



# Alternatives Assessment Pilot and Principles

BizNGO Annual Meeting

Helen Holder / December 2012

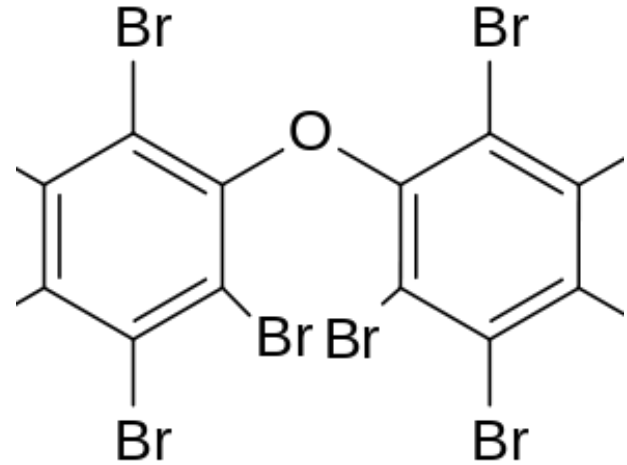
# Agenda

## DecaBDE/HBCD Alternatives Assessment pilot

- Purpose
- Scope
- Status
- Phase 1 findings and challenges
- Phase 2 findings and challenges

## Principles of Sustainable Alternatives Assessment

## Suggestions for guidance documents



Decabromodiphenyl ether

# BizNGO Chemical Alternative Assessment Protocol

Released 2011

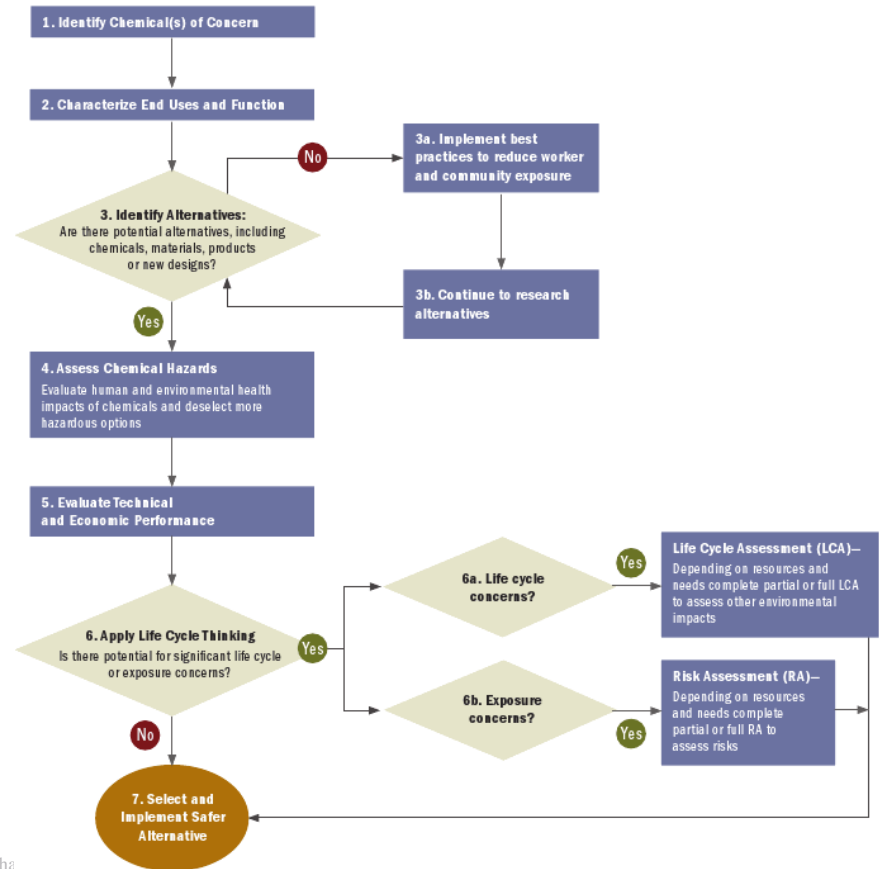
– Approach for evaluating alternatives to chemicals of concern

– Has similarities to Article 5 (and HP) approaches

– Phased/ordered analyses

– Hazard first

– Delay LCA and exposure to later stage

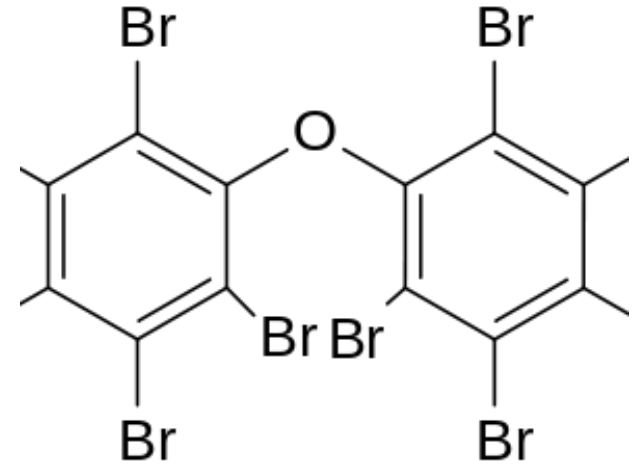


# Safer Consumer Product Alternatives Analysis

## BizNGO creating model AA for PBDEs and HBCD for electronics enclosures

•Chairs: Cheri Peele and Cory Robertson

Purpose: Gain useful experience to inform public comments on SCP regs and guidance documents by completing an Alternatives Analysis that meets requirements of Article 5



Decabromodiphenyl ether

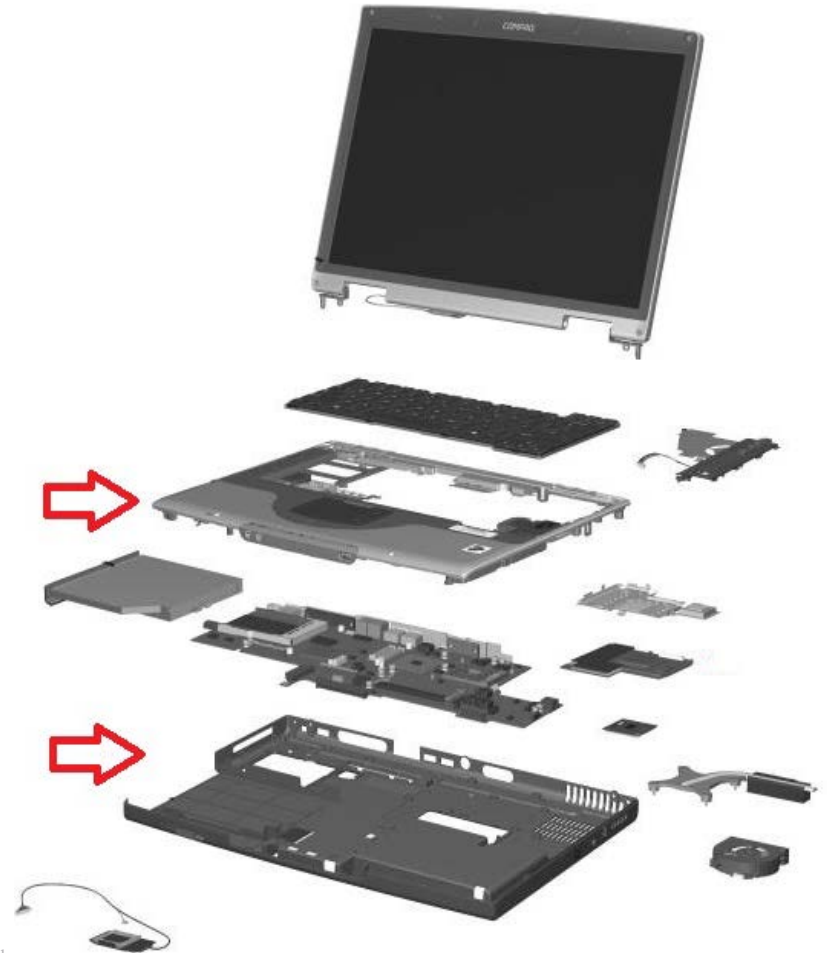
# Priority Product and Scope

## Priority Product/Chemical of Concern:

Electronics enclosures containing PBDEs or HBCDD

“Electronics enclosures” are defined as the external housings of electrical and electronic products. The Alternatives Analysis Threshold of **0.01%wt** applies to the homogenous plastic material(s) comprising the enclosure.

- Choice of PBDEs and HBCD allowed team to draw from substantial existing work, including EPA and WAstate



# SOP PBDE/ HBCD Alternatives Analysis Pilot

## Status

- Phase 1 “done”
- Submitted to “department”
  - Meg Whittaker
  - Cal Baier-Anderson
- “Department” to review submission
- Comments being provided this week



# Phase 1 Process Observations – AA Threshold

- AA Threshold initially set to 0.1%wt in the homogenous plastic enclosures (same as ROHS)

- Adjusted to 0.01%wt because recycled plastic content can result in DecaBDE amounts between 0.01% and 0.1%



The question of whether a non-functional, contamination level of DecaBDE would be acceptable is more suited to risk assessment/LCA than hazard assessment, so this issue was deferred to Phase 2.

# Phase 1 Process Observations – Many Alternatives

## PBDE/HBCD have many alternatives

- Identified over 106

## When there are many alternatives:

- Group alternatives and analyze a representative from the group
- Allow any reason for de-selection in first round, with explanation

## Objective is to find better alternatives to a CoC, not necessarily the “greenest”

- Goal of Phase 1 is to eliminate equal or worse hazard, so as long as goal is met, any alternative can be dismissed in Phase 1

<b>MDH</b> - Magnesium di-hydroxide	DfE Hazard Table, Known Alternative
<b>RDP</b> Resorcinol bis (diphenyl phosphate)	DfE Hazard Table, Known Alternative
<b>TPP</b> - triphenyl phosphate	DfE Hazard Table, Known Alternative
Zinc Borate	DfE Hazard Table, Known Alternative
Aluminum housing material	Material Change
Added sheet metal fire enclosure	Material Change
High PC content PC/ABS	Material Change
Tris-(2-ethylhexyl) phosphate	Representative--Alkyl Phosphate Group
silicon dioxide	Representative--Filler Group
<b>ZnHS</b> - Zinc Hydroxystannate	BFR Synergist
Antimony trioxide	BFR Synergist
<b>APP</b> Ammonium Polyphosphate (coated)	Duplicate
<b>APP</b> Ammonium Polyphosphate (with synergists)	Duplicate
Boehmite (Aluminium oxide hydroxide)	Group--Aluminum tri-hydroxide
<b>DEEP</b> - Diethylethane phosphonate	Group--Alkyl Phosphate
Expandable graphite	Group--Filler

Excerpt from list of alternatives





# Number of “Approved” Alternatives

## Regs

- Structured around identifying and adopting a single alternative
- Easiest way to meet requirements is to find and analyze a single alternative that is better than the CoC

## Reality

- Supply chain uses many different materials (and alternatives)
- Large list of approved materials is good for business and good for the environment
- Downstream users have limited ability to force the use of a single alternative in supply chain
  - What happens if a single alternative is evaluated and approved, but then is not widely adopted?



# Phase 1 Process Observations – Phase 2 Work Plan

Final requirement of Phase 1 is a work plan for Phase 2 of the analysis

Two major issues:

- 1) Minimum analysis for Phase 2
  - What kind of analysis is required?
  - How do you know when you're done?
- 2) What's an unacceptable trade-off?



# Phase 2 – Required Analyses

## Some options for meeting requirements:

- Narrative treatment of A-Mfactors
- Full formal LCA followed by full risk assessment of each hotspot/increase
- Comparative life cycle thinking followed by...something (exposure? risk? what type of analysis?)
- Certain eight state (IC2) modules



•How do you know when you're done?



# Complexity vs Parsimony

## Arguments for maximizing analyses

- Desire to be thorough and make high confidence decision
- Conclusions need to withstand scrutiny and peer review
- Need to defend against single issue criticism/activism
- Need to meet statutory requirements
- Maximum employment for consultants

## Arguments for parsimony in analyses

- Large number of factors can result in less differentiation between options
- Less differentiation increases chance of cognitive bias in decision making
- Resource and time constraints
- Perfect model doesn't exist
- Maximum analyses can still result in unforeseen consequences

\*Principle of “parsimony” in statistics – the ideal of explaining phenomena using fewer parameters

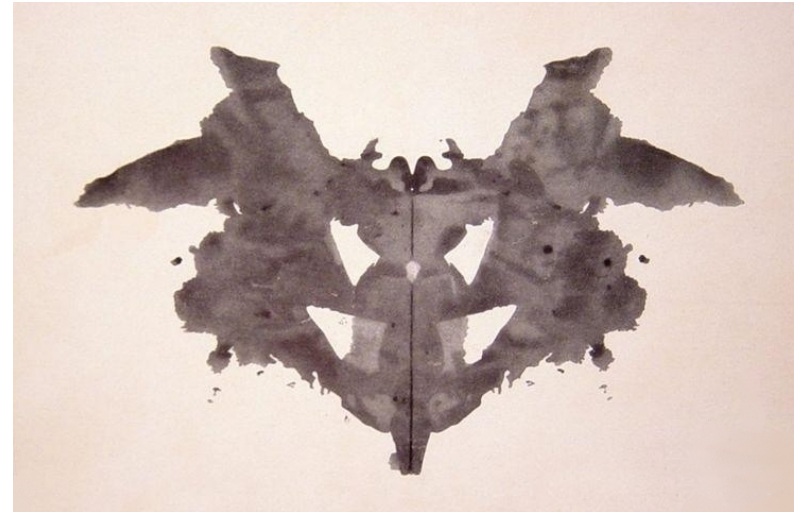


# Value-Neutral Analysis with Lots of Factors

Everything grey, can't decide



Justify doing what you wanted to do

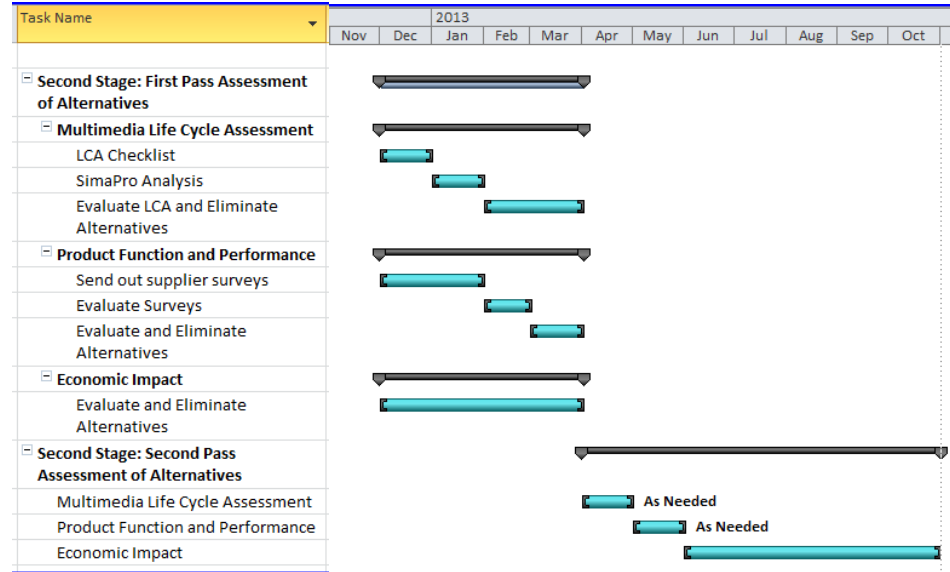


First card of Rorschach test , public domain image

# Phase 2 – Analyses

## Proposed for pilot Phase 2:

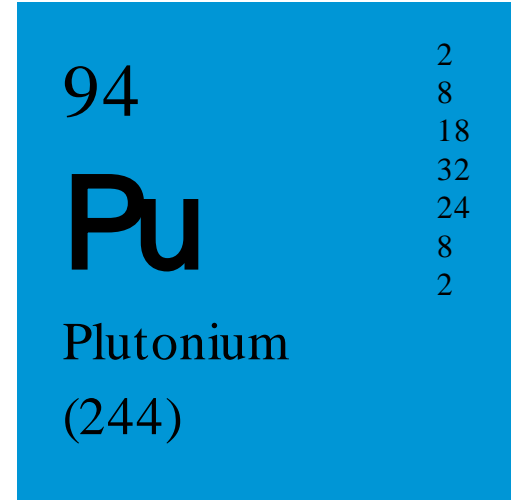
- Life-cycle thinking “**checklist**”
- Followed by LCA/SimaPro analysis
- Performance and economic assessment through supplier surveys
- Followed by final multimedia LCA, as needed



# Phase 2 - What is unacceptable burden-shifting?

## LCA, risk assessment, and multi-criteria decision matrices are value-neutral tools

- No boundaries for what is unacceptable burden-shifting
- No safeguards to prevent bad decisions
  - For example, using plutonium-based flame retardants to save a liter of water



## Exploring frameworks like GreenScreen™ or A-M



# Conclusions from Creating the Work Plan for Phase 2

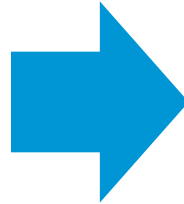
## Still figuring out how much analysis is needed for:

- High confidence decisions
- To meet regulation

## Collecting feedback for guidance documents

### Still trying to address definition of unacceptable trade-offs

- New set of principles or framework?
- Complement:
  - BizNGO Principles for Safer Chemicals
  - BizNGO Chemical Alternative Assessment Protocol



Need principles for Alternatives Assessment (beyond comparative chemical hazard) that reflect the values and goals of sustainability



# =CONVERSATION STARTERS=

## Principles of Sustainable Alternatives Analysis

1. Prefer lower hazard alternatives.
2. Seek the highest quality, available data.
3. Maximize the power of functional use.
4. Use life cycle thinking to minimize other environmental and human health impacts of an alternative.
5. Increase transparency and be transparent about assumptions.
6. Prioritize action over endless analysis.
7. Consider the absolute effects of impact areas for trade-off analysis.
8. Unacceptable burden-shifting is characterized by \_\_\_\_\_.
9. ????



# The Plan

- Cheri will address how a set of AA principles would fit with the CAA protocol and other AA guidance
- Small group discussions this morning
- Subteam of reps edit over lunch
- Working set by end of day
- Follow up work in committee
- Launch 2013



# Request for the Guidance Documents

## Guidance

- Accommodate multiple acceptable alternatives
- Clarify how to meet SCP with IC2 (8 state)
- Allow elimination of classes of materials (e.g. halogenated FRs) during phase 1 for any reason, with an explanation, rather than be forced to consider each chemical individually
- Waive Phase 2 economic analysis requirement if CoCis to be replaced

## Regs/Process

- Clarify consequence of using non-approved alternatives when outside control of the “responsible entity”
- Be as specific as possible in scope for notifications (for example, in this pilot the scope was limited to the external housing material instead of all plastic parts)



# Thank you

