



DESIGN CHAIN
ASSOCIATES

Environmental Properties: Common Issues & Approaches to WHN

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ACTION AND REACTION

Developing a sustainable approach to emerging chemical issues

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Overview

□ Agenda

- Regulatory Trajectories
- Product Design Today
- What Needs to Change Across Industries
- Impacts of Change: Supply Chain

Other Regulatory Trajectories

- ❑ Energy Use
 - Throughout the entire product lifecycle
 - EuP, etc.
- ❑ Waste Reduction/Elimination, Lifecycle extension and Recycling
 - Throughout the entire product lifecycle
 - WEEE, Battery Directive, etc.
- ❑ Material Restriction and Replacement
 - From Substance to Products
 - REACH
- ❑ Non-Regulatory Too:
 - EPEAT
 - IEEE-1680 Standard for government/industry green procurement
 - Wal-Mart
 - “Sustainable Electronics” initiative

Product Design Today

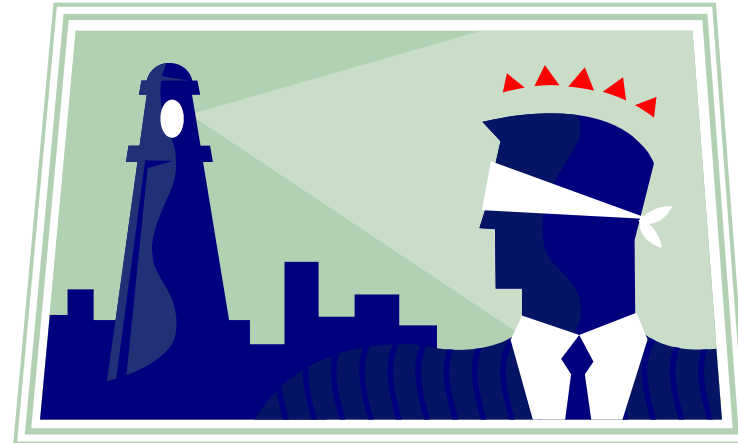
- ❑ Product Design fundamentally focuses on a few technical attribute classes for components/materials
 - Form/Fit/Functional
 - Including quality/reliability attributes
 - Mechanical
 - Thermal
 - Electrical
 - Optical
- ❑ Business attributes for suppliers/components/materials are also usually considered
 - Cost
 - Leadtime
 - Strategic Roadmap alignment
 - Ramp capability
 - Etc.



The Industry Blind Spot

- ❑ Environmental Attributes
 - Impact of products on the environment

- ❑ Including
 - Material Attributes
 - Energy Attributes
 - Waste Attributes



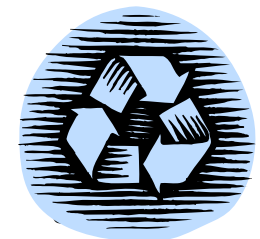
KEY POINT!

Ignored until now, these are **RIPE** for optimization and competition

Common Thread: Environmental Properties Rarely Considered in Design

- ❑ Specific Material Attributes
 - Toxicity
 - Eco-Toxicity
 - Energy Use/Energy Recoverability
 - Recyclability/Desirability

- ❑ Product Energy/Waste Attributes
 - Energy Use
 - Modularity/upgradeability
 - (for lifecycle extension)
 - Recyclability/Desirability



Supply Chain Challenges and Impacts

- ❑ Supply Chain now needs to provide these properties
 - No defined/identified/agreed upon standards to measure attributes or transfer/provide data
- ❑ Current Supply Chain designed w/o environmental considerations
 - Any change to requirements will have negative & positive impacts
- ❑ Expect to have to realign your supply chains with your revised product requirements
 - Define requirements and expectations
- ❑ Assign resources to evaluate supply chain capabilities to new requirements & engage with supply base

Thank You For Your Attention

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