Strengthening Environmental Justice Research and Decision Making: A Symposium on the Science of Disproportionate Environmental Health Impacts

MARCH 17 - 19, 2010

WALTER E. WASHINGTON CONVENTION CENTER
WASHINGTON, DC

EPA United States Environmental Protection Agency · CDC · ATSDR Agency for Toxic Substances and Disease Registry · Johns Hopkins Center for a Livable Future · The Kresge Foundation · NIEHS National Institute of Environmental Health Sciences · NIOSH National Institute for Occupational Safety and Health · APHA American Public Health Association · NCMHD · Joint Center for Political and Economic Studies

Incorporating Disproportionate Impacts into EPA Decision-Making: The Role of Risk Assessment

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Potential schisms

- Analytical vs. deliberative
- Precautionary principle vs. risk assessment
- Top-down vs. bottom-up
- National vs. local
- Complexity vs. simplicity
- Study vs. act
- Inequality vs. inequity vs. justice vs. disparities vs. disproportionate vs. racism

In defense of risk assessment

- Sufficiently broad in principle (if not in practice) to address many issues of concern
  - Red Book (1983): Systematic evaluation of the factors that might result in an adverse human health effect resulting from a hazard, and often the attempted quantification of those factors and effects
- Potential to be precautionary (defaults, stopping a chemical pre-exposure)
- Potential to be oriented around solutions
- Potential to include vulnerability and inequality

Silver Book motivation

- Risk assessment is at a crossroads, and its credibility is being challenged
- Stakeholders are often disengaged from the risk assessment process at a time when risk assessment is increasingly intertwined with societal concerns
- Disconnects between the available scientific data and the information needs of decision-makers
  - Report sponsored by EPA

Evaluation strategy

- Committee concluded early on that risk assessment can be “improved” in two different ways
  - Improving technical analysis
  - Improving utility (making risk assessment more relevant and useful to risk management decisions)

Helping risk assessment inform decisions

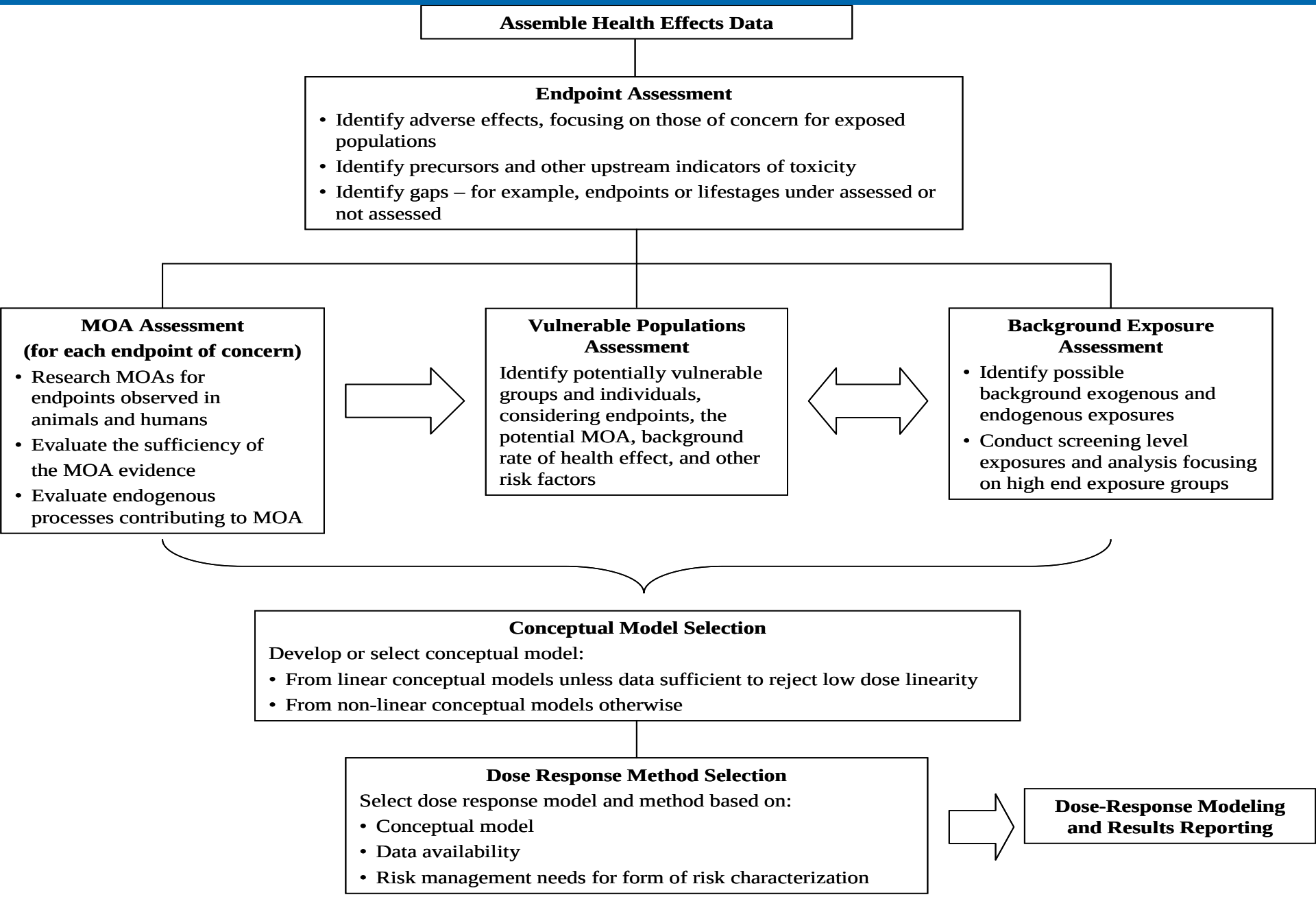
- Risk assessments need to be designed, like any other products or tools
- From decision-support perspective, there are multiple desirable attributes which may at times conflict with one another
  - Use of best science and methods
  - Inclusiveness of scope
  - Inclusiveness of process
  - Transparency
  - Timeliness

Improving the utility of risk assessment

- Silver Book Committee proposed a new framework for risk-based decision-making
- Framework asks:
  - What options are there to reduce the hazards or exposures that have been identified, and
  - How can risk assessment be used to evaluate the merits of the various options?
    - Risk assessment as a means to an end
- Not all decisions must use risk assessment, but framework makes it most useful when needed

Accounting for vulnerability

- Risk assessment addresses variability and susceptibility to some extent, but rarely adequately
  - Cancer: Assumption that everyone is identically susceptible
  - Non-cancer: General omission of background exposures and vulnerability, “bright line” comparisons not scientifically supported or helpful for decisions


Assemble Health Effects Data
Endpoint Assessment
• Identify adverse effects, focusing on those of concern for exposed populations
• Identify precursors and other upstream indicators of toxicity
• Identify gaps – for example, endpoints or lifestages under assessed or not assessed
MOA Assessment
(for each endpoint of concern)
• Research MOAs for endpoints observed in animals and humans
• Evaluate the sufficiency of the MOA evidence
• Evaluate endogenous processes contributing to MOA
Vulnerable Populations Assessment
Identify potentially vulnerable groups and individuals, considering endpoints, the potential MOA, background rate of health effect, and other risk factors
Background Exposure Assessment
• Identify possible background exogenous and endogenous exposures
• Conduct screening level exposures and analysis focusing on high end exposure groups
Conceptual Model Selection
Develop or select conceptual model:
• From linear conceptual models unless data sufficient to reject low dose linearity
• From non-linear conceptual models otherwise
Dose Response Method Selection
Select dose response model and method based on:
• Conceptual model
• Data availability
• Risk management needs for form of risk characterization
Dose-Response Modeling and Results Reporting

Silver Book via on cumulative risk assessment

- Committee applauded EPA's move toward cumulative risk, making risk assessment more informative and relevant to decisions and stakeholders
- However, in practice, EPA risk assessments often fall short of what is possible and supported by agency guidelines
  - Little consideration of nonchemical stressors, vulnerability, and background risk factors.
- Because of the complexity of considering so many factors simultaneously, there is a need for:
  - Simplified risk assessment tools
  - Orientation around pertinent risk management options

Concluding thoughts

- Risk assessment can be reoriented to better provide solutions to communities and to better capture important dimensions of vulnerability and disproportionate impacts
  - More science is needed, but we know enough to start
  - Analysis doesn't solve everything, but can provide tremendous insight if it answers the right questions
  - HIA another important approach, which should inform (and be informed by) risk assessment
  - Need to engage local communities, incorporate local knowledge, and to understand local conditions

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