Opportunities and Challenges for Integrating Precaution in Regulatory Policy

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Main points

- Precaution is about how do we make better, more preventive decisions under complexity and uncertainty – a compass not a hammer
- Need a flexible approach to precaution that adapts precaution as an overarching principle
- A goal is moving from a reactive to a proactive approach to hazards/risks – solutions-based
- A precautionary framework can be a strong driver for innovation in science, policy, and technology
- Precaution is a challenge to develop new tools to characterize and prevent complex risks

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Question: What can AQMD and other regulatory bodies do to integrate precaution into decision-making processes?

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Aspects of an ideal precautionary decision-making framework

- Establishing broad, health protective goals
- Consideration of alternatives for hazard/exposure reduction– shifting questions, finding opportunities
- Using appropriate scientific tools
- Rapid assessment processes and identification of aspects activities that can lead to problems
- Monitoring for early warnings
- Enhancing public information/participation

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More aspects

- Identification of "synergistic" interventions
- Support/education for innovation
- Flexibility in application
- Appropriate mix of tools for problem at hand
- Internalization of precautionary considerations

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Precaution and science

- Precaution is not anti-science or just risk management
- It demands more rigorous and transparent science to characterize risks, identify opportunities for prevention and make clear gaps in understanding.
- Best available science should inform policy
- The role of science is to inform policy – we don’t need perfect information, just enough to decide when we know enough to act

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Appropriate Science – A new vision of science for policy

- Methods/approaches chosen to fit the nature and complexity of the problem - flexibility
- Quantitative and qualitative data respected equally
- Risk assessment not separated from alternatives assessment
- Use of interdisciplinary approaches to the extent feasible – look at whole of evidence
- More comprehensive uncertainty characterization and improved communication/consultation

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Aspects of appropriate science

- Consideration of hazard and exposure as well as risk.
- Characterization of cumulative effects as well as effects on vulnerable sub-populations
- Systems for continuous monitoring to avoid unintended consequences, understand health impacts, and identify early warnings
- Science for solutions – studying and developing alternatives - green chemistry, process and product redesign

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Alternatives Assessment

- Examine/understand impacts and purpose of activity. Broadly define
- Identify wide range of alternatives.
- Conduct detailed comparative analysis of alternatives (pros/cons, economic, technical, h&s)
- Select “best” alternative and institute implementation and follow-up plan.
- Identify technical/research support needs

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Steps of Precautionary Assessment

I. **Determine whether problem needs regulatory review**

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II. **Broad Problem Framing**

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III. **Environment and Health Impact Analysis**

- Hazard Analysis
- Exposure Analysis
- Magnitude Analysis
- Uncertainty Analysis

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IV. **Alternatives Assessment**

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V. **Precautionary Action Analysis and Post-implementation follow-up**

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The important goal – when do we know enough to act?

- A “moving target”
- Consider when and how to act in context of:
  - Available knowledge
  - Scientific “suspicion”/judgment
  - Complexity/magnitude/severity/uncertainty/ reversibility
  - Accumulated understanding
  - Availability of prevention options
  - Public values
  - Responsibility to protect health and ecosystems

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Goals of precautionary actions

- Reducing and eliminating exposures to potentially harmful agents, minimizing trade-offs – not just bans
- Redesigning production processes, products, and human activities to minimize risk in the first place
- Providing information and education to promote empowerment and accountability
- Establishing a research agenda designed to more comprehensively characterize risks, provide early warnings and develop alternatives.

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Cleaner Production

- Development of products and processes that minimize pollution at the source by reducing both the intensity of materials as well as their toxicity.
- Consider the service that an activity provides and whether that service can be provided in a less harmful manner – eg selling services
- Includes sustainable transport and land-use planning

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Example: Precautionary Goal Setting/Foresight Planning

- Common in Public Health
- Goals for:
  - Reducing impacts/exposure
  - Phasing out materials
  - Materials efficiency
  - Establishing “red flag” activities
- Backcasting to figure out means to achieve goals
- Precautionary health air quality plans?

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Swedish Environmental Quality Objectives

- Reduced climate impact
- Clean air
- Natural acidification
- A non-toxic environment
- A protective ozone layer
- A safe radiation environment
- Zero Eutrophication
- Thriving wetlands
- Good-quality groundwater
- A balanced marine environment
- A good build environment
- Sustainable forests

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More effectively addressing unintended consequences in public health

- A greater range of options to choose from
- More comprehensive/quality assessment of risks and potential unintended consequences – examining root causes
- Explicitness about uncertainties
- More participation in the decision-process.
- More effective monitoring of actions
- Be cognizant of potential trade offs

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Barriers to Precaution in Science and Policy

- Constraints on agencies to experiment with new scientific methods/tools until fully developed
- Agency/research funding focus primarily on more detailed characterization of risks
- Lack of funding for interdisciplinary, innovative or prevention research
- Limited innovation and interdisciplinary approaches in education

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Conclusions

- Expand scientific tools – QRA may not always be the most appropriate method
- How to achieve products, services, etc. while minimizing impacts
- Go beyond border of diagnosis to solutions
- The most robust decisions involve a diverse range of tools, options, stakeholders, and an ability to build on knowledge – the whole of the evidence
- Ultimate goal is to prevent disease and degradation and restore health.

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