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Environmental Justice

by Eileen Gauna, Catherine A. O'Neill, and Clifford Rechtschaffen

A Center for Progressive Regulation White Paper

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I. Introduction

Even a cursory visit to an area affected by toxic pollution – what some call a toxic tour – may graphically reveal the scope of environmental inequities in American society.

In some refinery communities of the Gulf Coast region, visitors first see acres of imposing industrial buildings joined by an intricate set of holding tanks, pipes, and smokestacks. In the shadows of these facilities are tiny houses. Visit some of the families in these houses and you will see that many keep suitcases filled with essentials by the front door, tucked perhaps behind the couch, because evacuations are not uncommon. There are “shelter in place” alarms, where children are taught to run inside and immediately close all the windows and doors.¹

Another example: standing on the bank of the Mississippi river in the industrial corridor between New Orleans and Baton Rouge, one might see a man standing on the bank, fishing. Immediately across from him is a factory with a huge outfall pipe belching effluent into the river. The smell is intense, stinging the eyes, but the man continues to fish. He will take the catch home to his family. It is their primary source of protein.²

Another: In Pennsylvania, one might see a small community ringed by large facilities. The newest is a medical and municipal waste incinerator. Huge trucks roll by, an average of one every few minutes. They shake the foundations of the houses and other buildings; indeed, a nearby church is crumbling. The smells are terrible, and rodents are a big problem.³

These are classic real life environmental justice scenarios.

But sometimes environmental justice issues are not readily apparent. Imagine a school yard that looks typical, even idyllic, in the sunny southern California landscape, with no big imposing facilities in sight. But a community organizer explains that there are high rates of leukemia and rare cancers among the children. He explains that many of the school teachers have had multiple miscarriages and that there have been a significant number of birth defects among the faculty and staff at the school. He points to what he believes is the culprit: the vent of a small metal plating shop next door. The emissions vent directly into the school yard.⁴

Similarly, in a community near Tucson, you see another school yard. In the middle of it is a garden memorial to the children who have died. In this case, contaminated water is thought to be responsible.⁵

When encountering instances of environmental injustice, one sees a range from the obvious to the invisible. There are quality of life impacts (noise, odors, rodents) and serious adverse health impacts (cancer clusters and exceedingly high rates of respiratory diseases) in all kinds of combinations. Such scenarios illustrate the persistent failure of environmental laws to protect certain populations. And as the examples and the data pile up, what becomes apparent is that the failure is not random. People of color and the poor disproportionately live in the communities that are overburdened by pollution and underprotected by industry and government.

This white paper describes briefly the remarkable journey of community-based environmental justice advocates over the last 15 years and their impact on environmental regulation. It will also describe some of the empirical evidence of disparities and the

regulatory dynamics that make these inequities an intractable problem, despite the collective efforts of grassroots leaders, environmental justice organizations, public interest law firms, and governmental officials. The paper then focuses on one important set of issues that must be tackled in order to achieve environmental justice: those involving injustice in risk regulation. These are by no means the only issues that confront environmental justice communities and their advocates, who must navigate a technocratic regulatory arena despite a persistent lack of resources, language barriers, lack of notice, and other impediments to fair process. They confront a wide range of issues. Risk is a significant one, to be sure, but so are other quality of life impacts, lack of enforcement, destruction of sacred sites, and lack of access to such environmental amenities as parks, open space, and beach access.

While the Center for Progressive Regulation does not purport to speak for or on behalf of such impacted communities, we strive in this white paper, as allies in this collective undertaking, to analyze and discuss some of the troubling regulatory processes and methodologies that bedevil attempts to reduce risk and eliminate disparities. We close with seven recommendations for agencies. While this list is by no means exhaustive, it includes steps that, taken together, agencies should undertake to begin to respond to environmental injustice. We stress also the need for any response to comport with the *Principles of Environmental Justice*⁶ and to provide for full, meaningful participation by impacted communities and consultation with affected tribes.

II. History and Regulatory Responses

Broadly speaking, environmental justice refers to a political and social movement to address the disparate

distribution of environmental harms and benefits in society and to reform the processes of environmental decision making so that all affected communities have a right to meaningful participation.

Some place the beginnings of the present day environmental justice movement at the 1982 demonstration against the siting of a landfill for polychlorinated biphenyls (PCBs) near an African-American community in Warren County, North Carolina. Environmental justice advocates place the beginning as early as the 1964 passage of the Civil Rights Act,⁷ or in 1971, when an annual report by the Council of Environmental Quality acknowledged that racial discrimination adversely affects the urban poor and the quality of their environment. Local in

origin, the movement grew to national prominence in the late 1980s and early 1990s as regional environmental justice networks grew from local organizations, the empirical evidence of environmental injustice mounted, and activists came together in 1991 for the First National People of Color Leadership Summit. The last 15 years in particular have seen remarkable changes in the landscape of environmental regulation in response to environmental justice claims and the empirical evidence that supported them.

In 1993, for example, the Environmental Protection Agency (“EPA”) established the 25-member National Environmental Justice Advisory Council (“NEJAC”) to make recommendations to the EPA Administrator on environmental justice matters. The NEJAC has since issued several reports and recommendations.⁸ In February of 1994, then-President Clinton signed the Executive Order on Environmental Justice, which directed all federal agencies to make achieving environmental justice part of their missions.⁹ In 2001, a group of law professors

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surveyed several agencies to determine what actions they had undertaken in response to the Executive Order and to offer a preliminary assessment of their compliance.¹⁰ The survey found that all agencies had an initial outburst of energy upon issuance of the Executive Order, but that carry-through was inconsistent among agencies. What seemed to determine relative success was the level of commitment of high-level officials within the agency and a more centralized agency structure.

The Executive Order also created the Federal Interagency Working Group on Environmental Justice (“IWG”), a group chaired by the EPA Administrator. In 1999 the IWG established an Integrated Federal Interagency Action Agenda, a vehicle that sponsored a number of demonstration projects to promote environmental justice. These pilot projects have been used to further develop alternative collaborative approaches to achieving environmental justice. They have often involved efforts by federal and sub-federal agencies and tribal governments working with business stakeholders and community residents. The projects have included a range of issues, from environmental cleanup of contaminated properties, public health issues, children’s health concerns, economic development, and capacity building.

Despite these initiatives, however, EPA has made slow progress in implementing environmental justice, as noted in a recent report by the EPA’s Office of the Inspector General. That report concluded that the EPA has yet to identify minority and low-income populations or develop criteria for determining disproportionate impact; has not developed a clear vision or comprehensive strategic plan to address environmental justice; has not established values, goals, expectations, and performance measures; and has not consistently implemented environmental justice in EPA’s regional offices.¹¹

Meanwhile, because of the lack of progress in alleviating dire conditions in impacted communities, environmental justice advocates began in the early 1990s to use environmental citizen suits, constitutional claims, common law actions, and Title VI of the Civil Rights Act of 1964 to attempt to

remedy environmental disparities. Section 602 of Title VI authorizes federal agencies to adopt regulations that prohibit recipients of federal funds from discriminating either intentionally or by using a facially neutral policy, procedure, or practice that has a discriminatory impact on members of a protected class. Most of the claims consisted of a lawsuit or administrative complaint to the EPA against state environmental protection agencies that were allegedly issuing permits to polluting facilities that resulted in disparate impacts in people of color communities. Although Title VI does not explicitly grant a private cause of action in the statute, most federal courts had acknowledged such a right and allowed plaintiffs access to the courts to prosecute Title VI violations and seek injunctive relief. However, in 2001, the Supreme Court in *Alexander v. Sandoval* ruled that disparate impact lawsuits under Section 602 could not be brought directly by private citizens and that citizens only had standing to sue for intentional discrimination under Section 601.¹² Instead, private citizens alleging disparate impact could send a complaint to a federal agency that funded the recipient who was allegedly discriminating. The funding agency could launch an investigation and, if a violation of their disparate impact regulations was found and not remedied, the federal agency could terminate funding of the discriminating recipient.¹³

This makes administrative actions, i.e., complaints filed with the EPA or other federal funding agencies, the primary remedy for Title VI violations. Recently, the Office of the General Council of the U.S. Commission on Civil Rights released a report on Title VI and the Executive Order on Environmental Justice. The report concluded that the significant delay in the EPA’s issuance of final guidance to investigate such claims and the procedural delay in investigating and ruling on such complaints have left communities continually exposed to harmful pollutants.¹⁴

According to EPA’s Title VI website, last updated November 21, 2003, about 143 complaints have been filed. Eight of those cases have been decided on the merits, but all were dismissed, six finding no adverse impact, one finding no disparity, and one finding lack

of intentional discrimination.¹⁵ Thus, of the 143 complaints filed since September of 1993, there has not been a formal finding of a disparate impact in any case, and EPA's resolve either to terminate funding or to refer cases to the Department of Justice for enforcement remains untested.

Just as Title VI has been an illusory legal remedy to redress environmental inequities, other legal tools have been similarly disappointing. Constitutional claims alleging violations of the Equal Protection Clause have been largely unsuccessful because of the high evidentiary burden to prove discriminatory intent.¹⁶ Standing requirements typically preclude citizens from prosecuting public nuisance actions.¹⁷ Toxic tort cases can be difficult to prove because the conditions in impacted communities often stem from a variety of sources, making litigation against any particular defendant problematic.

Because of the difficulty in making significant progress at the national level and in the courts, many advocates are turning their attention to state and local approaches.¹⁸ Initiatives adopted include state executive orders, the establishment of an environmental justice office or an environmental justice position, policies or strategic plans, environmental justice advisory boards (statewide or community), and working groups (agency or interagency). Cleanup requirements for contaminated sites and brownfield initiatives also sometimes contain environmental justice provisions, as do the criteria for approval of supplemental environmental projects. Some states have taken relatively aggressive steps and targeted enforcement actions in impacted communities. These initiatives demonstrate that environmental justice has grabbed the attention of policymakers; however, these state and local initiatives are of recent vintage, and any assessment of their efficacy is premature.

III. The Evidence

The movement for environmental justice has been bolstered by a solid body of empirical evidence documenting that environmental harms and benefits are unequally distributed in society.

Some of the best publicized early research focused on hazardous waste facilities. In 1983, for example, the General Accounting Office (since renamed the Government Accountability Office) found that three of the four major offsite hazardous waste facilities in EPA's Region IV were located in predominantly African-American communities, even though African-Americans comprised only about one-fifth of the region's population.¹⁹

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Then in 1987, the United Church of Christ's Commission for Racial Justice released a national study documenting a significant relationship between the location of commercial hazardous waste facilities and uncontrolled toxic waste sites and race. Although socioeconomic status

appeared to play an important role in the location of hazardous waste facilities, race was even more significant, even after controlling for urbanization and regional differences.²⁰ Later research largely has confirmed these results, although some studies have reached differing conclusions.²¹

Other early research, some dating back to the start of the 1970s, documented that air pollution and other environmental hazards are distributed unequally by race and income (and that in most cases race was more strongly related to the incidence of pollution than income).²² Based on its review of the literature, in 1992 EPA concluded that racial minority and low-income populations experience higher than average exposures to certain air pollutants, hazardous waste facilities (and by implication, hazardous waste),

contaminated fish, and agricultural pesticides, and that children of color suffer higher rates of lead poisoning.²³ (While blood lead levels of children continue to drop nationwide, children from poor families remain eight times more likely to be poisoned than those from higher-income families, and African-American children are still five times more likely to be poisoned than white children.²⁴)

One response by academics to this evidence was to raise the question, termed by Professor Robert Bullard the “chicken or egg” debate, about whether the polluting facilities were initially placed in people of color communities or whether they were sited in a more racially neutral manner, but post-siting market forces caused the present disparities.²⁵ The latter “market dynamics” or “minority move-in” theory posits that the presence of polluting facilities reduced land prices, thus prompting white residents to move away and poorer people and minorities to move into the area. Based on the research to date, however, there is little empirical support for the market dynamics theory. For example, a nationwide study by Professor Vicki Been – one of the leading proponents of this theory – found that in more than 500 of the communities that hosted commercial hazardous waste facilities at the time of the study, neighborhoods surrounding hazardous waste facilities did not become poorer or more heavily minority after the facilities were sited there.²⁶

Other critics challenged the early studies as inconclusive because they failed to clarify the independent effects of race, income, population density, and other demographic and political factors. Since 1992, however, research has tended to be more sophisticated and controlled for these variables. These more recent studies in large part confirm the earlier conclusions, finding that race and class are significant predictors of where environmental harms are located, while also finding that other factors can be significant predictors.²⁷ Professors John Hird and Michael Reese, for example, found a clear and strong relationship between race and environmental quality after examining 29 indicators of environmental quality throughout the nation, including industrial air emissions, industrial water discharges, water quality,

air quality, and proximity to hazardous wastes: nonwhite and Hispanic populations experience disproportionately high pollution levels.²⁸ Scholars James Lester, David Allen, and Kelly Hill reached similar conclusions in their own detailed study of where environmental harms are concentrated at the state, county, and city levels.²⁹

Interestingly, several studies show that the very poorest neighborhoods appear to repel, rather than attract polluting facilities, and that working class or lower middle class neighborhoods bear a disproportionate share of such plants.³⁰ A more recent study in southern California also suggests a more complicated picture, revealing that the communities most likely to host risk-producing land practices are communities experiencing an “ethnic shift” from one ethnic minority to another.³¹ These researchers posit that social ties are weakened in communities undergoing transition and that they are less likely to organize.³²

Occupational hazards also are disproportionately borne by low-income workers and workers of color. One notable example is farm worker exposure to pesticides: 90 percent of the approximately 2 million hired farm workers in the United States are people of color.³³ The World Resources Institute has estimated that as many as 313,000 farm workers in the United States may suffer from pesticide-related illnesses each year.³⁴ Outside the farm worker context, several studies show that workers of color and low-wage workers are more likely than the rest of the population to work in jobs with higher exposures to toxic chemicals and other hazardous conditions, and that they experience greater risks of occupational disease and injury.³⁵

A smaller but growing body of evidence demonstrates the uneven distribution of environmental amenities, such as effective enforcement, parks and open space, beach access, and transportation spending. Examples include:

Environmental Enforcement. Low-income communities and communities of color suffer disproportionately when environmental laws are

inadequately enforced and businesses violate requirements, because these communities host a disproportionate share of polluting facilities. A 1992 study by the National Law Journal (“NLJ”) found that penalties imposed by EPA for violations of federal environmental laws were substantially lower in minority communities than in white communities, and that racial disparities were evident in EPA’s response to contaminated waste sites.³⁶ (The NLJ study has been criticized, and two subsequent studies of the cases reviewed by the NLJ have questioned its conclusions; two subsequent state studies, however, report similar results.)

Parks and Open Space. Newer studies are documenting disparities in parks and open space. Los Angeles has fewer acres of parks per 1,000 residents than any major city in the country; in the inner city where low income communities of color live, there are 0.3 acres of parks per thousand residents, compared to 1.7 acres in disproportionately white and relatively wealthy parts of Los Angeles.³⁷ Communities of color in New York have the lowest percentages of tree canopy in the city, and New York City has the lowest open space standards for its citizens of any metropolitan area in the country – only 2.5 acres of open space per 1,000 residents. Moreover, at least two-thirds of the community-planning districts (primarily communities of color) do not meet this standard.³⁸

IV. The Many Regulatory Contexts in Which Environmental Justice Issues Arise

Environmental justice advocates have explained how and why disparities exist throughout the regulatory process – in program design, standard setting, permit issuance, enforcement, and cleanup of contaminated properties. Of these, permit issuance is perhaps the most recognized context in which environmental justice issues arise. As noted above, much of the empirical evidence has documented the maldistribution of hazardous waste and other polluting facilities permitted by government agencies. However, environmental injustice may result not only from permitting decisions, but from other facets of health and environmental agencies’ regulatory

approaches as well. Indeed, it would be a mistake to think of “environmental justice” as encompassing only issues of facility siting and permitting.

Environmental justice protections are often absent from the design of regulatory programs in the first place. For example, newer market-oriented programs have been allowed to go forward despite the potential for aggregate trades to result in toxic “hot spots” that occur in minority communities. A case in Southern California is illustrative, where under a car-scrapping program, refineries were allowed to buy reduction credits by retiring heavily polluting older cars, in lieu of installing vapor recovery systems at their marine terminals. The three refineries purchasing the bulk of the credits were located in predominantly Latino communities; these communities continued to experience the refinery’s impacts, while the benefits from the car scrapping were felt throughout the larger metropolitan area.³⁹ Likewise, innovations in program design tend to be industry friendly, with no protections for their implementation in impacted communities. The recent changes to the New Source Review requirements of the Clean Air Act are illustrative. EPA has allowed companies to select the two-year period with the highest emissions out of the last ten years to serve as the baseline for determining whether improvements at existing facilities will be deemed to increase emissions and so require installing new pollution control equipment. It has also tried to expand greatly the roster of improvements that are exempt from new pollution control requirements because they are considered to be routine maintenance. Both actions work to the detriment of the communities that often host the older major emitting facilities that will take advantage of the new rules and increase emissions without undergoing New Source Review. To the extent that these host communities are disproportionately comprised of people of color and low-income people, the changes impose a greater burden on these groups than on the general population.

Environmental justice issues also surface in environmental agencies’ standard setting efforts. For example, when agencies set standards to determine the amount of contamination they will permit to be

discharged into the air, water, or soils, they make a host of assumptions about human exposure to the contaminants. Environmental justice advocates have pointed out that these assumptions often do not accurately describe the more dire circumstances of those who live in the shadow of multiple polluting facilities or who consume much more fish than the “average American.” When agencies’ assumptions underestimate the true exposure of those affected, the resulting standards will not adequately protect these individuals. These and other issues in the standard setting context are explored in greater detail in Part V, which focuses on risk regulation.

By far the greatest number of environmental justice challenges arise in the course of permit proceedings. Community residents in overburdened communities, already beset by health problems and a tenuous quality of life, often view a new or expanded facility as the proverbial straw that breaks the camel’s back. Add to those concerns suspicions of siting decisions motivated by racial discrimination, and the result is often an aggressive and acrimonious proceeding that is inefficient and unsatisfactory by any measure. Just as often, the permitting official is left in a quandary about what she or he can and cannot do to address environmental justice concerns. There has been significant attention to potential legal authorities to address environmental justice under federal law. The consensus of commentators is that there is ample discretionary authority for agencies to address environmental justice concerns in more broadly worded provisions or “omnibus” clauses that can be found in most if not all permitting statutes.⁴⁰ However, to date, permitting authorities have been exceedingly conservative in interpreting their authority to address environmental justice concerns. This stands in stark contrast to the very aggressive

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use of this authority to allow for streamlined permits, flexible permitting, plant-wide applicability limits, and other innovative favorable regulatory treatment at the behest of permit applicants.⁴¹ As such, the legal authority to address environmental justice in permit proceedings remains untried and legally untested.

There are documented disparities in the cleanup of contaminated properties as well. Although the Comprehensive Environmental Response, Compensation, and Liability Act

(“CERCLA”) statutorily establishes a preference for remedial actions at Superfund sites that permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, a 1992 NLJ investigation found that site capping was the preferred cleanup method 7 percent more frequently at predominantly minority sites compared to predominantly white sites. In contrast, soil treatment was the preferred cleanup method 22 percent more frequently at predominantly white sites compared to predominantly minority sites.⁴² It also found that Superfund site cleanups under CERCLA began 12 percent to 42 percent later at minority sites than white sites. The reason for the disparity may lie in part in the inability of affected communities to participate in the cleanup proceedings. Although EPA is authorized to provide technical assistance grants (“TAG”) to communities impacted by a Superfund site, many environmental justice advocates view the TAG grants as having limited effect because the administrative barriers limit the number of communities that receive the grants and prevent them from using the grants effectively.⁴³

These barriers tend to exacerbate the issues that arise in the selection of an appropriate remedy and appropriate cleanup standards. In addition, relocation

of residents of contaminated areas as an option poses a unique set of issues because of the displacement of sometimes stable people of color communities. In addition, the payment for properties in affected communities might have an artificially lower market value because of perceived contamination and because of the way that discrimination affects the housing market generally.⁴⁴

At times, the relocation decisions in communities of color have appeared discriminatory when compared to relocation in white or wealthier areas.⁴⁵

Aside from CERCLA cleanups, the 1992 NLJ investigative report also found significant disparities in federal enforcement of other environmental laws, as discussed earlier. The findings of this study resonated with many environmental justice advocates who for years had heard and experienced anecdotal accounts of lax governmental enforcement in people of color communities.⁴⁶ The EPA disputed the charges of discrimination revealed by the NLJ study, while acknowledging that there was a perception of agency bias that needed to be addressed. However, it is not simply a matter of perception. Even if enforcement decisions are completely neutral, unequal environmental burdens can nonetheless exist simply because there are more polluting facilities and other risk-producing land practices in people of color communities. Thus, an equal rate of noncompliance is certain to affect these impacted communities to a greater extent. This is troubling, considering that noncompliance is widespread. Numerous government reports indicate that rates of significant noncompliance by major facilities with federal environmental requirements are in the range of 20 to 40 percent. Also of concern is that enforcement decisions – such as when to inspect, whether to prosecute, and how to settle an enforcement action – are ordinarily decisions made away from public scrutiny and discretionary matters not typically subject to judicial review. Decision makers exercising such wide-ranging discretion may, consciously or

unintentionally, act on biases that disadvantage poor and people of color communities.

Finally, the shift in emphasis at the state level in recent years from deterrence-based models of enforcement to cooperation-based enforcement strategies may have adverse impacts on heavily

burdened communities. For example, state-level inspections and other traditional enforcement activity dropped during the late 1990s. Likewise, other cooperative-based strategies pursued by states – such as amnesty programs, environmental audit privilege and immunity laws, and flexible penalty policies

– can weaken traditional enforcement and add to real or perceived disparities.

While environmental justice advocates have begun to bring these various aspects of environmental injustice to the attention of agency regulators, there are several obstacles that preclude effective and protective regulation from becoming a reality. First, environmental justice groups often lack the capacity – time, money, and expertise – to participate meaningfully in regulatory processes, from permit proceedings to advisory groups. Another problem is the current patchwork of local, state, and federal regulations that address environmental problems. This fractured legal jurisdiction makes it difficult for residents in highly impacted communities to reach the right decision makers, at the right time, in the appropriate venue. Even in instances where an agency clearly has the authority over an issue, the tendency is to shift an environmental justice problem to another site of regulatory activity. For example, when environmental justice advocates have requested environmental protections in proposed regulations, agencies have responded by noting that such issues are best addressed on a case-by-case basis, such as in a permit proceeding. Then in permit proceedings, the hearing officer explains that he or she has no authority to address environmental justice because the

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regulations are silent on the matter, or that such matters are best suited to enforcement actions.

Even this brief sketch affords a sense of the many and varied regulatory contexts in which environmental justice issues arise. In the next Part, we focus on one subset of these issues: occasions for injustice in risk regulation.

V. Injustice in Risk Regulation

From the perspective of those affected, the harms of contaminated environments are many and interrelated. These harms include adverse impacts on ecological health and to humans' physical, psychological, social, and cultural health. In many instances, the affront is not only to an individual, but also to a group. These harms, moreover, are the result of multiple contributing "stressors" – for example, the likely adverse impact of exposure to a chemical stressor such as mercury (present in fish that live in contaminated aquatic environments) depends in part on the presence of other chemical stressors such as PCBs and socioeconomic stressors such as lack of access to adequate health care.

When health and environmental agencies respond to the harms of contaminated environments, however, they typically focus on risk to human health – understood in the narrow, individual physiological sense of the term. Agencies proceed chemical by chemical (or source by source) and consider the extent to which human contact with that chemical is likely to result in an increase in the occurrence of various human health "endpoints" such as neurological damage or cancer. Agencies generally make this determination by means of risk assessment, an analytical tool that produces a quantitative prediction of this increase for given levels of environmental contamination. In setting water quality standards, for example, agencies employ risk assessment to set standards for dioxins that are designed to permit discharges to surface waters just up to the level that results in an increased risk of cancer deemed "acceptable." In this process, agency risk assessors take into account the *toxicity* of the contaminant in question (are dioxins potent

carcinogens?) together with the various factors that describe human *exposure* to that contaminant (once present in aquatic environments, do dioxins bioaccumulate in fish? do humans consume these fish and, if so, in what quantity? over what period?).

Health and environmental agencies then "manage" these human health risks by one or both of two strategies. The first strategy is *risk reduction*, whereby risk producers are required to clean up, reduce, or prevent environmental contamination; for example, through effluent limitations, applied to industrial sources that discharge contaminants into nearby surface waters. The second strategy is *risk avoidance*, whereby risk bearers are asked to change the practices that expose them to contamination so as to avoid the resulting risk; for example, through fish consumption advisories directing people to reduce or eliminate certain species of fish from their diet.

As persuasively argued by environmental justice advocates, there are numerous limitations in how agencies evaluate and respond to environmental contamination. First and fundamentally, agencies' narrow focus on human health risk misunderstands the nature of the harm from the perspective of many of those affected. Second, working within this more narrowly framed inquiry, agencies' assessment of exposure often fails accurately to reflect the actual circumstances of tribes and other indigenous peoples, other communities of color, and low-income communities. Third, agencies' "toxicity times exposure" formula for assessing risk fails to register the effects of multiple stressors, such that an environmental insult of the same intensity may result in widely differing effects for two different communities or subpopulations. Fourth, agencies' increasing reliance on risk avoidance rather than risk reduction in their efforts to address environmental contamination disproportionately burdens environmental justice groups. The NEJAC, a multi-stakeholder advisory group discussed above, has made similar observations about agencies' risk assessment and risk management processes. We highlight below the issues of exposure, vulnerability, and risk avoidance.

A. Exposure

Humans are exposed to environmental contaminants through various pathways: we inhale toxic air contaminants, we drink contaminated groundwater, we absorb pesticides through our skin, and we eat fish that bioaccumulate toxins from contaminated surface water and sediments. In the case of mercury and PCBs, for example, fish consumption is the primary route of human exposure. Factors relevant to human exposure include, among other things, the quantity of fish people consume, the frequency of fish consumption, the species and parts of the fish people typically eat, the preparation methods they use, and the bodyweight of those exposed. In gathering information about exposure to environmental contaminants, agencies for the most part consider the lives, practices, and circumstances of the “average American” or the “typical U.S. consumer.” Yet humans’ fish consumption practices vary considerably. Agencies have tended not to account for this variability and, importantly, not to register the cultural, traditional, religious, historical, economic, and legal circumstances that are relevant when tribes and other indigenous peoples, communities of color, and low-income communities are among those exposed.

The EPA’s proposed regulation of mercury emitted from coal-fired power plants provides a case in point.⁴⁷ In the preamble announcing the rule, EPA emphasizes that the “typical U.S. consumer eating a wide variety of fish from restaurants and grocery stores is not in danger of consuming harmful levels of methylmercury from fish and is not advised to limit fish consumption.”⁴⁸ Those who “regularly and frequently consume large amounts of fish,” the EPA concedes, “are more exposed.”⁴⁹ In developing its rule, EPA considered studies tabulating fish consumption rates for the general population as well as for various “subsistence” populations.⁵⁰ The fish consumption rate currently recommended by EPA as a default for use in setting water quality standards for the general population is 17.5 grams/day (roughly one fish meal every two weeks). The default for subsistence populations is 142.4 grams/day. In fact, fish consumption rates for some groups may well be

markedly greater than even this value for subsistence fishers. This is likely the case, for example, for members of the various Ojibwe tribes of the Great Lakes. A survey of tribal spearers conducted by the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) found that those consuming an average number of walleye meals in spring (the season of highest consumption) had intake rates ranging from 189.6 grams/day to 393.8 grams/day.⁵¹

Additionally, methylmercury’s particular health endpoints mean that relatively short periods of consumption – corresponding to developmental periods during which methylmercury is likely to damage the developing nervous system of the fetus or growing child – can contribute to health effects.⁵² As a consequence, monthly or seasonal consumption patterns become important in evaluating the harms from methylmercury exposure. Whereas there is little seasonal fluctuation in fish intake for members of the general population, this fluctuation is marked for Ojibwe tribal spearers. The average number of meals of walleye consumed ranges from a low of 2.2 meals per week in the fall to a high of 3.6 meals per week in the spring.⁵³

Moreover, seasonal and cultural constraints (for example, consumption as part of ceremonies or traditional gatherings) affect tribal consumption in ways that do not affect most members of the general population. Further, even the size of the average meal may differ considerably among different subpopulations – whereas the EPA assumes that the average meal size for a fish consumer in the general U.S. population is 6 ounces (approximately 170 grams), the GLIFWC survey revealed that the average size of a fish meal for tribal fishers ranged from 13 to 27 ounces (approximately 369 to 766 grams).⁵⁴ It is not only how much fish is consumed, but also how frequently and at what point in one’s life this fish is consumed that is relevant to exposure.

Finally, because the concentration of methylmercury present in fish tissue differs from species to species, and from fish to fish within a particular species, different groups’ fish consumption practices again contribute to differences in exposure.

Many of the species that are most frequently consumed by the general population in the United States. (e.g., Alaskan pollack, salmon, crab, and cod) are contaminated to a far lesser degree than those species most frequently consumed by GLIFWC tribal members (e.g., walleye, muskellunge, northern pike, and lake trout).⁵⁵

As a result, members of the various Ojibwe tribes in the Great Lakes are more highly exposed than the members of the general population that are the apparent focus of EPA's regulatory efforts for mercury.⁵⁶ In fact, given current levels of contamination in walleye, a woman consuming at rates typical of the general U.S. population is currently exposed to methylmercury just at the EPA's reference dose (RfD) – the level above which exposure is unsafe for humans.⁵⁷ But a woman consuming at rates typical of the general population in the Great Lakes states is exposed at levels over twice the EPA's RfD.⁵⁸ And a woman consuming at rates typical of GLIFWC tribal fishers is currently exposed at levels more than *ten times* the EPA's threshold.⁵⁹ Thus, the level set by EPA's proposed mercury rule leaves many in the Great Lakes region unprotected, and it imposes the most severe burden on the fishing tribes and their members.

The case of worker protection standards set by EPA under the Federal Insecticide, Fungicide & Rodenticide Act (FIFRA) in 1992 provides another example.⁶⁰ Those standards contain entry intervals, provisions that require a waiting period between pesticide application and worker reentry into the fields. The longer the entry interval, the more protective it is for the farm worker, but it is also more economically burdensome upon the grower, who must wait longer to harvest in the area of the application and pesticide drift. In developing the entry intervals, the EPA claimed that the standards take into account twelve-year-old workers, the youngest legal workers in the field. However, the General Accounting Office issued a report, based upon interviews with EPA personnel, that disclosed that the default body weight used in calculating the entry intervals was 154 pounds.⁶¹ Yet, the median weight of twelve-year-olds is 100 pounds. The EPA justified its failure to use the

more accurate, and protective, assumption of 100 pounds by reasoning that although twelve-year-olds were on average 100 pounds, their bodies have less surface area, and they perform less work, resulting in less physical contact with pesticide-treated plants. This justification flies in the face of the fact that, pound for pound, children eat more and breathe more than adults, and so are more exposed to pesticides via ingestion and inhalation. In addition, children's ordinary behaviors result in greater exposures than adults: among other things, their greater hand-to-mouth contact means that they are more likely to come in contact with pesticides transferred from objects, soil, or dust. Additionally, EPA's failure to account for children below the age of twelve is problematic considering the fact, known to the EPA, that farm worker parents often take their preschool children (some of them infants) into the fields with them due to lack of day care services. The implications of EPA's choice come into focus when one considers that the vast majority – 88 percent – of farm workers are Latinos.⁶² This demographic group is overwhelmingly low-income, with very low educational attainment and few health care opportunities.

Although the issue of differential exposure circumstances has been acknowledged by agencies, they have to date taken few concrete steps to adopt environmental standards that take into account these exposure patterns and are protective of the practices and lifeways of heavily impacted communities.

B. Vulnerability

In addition to exposure, several other factors are relevant to assessing the likelihood of adverse effects from contact with environmental contamination. As long maintained by affected communities, agencies' focus on a single chemical or source (for example, "a risk assessment for dioxin," "a cleanup standard for TCE in the groundwater") is misplaced. Rather than starting with a single chemical stressor and following it to the exposed community, agencies should follow an analysis that takes as its starting point a subpopulation or place and considers the multiple

chemical and non-chemical stressors that affect that subpopulation or place. This broader, contextualized understanding of the nature of the problem is sometimes discussed in terms of groups' differing susceptibilities,⁶³ the presence of "co-risk" factors,⁶⁴ or cumulative risks. As the NEJAC recently recognized, however, usage here has been inconsistent.⁶⁵ Thus, it adopts the helpful term "vulnerability," a concept that includes an individual's susceptibility or sensitivity to the contaminant(s) in question; her circumstances of exposure to the contaminant(s); and her ability to prepare for and recover from the effects of contact with the contaminant(s), given the various other chemical and non-chemical stressors (for example, physical, social, cultural) that affect that individual.⁶⁶

Differential Susceptibility or Sensitivity. A subpopulation may be more susceptible to a particular environmental contaminant – that is, more likely to suffer an adverse effect when exposed to a given level or "dose" of a toxic contaminant – because of one or more factors: members' life stages (for example, are they children, pregnant women, or the elderly?), pre-existing conditions (for example, do they have asthma or an impaired immune system?), and genetic makeup (for example, do they have genetic polymorphisms that render them more susceptible to certain health endpoints?). A subpopulation may also be more or less sensitive to a particular environmental contaminant because of members' previous exposures to the same or similar contaminants, such that they have become sensitized and now have more severe responses. It seems clear that there is a significant correlation between race, ethnicity, and income and some of these factors that affect susceptibility or sensitivity. For example, asthma disproportionately affects African-Americans in the United States: African-Americans visit the emergency room because of asthma at three times the rate of whites; are hospitalized for asthma at more than three times the rate of whites; and die from asthma at two times the rate of whites.⁶⁷

Differential Exposure. A subpopulation may be more vulnerable to a given level of environmental contamination because its members' circumstances

and lifeways leave them more exposed to the contaminants than those in the general population. They might live nearer to the fence line of industrial facilities that emit multiple toxic air pollutants (pollutants that may have cumulative or synergistic effects, such that their effects are amplified or multiplied beyond the additive effects of exposure to each pollutant individually); they might live in older, deteriorated housing that harbors lead dust; they might depend on fish that has become contaminated with PCBs. A subpopulation may also be more vulnerable because of historic or background exposure. Members may have been exposed in the past or over time (including through occupational exposure) such that their body burdens are already relatively high and any additional exposure may place them at risk of exceeding threshold safety levels for humans. Examples are numerous. Whereas 68 percent of the African-American population lives within 30 miles of a coal-fired power plant, where they are exposed to sulfur dioxide, nitrogen oxides, particulates and mercury, only 56 percent of the white population lives within this distance of a coal-fired power plant.⁶⁸ Whereas 15.3 percent of non-Hispanic white women of childbearing age have mercury in their blood at levels that pose a risk to a developing fetus, this number climbs to 31.5 percent for women of childbearing age who identify themselves as "Other," a category comprised primarily of Native Americans, Pacific Islanders, those "of Asian origin," or those of "mixed race."⁶⁹ Twice as many Hispanic children as non-Hispanic white children have lead in their blood above the action level established by the Center for Disease Control and Prevention for risk of lead poisoning.⁷⁰ Hmong fishers along the Fox River in Wisconsin not only consume fish at greater quantities than the "average American," but they consume fish heavily contaminated with both PCBs and methylmercury, contaminants researchers believe may act in concert.⁷¹

Differential Preparedness or Ability to Recover. A subpopulation may be less able to withstand or recover from an environmental insult or stressor. This may be so because the subpopulation lacks economic means; has nutritional deficits; has poor access to preventative and other health care (including, for

example, vaccination, early diagnosis, adequate treatment); has poor access to informational and other preventative resources; or is relatively isolated or lacks influence for linguistic, racial, economic, or other reasons. Again, the examples are numerous. Nationally, American Indians and Alaska Natives have the highest poverty rate – twice the national average.⁷² Approximately 52 percent of Hispanics under the age of 65 do not have health insurance and Hispanics account for fully one-quarter of the nation's 74 million uninsured; these rates are even higher if one considers Spanish-speaking Hispanics.⁷³

account for how these multiple and interrelated factors work in concert to affect communities or places. One useful matrix for doing this has been developed by the NEJAC.⁷⁴ This sample matrix gathers the factors relevant to assessing vulnerability in the Mississippi River Industrial Corridor – also known as “Cancer Alley” – the 2,000 square mile area between Baton Rouge and New Orleans in the state of Louisiana.

EPA's current risk assessments largely ignore considerations of vulnerability beyond exposure to the single contaminant at issue. EPA has, however,

An assessment of vulnerability, of course, must

Table 1: Multiple, Aggregate, and Cumulative Risks and Impacts in the Mississippi River Industrial Corridor

Demographics	Pollution Sources	Existing Health Problems & Conditions	Unique Exposure Pathways	Social/ Cultural Conditions	Community Capacity & Infrastructure/ Social Capita
<p>African American: 63%</p> <p>Caucasian: 35%</p> <p>Asian: 3%</p>	<p>Petrochemical facilities</p> <p>Refineries</p> <p>Wastewater treatment facilities not meeting permit limits and bypassing raw sewage due to under capacity</p> <p>Drinking water taken from Mississippi River</p> <ul style="list-style-type: none"> . Toxic organics, pesticides, and heavy metals in drinking water . Atrazine from Midwest agricultural fields present year - round in raw and finished water . Pesticides, herbicides, and fertilizers applied to sugar cane crops; aerial and tractor application drifts on to adjacent residential areas and school yards . Burning sugar cane during fall harvest season results in particulate matter and pesticides being dispersed into the air for a third of the year 	<p>Asthma</p> <p>Respiratory distress</p> <p>Skin rashes</p> <p>High rate of a large variety of cancers</p> <p>Lack of access to health care</p> <p>Lack of trained environmental health physicians.</p>	<p><u>Air</u></p> <ul style="list-style-type: none"> . Industrial facilities: semi-volatile and volatile organics, dioxins, pesticides and herbicides, . Toxic heavy metals, and smoke from sugar cane burning <p><u>Water:</u></p> <ul style="list-style-type: none"> . Drinking water contaminated . Surface water contaminated with industrial and agricultural chemicals and partially treated waste water . Contaminated crops, contaminated terrestrial game species . Seafood contaminated with pesticides, industrial chemicals, mercury from chlor-alkali facilities by way of air deposition. 	<p>Very poor/minority communities</p> <p>Live off land and gardens contaminated with air-deposited chemicals</p> <p>Hunting and fishing of contaminated organisms</p> <p>Generations have lived off the land and not profited by industrial development in the area.</p>	<p>Good infrastructure in areas of low-income communities of color with respect to roads and rail; the industry needs these items.</p> <p>Poor infrastructure within the communities:</p> <ul style="list-style-type: none"> . poor road conditions, . improper drainage . waste water collection and treatment system inadequate. . Very little to no social capital: education system very minimal; . the area was impacted by white flight; primarily African-Americans attend the public schools.

Table developed by Ms. Wilma Subra, Louisiana Environmental Action Network.

recently issued a *Framework for Cumulative Risk Assessment* that incorporates a broad understanding of vulnerability and of the stressors that are relevant to a community- or place-based assessment of the harms of environmental contamination.⁷⁵ If fully implemented, the approach suggested in the *Framework* could significantly improve the manner in which risk assessments are carried out.

Finally, tribes have pointed out that there are unique considerations that apply when tribal resources are at stake.⁷⁶ As suggested by the discussion above, the various tribes and their members have susceptibilities and sensitivities, exposure circumstances, and abilities to prepare for and recover from environmental insults that will often differ from the general population and other subpopulations, including, in some instances, other tribal subpopulations. In addition, it is crucial to note that American Indian tribes and Alaska Native villages have a unique political and legal status that differentiates them from other affected groups.⁷⁷ Tribes are sovereign nations, with broad inherent authority over their members, territories, and resources. Tribes' unique legal status includes a trust responsibility on the part of the federal government⁷⁸ and various commitments to maintain a government-to-government relationship. In many cases, tribal rights and resources (including, for example, the rights to catch and consume fish or to hunt certain animals) are also protected by treaties. Finally, tribes' rights to self-determination, including cultural self-determination, may mean that appropriate risk assessments need to take into account the unique relationship between tribes and the traditional lands and resources on which they depend.⁷⁹ Typically, this has not been done by agencies.

C. Risk Avoidance

In responding to the harms of environmental contamination, the current Bush Administration has embraced risk avoidance in lieu of risk reduction.⁸⁰ Risk reduction strategies aim to clean up, limit, or prevent environmental contamination in the first place. Risk avoidance strategies, by contrast, leave

contamination unabated. They address the harms of this contamination by looking to those whose circumstances or lifeways leave them exposed and asking them to alter their ways, thereby "avoiding" the risk – placing the burden on victims rather than polluters. The proposed regulation of mercury from coal-fired power plants exemplifies just this shift.⁸¹ Rather than seek to reduce the risks to those who "regularly and frequently consume large amounts of fish" by decreasing the amount of mercury emitted into the environment, it places responsibility on those affected to avoid the risk by altering their fish-consumption practices. EPA instructs those affected, particularly children and women of childbearing age, to consult fish consumption advisories and reduce or eliminate fish from their diets accordingly. Remarkably, the EPA unflinchingly acknowledges that it will be Native Americans, Southeast Asian Americans, and lower income subsistence fishers who will be subject to avoidance measures.

This turn to risk avoidance is problematic on several scores and is particularly troubling from the perspective of environmental justice. First, risk avoidance is short-sighted.⁸² By focusing only on specific, direct threats to human health, risk avoidance measures leave unaddressed the myriad other effects of contamination, that is, the adverse effects on all non-human components of ecosystems. Loons cannot read fish consumption advisories. This lack of concern for non-human health is troubling in and of itself, for example, for the Minnesota Chippewa Tribe, for whom loons, mink, and other animals affected by methylmercury contamination are important clan symbols and valued as parts of an integrated ecosystem. Even if one is concerned chiefly with human health, however, risk avoidance may fail ultimately to address many direct and indirect effects on humans. In the case of mercury, for example, there is evidence that methylmercury contamination inhibits the growth of wild rice, a staple food and culturally important resource for the various Objibwe and other tribes.

Second, risk avoidance is often not effective.⁸³ In order for risk avoidance to work, advisories must be received and understood, restrictions must be

enforced, and human behaviors must be changed – each of which presents considerable hurdles. These hurdles loom larger and may become insurmountable when those affected do not share the language or culture of the dominant population. For example, a recent study showed that half of those consuming fish caught on the Great Lakes were unaware of the relevant fish consumption advisories; people of color, women, and those without a high school degree evidenced the least awareness. Those for whom fish consumption includes spiritual, traditional, or cultural dimensions may feel that it is simply not possible to cease eating fish. In the case of members of the various Ojibwe tribes, for example, a recent survey showed that whereas 57 percent of tribal fishers were aware of mercury advisories for walleye, only 9 percent had ever refused to eat walleye in a group setting such as a feast or a ceremonial gathering.

Third, risk avoidance is an approach with finite possibilities.⁸⁴ Some pollutants can be more readily avoided than others. The options for avoiding mercury in fish are few. A fisher seeking to avoid PCB contamination might be able to alter his preparation methods – trimming the skin and fat from fillets and broiling or grilling so that the fats drips off while cooking – but to continue to fish at his customary sites and for his customary species. A fisher seeking to avoid mercury contamination, by contrast, cannot do so merely by altering her preparation methods, because methylmercury accumulates in the muscle tissue that comprises the fillet. Instead, she must take steps to reduce – and, in some cases, eliminate altogether – her total consumption of particular species caught from contaminated waters and to pace her allowable intake to avoid acute exposure. As a general matter, the more risk avoidance is allowed to supplant risk reduction, the fewer the options for risk avoidance. Heavy reliance on risk avoidance would

eventually lead to a world in which there are no longer any healthful alternatives, as uncontaminated environments are permitted one by one to become and remain degraded. Eventually, if mercury emissions were to continue unabated, there would be no “safe” species, no lakes free of contamination.

Fourth, risk avoidance may itself introduce risks.⁸⁵ If those exposed change their ways in order to avoid risks posed by contamination, they may adopt practices that subject them to a different set of risks. To the extent that those affected “comply” with fish consumption advisories, the potential for countervailing risks is a serious concern, given the

Finally, risk avoidance is fundamentally unfair: the burden of undertaking risk avoidance measures is likely to fall disproportionately on tribes and indigenous peoples, other communities of color, and low-income communities, because it is these communities who are likely to be among the most exposed.

celebrated nutritional benefits of frequent fish consumption. Fish are an efficient source of protein, omega-3 fatty acids, selenium, and other nutrients important to human health. By foregoing these benefits, those affected may open themselves to an increased risk of coronary and other diseases. In addition, for those for whom fish forms a part of a traditional diet, including those in the fishing tribes of the upper

Great Lakes, regular consumption of fish and other traditional foods may function to promote health and to combat diabetes, a particular concern for tribes given the high rate of diabetes among American Indians and Alaska Natives.⁸⁶ Agencies may believe themselves to have made informed choices and tradeoffs before opting for risk avoidance. As elaborated below, however, such tradeoffs are likely to reflect the values of the dominant society; this is problematic to the extent that these values are different from those on whom the burden of undertaking risk avoidance will fall. And the point nonetheless remains that agency decision makers may not foresee fully the roster of countervailing risks introduced by avoidance measures.

Finally, risk avoidance is fundamentally unfair: the burden of undertaking risk avoidance measures is likely to fall disproportionately on tribes and indigenous peoples, other communities of color, and low-income communities, because it is these communities who are likely to be among the most exposed. In the case of mercury contamination, whereas members of the general population, especially those who do not consume fish, are not much affected by a turn to advisories in lieu of reduced contamination, members of these fishing peoples will be faced with the “choice” of curtailing severely their fish intake or being exposed to methylmercury in fish at levels determined to be unhealthful for humans.

Moreover, risk avoidance measures are likely to be evaluated by reference to the understandings and commitments of the dominant society and adopted only where avoidance is thought not to occasion great costs or profound loss. Yet the understandings and commitments of those who will be faced with altering their practices and lifeways may be quite different than those of the dominant society. This will often be the case where Native peoples are prominent among the risk bearers, as they are when the source of risk is methylmercury contamination. Thus, environmental injustice here arises not only from distributive inequities but also from cultural discrimination. Not only are the Ojibwe and other fishing peoples the ones most heavily burdened by reliance on fish consumption advisories, but they are likely to understand differently the nature of this burden. There are likely profound differences in the value attached to fish, fishing, and fish consumption as between various indigenous peoples and the dominant society. For the fishing tribes of the Great Lakes, as for fishing peoples elsewhere, fish and the lifeways associated with fish are central to their identity as peoples; they are indispensable to physical, social, economic, political, spiritual, and cultural health. For the dominant society, by contrast, these practices, while important, are likely not constitutive of their very identity. Thus, for example, a member of the general population who habitually consumes two meals of fish per week might, in the face of fish consumption advisories for mercury, look to

substitute food sources with relatively modest accommodations to palate and pocketbook. A member of the Mille Lacs Band, however, might view such risk avoidance measures as impossible, given the affront this would mean to her tribe’s very identity, to what it means to be Ojibweg. By permitting significant mercury contamination to remain and relying instead on fish consumption advisories, EPA perpetuates a long history of cultural discrimination against American Indian peoples.

VI. Recommendations

The following recommendations do not by any means exhaust the possible efforts agencies might usefully undertake to address the issues outlined above. But they represent important steps that, taken together, would at least begin to address environmental injustice.

1. Reduce Risk, Don’t Force the Public to Avoid Risk

Agencies should stop using “risk avoidance” strategies – those that require the public to avoid the risks imposed on them rather than require firms creating the hazards to reduce these risks – as a way to control environmental and health risks. These strategies fail to address the underlying risks posed by harmful activities, are of doubtful efficacy (they rely, for example, on warnings about consuming contaminated fish to be read and understood and to change the behavior of subsistence anglers; or they count on the construction of a fence surrounding contaminated soil to permanently keep children from playing there), and tend to fall disproportionately on Native Americans, racial minorities, and low-income individuals who are the most highly exposed to harmful pollutants. Moreover, these strategies often burden practices highly valued on cultural or spiritual grounds only by indigenous peoples or other people of color – such as fishing and fish consumption or basket-weaving. Rather than placing the burden on innocent members of the public – instructing children to remain indoors during especially bad air days or counseling anglers not to eat fish caught in waters

contaminated by toxics – agencies should strive to reduce or eliminate risk-generating activities.

2. *Prevent Pollution at the Source*

Agencies must devote increasing attention to preventing or reducing pollution at the source, rather than controlling pollution after its creation at the “end of the pipe.” Chemical products and processes must be redesigned to reduce or eliminate the use and generation of hazardous substances. Pollution prevention can reduce waste, save costs and increase efficiency, and reduce risks to workers, the environment, as well as the public – risks that are disproportionately borne by low-income communities and communities of color.

Although most environmental laws currently do not mandate pollution prevention, agencies can nonetheless use the permitting and enforcement processes to identify and implement source reduction opportunities. As noted above, it is the consensus of commentators that ample discretionary authority exists under most if not all of the relevant environmental statutes. Federal and state agencies should make use of this authority to require mitigation, to address cumulative impacts, or to deny permits in cases where permit issuance would result in a disparate impact in overburdened communities. Moreover, as outlined in the NEJAC report, *Advancing Environmental Justice Through Pollution Prevention*, agencies should work with community residents in areas with multiple sources of pollution to develop comprehensive, community-wide toxics reduction plans. Additionally, states and localities should adopt laws that require companies to analyze their use of toxic chemicals and identify options for reducing use. This approach in Massachusetts, in the form of the state’s Toxic Use Reduction Act, has been quite successful at reducing toxic emissions.

3. *More Systematically Analyze Cumulative Risks*

Traditionally environmental agencies have analyzed risks posed by polluting facilities or other activities one at a time – chemical by chemical or source by source, as if these risks occurred in

isolation. As a result, many environmental decisions have been made by agencies without consideration of the multiple and varied stressors that affect the health and well being of impacted communities.

To the maximum extent permitted by their discretionary authority, agencies should work to incorporate cumulative risk analysis in their decision-making process. Moreover, as articulated in EPA’s *Framework on Cumulative Risk Assessment*, agencies should embrace a broad view of what constitutes cumulative risk, including examining stressors beyond those subject to their regulatory authority. Risk should be defined to include not just chemical stressors but a range of other biological, physical, social and cultural factors that affect the population experiencing a risky activity – factors such as genetic disposition, life stage, preexisting illnesses and background health conditions, income level, access to health care and health insurance, and historical and background exposures. Moreover, agencies should draw on the knowledge and expertise of community members and tribes in assessing the many factors that may contribute to that group’s increased vulnerability to risk-producing activities.

Related, in the context of Clean Air Act permitting decisions, EPA and state agencies should use their authority to require that proposed new or expanded sources in heavily impacted areas conduct “multi-source” modeling – modeling that analyzes not only the source’s direct impacts but the combined impacts of all existing sources in the area. This will allow agencies and the public to gauge more accurately the cumulative air burdens facing communities.

4. *Implement a Community-Based Participatory Research Model*

EPA and other environmental agencies should implement a community-based participatory research model for conducting risk assessments, research, and other investigations. This model promotes active community or tribal involvement in the processes that shape agency research and intervention strategies

affecting local communities. It helps ensure that risk assessments are informed by local knowledge and conditions, and that agency research questions are guided by the environmental health issues and concerns most important to community members or tribes.

5. Adopt the Precautionary Principle

Agencies should embrace a precautionary approach to dealing with risky activities – one that calls for precautionary measures when an activity raises potential threats to the environment or human health, even if there is scientific uncertainty about those impacts. In such situations, the burden of proving that an action is safe should be placed on the party responsible for creating the risk, and a full range of alternatives should be examined to see if there are safer, less harmful options to the proposed activity.⁸⁷ This principle has become a cornerstone of international environmental law treaties, environmental policies adopted by the European Union, and local ordinances in several U.S. communities, including Portland, Oregon and San Francisco, California.

For example, although humans have introduced tens of thousands of toxic chemicals into commerce over the past several decades, agencies lack toxicity information about the vast majority of them. To remedy this large data gap, agencies should shift the burden of proof to chemical producers to demonstrate the safety of toxic chemicals – an approach mandated by the European Union’s recent REACH legislation. Ultimately, a precautionary approach will lead to reductions in risky activities – activities that disproportionately burden poor, minority, and indigenous populations.

6. ‘Nonattainment’ Areas for Toxic Releases

Many communities are saturated with multiple sources of pollution or face high community health burdens resulting from the cumulative combination of multiple stressors. Just as new or expanding sources in areas that fail to meet the National Ambient Air

Quality Standards of the Clean Air Act must offset their increased pollution by eliminating a greater amount of emissions in the area in order to allow progress toward meeting the air quality standards, agencies should pioneer the concept of “nonattainment areas” for toxic emissions. New sources discharging toxic pollutants into an already overburdened area should be required to mitigate their harmful emissions by a greater amount of the new emissions, so as to help relieve the cumulative burdens faced in these communities. For their part, agencies should require extra protections – in the way of buffer zones, tighter triggers for more comprehensive analyses, or additional enforcement scrutiny – in these overburdened communities. The South Coast Air Quality Management District in Los Angeles, for instance, now requires buffer zones for such sensitive receptors as schools to protect against the risks posed by toxic emissions from chrome plating and other high impact sources.

7. Prevent Hot Spots in Pollution Trading Programs

Recent years have seen an explosion of interest in emission trading and other market-based programs. While in theory these programs can reduce overall pollution levels more efficiently than certain forms of traditional regulation, as discussed earlier, they also have considerable potential to create or exacerbate pollution “hot spots,” typically in low-income communities or communities of color. Such communities, for example, may host a disproportionate share of older, inefficient facilities that are likely to purchase emission reduction credits from plants in other areas, rather than adopt on-site pollution controls.

To prevent hot spots from developing, environmental justice considerations should be factored into the design of market-based programs. Thus, for example, decision makers (or trading partners) should be required to analyze the potential impact of emission trades on low-income communities and communities of color before the trades go forward. In especially overburdened

communities, trades should be prohibited absent offsetting reductions of equal or greater amount in that community. Finally, trading in some instances may simply not be appropriate. This is likely to be the case where the pollutants at issue have acute impacts (e.g., many hazardous air pollutants) or where inter-pollutant trading (i.e., trading of different pollutants with diverse characteristics) is involved. This is also the case where trading could perpetuate or exacerbate inequities in environmental protection (in the case of mercury emissions for coal-fired power plants, for example).

The Center for Progressive Regulation has elaborated on several of these recommendations in *A New Progressive Agenda for Public Health and the Environment*.⁸⁸

Conclusion

Environmental justice advocates have done much in the past 15 years to focus the attention of agency regulators and the public on the current maldistribution of environmental burdens and benefits. While their efforts have resulted in an enlarged understanding of the regulatory contexts in which environmental justice issues arise, agency decision makers have yet to undertake many of the changes that would be necessary to begin to address these issues. We echo environmental justice advocates' call for change, and offer seven recommendations for agencies that, taken together, would make some important inroads. Ultimately, we seek agency decisions that reduce risk, eliminate disparities, and ensure environmental justice for all.

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Professors Gauna, O'Neill, Rechtschaffen, and Glicksman are Member Scholars of the Center for Progressive Regulation.

End Notes

1. See Ed Timms, *Racial Patterns: Economics and Segregation Left Minorities Closer to Toxic Sites*, DALLAS MORNING NEWS, Oct. 3, 2000, at A1, available at 2000 WL 28111045 (describing how accidental releases from refineries force residents in nearby public housing to evacuate or adopt “shelter in place” strategies).
2. Annual Meeting of the Association of American Law Schools, Environmental Law Section Tour of the Industrial Corridor, Louisiana (1999).
3. Title VI Advisory Committee, Tour of Chester, Pennsylvania (circa 1998).
4. Communities for a Better Environment, Tour of Los Angeles, California (circa 2001).
5. Title VI Advisory Committee, Tour of Tucson, Arizona (circa 1998).
6. PROCEEDINGS OF THE FIRST NATIONAL PEOPLE OF COLOR ENVIRONMENTAL LEADERSHIP SUMMIT xiii (Oct. 24-27, 1991).
7. See SECOND NATIONAL PEOPLE OF COLOR ENVIRONMENTAL LEADERSHIP SUMMIT, ENVIRONMENTAL JUSTICE TIMELINE – MILESTONES, at <http://www.ejrc.cau.edu/summit2/%20EJTimeline.pdf>.
8. NAT’L ADVISORY COUNCIL FOR ENVTL. POL’Y & TECH., REPORT OF THE TITLE IV IMPLEMENTATION ADVISORY COMMITTEE: NEXT STEPS FOR EPA, STATE, AND LOCAL ENVIRONMENTAL JUSTICE PROGRAMS (1999); see also ENVIRONMENTAL JUSTICE IN THE PERMITTING PROCESS: A REPORT FROM THE PUBLIC MEETING ON ENVIRONMENTAL PERMITTING CONVENED BY THE NEJAC NOVEMBER 30-DECEMBER 2, 1999; ENVIRONMENTAL JUSTICE AND COMMUNITY-BASED HEALTH MODEL DISCUSSION: A REPORT ON THE PUBLIC MEETING CONVENED BY THE NEJAC MAY 23-26, 2000; NEJAC REPORT ON INTEGRATION OF ENVIRONMENTAL JUSTICE IN FEDERAL PROGRAMS: A REPORT ON THE PUBLIC MEETING CONVENED ON DECEMBER 11, 12, AND 14, 2000; FISH CONSUMPTION AND ENVIRONMENTAL JUSTICE: A REPORT ON THE PUBLIC MEETING CONVENED BY THE NEJAC DECEMBER 3-6, 2001; and ADVANCING ENVIRONMENTAL JUSTICE THROUGH POLLUTION PREVENTION: A REPORT DEVELOPED FROM THE NEJAC MEETING OF DECEMBER 9-13, 2002.
9. See U.S. ENVTL. PROTECTION AGENCY, ENVIRONMENTAL JUSTICE STRATEGY (1995), available at http://www.epa.gov/compliance/resources/policies/ej/ej_strategy_1995.pdf.
10. Denis Binder et al., *A Survey of Federal Agency Response to President Clinton’s Executive Order No. 12898 on Environmental Justice*, 31 ENVTL. L. REP. 11133 (2001).
11. OFF. INSPECTOR GEN., EVALUATION REPORT: EPA NEEDS TO CONSISTENTLY IMPLEMENT THE INTENT OF THE EXECUTIVE ORDER ON ENVIRONMENTAL JUSTICE (2004), available at <http://www.epa.gov/oig/reports/2004/20040301-2004-P-00007.pdf>.
12. *Alexander v. Sandoval*, 532 U.S. 275 (2001).
13. The four-justice dissent in *Sandoval* opined that plaintiffs should be able to sue for a violation of disparate impact regulations under Section 1983, a statute that grants citizens a private right of action for violations of rights, privileges, or immunities secured by the Constitution and laws of the United States. Currently, there is a split in the federal circuits whether disparate impact claims can be brought through Section 1983; in 2002 the Tenth Circuit affirmed that they can. *Robinson v. Kansas*, 295 F.2d 1183, 1186 (10th Cir. 2002). However, also in 2002 the U.S. Supreme Court decided a case under the Family Educational Rights and Privacy Act which held that in legislation enacted pursuant to Congress’ spending power, private rights of action are not typically allowed unless Congress clearly so provided, particularly where there are sufficient administrative means to enforce such laws. *Gonzaga University v. Doe*, 536 U.S. 273 (2002). The stringent standard adopted in the case will now make it more difficult, over the long run, for plaintiffs seeking to enforce EPA’s Section 602 regulations in court.
14. U.S. COMMISSION ON CIVIL RIGHTS, NOT IN MY BACKYARD: EXECUTIVE ORDER 12898 AND TITLE VI AS TOOLS FOR ACHIEVING ENVIRONMENTAL JUSTICE 84-87 (2003), available at <http://www.usccr.gov/pubs/envjust/ej0104.pdf>. The Commission found that of the 124 Title VI complaints filed with the EPA by January 1, 2002, only 13 cases or 10.5 percent were processed by the agency in compliance with its own regulation. *Id.* at 57. None of these 13 complaints

- were accepted for investigation. *Id.* They were all rejects because the EPA determined they did not meet the agency's requirements. *Id.* The Commission also found that, as of February 2002, no decisions had been made on the merits of backlogged complaints. *Id.*
15. <http://epa.gov/civilrights/docs/t6csnovember2003.pdf> (last visited Feb. 2, 2005).
 16. CLIFF RECHTSCHAFFEN & EILEEN GAUNA, ENVIRONMENTAL JUSTICE: LAW, POLICY & ENVIRONMENTAL REGULATION ch. XIII (2002).
 17. *See, e.g., In re Exxon Valdez; Alaska Native Class v. Exxon Corp.*, 104 F.3d 1196 (1997) (upholding summary judgment order on behalf of Exxon on grounds that Alaska Natives had failed to demonstrate the requisite "special injury" different in kind from that suffered by the general public for harms to their culture and subsistence lifeways resulting from the massive oil spill in the 1998 grounding of the tanker *Exxon Valdez*).
 18. ENVIRONMENTAL JUSTICE FOR ALL: A FIFTY-STATE SURVEY OF LEGISLATION, POLICIES, AND INITIATIVES (Steven Bonorris ed., 2003), available at <http://www.abanet.org/irr/committees/environmental/statestudy.pdf>.
 19. U.S. GEN. ACCT. OFF., SITING OF HAZARDOUS WASTE LANDFILLS AND THEIR CORRELATION WITH RACIAL AND ECONOMIC STATUS OF SURROUNDING COMMUNITIES (1983). EPA's Region IV is comprised of the states Kentucky, Tennessee, North Carolina, South Carolina, Mississippi, Alabama, Georgia, and Florida.
 20. UNITED CHURCH OF CHRIST COMMISSION FOR RACIAL JUSTICE, TOXIC WASTES AND RACE IN THE UNITED STATES: A NATIONAL REPORT ON RACIAL AND SOCIO-ECONOMIC CHARACTERISTICS OF COMMUNITIES WITH HAZARDOUS WASTE SITES (1987).
 21. *See, e.g.,* BENJAMIN GOLDMAN & LAURA FITTON, TOXICS WASTES AND RACE REVISITED: AN UPDATE OF THE 1987 REPORT ON THE RACIAL AND SOCIOECONOMIC CHARACTERISTICS OF COMMUNITIES WITH HAZARDOUS WASTE SITES (1994). For a contrary conclusion, see Douglas Anderton et al., *Environmental Equity: The Demographics of Dumping*, 31 DEMOGRAPHY 229 (1994).
 22. Paul Mohai & Bunyan Bryant, *Environmental Racism: Reviewing the Evidence*, in RACE AND THE INCIDENCE OF ENVIRONMENTAL HAZARDS: A TIME FOR DISCOURSE 163 (Bunyan Bryant & Paul Mohai eds., 1992).
 23. U.S. ENVTL. PROTECTION AGENCY, ENVIRONMENTAL EQUITY: REDUCING RISK FOR ALL COMMUNITIES, VOL. 2: SUPPORTING DOCUMENT 7-15 (1992).
 24. Centers for Disease Control & Prevention, *Update: Blood Lead Levels – United States 1991-1994*, 46 MORBIDITY & MORTALITY WKLY. REP. 141 (1997).
 25. Vicki Been, *Locally Undesirable Land Uses in Minority Neighborhoods: Disproportionate Siting or Market Dynamics?*, 103 YALE L.J. 1383, 1385 (1994).
 26. Vicki Been & Francis Gupta, *Coming to the Nuisance or Going to the Barrios? A Longitudinal Analysis of Environmental Justice Claims*, 24 ECOL. L.Q. 1, (1997).
 27. JAMES P. LESTER ET AL., ENVIRONMENTAL INJUSTICE IN THE UNITED STATES 13-14 (2000).
 28. John A. Hird & Michael Reese, *The Distribution of Environmental Quality: An Empirical Analysis*, 79 SOC. SCI. Q. 693, 711 (1998).
 29. LESTER, *supra* note 27, at 149-155.
 30. Evan J. Ringquist, *Equity and the Distribution of Environmental Risk: The Case of TRI Facilities*, 78 SOC. SCI. Q. 811, 818 (1997).
 31. Rachel Morello-Frosch et al., *Environmental Justice and Southern California's Riskscape: The Distribution of Air Toxics Exposures and Health Risks Among Diverse Communities*, 36 URB. AFF. REV. 551 (2001).
 32. *See also,* James T. Hamilton, *Testing for Environmental Racism: Prejudice, Profits, Political Power?*, 14 J. POLICY ANAL. & MGMT. 107 (1995)(finding a strong negative correlation between siting of LULUs and political participation, as measured by voter turnout, rather than between siting and race).
 33. Yvette Perfecto & Baltimore Velásquez, *Farm Workers: Among the Least Protected*, 18 EPA J. 13 (March/April 1992).
 34. U.S. Dept. of Health and Human Services, Office of Minority Health Resource Center, *Migrant Farmworkers Suffer from Pesticide Exposure*, CLOSING THE GAP (Oct.

- 1997), available at <http://www.omhrc.gov/ctg/env-09.htm>.
35. See George Friedman-Jiménez, M.D., *Achieving Environmental Justice: The Role of Occupational Health*, 21 *FORDHAM URB. L.J.* 604, 610-613 (1994).
 36. Marianne Lavelle & Marcia Coyle, *Unequal Protection: The Racial Divide in Environmental Law*, *NAT'L L.J.*, Sept. 21, 1992, at S1-S12.
 37. Robert Garcia, *Building Community: Lessons From the Urban Parks Movement in Los Angeles* (unpublished manuscript on file with author).
 38. Samara F. Swanston, *Environmental Justice: Mobilizing for the 21st Century: Environmental Justice and Environmental Quality Benefits: The Oldest, Most Pernicious Struggle and Hope for Burdened Communities*, 23 *VT. L. REV.* 545 (1999).
 39. Richard Toshiyuki Drury et al., *Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy*, 9 *DUKE ENVTL. L. & POL'Y F.* 231 (1999).
 40. *NAT'L ACAD. OF PUB. ADMIN., ENVIRONMENTAL JUSTICE IN EPA PERMITTING: REDUCING POLLUTION IN HIGH RISK COMMUNITIES IS INTEGRAL TO THE AGENCY'S MISSION* (2001); *ENVTL. L. INST., OPPORTUNITIES FOR ADVANCING ENVIRONMENTAL JUSTICE, AN ANALYSIS OF U.S. EPA STATUTORY AUTHORITIES* (2001); Richard J. Lazarus & Stephanie Tai, *Integrating Environmental Justice into EPA Permitting Authority*, 26 *ECOLOGY L.Q.* 617 (1999); Shiela R. Foster, *Meeting the Environmental Justice Challenge: Evolving Norms in Environmental Decisionmaking*, 30 *ENVTL. L. REP.* 30992 (2000); Eileen Gauna, *EPA at Thirty: Fairness in Environmental Protection*, 31 *ENVTL. L. REP.* 10,528, 10,532-33 (2001); *ENVIRONMENTAL JUSTICE IN THE PERMITTING PROCESS: A REPORT FROM THE PUBLIC MEETING ON ENVIRONMENTAL PERMITTING CONVENED BY THE NEJAC NOVEMBER 30-DECEMBER 2, 1999; Memorandum from Gary S. Guzy, EPA General Counsel, EPA Statutory and Regulatory Authorities Under Which Environmental Justice Issues May be Addressed in Permitting* (Dec. 1, 2000), available at <http://www.epa.gov/region02/community/ej/ogcmem.pdf>.
 41. Gauna, *supra* note 40, at 10,561.
 42. See Marcia Coyle et al., *Unequal Protection: The Racial Divide in Environmental Law*, *NAT'L L.J.*, Sept. 21, 1992, at S1-S12 (a special investigation).
 43. Deoohn Ferris, *Communities of Color and Hazardous Waste Cleanup: Expanding Public Participation in the Federal Superfund Program*, 21 *FORDHAM URB. L. J.* 671, 679 (1994).
 44. For an interesting case study on relocation, see *Escambia Treating Company Case Study for the Relocation Roundtable Meeting* discussed in *RECHTSCHAFFEN & GAUNA, supra* note 16, at 236-244.
 45. See Robert R. Kuehn, *Remedying the Unequal Enforcement of Environmental Laws*, 9 *ST. JOHN'S J. LEGAL COMMENT.* 625, 633-34 (1994) (noting that EPA quickly authorized governmental buyouts of the homes of residents living in Love Canal and Times Beach, but was unwilling to authorize a buyout in the African-American town of Triana, Alabama).
 46. See generally, *id.*
 47. Catherine A. O'Neill, *Mercury, Risk, and Justice*, 34 *ENVTL. L. REP.* 11,070 (2004).
 48. U.S. ENVTL. PROTECTION AGENCY, *Proposed National Emissions Standards for Hazardous Air Pollutants; and, in the Alternative, Proposed Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units; Proposed Rule*, 69 *Fed. Reg.* 4652, 4658 (Jan. 30, 2004).
 49. *Id.*
 50. O'Neill, *supra* note 47, at 11,075-11,079.
 51. *Id.*; GREAT LAKES INDIAN FISH AND WILDLIFE COMM'N, 1993 SURVEY OF TRIBAL SPEARERS (1993).
 52. U.S. ENVTL. PROTECTION AGENCY, *MERCURY STUDY REPORT TO CONGRESS: VOLUME IV: AN ASSESSMENT OF EXPOSURE TO MERCURY IN THE UNITED STATES 4-2, 4-82* (1997), available at <http://www.epa.gov/ttncaaa1/t3/reports/volume4.pdf>.
 53. O'Neill, *supra* note 47, at 11,077-11,078; GREAT LAKES INDIAN FISH AND WILDLIFE COMM'N, *supra* note 51.
 54. *Id.*

55. O'Neill, *supra* note 47, at 11,078-11,079.
56. *Id.* at 11,092-11,095.
57. *Id.* at 10,093.
58. *Id.*
59. *Id.*
60. Eileen Gauna, *Farmworkers as an Environmental Justice Issue: Similarities and Differences*, 25 ENVIRONS ENVTL L. & POL'Y J. 67, 68-71 (2002).
61. U.S. GEN. ACCT. OFF., PESTICIDES, IMPROVEMENTS NEEDED TO ENSURE THE SAFETY OF FARMWORKERS AND THEIR CHILDREN 19 (2000). EPA's default bodyweight is altered to 132 pounds, however, for those pesticides that have potential fetal developmental effects, to account for the lower average bodyweight of women in their childbearing years. *Id.*
62. Adrianna Quintero-Somaini et al., Natural Resources Defense Council, *Hidden Danger: Environmental Health Threats in the Latino Community* vi (2004).
63. *See, e.g.*, Robert R. Kuhn, *The Environmental Justice Implications of Quantitative Risk Assessment*, 1996 U. ILL. L. REV. 103.
64. *See, e.g.*, FISH CONSUMPTION AND ENVIRONMENTAL JUSTICE: A REPORT ON THE PUBLIC MEETING CONVENED BY THE NEJAC DECEMBER 3-6, 2001, at 42-43.
65. NAT'L ENVTL. JUST. ADVISORY COUNCIL, ENSURING RISK REDUCTION IN COMMUNITIES WITH MULTIPLE STRESSORS: ENVIRONMENTAL JUSTICE AND CUMULATIVE RISKS/ IMPACTS: DRAFT REPORT (2004).
66. *Id.* at iii.
67. Black Leadership Forum et al., *Air of Injustice: African Americans & Power Plant Pollution* 3 (2002).
68. *Id.*
69. Kathryn R. Mahaffey et al., *Blood Organic Mercury and Dietary Mercury Intake: National Health and Nutrition Examination Survey, 1999 and 2000*, 112 ENVTL. HEALTH PERSP. 562 (2004).
70. Quintero-Somaini, *supra* note 62, at vi.
71. *See, e.g.*, Dyan M. Steenport et al., *Fish Consumption Habits and Awareness Among Fox River Anglers*, WISCONSIN MEDICAL J. (2000), available at <http://www.wismed.org/wmj/nov2000/fish.html>; Friends Children's Environmental Health Center, *Research Project Two: Perinatal PCBs and Neuropsychological Auditory Function*, available at http://www.friendscenter.uisuc.edu/Project_2.html.
72. Centers for Disease Control & Prevention, *Health Disparities Experienced by American Indians and Alaska Natives*, 52 MORBIDITY & MORTALITY WKLY. REP. 697 (2003).
73. LEAGUE OF UNITED LATIN AMERICAN CITIZENS, AIR OF INJUSTICE: HOW AIR POLLUTION AFFECTS THE HEALTH OF HISPANICS AND LATINOS 4 (2004), available at <http://www.lulac.org/Issues/Environment/Latino%20Reportlowres.pdf>.
74. NAT'L ENVTL. JUST. ADVISORY COUNCIL, *supra* note 65, at 5.
75. U.S. ENVTL. PROTECTION AGENCY, OFFICE OF RESEARCH AND DEVELOPMENT, NATIONAL CENTER FOR ENVIRONMENTAL ASSESSMENT, FRAMEWORK FOR CUMULATIVE RISK ANALYSIS (2003), available at <http://www.epa.gov/ncea/raf/recordisplay.cfm?deid=54944>.
76. For a discussion of these unique considerations in the context of contaminated fish, *see* Catherine A. O'Neill, *Variable Justice: Environmental Standards, Contaminated Fish, and "Acceptable" Risk to Native Peoples*, 19 STAN. ENVTL. L. J. 3, 70-116 (2000); O'Neill, *supra* note 47, at 11,112-11,115.
77. *See, e.g.*, Jana L. Walker et al., *A Closer Look at Environmental Justice in Indian Country*, 2 SEATTLE J. SOC. JUST. 379 (2002).
78. *See, e.g.*, Mary Christina Wood, *The Indian Trust Responsibility: Protecting Tribal Lands and Resources through Claims of Injunctive Relief Against Federal Agencies*, 39 TULSA L. REV. 355 (2003).
79. *See, e.g.*, Stuart G. Harris and Barbara L. Harper, *Using Eco-Cultural Dependency Webs in Risk Assessment and Characterization of Risks to Tribal Health and Cultures*, 2 ENVTL. SCI. AND POLLUT. RES. 91 (Special Issue, 2000).

80. *See generally*, Catherine A. O'Neill, *Risk Avoidance, Cultural Discrimination, and Environmental Justice for Indigenous Peoples*, 30 *ECOLOGY L. Q.* 1 (2003).
81. O'Neill, *supra* note 47, at 11,106-11,112.
82. *Id.* at 11,108.
83. *Id.* at 11,108-11,109.
84. *Id.* at 11,109.
85. *Id.*
86. *See generally*, Centers for Disease Control and Prevention, *supra* note 72, at 697. ("The rates of . . . diabetes . . . were two to three times as high among [American Indians and Alaska Natives] than among all racial/ethnic populations combined.").
87. *See* 1998 Wingspread Statement on the Precautionary Principle, *in* Joel Tickner et al., *Sci. & Envtl. Health Network*, *THE PRECAUTIONARY PRINCIPLE IN ACTION: A HANDBOOK* app. (undated), available at <http://www.sehn.org/rtfdocs/handbook-rtf.rtf>.
88. *A NEW PROGRESSIVE AGENDA FOR PUBLIC HEALTH AND THE ENVIRONMENT* (Christopher H. Schroeder and Rena Steinzor, eds., 2005). Chapter 4, "Shifting the Blame," Chapter 5, "Do the Best We Can," and Chapter 8, "Fair Distribution of Environmental Harms and Benefits," are of particular relevance.

About the Center for Progressive Regulation

Founded in 2002, the Center for Progressive Regulation is a nonprofit research and educational organization of university-affiliated academics with expertise in the legal, economic, and scientific issues related to regulation of health, safety, and the environment. CPR supports regulatory action to protect health, safety, and the environment, and rejects the conservative view that government's only function is to increase the economic efficiency of private markets. Through research and commentary, CPR seeks to inform policy debates, critique anti-regulatory research, enhance public understanding of the issues, and open the regulatory process to public scrutiny. Direct media inquiries to Matthew Freeman at mfreeman@progressiveregulation.org. For general information, email info@progressiveregulation.org. Visit CPR's website at www.progressiveregulation.org. The Center for Progressive Regulation is grateful to the Deer Creek Foundation for its generous support of this project and CPR's work in general.



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