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Articles

RISK AVOIDANCE, CULTURAL DISCRIMINATION, AND ENVIRONMENTAL JUSTICE FOR INDIGENOUS PEOPLES

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CONCLUSION

*2 INTRODUCTION

For indigenous peoples, environmental justice encompasses a different constellation of issues than it does for other affected groups. Environmental justice requires attention to the interrelated cultural, spiritual, social, ecological, economic, and political dimensions of environmental issues. For Native peoples in the United States, moreover, environmental justice cannot be contemplated apart from a recognition of tribes' unique legal and political status: tribes are sovereign governments, with rights to and management authority over tribal lands and resources. Finally, environmental justice requires an appreciation of each tribe's particular historical circumstances and contemporary understandings, including each group's aspirations for the flourishing of its culture.

There appears to be increasing tolerance among environmental decision makers and commentators for risk avoidance--strategies that call upon risk-bearers to alter their practices so as to avoid the harms of environmental risks--in lieu of risk reduction--strategies that look to risk-producers to prevent or eliminate contamination in order to reduce these harms. Under

risk avoidance approaches, risk-bearers might be forced to move from their homes or homelands to avoid exposure to soils or waters contaminated with lead or polychlorinated biphenyls (PCBs); they might be admonished to refrain from certain pursuits or ways of ***3** living, such as fishing in and consuming fish from lakes and rivers contaminated with mercury; or they might be called upon to take certain medications to counter the severe respiratory distress they experience during acute exposure to sulfur dioxide.

Although the burden of undertaking avoidance is unlikely to fall on members of the dominant society, risk avoidance is likely to be the strategy of choice only where members of the dominant society do not value the practice that entails risk or do not understand the particular avoidance measures to occasion profound loss. The first of these points is disquieting as a matter of distributive justice, inasmuch as it is communities of color, low-income communities, and indigenous peoples who are disproportionately among the most exposed, and so will be disproportionately among those called upon to undertake avoidance. The second of these points is perhaps even more troubling as a matter of environmental justice, to the extent that the values and cultural understandings reflected in the dominant society's evaluation of risk avoidance measures are not the values and understandings of those who must undertake avoidance. This is often the case where indigenous peoples are among the risk-bearers. Environmental policy that is inattentive to this observation becomes a means by which the dominant society continues to dismantle the cultural bonds of indigenous peoples and to sanction the destruction of the land and resources that are crucial to the flourishing of these peoples.

Part I of this Article defines risk avoidance strategies and distinguishes them from risk reduction strategies. It then presents examples of the increasing regulatory reliance on risk avoidance. It next addresses potential confusion between risk avoidance strategies and informational or educational strategies. Finally, it notes several respects in which a regulatory approach that relies on risk avoidance might be perilous as a general matter. Having registered this general concern, the balance of the Article addresses the implications of this reliance for environmental justice.

Part II explores injustice in contemplating risk avoidance. It first observes that we are not all equally likely to be required to undertake risk avoidance measures and marks the distributive implications of this point. It next observes that we are not all likely to value similarly the practices that, because of environmental contamination, have come to entail risk, nor to perceive similarly the ease or anguish with which we might undertake various risk avoidance measures. By way of example, it considers the likely differences between the dominant society's and various indigenous peoples' understandings of the importance or necessity of basketweaving and fishing. Finally, this Part argues that, as agencies and other decision makers have contemplated various risk avoidance measures, they have for the most part either failed to inquire ***4** who is likely to be burdened and what those burdened consider to be at stake, or failed to register this information and acknowledge its implications for environmental justice. It explores this claim in the context of agencies' reliance on fish consumption advisories and the effects of this reliance on the various fishing peoples of the Pacific Northwest and elsewhere.

Finally, Part III identifies several elements of a proposed inquiry that attempts to ensure that risk avoidance strategies are not evaluated and employed at the expense of indigenous cultures. It briefly sketches these elements, invoking a conception of environmental justice that acknowledges the need to redress cultural discrimination, particularly in the case of indigenous peoples.

I. RISK AVOIDANCE

Environmental contaminants continue to be released into the air, water, soil, and sediments. Once in the environment, they behave in various ways, many of which leave them present and available in amounts toxic to humans and other living things. Humans, for example, are exposed to environmental contaminants through a variety of pathways: we inhale contaminants in the air we breathe; we absorb through our skin contaminants present in the soils with which we work and play; we ingest contaminants that have bioaccumulated in the fish we eat.[1] The resulting threat to human health (and, to a lesser extent, ecological health) has in the last several decades become the subject of environmental regulatory efforts, which seek to clean up, limit, or prevent contamination--at least to the point that it poses risks to humans at levels deemed "acceptable." Risk in this context is the product of the toxicity of a particular contaminant and the duration and frequency of human exposure to that contaminant.[2]

Environmental regulatory efforts have, until recently, focused on reducing environmental risks to levels deemed acceptable by eliminating the sources of these risks, i.e., environmental contaminants. Under this approach, threats to human health are reduced by targeting the first link in the chain that connects environmental contamination to adverse health effects in humans. While concern for human health has been the touchstone for these regulatory efforts, the focus on the source has meant that ecological health benefits as well. Increasingly, however, decision makers and commentators have entertained a shift in

focus: environmental risks might be addressed by intervening late in the chain, ***5** breaking the link at the point of human exposure. Under this new approach, environmental regulatory efforts include strategies that leave contamination unabated and instead shift the burden to affected humans to eliminate or mitigate their exposure, thereby "avoiding" the risk. Reliance on risk avoidance strategies, however, will in many cases result in cultural discrimination and environmental injustice from the perspective of indigenous peoples--a claim explored in Parts II and III of this Article. By way of background, this Part defines and provides examples of "risk avoidance" strategies, presents evidence of an increasing tolerance for such measures as a staple of environmental regulatory policy, and offers a cautionary note regarding the perils of risk avoidance as a general matter.

A. Risk Avoidance Versus Risk Reduction

Risk avoidance strategies are those that require risk-bearers to avoid the risks they face rather than require risk-producers to reduce these risks. Risk avoidance strategies seek to "manage" environmental risks by looking to the individuals whose practices or lifeways expose them to environmental risks--given the presence of a contaminated environment--and requiring them to alter their ways. These risk-bearers might be required or induced, for example, to move from their homes or homelands to avoid contact with neighborhood soils or reservation waters contaminated with lead or PCBs; they might be advised to stay indoors on "ozone alert days" to avoid respiratory problems, particularly if they are asthmatic, elderly, or otherwise sensitive to air pollution; they might be admonished to refrain from certain activities, pursuits, or ways of living, such as fishing in and consuming fish from lakes, streams, or bays contaminated with mercury, particularly if they are children or women of childbearing age; they might be called upon to take certain medications to reverse severe respiratory distress, as in the case of asthmatics who receive acute exposures to sulfur dioxide; they might be asked to undergo medical monitoring to keep an accounting of the lead content in their blood; or they might be induced to undergo prophylactic surgeries to correct physiological conditions that render them particularly susceptible to environmental contaminants. What these strategies have in common is that they place the burden of addressing environmental risks on those who bear the risks of environmental contamination.

Risk reduction strategies, by contrast, aim to clean up, limit, or prevent environmental contamination by requiring those who are the sources of environmental contamination and the resulting risks to reduce or eliminate the contamination. These risk-producers might be required, for example, to clean up PCBs from the sediments and surface waters of the St. Lawrence River, given, among other things, that PCBs ***6** bioaccumulate in fish and so are a source of exposure to humans and others who eat the fish. Or risk-producers might be permitted to emit only certain quantities of hazardous pollutants to the air in Convent, Louisiana, given the considerable quantities of hazardous air pollutants to which those living in the area are already exposed. What these strategies have in common is that they allocate the responsibility for addressing environmental risks to those who produce environmental contamination.

Neither decision makers nor commentators have thus far identified risk avoidance as a distinct environmental regulatory approach. Rather, risk avoidance strategies tend to be discussed as risk reduction strategies, or included among an undifferentiated menu of "risk management" options or public health "interventions."[3] I suggest that a nomenclature distinguishing risk avoidance and risk reduction more accurately captures most users' intended meaning and more precisely describes the nature of the measures involved.

B. Increasing Tolerance for Risk Avoidance Strategies

There appears to be an increasing tolerance among decision makers and commentators for risk avoidance strategies in environmental policy. Whereas in the past risk avoidance measures were undertaken as a last resort and characterized as regrettable, temporary, or exceptional responses to contamination, risk avoidance measures now serve as important, permanent, and even primary components of several environmental regulatory efforts. Some commentators, moreover, have recently suggested that environmental policy rely to a greater, not lesser, extent on risk avoidance strategies. Given that risk avoidance strategies have not yet been categorized as such, it is perhaps unsurprising that there has not been any effort systematically to consider or justify a shift to such strategies. To the extent that reasons have been offered to justify a shift in the context of particular risk avoidance measures, efficiency appears to be the chief virtue claimed by proponents.

*7 1. Examples of Risk Avoidance as Environmental Regulation

a. Fish and Wildlife Consumption Advisories

The rivers, bays, lakes, estuaries, and oceans that support fish, wildlife, and other aquatic resources are contaminated. Toxic chemicals and other contaminants have been and continue to be permitted to be released into the air, water, soils, and sediments. Once in the environment, these contaminants behave in various ways: some move--traveling over great distances or cycling between air and water; some linger--persisting for months or years; some biodegrade--becoming more or less toxic chemical successors; some bioaccumulate in the tissues of fish, wildlife and other aquatic organisms--existing in increasing quantities in organisms higher up the "food chain." Aquatic ecosystems are contaminated, for example, when mercury is emitted to the air from coal-fired power plants and other sources of fossil fuel combustion, from medical waste and solid waste incineration, and from chlor-alkali production.[4] Mercury that enters aquatic ecosystems is converted to methylmercury by aquatic biota, an organic mercury compound in a form available for uptake by and bioaccumulation in aquatic organisms.[5] Eventually, humans who consume and use aquatic resources may be exposed to mercury, now concentrated in the animal and plant tissues.

Consumption and use of contaminated fish, wildlife, and other aquatic resources is the primary route by which humans are exposed to many toxic contaminants. Consumption of contaminated fish is the single greatest source of human exposure to PCBs[6] and to mercury,[7] and it is also a significant source of human exposure to chlordane, dioxins, DDT, toxaphene, and a litany of over thirty other contaminants.[8] Indeed, any contaminant that persists in aquatic environments and bioaccumulates in the fish, wildlife and aquatic resources supported by these environments may find its way into humans who consume or use these resources.[9]

***8** Humans suffer a host of adverse health effects as a result of exposure to these contaminants. PCBs, for example, have been classified by the EPA as "probable human carcinogens."[10] PCBs may also cause adverse reproductive and developmental effects.[11] Mercury is a neurotoxin.[12] Exposure to high doses can lead to death or severe neurological damage in adults; lower doses can cause damage to the central nervous system.[13] Prenatal exposure is of particular concern, given the fetus' greater sensitivity to mercury: prenatal exposure can cause irreversible damage to the developing central nervous system, and can result in neurological damage that can be severe.[14]

Environmental agencies have made some progress over the past three decades toward addressing degraded aquatic environments, but aquatic ecosystems remain seriously compromised. About 40 percent of assessed waters in the United States are still not healthy enough to support "fishable-swimmable" uses;[15] and fully ten percent of assessed sediments are contaminated at levels of serious concern.[16]

Increasingly, health and environmental agencies have turned to fish and wildlife consumption advisories as a means of "managing" the resulting risks to human health. Consumption advisories seek to address these risks by encouraging those affected to reduce the quantity or frequency of their fish consumption, or to refrain from eating fish altogether, thereby avoiding the exposure to toxic contaminants that these practices would entail. For example, signs posted along the Columbia Slough, a contaminated waterway on Portland, Oregon's northeast side, advise against fishing at all, cautioning: "Danger. Polluted River. This river is polluted. Swimming, eating the fish, and drinking the ***9** water is not advised due to health hazards. Do at your own risk. Bureau of Environmental Services 823-7740."[17] The Louisiana Department of Environmental Quality's website recommends "limit[ing] fish consumption to TWO MEALS PER MONTH," from Devil's Swamp Lake and Bayou Baton Rouge, given contamination from hexachloro-1, 3-butadiene, PCBs, lead, mercury, and arsenic.[18] In some instances, advisories may suggest alternative means for those affected to continue eating fish, such as altering preparation methods or consuming different species.[19] More rarely, advisories may also provide information about the nature and extent of the contamination and its adverse health effects.[20] But in every instance, advisories' core messages reflect their underlying aim: to induce behavioral changes in people whose lifeways expose them to risk, given contaminated aquatic environments.[21] That risk avoidance is the common denominator for advisory programs is underscored by the fact that agencies measure the success of advisory efforts by the extent to which they achieve "compliance" by risk-bearers, that is, by the extent to which risk-bearers reduce or cease consumption, or otherwise alter their practices in accordance with advisories' recommendations.[22]

***10** As of 2000, 26 percent of the lakes and 11 percent of the river miles in the United States were under state or tribal advisory--a total of 63,288 lakes and 325,500 river miles.[23] In addition, the entirety of the Great Lakes and their connecting waters were under advisory in 2000,[24] as were 71 percent of coastal waterways in the contiguous 48 states (including 100 percent of the Atlantic Coast and 92 percent of the Gulf Coast).[25] In January, 2001, the first national advisory was issued: the

EPA and the Food and Drug Administration ("FDA") each independently cautioned against consuming several species of fish due to mercury contamination.[26] Moreover, the number of advisories has generally been increasing: in 2000, the number of advisories rose by 187, representing a seven percent increase over 1999 and a 124 percent increase over 1993.[27] Improved assessment by agencies and continued vigilance by affected people provide a partial explanation for the increase in fish and wildlife consumption advisories: in recent years, agencies have gathered data on a larger sample of fish tissues and bodies of water (often at the behest of affected communities),[28] finding levels of contamination warranting advisories in a greater number of instances. Nonetheless, a shift in the acceptability of risk avoidance strategies may also help to explain the increase.

As with other risk avoidance strategies, fish and wildlife consumption advisories have become accepted as a staple of agencies' "risk management" efforts. Although agencies continue to characterize advisories as regrettable or temporary responses to contamination, they now occupy an important--and seemingly permanent--place on many agencies' risk management rosters. Thus, for example, a representative from the EPA's Office of Water opened the 2001 National Forum on Contaminants in Fish by declaring that:

> [W]ater quality-based programs at both the federal and state levels seek not only to advise people on ways to minimize public health risks, but also to implement management measures to reduce the pollution problems so that measures like fish consumption advisories ***11** can be rescinded. No one wants consumption advisories in place any longer than necessary.[29] Yet many aspects of agencies' practice belie such claims. Far from being temporary measures, invoked to protect the public in the short term, advisories have been in effect in some places since the 1970s.[30]

Agencies have in recent years devoted considerable resources to building advisory programs. The EPA, for example, has spent the last decade developing an extensive advisory program, and has cited the growth and extent of this program as evidence of EPA's accomplishments in addressing the adverse effects of contaminated aquatic ecosystems.[31] Agencies, moreover, appear to anticipate a robust future for advisories as a risk management strategy and to project continued efforts to issue and ensure compliance with advisories. This orientation is reflected in the EPA's recent Strategic Plan, where it lists among its objectives: "[b]y 2005, . . . consumption of contaminated fish will be reduced."[32] It is also reflected in practice: while noting that its advisory program is a discretionary undertaking,[33] the EPA has not made any particular attempts to ensure that advisories will indeed be necessitated only in the short term. Instead, it has sought to redirect deliberation of advisory bodies from solutions that would focus on risk reduction to solutions featuring risk avoidance. In response to the National Environmental Justice Advisory Council's broadly-framed efforts to address environmental justice issues stemming from contaminated aquatic environments, which examined both risk assessment and risk management, the Office of Water suggested that it was interested in the main in advice regarding risk avoidance and communication. Specifically, the Office was interested in how it could improve fish consumption advisories and how it might update its risk communication guidance.[34] Similarly, the EPA has sought to enlist the assistance of states, tribes, and ***12** risk-bearers in narrowly described efforts to improve advisories' efficacy.[35]

b. Institutional Controls

In addition to surface waters and sediments, soils and groundwater have also become contaminated with a wide array of toxic chemicals and other pollutants. These pollutants or their chemical successors now remain in quantities toxic to humans and other living things at hundreds of sites throughout the United States. Lead, for example, currently contaminates the soils and sediments in a host of communities, particularly those located near smelters and mines. Lead is emitted into the air during smelting, after which it is deposited to the surrounding soils. Lead also leaches to sediments, having been released into the environment during mining activities. Once in the soils and sediments, lead persists and may migrate, contaminating not only surrounding areas but also sediments in rivers and marshes downstream. Plants, fish, waterfowl, and other birds then uptake the lead present in contaminated sediments.[36] PCBs, too, currently contaminate the soils, sediments, and surface waters in communities surrounding industries that manufactured these compounds. Although banned from manufacture in the United States in 1979,[37] manufacturers prior to this routinely discharged PCBs directly to neighboring creeks and rivers and deposited PCBs in adjacent landfills. Once in the environment, PCBs migrated to surrounding soils, sediments, and waters,[38] bioaccumulating in organisms higher up the food chain.

Humans that live near contaminated sites may be exposed to toxic pollutants via several routes. In the case of lead contamination of soils and sediments, humans may be exposed by ingesting bits of contaminated soils (an especially likely

source of exposure for children at play, whether outdoors or indoors, given that lead tends to remain in the upper few centimeters of soil),[39] or by consuming contaminated plants, fish, or wildlife. In the case of PCB contamination of soils, sediments, and surface waters, humans may be exposed by consuming vegetables grown in ***13** contaminated soils; by eating contaminated fish and wildlife, as noted above; by eating contaminated red meat, poultry, eggs, or dairy products; and, for breastfed children, by ingesting mother's milk.[40]

Lead's adverse human health impacts include an array of carcinogenic and non-carcinogenic effects. Lead is a particular concern for young children and developing fetuses, given that exposure to even extremely low levels can cause irreversible neurological damage, resulting, among other things, in serious learning deficits.[41] Lead has been classified by the EPA as a "probable human carcinogen."[42] PCBs, as noted above, also have both carcinogenic and non-carcinogenic health effects in humans.

For over two decades, environmental agencies have endeavored to clean up contaminated sites. Under CERCLA and other statutes, several sites contaminated with lead, PCBs, and other toxic chemicals are slated for or are in the process of being cleaned up.[43] Other contaminated sites have yet to be selected for cleanup. At a very few, cleanup and restoration have been completed. Although cleanup has from the outset been understood to raise questions of appropriate baselines (e.g., "how clean is clean?"), agencies have nonetheless until recently been guided by a philosophy of risk reduction, aiming permanently to clean up contamination to a level sufficient to protect the health of humans who might live at and use the resources of the site in the future,[44] and aspiring in some cases to restore contaminated environments to their "natural" or pre-contaminated state.

Since the mid-1990s, however, environmental agencies have counted increasingly on risk avoidance measures in the form of institutional controls that permit them to alter the cleanup baseline, allowing some amount of contamination to remain in place at the site, undiminished in quantity or toxicity. Institutional controls are legal, administrative, or institutional devices that seek to induce or require people to limit their contact with the contaminants that are left in place. Institutional controls include such tools as fences and notices, zoning measures, easements, ***14** restrictive covenants, reversionary interests, and prohibitions or restrictions on resource use.[45] They operate within--and provide legitimacy for--a paradigm of "risk-based" or "use-restricted" cleanups, whereby the future uses of a site are limited to those that will result in little or no human contact so that cleanup can be less extensive, and thus less costly.[46] So long as future uses are adequately circumscribed and human exposure thereby avoided, such use-restricted cleanups should in theory result in the same amount of human health protection for less money.[47]

Agencies now rely on institutional controls as important components-- sometimes the sole component--of remedial efforts. Enabled, among other things, by recent brownfields initiatives, many state agencies have hastened to embrace institutional controls in the context of risk-based cleanups.[48] For example, whereas prior to 1994 Connecticut required that contaminated sites under its cleanup program be restored to a "pristine" state, legislative changes now permit the Connecticut Department of Environmental Protection to employ "differentiated" or "flexible" cleanup standards based on the proposed future uses of a site.[49] Similarly, the Massachusetts Department of Environmental Quality has recently issued cleanup regulations that permit differential cleanup standards depending on the "reasonably foreseeable" future uses of the site, applying "activity and use ***15** restrictions" to control those activities and uses that would result in exposures to "human receptors."[50] At the federal level, too, institutional controls have come to play an increasingly central role in cleanup efforts. Once viewed as interim measures meant to limit human exposure until cleanup at a site could be completed, agencies now rely upon institutional controls in the long term, as a partial or complete substitute for cleanup.[51] According to the National Contingency Plan ("NCP"), for example, the EPA now "expects to use institutional controls such as [use] and deed restrictions to supplement engineering controls as appropriate for short- and long-term management."[52] Additionally, the EPA anticipates that institutional controls may in limited cases serve as the sole remedy for contamination.[53] The EPA, moreover, appears to advocate a wholesale shift to use-restricted approaches. In 1995, the EPA's Office of Solid Waste and Emergency Response instructed regional EPA offices to determine the appropriate extent of remediation in accordance with predictions of likely future land uses.[54]

c. Plant Gathering Restrictions

Forest lands are contaminated with herbicides routinely applied by the United States Forest Service ("USFS") to eliminate vegetation thought to compete with coniferous species preferred for timber production. In California's Eldorado, Lassen, Sierra, and Stanislaus National Forests, for example, the USFS applies herbicides containing glyphosate, hexazinone, and

triclopyr as part of its "herbicide treatment programs" for areas that have recently been logged or burned due to forest fires.[55] These herbicides are applied from spring through fall, and ***16** eliminate vegetation including bear clover, manzanita, and other native shrubs and grasses.[56] Among the vegetation affected by the USFS's herbicide treatments are native plants that are culturally important to various California Indian tribes and used for food, medicine, and basketry materials.[57] In a recent study conducted by the California Department of Pesticides Regulation ("CDPR"), herbicide residues were shown to persist in these plants for as long as 130 weeks after application.[58] In addition, herbicide residues were shown to be present at distances up to 80-100 feet from the edge of the treated site.[59]

Human exposure to these herbicides is, for most individuals, limited. California Indian basketweavers, however, are exposed to these herbicides regularly as they tend, harvest, prepare, and weave the plants in the process of making baskets. Basketweavers are exposed through their skin: dermal contact takes place as they prune, cut, tend, and gather contaminated plant shoots and roots.[60] Weavers are also exposed through their mouths: dermal contact and perhaps ingestion occurs as they prepare the plant materials and as they weave, because they often need to hold one end of the grasses in their mouth-- one weaver refers to her "splitting tooth," that is, the one she uses to split grasses to prepare them for weaving.[61]

***17** Along with the results of its study of herbicide persistence and drift, CDPR issued the following warnings advising against the gathering and use of treated plants:

> [T]o be certain of avoiding plant materials with detectable herbicide residues, plants should not be gathered within 80 weeks of glyphosate and triclopyr applications. For hexazinone liquid or granular treated plants, they should not be gathered within 130 weeks of treatment . . . . To be assured that there will be a low probability of having residues in plant materials, gatherers should not collect within 100 feet from a treated area.[62] CDPR also noted that the herbicide applications were likely to render plants unsuitable for any use.[63] Although the USFS provided funding for the CDPR study and worked together with CDPR, the California Indian Basketweavers Association ("CIBA"), and several California Indian tribes to develop the study objectives,[64] they have been less willing to take steps to reduce the risks that result from their herbicide use. Despite more than a decade of efforts on the part of CIBA and the tribes to educate the USFS and other land managers about the effects of herbicide and pesticide use on the health of the people, the land, and the culture, risk avoidance appears to be the USFS' chief response.[65] Moreover, the USFS has hewn to this approach even as environmental agencies have acknowledged that California tribal members' unique exposure scenarios are unaccounted for in the risk assessments conducted to set the parameters for use of these herbicides.[66]

d. Other Examples of Risk Avoidance

In other contexts, too, agencies and others are looking to risk avoidance measures instead of risk reduction. For example, rather than requiring risk-producers to prevent or control air emissions of oxides of nitrogen ("NOx") and volatile organic compounds ("VOCs") sufficiently to reduce the formation of ground-level ozone to healthy levels, agencies ***18** instead issue "ozone alerts" on days when the ozone levels are unsafe. Ozone alerts typically recommend that everyone--especially children, people with asthma or other respiratory diseases, the elderly, and those who work or exercise outdoors--curtail their outdoor activities during the day.[67] Under the federal Clean Air Act, state environmental agencies were long ago supposed to have required risk reduction sufficient to ensure compliance with National Ambient Air Quality Standards designed to be protective of human health.[68] However, in many cases they have still not fulfilled this duty.[69] Failing this, some agencies have devoted efforts to improving the efficacy of ozone alerts: for example, California's South Coast Air Quality Management District, which regulates air quality in the highly compromised Los Angeles metropolitan area, is developing a pager system that will provide immediate warning to risk-bearers participating in the program.[70] Similarly, the EPA has justified a refusal to update sulfur dioxide standards to account for the severe respiratory distress suffered by asthmatics and others upon acute exposure in part because sufferers can control their symptoms by medication.[71]

While the EPA has delayed cleanup of PCB contamination in Anniston, Alabama-- where Monsanto for years released tons of PCBs into the surrounding creeks and soils[72]--its representatives have advised ***19** local residents to avoid eating food grown in their gardens, in light of soil contamination revealed by testing there.[73] Heeding this warning, one resident now grows his collard greens in five-gallon buckets filled with soil purchased elsewhere.[74]

Health and environmental agencies and others have even begun to enlist children in their various risk avoidance campaigns. For example, in St. James Parish, located in Louisiana's "Cancer Alley," state and federal agencies have permitted petrochemical and other facilities to emit toxic air pollutants in quantities two orders of magnitude greater than elsewhere in the United States.[75] These agencies have also otherwise acquiesced in siting and other decisions that leave residents vulnerable to "upsets" and other emergencies at these risk-producing facilities. The Local Emergency Planning Committee, sponsored by a consortium of these risk-producers, has developed a "Shelter-In-Place" program, which distributes brochures and coloring books designed to teach local school children how to move indoors, "seal" doors and windows with wet towels, turn off heating and cooling systems, and breathe through wet paper towels as a means of avoiding the risks of "upsets," explosions, and other emergencies at the nearby facilities.[76] In a similar vein, federal, state, and local agencies in Cherokee County, Kansas and Jasper County, Missouri have opted for risk avoidance measures designed to encourage local children and their parents to avoid lead contamination present at two large Superfund sites contaminated from years of mining and smelting operations.[77] Although soil lead levels in the vicinity greatly exceeded levels at which the EPA has mandated cleanup at other sites, the EPA declined to test or remediate any commercial, industrial or vacant properties, with the exception of churches, daycare facilities and schools, on the theory that the risks of exposure at these properties for children under the age of six would be low. Instead, they have relied on lead ***20** avoidance education for children in kindergarten and ninth grade, a story book for young children entitled "Pb Possum," and a special "no lead" merit badge that local girl scouts can earn by teaching younger children about lead avoidance.[78]

2. Academic and Industry Endorsement of Risk Avoidance

Professor Dan Tarlock has recently suggested that we revisit the assumption that "it would be unfair and inefficient to shift the burden of protection to individual [risk-bearer]s for a wide variety of pollution risks," and has observed that, given the increasing availability of information identifying individuals' circumstances in terms of susceptibility and exposure, we will increasingly have the tools at hand to effectuate such a shift.[79] Tarlock observes that the National Institute of Environmental Health Sciences' Environmental Genome Project is working to identify the 200 or so genes believed to determine human susceptibility to environmentally induced diseases, and rests his call for reevaluation in part on the promise of this new information about susceptibility.[80] Thus, he has ventured, individuals revealed to be relatively highly susceptible could be held responsible for avoiding or mitigating the environmental risks they face: these individuals might be required to move their place of residence; to stay indoors; to refrain from certain activities or pursuits; or to undergo medical monitoring or prophylactic surgeries.[81]

Others have explicitly endorsed risk avoidance. Recall, for example, the comments of an oil industry advocate during the debate occasioned by the EPA's issuance of more protective ozone standards in the late 1990s: "On bad air days, people can protect themselves. They can avoid jogging. Asthmatic kids need not go out and ride their bicycles."[82]

3. Justifications for a Shift to Risk Avoidance

There has not yet been any systematic effort to justify a shift to risk avoidance strategies. This may be due in part to the fact, noted above, that risk avoidance strategies have not yet been categorized and discussed as such. It may also be that some risk avoidance strategies have gone ***21** unexamined because they were initially undertaken alongside risk reduction strategies and have only gradually come to occupy a prominent place among agencies' risk management efforts.[83] To the extent that proponents of this shift have offered justifications, they have cited efficiency as the chief virtue of risk avoidance measures. This justification has been most clearly articulated in the context of use-restricted cleanups that employ institutional controls to oblige or encourage people to alter their practices to avoid exposure. By "limiting exposure," it is argued, "the same amount of protection of human health" can be obtained without incurring the substantial costs of treating and eliminating contamination.[84] Other proponents appear to endorse the shift to greater "individual responsibility" that risk avoidance strategies entail.[85] Finally, some proponents cite the need for interim amelioratives, given that risk reduction, even if pursued with all expediency, takes time.[86] They note, however, that this is not a justification for a shift to risk avoidance in lieu of risk reduction; rather it is a recognition of the need for protective measures in the meantime, alongside risk reduction.

*22 C. Informational and Educational Strategies Distinguished

Risk avoidance strategies should not be confused with informational or educational strategies. Informational strategies provide those affected with information about the nature, extent and sources of contamination and risks, often in the form of

community "right-to-know" strategies. Risk-bearers have been longtime advocates of such strategies, as they have sought access to information that would enable them to participate fully in public decision making on environmental issues. Whereas risk avoidance strategies are self-consciously designed to effect behavioral changes by "message recipients," informational strategies aim to educate them. Risk avoidance strategies seek to influence or require risk-bearers to alter their practices. Informational strategies seek to inform, but do not have particular designs on any behavior modification as a result.[87] Risk avoidance strategies measure success by how many have "complied" with the relevant advice or prohibition.[88] Informational strategies mark success by how many people have been reached by and understood the relevant information.[89] To be sure, several risk avoidance strategies provide information to risk-bearers as a means to achieve avoidance. Fish consumption advisories for contaminated waters or warning signs posted at contaminated sites, for example, provide some information about the fact and, more rarely, nature of contamination.[90] But this informational ***23** function remains incidental to the primary aim of behavior modification. Indeed, risk avoidance strategies are often criticized by risk-bearers for failing to provide enough information about the nature, extent and sources of the relevant contamination, risks, and health effects.

D. The Perils of Risk Avoidance

A shift to reliance on risk avoidance is troubling on several grounds, especially for those interested in environmental justice. This article is concerned primarily with the implications for indigenous people of such a shift, but it is worth noting that the apparent increased acceptability of risk avoidance strategies merits scrutiny as a general matter. That is, quite apart from the serious environmental justice concerns raised by risk avoidance strategies, a regulatory approach that prefers these measures is problematic for the general population as well.

First, risk avoidance strategies are myopic. Risk avoidance measures break the link between contamination and adverse human health effects late in the chain, at the point of human exposure. Thus, such measures leave unaddressed the myriad adverse effects of contamination that do not directly threaten human health, specifically, the adverse effects on all non-human components of ecosystems.[91] This focus is troubling in and of itself for anyone for whom human health is but one component of ecological health and but one aspect of appropriate environmental regulatory efforts.[92] Note, of course, that given the interrelatedness of ecosystems (including their human components), the limited pathways of exposure accounted for by current analyses of human health effects, and the considerable uncertainty that marks current understandings of the relationships between ecosystemic health and human health, allowing contamination to remain untreated may in fact leave unaddressed many indirect and direct effects on humans. Thus, even those who believe human health to be the sole end of environmental regulatory efforts have reason for concern. Either way, the touted cost savings of risk avoidance ***24** strategies thus may be less favorable than advertised and may be enjoyed only in the short term, by the current generation.[93]

Second, risk avoidance measures are of questionable efficacy. Even proponents of risk avoidance concede the difficulty of conveying warnings about or enforcing restrictions on uses that entail risk, as well as the difficulty of effecting behavioral changes in people, even those unopposed to the measures on philosophical, moral, or cultural grounds.[94] Signs intended to warn against consuming fish from contaminated waters get misplaced;[95] fences intended to keep children from playing in contaminated soils get scaled;[96] zoning restrictions designed to limit future uses of contaminated properties get waived.[97] Given these difficulties, there is no guarantee that the desired avoidance efforts will be undertaken, and so no guarantee that the chain linking contamination and adverse human health effects will be broken.[98] Risk reduction measures, by contrast, remove the first link in the chain and so afford this guarantee. Agencies and commentators sometimes move from this observation about efficacy to the argument that the remedy here is to refine risk avoidance measures.[99] This response is disquieting. At best, it raises a concern for the meantime, as risk avoidance strategies recognized to be of limited efficacy are nonetheless allowed to supplant risk reduction, to the detriment of risk-bearers. At worst, it begets a long term concern: to the extent that risk avoidance measures will never be able fully to achieve the desired behavioral changes, "risk avoidance" will for some risk-bearers remain but a myth.[100] And again, cost savings may be ***25** less than advertised, in light of the additional efforts necessary to reach and reform the recalcitrant, as well as the unaccounted for costs of health care for the ultimately unmovable.

Third, risk avoidance is an approach of finite applicability. As the use of risk avoidance measures in lieu of risk reduction increases, and uncontaminated environments are permitted one by one to become and remain degraded, the possibilities for avoidance decrease. Heavy reliance on risk avoidance would eventually lead to a world in which there are no longer any healthful alternatives. Asthmatics would not be able to move "somewhere else" to avoid ozone nonattainment areas and subsistence fishers would not be able to find substitute sources of protein and other nutrients.

A shift to risk avoidance strategies in environmental policy thus seems perilous as a general matter, and at the very least ought not be undertaken lightly. Attention to environmental justice, moreover, introduces a host of additional concerns with a move toward greater reliance on risk avoidance.

II. INJUSTICE IN CONTEMPLATING RISK AVOIDANCE

The burden of undertaking risk avoidance measures is unlikely to fall on members of the dominant society. Nevertheless, risk avoidance measures are likely to be judged by reference to the dominant society's values: risk avoidance is likely to be embraced where members of the dominant society do not value the practice that entails risk or do not understand the particular avoidance measures as occasioning profound loss. The first of these observations is troubling as a matter of distributive justice: indigenous people, members of other non-dominant groups, and low-income individuals will again be called upon disproportionately to shoulder the burdens of environmental degradation that have attended industrial and agricultural development even though the benefits of this development have been enjoyed not by these risk-bearers, but overwhelmingly by affluent members of the dominant society.[101] This maldistribution of environmental burdens and benefits, however, is only one component of the environmental injustice likely to be worked by a shift to risk avoidance. Where risk avoidance strategies burden practices that are valued only by indigenous people or members of other non-dominant groups or require measures that are problematic only from the perspectives of these non-dominant groups, the resulting burden on cultural flourishing raises additional dimensions of environmental injustice. Whereas claims to distributive justice are well-covered terrain ***26** in the environmental justice literature,[102] indigenous peoples' claims to cultural self-determination and other issues unique to tribes and indigenous peoples merit further attention.[103] These latter claims invoke a complex, robust conception of environmental justice that considers the interrelated cultural, spiritual, social, ecological, economic, and political nature of the harms and that does so in light of each affected group's particular history and aspirations.

A. Distributive Implications

It is not the case that we are all equally likely to be among those conscripted to undertake risk avoidance measures. Yet current debate--enlisting as it does the probabilistic discourse of risk, the myth of identitiless "statistical" lives,[104] myopic assumptions about exposure, and the cloak of scientific uncertainty--proceeds as if we were all equally likely to be burdened by an increased reliance on risk avoidance strategies. Tarlock's proposal is particularly instructive in this regard. Tied as it is in its particulars to information about susceptibility not yet available, Tarlock's proposal appears to implicate each individual living in the United States, and to do so equally, inasmuch as we cannot predict at this juncture who will win and who will lose the genetic lottery, that is, who will turn out to be among the least susceptible and who among the most susceptible. Each of us, then, might in theory be among those forced to move or to confine our activities to the indoors or to undergo prophylactic surgery in order to avoid environmental risks.

Risk avoidance proposals, however, only appear to implicate all equally. Because whether an individual will suffer adverse health and other effects from environmental harms is dependent on her exposure ***27** circumstances, even the most susceptible individual will not come to harm if she does not come in contact with contaminants, i.e., if she is not among the exposed. Although we cannot predict without further research who will turn out to be among the most susceptible, we can predict who is likely to be among the most exposed to environmental contaminants. As environmental justice advocates and others have demonstrated, people of color, low-income people, and indigenous people are likely to be among the most exposed.[105] These individuals are likely, for example, to reside nearer multiple sources of air pollution and so inhale relatively greater doses and mixes of toxic contaminants,[106] and they are likely to consume fish in larger quantities, at greater frequencies, and in accordance with differing practices and so ingest relatively greater doses of mercury, PCBs, dioxins, and other contaminants in the water and sediments, which the fish uptake.[107]

Thus, the distributive implications of risk avoidance proposals come into focus. We are not all equally likely to be among the conscripted. For those among us who enjoy relative freedom from contact with environmental contaminants, the chance that we would need to move or to cease eating fish or to undergo surgery to avoid environmental risks is slim. For those among us who are highly exposed, the chance that we would be so burdened is much greater. Thus, environmental regulatory approaches that feature risk avoidance promise to perpetuate the maldistribution of environmental burdens and benefits, further taxing those who shoulder the brunt of environmental harms. But distributive injustice is only one aspect of the problem, only one dimension of environmental injustice in this and other contexts.[108]

***28 B. Different Understandings of What is at Stake**

It is also not the case that we all value similarly the practices that, given contamination, entail exposure, nor perceive similarly the ease or anguish that would be occasioned by various risk avoidance measures. Yet debate proceeds as if there were shared understandings of what is at stake--and, to make a finer point, as if we all shared the dominant society's understandings of what is at stake.

The degree to which particular risk avoidance proposals seem promising or perilous depends on what, exactly, we would be asked to do or forego and with what ease or anguish we would undertake the prescribed avoidance measure. If risk avoidance involved moving from one's home in Los Angeles or Phoenix to escape the risks from contaminated air, and if moving were the source of some inconvenience but little consternation, such an avoidance measure might be thought, on balance, appropriate.[109] If, instead, risk avoidance involved wearing a respirator or ceasing to breathe, and if wearing a respirator or giving up one's life were thought to be impossible or to encroach seriously on important values or rights, such avoidance measures might be thought beyond the pale. Risk avoidance is only likely to be the strategy of choice (1) where the way of living that exposes humans to environmental risk is not valued or is thought to be unnecessary, and (2) where avoidance measures are thought to be possible and relatively easily or cheaply undertaken. These are, however, judgments of value over which there may be considerable disagreement.

There is occasion for concern if the values reflected in these judgments are not the values of those having to undertake avoidance. This will often be the case where indigenous peoples are among the risk-bearers. The dominant society's understandings of the value of the practices in question and the ease or anguish with which avoidance would be undertaken will often be different, perhaps profoundly so, from the understandings of the indigenous peoples on whom the burden of risk avoidance will fall.

1. Risk and Values

Risk reduction strategies are likely to be pursued where the practice or pursuit that exposes humans to risk is viewed as laudable, natural, essential, or important to living a human life. Risk avoidance strategies, by contrast, are likely to be entertained where the way of living that exposes humans to environmental risk is not valued or is thought to be ***29** unnecessary. Even if the practice in question is condoned (or at least not condemned), risk avoidance strategies may nonetheless be selected in lieu of risk reduction where avoidance measures could be readily and cheaply undertaken.

Thus, for example, regulatory efforts are thought to be warranted to reduce the risks associated with childbirth or the risks associated with being a firefighter, given that these pursuits are viewed by the dominant society as natural or laudable.[110] The risks of HIV/AIDs may provide a counter-example: societal reluctance to work to reduce these risks may reflect its disapproval of the way of living or being that it perceives to be associated with the risks, i.e., unsafe sex, especially among homosexuals.[111] Similarly, regulatory efforts are thought to be warranted to reduce the risks associated with breathing or the risks associated with drinking water, given that these practices are understood by the dominant society as indispensable or essential physiological functions. By contrast, risks associated with purely recreational or other voluntarily undertaken activities are unlikely to be thought to merit regulatory risk reduction efforts.

Even if the risky practice is condoned, risk avoidance may be the strategy of choice where avoidance measures are thought not to be particularly burdensome or costly. The risks associated with travel by automobile, for example, might be addressed in part by mandatory seat belt requirements, inasmuch as this means of avoiding risk is relatively inexpensive, and not likely to be thought especially onerous. The risks now associated with breastfeeding, given the presence of PCBs and other contaminants in the environment and, ultimately, in human mother's milk, provide both example and counter-example. These risks could be avoided in part either by abstaining from consuming fish and wildlife contaminated with PCBs during one's childbearing years or by abstaining from breastfeeding. Whereas the former avoidance measure might be recognized to entail some costs, the latter avoidance measure might be thought to occasion profound loss and to abridge fundamental rights. Thus, the former risk avoidance measure might be preferred to risk reduction, whereas the latter is less likely to be entertained as an alternative to risk reduction.

These determinations respecting importance, necessity, possibility, and ease are, of course, judgments of value. They are judgments about which there may be considerable disagreement, especially as between the dominant society and various indigenous peoples. In order to evaluate ***30** risk avoidance proposals, we need to be able to explore the extent to which such proposals reflect the dominant society's understandings and judgments and the extent to which these differ from those of the indigenous peoples on whom the burden of risk avoidance will fall. Although there have been various useful efforts to

explore the relationship between risk and values, these efforts have not to date examined the particular issues raised by cultural differences between the dominant society and indigenous peoples, nor their implications for environmental justice.[112] Difficulties here stem from the general problem that discerning an individual's or group's values and beliefs is an uncertain proposition (i.e., Do we ask her/them directly? Do we observe her/their behavior, economic or otherwise? Do we need to look to other indicia?).[113] Difficulties also arise from the more specific challenge that, to the extent current regulatory choices reflect the values of the dominant society, the fact of valuation is likely to be invisible, as the dominant society takes its perceptions to be "natural," immutable facts about the world rather than judgments of value.

In an effort to begin to explore the differences between the dominant society's understandings of the practices that have come to entail risk and various indigenous peoples' understandings of these practices or lifeways, the following section looks to evidence of these groups' values and beliefs surrounding fishing and basketweaving. What follows is not intended to be a full account of these values and understandings; rather, it is somewhat impressionistic, designed mainly to show that there are likely to be important differences and to give a sense of the nature of the disagreement.

*31 2. Examples of Differing Understandings of Practices that Entail Risk

a. Basketweaving

Depending on where one obtains the grasses and other plant materials used in basketweaving and on how one handles these materials, this pursuit might entail risks resulting from toxic contamination of the materials. For most basketweavers in the dominant society, obtaining materials is a matter of a trip to a craft or hobby store. Much of the processing of the materials has already been done by the time they are purchased by weavers. For many indigenous basketweavers, by contrast, obtaining materials involves tending the plants and their habitats (e.g., pruning, thinning, burning, and otherwise managing plant resources); harvesting the roots, shoots, and other portions of the plants to be used (e.g., digging for, cutting, and gathering the plants); and preparing these materials by hand (e.g., cleaning, pounding, splitting, dyeing, and otherwise readying materials for weaving).

In California, these practices surrounding basketweaving expose weavers to risks from toxic contaminants applied by various federal and state agencies to manage public lands that are traditional and contemporary sources of basketry materials. The U.S. Department of Transportation, U.S. Forest Service, Cal Trans, and California Park Service all employ pesticides and herbicides that contaminate materials--such as bracken fern roots, buckbrush or deerbrush shoots, woodwardia fern, grey willow, and beargrass--relied upon by indigenous basketweavers. Basketweavers are exposed to these pesticides and herbicides through contact with their hands and mouths when they prune, cut, tend, and gather contaminated plant shoots and roots; when they prepare the plant materials for use; and when they weave their baskets.[114] Both tradition and availability play a role in determining where one gathers. Older weavers may be more inclined to gather materials by the roadside because upland gathering places are more difficult to access.[115] Here, these weavers are exposed to pesticides and herbicides designed to kill roadside foliage that may impede motorists' visibility.[116] More agile weavers may gather materials in upland forests, where they are exposed ***32** to pesticides and herbicides designed to eliminate vegetation that competes with species planted as part of reforestation efforts after logging or forest fires.

The following subsection compares the likely understandings of this pursuit between members of the dominant society and California Indian basketweavers.

i. Value, Necessity of the Pursuit

For dominant society evaluators, basketweaving is likely to be viewed as a hobby or leisure activity. It is, for most, a pursuit that is primarily recreational and, as such, not necessary. Think, for example, of colloquial references to expendable or "fluff" courses in a curriculum as "Basketweaving 101." While basketweaving might be seen by those in the dominant society as an enjoyable and worthy enough activity, to the extent that basketweaving entails risks, it might not be thought sufficiently necessary to justify the associated risks--and risk reduction efforts--in many people's eyes.

For California Indian basketweavers, by contrast, basketweaving is a culturally important practice with traditional, social, economic, political, and spiritual dimensions. Proper practice includes tending and gathering materials, weaving and using baskets--all in accordance with prescribed methods and norms. Proper practice is understood to be necessary, in part to maintain appropriate reciprocal relations that ensure ecological health and the availability of materials, and to ensure the

well-being of the weaver, the weaver's people, and even of all the Earth.[117] Tending, gathering and weaving themselves involve prayer;[118] environmental contamination thus not only harms human physical health (in the sense understood by the dominant society) but also impairs ecological health and spiritual observance. Proper practice also helps maintain social bonds, including bonds among generations. Tending and gathering materials are occasions for the inter-generational transfers of knowledge, including the ecological, historical, social, and spiritual knowledge that is understood to be a central part of the inheritance of succeeding generations. Finally, proper practice assures that weavers and their families can use baskets or sell them to obtain income.[119] In short, basketweaving is a vital aspect of a living, dynamic culture and its continued practice contributes to the persistence and flourishing of ***33** California Native peoples.[120] Kathy Wallace, a Karuk/Yurok/Hoopa basketweaver explains:

I think basketmaking is more than just a craft or an art. It's a very emotional thing. It's a oneness with the Earth. It's carrying on something that generations have done; it gives you a tie to all your ancestors. It's something special that you have to pass on, that not a lot of people do, that you can pass on to your children and your grandchildren. It is learning to appreciate the Earth and what she has to offer; it's learning to take care of the world around you so that you will continue to have the materials you need and doing everything in the right way--being thankful and appreciative for what you have. And it teaches you patience: most basketmakers are very patient people.[121] Similarly, Norma Turner, a Western Mono weaver explains:

I like to take my time, and a lot of us traditional basketmakers and people are traditional. We talk to Grandfather while we're getting our materials and our plants because we have to thank our Creator. And we don't like eyes on us while we're doing this [you know] because this is direct contact with Grandfather.[122]

ii. Possibility and Costs of Avoiding the Attendant Risk

Dominant society evaluators likely see several possibilities for avoiding the risks that basketweaving has come to entail. It is likely that those in the dominant society can quite readily imagine substitute sources of basketry materials, substitute gathering and weaving methods that would entail lesser exposure (e.g., avoid holding grasses in one's mouth; don gloves) or even substitute activities for basketweaving altogether that occasion little or no harm. While dominant society evaluators might understand these measures to involve some loss, particularly if one were required to give up basketweaving altogether, their understandings are likely to differ from those of California Indian basketweavers not only as to degree but also as to kind. That is, dominant society evaluators may perceive these measures to impose costs that are minimal and that involve losses only in terms of money (perhaps substitute materials are more expensive to purchase); convenience (perhaps substitute materials are not obtainable at the neighborhood craft store; perhaps substitute methods are unwieldy and time-consuming to work with); or predilection (perhaps alternative hobbies are somewhat less enjoyable or fulfilling).

***34** For California Indian basketweavers, on the other hand, such risk avoidance measures would likely occasion great anguish and considerable loss. Indeed, such "substitutes" might be unthinkable. At the very least, basketweavers would be faced with considerable hardship if they were required to gather basketry materials from substitute sources in more remote areas (this assumes, of course, that appropriate materials are in fact obtainable elsewhere). This hardship would be visited in particular on older weavers, many of whom are elders and essential sources of the ecological, historical, social, and spiritual knowledge that attends basketweaving and is transferred and preserved through practice. California Indian basketweavers would suffer grave loss if risk avoidance meant an inability to tend and use traditional materials from customary gathering places, or if risk avoidance required altered or mediated gathering and weaving methods. Avoidance here would compromise weavers' ability to practice in accordance with important traditions and norms, and to uphold cultural duties and reciprocal relationships--with ill effects for the health of the land and all forms of life.[123] Avoidance might also compromise weavers' ability to pray and otherwise participate in the spiritual aspects of basketweaving practice. And, for California Indian basketweavers, risk avoidance would be unimaginable if it involved abandoning basketweaving altogether. Nancy Richardson, a Karuk basketweaver, explains:

And when you get your roots from the places, that's the whole essence of making a basket is when you gather and when it comes and your communion with your ancestral place--and that's really important and it's not good enough to say we can do some alternative plan because maybe--just us as basketweavers-- maybe it's our responsibility to make sure that our land is healthy. And if it's healthy enough for us to go and gather what we need, then we're preserving a healthy land for our future generations to come up.[124] Similarly, Bun Lucas, a Pomo weaver, explains:

We have to pray about it and we gather these plants in a very special place where it's been left with prayer. We don't go out into the different areas. Which, if we do go to different areas, it would be some other lady that's been going there would kind of invite you and say "we'll go to my place this time." But you can't say "I'm going to go down there and I'm gonna get her

stuff while she's gone." No, you can't do that. Our roots will rot, our roots will dry, our designs wouldn't be right, they said--so we have to be very careful where we pick things and when we pick them and how to take care of these things.[125]

*35 b. Fishing and Fish Consumption

As described above, fishing for and consuming fish entail risks when aquatic environments are contaminated with bioaccumulative toxic chemicals, such as mercury, PCBs, dioxins, DDT, and a host of other substances. Members of the dominant society as well as various indigenous people are exposed to these toxic substances when they fish and when they consume their catch. Members of the dominant society, however, tend to engage in these practices to a more limited extent than members of certain indigenous groups. For example, Native people of the Pacific Northwest are exposed to contaminants that accumulate in the fish tissue when they consume salmon and other fish filets, skin, and eggs.[126] Suquamish children are exposed to these contaminants when they teethe on dried clams.[127] Yakama elders are exposed to these contaminants when they use for medicinal purposes the broth that results from cooking dried fish.[128] Native fishers are also exposed to contaminants contained in the water through dermal contact, when fishers immerse their hands, arms, feet and legs in the waters and tidelands as they catch fish or harvest shellfish.[129]

The next subsection compares the likely understandings of fishing and fish consumption between various Native peoples of the Pacific Northwest and members of the dominant society.

i. Value, Necessity of the Pursuit

For dominant society evaluators, fishing is likely to be viewed primarily as a recreational pursuit and secondarily as an economic activity.[130] Fishing is therefore likely to be understood as a pursuit that is ***36** not necessary for most practitioners, [131] but important for recreational or economic reasons for some. Fish are likely to be recognized by those in the dominant society as a palatable, efficient, and relatively inexpensive source of protein and other nutrients for humans, although not the only such source.[132] Fish consumption is therefore likely to be valued, but unlikely to be thought indispensable.

For Native peoples of the Pacific Northwest, by contrast, the various aspects of fishing are constitutive of their identity as peoples. Fish, fishing, and fish consumption are understood to be vital for the physical, social, economic, political, spiritual, and cultural health of these peoples and their members. Proper practice includes protecting and tending to fish and shellfish habitat, fishing for or gathering fish and shellfish, preparing, consuming and using fish and shellfish, all attended by appropriate methods, prayers, and ceremonies. Fish, fishing, and fish consumption are understood to be necessary, an indispensable part of what it means to be Nez Perce or Nisqually. Fishing and eating fish are important occasions for the inter-generational transfers of knowledge, including the ecological, historical, social, and spiritual knowledge that is a central part of the inheritance of succeeding generations. Fishing is also important for economic reasons, as fishers can feed their families or sell their catch or harvest for income. The inestimable value that the various Native peoples of the Pacific Northwest attach to fish, fishing and fish consumption is marked in stories and ceremonies, language, treaties negotiated with the invading peoples, past and present fisheries management practices, contemporary leadership in restoration efforts, and the ongoing political and legal struggle for the survival of the salmon, fish, and shellfish and the flourishing of their fishing cultures. Del White, Nez Perce, explains: "People need to understand that the salmon is part of who the Nez Perce people are. It is just like a hand that is part of your body . . . ."[133] Similarly, Billy Frank, Jr., Nisqually, Chairman, Northwest Indian Fisheries Commission, explains:

Fishing defines the tribes as a people. It was the one thing above all else that the tribes wished to retain during treaty negotiations with the federal government 150 years ago. Nothing was more vital to the ***37** tribal way of life then, and nothing is more important now . . . . The tribes have fought too hard for too long to let the salmon and their treaty rights to harvest salmon go extinct. This summer and fall you will see tribal fishermen doing what they have always done--fish.[134]

Don Sampson, Umatilla, Executive Director, Columbia Inter-Tribal Fish Commission, explains:

The reason I've been fishing is more for my own subsistence, to bring fish home. But maybe more importantly now these days is to maintain that tradition of fishing--of going up to the mountains where my father, my elders fished before me. So it's something we've got to carry on--that's really why I fish. We've got to pass it on to our children. We have to have it for them in order to be Indians--in order to survive and carry on the things that were placed here for us, and carry on what our elders tell us and teach us.[135] The Suquamish Tribe introduces the results of its tribally-conducted fish consumption survey with an overview of the place of fish, fishing, and fish consumption in tribal culture:

The Suquamish culture finds its fullest expression in the acknowledged relationship of the people with the land, air, water and all forms of life found within the natural system. River systems, lakes and numerous small creeks historically supported abundant coho, chinook, sockeye and chum runs, with other salmonids and marine fish available as well. The same forests which sustained life in the riparian zones also harbored deer, bear, and other wildlife. Vast expanses of intertidal habitat supported shellfish. By virtue of the Treaty of Point Elliott, Suquamish rights to fish and interests in their habitat were recognized to include the marine waters of Puget Sound from the northern tip of Vashon Island to the Fraser River in Canada, including Haro and Rosario Straits and streams draining into the western side of central Puget Sound.

Increased levels of development as well as pollutants from residential, industrial, and commercial uses have resulted in degraded habitats and harvesting restrictions. There were eleven Superfund sites within the immediate area of the Port Madison Indian Reservation at the time the fish consumption survey was conducted.

Despite degraded water quality and habitat, tribal members continue to rely on fish and shellfish as a significant part of their diet. All species of seafood are an integral component of the cultural fabric that weaves the people, the water, and the land together in an ***38** interdependent linkage which has been experienced and passed on for countless generations.[136]

ii. Possibility and Costs of Avoiding the Attendant Risk

Dominant society evaluators are likely to believe that there are a host of alternatives to fishing and substitutes for eating fish, each of which might involve some costs, but all of which would be reasonable means of avoiding the risks that fishing and fish consumption have come to entail. To the extent that the dominant society views fishing as a recreational pursuit, fishing in different places, practicing "catch and release" fishing, or taking up alternative pastimes might suit nearly as well.[137] Because the dominant society is less likely to attach any significance to the consumption of particular species or parts of fish and shellfish, risk avoidance measures that advised against consumption of certain species or certain parts would be unproblematic, apart from small compromises in terms of money (perhaps the prohibited species is less expensive to purchase or catch) and predilection (perhaps the prohibited part is a delicacy). Similarly, because the dominant society is less likely to consume fish and shellfish at particular times and frequencies in accordance with seasonal availability or ceremonial requirements, risk avoidance measures that entail consuming at reduced rates or measured frequencies (e.g., "eat no more than one fish meal per week") would visit little or no hardship on its members, although it might entail some inconvenience (perhaps it is difficult to identify dietary substitutes that provide the nutritional benefits of fish). And, because the dominant society is less likely to employ the particular preparation methods that advisories recommend against, these risk avoidance measures are unlikely to implicate practices that are thought to be culturally important.

From the perspectives of the various Native peoples of the Pacific Northwest, such risk avoidance measures would occasion profound loss. Given that fish, fishing, and fish consumption is part of who these peoples are, it is simply not fathomable for them to avoid the attendant risks by ceasing to fish and eat fish. Indeed, it would be unthinkable. Tribal scientists for the Fourteen Confederated Tribes and Bands of the Yakama Nation and the Confederated Tribes of the Umatilla Indian Reservation explain the cultural inappropriateness of fish consumption advisories:

> ***39** We need to think not only about human people as receptors, but about the culture itself as a receptor. We should be very uncomfortable about having to write a fish advisory in the first place . . . . Really, there is just a single cultural community that is comprised of human and fish peoples and their rules for behaving and mutually surviving. It has been explained that the fish community existed first, and accepted people as community members, but only if human people follow certain rules of participating in the ecology, including a nutritionally adequate level of respectful consumption (a sacrament), and protecting the fish members from contamination and habitat degradation in return for being protected from starvation. Writing a fish advisory to protect some community members from other members is very disquieting, and causes many consequences on its own.[138]

It would also not be appropriate or possible in most cases to fish "elsewhere." As the Columbia River Inter-Tribal Fish Commission explains: "Salmon and the rivers they use are part of our sense of place. The Creator put us here where the salmon return. We are obliged to remain and to protect this place."[139] Moreover, various tribes' aboriginal and treaty-based claims to the fish and other resources are tied to specific places; the legal protections that flow from these claims cannot simply be re-established somewhere else.[140] In addition, the particularized skills and ecological knowledge that indigenous peoples have developed over centuries are also place-specific and, therefore, are not transferable to other locations.

Similarly, it would be unimaginable from the perspective of these peoples to undertake risk avoidance that required consuming fish and shellfish at reduced rates or frequencies, given that ceremonial observance necessitates consumption of large quantities during certain events timed in accordance with seasonal, traditional or cultural dictates. It would also work considerable hardship if risk avoidance required departure from traditional practices respecting preparation or species and parts consumed. In short, the loss occasioned by the potential risk avoidance measures would be profound and felt along cultural, spiritual, social, ecological, economic, and political dimensions. The Swinomish Indian Tribal Community explains:

> In the Swinomish Tribal Community, fish and shellfish represent vital subsistence and commercial resources for the Tribe as well as an important point of cultural association for the Tribe's identity. Employed in cultural and religious ceremonies, incorporated into the ***40** common diet, and sold to support families on the Reservation, the current ecological status and fate of these species is of utmost interest to the Tribe . . . . [W]e believe that risk reduction exemplifies a much more effective answer to addressing risk [from contamination] than does risk avoidance . . . . [O]ptions such as closing harvesting sites, substituting other sources of food, and posting "no fishing" signs are not viable considerations for reducing risk.[141]

In sum, as these examples help to illustrate, it will often be the case that the practices that have come to entail risk because of environmental contamination are valued differently by the dominant society on the one hand and indigenous peoples on the other. Where this is so, avoidance measures that ask risk-bearers to abandon or alter these practices are unlikely to be understood as particularly burdensome by dominant society evaluators--although they may be understood as impossibly burdensome by indigenous risk-bearers. Because environmental policy is likely nonetheless to reflect the dominant society's understandings of what is at stake, the risk avoidance measures that are adopted will likely be the very ones that encroach most profoundly on the expression of indigenous cultures and the exercise of indigenous rights. I observe in the next section that this has indeed been the experience of indigenous peoples of the Pacific Northwest and elsewhere as agencies have contemplated ever greater reliance on fish consumption advisories to ensure risk avoidance.

C. Risk Avoidance and Environmental Injustice for Indigenous Peoples: the Example of Fish Consumption Advisories

As agencies and others have contemplated various risk avoidance measures, they have largely failed to ask or to acknowledge who is likely to have to undertake avoidance. Such an inquiry would reveal that indigenous peoples are in many cases disproportionately among those who will be burdened by avoidance. Agencies and others contemplating risk avoidance have also failed to explore or to register differences in the understandings of the dominant society and indigenous peoples regarding what is at stake. Such an inquiry would reveal that indigenous peoples in many cases value differently the practice that entails risk and perceive differently the loss that would accompany the avoidance measures being considered. This is the case, for example, with respect to fish consumption advisories. Agencies have embraced risk avoidance in the form of fish consumption advisories, either without cognizance of or ***41** without concern for the deeply troubling consequences for indigenous peoples.[142]

This section begins by noting that the conditions set forth above that portend risk avoidance as the strategy of choice are indeed present in the context of fish consumption advisories. That is, it is the case that indigenous people will be affected by fish consumption advisories to a far greater extent than members of the dominant society and will value fish, fishing, and fish consumption differently than the dominant society, viewing these practices or ways of living as central and indispensable to their identity as peoples. This section points to the availability of evidence to this effect and then argues that, in the face of such evidence, agencies' increasing enthusiasm for fish consumption advisories constitutes an instance of environmental injustice, whereby the dominant society continues to dismantle the cultural bonds of indigenous peoples and to sanction the destruction of the land and resources that are crucial to the flourishing of these peoples.

1. Agencies Cannot Claim Ignorance as to Which Groups are Likely to be Burdened by Fish Consumption Advisories and What is at Stake from Their Perspective

Various indigenous peoples are prominent among the risk-bearers when the fish, shellfish, and aquatic resources on which they depend have become contaminated. Indigenous peoples are exposed to greater quantities and mixes of contaminants, via different routes, at different frequencies, and in different contexts than members of the general ***42** population. Therefore, the burdens of regulatory reliance on risk avoidance will be imposed disproportionately on these groups.

Thus, for example, members of the tribes represented by the Columbia River Inter-Tribal Fish Commission, members of the Tulalip Tribes and the Squaxin Island Tribe, and members of the Suquamish Indian Tribe consume fish and shellfish at rates markedly higher than the general population--and at rates markedly higher than those employed by federal and state agencies in setting environmental standards.[143] Various Pacific Northwest tribes and their members consume and use different parts of the fish and shellfish--including parts in which contaminants are more concentrated--and employ different preparation methods than the general population, again with the result that they are more highly exposed.[144] This exposure occurs not only through ingestion but also through dermal contact, as tribal members fish in and clean and prepare fish from contaminated waters.[145] The Swinomish Indian Tribal Community has noted the acute or peak exposures that result from tribal members' consumption of very large quantities of fish over short periods, such as during traditional ceremonies or seasonal harvests.[146] As a consequence of these practices, Native people in the Pacific Northwest are among the most exposed to contaminants contained in fish tissues. While the fisheries and shellfisheries upon which tribes depend are contaminated to varying degrees, there appears to be reason for concern in every instance. For example, as tribal scientists for the Fourteen Confederated Tribes and Bands of the Yakama Nation and the Confederated Tribes of the Umatilla Nation have relayed, "it is the norm, at least in the Columbia River systems, for over 100 contaminants to be identified in fish tissues."[147]

Increasingly, often in large part due to the efforts of these risk-bearers, the EPA and other agencies have been made aware of the nature ***43** and extent of indigenous peoples' different exposure circumstances and practices.[148] The information frequently has been conveyed directly to these agencies by tribes or inter-tribal groups. (Indeed, it is sometimes the case that these agencies have played a role in facilitating studies conducted in whole or part by affected tribes).[149] In some cases, agencies have cited these studies and incorporated this information--at least to some extent--in various decisions, or have otherwise evidenced their awareness of indigenous peoples' different practices.[150] Thus, it is fair to say that agencies cannot claim ignorance as to who is likely to be among the most exposed to contaminants in fish, shellfish, and aquatic environments and, therefore, who is likely to be disproportionately among those asked to undertake avoidance when the risks of this contamination are "managed" by reliance on fish consumption advisories.

Not only are indigenous peoples likely to be the ones burdened by reliance on fish consumption advisories, but they are likely to understand differently the nature of that burden. There are profound differences in the value attached to fish, fishing, and fish consumption by various indigenous peoples and by the dominant society. As elaborated above, the indigenous peoples of the Pacific Northwest view themselves to be ***44** inextricably tied to the fish. These peoples understand fishing and fish consumption as lifeways that are central to their identity as peoples and indispensable to the flourishing of their cultures. The dominant society, by contrast, likely views these practices as less valuable and certainly not irreplaceable.

Various tribes and indigenous groups have labored to educate agencies and the public about the historical and contemporary importance to them of fish, shellfish, and other aquatic resources.[151] Recall, for example, efforts of tribal scientists for the Fourteen Confederated Tribes and Bands of the Yakama Nation and the Confederated Tribes of the Umatilla Indian Reservation to explain the cultural inappropriateness of fish consumption advisories, the extreme unease occasioned by advice at odds with tribal members' understandings of their relationship to the fish, and the dire consequences that would attend behavior contrary to their sacred obligations.[152] Similarly, various tribes and their members have emphasized the unthinkable loss that would be occasioned by being required to forego these practices as a means of risk avoidance. Recall, for example, efforts by the Swinomish Indian Tribal Community to explain the impossibility of undertaking particular avoidance measures, such as ceasing harvesting shellfish in the face of closed harvesting sites, going "somewhere else" to fish, or looking to dietary substitutes for fish.[153]

Again, increasingly, this information is readily available to the EPA and other agencies. In many instances, this information has been conveyed directly to these agencies, often in the context of various public processes regarding fish consumption advisories in particular or the health of aquatic ecosystems in general.[154] Importantly, this information is also likely to be made available to the EPA and other federal agencies ***45** that take seriously the consultation requirements of the government-to-government relationship between the federal government and tribes.[155]

2. Agencies Have Failed to Register the Experiences of Indigenous Peoples

As agencies and other decision makers have considered and, increasingly, employed fish consumption advisories as a means of risk avoidance, they have failed for the most part to register the experiences of indigenous peoples and have failed to appreciate the environmental justice implications of this shift. As a consequence, agencies' reliance on fish consumption advisories contributes to the denigration and obliteration of the cultural bonds of fishing peoples and sanctions the destruction

of the land and resources that are crucial to their survival as distinct peoples.

Agencies and others have assessed the move toward greater regulatory reliance on fish consumption advisories by reference to the values and decisional frameworks of the dominant society. Decision makers implicitly or explicitly weigh the costs and benefits of risk avoidance relative to the costs and benefits of risk reduction, with both "costs" and "benefits" typically assessed in the aggregate and defined narrowly, according to the values and experiences of the dominant society. Tradeoffs are framed and evaluated without accounting for their distributive consequences, and so, as noted above, without acknowledging that indigenous peoples are disproportionately among the risk-bearers. The costs and benefits of particular risk avoidance measures, moreover, are understood in terms of the importance or worth of the relevant practice--fishing at particular places, preparing fish in particular ways, or consuming particular species and parts of fish--to the dominant society rather than to the indigenous people who will be asked to forego it.[156] Finally, the more fundamental question whether risk avoidance is even an appropriate response to environmental contamination is assessed according to dominant society values. Recall that when agencies rely on risk avoidance rather than on risk reduction, they address only the harms ***46** to human health (narrowly understood), but leave unaddressed the harms to the health of the non-human components of aquatic ecosystems. This anthropocentric choice is itself an affront to the beliefs of many indigenous peoples, as is reflected, for example, by the Suquamish Tribe's explanation that the "fullest expression" of Suquamish culture is the "acknowledged relationship of the people with the land, air, water and all forms of life found within the natural system,"[157] and by tribal representatives' pointed recent criticism of agencies' exclusive focus on fish consumption advisories: "Who explains risk to other creatures who are dependent on fish?"[158]

Operating within this framework, agencies decline to register indigenous peoples' protests to it, whether revealed by indigenous peoples' refusal to comply with advisories or lodged by express statements indicating the anguish that would accompany risk avoidance. Instead, agencies appear selectively to register indigenous peoples' circumstances. Agencies may observe that a particular indigenous group has refused to comply with relevant advisories and may acknowledge the fact that this group is prominent among the risk-bearers to whom fish consumption advisories are addressed, that they consume fish in accordance with different practices than the general population, and that these different practices are dictated by culture and tradition. However, agencies may respond to such observations only by redoubling their efforts to improve fish consumption advisories in order to obtain compliance by even these "hard to reach," culturally divergent audiences. Alternatively, agencies may observe that a particular indigenous group has suspended or altered its fish consumption practices in the face of severe contamination or depletion and may hear expressions of the profound anguish and loss that the group experiences as a consequence--but may register only the altered behavior and take it to legitimate the use of risk avoidance measures here and elsewhere.

Thus, for example, indigenous risk-bearers have refused to "comply" with or "adhere" to fish consumption advisories, continuing to consume and use fish according to traditional and cultural practices.[159] Tribes and tribal groups have also denied the applicability of federal and state ***47** advisories to resources relied upon by their members.[160] Often, these actions are accompanied by express statements characterizing the protest as such. Moreover, indigenous people have explained that their noncompliance is not a matter of failed risk communication--i.e., it is not that the advisories have not reached their "target audience" nor that the audience has failed to comprehend the recommendations--but an indication of the impossibility of complying and the inappropriateness of advisories and avoidance as a response to risk from environmental contamination.[161] They have even sought to achieve understanding by invoking analogies to practices that would be thought non-negotiable by the dominant society, for example, likening catching and eating fish to breathing air or to partaking of a sacrament.[162] Yet agencies have not reevaluated their reliance on advisories and risk avoidance. Whereas ***48** agencies have recently made commendable efforts to solicit the perspectives of non-dominant groups regarding fish consumption advisories, they have for the most part channeled this information into efforts to improve risk communication, with the aim of enhancing compliance and the efficacy of risk avoidance.[163] Even where agencies have registered to some degree the existence of cultural differences between indigenous risk-bearers and the dominant society, agencies have done so by tinkering at the margins with the content of advisories in an attempt to make them more "culturally appropriate" (perhaps by deleting suggested alternative preparation methods that are culturally inapt, or by revising language to reflect local usage or language(s)).[164] At the same time, agencies have persisted in assuming the presence of a meaningful choice for indigenous peoples as to whether and how to consume and use fish. Tribal scientists and cultural specialists from the Fourteen Confederated Tribes and Bands of the Yakama Nation and the Confederated Tribes of the Umatilla Indian Reservation counter:

> [T]here are likely to be no acceptable "tradeoffs." Tribal peoples may not have an option of avoiding fish consumption for cultural or religious reasons as well as economic reasons . . . . The cultural use of fish is not a "perceived benefit of fish consumption." It is a baseline situation that is not an option or a choice, but an absolute requirement.[165]

In other cases, indigenous risk-bearers have with great anguish suspended or altered their fishing and fish consumption practices, undertaking risk avoidance in the face of severe contamination or closed or decimated fisheries. This is the case at Akwesasne, where tribal resources have been polluted by aluminum smelters and an automobile parts manufacturer to the point that fish and wildlife were contaminated with PCBs to levels several times those deemed fit for human ***49** consumption, and where a six-mile stretch of the Grasse River and a two-mile stretch of the St. Lawrence River were declared a federal Superfund site:[166]

"This is a classic environmental justice site," says Ken Jock, a director of the Akwesasne Environment Program . . . . His huge office is full of reports and photos documenting the extent of the [PCB contamination at Akwesasne.] The reports, photos, and sheer size of the Akwesasne Environment Program dwarf the infrastructure of most Indian nations in the country. Yet it seems that even with reams of paper, the action taken by federal agencies is minimal. "This all used to be a fishing village. That's all gone now. There's only one family that still fishes," Jock says. "We can't farm because of all of those air emissions. Industry has pretty much taken the entire traditional lifestyle away from the community here."

Today 65 percent of the Mohawks on Akwesasne reservation have diabetes, says Jock. Henry Lickers, director of the environmental health branch of the Mohawk Council of Akwesasne echoes Jock: "Our traditional lifestyle has been completely disrupted, and we have been forced to make choices to protect our future generations," says Lickers. "Many of the families used to eat 20-25 fish meals a month. It's now said that the traditional Mohawk diet is spaghetti."[167] Again, while this anguish is often expressed,[168] what agencies appear to register is not the profound nature of the loss, but the fact of the risk avoiding behavior. This altered behavior may in turn be interpreted as revealing the true, lesser value that those affected attach to fish, fishing, and fish consumption, or to support the view that the particular risk avoidance measures have been readily undertaken and cannot, therefore, be objectionable. Here, indigenous peoples' apparent "choice" is susceptible to being taken, at least implicitly, to constitute their consent. Again, importantly, agencies have not as a result reevaluated their reliance on advisories and risk avoidance as opposed to risk reduction.

***50** Furthermore, as agencies continue to assess the use of fish consumption advisories by reference to the perspectives of the dominant society, they may fail fully to appreciate the dimensions of the resulting environmental injustice from the perspectives of tribes and their members. Thus, to the extent that a preference for risk avoidance leaves unabated the contamination and depletion of tribal and culturally important land and resources, this choice also undermines tribal self-determination. Because tribal management of these resources is an important exercise of tribal sovereignty and self-government,[169] a threat to the health of these resources as a practical matter constitutes an encroachment on a tribe's political autonomy. Additionally, any unilateral decision by a federal or state agency to issue advisories ostensibly applicable to tribal land and resources is an affront to tribes' status as sovereign nations and, in the case of federal agencies, to the government-to-government relationship that is meant to describe dealings between federal and tribal governments where federal agency policy affects tribes.

Beyond these immediate effects, agencies' choice of risk avoidance may set in motion a downward spiral, whereby environments that are contaminated and depleted support only decreased fishing and fish consumption, and this decreased or "suppressed" level of consumption[170] may then be cited by agency regulators as evidence of the need for less protective standards, and of the increasing appropriateness of risk avoidance measures such as use-restricted cleanups and fish advisories. As a result, fish, shellfish, and aquatic resources will be permitted to become even more contaminated and further depleted, indigenous practices will be thwarted to a greater degree, apparent fish consumption rates will continue to decrease, and so the downward spiral will continue. "Suppression effects" and the resulting downward spiral pose a threat unique to tribes and their members, in that they may work to eviscerate treaty rights as a practical matter and, consequently, to hinder tribes' exercise of cultural self-determination.[171] As aquatic environments are ***51** permitted to become less and less hospitable to fish and shellfish, in time no fish or shellfish will remain to be taken under the terms of treaties. The right to take fish guaranteed the tribes will thus exist in theory only, as will the ability of the tribes to continue to determine for themselves how they will honor and practice their fishing cultures.[172] While there is, at present, only limited quantitative evidence documenting such suppression effects relevant to indigenous peoples,[173] ample qualitative evidence demonstrates these effects due to contamination and depletion. For example, according to Kelly Toy, a Shellfish Biologist for Tulalip Tribes, with fewer fish available to be taken due to compromised aquatic ecosystems and depleted salmon and other fisheries, many tribal members have been prevented from consuming fish at the level that they would have, were they able to exercise their treaty rights to the fullest extent.[174] Moses Squeochs, Director, Environmental Program, Fourteen Confederated Tribes and Bands of the Yakama Nation, similarly confirms contaminated and depleted fisheries, diminished opportunities to catch and consume fish, and compromised treaty rights.[175]

In sum, agencies and other decision makers have failed to develop a decisional framework that reveals when indigenous peoples and other non-dominant groups are likely to be burdened by the risk avoidance measures under consideration; that explores whether and in what respects there are relevant cultural differences between the burdened group and the dominant society; and that acknowledges that cultural flourishing may be undermined by a move to risk avoidance. As a consequence, environmental policy serves to instate the values and culture of the dominant society and to imperil the values and cultures of indigenous peoples. Experience in the context of fish consumption advisories illustrates the multiple dimensions of the resulting environmental injustice.

*52 III. TOWARD ENVIRONMENTAL JUSTICE FOR INDIGENOUS PEOPLES

Environmental justice for indigenous peoples requires attention to the interrelated cultural, spiritual, social, ecological, economic, and political implications of risk avoidance measures and requires recognition of the unique historical and legal contexts in which these peoples' claims must be evaluated. When agencies and other decision makers consider and employ risk avoidance measures in light of only the dominant society's circumstances and understandings of what is at stake, they contribute to environmental injustice along these multiple dimensions. They permit environmental policy to privilege the dominant culture at the expense of non-dominant cultures and peoples, and so perpetuate cultural discrimination.

In order to work toward environmental policies that do not benefit only the dominant culture and thwart the flourishing of indigenous cultures, agencies and other decision makers need to acknowledge and address this consequence of their current approach. Agencies and others need to develop an inquiry that reveals when indigenous peoples and other non-dominant groups are likely to be burdened by the risk avoidance measures under consideration. They need to establish a means to explore whether and in what respects there are relevant cultural differences as between the burdened group and the dominant society. They must acknowledge instances in which cultural flourishing for the burdened group may be undermined by a move to risk avoidance rather than risk reduction. Finally, they must be prepared to facilitate cultural self-determination for indigenous peoples as a step toward remedying the injustices of cultural discrimination. As a general matter, agencies and others need to employ a decisional framework that identifies, considers, and seeks to address these issues in light of each affected group's particular history and aspirations.

As an initial step, agencies and others must be able to identify when and to what extent indigenous peoples and other non-dominant groups are likely to be the ones on whom the burden of undertaking avoidance will fall. Agencies and other decision makers must not proceed on the assumption that we are all equally likely to be asked to undertake risk avoidance measures. This step is necessary to reveal distributive inequities, and so to provide the basis for groups' claims to have the distributive dimensions of environmental injustice addressed. This step is also necessary as a prerequisite to efforts to explore the contours of relevant cultural differences between the dominant society and those non-dominant groups that are required to undertake risk avoidance. Agencies must be able to ascertain the identity of the affected group(s) in order to discern the groups' particular understandings of what is at stake, ***53** and so to detect cultural differences between their understandings and those of the dominant society.

In a second step, agencies must work to detect the existence of cultural differences and attempt to understand these differences and their implications for evaluating the risk avoidance measures at issue. The more profound the divergence in values and understandings, the greater the need for such efforts. This step is necessary to expose cultural discrimination, and so to provide the foundation for some groups' claims that agencies and other decision makers address the cultural dimensions of environmental justice. Thus, decision makers must not proceed on the assumption that we all value similarly the practices that entail risks resulting from contamination, nor on the assumption that we all perceive similarly the ease or anguish that would accompany the avoidance measure at issue.

In some cases, for some groups, the inquiry might end here. If a particular group turned out to be among the most exposed, and so among the risk-bearers called upon to undertake avoidance, but this group did not diverge from the dominant society regarding the cultural importance of the practice that subjected it to risk, or regarding the ease with which the proposed risk avoidance measure would be undertaken, then distributive justice would be the only concern. This might be the case, for example, if the proposed measure asked those exposed to PCBs and a variety of other contaminants to cease breastfeeding in order to avoid the resulting risks to their children. If there were reason to believe that breastfeeding is equally esteemed in non-dominant and dominant cultures alike, and to think that alternatives, such as feeding one's child formula from a bottle, are perceived by these groups to entail losses along similar metrics (e.g., losses in terms of child and maternal health, losses in terms of mother-child bonding), and to comparable degrees--in short, if there were indeed shared understandings of what is at stake--then the salient issue would be any disproportionate burden on members of a particular non-dominant group resulting from the fact that they were the ones exposed, and thus the ones who would be asked to cease breastfeeding.

If, however, the particular group revealed to be among the most exposed, and so among those asked to undertake avoidance, diverged considerably from the dominant society with respect to its understandings of the worth of the practice in question or the loss that would be suffered in undertaking the particular risk avoidance measure, then additional facets of environmental justice--notably, cultural flourishing--would also be at issue. This is likely to be the case, for example, if the proposed measure called upon those exposed to herbicides and pesticides in the course of tending, harvesting, and using basketry materials to suspend their tending, gathering and weaving of buckbrush for over two years in ***54** order to avoid the risks of hexazinone exposure. Here, few if any members of the dominant society are likely to be among those asked to undertake avoidance, given that the practice of basketweaving for them begins not in the forests but at the craft store. Even if they were equally among those called upon to cease basketweaving, however, members of the dominant society are likely to share little common ground with California Indian basketweavers regarding the value of basketweaving and its importance to their very identity. They may share a sense that abstaining from basketweaving would entail a loss of a pleasurable pastime, an artistic endeavor, or a useful product, and so perceive some costs to risk avoidance. But they would likely not share an understanding of the multiple other dimensions along which California Indian basketweavers would suffer harm. Thus, in instances such as this, environmental injustice would stem from the divergent cultural understandings of what is at stake--of what would be compromised by risk avoidance.

Finally, there is a third step. Once agencies and others are aware that risk-bearers' understandings of the cultural importance of the practice or way of living that entails risk diverge markedly from the understandings of the dominant society, agencies cannot persist in employing the risk avoidance measure in question, thereby impeding the perpetuation of non-dominant cultures. Rather, agencies need to ensure that their decisions support commitments to cultural flourishing for indigenous and other non-dominant groups, as well as for dominant groups. This contention invokes a robust conception of environmental justice--one that has been advanced by indigenous advocates and that considers the interrelated cultural, spiritual, social, ecological, economic, and political nature of the harms.[176] While a complete defense of this contention is beyond the scope of this Article, its moorings bear mention here. It draws upon normative commitments that embrace the integrity and flourishing of diverse cultures[177] and that strive not to burden deeply-held beliefs and values by requiring believers to modify their commitments in order to avoid risks.[178] It also draws upon the tools of critical race studies and ***55** requires consideration of each affected group's particular history and aspirations.[179]

This contention is not uncontroversial. However, it responds to those who would claim, on either normative or positivist grounds, that environmental decisions ought not comprise cultural considerations by observing that these decisions inevitably have significant cultural impacts. As Eric Yamamoto and Jen-L Lyman explain, although the dominant society tends to separate the "physical environment" (which includes water, trees and the like) from the "social environment" (which includes people, culture, and social structures), "the physical and the social are integrally connected."[180] This argument responds to those who would question whether environmental policy should work to facilitate cultural self-determination for indigenous peoples and other non-dominant groups by observing that environmental policy currently privileges the values of the dominant society and facilitates the perpetuation of the dominant culture--often at the expense of indigenous and other non-dominant cultures. It responds further by pointing to the value increasingly placed on the existence of diverse cultures[181] and by pointing to the past and present harms of cultural discrimination to argue that remedies are warranted in a just society. As James Anaya explains, cultural discrimination works to suppress or obliterate the cultural bonds of non-dominant or minority cultures, in an effort to acculturate or assimilate the subordinated group, where that group does not desire to abandon its cultural identity.[182]

Such an approach recognizes that different circumstances and claims characterize different non-dominant groups and that, as a consequence, different remedies will be appropriate in different cases. Although it is not my aim to venture a schematic for assessing these claims here--indeed, it would be inappropriate to try to do so in the abstract--it seems that, in general, the more pervasive the history of dominant society efforts to obliterate cultural bonds and assimilate the particular group, the greater the justification for a host of remedial and reparative efforts to ensure cultural flourishing.

Indigenous peoples are prominent among those for whom such efforts to ensure cultural flourishing are justified. There is a long and ***56** undeniable history in the United States of efforts to colonize, exterminate, and assimilate indigenous peoples.[183] These efforts, moreover, have often had the intent and effect of denigrating and undermining the land and resource-based attributes of indigenous cultures.[184] The resulting threats to the indigenous cultures, peoples, and resources are, not surprisingly, interrelated. Past and present decisions by the dominant society have worked to dispossess Native peoples of vast portions of their homelands and to despoil those lands and resources that these peoples have retained. The consequent harms stem not only from the facts of deprivation and destruction of the resources themselves, but also from the fact that the land and resources are a means by which indigenous cultures are practiced and transmitted, and so a means by which indigenous peoples exercise their claims to sovereignty and self-determination and maintain their identity as distinct peoples.

Given the pervasiveness of the dominant society's efforts--past and present-- to dismantle the cultural bonds and to assimilate indigenous peoples, a panoply of reparative measures is justified. Although reparative efforts may be similarly justified in some cases, for some other groups, the particular history of indigenous peoples within the United States provides especially ample support for such measures. Among the claims that indigenous peoples are justified in making is a claim that environmental policy in general--and evaluation of risk avoidance in particular--should not perpetuate cultural discrimination. Attention to the historical circumstances and contemporary aspirations of Native peoples requires, furthermore, that agencies honor treaties, the federal trust responsibility, and the status of tribes as governments, with rights to and management authority over tribal lands and resources.

CONCLUSION

Where environmental policy affects indigenous peoples, decision makers must embrace a conception of environmental justice that acknowledges the interrelated cultural, spiritual, social, economic, and ***57** political dimensions of environmental issues. As decision makers evaluate risk avoidance strategies, they need to be alert not only to the distributive implications but also to the cultural impacts of a move to risk avoidance: given differences in various groups' understandings of the practices at stake, the risk avoidance measures preferred by dominant society evaluators are likely to be the very ones that encroach most profoundly on the expression of indigenous cultures. Agencies must consider risk avoidance in light of each affected group's circumstances and aspirations and decline to employ avoidance measures where doing so will imperil cultural self-determination for indigenous peoples.

Footnotes

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1	Bioaccumulation is the process by which chemicals that are persistent and lipophilic accumulate in increasing quantities in organisms higher up the food chain.
2	EPA, Exposure Factors Handbook (Draft 1996).
3	If one intended to invoke the Coasian orientation, the term "risk reduction" might be appropriate. See Ronald Coase, The Problem of Social Cost, 3 J.L. & Econ. 1 (1960). That is, if environmental risks were understood to be the product of the coincidence in time and space of two incompatible elements--contaminants and human and ecological receptors that might be harmed by contact with these contaminants--then any measures that mitigated this coincidence, whether required of risk-producers or risk-bearers, might properly be referred to as "risk reduction" measures. It is my sense, however, that the failure in common usage to distinguish risk avoidance from risk reduction is not a considered nod to Coase, but is rather an unconsidered or, in some cases, a euphemistic formulation.
4	EPA, Mercury Study Report to Congress, at Executive Summary (1997). Other sources of mercury emissions to air include mining and smelting operations; cement production; other industrial operations involving the use of mercury; and non-industrial combustion (e.g., wildfires and open burning). Id.
5	National Research Council, Toxicological Effects of Methylmercury 16 (2001) [hereinafter NRC Methylmercury].
6	Office of Water, EPA, Fact Sheet, Polychlorinated Biphenyls (PCBs) Update: Impact on Fish Advisories 2 (1999), available at http:// www.epa.gov/ost/fish/pcbs.pdf (last visited Nov. 18, 2002) [hereinafter EPA PCB Update].

7	NRC Methylmercury, supra note 5, at 15; Office of Water, EPA, Mercury Update: Impact on Fish Advisories 3 (2001), available at http:// www.epa.gov/ost/fishadvice/mercupd.pdf, (last visited Nov. 18, 2002).
8	EPA, Update: National Listing of Fish and Wildlife Advisories 5 (2001) [hereinafter EPA National Advisories].
9	Id.
10	EPA PCB Update, supra note 6, at 4-6. Studies have suggested that PCBs may play a role in inducing breast cancer, and have linked PCBs to other cancers as well, including cancers of the liver, biliary tract, gall bladder, gastrointestinal tract, pancreas, and melanoma and non-Hodgkin's lymphoma. Id.
11	Id.
12	NRC Methylmercury, supra note 5, at 13.
13	Id. at 16-18.
14	Id. Among the more severe neurological effects are seizure disorders, cerebral palsy, blindness, and deafness; among the more subtle neurological effects are abnormal muscle tone, attention deficits, and diminished visuospatial performance. Id.
15	Zygmunt J.B. Plater, et al., Environmental Law and Policy: Nature, Law, and Society 503 (2d ed. 1998). Note that this figure must be considered in light of the fact that only some 20-25 percent of waters in the United States have been assessed. Jim Hanlon, Acting Deputy Assistant Administrator, Office of Water, EPA, in 2001 Nat'l Envtl. Just. Advisory Council Meeting Proceedings II-44, available at http:// www.epa.gov/compliance/resources/publications/ej/nejacmtg/transcript_seattle_120401am.pdf (last visited Nov. 18, 2002).
16	Office of Science and Technology, EPA, The Incidence and Severity of Sediment Contamination in Surface Waters of the United States, Volume 1: National Contaminant Survey 1 (1997), available at http:// www.epa.gov/waterscience/cs/vol1/nsi_vol1.pdf (last visited Nov. 14, 2002). This percentage is calculated by volume of assessed sediments underlying the nation's waters.
17	Photograph of posted sign (on file with author). Note that this message appears in six languages: English, Spanish, Russian, Cambodian, Vietnamese, and Laotian. See generally Comments by Chee Choy, on the National Environmental Justice Advisory Council's Draft Fish Consumption Report (Feb. 1, 2002).
18	Louisiana Department of Environmental Quality, Human Health Protection Through Fish Consumption and Swimming Advisories in Louisiana (2001), at http://www.deq.state.la.us/surveillance/mercury/fishadvi.htm (last updated July 15, 2002) [hereinafter LA Health Protection]. These waters are in East Baton Rouge Parish. The advisory goes on to recommend "No fish consumption" from Capitol Lake, also located in East Baton Rouge Parish, due to contamination with "priority organics (PCBs)." Id.
19	Washington's advisory concludes by outlining the health benefits of eating fish and suggesting that, "in addition to following the recommendations contained in the advisories for specific fishing locations and fish species," exposure to contaminants can be further reduced by cooking, cleaning, and other practices (e.g., consuming younger, smaller fish). Washington State Department of Health, Office of Environmental Health Assessments, Fish and Shellfish Consumption Advisories in Washington State Due to Chemical Contamination, at www.doh.wa.gov/ehp/oehas/EHA_fish_adv.htm (last visited Nov. 18, 2002).
20	Washington, for example, indicates the "chemicals of concern" and the species affected. Id. Louisiana similarly indicates the "causative pollutants" for each advisory. LA Health Protection, supra note 18.
21	Office of Water, EPA, Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume IV: Risk Communication 10 (1995) ("Ultimately, fish consumption is the behavior most health advisory communication programs are designed to influence.") [hereinafter EPA Risk Communication Guidance].

22	See, e.g., Kerry Kirk Pflugh, Community Outreach to At-Risk Urban Anglers: A Case Study in Risk Communication of Fish Consumption Advisories, 2001 Nat'l Risk Communication Conference II-32, available at http:// www.epa.gov/ost/fish/forum/ riskconf.pdf (last visited Nov. 18, 2002) (discussing challenges for New Jersey's fish consumption advisory program, given the "large number of people who were not complying with advisories" but "were still eating [fish], despite the issuing of advisories"); Henry Anderson, 2001 Nat'l Risk Communication Conference II-36 (recounting efforts to evaluate the effectiveness of Wisconsin's fish consumption advisories, which had found "awareness" to be very high, but "compliance" to be lacking).
23	EPA National Advisories, supra note 8, at 3.
24	Id. Note that the Great Lakes are considered separately from other lakes, and their connecting waters are considered separately from other river miles.
25	Id. at 4.
26	EPA, EPA National Advice on Mercury in Freshwater Fish for Women Who Are or May Become Pregnant, Nursing Mothers, and Young Children, available at http://www.epa.gov/ost/fishadvice/advice.html (last visited Nov. 18, 2002).
27	EPA National Advisories, supra note 8, at 2. There were 2,838 advisories in the United States as of 2000, up from 2,651 advisories in 1999 and 1,266 advisories in 1993. Id.
28	Id. at 3; see, e.g., Choy, supra note 17 (describing role of community efforts in getting advisories posted on the Columbia Slough, a contaminated waterway on Portland, Oregon's northeast side).
29	Elizabeth Southerland, Proceedings of the National Forum on Contaminants in Fish, May 6 and 9, 2001 I-10 (2001), available at http:// www.epa.gov/ost/fish/forum/fishforum.pdf (last visited Nov. 18, 2002).
30	EPA Risk Communication Guidance, supra note 21, at 1.
31	Hanlon, supra note 15, at II 40-45. Hanlon noted that, from the Office of Water's perspective, fish consumption advisories are not the solution to the problem of contaminated fish and are only a temporary measure. Nonetheless, the bulk of his comments regarding the Office of Water's efforts to address contaminated aquatic ecosystems and their adverse effects celebrated the work that it had done with the states to develop a risk-based advisory program, to disseminate advisories throughout the United States, and to refine advisories and other risk communication efforts. Id.
32	EPA, Strategic Plan, 20-21 (2000). While the construction of this sentence is admittedly ambiguous, it seems fair to read its focus on reducing consumption as opposed to reducing contamination to suggest a preoccupation with risk avoidance.
33	Hanlon, supra note 15, at II-41.
34	Memorandum from James Hanlon, Acting Deputy Assistant Administrator, Office of Water, to Barry Hill, Director, Office of Environmental Justice (Oct. 4, 2001) (on file with author).
35	Id.; see also Hanlon, supra note 15, at II-42. See generally Proceedings of the National Forum on Contaminants in Fish, May 6 and 9, 2001, available at http://www.epa.gov/ost/fish/forum/fishforum.pdf (last visited Nov. 18, 2002).
36	See, e.g., Julia Silverman, Death of Fish-Eating Birds Alarms Biologists--Lead Poisoning Moves up the Food Chain, Spokesman-Rev., Aug. 11, 2001, at A1 (describing U.S. Fish and Wildlife Service's finding of lead poisoned merganser along the South Fork of the Coeur d'Alene River, an area contaminated with lead from mines and smelters).
37	EPA PCB Update, supra note 6, at 1 (noting that, while manufacture was banned as of 1979, "PCB-containing materials still in service at the time of the ban were not required to be removed from use, and, therefore, some are still in use.").

38	Id.
39	Agency for Toxic Substances and Disease Registry, Lead ToxFAQs (1993).
40	See, e.g., Agency for Toxic Substances and Disease Registry, Exposure to PCBs from Hazardous Waste Among Mohawk Women and Infants at Akwesasne (1995).
41	Agency for Toxic Substances and Disease Registry, Draft Toxicological Profile on Lead (1997).
42	Agency for Toxic Substances and Disease Registry, Lead ToxFAQs (1993).
43	See Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. § 9601-675 (2001).
44	CERCLA explicitly calls for preference of long-term, permanent treatment of contamination, as opposed to mere containment or removal. 42 U.S.C. § 9621(b)(1) (2001). EPA has, until recently, been guided by this preference, together with the assumption that sites might in the future be used for residential purposes. National Contingency Plan, 40 C.F.R. § 300.430(e)(9) (2001); see also Branford C. Mank, Reforming State Brownfield Programs to Comply with Title VI, 24 Harv. Envtl. L. Rev. 115, 131-36 (2000).
45	See, e.g., John Pendergrass, Sustainable Redevelopment of Brownfields: Using Institutional Controls to Protect Public Health, 29 Envtl. L. Rep. 10243 (1999). Note that Pendergrass excludes physical barriers, such as fences, from the tools that he defines as institutional controls to the extent that they are required by governmental entities (and relied upon by these entities to justify less extensive cleanups). However, their inclusion seems appropriate.
46	See, e.g., Alex Geisinger, Rethinking Risk-Based Environmental Cleanup, 76 Ind. L. J. 367, 368-69 (2001). Risk-based or use-restricted cleanup programs may also be referred to as "flexible," "variable" or "tiered" programs. Heidi Gorovitz Robertson, Legislative Innovation in State Brownfields Redevelopment Programs, 16 J. Envtl. L. & Litig. 1, 9 (2001).
47	See, e.g., Stephen Breyer, Breaking the Vicious Circle 11-19 (1993); Richard L. Revesz & Richard B. Stewart, The Superfund Debate, in Analyzing Superfund: Economics, Science, and Law 3, 14-16 (Richard L. Revesz & Richard B. Stewart eds., 1995); Gerald W. Phillips, Rethinking Restoration: Risk Based Corrective Action and the Future of Economic Regulation, 16 N. Ill. U. L. Rev. 659, 660-63 (1996).
48	Mank, supra note 44, at 134-35 (noting that approximately forty-one states now authorize agencies to consider the future use of a site when setting cleanup standards and to permit higher levels of contamination to remain in place where future use scenarios contemplate limited human exposure--with limited exposure to be guaranteed by means of institutional controls). The term "brownfield" is typically used to refer to contaminated industrial or commercial properties that are abandoned or underused at which cleanup is unlikely to be undertaken in the near term, either by developers or by federal or state governments. Brownfield initiatives refer to governmental efforts to facilitate brownfields cleanup and redevelopment, often by approving cleanup under more flexible terms and to less stringent environmental standards.
49	Gorovitz Robertson, supra note 46, at 12-13 nn. 35-36 and accompanying text.
50	Mass. Regs. Code tit. 310, § 40.0923 (1998). See generally Gorovitz Roberston, supra note 46.
51	Gorovitz Robertson, supra note 46, at 15 (observing that "[a]lthough institutional controls once were merely an interim measure used to protect people from exposure until a site cleanup was complete, these controls are now used to provide long term protection from exposure, when total site remediation is not contemplated."); Geisinger, supra note 46, at 371-76 (describing EPA's increased reliance on institutional controls to supplement or supplant engineering controls and noting a paradigm shift among agencies in general: "Rather than emphasizing removal or decontamination, regulators now consider whether exposure can be limited.").
52	40 C.F.R. § 300.430(a)(1)(iii)(D).

53	§ 300.430(a)(1)(iii)(D) (stating that institutional controls shall not serve as the sole remedy in substitution for "active response measures" such as treatment of contaminated material and restoration of degraded waters to their previous beneficial uses, "unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of a remedy.").
54	Office of Solid Waste and Emergency Response, EPA, Land Use in CERCLA Remedy Selection Process (Directive No. 9355.7-04) at 2, 1995 WL 457568, summarized in 60 Fed. Reg. 29,595 (June 5, 1995).
55	See, e.g., Randy Segawa, et al., Residues of forestry Herbicides in Plants of Interest to Native Americans; Phase One--Development of Methodologies and Pilot Sampling 2 (1997), available at http:// pestreg.cdpr.ca.gov/docs/empm/pubs/ehapreps/eh97-01.htm (last visited Nov. 18, 2002).
56	Id.; Randy Segawa, et al., Department of Pesticide Regulation, California Environmental Protection Agency, Dissipation and Off-site Movement of Herbicides in Plants of Importance to California Tribes (2001) (unpaginated report), available at http:// www.cdpr.ca.gov/docs/empm/pubs/ehapreps/forsherb.htm (last visited Nov. 1998) [hereinafter CDPR, Dissipation of Herbicides].
57	Id.; Study Documents Herbicide Drift & Persistence in the Environment, 36 Roots & Shoots (California Indian Basketweavers Association, Nevada City, CA), Fall 2001, at 10 [hereinafter CIBA Basketweavers Newsletter].
58	Lin Ying Li, California Environmental Protection Agency, Data Analysis of Forestry Herbicide Residues in Plants of Interest to California Tribes 9 (2002), available at http:// www.cdpr.ca.gov/docs/empm/pubs/ehapreps/forhrb3.pdf (last visited Nov. 18, 2002) [hereinafter Ying Li Herbicide Residues]. A recent study, conducted by California's Department of Pesticide Regulation, examined herbicide persistence and off-site drift affecting four plant species and parts important to California tribes for various purposes: bracken fern roots (basketweaving); buckbrush or deerbrush shoots (basketweaving); golden fleece foliage (medicinal uses); and manzanita berries (food). CDPR, Dissipation of Herbicides, supra note 56. Glyphosate was found to persist for as long as 60 weeks in golden fleece foliage; hexazinone persisted for as long as 130 weeks in buckbrush shoots; triclopyr persisted for as long as 56 weeks in golden fleece foliage. Ying Li Herbicide Residues, supra note 58, at 9.
59	CDPR, Dissipation of Herbicides, supra note 56. The maximum distance at which plants were sampled was 100 feet from the treated edge.
60	Videotape: From the Roots: California Indian Basketweavers, by California Indian Basketweavers Association (1996) [hereinafter From the Roots].
61	Bev Ortiz, Contemporary Indian Basketweavers and the Environment, in Before the Wilderness: Environmental Management by Native Californians 195, 208 (Thomas C. Blackburn & Kat Anderson eds., 1993).
62	CDPR, Dissipation of Herbicides, supra note 56.
63	Id. (commenting that "the plant materials in the treated area were dead, dying, chlorotic, brittle or deformed and hence are undesirable and very unlikely to be selected for basketweavng, medicine or food...").
64	CDPR, Dissipation of Herbicides, supra note 56; CIBA Basketweavers Newsletter, supra note 57.
65	CIBA Basketweavers Newsletter, supra note 57. But cf. Kathy Wallace, Presentation at the Indigenous Ecology and Cultural Restoration Workshop (Sept. 21, 1999) (on file with author) (noting California Indian basketweavers' varied experiences working with the USFS and other federal and state land managers, in some cases resulting in cooperative management of culturally important resources, e.g., prescribed burning and harvesting of beargrass in accordance with Native management techniques).
66	See e.g., Department of Pesticide Regulation, California Environmental Protection Agency, National Forest Herbicide Monitoring Project, available at http://www.cdpr.ca.gov/docs/empm/pubs/forest/forstprj.htm (last visited Nov. 18, 2002).

67	See, e.g., Joyce Wadler, It's Not the Heat or the Humidity, It's the Ozone, N.Y. Times, July 25, 2001, at A17 (describing New York State Department of Environmental Conservation's issuance of an ozone alert for the third day in a row).
68	Clean Air Act, 42 U.S.C. § 7409(b)(1) (2001).
69	See EPA, Ozone Nonattainment Area/State/County Report, available at www.epa/gov/oar/oaqps/greenbk/onca.html (listing areas that did not meet the national primary or secondary ambient air quality standards as of November 4, 2002); see also Thomas O. McGarity, Missing Milestones: A Critical Look at the Clean Air Act's VOC Emissions Reduction Program in Nonattainment Areas, 18 Va. Envtl. L. J. 41 (1999) (discussing history of many states' failure to attain the national ambient air quality standards, despite a series of extensions and other efforts by Congress and the EPA to ease states' burdens).
70	See Jack McCarthy, Pagers to Carry Smog Alert--Instant Warning System Being Developed for People at Risk, Press-Enterprise, Sept. 17, 1998, at A1 (quoting South Coast Air Quality Management District board member Roy Wilson: "We felt we needed a way to tell people who are ill or at the playground when the air is very bad, so they would know they had better go indoors.").
71	Michael Weisskopf, Legal Pollution that Makes Students Sick; Sulfur Dioxide Standards Don't Protect the 'Particularly Sensitive', Wash. Post, June 6, 1989, at A1.
72	Indeed, the EPA only recently revised a partial consent decree into which it had entered with Monsanto's corporate successor under pressure from an array of sources--including affected community groups and a bipartisan team of senators. Although the existence of widespread contamination at the site was not disputed, the prior consent decree declined to list it on the National Priorities List, and put off cleanup efforts until studies could be conducted by Monsanto's successor. The revised consent decree enables cleanup of contaminated residences to begin two years earlier, and provides that EPA conduct the portions of the studies addressing risks to human health. Compare Michael Grunwald, Senators Assail EPA on Ala. PCB Cleanup, Wash. Post, April 20, 2002, at A5 with Ala. PCB Cleanup Pact Is Revised, Wash. Post, Oct. 25, 2002, at A16; see United States v. Pharmacia Corp., Civil Action No. CV-02-PT-0749-E, Memorandum in Support of Motion to Enter Revised Partial Consent Decree (Oct. 18, 2002), available at www.epa.gov/region4/waste/npl/nplal/annpcbfcd.pdf.
73	Kevin Sack, PCB Pollution Suits Have Day in Court in Alabama, N.Y. Times, Jan. 27, 2002, at A20.
74	Id.
75	See, e.g., United Church of Christ, Commission for Racial Justice, From Plantations to Plants: Report of the Emergency National Commission on Environmental and Economic Justice in St. James Parish, Louisiana, Table I and Table II (Charles Lee & Damu Smith, coordinators, Sept. 15, 1998) (comparing toxic air pollutant releases in St. James Parish and in the United States, and noting that annual releases in St. James Parish were 30,560 pounds per square mile and 360 pounds/person, whereas releases in the United States were only 382 pounds per square mile and 7 pounds per person).
76	Local Emergency Planning Committee, Shelter-In-Place, Be Wally Wise: A Coloring Book (undated materials) (on file with the author). I am indebted to Bob Kuehn for this example.
77	Environmental Law Institute, Protecting Public Health at Superfund Sites: Can Institutional Controls Meet the Challenge? 65-93 (1999) [hereinafter ELI, Institutional Controls].
78	Id. at 80. In fact, it was only because of considerable community initiative that these avoidance programs were as innovative and widespread as they were. Id.
79	A. Dan Tarlock, Genetic Susceptibility and Environmental Risk Assessment: An Emerging Link, 30 Envtl. L. Rep. 10277, 10277 (2000).
80	Id. at 10278.

81	Id. at 10280.
82	See, e.g., Edward F. Snyder, Editorial, Clinton's Decision Good One for Maine and all its Children by Standing up to EPA's Critics, He will Help Asthmatics and Others Breathe Easier, Portland Press Herald, June 28, 1997, at 9A.
83	Or it may be that some risk avoidance measures have gone largely unchallenged because and to the extent that they serve the ancillary function of information provision, a strategy that enjoys wide support. See discussion infra in Part I.C.
84	See, e.g., David F. Coursen, Institutional Controls at Superfund Sites, 23 Envtl. L. Rep. 10279 (1993); see also Geisinger, supra note 46, at 369 (citing "substantial" cost savings associated with use-restricted cleanups, but challenging assumption that such cleanups actually result in the same amount of human health protection). But cf. Gorovitz Robertson, supra note 46, at 2, 8-45 (recognizing that use-restricted cleanups are less costly in the short-term, but arguing that these savings are achieved in considerable part by externalizing many of the costs, e.g., to future landowners and to host communities).
85	Although Tarlock's essay is brief and does not commit to defending a shift to risk avoidance, it is nonetheless suggestive of just this shift, pointing to several bases on which current strategies are, in his view, inferior to the risk avoidance strategies that would be permitted by the information on susceptibility promised by the Environmental Genome Project. Thus, Tarlock laments that [o]ur current regulatory strategy for toxic pollutants is second-best. Ideally, regulation would be based on deterministic causal relationships between exposure and illness or genetic mutation, but this level of certainty is not [currently] possible.... At the present time, we lack the information to "force" greater individual responsibility for most harms that result from general environmental exposure.... We are presumed to be "victims" of environmental pollution with little or limited capacity to mitigate the harm of exposure. For example, asthmatics and other at-risk populations are not expected to move from ozone non-attainment areas designated by the Clean Air Act. At most, they are expected to refrain from strenuous activities on ozone alert days. Tarlock, supra note 79, at 10279. Tarlock elsewhere appears to be agnostic as between risk reduction and risk avoidance, instead calling for examination of the ethical and legal issues that attend "[t]he use of [genetic] information to change the victim status of those exposed to pollution by forcing them to take individual avoidance steps." Id. at 10280.
86	See, e.g., National Environmental Justice Advisory Council, Fish Consumption and Environmental Justice 98-101 (2001) [hereinafter NEJAC Fish Consumption Report]. In a similar vein, some commentators advocate a limited role for risk avoidance, as "a method of last resort" in cases where treatment or removal of contaminants is truly infeasible. See, e.g., ELI, Institutional Controls, supra note 77, at 115.
87	Informational strategies may, of course, result in behavior modification--on the part of both risk-bearers and risk-producers. For example, California's Proposition 65 has been celebrated for the somewhat unanticipated effect it has had on risk-producers, many of whom have sought to make changes to their products that reduce toxicity or risk and thereby to avoid the statute's reporting and information provision requirements. See, e.g., Clifford Rechtschaffen, The Warning Game: Evaluating Warnings Under California's Proposition 65, 23 Ecology L.Q. 303 (1996).
88	EPA Risk Communication Guidance, supra note 21; see, e.g., Dyan M. Steenport et al., Fish Consumption Habits and Advisory Awareness Among Fox River Anglers, Wisconsin Med. J. (2000), available at www.wisconsinmedicalsociety.org/uploads/wmj/steenport.pdf (last visited Nov. 18, 2002) (describing how Wisconsin anglers were not familiar with a state fish advisory); accord Pendergrass, supra note 45, at 10243 (noting that institutional controls "operate by inducing humans to modify their behavior" and observing that this is "an extraordinarily difficult task," and therefore unlikely to be completely "effective").
89	See, e.g., Rechtschaffen, supra note 87, at 313-16 (discussing "information disclosure" strategies and noting among their limitations that people may fail to seek out, understand, or use the information).

90	Fish consumption advisory signs along the Columbia Slough in Portland, Oregon, indicate only that the river is "polluted." See discussion supra at text accompanying note 17. Similarly, a sign at a contaminated industrial site in Edison, New Jersey states merely that "hazardous substances are present." See infra note 96. Fish consumption advisories posted on the Louisiana Department of Environmental Quality's website also list the pollutants giving rise to the advisory. See discussion supra at text accompanying note 18. Recognizing that fish consumption advisories to some extent serve this informational function, some risk-bearers have advocated their increased use. However, their call for more advisories has tended to focus on affected groups' right to be informed (and thereby empowered to seek risk reduction) and to be issued with a strongly worded caveat that risk reduction efforts be redoubled (rather than replaced with risk avoidance). See NEJAC Fish Consumption Report, supra note 86, at 101.
91	See, e.g., Silverman, supra note 36 (citing Mary Jane Nearman, EPA Project Manager for the Coeur D'Alene River Basin Superfund site, who observed that "there's no way to put up signs warning mergansers and other wildlife not to eat fish because of possible [lead] contamination.").
92	This is, in fact, a perspective reflected in many tribes' and indigenous people's conceptions of environmental justice. See, e.g., The Suquamish Tribe, Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound Region 4 (2000) (describing the Suquamish perspective that the people are related to "the land, air, water, and all forms of life" and arguing that data generated by the tribe's fish consumption survey should be used to support "cleanup levels which will be protective of human health as well as of benefit to the natural resources"); see discussion infra at text accompanying notes 157-158.
93	Accord Gorovitz Robertson, supra note 46, at 30-38, 43-45.
94	See, e.g., Pendergrass, supra note 45, at 10243.
95	See, e.g., Pflugh, supra note 22, at II-35 (recounting one ironic example, in which agency partners discovered a family on the Hackensack River that had taken down the sign advising against crabbing and placed it over a fire to support a cooking pot filled with river water and freshly caught crabs).
96	See, e.g., Elizabeth Shogren, Toxic Sites Lie Wasting as Superfunds Dry Up, San Francisco Chron., Aug. 5, 2002, at A8 (describing site of the abandoned Chemical Insecticide Corp., located adjacent to suburban homes in Edison, New Jersey and contaminated with arsenic, lead, dioxin, and other toxic chemicals: "On a recent afternoon, the back gate was wide open.... The only indication of the potential danger inside was a sign face down in the dirt that read: 'Danger no trespassing; hazardous substances present.'").
97	See, e.g., Geisinger, supra note 46, at 386-93 (describing limitations of regulatory, proprietary and other institutional controls in proscribing future uses of contaminated lands).
98	Id.
99	See, e.g., Id. at 10243 (describing EPA efforts to improve effectiveness of fish consumption advisories); Hanlon, supra note 15.
100	See, e.g., Pendergrass, supra note 45, at 10243 (observing that "[i]t is unlikely that public health warnings [or notices] can be 100 percent effective at preventing all exposure to risk, because some people will not receive the warning, some who receive it will not understand it, and some who understand it will choose to ignore it," but concluding that "[d]espite these risks, notices remain a highly useful institutional control because they are an inexpensive method of warning large populations about a risk and allowing individuals to reduce their own risk of exposure.").
101	See discussion infra at notes 105-107 and accompanying text.

102	See, e.g., Robert R. Kuehn, A Taxonomy of Environmental Justice 30 Envtl. L. Rep. 10681, 10683 (2000) (offering a four-part taxonomy of the claims that comprise environmental justice and observing "[o]f the four aspects of justice implicated by the use of the term environmental justice, distributive justice concerns have received the most attention from government officials, scholars, and communities."); accord Eric Yamamoto & Jen-L. W. Lyman, Racializing Environmental Justice, 72 U. Colo. L. Rev. 311, 311-12 (2001).
103	See, e.g., Jana L. Walker et al., A Closer Look at Environmental Injustice in Indian Country, 2 Seattle J. for Social Justice 379 (2002); Robert J. Miller, Exercising Cultural Self-Determination: The Makah Indian Tribe Goes Whaling, 25 Am. Indian L. Rev. 165 (2002); Dean B. Suagee, Turtle's War Party: An Indian Allegory on Environmental Justice, 9 J. Envtl. L. & Litig. 461 (1994); Robert A. Williams, Jr., Large Binocular Telescopes, Red Squirrel Piñatas, and Apache Sacred Mountains: Decolonizing Environmental Law in a Multicultural World, 96 W. Va. L. Rev. 1133 (1994).
104	Catherine A. O'Neill, Variable Justice: Environmental Standards, Contaminated Fish, and "Acceptable" Risk to Native Peoples, 19 Stan. Envtl. L. J. 3, 73-75 (2000) (arguing that, given data revealing various Native peoples to be among the most exposed to contaminants in fish, agencies know who will be burdened by less protective environmental standards, and can no longer claim to be deliberating in terms of identitless, statistical lives). See generally Lisa Heinzerling, The Rights of Statistical People, 24 Harv. Envtl. L. Rev. 189 (2000).
105	Although this claim is not uncontested, it is fair to say that it is, on balance, supported by anecdotal evidence and quantitative study. See, e.g., Luke W. Cole and Sheila R. Foster, From the Ground Up: Environmental Racism and the Rise of the Environmental Justice Movement 10 (2001) ("Environmental hazards are inequitably distributed in the United States, with poor people and people of color bearing a greater share of the pollution than richer people and white people. This intuitive idea--think for a moment about the most polluted parts of your region--has been borne out by dozens of studies over the past two decades.") For useful catalogues and syntheses of the relevant studies, see id. at 54-79 & App.; Clifford Rechtschaffen and Eileen Gauna, Environmental Justice: Law, Policy & Regulation 55-85 (2002).
106	See, e.g., United Church of Christ, supra note 75.
107	See, e.g., O'Neill, supra note 104; NEJAC Fish Consumption Report, supra note 86.
108	The point that environmental justice, for many affected groups, includes not only distributive but other claims has been emphasized by some commentators. See, e.g., Sheila Foster, Justice from the Ground Up: Distributive Inequities, Grassroots Resistance, and the Transformative Politics of the Environmental Justice Movement, 86 Cal. L. Rev. 775 (1998); Yamamoto & Lyman, supra note 102.
109	Mary Jo Pitzl, No Escaping Valley's Pollution, Ariz. Republic, Jan. 9, 2000, at A1 (recounting an EPA representative's decision to move to Tucson to avoid Phoenix' poor air quality).
110	I am indebted for these examples to Cass Sunstein's discussions of risk, values, responsibility and blame. Cass R. Sunstein, A Note on "Voluntary" and "Involuntary" Risks, 8 Duke Envtl. L. & Pol'y F. 173, 177 (1997); Cass R. Sunstein, Bad Deaths, 14 J. Risk and Uncertainty 259 (1997).
111	Sunstein, Bad Deaths, supra note 110.
112	Commentators have, for example, explicated the central (and often unexamined) role of judgments of value, responsibility and blame in decisions allocating resources to regulate risks. See, e.g., id. Commentators have also posited that white males are likely to find tolerable or "acceptable" a greater level of risk from environmental contamination than are non-white males and women of all races. See, e.g., James Flynn, et al., Gender, Race, and Perception of Environmental Risks, 14 Risk Analysis 1101, 1106 (1994). Other commentators have pointed to different assumptions as between the dominant society and some indigenous peoples regarding whether there are "acceptable" levels of risk. See, e.g., O'Neill, supra note 104, at 33. Commentators have also observed that decisions in the environmental regulatory context are likely to be made by members of (a limited segment of) the dominant society, and so reflect their values and biases. See, e.g., Robert R. Kuehn, The Environmental Justice Implications of Quantitative Risk Assessment, 1996 U. Ill. L. Rev. 103; O'Neill, supra note 104. See generally Clayton P. Gillette & James F. Krier, Risk, Courts and Agencies, 138 U. Pa. L. Rev. 1027, 1098 (1990); Annette Baier, Poisoning the Wells, in Values at Risk 49 (Douglas MacLean ed., 1986) (noting the role of culture in societal determinations about "which harms to notice and worry about").

113	See, e.g., Douglas MacLean, Introduction to Values at Risk 3 (Douglas MacLean ed., 1986).
114	Ortiz, supra note 61; accord Telephone Interview with Vivian Parker, Resource Policy Analyst, California Indian Basketweavers Association (Jan. 16, 2001).
115	Vivian Parker interview, supra note 114.
116	See, e.g., Chuck Striplen, Mutzun Ohlone Tribe, Native Subsistence in a Toxic Environment: A Tribal Viewpoint, OPPTS Tribal News 14 (Fall/Winter 1999-2000) (reporting that "[a]n average of about five gallons of liquid-form and more than two pounds of dry herbicide is applied per mile along the 15,000 miles of highways" in coastal northern California, home to the Yurok, Hupa, Karuk and Tsnungwe tribes, and discussing the adverse impact of this pesticide use for basketweavers).
117	See, e.g., Ortiz, supra note 61, at 195-99.
118	Id.
119	Id. at 197-98. See generally David W. Peri and Scott M. Patterson, 'The Basket is in the Roots, That's Where it Begins,' in Before the Wilderness: Environmental Management by Native Californians 175 (Thomas C. Blackburn & Kat Anderson eds., 1993).
120	See, e.g., From the Roots, supra note 60 ("For centuries, basketweaving has been an integral part of California Indian life.... Today baskets are made as part of a commitment to preserve tribal heritage and identity.").
121	Id.
122	Id.
123	See, e.g., Ortiz, supra note 61, at 205-11.
124	From the Roots, supra note 60.
125	From the Roots, supra note 60.
126	See, e.g., Barbara Harper & Stuart Harris, Tribal Technical Issues in Risk Reduction Through Fish Advisories, in Proceedings of the American Fisheries Society: Contaminants in Fish 19 (1999) [hereinafter Harper & Harris] (observing that "it is the norm, at least in the Columbia River system, for over 100 contaminants to be identified in fish tissues."); Dan Landeen & Allen Pinkham, Salmon and His People: Fish and Fishing in the Nez Perce Culture 95 (1999) (quoting Ron Oatman, Nez Perce: "We used to collect eggs from the suckers and Mom would fry them up along with the rest of the fish."); Wilbur Slockish, Jr., Comments on the National Environmental Justice Advisory Council, Draft Fish Consumption Report 15 (2002) (describing Yakama practice of consuming fish skin that has been fried, boiled, or dried).
127	The Suquamish Tribe, supra note 92, at 9.
128	Slockish, supra note 126, at 13, 34. The Suquamish Tribe similarly reports that tribal members commonly drink the "nectar" that results from shellfish preparation. The Suquamish Tribe, supra note 92, at 51.
129	See, e.g., Slockish, supra note 126, at 13; accord Harper & Harris, supra note 126, at 19 (citing presence of contaminants in the water and sediments as responsible for "other routes of exposure" for Yakama people in addition to the ingestion of contaminated fish).

130	See, e.g., Joanna Burger, 2001 Nat'l Risk Communication Conference II-40, available at http://www.epa.gov/ost/fish/forum/riskconf.pdf (last visited Nov. 18, 2002) (recounting case study of Newark Bay Region: "We recently asked people why they went fishing.... Respondents rated relaxation and to be outdoors as a fairly important reason; they rated eating fish as fairly unimportant.... Low-income folks still consider the reason they fish is to relax and be outdoors.").
131	See, e.g., Telephone briefing by Rick Healy, Office of Water, EPA (June 26, 2001) (advising everyone with the National Environmental Justice Advisory Council, Fish Consumption Workgroup who had planned to head out on a fishing vacation over the upcoming holiday to heed the relevant advisories).
132	See, e.g., Renate D. Kimbrough, Consumption of Fish: Benefits and Perceived Risk, 33 J. Toxicology & Envtl. Health 81, 82-83 (1991).
133	Dan Landeen & Allen Pinkham, Salmon and His People: Fish & Fishing in Nez Perce Culture 156 (1999).
134	Billy Frank, Jr., A Statement from Billy Frank, Jr., at http:// www.nwifc.wa.gov/esa/start.htm (last visited Nov. 13, 2002).
135	Videotape: My Strength is From the Fish (Columbia River Inter-Tribal Fish Commission 1994) (on file with author) [hereinafter CRITFC, My Strength is From the Fish].
136	The Suquamish Tribe, supra note 92, at 4.
137	See, e.g., Pflugh, supra note 22, at II-34 (describing New Jersey's reluctance to issue advisories that discourage fishing, given the robust recreational fishery in the state, and recounting New Jersey's decision to encourage "catch and release" instead--despite its recognition that this message would be untenable "for people who are relying on fish for economic reasons, for cultural reasons, and for traditional family reasons.").
138	Harper & Harris, supra note 127, at 17.
139	Columbia River Inter-Tribal Fish Comm'n, The Importance of Salmon to the Tribes, at http://www.critfc.org/text/salmcult.html (last visited Nov. 18, 2002).
140	See, e.g., U.S. v. Washington, 384 F. Supp. 312 (W.D. Wash. 1974).
141	Comments from Swinomish Indian Tribal Community, on the National Environmental Justice Advisory Council's Draft Fish Consumption Report (Feb. 5, 2002) [hereinafter Swinomish Comments].
142	The use of the term "agencies" in this section, as well as in Part III, is meant to refer to federal, state, and local environmental agencies. These agencies at present make numerous decisions that affect tribal resources. In the Pacific Northwest, for example, where Native peoples by treaty ceded vast tracts of their aboriginal homelands but retained rights to hunt, fish, and gather at their "usual and accustomed places" in even this ceded territory, federal, state, and local agencies now manage or co-manage lands and waters that affect the survival of the salmon and other important aquatic resources. See, e.g., Treaty with the Nisquallys (Medicine Creek treaty), Dec. 26, 1854, U.S.-Nisquallys, art. III, 10 Stat. 1132 (1855); U.S. v. Winans, 198 U.S. 371 (1905); U.S. v. Washington, 384 F. Supp. 312 (W.D. Wash. 1974); U.S. v. Washington, 898 F. Supp. 1453 (W.D. Wash. 1995). Of course tribal environmental agencies also make management decisions that affect tribal members, lands and resources--and so also grapple with whether and how risk avoidance ought to figure into their responses to contaminated fish, shellfish, and aquatic resources. See, e.g., Lynda V. Mapes and Warren King, Study Worries Tribes that Eat Columbia Fish, Seattle Times, Aug. 1, 2002, available at http://seattletimes.nwsource.com/html/localnews/134504497_columbiafish01m.html (recounting the dilemma faced by the Confederated Tribes of the Umatilla Indian Reservation and the Yakama Nation given the contaminants revealed to be present in Columbia River Basin fish and their understanding that "reducing the[ir] consumption of fish to avoid risk" is "unacceptable."). This Article assumes, however, that its critique of agencies' failures to identify when and how indigenous peoples and their cultures are affected will be inapplicable to tribal environmental agencies.

143	Columbia River Inter-Tribal Fish Comm'n, Technical Report 94-3, A Fish Consumption Survey of the Umatilla, Nez Perce, Yakama, and Warm Springs Tribes of the Columbia River Basin (1994); Kelly A. Toy, et al., A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region (1996); The Suquamish Tribe, supra note 92.
144	See, e.g., The Suquamish Tribe, supra note 92, at 9, 51 (describing Suquamish children teething on dried clams, and tribal members drinking the "nectar" that results from shellfish preparation); Slockish, supra note 126, at 13, 34 (describing Yakama elders using for medicinal purposes the broth from cooking dried fish).
145	See, e.g., Slockish, supra note 126, at 13; accord Harper & Harris, supra note 126, at 19 (citing presence of contaminants in the water and sediments as responsible for "other routes of exposure" in addition to the ingestion of contaminated fish).
146	Swinomish Comments, supra note 141; accord Delores Garza, Alaska Native Science Commission, in Proceedings of the Nat'l Envtl. Justice Advisory Council Meeting, Dec. 3-6, 2001, III-89-90 (2001).
147	Harper & Harris, supra note 126, at 19; accord EPA, columbia river Basin Fish Contaminant Survey 1996-1998 (2002) (analyzing 132 chemicals, including pesticides, metals, PCBs, dioxins and furans, and other organic chemicals, and finding 92 present in fish tissues).
148	Similarly, the California Indian Basketweavers Association and its members have worked to educate the U.S. Forest Service and other relevant agencies regarding their tending, harvesting, and gathering practices and the nature and extent of the exposure that results. Basketweavers have explained that these practices mean that they are present along the roadsides and in the upland areas that have been treated with pesticides more often and at different frequencies than are members of the general population. They have demonstrated that they are exposed to these pesticides through a variety of routes--through their skin as they tend and harvest the roots and shoots, through their lips and mouths as they anchor the grasses and other materials during weaving, through ingestion as they use the finished baskets for cooking--that have no real parallels in the general population and thus are simply unaccounted for in agencies' assessment and management of risks. CIBA Basketweavers Newsletter, supra note 57; Wallace, supra note 65.
149	For example, the study by the Suquamish Tribe was funded in part by the Agency for Toxic Substances and Disease Registry; the CRITFC study was funded in part by the EPA. Columbia River Inter-Tribal Fish Comm'n, supra note 143; The Suquamish Tribe, supra note 92. In some cases, moreover, health and environmental agencies are themselves the principal authors of relevant studies. See, e.g., Columbia River Basin Fish Contaminant Survey, supra note 147 (finding 92 out of 132 chemicals analyzed to be present in fish tissues tested and concluding that members of the four Columbia River Basin tribes were exposed to risks for cancer and other adverse health effects at levels several times those of the general population).
150	See, e.g., Office of Science and Technology, EPA, Ambient Water Quality Criteria Derivation Methodology: Human Health, Technical Support Document 89-103 (1998), available at http:// www.epa.gov/waterscience/humanhealth/awqc-tsd.pdf, (last visited Nov. 18, 2002) (citing CRITFC and Tulalip studies, and incorporating their findings to a degree in EPA's recommended default values for fish consumption rates to be used in setting water quality standards under the Clean Water Act); Office of Water, EPA, Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000), available at http:// www.epa.gov/waterscience/humanhealth/method/method.html (last visited Nov. 18, 2002).
151	In addition to the sources discussed supra in Part II.B.1(b), see, e.g., Letter from Columbia River Inter-Tribal Fish Comm'n, to EPA Administrator Carol Browner on the Draft Revisions to the Methodology for Deriving Ambient Water Quality for the Protection of Human Health 10 (Jan. 14, 1999) [hereinafter CRITFC Comments to EPA] (describing various aspects of "cultural risk" that results from contamination of fish and aquatic resources, including the "ecological impacts that reduce or impair the inter-generational transfer of ecological knowledge used for implementing traditional holistic environmental management practices"); Columbia River Inter-Tribal Fish Comm'n, The Importance of Salmon to the Tribes, at http:// www.critfc.org/text/salmcult.html (last visited Nov. 18, 2002) (explaining the cultural context in which the Columbia Basin tribes fish, consume and use fish); The Olympic Peninsula Intertribal Cultural Advisory Committee, Native Peoples of the Olympic Peninsula: Who We Are (Jacilee Wray ed., 2002).
152	Harper & Harris, supra note 138 and accompanying text.
153	Swinomish Comments, supra note 141 and accompanying text.

154	See, e.g., CRITFC Comments to EPA, supra note 151, at 10; 2001 Nat'l Risk Communication Conference, available at http:// www.epa.gov/ost/fish/forum/riskconf.pdf (last visited Nov. 18, 2002); NEJAC Fish Consumption Report, supra note 86; Swinomish Comments, supra note 141.
155	In recognition of tribes' status as sovereign governments, federal agencies are directed by executive order to consult with tribes on a government-to-government basis when developing policies that affect tribes. Exec. Order No. 13,175, 65 Fed. Reg. 67, 249 (Nov. 9, 2000) (Consultation and Coordination with Indian Tribal Governments); see also Executive Memorandum on Government-to-Government Relations with Native American Tribal Governments (Apr. 29, 1994), available at http:// www.em.doe.gov/public/tribal/whletter.html.
156	See, e.g., Pflugh, supra note 22, at II-32, II-34 (describing New Jersey's decision not to issue advisories that discourage fishing, given that recreational fishing is widely practiced and constitutes "a multimillion dollar business" in the state, but to issue advisories that encourage "catch and release" and thus discourage fish consumption--despite their acknowledgement that this message would be untenable for those who fish and consume fish for economic, cultural, or traditional reasons).
157	The Suquamish Tribe, supra note 92, at 4.
158	Unidentified Indigenous Community Representatives, Tribal Breakout Session, in 2001 Nat'l Risk Communication Conference III-31, available at http://www.epa.gov/ost/fish/forum/riskconf.pdf (last visited Nov. 18, 2002).
159	See, e.g., Stuart Harris, Impacts of Fish Contamination on Native American Culture, 2001 Proceedings of the Nat'l Forum on Contaminants in Fish III-34, available at http://www.epa.gov/ost/fish/forum/fishforum.pdf; Telephone Interview with Moses Squeochs, Director, Environmental Program, Fourteen Confederated Tribes and Bands of the Yakama Nation (Aug. 3, 2001).
160	See, e.g., Mercury and National Fish Advisories Statement from the Alaska Division of Public Health: Recommendations for Fish Consumption in Alaska, Bulletin No. 6 (State of Alaska Epidemiology), July 15, 2001, available at http:// www.epi.hss.state.ak.us/bulletins/docs/b2001_06.htm (endorsed by, among other entities, the Alaska Native Health Board, Alaska Native Science Commission; Alaska Native Tribal Health Consortium; Aleutian/Pribilof Islands Association, Inc., and the Yukpm Kuskokwim Health Corporation, recommending "unrestricted consumption of fish from Alaskan waters," given these entities' independent review of mercury levels in Alaska fish, the known health benefits of fish consumption, and the fact that "the subsistence lifestyle and diet are of great importance to the self-determination, cultural, spiritual, social, and overall health and well being of Alaska Natives"); Great Lakes Indian Fish and Wildlife Comm'n, Masinaigan Supplement: How to Enjoy Fish Safely 3 (2000), available at http://www.glifwc.org/publications/supplement.pdf (last visted Nov. 18, 2002); Telephone Interview with Nancy Costa, Fond du Lac Environmental Program (July 31, 2001) (noting that the Fond du Lac Environmental Program is in the process of issuing "tribal consumption guidelines" that do not warn against eating fish but instead provide guidelines for healthy consumption, consistent with tribal traditions and practices, and explaining that "the last thing we want to do is discourage tribe and band members from eating their Native diet, given the serious health effects that we've seen getting away from a Native diet.")
161	Compare Ed Horn, 2001 Nat'l Risk Communication Conference II-23 (describing efforts of the New York State Health Department to improve its fish advisory program by addressing noncompliance by "hard-to-reach" populations, and conceiving of these populations as those who are unaware of advisories, do not understand advisories, or do not believe the advisory message conveys accurate information regarding contamination) with Unidentified Indigenous Community Representatives, Tribal Breakout Session, in 2001 Nat'l Risk Communication Conference III-31, available at http:// www.epa.gov/ost/fish/forum/riskconf.pdf (last visited Nov. 18, 2002) (recounting comments such as "Tribal input on brochures: I don't want a brochure. I want EPA to turn the responsibility back to the polluters in our country and not put it on us;" and "I want everyone to hear what's being said today.... The people who need to hear us are here at this conference.... Everyone should hear the Native American perspective on the problem. The problem is not getting the message out to our people. The message is getting the responsibility back on those who caused the problem. The U.S. needs to hear the message.").
162	See, e.g., Rebecca Tsosie, Privileging Claims to the Past: Ancient Human Remains and Contemporary Cultural Values, 31 Ariz. St. L. J. 583, 635 (1999) (observing that indigenous peoples are often forced to vet their claims through processes framed and overseen by the dominant society and so are required to try to articulate their claims in the terms of or by analogy to the practices and beliefs of the dominant society).

163	See, e.g., Conference Welcome/Introductions, 2001 Nat'l Risk Communication Conference II-3-10 (state and federal agency comments opening National Risk Communication Conference, underscoring importance of "input" from tribal and other participants--but only to the end of improved risk communication, particularly with "at-risk" or non-traditional populations, not to the end of enhanced risk reduction). Institutional structure may pose a hurdle: in many states, fish consumption advisories are communicated by health departments, whereas decisions setting priorities for risk reduction are made by environmental departments. See, e.g., Telephone Interview with Pamela Shubat, Environmental Toxicologist, Minnesota Department of Health (Apr. 7, 2001) (acknowledging lack of mechanisms in many states for communicating to environmental department decision makers the feedback received by health department risk communicators). Within the EPA, the advisory program resides in the EPA's Office of Water, whereas decisions about cleanup (although not about risk prevention and reduction for surface waters) are made elsewhere. Nevertheless, agencies have made little effort to address such hurdles.
164	See, e.g., Conference Welcome/Introductions, 2001 Nat'l Risk Communication Conference II-3-10.
165	Harper & Harris, supra note 126, at 21.
166	James Ransom, Haudenosuanee Enviornmental Task Force, Untitled Remarks, in Proceedings of the American Fisheries Society: Forum on Contaminants in Fish 25, 26 (1999) (recounting that analysis of a sturgeon caught by Mohawk fishermen in the St. Lawrence showed PCB concentrations of 3.41 parts per million (ppm) in the filet, 7.95 ppm in the eggs, and 10.20 ppm in the liver, compared to the 2.0 ppm deemed fit for human consumption by the State of New York); see also Winona LaDuke, All Our Relations: Native Struggles for Land and Life 12 (1999) (recounting that a snapping turtle found on the reservation was shown to harbor PCB concentrations of 3,067 ppm in its fatty tissue).
167	LaDuke, supra note 166, at 17.
168	According to a tribal press release, for example: "Our traditional lifestyle has been completely disrupted and we have been forced to make choices to protect our future generations. We feel anger at not being able to eat the fish." Susan Ross, Learning About Survival from Survivors: Mohawk Environmental Communicative Action, 2 Murdoch U. Electronic J. L. 1 (1995), available at http://www.murdoch.edu.au/elaw/issues/v2n1/ross21.html.
169	Rebecca Tsosie, Tribal Environmental Policy in an Era of Self-Determination: The Role of Ethics, Economics, and Traditional Ecological Knowledge, 21 Vt. L. rev. 225 (1996).
170	This "suppression effect," whereby fish consumption rates for a given population reflect a current level of consumption that is artificially diminished (e.g., because of contamination or depletion of the resource, and/or in response to fish consumption advisories) from an appropriate baseline level of consumption for that population, was recognized and named in an early survey of Michigan sport anglers, and cited as a basis for adjusting the observed fish consumption rate upwards. See NEJAC Fish Consumption Report at 86, 43-49 citing Patrick West et al., School of Natural Resources, Natural Resource Sociology Lab, University of Michigan, Ann Arbor, Technical Report No. 2, Michigan Sports Anglers Fish Consumption Survey: Supplement I, Non-Response Bias and Consumption Suppression Effect Adjustments (1989).
171	See Miller, supra note 103, at 206 (defining "cultural self-determination" as "the right of a distinct and identifiable group of people or a separate political state to set the standards and mores of what constitutes its traditional culture and how it will honor and practice that culture.").
172	Although tribes and indigenous people have exhibited remarkable determination and resiliency in the face of cultural oppression by the dominant society and have variously preserved, revived, and revised cultural practices under unspeakable conditions, the decimation of the salmon and other fish would surely constitute an unbearable burden to the cultures of the fishing peoples of the Pacific Northwest. See generally Miller, supra note 103 (describing the efforts of the Makah tribe to practice its culture on its own terms by reviving its traditional whale hunts).
173	See, e.g., The Suquamish Tribe, supra note 92, at 2 (noting that 67% of survey respondents indicated that their consumption patterns had changed over time, with 68% of these indicating that they ate less seafood (57%) or a different mix of species (11%) than twenty years ago, and citing, among the reasons for changed consumption patterns, the lack of accessibility or availability of finfish and shellfish, and the restriction of harvesting opportunities due to "red tides" and increased pollution).

174	Telephone Interview with Kelly Toy, Shellfish Biologist, Tulalip Tribes (Nov. 9, 1999).
175	Squeochs, supra note 159.
176	See, e.g., Tom B. K. Goldtooth, Indigenous Nations: Summary of Sovereignty and Its Implications for Environmental Protection, in Environmental Justice: Issues, Policies, and Solutions 138 (Bunyan Bryant, ed., 1995).
177	See, e.g., S. James Anaya, Ethnic Group Rights, in Ethnicity and Group Rights NOMOS XXXIX 222, 228-29 (Ian Shapiro & Will Kymlicka eds., 1997) (noting the existence of emerging yet widely shared norms in the United States and elsewhere that embrace "the value attached to the integrity of diverse cultures.").
178	See, e.g., Guido Calebresi, Ideals, Beliefs, Attitudes, and the Law 18-19 (1985).
179	See, e.g., Yamamoto & Lyman, supra note 108, at 341, 346 (advocating an analytical framework of "racializing environmental justice" that "illuminates the underlying racialized character of environmental justice claims" by, among other things, exploring different groups' differing histories and by "treat[ing] each racial or Native community separately according to its specific socio-economic needs, cultural values, and group goals.").
180	Id. at 312 (noting that this understanding is crucial to environmental justice and pointing out that the very term "environmental racism" importantly merges the "physical" and the "social.").
181	See, e.g., Anaya, supra note 177, at 228-29.
182	Anaya, supra note 177, at 228.
183	See generally Robert A. Williams, Jr., The American Indian in Western Legal Thought: The Discourses of Conquest (1990).
184	Anaya, supra note 177, at 228-29.
185	See, e.g., Rebecca Tsosie, Land, Culture, and Community: Reflections on Native Sovereignty and Property in America, 34 Ind. L. Rev. 1291, 1292 (2001). Native peoples' survival in America depends upon their ability to maintain their unique cultural identity as well as their separate political status. As separate cultures, Native peoples maintain distinctive world views, containing a composite of values and norms, that guide the ways in which the people relate to their ancestral lands and resources. As separate governments, they maintain a measure of autonomy over their lands and exert ownership over natural resources such as water, fish and game, timber, and minerals. Id.