



Chemical Alternatives Assessment

Setting the Context

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Seeking a Safer Chemical Economy

- Alternatives assessment arises out of our long history to address harmful chemicals
- Conventional practice focused on protecting people and the environment from chemicals: exposure control
- More recent approaches focus on converting to safer chemicals: substitution, rather than control
- Just as the chemical control approach needed a methodological tool (risk assessment) the chemical substitution approach needs a tool (alternatives assessment)

Designing Alternatives Assessment

Design Parameters:

- Alternatives assessment needs to be
 - flexible and adaptive
 - iterative, replicable, and correctable
 - scalable for the facility, as well as the national level
- We need to avoid
 - complex science standards
 - rigid government requirements

History of Chemicals Alternatives Assessment

Phase One

Massachusetts Toxics Use Reduction Planning

Swedish Keml “Substitution Principle”

International Conference on Alternatives Assessment

Lowell Center AA Framework

Phase Two

TURI: Five Chemicals Study

EPA DFE/Green Screen/ Biz-NGO Frameworks

European Union REACH Assessment of Alternatives

State Chemical Policy: Washington, Maine, Minnesota, California

Interstate Chemicals Clearinghouse Alternatives Assessment Guidance

Commons Principles for Alternatives Assessment

Phase Three

National Academy Report

Defining Chemical Alternatives Assessment

Alternatives Assessment is a process for identifying comparing and selecting safer alternatives to chemicals of concern (including those in materials, processes and technologies) on the basis of their hazards, performance, and economic viability.

-- Commons Principles for Alternatives Assessment

Alternatives assessment is a process for comparing alternatives, usually to a chemical of concern, and identifying those that are safer.

-- NAS, A Framework to Guide the Selection of Chemical Alternatives

Goals –

- Encourage adoption of safer chemicals
- Avoid regrettable substitutions

Alternative Assessment Frameworks

**Toxics Use Reduction Institute
Framework**

Lowell Center Framework

**Interstate Chemicals
Clearinghouse Framework**

Alternative Assessment Frameworks

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Alternative Assessment Frameworks

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Alternative Assessment Frameworks

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Framework**

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**EPA DFE Framework
Biz/NGO Framework**

**EU REACH Framework
Stockholm Treaty Framework**

UCLA MCDA Framework

California SCP Framework

Common Themes

- Some focus on substituting a Chemical of Concern with a safer alternative, while others demonstrate the absence of acceptable alternatives
- Most focus on the hazards of alternatives, with less priority given to exposure
- Some address life cycle considerations
- Some include cost and performance assessments, while others do not

The Commons Principles for Alternatives Assessment

- Reduce Hazard
- Minimize Exposure
- Use Best Available Information
- Require Disclosure and Transparency
- Resolve Tradeoffs
- Take Action

THE COMMONS PRINCIPLES FOR ALTERNATIVES ASSESSMENT

Addressing Chemicals of Concern to Human Health or the Environment

In October 2012, a group of 26 environmental health scientists, advocates, funders and policy makers met in Boston, Massachusetts for two days of meetings entitled **Building a Chemical Commons: Data Sharing, Alternatives Assessment and Communities of Practice**. One of the key outcomes of this meeting was an agreement regarding the need for a common definition and set of principles for chemicals alternatives assessment. Following this meeting, a subcommittee met over four months in 2013 to refine a consensus set of principles. These principles were based on earlier foundational work by the Lowell Center for Sustainable Production, the Massachusetts Toxics Use Reduction Institute, the Environmental Defense Fund, and the BizNGO Working Group. These principles are now available to be shared and used in framing discussions about alternatives assessment and to guide decision making about safer chemical use.

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Alternatives Assessment is a process for identifying, comparing and selecting safer alternatives* to chemicals of concern (including those in materials, processes or technologies) on the basis of their hazards, performance, and economic viability. A primary goal of Alternatives Assessment is to reduce risk to humans and the environment by identifying safer choices.

These Principles for Alternatives Assessment are designed to guide a process for well informed decision making that supports successful phase out of hazardous products, phase in of safer substitutes and elimination of hazardous chemicals where possible.

REDUCE HAZARD Reduce hazard by replacing a chemical of concern with a less hazardous alternative. This approach provides an effective means to reduce risk associated with a product or process if the potential for exposure remains the same or lower. Consider reformulation to avoid use of the chemical of concern altogether.

MINIMIZE EXPOSURE Assess use patterns and exposure pathways to limit exposure to alternatives that may also present risks.

USE BEST AVAILABLE INFORMATION Obtain access to and use information that assists in distinguishing between possible choices. Before selecting preferred options, characterize the product and process sufficiently to avoid choosing alternatives that may result in unintended adverse consequences.

REQUIRE DISCLOSURE AND TRANSPARENCY Require disclosure across the supply chain regarding key chemical and technical information. Engage stakeholders throughout the assessment process to promote transparency in regard to alternatives assessment methodologies employed, data used to characterize alternatives, assumptions made and decision making rules applied.

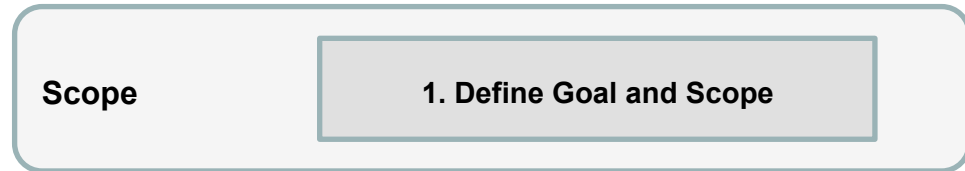
RESOLVE TRADE-OFFS Use information about the product's life cycle to better understand potential benefits, impacts, and mitigation options associated with different alternatives. When substitution options do not provide a clearly preferable solution, consider organizational goals and values to determine appropriate weighting of decision criteria and identify acceptable trade-offs.

TAKE ACTION Take action to eliminate or substitute potentially hazardous chemicals. Choose safer alternatives that are commercially available, technically and economically feasible, and satisfy the performance requirements of the process/product. Collaborate with supply chain partners to drive innovation in the development and adoption of safer substitutes. Review new information to ensure that the option selected remains a safer choice.

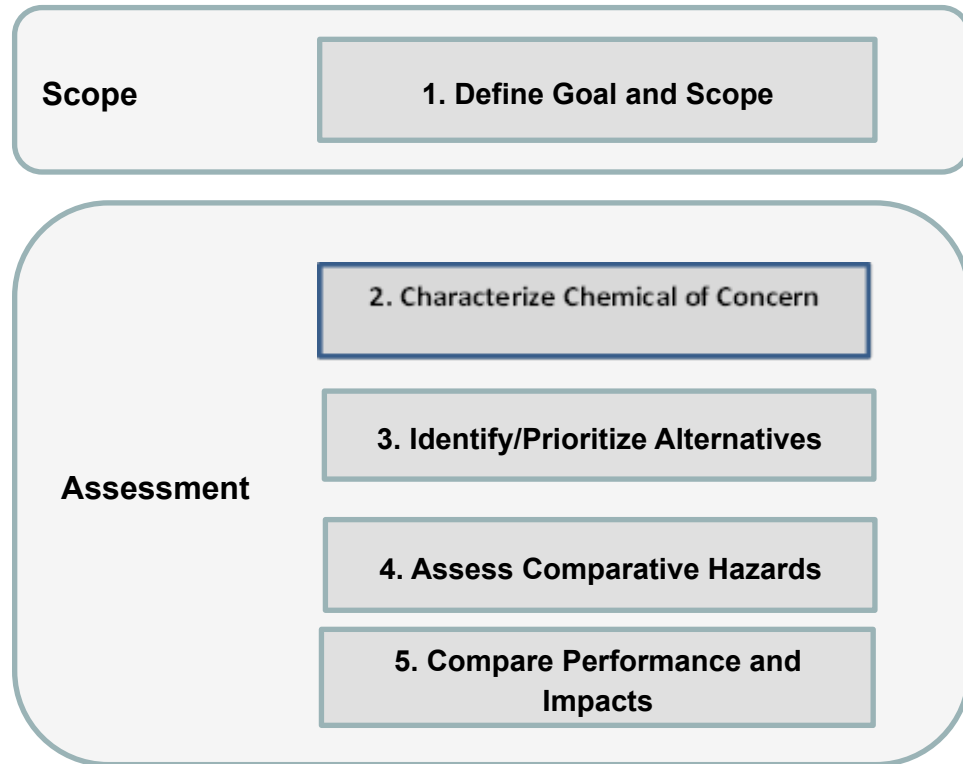
* Safer Alternative: An option, including the option of not continuing an activity, that is healthier for humans and the environment than the existing means of meeting that need. For example, safer alternatives to a particular chemical may include a chemical substitute or a re-design that eliminates the need for any chemical addition. From Tickner, J. and Eliason, P. Alternatives Assessment for Chemicals: From Problem-Evaluation to Solutions-Assessment and Implementation: A background paper created expressly for use in the March 31-April 1, 2011 Interagency Discussion on Alternatives Assessment, EPA Potomac Yards Conference Facility, Crystal City, VA, March 24, 2011

— PLEASE SEE SIGNATORIES ON REVERSE —

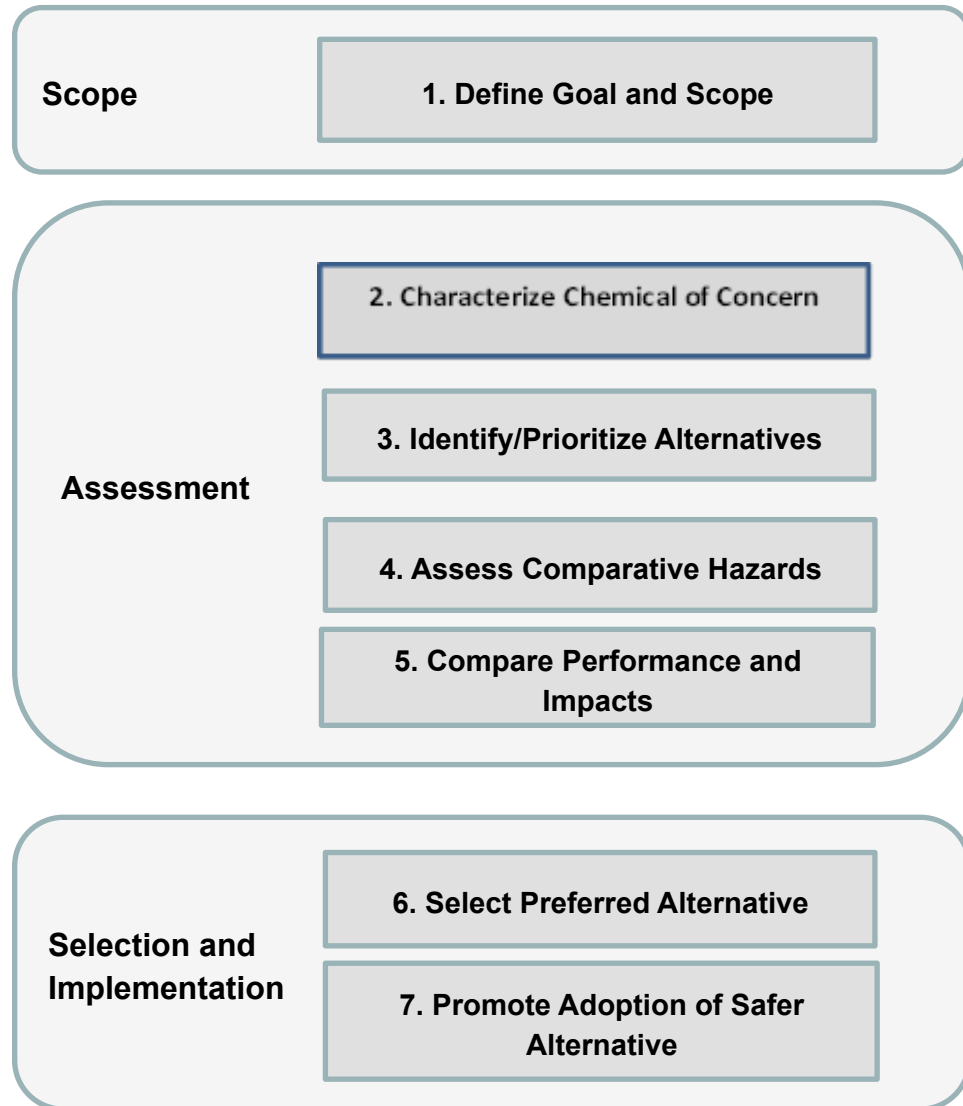
Architecture of Alternatives Assessment



Architecture of Alternatives Assessment



Architecture of Alternatives Assessment



Unresolved Issues

Alternatives assessment, today, is still under development—challenges remain:

- Data limitations
- How to handle trade-offs
- How to consider function and use
- Role of exposure