

Environmental Laws and Alternative Dispute Resolution: Tools for Environmental Justice

Cumulative Risks and Impacts: From Challenge to Opportunity

Introduction

The real life context of communities confronting environmental justice issues: this must be the focus of policies and practices that are intended to respond to the needs of people who are overburdened with pollution and disease. An important step in assuring this focus is the concept of “cumulative risk assessment and impact.” This fact sheet will explain this concept and how it relates to the achievement of environmental justice for all communities.

History

The concept of cumulative risk assessment and impact can be viewed as part of the evolutionary process of understanding and regulating exposure to environmental agents. In the 1970s, as the *modern* version of environmental laws were being adopted, such as the Clean Air Act, efforts to control pollution generally used technology-based regulations or an individual chemical-by-chemical approach. Decisions were made using *risk assessment* tools. Risk assessment is a process that characterizes the relationship between environmental exposures and effects observed in exposed individuals. It traditionally involves 4 steps:

1. Hazard identification
2. Dose-response assessment
3. Exposure assessment
4. Risk characterization

While improving many aspects of environmental and health degradation from pollution, gaps in this approach became known over time. Knowledge was expanded through the development of databases on releases of pollutants. Understanding of the mechanisms of interactions between pollution and disease was improved through toxicological and epidemiologic research. Recognition of the need to account for sensitive sub-populations was increased by health professionals. Thus, over time, the concept of cumulative risk assessment was developed. In 2003, EPA published its *Framework for Cumulative Risk Assessment*, as one of its first steps in developing guidelines for responding to the *real life context of communities confront-*

History, cont'd.

ing environmental justice issues. And in 2004, the National Environmental Justice Advisory Council to the US EPA prepared its report *Ensuring Risk Reduction in Communities with Multiple Stressors: Environmental Justice and Cumulative Risks/Impacts*. This report provided recommendations for implementing cumulative risk assessment in order to ensure environmental justice for all communities and tribes.

What is Cumulative Risk and Impact?

To understand the meaning of cumulative risk, it is useful to consider the conventional scientific definition and also to consider the concept from an environmental justice perspective.

The conventional definition of cumulative risk is:

the risk of a common toxic effect associated with concurrent exposure by all relevant pathways and routes of exposure to a group of chemicals that share a common mechanism of toxicity

As background, “route of exposure” is the way a chemical enters an organism after contact. This can include ingestion (i.e. eating); inhalation (i.e. breathing), or dermal absorption (i.e. touching).

From an environmental justice perspective, cumulative risks and impacts describe the “complex web of combined exposures” that is experienced by disadvantaged, underserved, and environmentally overburdened communities. The concept recognizes the collection of individual stressors that occur simultaneously and multiply over time. These stressors include chemicals and environmental toxins, but also consider other biological, physical, social and cultural factors that affect human health. The concept takes into account the multiple and interconnected factors that influence both individual and community health. These factors include:

- demographics (racial/ethnic status)
- pollution sources (factories, pesticides)
- existing health problems and conditions (e.g., asthma, skin rashes, lack of access to health care)
- unique exposure pathways (e.g. private wells/untreated drinking water)
- social/cultural conditions (e.g., subsistence fishers, hunters)
- community capacity & infrastructure/social capital (e.g., improper drainage, wastewater treatment, education)

To ensure the goal of environmental justice for all communities, EPA's Cumulative Risk Assessment Framework includes the following features:

- Takes a broad view of risk
- Utilizes a population-based and place-based analysis
- Involves multiple stressors (chemical and non-chemical)
- Promotes a comprehensive and integrated assessment of risk
- Posits an expanded definition of vulnerability to include biological and social factors
- Places a premium on community involvement and partnerships
- Emphasizes the importance of planning, scoping, and problem-formulation
- Links risk assessment to risk management within the context of community health goals

Cumulative Risk and Impact, cont'd.

For the above reasons, the emerging field of cumulative risk and impact assessment is particularly suited to properly assessing and mitigating the environmental and public health issues of communities that are: (1) vulnerable, (2) exposed to multiple hazards, and (3) lacking the capacity to adequately participate in the decision-making process.

Ultimately, the concept provides the foundation for understanding the susceptibility of certain communities to environmental toxins because of greater exposure to pollution and a compromised ability to cope with or recover from such exposures.

Environmental Law Opportunities for Assessing Cumulative Risk

There are statutory authorities found in federal environmental laws administered by the US EPA that support use of cumulative risk assessment in government decision-making. Even though the environmental laws do not contain specific language requiring consideration of cumulative risk, they provide the Agency with considerable discretion to address this environmental justice concern. This capacity is based on EPA's general discretionary authority to interpret and implement the statutes that contain broad admonitions to "protect human health and the environment." EPA's authority to consider cumulative risk is described below by agency function.

Standard-Setting

Environmental laws give EPA broad rulemaking powers to make standards and regulations to implement those laws. There are four general types of standards that have varying capacity to address cumulative risks and impacts. These are: 1) technology-based standards; 2) design and practice standards; 3) harm-based standards; and 4) standards for regulating substances.

Technology-based standards and design and practice standards pose the greatest challenge in securing consideration of cumulative risk. These types of standards focus on control measures that are available or achievable to control pollution, or to a specific method of managing waste. The standards are premised on eliminating exposure to toxics to the extent feasible or practicable, considering costs and limits of technology. Yet opportunities do exist to emphasize cumulative risks and impacts. For example:

Clean Water Act: When listing pollutants and setting effluent guideline limitations, EPA has the authority to take cumulative and synergistic effects into consideration. Thus, cost considerations can be overridden to secure adequate health protection.

Clean Air Act: Under the act's toxics program, EPA can make discretionary judgments to incorporate cumulative risk and impact information. In the case of uniform design requirements, such as installation of a double liner, EPA can use its discretion in evaluating the totality of permitting conditions at an entire facility to increase protection when necessitated by cumulative risks and impacts.

Permitting

There are two general opportunities to use permitting to address environmental justice: 1) the siting of new facilities, where EPA's role is somewhat limited; 2) the placement of conditions on a permit for operating a facility.

Facility siting decisions are primarily local, land-use planning or zoning issues and EPA's role in permitting is limited. Yet, there are specific areas where EPA does have authority to address siting. For example, under Section 404 of the Clean Water Act, regarding wetlands and coastal zones, EPA has significant ability to consider and address disproportionate impacts and cumulative risks.

Operating permits provide much greater opportunity for EPA to address cumulative risks and impacts. EPA's grant of authority to operate a facility can include measures that are necessary or appropriate to protect human health and the environment. These provisions are found in RCRA, CAA (Title V operating permits) and the CWA (Section 402(a)(1)), among others.

Specific Strategies to Incorporate Cumulative Risk into Dialogues with both Government and the Private Sector

- 1) Determine the extent to which regulatory decisions do not consider cumulative risks, and leverage this gap to invoke additional action
- 2) Request action to clarify the nature of cumulative risk faced by a community. There are primary and special methods to clarify the nature of cumulative risk.

Primary methods:

- questionnaires, interviews and panels to gather information about cumulative effects analysis
- modeling to quantify the cause-effect relationships leading to cumulative risks
- trends analysis to assess the status of resources, ecosystems, and human communities over time and identify cumulative effects problems
- overlay mapping and GIS to incorporate locational analysis and help set boundaries of the analysis and identify areas where effects will be greatest
- matrices to determine the cumulative effects on resources, ecosystems, and human communities by combining individual effects from different actions

Special methods:

- carrying capacity analysis
- ecosystem analysis
- economic impact analysis
- social impact analysis

- 3) Request that a clear operational framework be established that can provide a sound baseline of information about multiple stressors in a community, and that responds to these stressors.
- 4) Request that EPA use its discretionary authority to produce tangible and sustainable benefits for communities and tribes suffering environmental injustices.

• Enforcement

EPA has the obligation to assure compliance with environmental laws and regulations. It can use a variety of tools to achieve compliance, including: issuing an administrative order, seeking an administrative fine, revoking or withholding a permit, bringing a court action, or pursuing criminal charges. When selecting a particular tool, EPA has discretion to consider a variety of factors, including the impact on public health. This can include cumulative risks and impacts.

An important authority found in several environmental statutes (e.g. RCRA, CWA, CAA) is the “imminent and substantial endangerment” provision that authorizes prompt action to abate and prevent serious harm. Cumulative risks and impacts can help meet the burden of showing substantial endangerment. For example, under Section 504 of the CWA, EPA can consider combined effects.

EPA can also consider cumulative risk in its determination of penalties. Since many enforcement actions are resolved through settlement, there are opportunities for crafting creative remedies. Supplemental environmental projects are also a vehicle for addressing cumulative risks and impacts.

Other Functional Activities

There are a variety of additional opportunities to address cumulative risks and impacts through EPA’s functional activities. EPA’s authority to gather information can stimulate consideration of cumulative risks and impacts. This can be through research, monitoring and reporting activities. The award of financial assistance by EPA, in the form of grants, contracts and assistance agreements, provides another venue to promote consideration of cumulative risks and impacts. Finally, public participation opportunities authorized by federal environmental laws provide the venue to raise awareness of cumulative risks and impacts.

How Cumulative Risk/Impact Can Be Used to Achieve Environmental Justice

The concept of cumulative risk clarifies the core challenges faced by environmentally overburdened communities. It captures the real-life, real-time experiences of communities living with multiple exposures to environmental toxins. The conventional regulatory approach for siting and operating various types of facilities or activities is predicated primarily on a risk-based paradigm from a single source or a single pollutant. Zoning for mixed-use areas also contributes to multiple exposures. This approach results in the aggregation of sources (clusters) that are within the risk threshold for individual facilities, but cumulatively produce a higher exposure burden to people living in surrounding areas. Cumulative risk can respond to the assumption used in scientific and government decision-making that people are only exposed to one environmental toxin at a time. Cumulative risk can also serve as an important link to a collaborative problem-solving approach. EPA’s Framework for Cumulative Risk Assessment expands the scope of risk assessment to include the factors that are key to understanding full community risk. This approach fosters a dialogue between community residents, government, and the private sector that can lead to action that responds to cumulative risks and impacts.

Using Cumulative Risk/Impact to Achieve Environmental Justice, cont'd.

Cumulative risk can serve as a useful tool to help environmentally overburdened and health-compromised communities achieve environmental justice. In order to be an effective tool, it must be applied in the context of a “bias for action,” and not used to delay implementation of measures that provide relief to communities overburdened with pollution. The benefits can accrue to both the outcome and the process. Beneficial outcomes include mechanisms to address multiple stressors; increased attention to the vulnerabilities in communities; and significant reduction in overall risk from exposure to environmental toxins.

The process of achieving environmental justice is also improved when cumulative risks are recognized. It provides the context for using efficient screening, targeting, and prioritization methods and tools to better understand the human health impact of exposure to environmental toxins. It provides the venue for creating a transparent process that instills confidence, trust, and other features of social capital. It provides the opportunity for regulatory authorities to garner the attention of recalcitrant parties and commence a dialogue about measures to address impact.

Conclusion

Cumulative risks and impacts are challenges borne by people overburdened with pollution and disease. They extend to environmental, health, economic, social and cultural issues. Understanding and recognition of these cumulative risks and impacts can produce opportunities for community residents, government and the private sector to develop and implement measures that will ultimately lead to environmental justice for all communities.