



Lowell Center for Sustainable Production

UNIVERSITY OF MASSACHUSETTS LOWELL

Alternatives Assessment 111 Webinar:

Interstate Clearinghouse on Chemicals Alternatives Assessment Guidance Document Process



APRIL 4, 2013

FACILITATED BY: JOEL TICKNER, SCD

JOEL_TICKNER@UML.EDU

**LOWELL CENTER FOR SUSTAINABLE PRODUCTION,
UMASS LOWELL**

** If you would like to ask a question or comment during this webinar please type your question in the Q&A box located in the control panel.*

Goals



- Continuing education and dialog
- To advance the practice of alternatives assessment for informed substitution across federal, state, and local agencies through networking, sharing of experiences, development of common approaches, tools, datasets and frameworks, and creation of a community of practice.

Purpose of this call



Lowell Center for Sustainable Production
UNIVERSITY OF MASSACHUSETTS LOWELL



- The purpose of this call is to provide an overview of the Interstate Clearinghouse on Chemical's efforts to develop a guidance document to support alternatives assessment practice.
- This multi-year effort, overseen by a technical steering group of several states and the U.S. Environmental Protection Agency, involved the development of a series of "modules" that comprise the steps of alternatives assessment as well as stakeholder engagement to obtain input on those modules
- States and other entities can adapt these modules to their own policies and initiatives

Speaker



Lowell Center for Sustainable Production
UNIVERSITY OF MASSACHUSETTS LOWELL



- Alex Stone, WA Department of Ecology



Discussion Questions



- How can the IC2 alternatives assessment guidance be adapted to states and entities that may not have the resources for a detailed multi-module assessment?
- How does the IC2 plan on using the guidance once it is finished?
- Are there specific aspects of the guidance that are more or less important to supporting informed substitution?



Webinar Discussion Instructions



- Due to the number of participants on the Webinar, all lines will be muted.
- If you wish to ask a question, please type your question in the Q&A box located in the drop down control panel at the top of the screen.
- All questions will be answered at the end of the presentations.

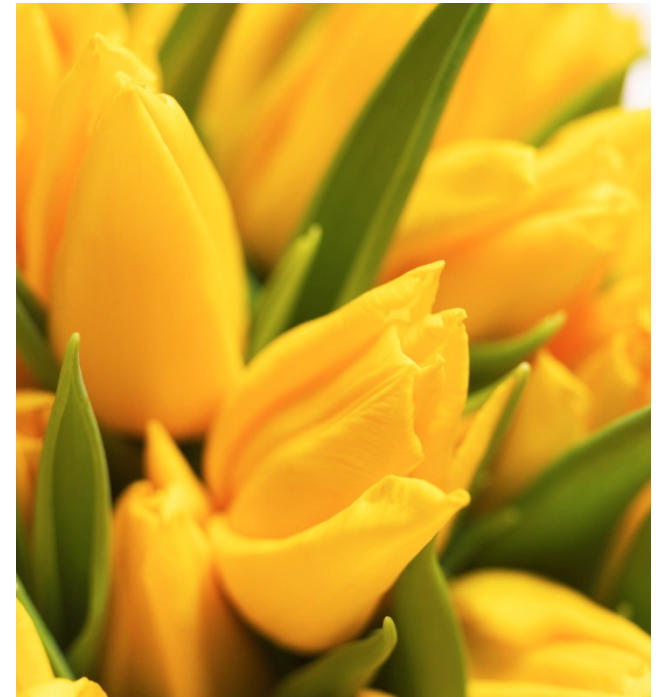
Alternative Assessment and Risk Reduction Guidance



Alex Stone
Guidance Team Lead
Interagency Alternatives Assessment
Webinar Series
4 April 2013

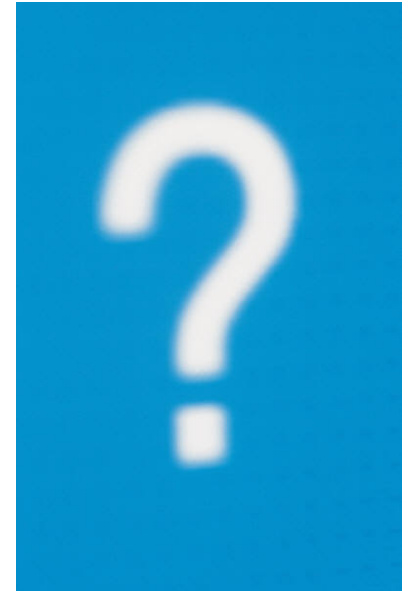
Alternatives Assessment

- \$150K EPA funding to develop AA guidance
- Eight IC2 member states (CA, CT, MA, MI, MN, NY, OR, WA) working together
- Hired contractors for technical and stakeholder support and technical writing
- EPA Design for Environment providing technical support



Why an AA Guidance?

- Desire to get off toxic treadmill and stop regrettable substitutions from occurring
- IC2 objective of sharing resources and expertise including alternatives assessments
- Increased interest by State Legislatures in AA process in conjunction with chemical bans
- Increased interest in industry in AAs and requests for assistance



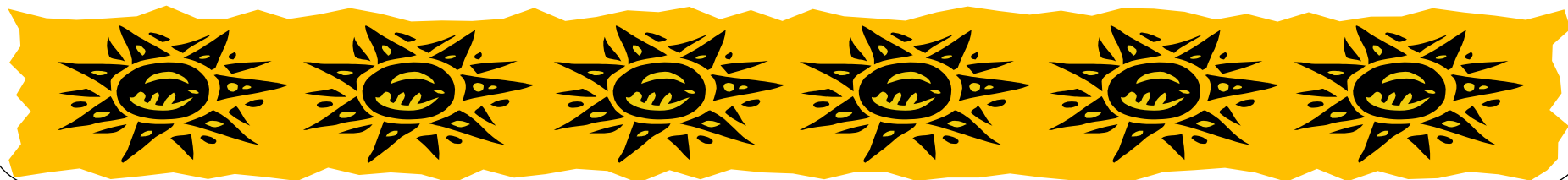
Alternatives Assessment

The Golden Rule:

- The objective of an alternatives assessment is to replace chemicals of concern in products or processes with inherently safer alternatives, thereby protecting and enhancing human health and the environment.

Principles

- Reduce risk by reducing hazard
- Transparency
- Flexibility
- Life-cycle Thinking
- Opportunities for Green Chemistry and Continuous Improvement
- Consider Uncertainties



Alternative Assessment Objective

Replace toxic chemicals with safer alternatives

- If a safer alternative to a toxic chemical exists that completes the function of the product at a cost effective price, NO justification for continued use of toxic chemical
- Money is saved by not using toxic chemicals including cost savings associated with:
 - Manufacture, transport and potential spills
 - Release during use and end-of-life
 - Cleanup of contaminated sites
 - Regulatory costs of managing both chemicals and dangerous waste
- Major US and International companies require alternatives assessment because of these benefits



Risk Assessment Concerns

Exposure plays a role in an alternative assessment but inadequate to address concerns posed by toxic chemicals

- *Finding 4.6. – Better methods [beyond risk analysis] are needed to support consideration of health and environmental effects for the green chemistry goal of safer products and more sustainable chemical usage (National Academy of Science's Green Book on Sustainability)*
- Problems managing toxic chemicals persist and incidence of childhood diseases and birth defects continue to increase

Chemical Hazard Assessment-Business Perspective (HP)¹

- Faster, Easier to complete
 - Narrow, well-defined endpoints
 - Science-based
 - Facilitates relative quick assessments
- Increasingly used by regulatory bodies
 - Useful as an indicator of future restriction
 - Aligns business with regulatory process



¹ Information from a presentation at a Green Materials symposium made by Helen Holder of Hewlett-Packard on 23 March 2011

RA Concerns-Business Perspective (HP)¹

Is Risk Assessment the right tool for comparing alternatives to restricted substances in electronics?

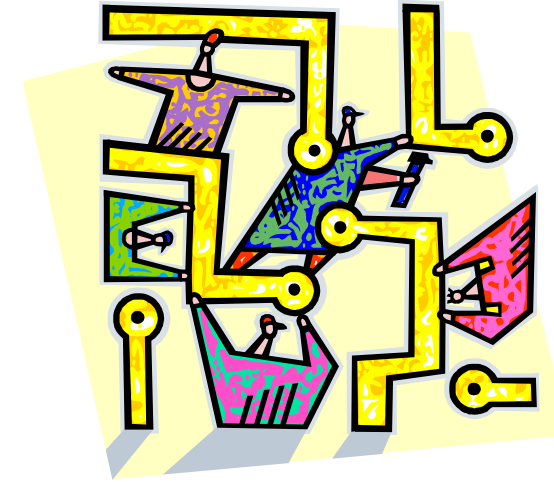
- Overwhelming to most decision-makers
 - Most decision makers are procurement engineers
 - Overwhelmed by information out of their field
 - Can't effectively incorporate into existing procurement process
- Not comparative
 - Not in a useful format for comparative decisions
 - Chemists consider function when designing formulations
 - Alternatives must be shown in relation to other chemicals of the same function



¹ Information from a presentation at a Green Materials symposium made by Helen Holder of Hewlett-Packard on 23 March 2011

Guidance Implementation

Guidance is comprehensive and contains several different ways to conduct an alternatives assessment



Guidance does include some minimum expectations and requires all AAs to meet the objective of replacing toxic chemicals with safer alternatives

Assessors can select from the guidance what constitutes a recommended AA

Guidance Components

Scoping Modules

- *Initial Evaluation*
- *Identification of alternatives*
- *Decision methodology*
- *Stakeholder Involvement*

Assessment Modules

- *Performance*
- *Hazard evaluation*
- *Cost & Availability*
- *Exposure evaluation*
- *Materials Management*
- *Social Impact*
- *Life-cycle Thinking*



Guidance Approach

Guidance based upon risk-reduction approach

$$\mathbf{Risk} \approx \text{Function} (\underline{\text{Hazard}}, \underline{\text{Exposure}})$$

Risk-reduction is a two step process:

1. Identify chemicals with lowest possible hazard
2. Evaluate exposure of chemicals with lowest hazard

Select alternative that is both lowest hazard and lowest possible exposure potential

Using an exposure evaluation alone as the rationale for continued use of toxic chemicals should be avoided as both steps are critical



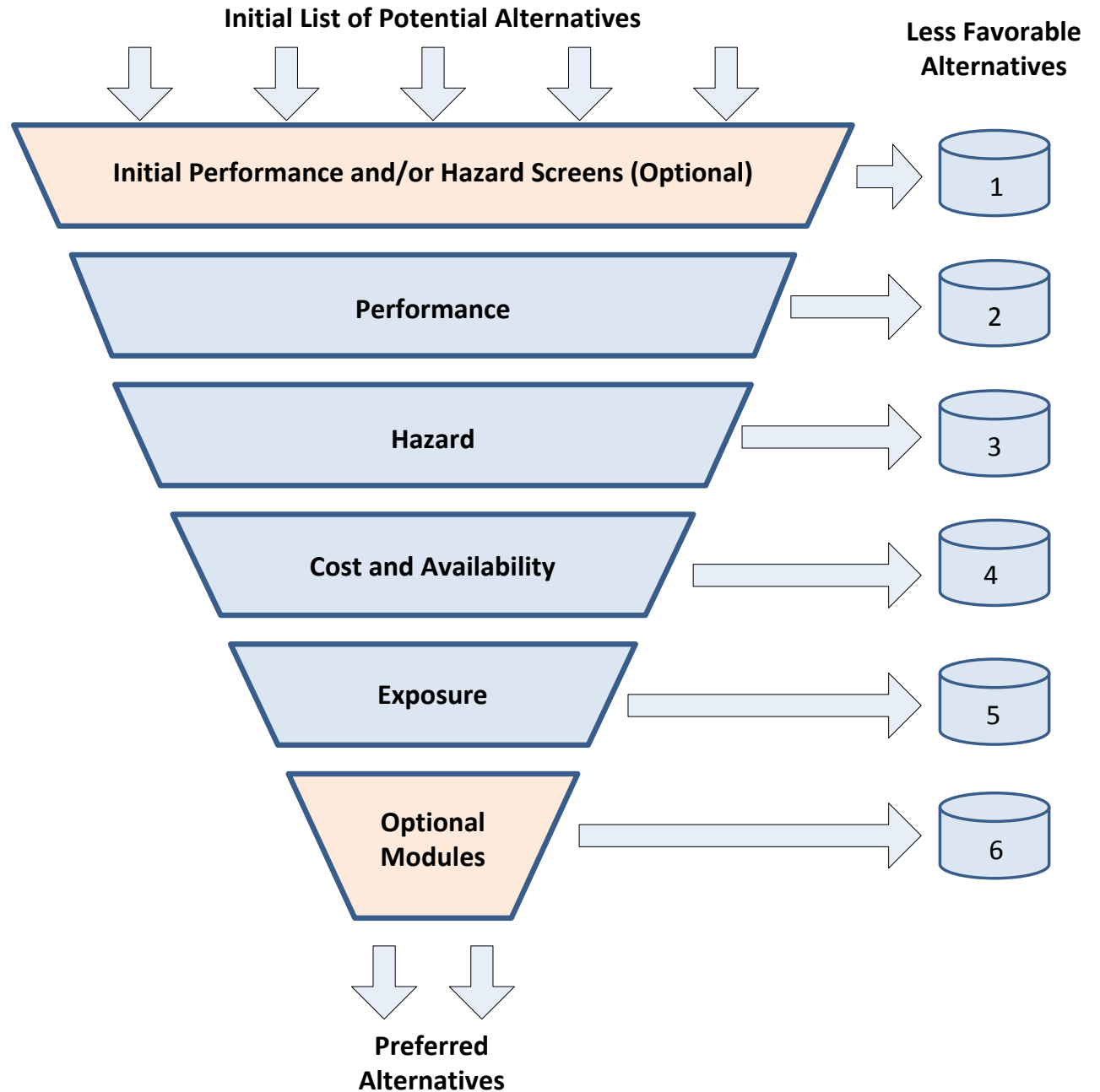
Decision Frameworks

Three Decision Frameworks

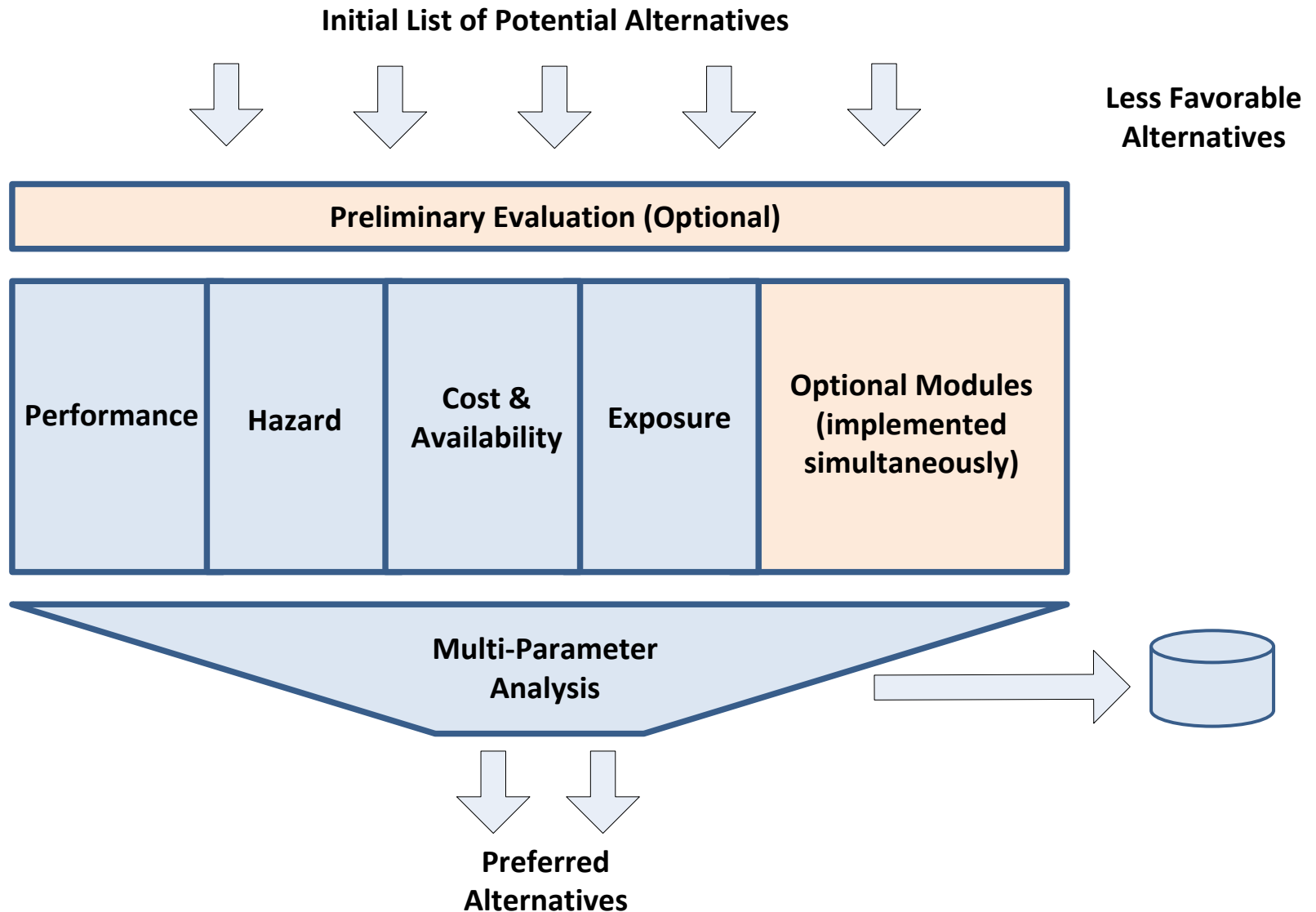
- *Sequential*
- *Simultaneous*
- *Hybrid*



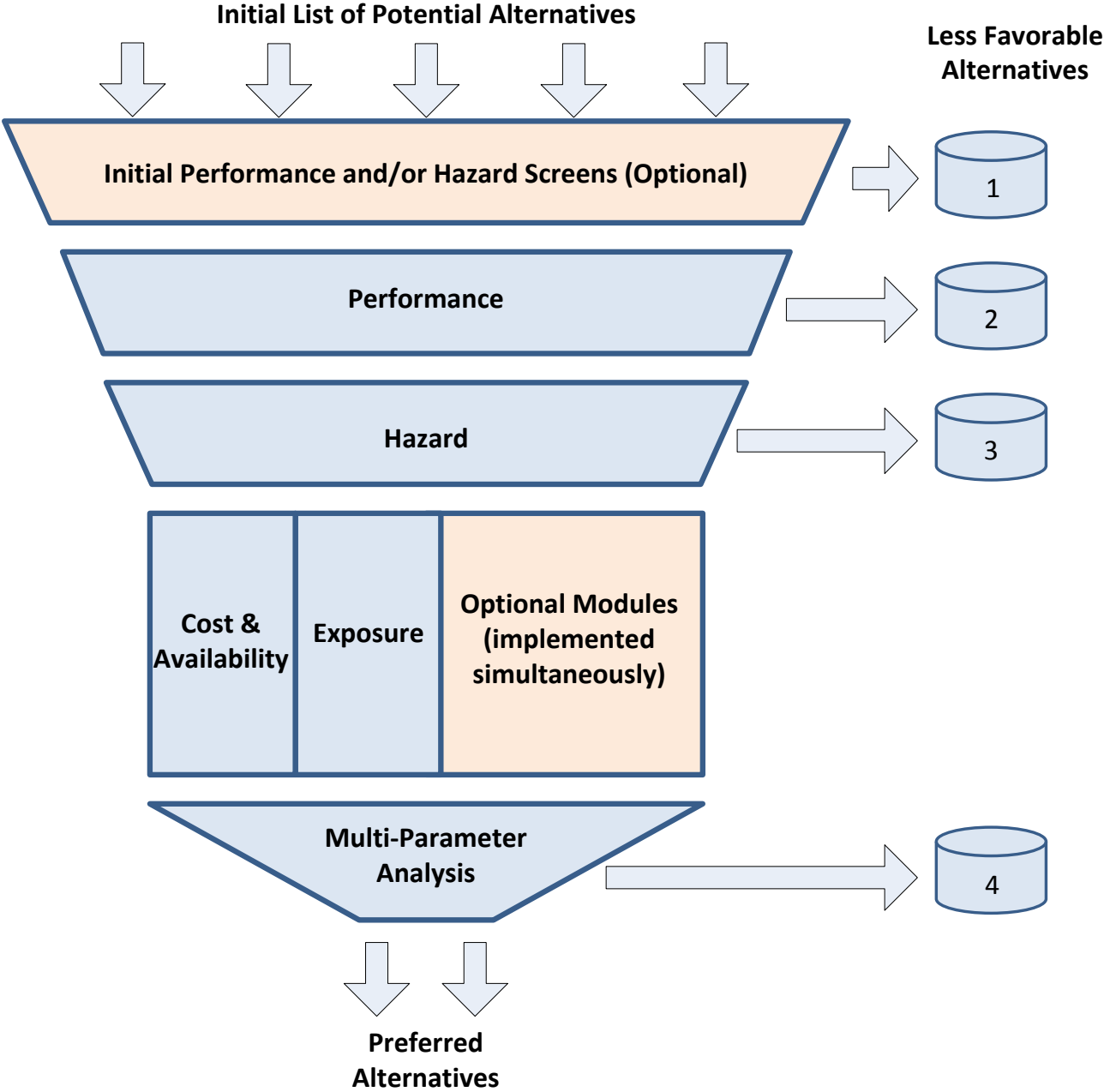
Sequential Framework



Simultaneous Framework



Hybrid Framework



Performance Module

- Based upon work conducted by the Toxics Use Reduction Institute (TURI) at the University of Massachusetts-Lowell and the European Chemicals Agency (ECHA)
- Ranges from a simple qualitative to a validated quantitative evaluation
- Consists of 3 Levels with increasing complexity and data requirements



Performance Module

Each level compares performance using:

Level 1: Qualitative information readily available from manufacturers and other easily-accessible sources

Level 2: Quantitative information of existing data reviewed by technical experts

Level 3: Quantitative information based upon results of specified tests with results reviewed and validated by technical experts



Hazard Assessment Module

- Objective is to determine what hazards exist for potential alternatives to chemical of concern
- Based upon methodology established by EPA's Design for the Environment (DfE) Program's Safer Products Initiative
- Ranges from a simple list comparison to a full-blown, validated chemical hazard assessment
- Provides tools to fit needs of wide range of users



Hazard Assessment Module

Two Assessment Levels

Level 1: GreenScreen™ assessment

- Reviews 19 hazard endpoints & ranks them from very high to very low level of concern
- Places chemicals into one of 4 bins or 'benchmarks' for comparison

Level 2: GreenScreen™ assessment plus:

- Elimination of all data gaps via computer modeling or scientific studies AND
- Verification of results by qualified scientists

Three Screening Options

Option 1: Comparison against lists of chemicals identified by authoritative bodies

Option 2: Add more lists for comparison

Option 3: Add more authoritative sources including specific databases, technical reports such as risk assessments, etc.



Exposure Module

- Based upon work conducted by the National Institute of Occupational Safety and Health (NIOSH)
- Ranges from a simple exposure evaluation to a full-blown risk assessment
- Expected to be used after hazard evaluation and will aid in narrowing down alternatives
- Consists of 5 Levels with increasing complexity and data requirements and 1 Initial Screen



Exposure Module

Initial Screen: Determines if exposures scenarios are sufficiently similar that an exposure assessment is not necessary

Level 1: Basic Exposure review of potential exposure concerns and how they may be addressed using qualitative approaches.

Level 2: Moderate exposure review of potential exposure concerns using quantitative approaches.

Level 3: Expanded exposure review using more qualitative data

Level 4: Detailed exposure review using detailed scientific studies

Level 5: Full exposure assessment



Stakeholder Involvement

States committed to an open and transparent process during development of guidance

- Webpage with documents related to guidance:

<http://www.ecy.wa.gov/programs/hwtr/ChemAlternatives/index.html>

- Modules and related documents
- Public comments
- Workshops
- Webinars

- Blog:

<http://blog.purestrategies.com/StateofWashington/DepartmentofEcology/Alternatives-Assessment/>

- Draft Guidance released for comment:

<http://www.newmoa.org/prevention/ic2/aaguidance.cfm>



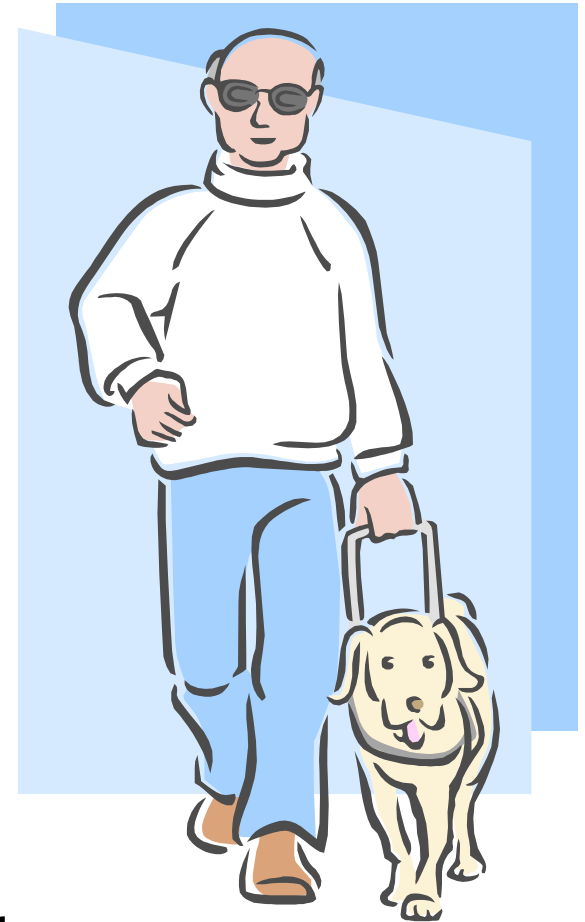
Timeframe

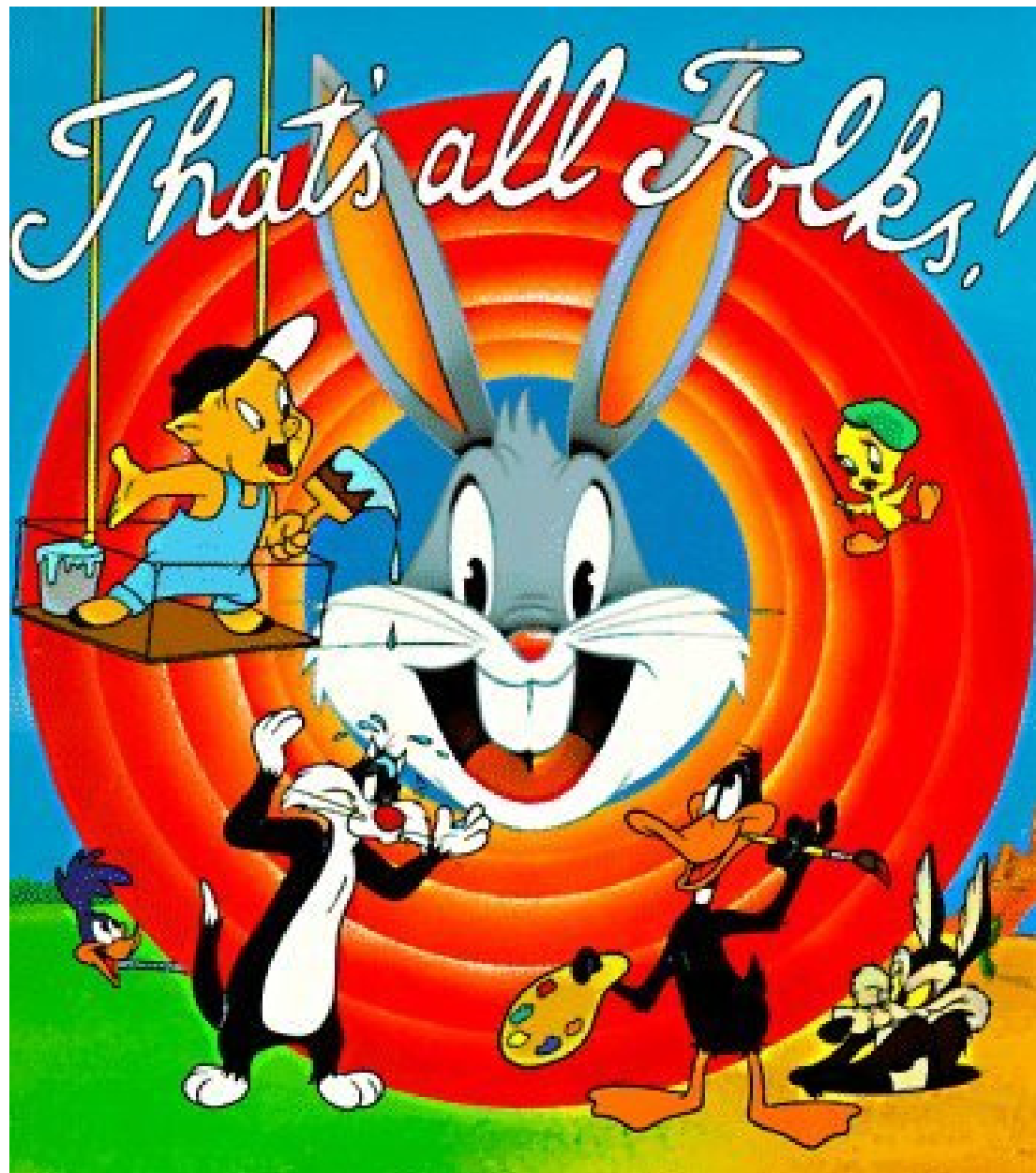
- Draft Guidance document released for 60-day public comment period on March 4th
- Comment period ends on May 3rd
- Guidance and response-to-comment documents completed by June 30th
- Will test guidance to see if it meets goals and if further changes are needed
- Individual states will decide whether to use parts or all of guidance document
- Guidance will primarily be used on a voluntary basis



How will Guidance be used?

- By state and other governments to decide what comprises an adequate AA
- On a voluntary basis with companies interested in AA as part of pollution prevention efforts
- By IC2 members to share AAs and resources
- By businesses to determine what constitutes an adequate AA for their product and process under evaluation while meeting company goals and objectives





Contacts

Alex Stone

Washington Department of Ecology
Safer Chemical Alternative Chemist
(360) 407-6758

Alex.Stone@ecy.wa.gov

Ken Zarker

Washington Department of Ecology
Pollution Prevention and Regulatory Assistance
(360) 407-6724

Ken.Zarker@ecy.wa.gov





Discussion Questions



- How can the IC2 alternatives assessment guidance be adapted to states and entities that may not have the resources for a detailed multi-module assessment?
- How does the IC2 plan on using the guidance once it is finished?
- Are there specific aspects of the guidance that are more or less important to supporting informed substitution?



Next Webinars



- Identifying priority chemicals, uses, and sectors for alternatives assessment and informed substitution –
 - May 2013
- Evaluating and addressing tradeoffs in alternatives assessment practice
 - June 2013



Webinar Audio & Slides



The audio recording and slides shown during this presentation will be available at:

<http://www.chemicalspolicy.org/alternativesassessment.webinarseries.php>