ENVIRONMENTAL JUSTICE AS A COMPONENT OF ENVIRONMENTAL DECISION-MAKING

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Summary

The concept of environmental justice describes a growing social movement as well as a particular set of environmental policy issues. The basic tenet of environmental justice is that all persons, regardless of race or social status, have the right to a clean and healthy environment in which to live, work, and recreate. In the past 20 years, studies have been conducted in areas of high industrial use and urban areas that indicate to various degrees that poor communities; and communities of color, are frequently and disproportionately subject to multiple hazards, and inadequate protection and review. The environmental justice movement is therefore united in understanding that absence of ecological

destruction, freedom from environmental discrimination, and the need for demographic participation at every stage of policy-making are central to an environmental justice perspective, and the need to re-orient environmental decision-making. This chapter will explore the existing framework of environmental decision-making in the United States, analyze the impact the environmental justice movement has had on environmental policies, and propose a working model to integrate environmental justice into environmental decision-making.

1. Introduction

In the past 20 years, the research and ongoing debate on issues of environmental racism, equity, and justice have influenced environmental health policy in the Unites States. During this time, grass roots organizations and community action groups that have focused attention on the environmental problems facing disadvantaged populations have, in part, prompted the change in environmental policies. This is in contrast to the environmental movement that began in the 1960s and 1970s, which was predominantly organized by the white middle class. Although the early environmental movement succeeded in building a strong political foundation for environmental regulation and reform, it generally ignored charges that chemical pollution in communities of color and low- income was far higher than in affluent, white communities.

The basic fact that communities of color and low-income are frequently and disproportionately subject to multiple hazards, and inadequate environmental protection is central to what has been called the environmental justice movement. The term "environmental justice" is used throughout this chapter to describe a growing social movement as well as a particular set of environmental policy issues. Though a relatively new concept, environmental justice refers to a rich tradition of urban and rural environmental activism that dates back to the beginning of the twentieth century in the United States. The environmental and occupational hazards experienced by the most vulnerable groups in society—the poor, recent immigrants, women, people of color, children, and communities subject to multiple forms of pollution—have historically been of concern to community activists, social reformers, and public interest scientists.

The history of the environmental justice movement in the United States has been well chronicled (see Bibliography for further reading). Evidence of disparities in exposure to environmental pollution (particularly air pollution) by race and income group was presented in the 1970s by several researchers. Concurrently, in 1971, the annual report of the President's Council on Environmental Quality included information on the disparate distribution of environmental problems among demographic groups. During the 1980s, the environmental justice movement, represented by community and grass roots groups brought to the attention of government agencies examples of environmental problems facing disadvantaged communities. In its landmark publication, the United Church of Christ's Commission for Racial Justice released a nationwide study in 1987 on the demographics of populations living near commercial hazardous waste facilities. This report prompted the convening of several conferences and coalitions. For example, the Michigan coalition was formed by a group of scientists, activists, and civil rights leaders during the Conference On Race And The Incidence Of Environmental Hazards held in Michigan in 1990. Such groups elevated the issues of

environmental justice to national prominence in the 1990s.

Since that time, several books, newsletters, and some of the media coverage have documented the social, legal, and scientific aspects of environmental justice. The result of the increase in visibility of the problem was a proliferation of citizen and government activities related to environmental justice that has led to legislative, and executive action at the national level, and in some states, including the signing in 1994 of Executive Order 12898 On Environmental Justice by President Clinton. Although the environmental justice movement has been successful in educating citizens, government agencies, and politicians about ongoing environmental problems in disadvantaged communities, much work still needs to be done to correct these inequities.

In practical terms, the word "environment" means different things to different people. For many, the environment is the untouched wilderness such as the mountains and forests that is separate from where they live and work. For others, the environment refers to the built environment around them, such as the streets, parks, and buildings that make up their cities and towns. The occupational environment might be an assembly line, a walled-in office or a warehouse where people congregate a third of their working life. Some environmental problems, like wildfires and background radiation, occur naturally. Others, like pollution and development, are clearly caused by humans; and have been exacerbated by the world's rapidly expanding population, by resource extraction, and, some believe, by a lack of centralized planning in developing countries as well as industrial nations.

Not all health problems come from environmental pollution. Hazards in the workplace associated with chemical exposure are often greater than the hazards from exposure to pollutants in the environment. Many other factors also play a role, including poverty and employment status, which affect nutrition; and access to health care, violence, smoking, and drug use. In fact, scientists still do not know the exact degree to which human health problems can be attributed to pollution, and how much should be attributed to other environmental factors or lifestyle choices. However, we do know that there is an integral connection between the health of nature and the health of humans. A lack of a balance in one affects the other. Given the scientific uncertainties involved in evaluating the impact of environmental stressors on human health, it is prudent public health practice to reduce or eliminate preventable exposures to hazardous substances, particularly in high-risk settings. Furthermore, environmental protection programs must effect empowerment within individuals and communities, and raise the consciousness about their health and environment, and multi-cultural issues. In the United States, these are particularly important given the rapidly changing demographic face of the nation, the ongoing problems associated with environmental pollution, and the increased production and use of chemicals.

Lawmakers, scientists, business executives, environmental advocates, and community leaders have argued for decades about the best way to protect humans and ecosystems from chemical pollution. Policymakers often fail to—or do not adequately—consider a range of good opportunities for increasing funding for environmental protection, including finding alternatives to hazardous processes and products or levying pollution taxes. For example, it might be more effective to spend money to develop and use

alternatives to conventional pesticides, than to first regulate them and then mitigate the problems they cause. In the United States, there are many federal, state and local laws, regulations, and ordinances aimed at reducing the impact of environmental pollution. Too often, however, legislation has focused on one environmental medium (for example, water or air) or one problem (for example pesticide use or mobile sources of air pollution) rather than using an inclusive approach. Furthermore, in conducting evaluations of health impacts of pollution, certain sub-populations are generally "averaged" within the total population, an approach that often masks the need for alternative measures other than those designed to protect an average person. These inadequacies in existing environmental laws have resulted in environmental protection that is fragmented, overlapping, and/or insufficient to address health and environmental concerns. Moreover, despite some attempt to address society's needs as a whole, environmental protection has often competed with this country's other priorities, including education, economic growth, transportation, crime prevention, and other social programs.

The environmental justice movement is united in understanding that absence of ecological destruction, freedom from environmental discrimination, and the need for democratic participation at every stage of policymaking are central to an environmental justice perspective, and the need to reorient environmental policy. It follows that the environmental justice movement and perspective is under the larger consideration of social justice as a whole. The goals and objectives of social justice policy therefore need to include environmental policy. This chapter provides a framework for incorporating environmental justice into environmental decision-making.

2. Existing Framework for Environmental Decision-Making

Whether decisions are about our personal health, a significant purchase, job or travel plan we all make them based on a myriad of factors. Environmental decision-making is also a multi-dimensional process. Some factors that might be considered in formulating a decision on environmental problems are listed below:

- Consensus.
- Convention.
- Demographics.
- Economics.
- Education.
- Emergencies.
- Ethics.
- Existing law/regulation.
- Justice.
- Perception.
- Politics.
- Popular opinion.
- Prevention.
- Quality of life.
- Risk (assessment).

- Science.
- Sustainability.
- Technical feasibility.

One of the more difficult problems in any environmental decision is the question of the public's perception of the problem. That is, even if scientists, policymakers, and advocates could create the most accurate scientific risk-based assessment imaginable, citizens would still have their own perception of the severity of the environmental problems that surround them. Those perceptions are key to developing sound policies, effective education, and responsive government agencies. Public perception on environmental issues is influenced by at least four general factors:

1. The knowledge that people have about environmental problems.
2. The source of this knowledge.
3. The level of trust in the decision-makers.
4. The degree that citizens' views are incorporated into environmental decision-making.

Some policymakers attempt to incorporate public opinion into their decision-making process. However, such attempts usually do not utilize the full extent of public knowledge about an existing problem. The sources of knowledge can be quite diverse depending on the visibility and complexity of the problem. Furthermore, the public generally tends to accept information about environmental problems obtained from environmental organizations and the news media over information obtained from government agencies or industry. If this is true, then there is a degree of public mistrust inherent in any decision on the environment or health made by a government agency.

The more information we have on the environmental problem and its impacts, the better able we are to make good decisions. The approach to environmental decision-making currently practiced by most governmental agencies tends to include some or all of the following conditions:

- Risk assessment is the primary tool used to support decisions on mitigation, control, and enforcement or regulation. However, risks might be assessed differently among agencies, and there are actually only a few "environmental agencies" that assess environmental or occupational health risks. These agencies attempt to make decisions based on data supported with scientific judgment. Most agencies also either consider themselves mandated to look at future or multiple risks or do so voluntarily.
- Pollution abatement (that is, reducing pollution after it has been released) is a dominant mandate. On the other hand, pollution prevention, which includes concepts of source reduction and life cycle analysis, is not commonly mandated, although the concept is now more frequently addressed in regulatory programs.
- Most agencies are mandated to provide public notice and formal hearings for pending decisions, and provide access to published information. The full range of activities that might engage the public is often not used. Few if any agencies, for example, are mandated to use public education programs or informal workshops on a significant basis, although some do on a voluntary basis. Few agencies require

significant community or public involvement (typically in the form of co-sponsorships) in grant projects.

- Formally or informally, agencies might consider sub-populations that may be at more risk than the broader population. Environmental laws are now being introduced or amended to ensure health protection of children and infants. However, consideration of other environmental justice issues is rarely included in existing mandated activities.
- Few agencies are mandated to include economic factors other than efficiency. Economic considerations generally take the form of evaluating impacts on businesses, for example, of toxic air emissions regulations on small businesses or of registration processes for new pesticides on agricultural enterprises.

The remainder of this section provides some basic information on selected existing models that can be used by environmental agencies to assist the decision-making process.

2.1. Risk Assessment

Risk is defined as the probability or chance that a desired or unwanted action, circumstance or event will result in loss or harm. In the context of environmental assessment, risk is the likelihood of harmful effects, including human disease or death, damage to ecosystems, property losses, and anxiety about the future. In the context of human health, risk is the probability that adverse health effects, ranging from death to subtle biochemical changes, may occur due to exposure to a substance. The degree of risk attributed to an environmental problem is based on both technical analysis and expert judgment, and it usually refers to current or potential risk calculated with environmental protection programs in place.

As mentioned previously, risk assessment is the tool that is more often than not referred to as the premier factor used in environmental decision-making by government agencies. Many believe that risk-based assessments of environmental problems are valuable and should be used for priority setting in conjunction with other factors. This model of environmental priority setting uses a two-tiered approach. Analysts first attempt to understand the size and scope of various problems (risk assessment). Secondly, they have to decide which problems to address in light of feasibility, cost, equity, and other factors (risk management). Typically, a risk becomes a priority when the public is concerned and policymakers decide to address it.

The National Academy of Sciences in 1983 defined risk assessment as a four-step process developed to aid in the evaluation of the safety of synthetic chemical use, or the exposure to humans from chemicals in the environment. Later, risk communication was added as an unofficial fifth step as a means to link risk assessors with the public and to present the information to the public in the most effective way. In conducting health risk assessments, analysts ask a number of representative questions about each environmental problem (see Table 1). Once a risk for a human exposure to an environmental agent has been determined, a decision is made on whether it is necessary to reduce the risk, and how would risk reduction be accomplished. This latter procedure is referred to as risk management, which is a value-based process to determine what

level of risk to human health and the environment is significant, and to formulate options for identifying, selecting, and implementing actions to prevent, reduce or maintain risks below that level. Risk management considers risk along with other technical, economic, legal, and social factors.

Risk Assessment Step	Examples of Questions Asked by the Risk Assessor
Hazard Identification	What substances harm humans, and what kind of harm is it? Out of all the substances involved in a problem area, (for example, air pollution) which substances will we look at in this analysis?
Exposure Assessment	What are the sources and duration of exposures to this substance? How many people are exposed to the hazardous substance? What range of doses do they receive?
Dose-Response Assessment	What could happen to humans if they are exposed to different levels of these compounds? What are the cancer-causing effects and non-cancer-causing effects?
Risk Characterization	Given all we have learned so far, what are the human health impacts of current exposures? What is the risk to an individual? What is the risk to an entire population? Are any sub-populations more impacted than others? How confident are we in the overall analysis?
Risk Communication	Is the information clearly relevant to and understandable by the affected public? Does the information respond to the public's concerns? What are the limitations of the risk assessment?

Table 1. Steps Used to Assess Human Health Hazards.

Human health risks are the actual or estimated cases of human disease or injury caused by natural or human-made environmental stressors. These include both cancer (for example, lung cancer caused by exposure to tobacco smoke) and non-cancer effects (for example, retarded mental development caused by ingesting lead in paint chips). Human health risk assessment often includes a systematic procedure to identify environmental agents that could adversely impact human health. Exposure data, based on actual or modeled exposures, are used to quantify levels of hazardous substances reaching, and then being taken up by, an individual (referred to as a dose). Information on the toxicity of a substance is used to develop a dose–response relationship to which the human exposure dose is compared as part of the risk characterization.

Assessing the impacts of pollution on the environment is another essential process in aiding policymakers in making informed decisions about environmental protection. Although beyond the scope of this chapter, it should be briefly mentioned that ecological health risks are the estimated or anticipated damages to the structure and

function of natural ecosystems. Examples include loss of fish and plant life due to water pollution, loss of wildlife habitat, changes in the physical landscape, and reduced growth rates in forests exposed to high levels of smog. Assessing ecological risks is less well defined than human health risk assessment, although great strides have been made in recent years to develop a more consistent approach. Ecological risk assessors often rely on environmental data collected by regulatory agencies, industry groups, regional associations, and environmental groups. Cause and effect "pathways" are then used to identify the most severe threats to an ecosystem(s). This allows for a more flexible approach assessing the relative hazard or threat of environmental pollution.

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Biographical Sketch

Michael J. DiBartolomeis, Ph.D., is Senior Toxicologist and Chief of the Pesticide and Food Toxicology in the Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency (Cal/EPA). This program evaluates health risks from exposure to chemical contaminants in food, the environment, and the workplace. Dr. DiBartolomeis also represents California in public health matters related to pesticide and food safety and provides support for public outreach and education.

In 1984, Dr. DiBartolomeis earned his PhD in environmental toxicology from the University of Wisconsin, Madison, and conducted postdoctoral studies at the University of California, San Francisco and at the California Public Health Foundation. He earned his BS in biochemistry from the University of Massachusetts, Amherst in 1979, and has been certified by the American Board of Toxicology since 1988. He has served on US EPA's Forum of State and Tribal Toxics Action and the National Environmental Justice Advisory Council, special emphasis review committees for the National Institute of Environmental Health Sciences, as a member and past president of the board of directors for the Pesticide Action Network and has conducted volunteer work in developing countries in the areas of education and public health. Dr. DiBartolomeis has presented original research in over 50 publications and conference proceedings. From January 1992 to June 1994 in a concurrent appointment, Dr. DiBartolomeis served as director for the California Comparative Risk Project sponsored by Cal/EPA. In this role, he supervised the work of over 300 participants, developed the work plan, and acted as liaison with Cal/EPA, US EPA, other state departments and the Legislature. The project involved convening several advisory committees consisting of scientists, educators, policy-makers, and representatives from community groups as well as chairing the project management team, and guiding six technical research committees.