

RISK ANALYSIS VIRTUAL ISSUE

Environmental Justice and Social Injustice: Ethnic, Racial, Economic, and Other Marginalized People and Communities

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Introduction

Our aim with this virtual issue is to provide a compendium of papers that examine some of the risks and disadvantages that people and communities experience as a result of environmental injustices. Environmental injustice is one form of social injustice that normally refers to the disproportionate exposure of some individuals and groups to environmental hazards such as pollutants, industrial sites, and hazardous waste sites, without receiving the benefits deriving from the hazards that accrue to the polluters or industries.

Communities disproportionately affected by pollutants have higher exposures to toxic chemicals that pose health risks than other communities, have little control, and often have less access to information and resources to mitigate these risks (Zartarian et al., 2011). Environmental justice and health equity have come to represent principles of fairness, and the need for change, ending health disparities (Ruffin, 2011; Chakraborty, 2011).

Modern environmentalism arose in the 1960's-1970's. However, the environmental justice movement gained considerable momentum when social justice advocates affiliated with the United Church of Christ (UCC) were asked to respond to a proposed landfill site in rural Afton, North Carolina. Benjamin Chavis, Jr., a major civil rights leader, organized protests, and his UCC colleague Charles Lee (later head of U.S.EPA environmental justice program) returned from North Carolina with the hypothesis that hazardous waste sites around the U.S. were probably disproportionately to be found in poor and minority areas. That hypothesis led to *Toxic Waste and Race* (1987). The UCC released their report in April 1987, and during that press conference Benjamin Chavis coined the term "environmental racism." (Greenberg, 1999). The UCC leaders were deeply grounded in ethical beliefs. However, in order to determine if Lee's hypothesis was correct, two academics quite familiar with the newly emerging risk analysis field, Michael Greenberg and Benjamin Goldman, were asked to design the study and Benjamin Goldman carried out the work (CRJ, 1987).

Bullard and others (Bullard and Wright, 1987; Mohai and Bryant, 1992, Wigley and Shrader-Frechette, 1990) noted the health and economic disparities of "blacks and other minorities, the poor, and working-class (Bullard 1990) living near waste sites and polluting factories that exposed them to toxic chemicals, without reaping the benefits of these industries. Profiteering at community expense involved externalizing the cost of waste disposal. Bullard's (1990) *Dumping on Dixie: Race, Class, and Environmental Quality* summarized studies showing that siting of hazards near black communities was non-random, and brought into sharp focus these disparities in exposures and health risks. They made a powerful case for fairness, equity, and response, which required accurate risk assessments, reasonable

risk management and mitigation, clear and honest risk communication, and the involvement of communities in characterizing the disproportionate exposures, effects, and solutions.

Yet, in our collective experience, environmental justice communities often do not trust risk assessments, which they believe are designed to exclude or minimize their input. Most prefer a precautionary approach. While there is some debate about environmental justice community identification, inclusion, health disparities, and economic outcomes, there is clear agreement that environmental injustices exist (e.g. differential exposures), and that not all communities share equally in economic benefits from nearby polluting facilities. This made environmental justice one among several great social justice disparities.

We accept the Environmental Protection Agency's definition of environmental justice as the "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation and enforcement of environmental laws, regulations and policies" (EPA, 2020). This definition is derived from President Clinton's Executive order #12898 on environmental justice issued in March 1994. Clearly, assembling data and evidence, risk analysis and management, and traditional knowledge and beliefs are important for the discussions and papers that follow. In some cases, communities may feel they have not had meaningful involvement, and strive for the power to deny or amend permits, or have cleaner technologies.

In the introduction, we examine environmental justice historically, briefly discussing three of the main themes of the environmental justice movement, concentrating on the disparities in environmental exposures and health, but noting that the injustices in our societies include not only differential incomes and toxic environmental exposures, but a range of other disparities. Maintaining an eye on injustices in environmental exposures, outcomes, and health disparities as the focus of this issue does not mean that the social injustices should not be addressed, but rather that we use environmental injustices as the lens for action and social change. The recent Covid-19 pandemic, the increasing challenge of police use of excessive force, and the recognition of a largely unknown history of racial discrimination and violence, highlight the importance of addressing not only environmental justice, but the inequities of our societal norms.

Papers were selected from the late 1980s to the present, divided into three themes of environmental justice thinking and research. We also suggest additional papers on each topic for completeness. The three topic areas are:

- 1. Recognition of the diversity of environmental justice exposures and effects**
- 2. Ethics, laws, tools and approaches to remedy environmental justice**
- 3. Recognition of the connection between environmental justice, disasters, and the social justice movement**

As with all such divisions within an interdisciplinary, interconnected, iterative paradigm, these topics overlap and lead into one another. The rise of the environmental justice movement was swift and appealing, largely because justice is a mobilizing theme, environmental injustice exists, and it is pervasive (Taylor, 2000). The papers in this volume range from equity in social risk and the "fairness" of the distribution of risks, to ethical and methodological issues with environmental justice analyses, to the more recent examinations of the unequal distribution of risks and outcomes with respect to intergenerational issues, catastrophic events, and climate change.

Historical Context

Every society has had some social injustices, evolving from social or political structures, differences in resources and finances, differences in religious or other belief systems, and a range of other factors. However, a unique situation was created by the industrial revolution. The move from farming communities to industrial communities necessarily meant some people lived near factories, and the closer people lived to factories, the more likely they were to be exposed to pollutants or other substances that were byproducts of the industries. Proximity was not the only threat. Working in these factories created its own occupational exposures. In the pre-automobile era, however, factory neighbors were likely to be factory workers, gaining direct benefits from jobs, even if exposed to environmental and occupational hazards. Because of the potential for pollution (bad-smelling air or water, funny-tasting water, and later knowledge of chemical health effects), some people were able to move out of these neighborhoods, while others were unable to do so. Low housing values or low taxes attracted other people, primarily lower income people, to move in. Where this happened, inequities in exposures developed. Polluting factories still employed people, but mostly no longer neighbors, creating a mismatch between hazard and benefit. When factories closed, they left contamination of air and water, plus abandoned land with contaminated soil or toxic waste.

With time, the siting of new factories, energy facilities (e.g. nuclear power plants, garbage dumps and hazardous waste sites, as well as airports), sometimes referred to collectively as Locally-Unwanted Land Uses (LULUs) (Popper, 1983) became an issue, and “Not in my Backyard” (NIMBY) became a familiar phrase that could be wielded effectively by advantaged (i.e. white middle-class) but not by disadvantaged (i.e. black, low-income) communities (Greenberg, 2009). Given the opportunity to choose, lower-income communities often succumbed to the seductive benefits of lower taxes and housing costs. Further, some hazardous facilities were located in rural areas with low population density, or on Native American or Alaskan Native lands. Bullard’s (1990) *Dumping on Dixie: Race, Class, and Environmental Quality* provided a reasoned argument for facing the inequities created by higher exposures to environmental contaminants, although clearly contaminants are not the only environmental exposures of concern. Bullard was very clearly inclusive, speaking about black, poor, and working class people that were disenfranchised – they were communities that had contaminants and unhealthy living conditions thrust upon them.

It is not simply a problem of lower incomes, minority status, or marginalized communities, however, but of institutional discrimination and historical outcomes. To some extent, the problem is one of redistribution (Figueroa, 2003) -in this case, the redistribution of environmental exposures (and harmful health outcomes) and the societal benefits of the industrial products, processes, or other values. The outcry of Bullard and others in the environmental justice movement was clear and incontrovertible – low-income, minority communities, Native American and Alaskan Natives, working-class families, and others were experiencing health disparities that often led or embodied social inequities. The previously referred to case that attracted Benjamin Chavis, Jr. and Charles Lee and started the environmental justice movement in the U.S. occurred in Afton, North Carolina, a rural largely African-American town that remains a classic illustration of Charles Lee’s, Ben Chavis, Jr. and Bob Bullard’s contentions about inequitable siting.

Identification of the problems and health disparity outcomes is the first step in addressing these issues. For example, the initial siting of Department of Energy nuclear production facilities was largely by fiat

and done in relative secrecy because of the security necessary during the nuclear bomb “race” and after the Second World War, whereas the more recent siting of power plants, nuclear waste repositories, and other hazardous facilities has occurred with much more consideration of community input, and the “fairness” of their location (Keller and Sarin 1995, Graham, 1999). The initial recognition of the range of people and communities exposed to the injustices of chemical and radionuclide exposures because of proximity to facilities occurred before the first issue of *Risk Analysis*. Nonetheless, the range and scope of environmental justice was a key feature of early articles, and is the continued subject of reviews (Brulle and Pellow, 2006).

Presidential Executive Order 12898: Laws and regulations as solutions

In 1994, President Bill Clinton of the United States signed Executive Order 12898 that tasked all federal agencies to make environmental justice part of their mission (Federal Register, 1994). Agencies were directed to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies and activities on minority and low-income populations (DOE, 2008). Many agencies and groups held symposia, focus groups and large-scale meetings to examine the disparities in health as a function of environmental injustices in their exposures. The U.S. Environmental Protection Agency (EPA) held a symposium on the topic, results of which were publicized widely in the *American Journal of Public Health supplement* in 2011. The exposures that led to health disparities were through all media (air, water, soil), and by all routes (dermal and ingestion of food, water, medicines) (Burger and Gochfeld, 2011; Gochfeld and Burger, 2011). They noted that nonstandard and unique exposure pathways can lead to disproportionate exposures for minority, low-income, Native American and Alaskan Natives, and other groups, leading to increased disparities in health outcomes.

Environmental injustices do, in fact, lead to environmental health crises. The “traditional” routes of exposure, however, do not always take into account environmental justice communities, such as Native Americans or Alaskan Natives (Harris and Harper, 2000; Burger et al., 2008). Several of the EPA’s projects and programs made a concerted effort to include environmental justice communities in their decision-making processes (Crismon, 1999). The EPA developed many documents and practices for dealing with the environmental justice issues involved with fish consumption, for example (e.g. high exposures to PCBs and mercury in Native American and low-income communities) (EPA, 2008). EPA also produced a community guide to environmental justice and National Environmental Policy Act (NEPA) methods (EPA, 2019) in recognition of the importance of continued agency attention particularly for minority communities.

The environmental justice movement, while maintaining the importance of documenting exposure and health outcome disparities, turned to examining the historical aspects of environmental injustices, such as those faced by Native American and Native Alaskans who were often relegated to sub-optimal or inhospitable landscapes and have not received as much attention in the literature as other groups (Vickery and Hunter, 2016).

Environmental justice, social conflict, and cumulative effects

The recognition that low-income, minority and other marginalized communities have faced higher levels of exposure to contaminants and other harmful situations (e.g. truck traffic, noise around airports, loss of green space, low-lying and floodable communities), has led to emerging principles of self-determination, identity recognition, and democratic participation. Environmental justice led to social

conflict (Mikula and Wenzel, 2000). It is no longer only proximity to environmental hazards with resulting health outcomes (Brender et al., 2011), but rather a constellation of exposures and social conditions that exacerbate the adverse health disparities of exposures to chemicals or radionuclides. The presence of two or more of the “environmental justice” community characteristics (e.g. minority, Native American or Alaskan Natives, low-income, rural, disfranchised) may be synergistic rather than additive – they seemingly magnify and enhance the health and social disparities. With time, analyses of the extent and effects of environmental injustices, using a longitudinal approach, are leading to a fuller understanding of how to move forward (Mohai, 2015; Chakraborty et al., 2016).

There is a new recognition that environmental inequities are also magnified during adverse natural disasters. Hurricanes, tornados, extensive fires, earthquakes, and infectious diseases all play on top of the inequities of exposures to hazardous wastes, air pollution, water pollution, contaminants in food, and loss of ecological resources (Austin and McKinney, 2016). Climate change, associates sea level rise, and flooding will continue to impact environmental justice communities to a greater extent than more affluent ones (Burger et al. 2019). In many places in the world, including the United States, indigenous people are exposed to injustices from both environmental exposures and global climate change (Babidge, 2016). This leads directly to the importance of examining environmental inequities in light of unsustainable conditions (Agyeman et al, 2016) – What is the risk to Native Americans, Alaskan Natives, Blacks, Hispanics and Latinos, and other low-income and minority communities from the combined effect of inequities in exposures, climate change, and the need for sustainable cultures and life styles?

It seems to us that resolution depends upon addressing current environment inequities and future generational ones, as well as the current inequities and unrest in the social order (justice, power, protest, race, gender, income, and police violence, for example) (Sze, 2020). We hope these papers will provide a foundation for anyone interested in risk, risk analysis and management, community involvement, inequalities in exposure and health outcomes, and environmental justice within the broader aspects of social justice. The challenges they present seem to be intensifying.

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1. Recognition of the diversity of environmental justice exposures and effects

The recognition that some people were unjustly exposed to environmental contaminants occurred much before the first issue of *Risk Analysis* was first published in 1981, yet the task of recognizing the full extent of these injustices continues. We selected papers for this section, and noted some additional readings, that explore the range of people and communities facing disparities in health as a result of these injustices. The Keller and Sarin (1988) paper explores the notion of fairness and equity in exposures and risks, as well as how the role of perceived deservedness influences judgements of equity. It suggests that a fair-risk model should also include benefits, including compensatory differentials. Greenberg (1993) argues and illustrates that it is all too easy to change scales and statistics to get different EJ results. Therefore, we need to check the choice of statistics and geographical scales before concluding that a place or population suffers from inequity or does not. EPA's EJSCREEN tool on EPA's website has become a valuable tool in that assessment of evidence.

The Cutter et al. (1996) and Graham, et al. (1999) papers explore how location and scale are key to understanding and monitoring environmental justice. The Graham paper examined 36 coke plants and 46 oil refineries in the US, compared them to population data of site neighbors, and observed that site neighbors have a higher proportion of minority and non-white poor residents. The paper adds that over time neighborhood demographics change, supporting Greenberg's plea for scanning for evidence. Finally, Chakraborty et al. (2014) noted that often chronic and acute exposures are not examined together within the context of environmental justice communities. In their Houston study with air toxics, communities in which Hispanic residents, a lower percentage of home owners, and higher income inequities faced significantly higher acute and long-term pollution risks than other communities.

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Additional Readings

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2. Ethics, laws, tools, and approaches to remedy environmental justice

While it is essential to continue to explore and examine the inequities and health disparities in

environmental justice communities, it is equally important to recognize the role of ethics, laws, tools and approaches to remedy the environmental injustices. We selected papers and additional readings that address some of these issues. One of the key issues with inequities in exposure and health outcomes is the potential for intergenerational effects – essentially visiting the ills of the present on the next generation. The paper by Becker (2000) examines intergenerational effects in Jewish and Christian communities, and it broadens the questions to resource allocation and fairness. Belzer’s paper (2000) rebuts the notion of the ethical objections to discounting for future effects when considering fairness, and maintains that the irreversibility of actions is often overstated. The Okrent (1999) and Shrader-Fenchette (2000) papers both address duties to future generations, and the need for policies and guidelines to address these issues. Many of the readings we suggest also deal with intergenerational equity issues.

The last two papers selected deal with incorporating ecological information (Burger et al. 2010) and benefit-cost analysis (Farrow 2011) to address and explore environmental justice. The Burger et al. paper provides a template of information needs to protect the ecological resources necessary for human health and cultural well-being in environmental justice communities. The Farrow paper examines how the Office of Management and Budget might improve their examination of distributional consequences of their analysis and implementation of federal regulations.

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3. Recognition of the connection between environmental justice, disasters, and the social justice movement

Environmental justice is both part of social justice considerations, and intertwined with current and future events, such as disasters, infectious diseases, climate change, and resiliency. Communities that are already stressed by inequities in pollution exposure are more at risk from these potential large-scale environmental changes. Kovats et al. (2005) examined human health and climate change with respect to our inability to predict future adverse global health effects. They make the point that improved methods of assessing future risks are particularly critical to face and deal with climate change. Logan (2020) paper follows this theme, reframing the resiliency question by using past experiences during natural disasters to plan and be resilient for future ones. Both argue that environmental justice communities are often more vulnerable to climate change, and thus to ensuing health disparities and we need to find more equitable responses to climate change challenges. .

The Levy and Greco (2009) paper is an example of an excellent approach to examining the current inequities in the distribution of health outcomes (e.g. including death) from air pollution, using a number of inequity indicators. It demonstrates the utility of using formal analytical approaches to address inequality, and provides a tool for decision-makers. Finally, Satterfield and Slovic (2004) link risk perception and environmental injustice with data on the roles of race and gender. They explore the possibility that subjective experience also influences race and gender perceptions. People who regarded themselves as vulnerable rated most risks as higher than those who did not (although their perceptions

did not explain all the differences). In the end risk perceptions, risk communication, and how environmental justice communities face and deal with climate change will have an impact on whether health and income disparities widen, or narrow

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