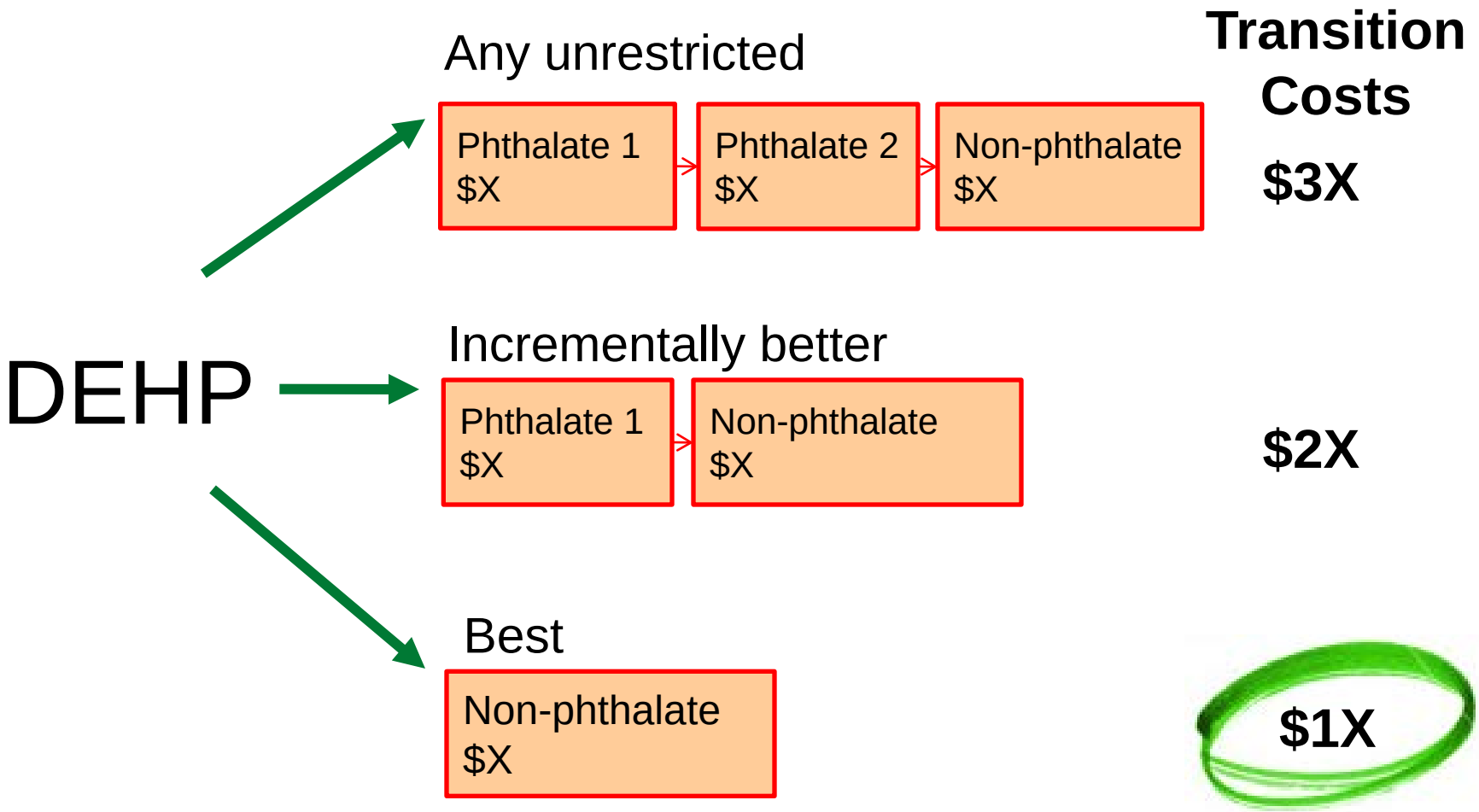
Substance restrictions have become a major class of regulation for finished electronic products

- More substances
- More jurisdictions
- More reporting



HP wants to use materials no one cares about (plug for Chemical Footprint Project)

Avoiding extra substitutions saves money



Why GreenScreen®?

Aligns with Regulators

Chemical	CASRN	Human Health Effects									Aquatic Toxicity		Environ-mental	
		Acute Toxicity	Skin Sensitizer	Cancer Hazard	Immunotoxicity	Reproductive	Developmental	Neurological	Systemic	Genotoxicity	Acute	Chronic	Persistence	Bioaccumulation
Additive Flame Retardants[3]														
Aluminum hydroxide														
Aluminum hydroxide	21645-51-2	L	L	L	M	L	L	M	L	L	H	M	H^R	L
Exolit OP 930 (phosphoric acid, diethyl-, aluminum salt) (Clariant)														
Exolit OP 930	225789-38-8	L	L	L	M	L	M	M	L	L	M	M	H^R	L
Melapur 200 (Melamine polyphosphate) (Ciba) [4]														
Melapur 200	218768-84-4	L	L	L	L	L	L	L	M	M	L	L	M	L
Polyphosphoric acid	8017-16-1	L	L	L	L	L	L	L	L	L	L	L	L	L
Melamine	108-78-1	L	L	L	L	L	L	L	M	M	L	L	M	L
Silicon dioxide amorphous[5]														
Silicon dioxide amorphous	7631-86-9	L	L	L	L	L	L	L	H§	L	L	L	H^R	L
Silicon dioxide crystalline[5]														
Silicon dioxide crystalline	1317-95-9	L	L	H‡	H§	L	L	L	H§	H§	L	L	H^R	L

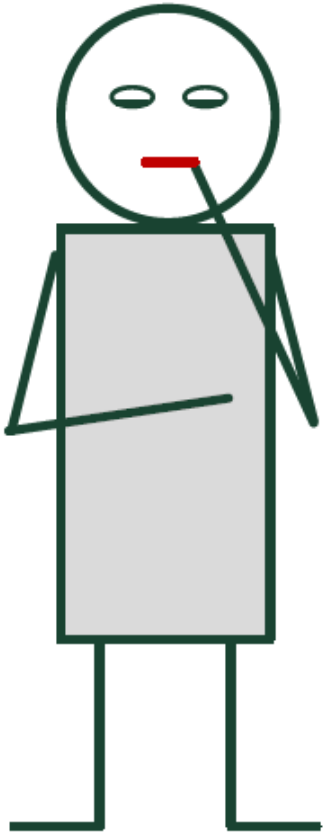
GHS

Why GreenScreen®?

- Meaningful results
- Many faces of the GreenScreen®
  - Open source, anyone can use the method
  - Training available for Authorized GreenScreen Practitioners
  - 3rd Party assessors available
  - Certified assessments are available to suppliers
- Simple 1 to 4 score and scientifically robust

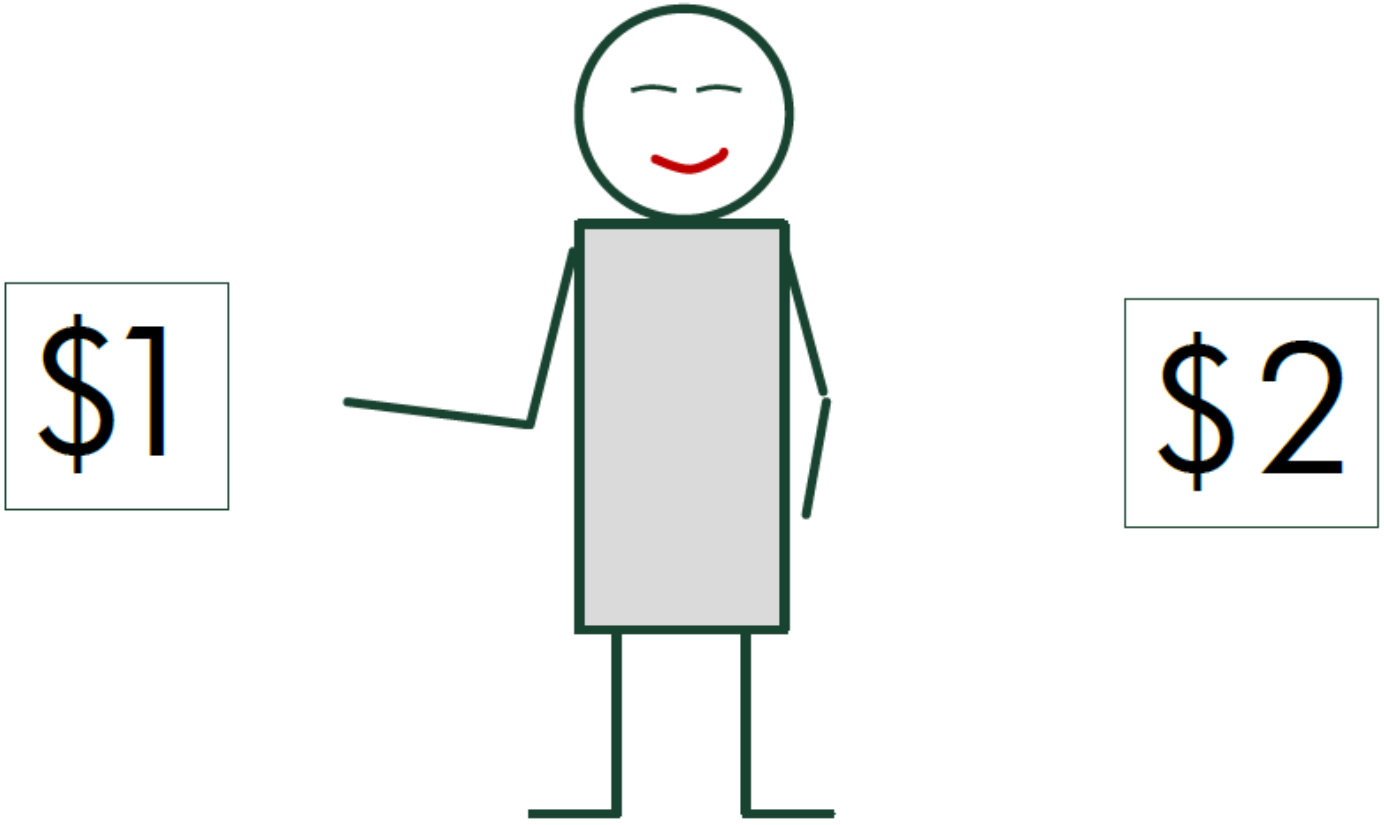
Procurement is Very Good with Numbers

$1



$2

You get a raise!

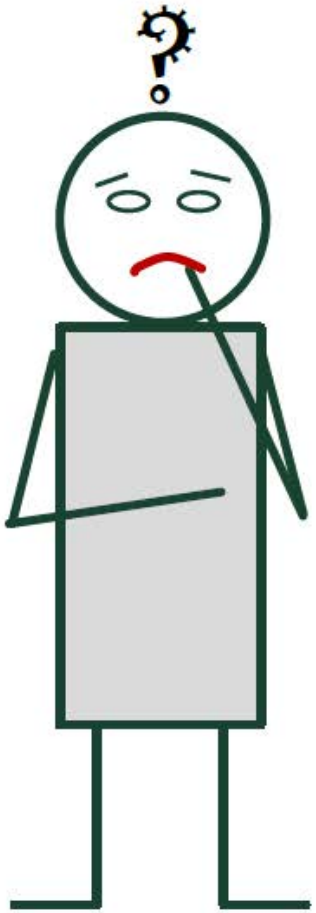


Not as Good with Environmental Criteria

Aquatic Toxicity

R50/53

Bioaccumulation



Persistent

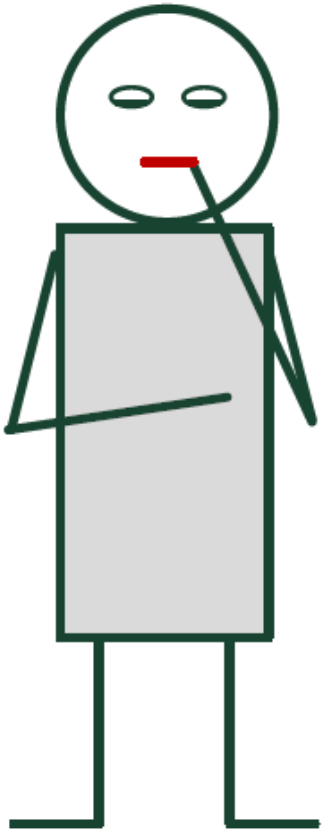
LD50 = 2150mg/kg

Mutagenicity

Helps Procurement Make Decisions

Benchmark 4

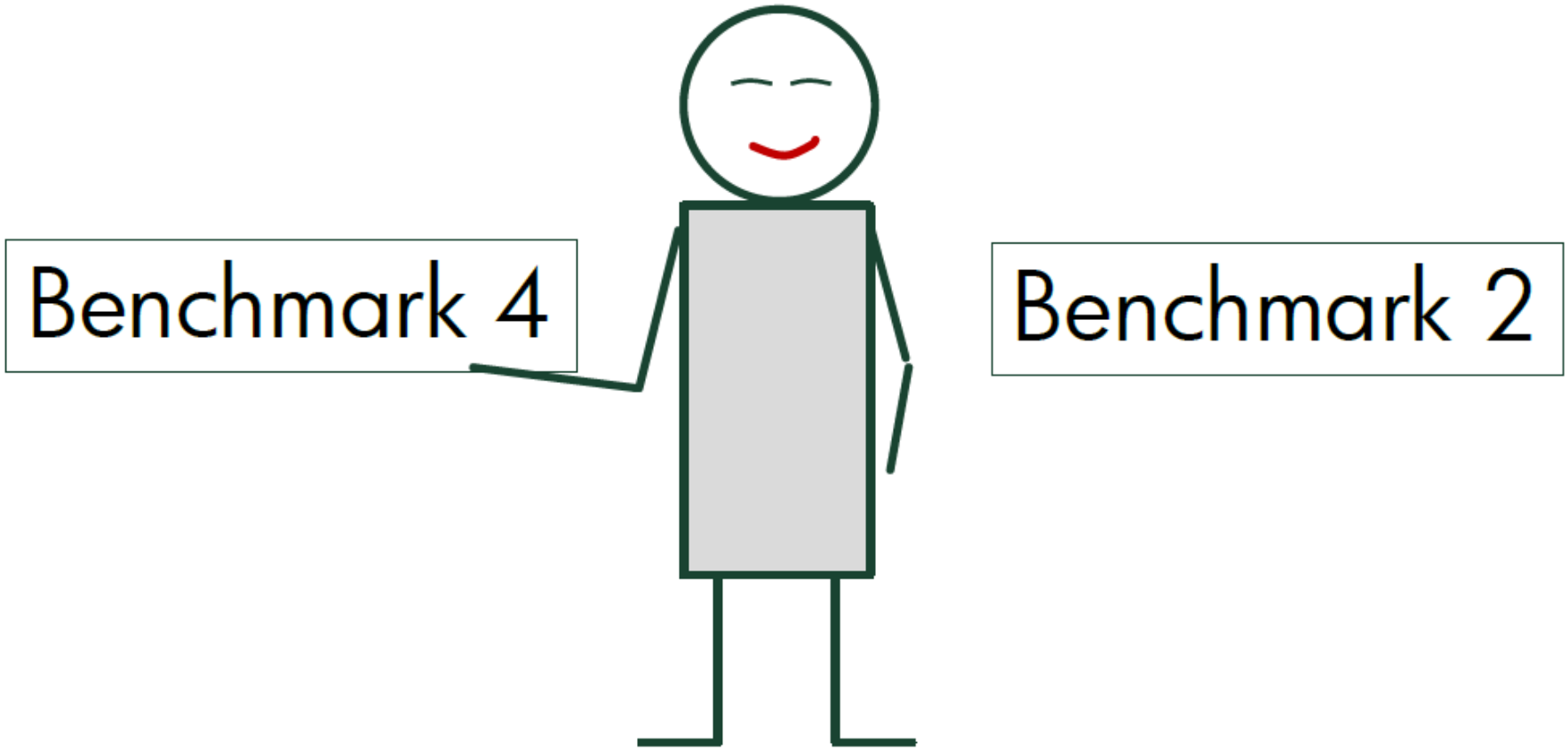
$1



Benchmark 2

$1

You get a raise!

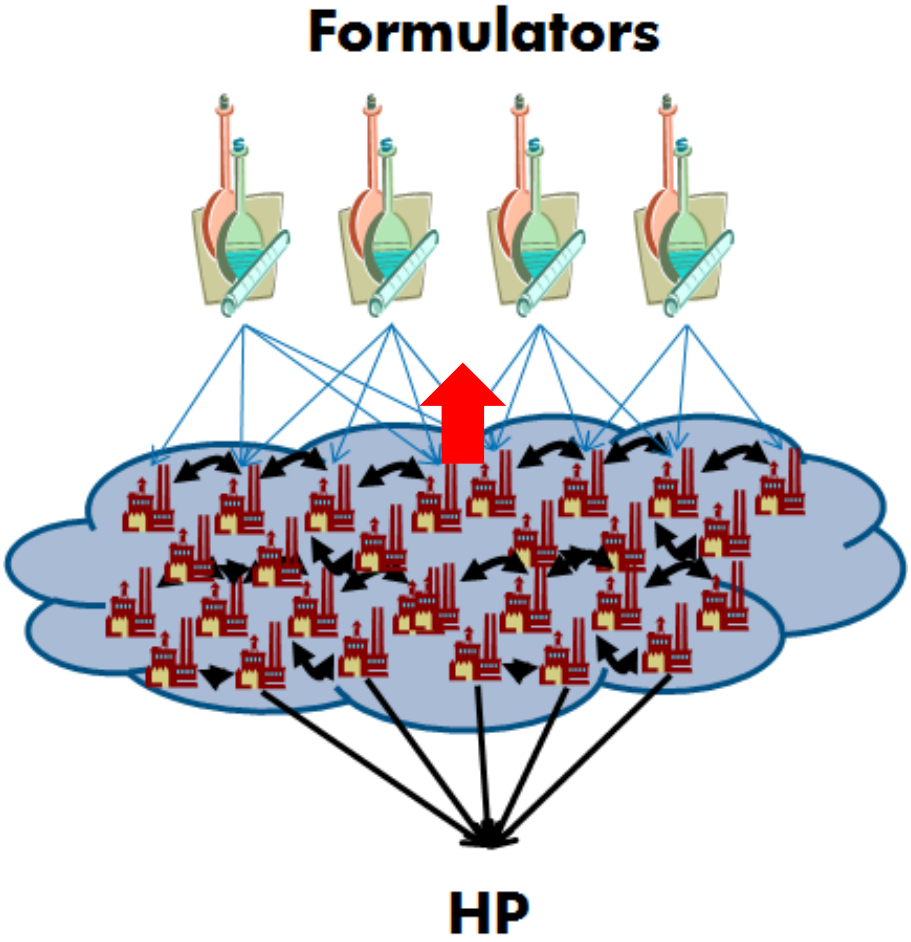


PVC-Free Power Cord GreenScreen® Pilot Circa 2009

- PVC being phased out voluntarily
- GreenScreen® mandatory, in addition to all standard and regulatory requirements
- Full disclosure under CDA
- Supplier Training
- Over 30 materials screened
- Approved material list

What has changed?

If we articulate environmental requirements to our suppliers we get better materials



Ecolabels

TCO Certified Accepted Substances List

Substance name	CAS	Benchmark	Sunset date	Report public	Comments
Aluminum diethylphosphinate	225789-38-8	2	-	Yes	
Aluminum Hydroxide	21645-51-2	2	-	Yes	
Melamine Polyphosphate	15541-60-3	2	-	Yes	
Poly[phosphonate-co-carbonate]	77226-90-5	2	-	Yes	
Resorcinol Bis-Diphenylphosphate	125997-21-9; 57583-54-7	2	-	Yes	Interchangable CAS numbers
Red Phosphorus	7723-14-0	2	-	Yes	
Bisphenol A diphosphate	181028-79-5; 5945-33-5	2	-	-	Interchangable CAS numbers
Substituted Amine Phosphate mixture	66034-17-1	2	-	Yes	
Triphenyl Phosphate	115-86-6	2	-	Yes	
Tetrakis (2,6-dimethylphenyl)-m-phenylene biphosphate	139189-30-3	2	-	-	
Siloxanes and silicones, di-Me, di-Ph, polymers with Ph silsesquioxanes	68648-59-9	2	-	-	
Ammonium Polyphosphate	68333-79-9	3	-	Yes	
Magnesium Hydroxide	1309-42-8	3	-	Yes	
Polyphosphonate	68664-06-2	3	-	Yes	

All substances of a Flame retardant mixture shall be accounted for. Non-accepted components shall not exceed concentration levels of 0.1% by weight of the flame retardant. All substances on this list have been reviewed and the benchmark set by CPA licenced profilers

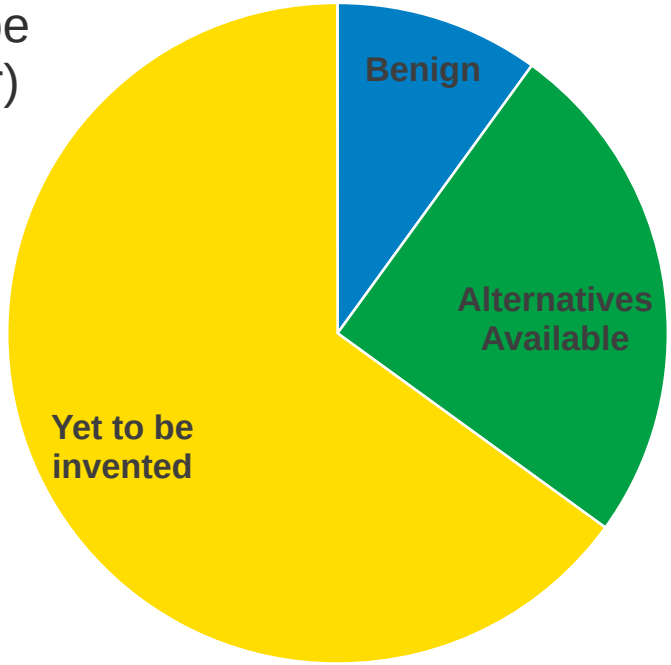
Ecolabels

Value of GreenScreen® Training

- Personalized coaching and feedback while conducing GreenScreen assessments for Practicum
- Gained greater appreciation for data preferences and documenting data sources for a high quality assessment
- Adds credibility personally and to GreenScreen® as a whole
- Ecolabel requirements

Future

Chemical Landscape
(from John Warner)



- Ecolables
- Repository & White Lists
- More Users – Infrastructure needed
- Lots of Benchmark 2 chemicals
  - Superior performance
  - Superior Cost
  - Better for human health & the environment

Thank You !

Education & Training

- Clean Production Action provides a broad range of educational materials in the forms:
  - In-person trainings
  - Live web-based trainings
  - Online trainings
  - Webinars
- Trainings are designed to help you:
  - Reduce your chemical footprint
  - Understand transparency in your supply chain
  - Identify hazardous chemicals and safer alternatives

GreenScreen Training Offerings

http://www.greenscreenchemicals.org/learn/training

GreenScreen for Safer Chemicals	Delivery	Training Hrs	Cost
Introductory Webinars	Recording	1 each	FREE
Introductory Course	Online	6	$599[1]
Advanced Topics Course	Live web-based	14	$3000
Authorized Practitioner Program	Live web-based	20+	$6000

GreenScreen List Translator	Delivery	Training Hrs	Cost
Introductory Webinars	Recording or Live	1 each	FREE or $19
Introductory Course	Live web-based	3	$389
Introductory Workshop	In-person	6	$ 79[2]
Advanced Course	Live web-based	3	$425

1- This course is currently FREE to you for a limited time due to generous funding from California Department of Toxic Substances Control and a USEPA Pollution Prevention Grant.

2- This course is offered at a nominal fee and is sponsored by Washington State Department of Ecology and a Foundation grant.

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Upcoming Trainings

1. GreenScreen Advanced Topics Course
   - Register NOW until March 15
   - Offered once per calendar year
   - 2017 Course starts April 17
   - Online Introductory Course as prerequisite
   - NEW “A la carte” offering by topic of interest
2. Authorized GreenScreen Practitioner Program
   - Apply NOW until March 15
   - Professional credentialing
   - Support your organization in reducing cost, increasing sales, and reducing risk
   - Several bullets above also apply
3. GreenScreen List Translator Workshop
   - March 15 in Seattle, WA
   - June 6 in Portland, OR

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Question & Answer

Contact Us

Website: http://www.greenscreenchemicals.org/

GreenScreen Email: greenscreen@cleanproduction.org

Training Email: training@cleanproduction.org

Shari Franjevic
Education & Training Leader
Shari@cleanproduction.org

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Thank You for Participating!

How Top Companies are Using GreenScreen

Next Webinar in the series:

Webinar 2 - February 28, 2017

GOJO, Roxul, Valspar

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