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Welcome!

State-of-the-Science and the Future of
Cumulative Impact Assessment

Public Release Webinar

October 9, 2025



Meeting Disclaimers



This is a public meeting, and it is being audio and video recorded.



Today's presentation is on the committee's report. However, the committee's conclusions and recommendations are not presented *verbatim*.



The audience is encouraged to consult the full National Academies report, which may be quoted, cited, and shared forward

Our new report

Committee on *State-of-the-Science
and the Future of Cumulative
Impact Assessment*

Sponsor:

Environmental Protection Agency

Public Release: October 9, 2 pm ET



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Committee's overall goals

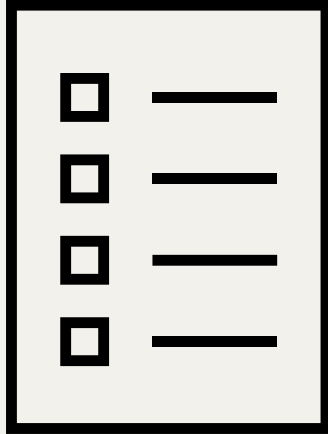
- Convene state-of-the science workshops
- Provide advice to the nation to guide the future of *cumulative impact assessment (CIA)*



Project website:

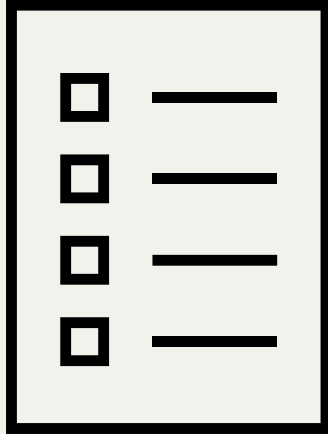


Key Aspects of Committee's Statement of Task



- Prior NAS advice, developments by EPA and others, response from communities
- Types of stressors (now and future) and factors that may make communities vulnerable to them
- Barriers to strengthening a community's ability to respond to stressors

Key Aspects of Committee's Statement of Task (*cont'd*)



- Critical paths to improved community health and well-being
- Community and tribal data and knowledge
- Approaches for assessing overall health and well-being
- Characterizing uncertainty
- Adapting CIA to different communities, scales, and EPA's different programmatic needs

Organization of the Report



Summary



Chapter 1: Introduction



Chapter 2: Origins and Advancement of CIA



Chapter 3: Data and Knowledge for CIA

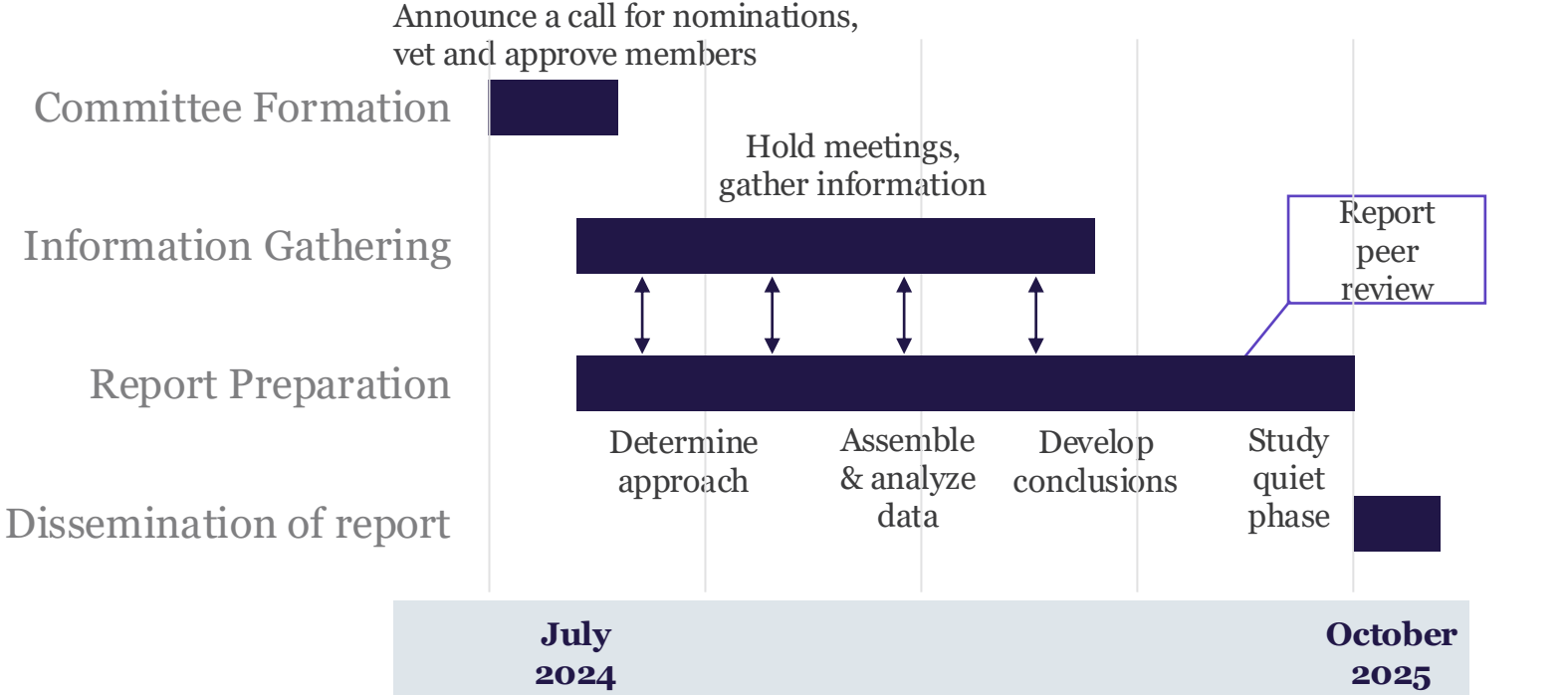


Chapter 4: Methodological Approaches, Frameworks, and Uncertainties



Chapter 5: The Path Forward

Overview of Consensus Study Process



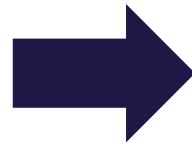
Committee's Approach to the Statement of Task

The committee engaged with:

- Scientists
- Communities
- Tribes
- EPA
- Other federal agencies
- State and local entities
- General public

The committee reviewed:

- ✓ Relevant National Academies reports
- ✓ All written material submitted by outside parties



Audiences of the report:

- EPA
- Other federal agencies
- Tribal nations
- States
- Communities

The committee's recommendations are generally applicable to the practice of CIA, including at the national, tribal, state, and community levels

State of the Science and the Future of Cumulative Impact Assessment



Consensus Study Report



Chapter 2: Origins and Advancement of CIA

What is *Cumulative Impact Assessment*?

- A tool to help decision-makers understand how different factors combine to impact “**health and well-being**” of people and communities



What factors cause impacts?

- Pollution, wildfires, natural and man-made disasters

Who faces impacts?

- Every community across the US

What types of factors increase impacts?

- Unaffordable housing, limited/no healthcare access, poverty, and unemployment

What is *Cumulative Impact Assessment*?

- A tool to help decision-makers understand how different factors combine to impact “**health and well-being**” of people and communities



What are the goals of CIA?

- Improve health and well-being
- Acknowledge multiple factors may occur at once, and over the life-course

What is “health and well-being”?

- Not just lack of disease – but a state of complete physical, mental and social well-being

Origins of Cumulative Impact Assessment

Impact Assessment:

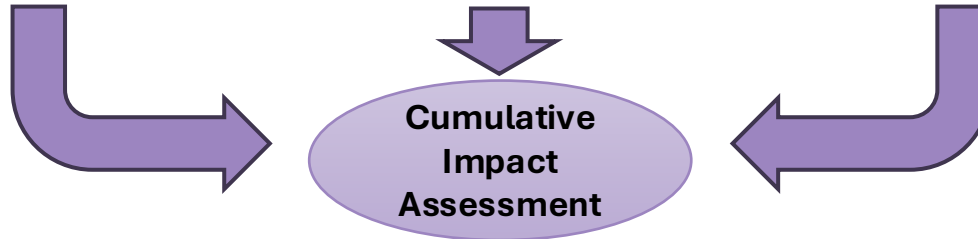
- Environmental Impact Assessment
- Regulatory Impact Assessment
- Health Impact Assessment

Community Assessment:

- Geospatial mapping of place-based indicators
 - Pollutant Exposures
 - Environmental Hazard Proximity
 - Social Vulnerability
- Community-level data collection and analysis

Risk Assessment:

- Risk of Individual Chemicals
- Cumulative Risk of Multiple Chemicals
- Risk of Chemical and Non-Chemical Stressors



Consideration of Cumulative Impacts and Risk in National Academies Reports

Report draws from more than 50 NAS reports - spanning more than 40 years

- Cover evolving state of knowledge, tools, methods, and technology for assessment methods
- Relevant to a range of decision contexts

BOX S-2

Examples of Decisions Informed by Cumulative Risk and Impact Assessments

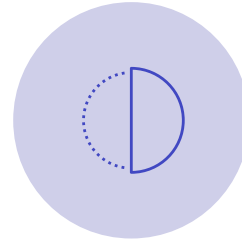
A variety of environmental and public health decisions can be supported by cumulative impact or risk assessments. Examples of National Academies reports that provide relevant advice or commentary for different types of decisions are given below.

- **Identifying communities for attention (e.g., investment) based on disproportionate impact; monitoring and tracking progress over time**
 - 2024 Constructing Valid Geospatial Tools for Environmental Justice
 - 2023 Transforming EPA Science to Meet Today's and Tomorrow's Challenges
- **Wide-impact decision-making such as siting large facilities, transportation planning, and development of national policies**
 - 2019 Vibrant and Healthy Kids: Aligning Science, Practice, and Policy to Advance Health Equity
 - 2012 Linking Community Visioning and Highway Capacity Planning
 - 2011 Improving Health in the United States: The Role of Health Impact Assessment
 - 2009 Science and Decisions: Advancing Risk Assessment
 - 1996 Understanding Risk: Informing Decisions in a Democratic Society
- **Routine decision-making such as in permitting small facilities**
 - 1996 Understanding Risk: Informing Decisions in a Democratic Society
- **Community/tribal-driven or -performed development of priorities and action plans**
 - 2023 Transforming EPA Science to Meet Today's and Tomorrow's Challenges
 - 2012 Exposure Science in the 21st Century: A Vision and a Strategy
 - 2009 Science and Decisions: Advancing Risk Assessment
- **Controlling use of chemicals in products and commerce**
 - 2019 Class Approach to Hazard Assessment of Organohalogen Flame Retardants
 - 2017 Using 21st Century Science to Improve Risk-Related Evaluations
 - 2008 Phthalates and Cumulative Risk Assessment: The Tasks Ahead
 - 1993 Pesticides in the Diets of Infants and Children
- **Developing guidance values or assessing risk, accounting for baseline concomitant exposures and population heterogeneity**
 - 2017 Approaches to Understanding the Cumulative Effects of Stressors on Marine Mammals
 - 2013 Assessing Risks to Endangered and Threatened Species from Pesticides
 - 2009 Science and Decisions: Advancing Risk Assessment
 - 1980 Drinking Water and Health, Volume 1

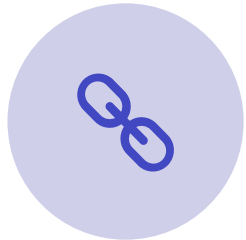
Cumulative Impact Assessment at EPA



The importance of evaluating exposures to combinations of chemical and nonchemical stressors has been widely recognized for decades.



EPA has partially implemented aspects of cumulative risk assessment, but with uneven implementation across offices and programs.

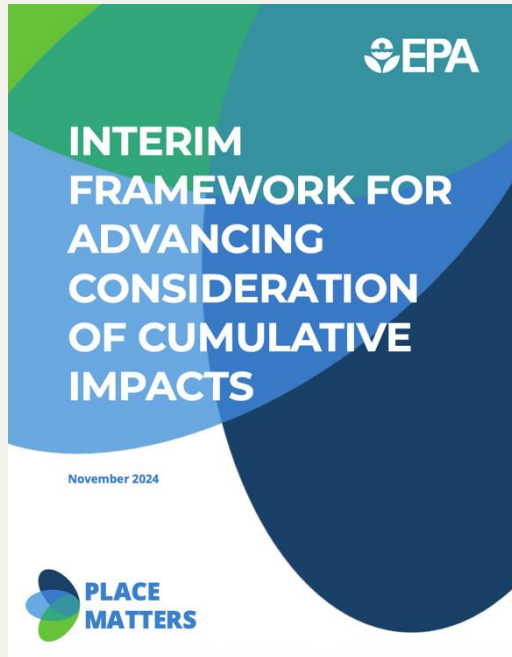


EPA has not generally moved beyond the 1996 FQPA requirement to consider cumulative effects of chemicals that have a common mechanism of toxicity.



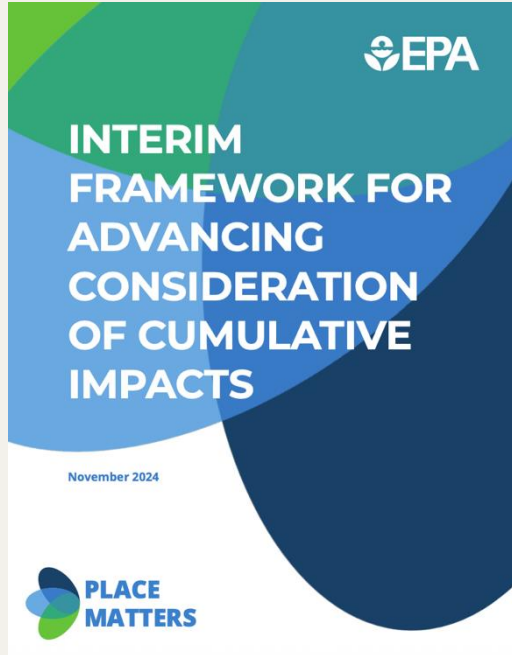
Nonchemical stressors are generally not addressed, and EPA has not fully acted upon prior National Academies recommendations or in a manner that is concordant with their definition of cumulative risk assessment.

Strengths of EPA's *Interim Framework* (2024)



- Reflects lessons learned across assessment practices
- Provides a useful starting point for conceptualizing cumulative impacts
- Facilitates development and improvement of decision-relevant tools

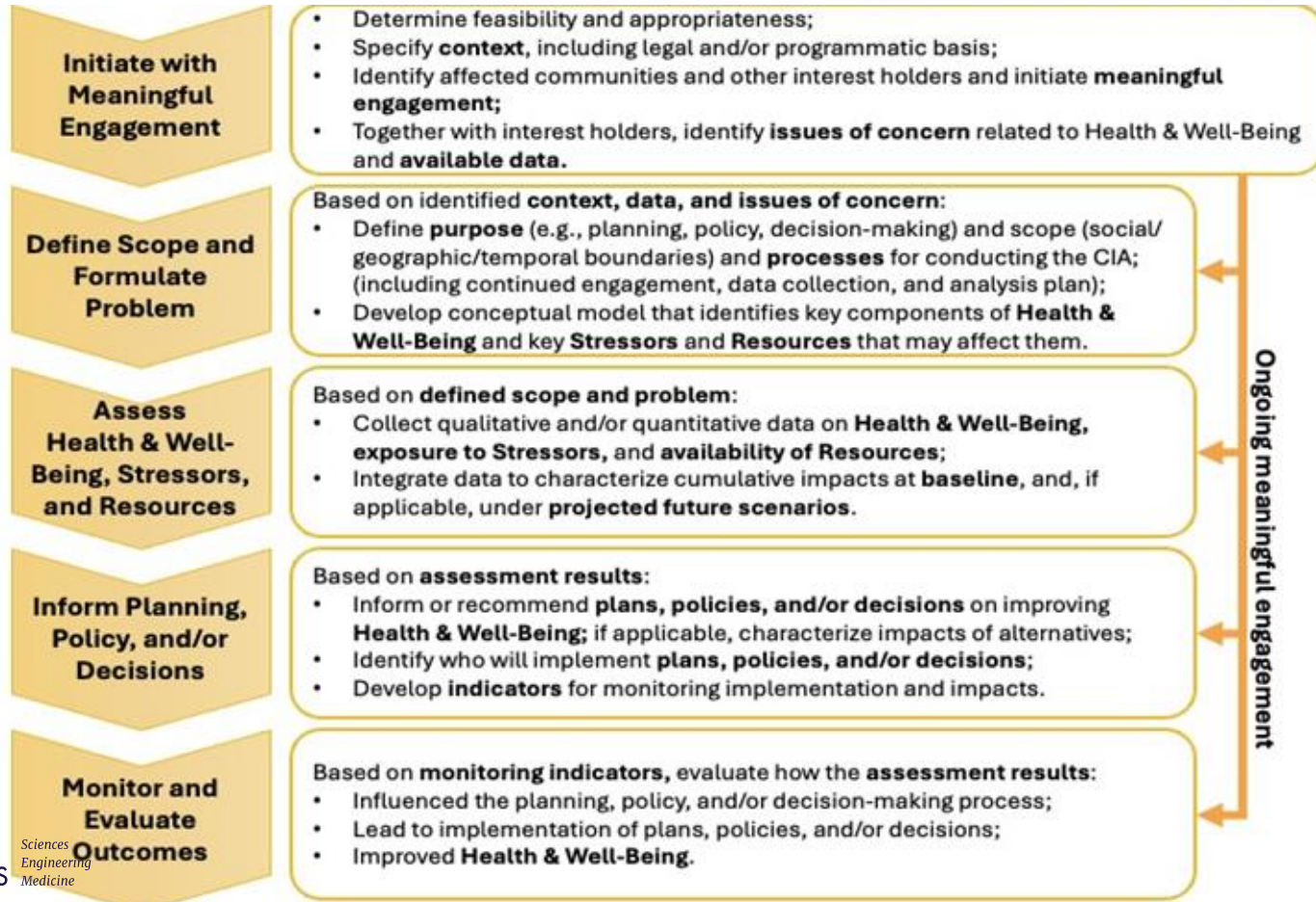
EPA's *Framework*: Next Steps



EPA should update and expeditiously finalize its CIA framework

- Add key steps to monitor and evaluate process, impact, or outcome
- Broaden definitions of key concepts
- Add information on implementation

CIA Steps Recommended by the Committee



State of the Science and the Future of Cumulative Impact Assessment

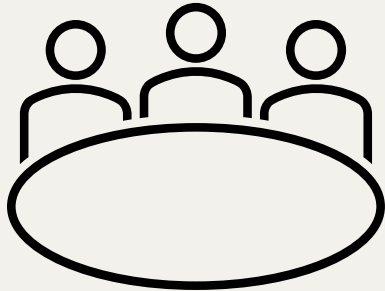


Consensus Study Report



Chapter 3: Data and Knowledge for CIA

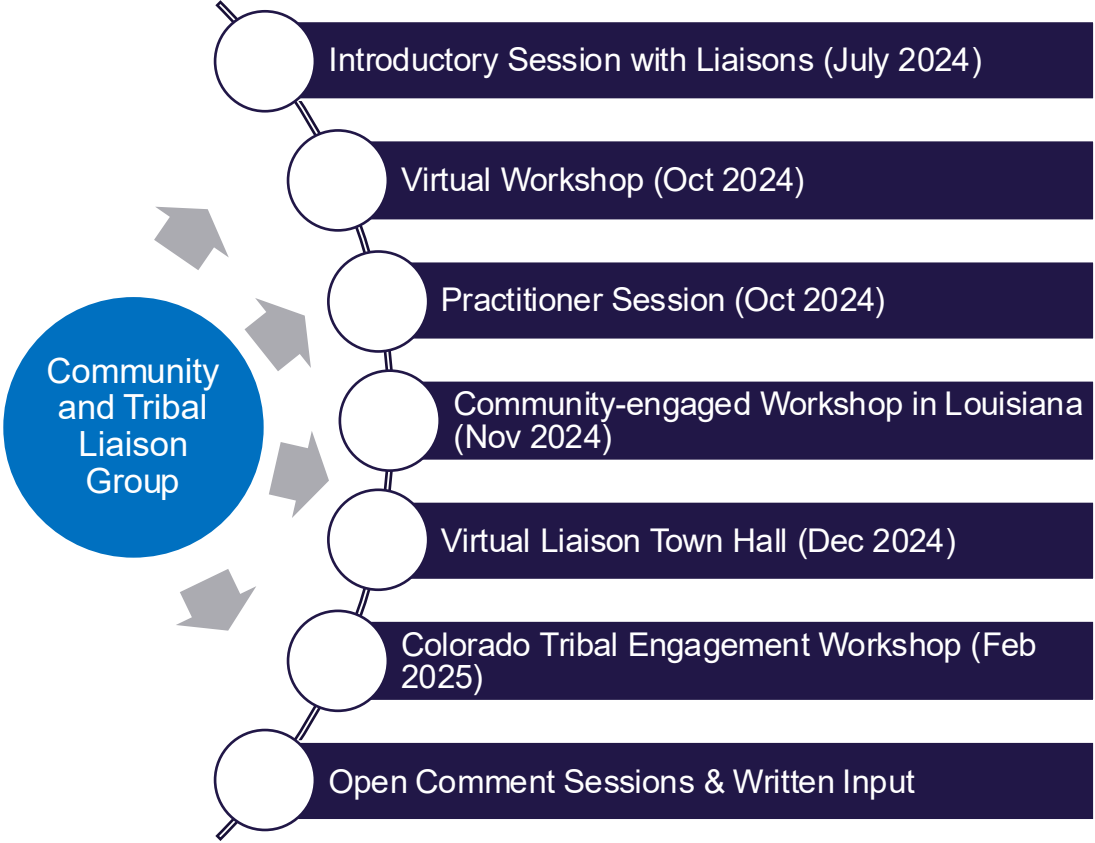
Conceptualizing Cumulative Impacts with Meaningful Engagement



The knowledge is in the community The cumulative impacts exist in the stories that people know—how many relatives they lost to cancer, what kinds of cancer, and how quickly it came and where they live and where they work. You can draw out this kind of information by talking to the communities that have been impacted by it.

- Justin Kray (Hidden Landscape Consulting)

Committee's Engagement Plan



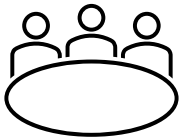
Committee's Workshops



- Virtual workshop



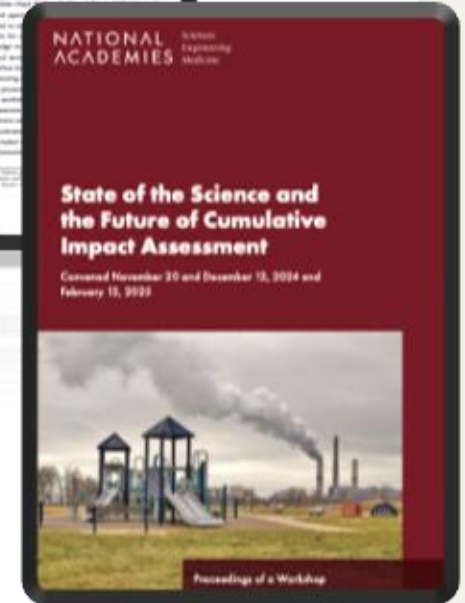
- In-person community-engaged workshop (New Orleans, LA)



- In-person tribal engagement (Colorado)



- Liaison Town Hall (virtual)



World Café Format: *Discussion Questions*

BOX S-3 Discussion Questions

1. What are the main stressors experienced in your community now?
2. What will be the main stressors in the future—in the next 10–20 years?
3. What makes your community more vulnerable to stressors?
4. What are the barriers to strengthening your community's ability to respond to stressors?
5. What is your future vision of improved community health and well-being?
6. What is the most important aspect for our committee to consider?
7. What are special considerations or concerns that should be highlighted to ensure children are properly included in CIAs? ^a
8. What are the opportunities to improve decision-making tools by incorporating tribal knowledge and data? ^b

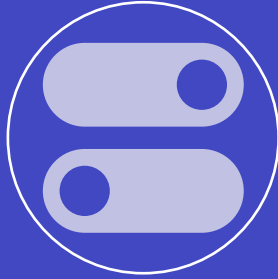
^a Only used during the virtual liaison Town Hall.

^b Only used during the Colorado tribal engagement.

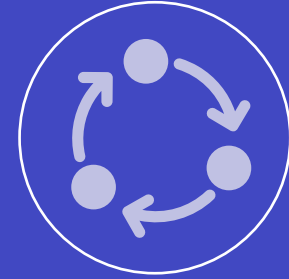
Needs Highlighted during Committee's Engagements



Physical, mental, emotional, material, social, and spiritual components play a role in community health & well being



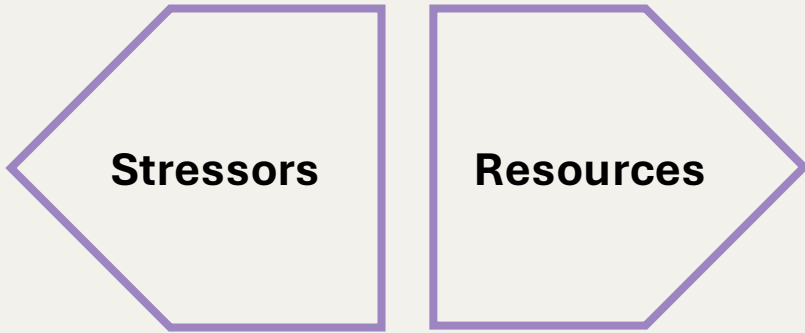
Wide and dynamic range of factors across time and place - increasing or decreasing vulnerability, or acting as barriers to strengthening resilience



Importance of local context and the role of data ownership and democratization



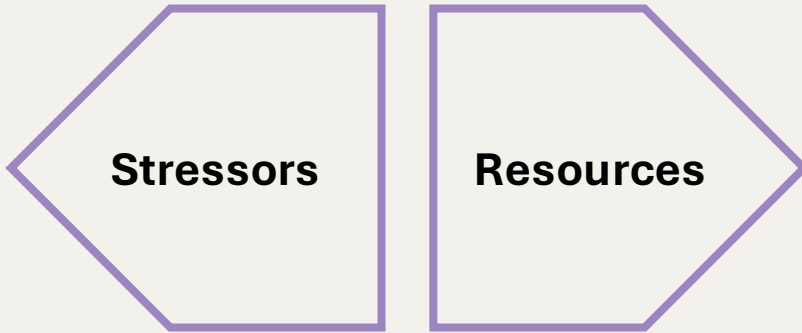
EPA's Framework: *Broadening the Conceptual Paradigm*



Distinguish **stressors** from **resources**

- **Stressors:** factors that *undermine* health and well-being
- **Resources:** factors that *promote* health and well being

EPA's Framework: *Broadening the Conceptual Paradigm*

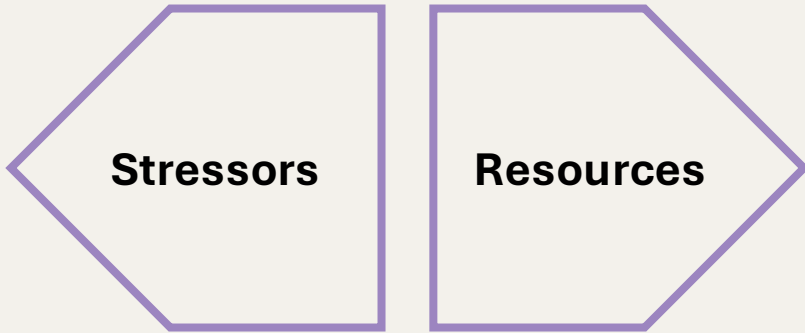


Distinguish **stressors** from **resources**

Account for multiple dimensions of **health and well-being**

- A broad umbrella encompassing multiple dimensions—including physical, mental, emotional, material, social, and spiritual aspects

EPA's Framework: *Broadening the Conceptual Paradigm*



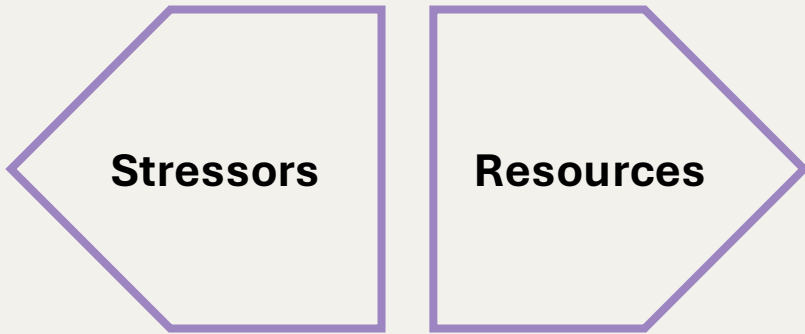
Distinguish **stressors** from **resources**

Account for multiple dimensions of **health and well-being**

Recognize **different scales** at which stressors and resources operate:

- From global to neighborhood to family and individual
- Across the past, present, and future

EPA's Framework: *Broadening the Conceptual Paradigm*



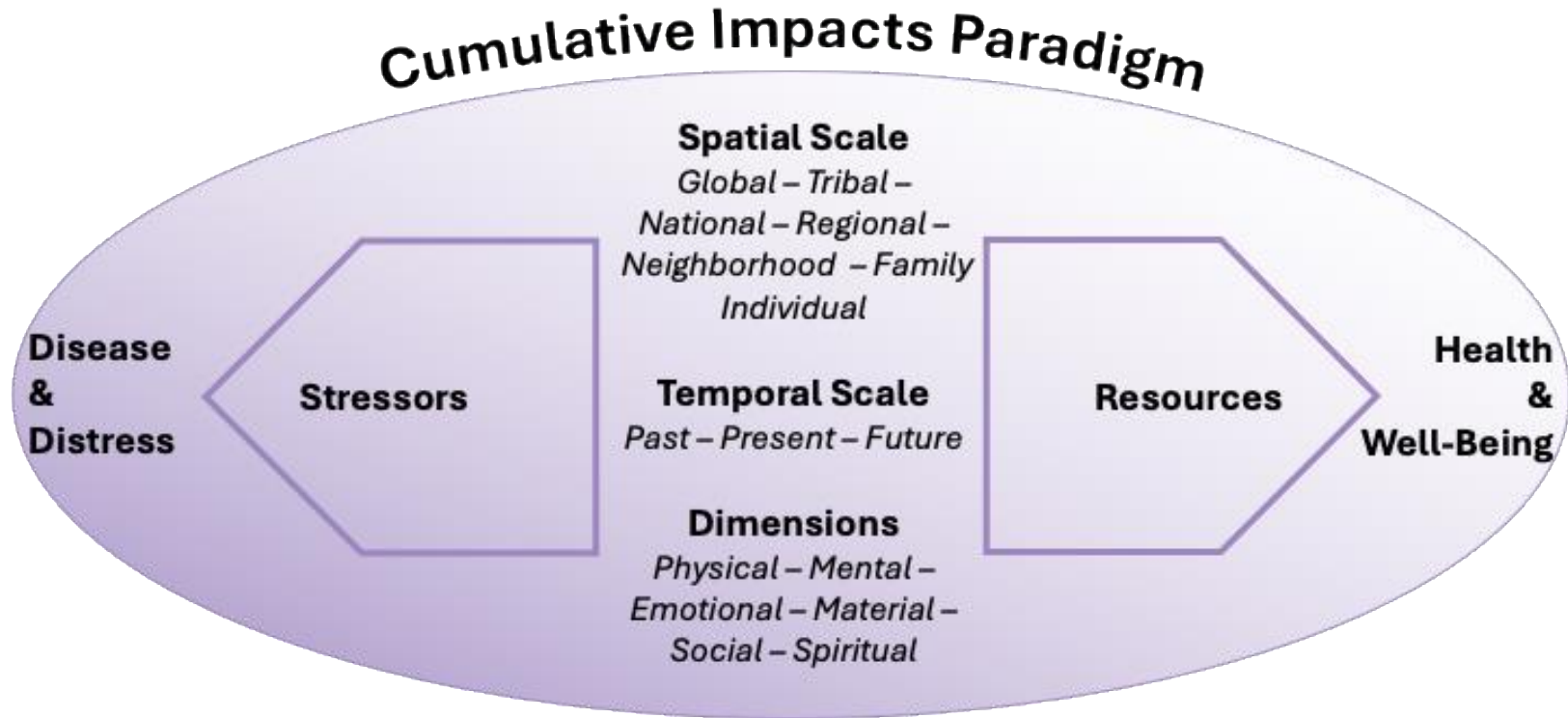
Distinguish **stressors** from **resources**

Account for multiple dimensions of **health and well-being**

Recognize **different scales** at which stressors and resources operate.

Implement this paradigm through existing best practices for **meaningful engagement.**

Recommended Cumulative Impacts Paradigm



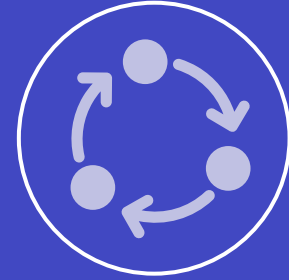
Recommended Cumulative Impacts Paradigm: *Key Aspects*



Reflects how the deep interconnections between people and environmental, political, economic, historical, and cultural factors affect multiple dimensions of health & well-being



Highlights the critical importance of the context of decision-making, providing consideration for different spatial and temporal scales, including past, present, and future



Stresses community and tribal data and knowledge, tribal sovereignty/legal self-governance as critical aspects of understanding and integrating local contexts



State of the Science and the Future of Cumulative Impact Assessment



Consensus Study Report



Chapter 4: Methodological Approaches Frameworks, and Uncertainties

Methods and Approaches to CIA

Initiate with Meaningful Engagement

Define Scope and Formulate Problem

Assess Health & Well-Being, Stressors, and Resources

Inform Planning, Policy, and/or Decisions

Monitor and Evaluate Outcomes

FOCUS OF CHAPTER 4

Based on **defined scope and problem**:

- Collect qualitative and/or quantitative data on **Health & Well-Being, exposure to Stressors, and availability of Resources**;
- Integrate data to characterize cumulative impacts at **baseline**, and, if applicable, under **projected future scenarios**.

Ongoing meaningful engagement

Collect, Evaluate and Synthesize Evidence

- Authoritative Data Sources, Systematic Reviews, Systematic Evidence Mapping;
- Qualitative, Lived-Experience, and Other Data;
- Data from Multidisciplinary Geospatial, Toxicological, Epidemiologic, Exposomic, Life-Course, & Economic Approaches.

Analyze and Integrate Data

- Single/Multiple Scoring & Matrix Approaches;
- Mixed Qualitative-Quantitative Methods and Systems-Based Approaches;
- Addressing Uncertainty while Prioritizing Timeliness through Defaults.

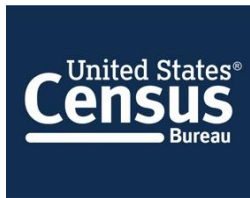
Committee addressed strengths, gaps, uncertainties, and opportunities in:

- Toxicology, epidemiology, exposure science (basis of authoritative reviews)
- Economic approaches
- Exposomic approaches
- Life-course approaches

EPA should specify how to select and apply approaches to CIA appropriate to the decision context, engaging with affected populations

Key Sources of Data, Research Synthesis, and Research Funding Related to Stressors, Resources, and Health & Well-Being

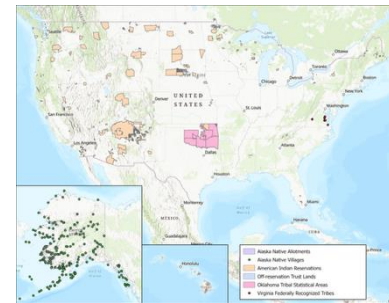
Federal agencies



FEMA



Tribal, state, & local agencies



Opportunities to Advance CIA: *Actions for EPA, National, Tribal, State, and Local Entities*



- ✓ **Bolster authoritative data & resources at the national, tribal, state, and local level**
 - Maintain, update, and expand datasets
 - Expand infrastructure for public data access & crosswalk across agencies
- ✓ **Advance analysis and integration of existing multidisciplinary research into CIA**
- ✓ **Support research to fill gaps in methods, data**

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State of the Science and the Future of Cumulative Impact Assessment



Consensus Study Report

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Medicine



Chapter 5: The Path Forward

Committee's Case Studies



Case 1:
Place-
Based
(Louisiana)



Case 2:
Population
-Based
(Urban &
Rural
Tribal
Members,
Colorado)



Case 3:
Disaster-
Specific
(East
Palestine,
Ohio)



Case 4:
Los
Angeles,
California
Wildfires



Case 5:
Air Quality
Regulation



Case 6:
Co-
Benefits of
Climate
Policies



Case 7:
Lead
Service
Line
Replace-
ment



Case 8:
Chemical
Class,
Mixtures,
and
Chemicals
Policy



Committee's Case Studies



Case 1:
Place-
Based
(Louisiana)



Case 2:
Population
-Based
(Urban &
Rural
Tribal
Members,
Colorado)



Case 3:
Disaster-
Specific
(East
Palestine,
Ohio)



Case 4:
Los
Angeles,
California
Wildfires



Case 5:
Air Quality
Regulation



Case 6:
Co-
Benefits of
Climate
Policies



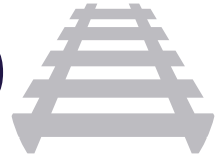
Case 7:
Lead
Service
Line
Replace-
ment



Case 8:
Chemical
Class,
Mixtures,
and
Chemicals
Policy



Case 3: Disaster-Specific (East Palestine, Ohio)



Ongoing meaningful engagement

Initiate with
Meaningful
Engagement

Define Scope and
Formulate
Problem

Assess
Health & Well-
Being, Stressors,
and Resources

Inform Planning,
Policy, and/or
Decisions

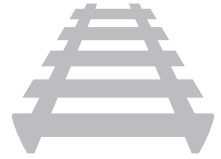
Monitor and
Evaluate
Outcomes



FIGURE 5-1. Aerial view of the Norfolk Southern freight train derailment in East Palestine, Ohio on February 5. SOURCE : NTSB, 2023. <https://www.ntsb.gov/news/press-releases/Pages/NR20230214.aspx>.

- Derailment of freight train carrying hazardous materials, subsequent fires
- Many chemicals released into air, soil, nearby streams
- Community members voiced physical, emotional, and social impacts

Case 3: *Key Takeaways*



Limitations of traditional risk assessment & monitoring of pollutant by pollutant based on train manifest.

Reframe to reflect vulnerabilities and layered exposures:

- *Baseline assessment*: health & well-being, stressors, resources to reflect lived experiences – and build trust
- *Inform increased availability, access to resources*
- *Monitoring and evaluation*: broader range of exposures, key indicators of community health and well-being, availability & use of resources

Ongoing meaningful engagement



Case 4: Los Angeles, California Wildfires



Integrate four key dimensions:

1. *Environmental stressors*: Mapping of smoke plumes, PM2.5 and toxic air contaminant exposure zones, toxic soils, heat events
2. *Occupational stressors*: Shift data, injury records, labor protections for essential workers, cleanup crews, and firefighters
3. *Social determinants*: Data on housing instability, income levels, health care access, language barriers, food security
4. *Resource mapping*: Availability of clean air centers, HVAC-equipped shelters, health care, mental health services, employer safety policies

Ongoing meaningful engagement



Case 4: *Key Takeaways*



Limitations of traditional risk assessment focus on ambient air quality.

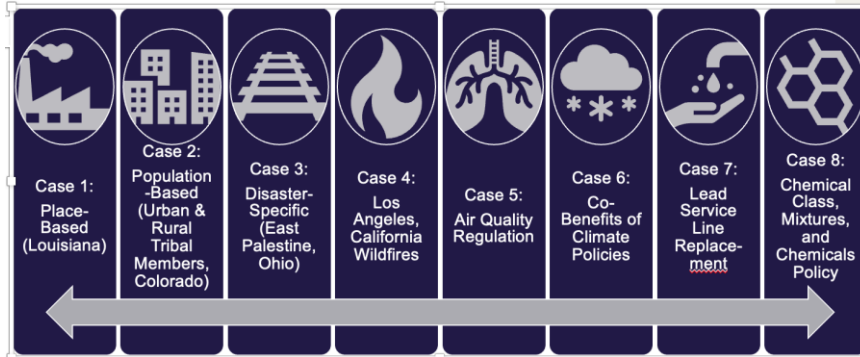
Reframe to reflect community-centered monitoring:

- Emergency room visits for respiratory illness and heat-related conditions
- Uptake of workplace protections and health services
- Resident and worker feedback
- Real-time mapping of resource availability and unmet needs

Ongoing meaningful engagement



Committee's Case Studies: *Lessons Learned*



- Underscore CIA's applicability to many different decision contexts
- Illustrate how the committee's recommendations can increase the effectiveness of actions to improve health and well-being
- Highlight needs for CIA practice:
 - Refine Steps 2 and 5
 - Ensure timeliness even when uncertainties remain

Implementing CIA: *Refining Step 2 and Step 5*

Ongoing meaningful engagement

Initiate with
Meaningful
Engagement

Define Scope and
Formulate
Problem

Assess
Health & Well-
Being, Stressors,
and Resources

Inform Planning,
Policy, and/or
Decisions

Monitor and
Evaluate
Outcomes

Develop guiding/diagnostic questions to facilitate adaptability to different communities, scales and programmatic needs

Support ongoing program adjustments by using both technical indicators *and* community-defined metrics to track changes in cumulative impacts over time

Implementing CIA: *Ensuring Timeliness while Addressing Uncertainty*

Ongoing meaningful engagement



- Need for timely decision-making even when data are limited and uncertainties remain
- Adopt approach with a preference towards action and against underestimation of cumulative impacts
 - Conduct rapid CIAs when appropriate
 - Use existing authoritative or systematic reviews
 - Apply “default” assumptions to account for uncertainty associated with gaps in knowledge

Next Steps for EPA and other National Entities, States and Local Levels



- ✓ Expand use of existing tools for baseline assessments to identify communities for interventions to improve health and well-being
- ✓ Increase capacity for CIAs through development of tools, best practices, and training

Report Dissemination



- The pre-publication report was made available on the National Academies website for free download on October 9 at 2 pm ET
- A recording of this public release webinar will be posted on the event website
- The final, copy-edited report will be published online (for free download) and in book format in approximately 3 months (February 2026)

Thank you!

The ad hoc committee on the *State-of-the-Science and the Future of Cumulative Impact Assessment* and the National Academies staff extend sincere thanks to EPA for the opportunity to conduct this study.

... and thank you all for your interest in our study and for attending today's public webinar!

Extra Slides- Case Studies

#1, 2, 5, 6, 7, 8

Committee's Case Studies



Case 1:
Place-
Based
(Louisiana)



Case 2:
Population
-Based
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Case 3:
Disaster-
Specific
(East
Palestine,
Ohio)



Case 4:
Los
Angeles,
California
Wildfires



Case 5:
Air Quality
Regulation



Case 6:
Co-
Benefits of
Climate
Policies



Case 7:
Lead
Service
Line
Replace-
ment



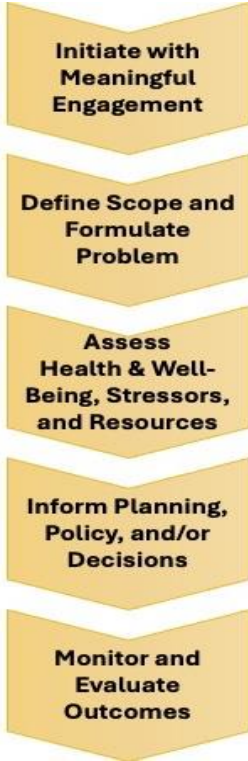
Case 8:
Chemical
Class,
Mixtures,
and
Chemicals
Policy



Case 1: Place-based (River Parishes, New Orleans to Baton Rouge, LA)



Ongoing meaningful engagement



Engagement to understand neglect, discrimination, toxic emissions, public health crises through generations



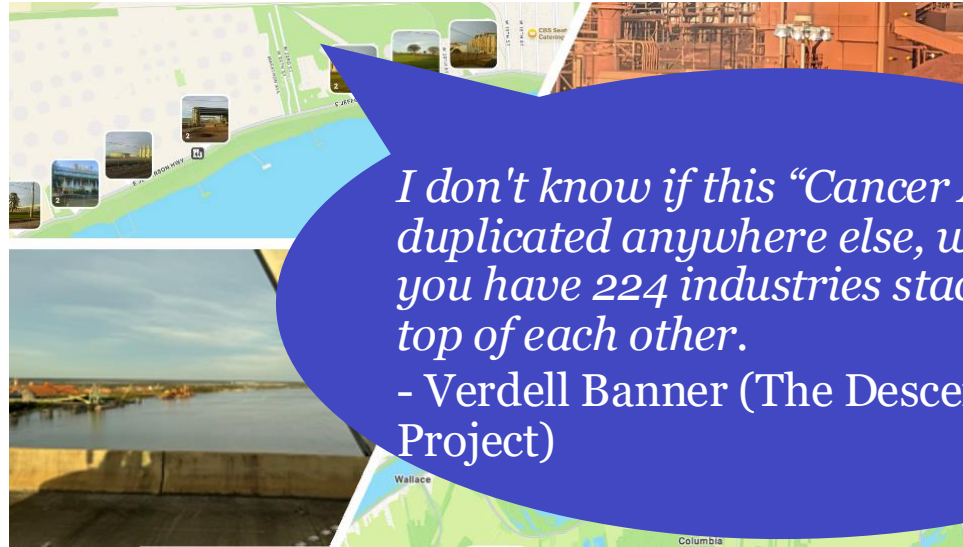
Case 1: Place-based (River Parishes, New Orleans to Baton Rouge, LA)



Ongoing meaningful engagement



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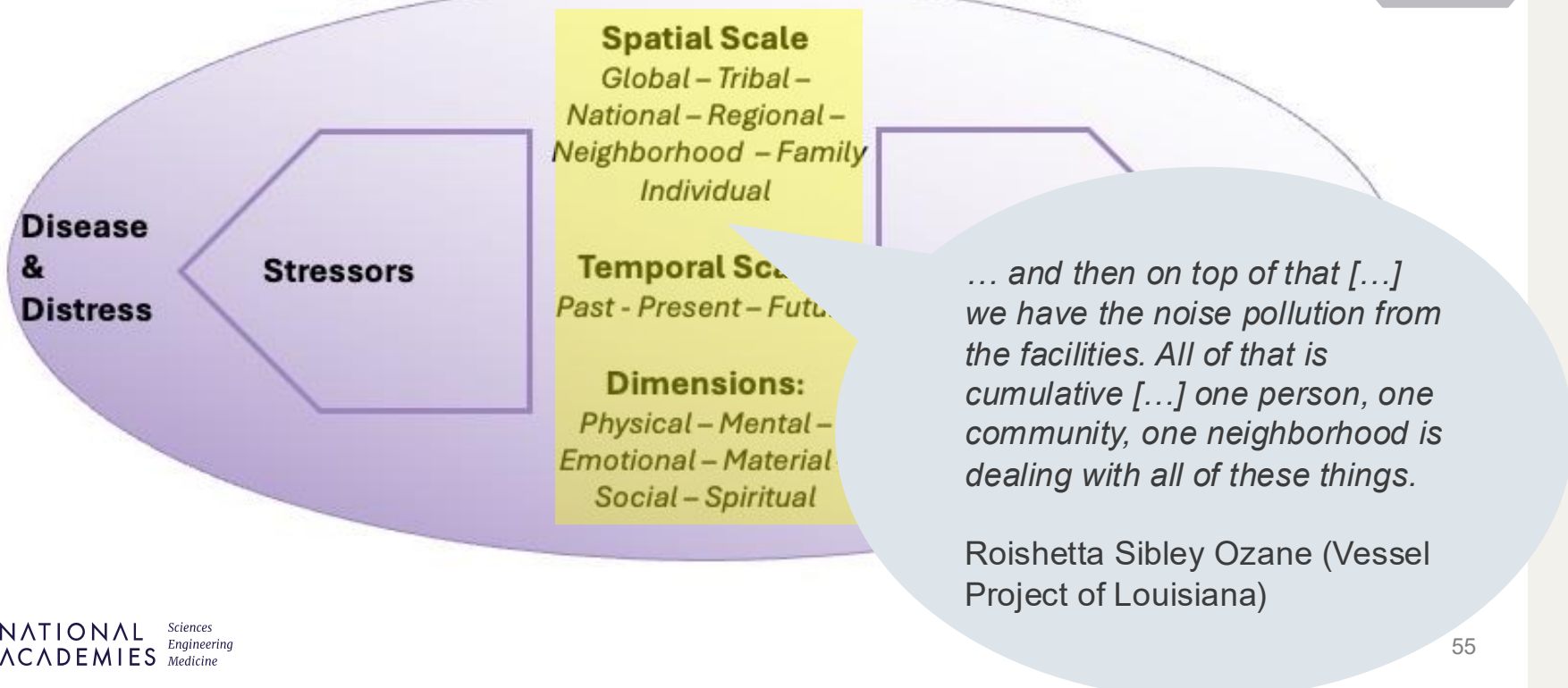
I don't know if this "Cancer Alley" is duplicated anywhere else, where you have 224 industries stacked on top of each other.

- Verdell Banner (The Descendants Project)

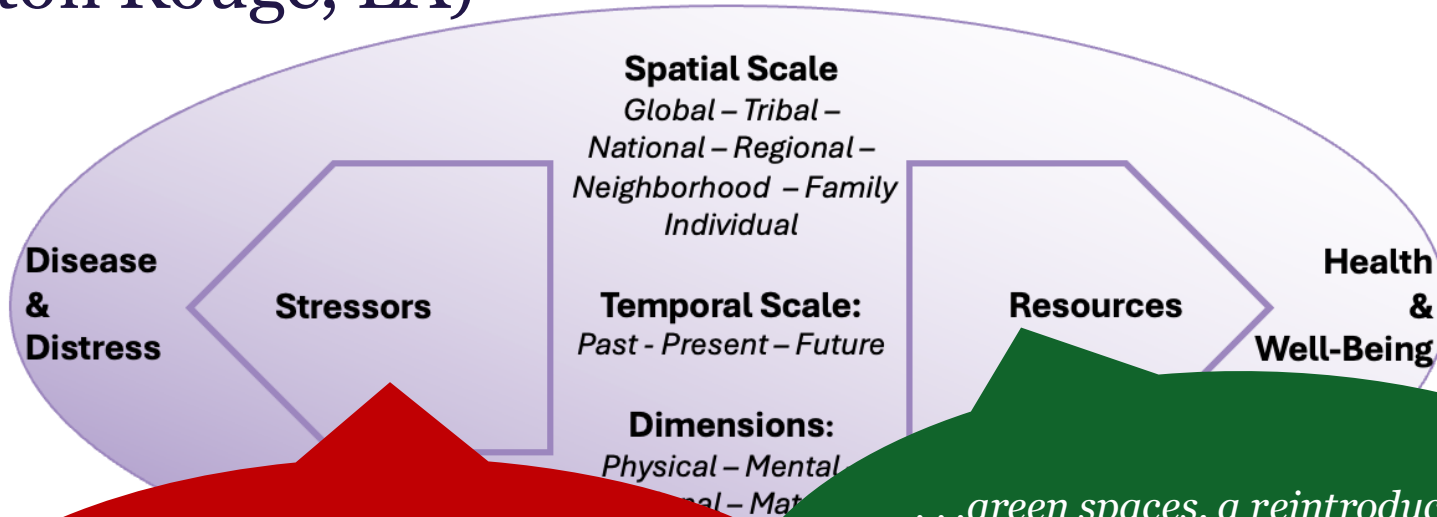
Case 1: Place-based (River Parishes, New Orleans to Baton Rouge, LA)



Cumulative Impacts Paradigm



Case 1: Place-based (River Parishes, New Orleans to Baton Rouge, LA)



We know from public health data that a couple of hours of very heavy particulates can be really bad for heart health and lung health . . . These short-term events happen like clockwork.

- Scott Eustis (Healthy Gulf)

. . . green spaces, a reintroduced wetland buffer, ... and residential homes that are built to withstand severe weather events, and the community enjoys clean air and water.

- Jacqueline Baham (Water Wise Gulf South, New Orleans East Green Infrastructure Collective)

Case 1: *Key Takeaways*



Limitations of traditional risk assessment of emissions by source, pollutant by pollutant.

Reframe to reflect layered, systemic stressors, lived experience, historical context of land use, zoning, and industrial policy:

- *Assess spatial, temporal data:* Emissions, facility locations, historical permit records, community-level data on stressors, resources, health through co-production of knowledge
- *Inform regulatory and policy shifts:* Permitting, enforcement, public investment to strengthen infrastructure
- *Monitor:* Health outcomes, pollution trends, well-being

Ongoing meaningful engagement

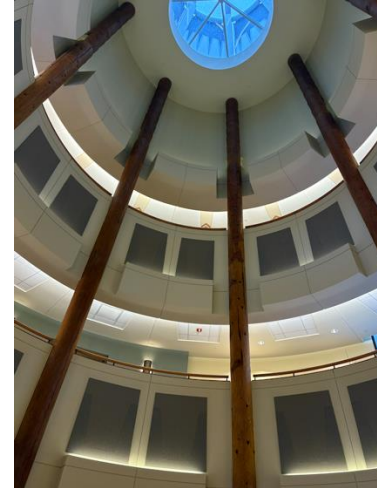


Case 2: Population-Based (Urban and Rural Tribal Members in Colorado)



Engagement to understand lived experience across geographic boundaries - and to identify context-specific solutions that respect tribal sovereignty

Ongoing meaningful engagement



Case 2: Population-Based (Urban and Rural Tribal Members in Colorado)



Cumulative Impacts Paradigm

Dis
&
D

Spatial Scale
Global – Tribal –
Metropolitan – Regional –
Neighborhood – Family
Individual

Scale:
Future

ns:
Mental –
Material –
Spiritual

The costs of housing are unbelievable, and Native families have always congregated and lived together; that's how we survived a lot of the trials and tribulations.

Beverly Castaneda (Community Elder)

... There is a large population of Tribal folks who have been spiritually disconnected from their homelands [and] home cultures.

Sena Harjo (Seminole, Choctaw and Creek)

Case 2: *Key Takeaways*

Limitations of traditional risk assessment tied to a specific facility or boundary.

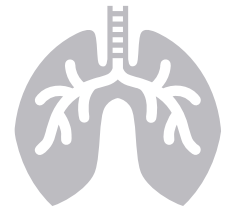
Reframe to iteratively assess stressors & resources in urban and rural tribal communities:

- *Assess tribal, state, and local data:* qualitative and quantitative information (health care, housing, water quality & access) through co-production of knowledge
- *Inform regulatory and policy shifts:* culturally competent health care access in cities, rural water infrastructure
- *Monitor:* tribal health indicators, service access, environmental quality, focusing on well-being, co-governance, culturally-relevant feedback to policy-makers

Ongoing meaningful engagement



Case 5: Air Quality Regulation Monitoring



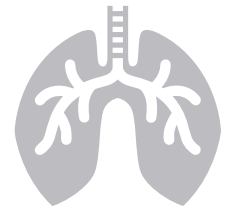
Expand beyond the approaches of Regulatory Impact Assessment to assess:

- Qualitative and quantitative information on high-risk populations and health outcomes
- Connections between policy measures and health
- Expanded metrics of well-being - beyond morbidity and mortality
- Influence of policy measures on distribution of exposures and health outcomes, within and between communities

Ongoing meaningful engagement



Case 5: Key Takeaways



CIA provides additional insight to decision-makers and affected communities:

- Incorporating retrospective and anticipatory lenses
- Earlier meaningful engagement to refine questions: who to characterize, whether outputs are national, state or by specific geographic areas or emission sources
- Assess alternative policies (vs benefits and costs of a single candidate policy measure)
- Monitoring to track emissions, air quality, health outcomes

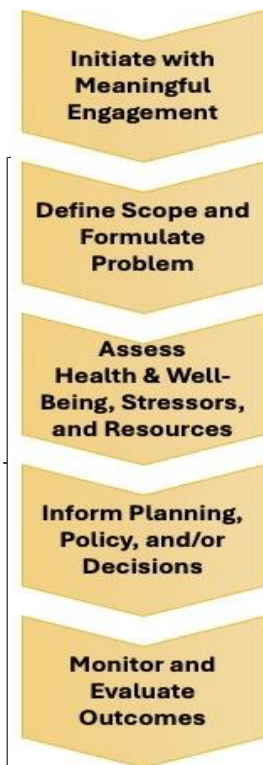
Ongoing meaningful engagement



Case 6: Co-Benefits of Climate Policies- *Key Takeaways*



Ongoing meaningful engagement



Holistically assess reductions in PM_{2.5} and air toxics along with associated health benefits:

- Engage overburdened communities to better understand local drivers
- Centralize data collection and track across multiple regulatory agencies
- Use granular data on mobile-source emissions and exposures – link to neighborhoods
- Assess place-based, community-specific health implications
- Monitor health risks related to air toxics: integrate emissions data with modeling approaches

Case 7: Lead Service Line Replacement (LSLR)

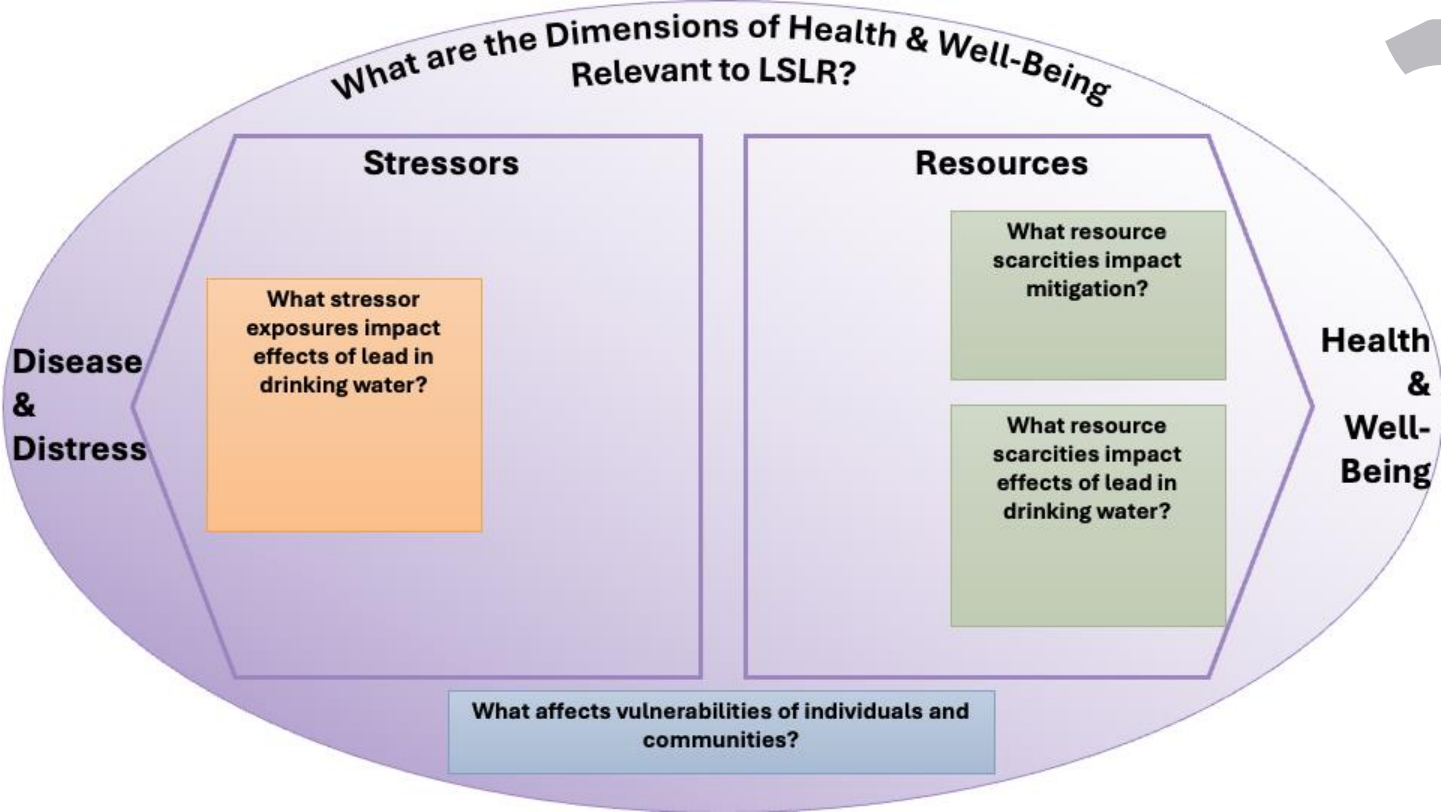


Ongoing meaningful engagement

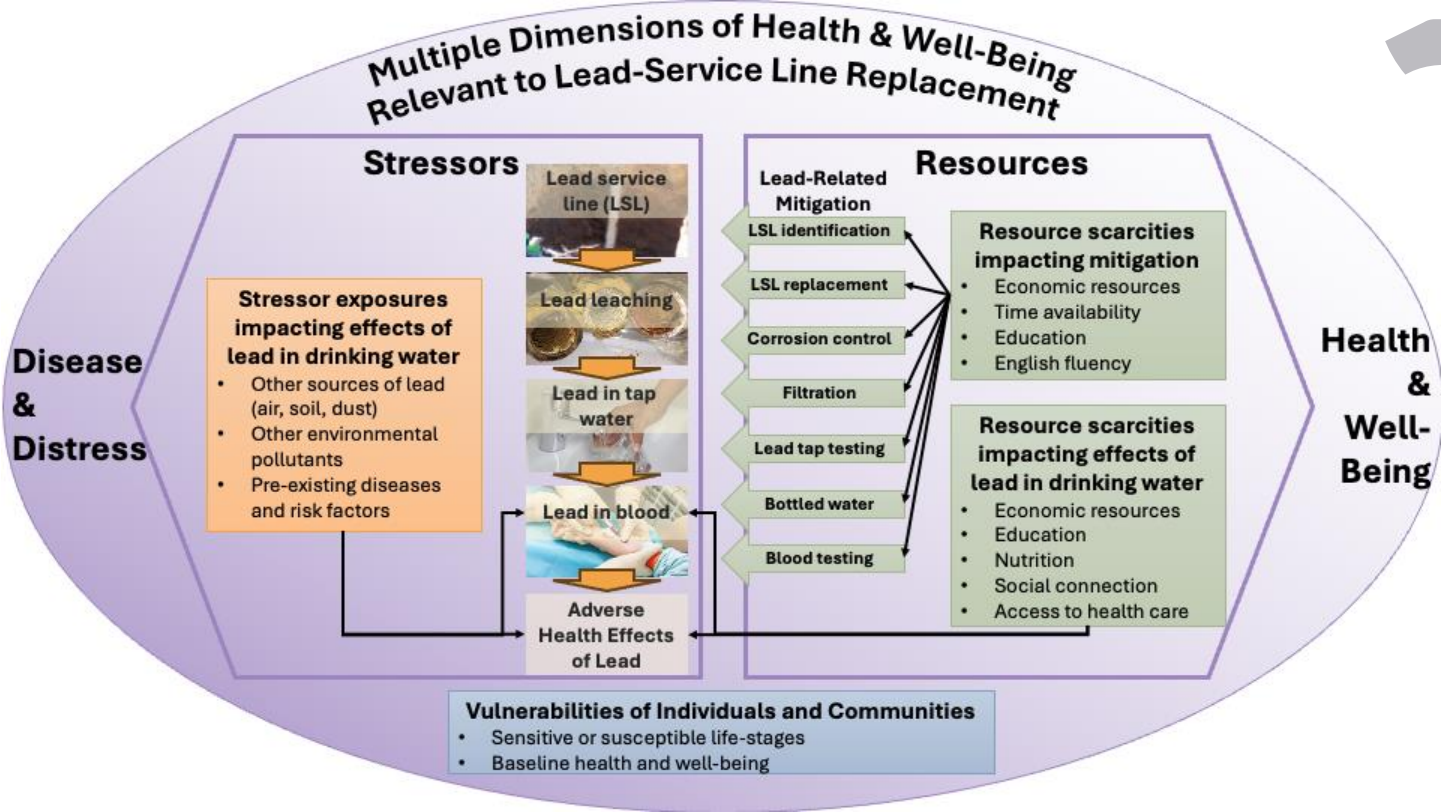


- EPA’s Lead and Copper Rule: inventory & plan LSLR for systems serving schools, colleges, factories, and hospitals
- **CIA can inform how to prioritize communities based on higher impact of LSLR on health & well-being:**
 - *Baseline assessments:* Most relevant cumulative burdens (stressors, resource scarcities)
 - *Reduce barriers to implementation:* Develop specific programs and policies
 - *Monitor & Evaluate:* Test for lead before and after LSLR to verify exposure reduction in prioritized communities

Case 7: Lead Service Line Replacement (LSLR)



Case 7: Key Takeaways



Case 8: Chemical Class, Mixtures, and Chemicals



Ongoing meaningful engagement

Initiate with
Meaningful
Engagement

- *Community and expert inputs*: how chemicals are used, how people are exposed, any populations with high exposures or vulnerability

Define Scope and
Formulate
Problem

- *Groups chemicals*: build from risk assessments of co-occurring exposures, shared health effects (phthalates, flame retardants)

Assess
Health & Well-
Being, Stressors,
and Resources

- *Assess impacts of chemicals, other stressors*: across populations or on a common health outcome (e.g., breast cancer)

Inform Planning,
Policy, and/or
Decisions

- *Monitor and evaluate*: NHANES, databases related to chemical use (as done for PFAS, flame retardants, lead)

Monitor and
Evaluate
Outcomes

Case 8: *Key Takeaways*



Ongoing meaningful engagement

Initiate with
Meaningful
Engagement

Define Scope and
Formulate
Problem

Assess
Health & Well-
Being, Stressors,
and Resources

Inform Planning,
Policy, and/or
Decisions

Monitor and
Evaluate
Outcomes

- **Inform chemicals regulation and policy:**
 - Analyze differences in exposure vulnerability, baseline health and well-being across populations
 - Integrate findings into determinations of significant risk under TSCA or in setting regulatory standards
- **Monitoring and evaluation:** prioritize the most highly exposed and overburdened groups, better ensuring protection of vulnerable populations