

Washington State Alternatives Assessment Workshop



Ken Zarker
Washington Dept. of Ecology

Washington AA Workshop
9 July 2014



Working Agenda

9:00 am.	Welcome & Introductions
10:00 am	Background
10:45 am	Break
11:00 am	Scoping Modules
Noon	Working Lunch
12:45 pm	Minimum Recommended Modules
2:45 pm	Break
3:00 pm	Optional Modules
4:30 pm	Adjourn

INTERSTATE CHEMICALS



CLEARINGHOUSE

An association of state, local, and tribal governments that promotes a clean environment, healthy communities, and a vital economy through the development and use of safer chemicals and products.

- Avoid duplication and enhance efficiency and effectiveness of state, local, and tribal initiatives on chemicals through collaboration and coordination.
- Build agency capacity to identify and promote safer chemicals and products.
- Ensure that state, local, and tribal agencies, businesses, and the public have ready access to high quality and authoritative chemicals data, information, and assessment methods.



- Consumer demand for safer products is increasing.
- States are taking action due to the lack of federal action on policy reforms.
- We recognize the need for better tools.
- Alternatives Assessments save money & create new markets for products.
- How do we create an Alternatives Assessment Guide that works for Washington?



Creating an Alternatives Assessment Guide that works for Washington State

- AA Technical workshops
- GreenScreen® for Safer Chemicals training (Oct. 28, 2014)
- Quick Chemical Assessment Tool (QCAT) Training
- Projects, Tools & Education Input
- Safer Chemistry Challenge
- Northwest Green Chemistry



Process for creating an Alternatives Assessment Guide that works for Washington State

- Washington State AA Advisory Group
- WA Alternatives Assessment Guide Discussion Draft
 - Develop guide for Washington's small-to-medium sized businesses.
 - Based on a set of minimum criteria (in bold) from the Interstate Chemicals Clearinghouse Guide.
 - **Hazard**
 - **Performance**
 - **Cost and Availability**
 - **Exposure**
 - Materials management
 - Social impact
 - Life cycle assessment
- Report results to Executive Director & finalize guide by Dec. 2014.

Alternatives Assessment Background



Alex Stone
Washington Dept. of Ecology
Guide Team Lead

Washington AA Workshop
9 July 2014

Background

- What is alternatives Assessment (AA)?
- Why did IC2 create an AA Guide?
- Differences between AA and Risk Assessment
- Guide Structure and contents



Alternatives Assessment

Alternatives assessment (AA): Process for identifying and comparing potential chemical and non-chemical alternatives that can be used as substitutes to replace chemicals or technologies of high concern.

The AA Guide addresses these issues from a product perspective although other uses are possible.



Alternatives Assessment

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.



Alternatives Assessment

Principles:

- **Reducing hazard:** Chemical hazard must be emphasized. When an exposure assessment is part of an AA, it should be used to improve a product only after selecting the least hazardous option(s).
- **Transparency:** All assumptions, data sources, data quality, decisions, etc., should be documented and explained.
- **Flexibility:** Four modules should be included in all AAs, specifically the (1) Hazard, (2) Cost and Availability, (3) Performance Evaluation, and (4) Exposure Assessment modules. The remaining modules should be considered by the assessor.
- **Life cycle thinking:** Decisions should reflect a broad perspective and include consideration of the full life cycle of the product. Impacts to workers, consumers, and the environment across the life cycle and supply chain should be considered.
- **Opportunities for green chemistry and continuous improvement:** The assessor should distinguish between results that provide clear benefits and ones that afford marginal improvements or important trade-offs.
- **Consider uncertainties:** Data from peer-reviewed scientific studies are preferred over assumptions, estimates, and unpublished data.

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PROTECT YOUR CHILDREN Against Disease-Carrying Insects.



TRIMZ DDT
CHILDREN'S ROOM
WALLPAPER and Ceiling Paper

KILLS FLIES, MOSQUITOS, ANT
... as well as moths, bedbugs, silverfish and oth household pests after contact!

MEDICAL SCIENCE KNOWS many common insects bre in filth, live in filth and carry disease. Science also re ognizes the dangers that are present when these diseas carrying insects invade the home. Actual tests ha proved that one fly can carry as many as 8,000,000 ba teria! Imagine the health hazard—especially to ch dren—from flies seriously suspected of transmitting su diseases as scarlet fever, measles, typhoid, diarrhea . even dread polio! Some types of mosquitos carry mala; and yellow fever. And any mosquito bite is painful a easily infected when scratched.

NON-HAZARDOUS to children or adults, to pets or cloth *Certified* to be absolutely safe for home use. Tested a commended by *Parents' Magazine*.

GUARANTEED effective against disease-carrying inse for 1 year. Actual tests have proven the insect-killi properties still effective after 2 years of use.

NO SPRAYS! NO LIQUIDS! NO POWDERS! So convenie so safe because the DDT is fixed to the paper. It ca rub off!

BEAUTIFUL! "Jack and Jill" or "Disney Favorites"—g new patterns that protect as they beautify a child's roo **DDT CEILING PAPERS, TOO!** Extra protection for your ch dren's room—for every other room in the house. Cho of two tints.

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by
**PARENTS'
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READY-PASTED! Just Dip in Water and Hang!

Anyone can put Trimz Wallpaper up without help or previous experience. Millions have done it—proved it's quick, clean, easy! Nothing to get ready—no tools, paste or muss. Just cut strips to fit, dip in water and hang. It's dry in 20 minutes! Guaranteed to stick—guaranteed to please or money back. And so **INEXPENSIVE!** You can protect your child for \$8 to \$12—depending on size of room.

Trimz DDT Children's Room Wallpaper, Trimz DDT Cedar Closet Wallpaper now available at Department, Chain, Hardware, Paint, and Wallpaper stores everywhere.

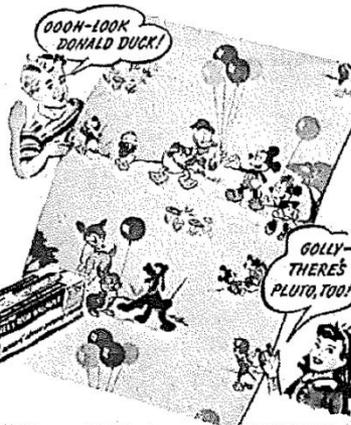
Many beautiful new patterns also available in regular Trimz Ready-Pasted Wallpaper at \$1.98, \$2.49, \$2.99 per box.



Just Dip in Water and Apply

TRIMZ READY-PASTED
WALLPAPER

Another Product of TRIMZ CO., INC., Division of UNITED WALLPAPER



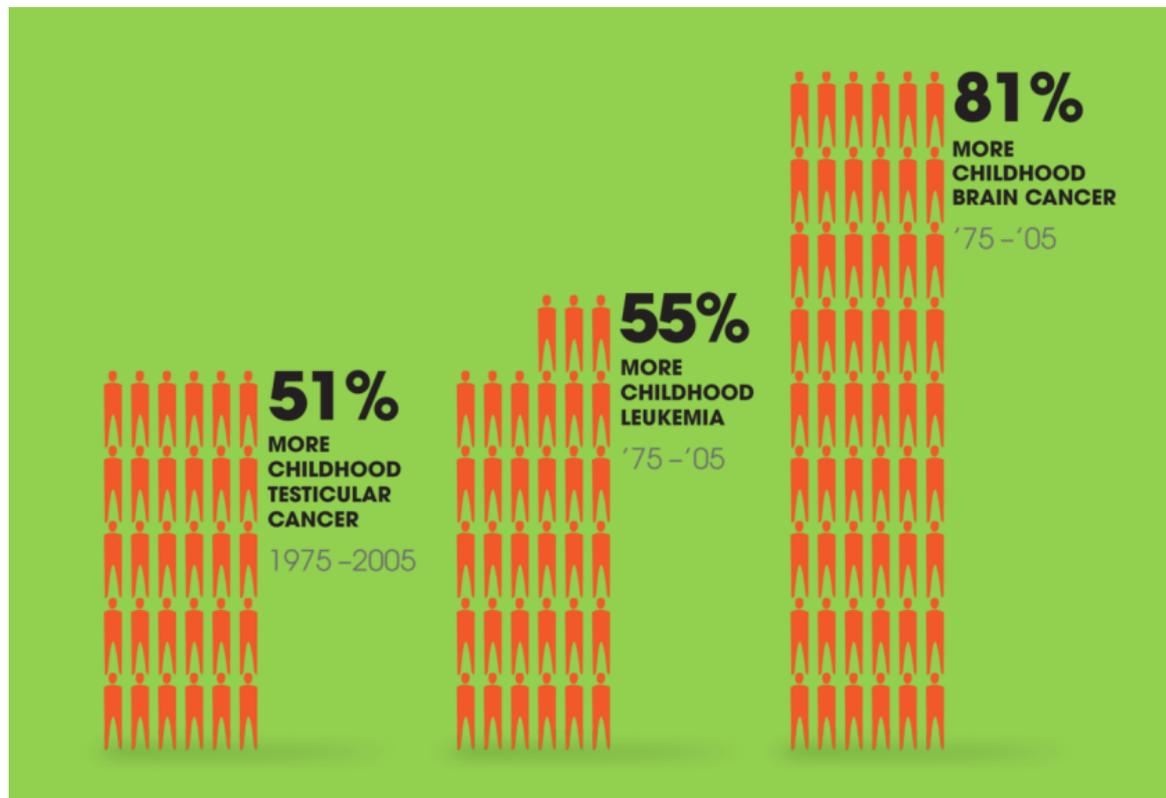
Why an AA Guide?

Non-hazardous to children or adults, to pets or cloth. **Certified** to be absolutely safe for home use. Tested and recommended by *Parents' Magazine*.

Oooh-Look Donald Duck!
Golly-There's Pluto too!

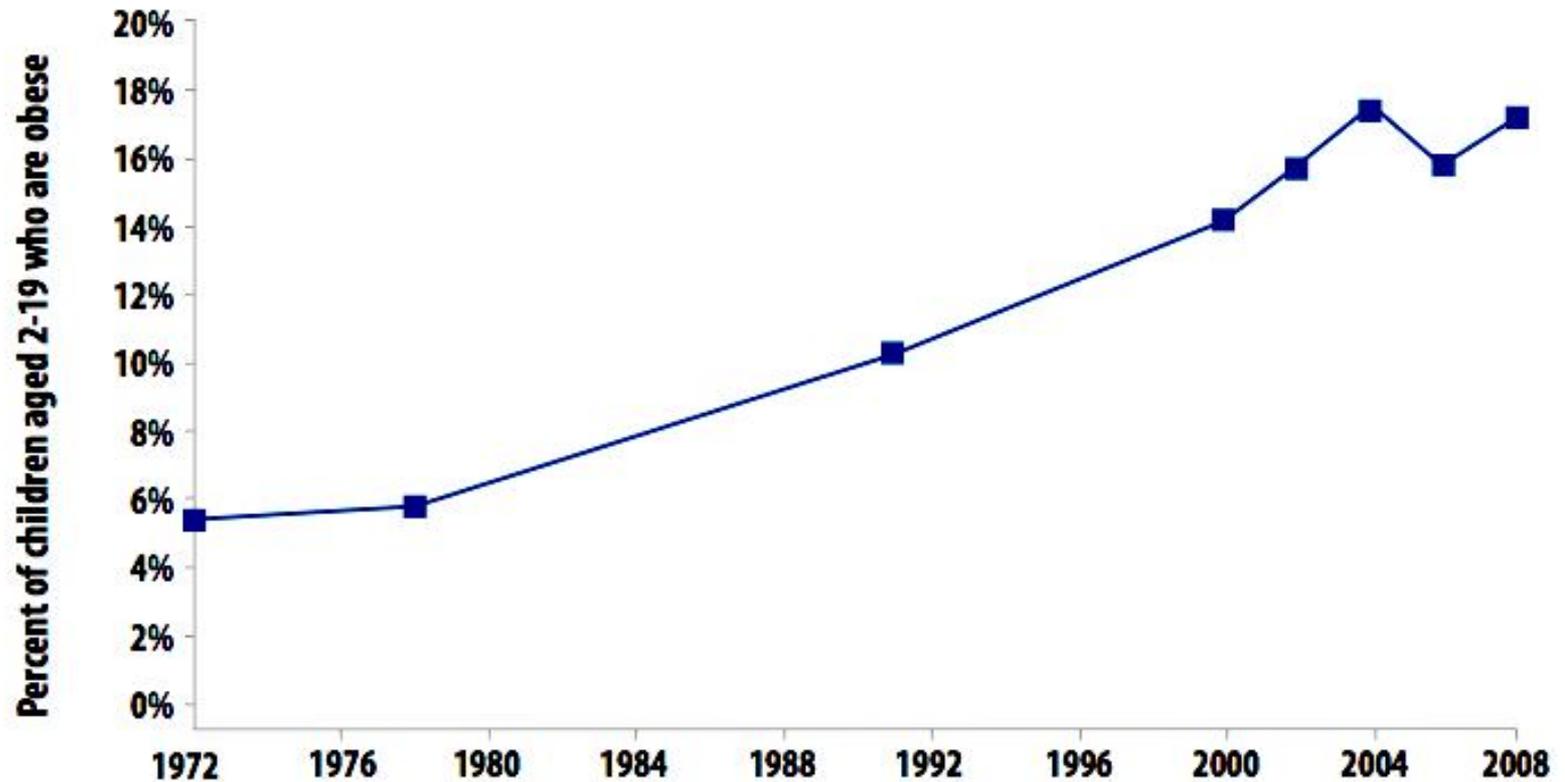
Pres. Obama's Cancer Panel (2010)

The true burden of environmentally induced cancer has been grossly underestimated. With nearly 80,000 chemicals on the market in the United States, many of which are used by millions of Americans in their daily lives and are understudied and largely unregulated, exposure to environmental carcinogens is widespread.



Additional Concerns

Growth in Childhood Obesity, 1971 to Present



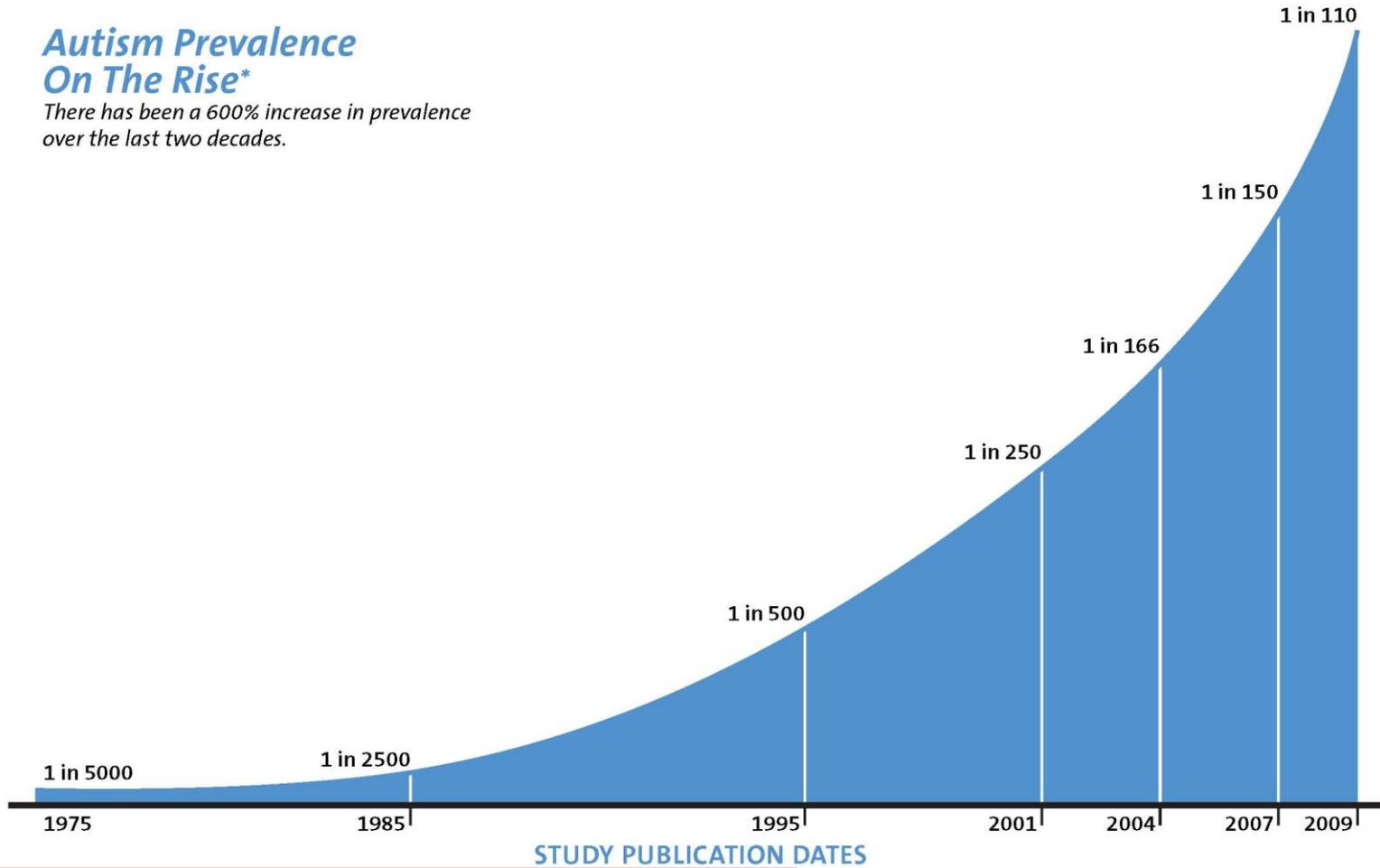
Source: CDC, National Center for Health Statistics, National Health and Nutrition Examination Surveys.

Note: Obesity is defined as BMI \geq gender- and weight-specific 95th percentile from the 2000 CDC Growth Charts

Additional Concerns

Autism Prevalence On The Rise*

There has been a 600% increase in prevalence over the last two decades.

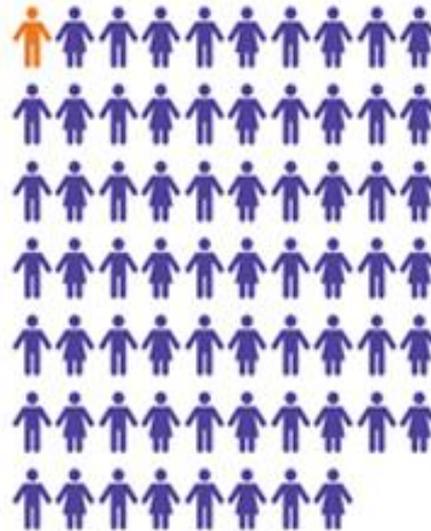


*Recent research has indicated that changes in diagnostic practices may account for at least 25% of the increase in prevalence over time, however much of the increase is still unaccounted for and may be influenced by environmental factors.

Autism Concerns (cont.)

Recent data
from the
Centers for
Disease
Control and
Prevention

NUMBER OF CHILDREN
IDENTIFIED WITH ASD



1 in **68**



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

Breast Cancer



- Only 10 percent of breast cancers can be attributed to genetic mutations.
- Compelling scientific evidence points to some of the 100,000 synthetic chemicals in use today as contributing to development of breast cancer, either by altering hormone function or gene expression.

Regrettable Substitution

- Replace toxic chemical with one of equal, or even higher, toxicity.
- Swap the devil you know for the devil you don't!



Regrettable Substitution

– Example: Break Cleaners

- Originally benzene, kerosene, etc.
- Moved to Stoddard Solvent.
- Moved to chlorinated solvents like perchloroethylene.
- Industry moved to hexane, a known neurological toxicant.
- Workers began to report neurological problems.
- Industry moved to n-propyl bromide, another neurotoxicant.



Need for New Tools

New tools are needed to address these concerns.

- *Finding 4.6: **Better methods ... 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*)*



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- Differences between AA and Risk Assessment?
- Guide Structure and contents?



AA and RA

Alternatives assessment (AA): Process for identifying and comparing potential chemical and non-chemical alternatives that can be used as substitutes to **replace chemicals or technologies of high concern**.

- Find safer alternatives to toxic chemicals
- Based upon solid, scientific data
- Reduces dependence upon exposure uncertainty

AA and RA

Risk assessment: Identification and quantification of the risk resulting from a specific use or occurrence of a chemical or physical agent, taking into account possible harmful effects on individuals or populations exposed to the agent in the amount and manner proposed and all possible routes of exposure. (IUPAC)

- Quantifies toxicity of chemical of concern but makes risk determination based upon exposure assumptions.
- **Assesses but does not reduce risk.**

Risk and Hazard – Different Questions

- **Risk Assessments** are designed to answer the question: “Is this chemical or product safe enough for the intended use?”
- **Hazard Assessments** are designed to answer the question: “Which chemical is inherently safer/lower hazard?”

↳ **Chemical Hazard Assessment (CHA) methods** typically share common hazard endpoints relating to human toxicity, environmental toxicity, and environmental fate



Making Better Environmental Decisions by Mary O'Brien is a cornerstone of Chemical Alternatives Assessment Methodology

AA Approach

Guidance based upon reducing risk

Risk \approx Function (Hazard, Exposure)

Reducing risk 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 exposure potential

Using an exposure evaluation as the rationale for continued use of toxic chemicals is inadequate.



CHA-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

GREEN SCREEN

HP is the world's leading practitioner of the **Green Screen** tool.

“HP has committed to replace restricted substances only with materials that are better for the environment and human health, and when there is sufficient assurance of required volumes and we have enough time to design and qualify the new material into the product. To assess alternative replacement materials we now use the Green Screen, a hazard-based assessment framework developed by the nongovernmental organization Clean Production Action.”

HP's Global Citizens Report

Assess and Avoid



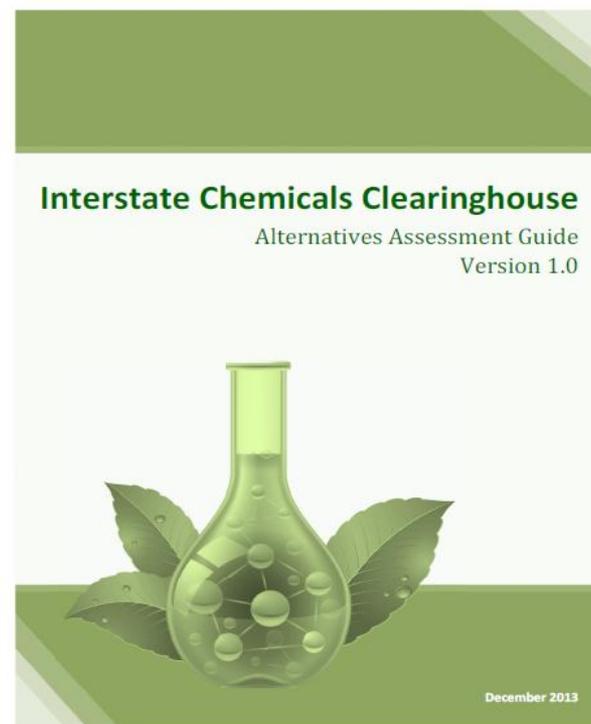
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Alternatives Assessment Background

- \$150K EPA seed funding to develop AA guide
- Eight IC2 member states (CA, CT, MA, MI, MN, NY, OR, WA) worked together for over two years
- Conducted extensive and detailed stakeholder process
- Guide released Jan. 8th
- Included response-to-comment documents



IC2 AA Guide

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ALTERNATIVES ASSESSMENT GUIDE

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IC2 Alternatives Assessment Guide

On January 8, 2014, the Interstate Chemicals Clearinghouse (IC2) and participating states [announced](#) the release of the [IC2 Alternatives Assessment Guide \(Guide\)](#). The *Guide* is the product of 20 months of effort by IC2's members.

An alternatives assessment is a set of tools that manufacturers, product designers, businesses, governments, and other interested parties can use to make better, more informed decisions about the use of toxic chemicals in their products or processes. The IC2 collaborated with businesses and non-governmental organizations on the development of the *Guide*.

In addition to the *Guide*, the IC2 is releasing two Response-to-Comment (RTC) documents. The [summary RTC document](#) groups comments received and documents how the *Guide* was either updated or not altered based upon input received. The [detailed RTC document](#) contains a response to each individual comment.

The responses in both RTC documents are identical; the full comments are available only in the detailed document. Comments received throughout the development of the *Guide* are [available](#) .

The IC2 understands the benefits of consistency in alternatives assessments but recognizes that one approach will not work in all situations. The *Guide* was designed to be very comprehensive and includes three ways in which an alternatives assessment can be conducted.

The *Guide* was created with an extensive stakeholder involvement process, including:

- Initial scoping of the project
- Release of the modules as they were completed for review and comment
- Three industry workshops
- Two free webinars
- A 60-day comment period

All comments were summarized in the RTC documents.

For questions concerning the *Guide*, contact Dr. Alex Stone, Team Lead, (360) 407-6758; alex.stone@ecy.wa.gov.



Interstate Chemicals Clearinghouse

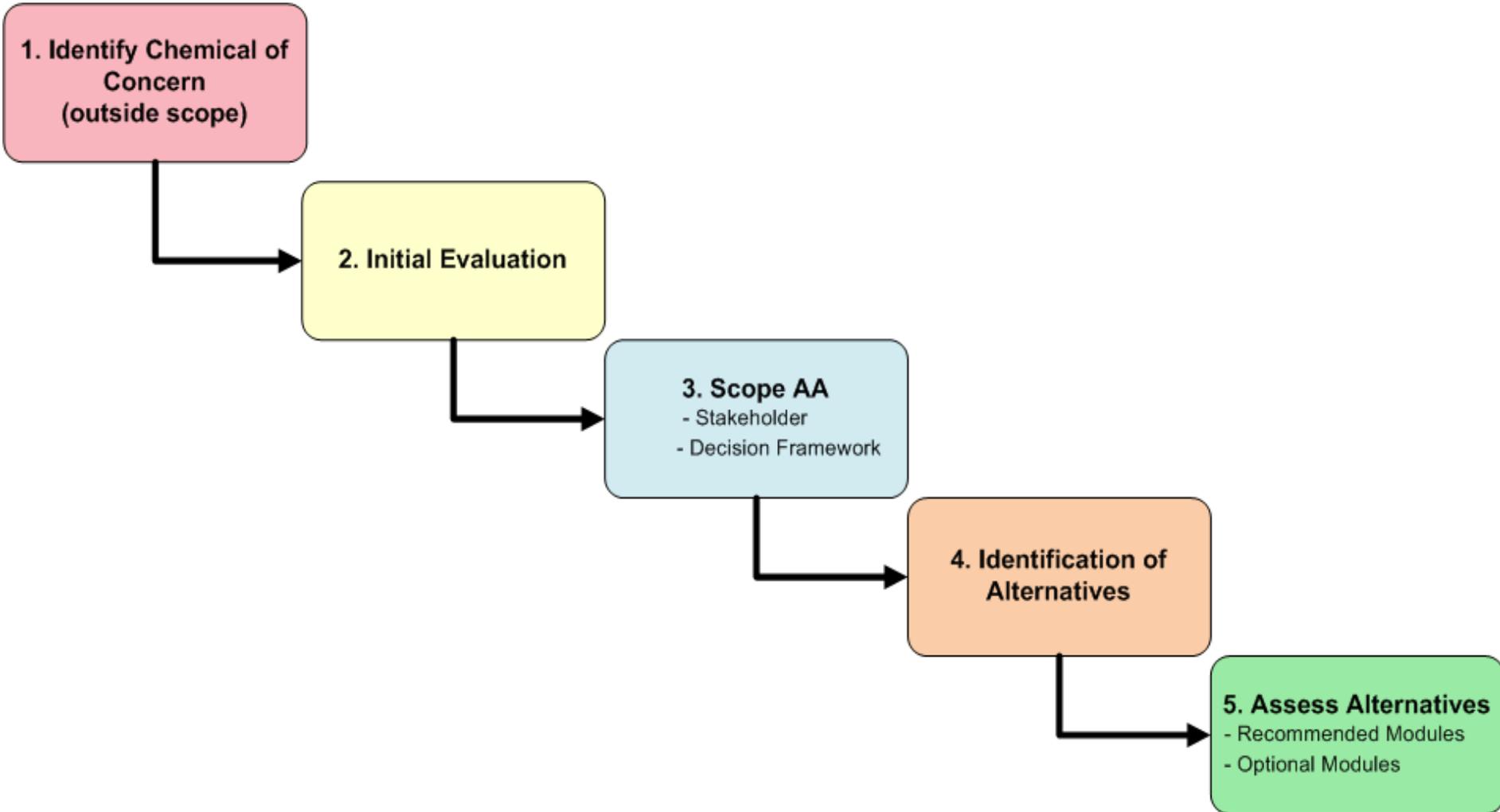
Alternatives Assessment Guide Response to Comments

December 2013

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

Guide Components

AA consists of five distinct steps



Guide Components (cont.)



1. Identify COCs

- Select chemical or process to be assessed in AA
- Although important, considered outside Guide scope
- Many ways COCs can be selected
 - Consumer concerns (BPA, chlorinated phosphate flame retardants)
 - Political concerns (PBDE flame retardants)
 - Business initiatives (regulatory avoidance, getting ahead of regulatory process)

Guide Components (cont.)



2. Initial Evaluation:

- Answers questions: ‘Is an AA necessary?’ ‘Can the chemical be eliminated without affecting the product?’
- If yes, eliminate chemical and avoid the need for AA

3. Scoping:

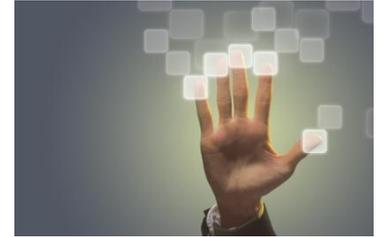
- Stakeholder
 - Decide appropriate level of stakeholder involvement
 - From internal to company to complete external involvement
- Decision Framework
 - Decide which of the three Frameworks is appropriate



Guide Components (cont.)

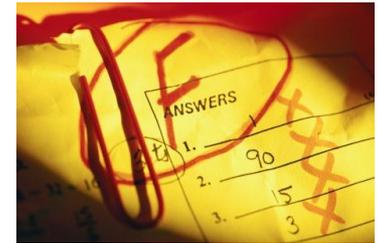
4. Identification of Alternatives

- Select alternatives for assessment
- Cast very wide net to include not only replacement and reformulation but redesign



5. Assess Alternatives:

- Decide modules above recommended minimum
- Decide which level within each module is appropriate
- Depending upon Framework, further decisions needed:
 - Decision logic included if using Sequential Framework
 - For Hybrid and Simultaneous Frameworks, decide on how to make decisions (Decision Methodology)



Guide Components (cont.)

5. Assess Alternatives: (cont.)

- Group 1: Minimum recommended modules and order
 - Hazard
 - Performance
 - Cost and Availability
 - Exposure
- Group 2: Additional modules
 - Materials management
 - Social impact
 - Life cycle assessment



Questions?

Comments?

