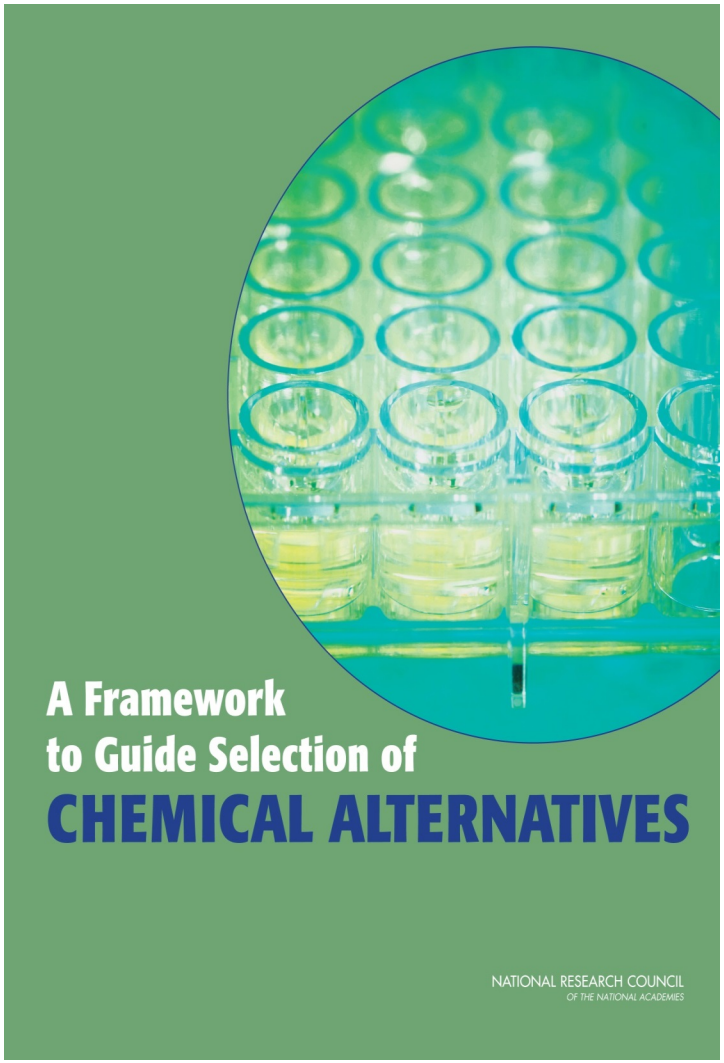
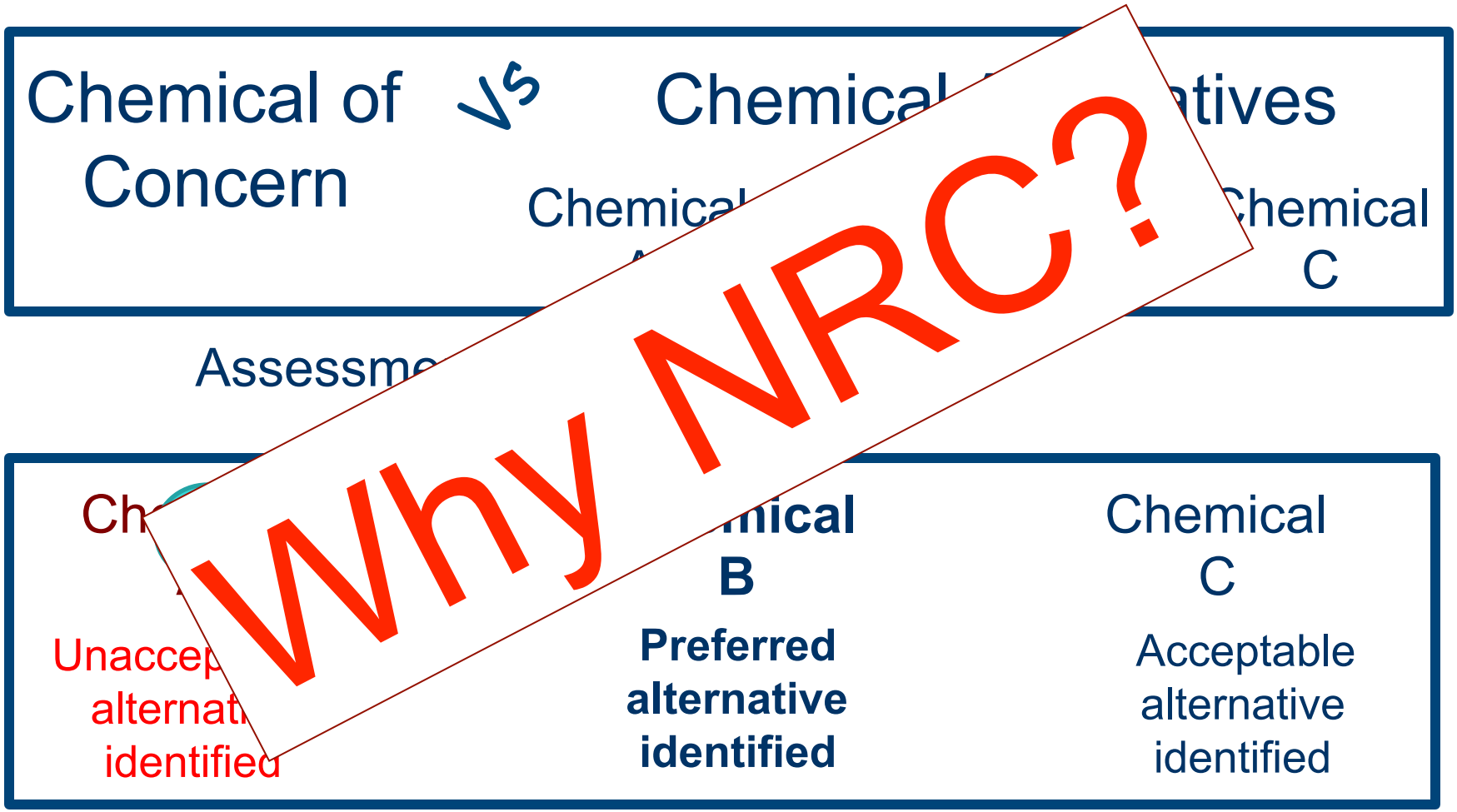


National Academies' Framework on Alternatives Assessment, "Design of Safer Substitutes"

David Dorman, DVM, PhD

North Carolina State University

Chemical Alternative Assessments: The Basics



NRC Process "Simplified"

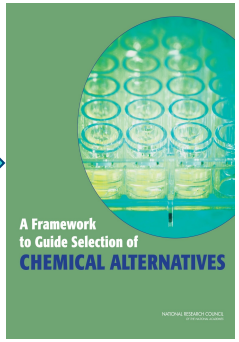
Sponsor and NRC agree to a project and **statement of task**

NRC forms committee

Committee holds open and closed sessions

Committee drafts a report

Draft report undergoes peer review



Committee's Statement of Task

Focused on:

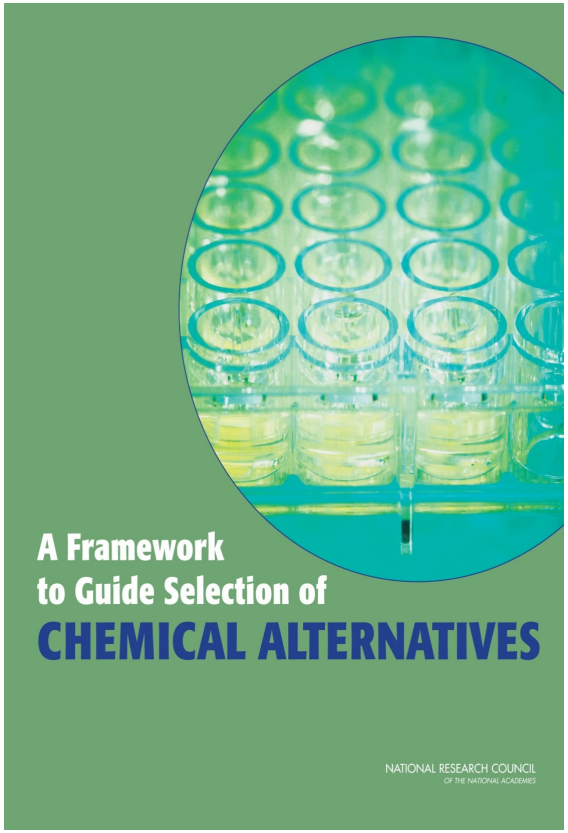
- Substitute chemicals
- Consider both human health and ecological risks
- Evaluate tradeoffs
- Demonstrate the use of high throughput/content data streams

Committee Members

Dr. David C. Dorman, (Chair), North Carolina State University
Dr. Peter Beak, University of Illinois at Urbana-Champaign
Dr. Eric J. Beckman, University of Pittsburgh
Dr. Jerome J. Cura, The Science Collaborative
Dr. Anne Fairbrother, Exponent, Inc.
Dr. Nigel Greene, Pfizer, Inc.
Dr. Carol J. Henry, The George Washington University
Ms. Helen Holder, Hewlett-Packard Company
Dr. James E. Huchison, University of Oregon
Mr. Gregory M. Paoli, Risk Sciences International
Dr. Julia B. Quint, California Department of Public Health (Retired)
Dr. Ivan Rusyn, The University of North Carolina at Chapel Hill
Dr. Kathleen A. Shelton, DuPont Haskell Global Centers for Health and Environmental Sciences
Dr. Joel A. Tickner, University of Massachusetts
Dr. Adelina Voutchkova, The George Washington University
Mr. Martin H. Wolf, Seventh Generation, Inc.

Report Overview

- Existing Frameworks and Tools
- Framework
- Details on each step, including how it is conducted in other frameworks
- Case studies to illustrate different alternative assessment situations



Alternatives Assessment (NRC)

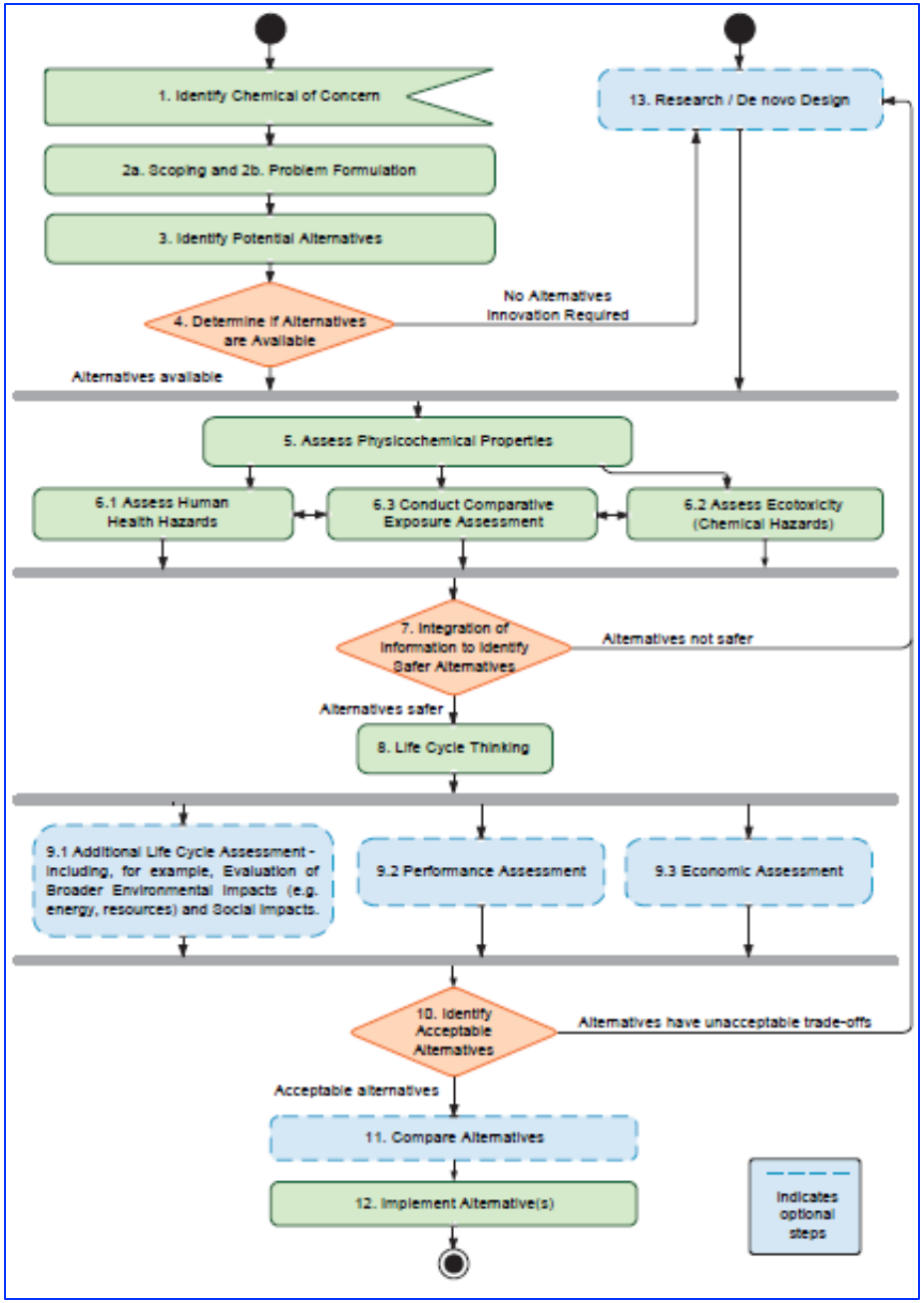
- Is a process for identifying, comparing and selecting safer alternatives to chemicals of concern.
- NOT a *safety, sustainability, or risk assessment*

Key Issues the Committee Considered

- Hazard vs. exposure
- Data gaps and uncertainty
- Integration of different types of information
- New data streams (e.g., high throughput screens)
- Role of R&D

13-Step Framework

- Required steps evaluating:
  - Physicochemical properties
  - Human health hazards
  - Ecotoxicity
  - Comparative exposure
  - Life cycle thinking
- Optional steps
  - Life cycle analysis
- Acknowledges the need for R&D



Scientific Information and Tools Required to Support the Committee's Framework

- Critical that the scientific community embrace the challenge and advantages of using novel data streams in the alternatives assessment process.
  - Need to develop principles or tools that support the benchmarking and integration of high throughput data.
- Multidisciplinary teams needed

Acknowledgments

- **Sponsor:**
  - EPA, Office of Research and Development (with support from Office of Chemical Safety and Pollution Prevention (OCSPP))
- **NRC Oversight:**
  - National Research Council's Division on Earth and Life Studies
    - Board on Chemical Sciences and Technology
    - Board on Environmental Studies and Toxicology