November 2002 (revised)

FISH CONSUMPTION AND ENVIRONMENTAL JUSTICE

A Report developed from the National Environmental Justice Advisory Council Meeting of December 3-6, 2001

A Federal Advisory Committee to the U.S. Environmental Protection Agency

PREFACE

"[L]et everybody know that this environment belongs to all of us, and when you contaminate the water and contaminate the fish, you are contaminating all of us.

I tell you, I don't know if you know anything about Isaiah. Isaiah was a great prophet you know, and he said, "I have played, I have taught, and I have preached, and I wonder if anybody is listening." So I want to know if anybody is listening, and if you are listening I want to know what are you going to do about it?"

Remarks of Daisy Carter, Project AWAKE
Member of the NEJAC Fish Consumption Work Group
and its Air and Water Subcommittee

December 4, 2001
Meeting of the National Environmental Justice Advisory Council
Seattle, Washington

ACKNOWLEDGMENTS

The NEJAC acknowledges, with deep appreciation, the Fish Consumption Work Group and the NEJAC Report consultant, Catherine O'Neill, Associate Professor

INTERPRETIVE NOTES

The National Environmental Justice Advisory Council (NEJAC) is a federal advisory committee to the United States Environmental Protection Agency (EPA). This Report, there

(3) Protect the health of populations with high exposure to hazards from contaminated fish, aquatic organisms and plants, and wildlife, including communities of color, low income communities, tribes, and other indigenous peoples, by making full use of authorities under the federal environmental laws and accounting for the cultural, traditional, religious, historical , economic, and legal contexts in which these affected groups consume and use aquatic and terrestrial resources;

(4) Ensure that fish and other aquaq pev7Tj3.

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low-income communities, tribes, and other indigenous peoples *depend* on healthy aquatic ecosystems and the fish, aquatic plants, and wildlife that these ecosystems support. While there are important differences among these various affected groups, their members generally depend on the fish, aquatic plants, and wildlife to a greater extent and in different ways than does the general population. These resources are consumed and used to meet nutritional and economic needs. For some groups, they are also consumed or used for cultural, traditional, or religious purposes. For members of these groups, the conventional understandings of the "health benefits" or "economic benefits" of catching, harvesting
adequately capture the significant value these practices have in their lives and the life of their culture. The harms caused by degradation of aquatic habitats and depletion of fisheries, moreover, do not only affect the present generation. They take their toll on future generations and on the transfer of knowledge from one generation to the next (e.g., ecological knowledge, customs and traditions surrounding

reflect the circumstances of the general population, but often are not reflect

environment; and they

truly to be a "two-way street" – if *communication* is actually to occur, - affected groups must be involved as partners or co-managers at every point in the risk communication process. All of the elements of effective advisories – including "audience identification," "needs assessment," message content, media choice, implementation, and evaluation – will fall into place if agencies and affected communities or tribes consider together the questions and answers. In general, EPA and other agencies should work to reconceptualize risk communication approaches from large-scale, abstract, one-time efforts to develop and disseminate various communication "products" (e.g., developing and posting fish advisory signs) to local, contextually-supported, ongoing efforts to establish and maintain relationships with a particular affected community or tribe.

More specifically, it will be important for EPA and other agencies to recognize the diverse contexts, interests, and needs that characterize the various affected groups – including, but not limited to groups with limited English proficiency; groups with limited or no literacy; low-income communities; immigrant and refugee communities; African American communities; various Asian and Pacific Islander communities and subcommunities (e.g., Mien, Lao, Khmu, and Thadium communities within the larger Laotian community in West Contra County, CA); various Hispanic communities and subcommunities (e.g., Carribean-American communities in the Greenpoint/Williamsburg area of Brooklyn, NY); various Native Americans, Native Hawaiians, and Alaska Natives (including members of tribes and villages, members of non-federally recognized tribes, and urban Native people).

"Affected groups" also refers to subgroups within these larger groups, including but not limited to nursing infants; children; pregnant women and women of childbearing age; elders; traditionalists versus modernists in terms of practices surrounding fish consumption; and subgroups defined by geographical region. Affected group involvement in aiding identification and understanding of the diverse contexts, interests, and needs of these various groups will, perhaps unsurprisingly, be essential. The content of the message and the media selected need to be effective and appropriate from the perspective of the affected group, and this chapter examines several specific considerations to this end. Implementation efforts, too, must be effective and appropriate from the perspective of those affected, who will be particularly well-positioned to take the lead in implementing an advisory and outreach strategy that has been developed by and for their group. Evaluation will also be most usefully conducted together with members of the affected group, whose ability to help define and measure "success" will again often be unparalleled.

FISH CONSUMPTION AND ENVIRONMENTAL JUSTICE

BACKGROUND CHAPTER

The National Environmental Justice Advisory Council (NEJAC) is a federal advisory committee of the U.S. Environmental Protection Agency (EPA). Under its charter, the NEJAC's mission is to provide advice and recommendations to the EPA Administrator on matters related to environmental justice. In July, 2000, EPA requested that NEJAC address issues raised by the relationship between fish consumption, water quality, and environmental justice. This issue was the focus of the NEJAC's December 3-6, 2001 meeting in Seattle, Washington.

This Report focuses on the following question:

How should EPA improve the quality, quantity, and integrity of our Nation's aquatic ecosystems in order to protect the health and safety of people consuming or using fish, aquatic plants, and wildlife?

This chapter provides background necessary to address adequately the above policy question. This chapter seeks to explain why contaminated and depleted aquatic ecosystems are an environmental justice issue. Importantly, this chapter seeks to present the dimensions of the problem from the perspectives of the various individuals, communities, tribes, and other peoples affected.

This chapter begins in Part A by gathering the accounts of a number of different people who suffer the ill effects of contaminated and depleted aquatic ecosystems. Although these stories do not catalogue exhaustively the harms felt by all of those who are affected, it is hoped that, taken together, they will provide a sense of the breadth and enormity of the impacts on communities of color, low-income communities, tribes, and other indigenous peoples. And it is hoped that, in their diversity, they will provide a sense of the differing dimensions of the ill effects for these different affected groups. This chapter begins with these accounts because they are properly the starting point for any discussion of environmental justice policy: they present the *real* stories – the stories told from the perspectives of those on the ground, and not as they need to be told to fit into the bins and categories created by environmental laws and regulations. These accounts should *frame* the discussion – rather than be merely "inputs" into a discussion already framed in someone else's terms.

In order to speak to government agencies that work within the boundaries of environmental laws and regulations, however, it seems useful to work to "translate" these stories so that their relevance to agencies' efforts can be appreciated. NEJAC's attempt at translation will often mean breaking things down and naming their component parts in ways that ar

Confederated Tribes and Bands of the Yakama Nation may invoke terms and concepts familiar to agencies such as “nutrition,” “health,” “economy,” “resource,” “subsistence,” “culture,” and “treaty-protected;” he may refer to laws and programs that separately address the “air,” “water quality,” “water quantity,” and “sediments” that together are home to the salmon.

This attempt at translation may entail loss, however: it may fail fully to capture the multiple and interrelated dimensions of what is at stake; or it may risk misunderstanding or *mis*translation Yet an attempt at translation may be necessary for those affected to convey their recommendations to agency decision makers. Nonetheless, it is crucial that agencies also work to *hear* the stories in their original, whole form and to consider what these stories have to teach them – how they might serve to reframe agencies’ approaches altogether. It is important that agencies strive to reduce the gulf that must be bridged by translation and so to minimize the loss that accompanies translation. With these considerations in mind, the remainder of this Report looks to discuss the issues in the terms used by environmental agencies and in environmental laws and regulations, while at the same time referring often to the words of those affected as touchstones for deliberation.

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Fish are a healthful source of dietary protein and other nutrients for humans.[3] Fish are relatively low in fat, and are a good source of selenium. Fish, aquatic plants, and wildlife are major dietary staples for some individuals, and those who subsist chiefly or solely on fish, aquatic plants, and wildlife are more likely to be people of color, low-income individuals, tribal members, or other indigenous people. Thus, for example, a recent survey revealed that whereas 60% of "non-white" (primarily African-American) fishers on the Detroit River fished there to meet their needs for food or for a combination of food and recreation, only 21.7% of white fishers indicated that they fished for reasons combining food and recreation, and none indicated that they fished only to meet their needs for food.[4] In Alaska, "[a]mong Yupiks of Gate6l4hb81.9 0 Tdver o ica

favored because it is the strongest fish and the most tasty. Chinook Salmon is the fish we try to bring to the long house.[10]

As Hawaii's Thousand Friends relates:

Hawaiians, the indigenous people of these islands, rely on healthy aquatic ecosystems for their life-style. The depletion and contamination of these ecosystems has drastically impacted their health, food sources, economic well-being and ability to follow cultural, traditional and religious practices.[11]

And, as Art Ivanoff, from the Alaska Native village of Unalakleet explains, their understandings of these practices – and of the very meaning of the term "subsistence" – are often quite different than the understanding of the do

> *My stepdad taught me how to fish. He is from a little town in Mississippi. Most people around here who fish were from the South and our parents were from the South and they were used to fishing and then they taught their kids. When I was little we used to eat fish a lot but that was when the water was clean. . . . I do eat the fish that I catch.*[14]

The Columbia River Inter-Tribal Fish Commission, for example, describes the extensive tribal ecological knowledge that was "transmitted to succeeding generations a

In some cases, too, not fishing and not eating fish are unimaginable for cultural, traditional, or religious reasons. For the fishing peoples of the Pacific Northwest, for example, fish and fishing are necessary for survival as a people – to fish is to *be* Nez Perce.[22] Fish and fishing are vital as a matter of cultural flourishing and self-determination. The importance of fish, especially salmon, to these peoples is reflected in language, in treaties, in past and present tribal fisheries management and environmental restoration efforts, and in the ongoing political and legal struggles for the survival of the salmon and the way of life that is bound up with the salmon. Don Samson, Umatilla, Executive Director, Columbia River 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 the tradition of fishing – of going up to the mountains where my father, my elders fished before me. So it's something that 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 that 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.*[23]

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 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.*[24]

Of course, for many communities of color, low-income communities, tribes, and other indigenous peoples, the nutritional, economic, and traditional or cultural aspects of fishing, preparing and eating fish are interrelated. Members of these groups thus in many cases depend on fish for a combination of the above reasons. For example, a recent survey of first- and second-generation Asian and Pacific Islanders in King County, Washington – including members of

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[22]See, e.g., Dan Landeen and Allen Pinkham, *Salmon and His People: Fish and Fishing in Nez Perce Culture* 156 (1999) (quoting Del White, Nez Perce: "People need to understand that the salmon is part of who the Nez Perce people are. It is just like a hand is a part of your body. The salmon have always been part of our religion. You can't separate the two.").

[23]Videotape: *My Strength is From the Fish* (Columbia River Inter-Tribal Fish Commission, 1994).

[24]Billy Frank, Jr., *A Statement from Billy Frank, Jr. a*vailable at www.nwifc.wa.gov/esa/start.htm.

Cambodian, Chinese, Filipino, Hmong, Japanese, Korean, Laotian, Mien, Samoan, and Vietnamese ethnic groups – observes:

> *[Asian and Pacific Islanders] consider seafood collection and consumption as healthy activities that reflect a homelike lifestyle and may fish for economic necessity.*[25]

Similarly, in Green Bay, Wisconsin:

> *Eating fish forms a regular part of the diet and culture for the Asians (Hmong and Laotians) living in the Green Bay area.*[26]

And, in the Greenpoint/Williamsburg ("G/W") community in the Borough of Brooklyn in New York City:

> *In G/W, some anglers consume as many as two meals per day of fish caught in the East River, which forms the western boundary of G/W. Approximately 38 percent of the G/W population lives below the poverty line, suggesting that many of the anglers fishing in this community may be urban subsistence anglers who rely on fish caught in the East River as a free source of nutrition. In addition, fishing is a way of life rooted in the cultural heritage for many of the black and Hispanic anglers observed fishing on the piers in G/W, many of whom come from Carribean fishing cultures.*[27]

Finally, the health of humans and the health of aquatic ecosystems are intimately related, such that compromised aquatic ecosystems are of concern in and of themselves, with the contamination of fish, aquatic plants, and wildlife but some of the devastating effects. Water of sufficient quality and quantity is vital to sustain all life. To allow waters to be degraded and depleted is to undermine health, traditions, cultures, and economies. To allow waters to be degraded and depleted is to neglect obligations, including the obligation to sustain tribal homelands as contemplated by federal Indian treaties and other laws. As Frank Tenorio, Governor, San Felipe Pueblo, explained:

> *There has been a lot said about the sacredness of our land which is our body; and the values of our culture which is our soul; but water is the blood of our tribes; and if its life-*

Yet toxic chemicals and other contaminants have been and continue to be permitted to be emitted, discharged, dumped, or leaked into the air, water, soils, and sediments that together make up home to all life. Once in the environment, these contaminants behave in various ways: some

General Motors site came to light. In 1983, it became a federal superfund site. By 1987, PCB problems at ALCOA and Reynolds became known as well. By 1989, a six-mile stretch of the Grasse River and a two-mile stretch of the St. Lawrence River became a federal superfund site because of PCB contamination. . . .

In 1986, a 67-inch length, 200 pound lake sturgeon was caught by Mohawk fishermen in the St. Lawrence river. Parts of it were sent for PCB analysis. The results were alarming as 3.41 parts per million (ppm) of PCBs were found in the meat, 7.95 ppm in the eggs, and 10.20 ppm in the liver. The New York State PCB fish standard for human consumption is 2.0 ppm. . . .

Contamination of the St. Lawrence River resulted in a destruction of a subsistence lifestyle for the Mohawk people. It destroyed hunting, fishing, farming, trapping, and gathering activities. . . .[30]

At a meeting of Alaskan Natives from the northwest arctic region, Herman Toolie, Savoonga, expresses his concerns and the concerns of others in his village:

They have those – what do you call it? – PCBs? A lot of those were in the village. They found gallons in the village around Northeast Cape. There were transformers that were leaking. We don't know if they took them out of the ground or not. I guess they took them out. There used to be a lot of fish right there. We had our camp there not more than a mile away from the site. [illegible]

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 interdependent linkage which has been experienced and passed on for countless generations.[32]

And in recounting the harms of intense industrialization along the lower Mississippi River and in St. James Parish, Louisiana, the United Church of Christ Commission for Racial Justice reports:

Also presented as a negative economic impact of polluting industries by local residents was the significant loss of wildlife and vegetation, which contribute to the subsistence living of many St. James Parish residents. Fruiting trees such as pecan, fig, peach, and others have died off. Fish, crayfish and oyster beds have been poisoned. And wilte Td(speTd(d o)Tl0.

consume or use these fish and wildlife. EPA has recognized that fish and wildlife consumption, in particular, is the chief route by which all humans are exposed to many of these "persistent and bioaccumulative toxins" or PBTs.

Consumption and use of contaminated fish, aquatic plants, and wildlife is an especially pressing concern for many communities of color, low-income communities, tribes, and other indigenous peoples, whose members may (1) consume fish, aquatic plants, and wildlife in greater quantities than does the general population; (2) consume and use different fish, aquatic plants, and wildlife than does the general population; (3) employ different practices in consuming and using fish, aquatic plants, and wildlife than does the general population; (4) consume and use fish, aquatic plants, and wildlife in cultural, traditional, religious, historical, economic, and legal contexts that differ from those of the general population.

When health and environmental agencies respond to the human health impacts from contaminated aquatic environments, they typically frame the issue as one of harm to individuals' physical health: the contaminants are carcinogens, or reproductive toxins, or endocrine disrupters, or have multiple human health "endpoints." Health and environmental agencies then manage these "health risks" by employing one or both of two general strategies: *risk avoidance* (whereby risk-bearers are encouraged or required to change the practices that expose them to environmental contamination, e.g. through fish consumption advisories, directed to those people who eat fish) or *risk reduction* (whereby risk-producers are required to cleanup, reduce, or prevent environmental contamination, e.g., through water quality standards, applied to industrial sources that discharge contaminants into surrounding waters). In both cases, agencies' decisions for the most part reflect the exposure circumstances and the cultural, traditional, religious, historical, economic, and legal contexts that describe members of the general population – the "average American" or "the typical U.S. consumer." Importantly, these decisions often do not reflect the exposure circumstances or the traditional, religious, historical, economic, and legal contexts that describe members of communities of color, low-income communities, tribes, or other indigenous peoples.

To illustrate briefly a few of these considerations:

The EPA until quite recently based its environmental decisions on the assumption that humans eat just 6.5 grams of fish per day – *roughly one 8-ounce fish meal per month*. Yet there is abundant evidence that people of color, low-income individuals, tribal members, and other indigenous people eat far greater quantities of fish. For example, eg ran0dd itidustra3Tf58j1grd(/da(tly)T0w 1.22 0 Td

groups in King County, Washington showed a mean fish consumption rate of 117.2 grams/day and a maximum values of 733.46 grams/day.

API community members appear

as Barbara Harper, Fourteen Confederated Tribes of the Yakama Nation, and Stuart Harris, Confederated Tribes of the Umatilla Indian Reservation, explain:

> *[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.*[45]

These considerations and others place in question the appropriate role of fish consumption advisories in protecting those who would consume fish, aquatic plants, and wildlife from the serious harms of exposure – harms including the risk of cancer, neurological damage, endocrine disruption, and a host of other ills. To the extent that fish consumption advisories form an appropriate part of agencies' response to contaminated aquatic environments, however, there is reason to be concerned that health and environmental agencies generally employ the language and methods of communication that are likely to reach and be understood by the members of the general population, but often fail to reach and cannot be understood by members of affected communities. This is particularly likely when agencies distribute advisories in English to those who have limited English proficiency, or when agencies post advisories on the Internet but those affected cannot afford and do not otherwise have access to a computer. There has been recent progress here, however, as EPA and other agencies in some cases have translated their advisories into the language(s) of those affected and have sought to learn which methods of communication would be most likely to reach communities likely to be among the most exposed.

4. Environmental Agencies Have Made Considerable Progress; However, Many Aspirations and Obligations Remain Unfulfilled

EPA and other agencies have made considerable progress toward addressing degraded and depleted aquatic ecosystems, and, more recently, toward attending to the needs and rights of communities of color, low-income communities, tribes, and other indigenous peoples. Aquatic ecosystems are significantly less contaminated than they were three decades ago, when the Clean Water Act was passed. According to EPA estimates, whereas in 1972 only 36% of the rivers, lakes, and estuaries

Chapter One focuses on the tools that environmental agencies use to define, evaluate and respond to the adverse health impacts from contaminated aquatic environments. It discuses the research methods agencies use to obtain information about the lives, practices, and circumstances of affected communities and tribes, as well as the risk assessment approaches agencies use to evaluate these impacts.

The next two chapters examine agencies' responses – the "risk management" approaches that they employ to address the health impacts of contaminated aquatic environments. Chapter Two discusses agencies' risk reduction strategies, whereby risk-producers are required to cleanup, reduce, or prevent environmental contamination. This chapter examines the legal authorities that might be invoked more effectively to sustain healthy aquatic ecosystems and to protect the health and safety of people consuming or using fish, aquatic plants, and wildlife.

CHAPTER I: RESEARCH METHODS AND RISK ASSESSMENT APPROACHES

How should EPA improve its research methods and risk assessment approaches to address degradation of aquatic ecosystems and adverse impacts to human health from consuming or using contaminated fish, aquatic plants, and wildlife for subsistence, cultural, traditional, and religious activities and purposes?

When health and environmental agencies respond to the harms from contaminated aquatic environments, they typically frame the issue as one of "human health risks" – specifically, harm to individuals' physical health: the contaminants are carcinogens, or reproductive toxins, or endocrine disrupters, or have multiple human health "endpoints."

Health and environmental agencies then manage these "health risks" by employing one or both of two general strategies: *risk avoidance* (whereby risk-bearers are encouraged or required to change the practices that expose them to environmental contamination, e.g. through fish consumption advisories, directed to those people who eat fish) or *risk reduction* (whereby risk-producers are required to cleanup, reduce, or prevent environmental contamination, e.g., through water quality standards, applied to industrial sources that discharge contaminants into surrounding waters).[54] Risk reduction strategies will be the focus of discussion in Chapter 2; risk avoidance strategies will be the focus of discussion in Chapter 3.

For both strategies, agencies need to get a sense of the practices that expose humans to environmental contaminants (e.g., how much fish do they eat? what kinds of fish? how is it prepared?) and the underlying health and other circumstances of those exposed (e.g., are they young or old? do they have other preexisting health conditions? do they have access to adequate health care?). In gathering this information and, more generally, in fashioning their responses to contamination, agencies' efforts have until quite recently reflected the lives, practices, and circumstances of the "average American"or "the typical U.S. consumer."[55] Importantly, they often have not reflected the lives and circumstances of communities of color, low-income communities, tribes, and other indigenous peoples. That is, agencies' efforts overall have tended to reflect the cultural, traditional, religious, historical, economic, and legal contexts that describe members of the general population. Specifically, agencies' efforts have assumed (1) the exposure circumstances of members of the general population; and (2) the susceptibilities and co-risk factors of members of the general population. and cien

This Chapter will focus on the tools environmental agencies use to define, evaluate and respond to the adverse health impacts from contaminated aquatic environments: the *research methods* agencies use to obtain information about the lives, practices, and circumstances of affected communities and tribes, and the *risk assessment approaches* agencies employ to evaluate and address these health impacts. Along the way, it will highlight issues that bear as well on agencies' approaches to *risk management* and *risk communication*, although these questions will be taken up at greater length later in the Report.

Part A of the chapter discusses briefly the prior question: what is meant by "adverse impacts to human health?" The next four parts examine exposure. Part B looks at fish consumption rates and how these differ as between the general population and higher-consuming "subpopulations" such as communities of color, low-income communities, tribes, and other indigenous peoples. Part C examines standard assumptions about the fish, plant and wildlife species people consume and use; the parts of these species they use; and the preparation methods they employ. It considers the differences in these practices among various affected groups and how this affects estimates of exposure. Part D raises the poi 6(012tl)T 0 Td((us)Tj0 0 T0 Td(nces)Tj1.92 0 Td(

contaminated sediments after cleanup. These decisions then get incorporated into standards or permits or cleanup requirements.

This definition of the adverse impacts, however, may not reflect the perspectives of those affected. For some of those affected, the harms from contamination are not only physical, but psychological, social, and cultural. For some of those afb dsbj0.92 0 TThpsy

B. EXPOSURE

1. Evidence of Different Consumption Practices

While there is considerable evidence that different groups have different fish consumption practices, these differences have until recently been demonstrated chiefly by "anecdote" rather than by empirical study. Even today, there are many more instances in which practices that include high rates of fish consumption and/or consumption from seriously contaminated waters are evidenced by local knowle nhn be

Anecdotal evidence similarly describes peop

Table 1: Quantified Ev

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In addition to the studies presented here, several other studies provide further formal, quantified evidence of differences in fish consumption practices among communities of color, low-income communities, tribes, other indigenous peoples, and the general population.[68]

Significantly, the fish consumption rates presented in Table 1 are markedly higher, at virtually every point of comparison, than those relied upon by agencies to set water quality standards, to set cleanup standards for surface water and sediments, and to gauge baseline consumption to estimate health risks and the need for fish consumption advisories. As elaborated below, EPA until quite recently employed a fish consumption rate of 6.5 grams/day for all populations. EPA now employs a fish consumption rate of 17.5 grams/day for the general population and recreational fishers, and 142.4 grams/day for subsistence fishers.[69] These are 90th and 99th percentile values, respectively, from a study of the general population (fish consumers and non-consumers alike). That is to say, EPA targets protection at the 90th percentile of the general population (a point discussed further below). Compare these values with the 90th percentile of Asian and Pacific Islanders in King County, at 242 g/day or the 90th percentile of the Suquamish Indian tribe, at 489 g/day, or the 90th percentile of fishers in the Los Angles Harbor, at 225 g/day. Consider, too, that whereas those Asian and Pacific Islanders in King County consuming at the average (mean) rate may be adequately protected were the relevant environmental standards to reflect EPA's default for subsistence fishers (142.4 g/day), those consuming at the maximum rate – 733.46 g/day would be grossly underprotected. They would fare even worse were the relevant environmental standards to reflect EPA's default for the general population (17.5 g/day). Those consuming at the maximum rate for the Suquamish Tribe (1453.6 g/day), the Laotian communities in West Contra Costa County (182.3 g/day), the Squaxin Island and Tulalip tribes (391.4 g/day), and the four Columbia River tribes (972 g/day) would be similarly underprotected – and, as discussed below, consumption at these rates may reflect the very practices that these affected groups would want to see perpetuated and protected for cultural, traditional, religious, economic, and other reasons.

However, as this survey of the available data reveals, there are many communities, groups, or peoples for which empirical studies have not yet been conducted. In addition, there is still relatively little data about the intersection of factors such as ethnicity or group membership and income. And, for some groups, there is the matter of acute or peak consumption rates – very high rates of consumption for shorter periods, such as during ceremonies, religious and other holidays (e.g., Lent, during which Roman Catholics may consume 2 or more fish meals per week), or

[68]Among these are studies of fish consumption in Santa Monica (CA); in the state of New York; on the Hudson River (NY); in Detroit (MI); in Lake Coeur d'Alene (ID); on Commencement Bay (WA); on the Savannah River (GA); in the state of Florida; on Lake Ontario; in American Samoa; on the Fox River (WI); among Wisconsin Chippewa Indians; among the Miccousukee Indian Tribes of South Florida; and among Native Americans living near Clear Lake, California. EPA canvassed these and other studies in preparing its AWQC Methodology. See, U.S. Environmental Protection Agency, Ambient Water Quality Criteria Derivation Methodology Human Health, Technical Support Document 89-103 (July 1998).

[69]It is not clear precisely which groups EPA means to include when it refers to "subsistence fishers."

harvest seasons (e.g. salmon runs, during which some Alaskan Natives consume 80-100 pounds of fish per month) – about which less may be known and for which, in any event, current risk assessment methods may fail to account. As Delores Garza, Alaska Native Science Commission, explains:

> *[W]e eat much more [fish, wildlife, and plants] than is listed [by EPA and other agencies], but we also eat it in a very short time period. That's when strawberries are fresh, when corn is fresh, when salmon run – you eat nothing but salmon.*

Recognizing this, EPA revised its default assumption in the fall of 2000, as part of an updated Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health ("AWQC Methodology").[73] Although in many cases federal and state water quality criteria currently in effect reflect the old 6.5 grams/day default, EPA now recommends the following default FCRs:

General population	17.5 grams/day
Recreational fishers	17.5 grams/day
Subsistence fishers	142.4 grams/day

EPA will use the 17.5 grams/day value when it derives or revises national criteria pursuant to CWA 304(a).[74] EPA will also consider these values when it reviews water quality standards set by states and authorized tribes,[75] as part of a four-part preference hierarchy:

(1) Use local data;
(2) Use data reflecting similar geography/population groups;
(3) Use data from national surveys; and
(4) Use EPA's default intake rates.

EPA "strongly emphasizes that States and authorized Tribes should consider developing criteria to protect highly exposed population groups and use local or regional data over the default values as more representative of their target population group(s)."[76]

EPA's default value of 17.5 grams/day for the general population and for recreational fishers reflects the 90th percentile value of 17.53 grams/day for freshwater and estuarine ingestion by adults, taken from the USDA's CSFII Survey for the years 1994 to 1996. EPA's default value of 142.4 grams/day for subsistence fishers reflects the 99th percentile value of 142.41 grams/day for freshwater and estuarine ingestion by adults, taken from the USDA's CSFII Survey for the years 1994 to 1996. EPA states that it "believes that the assumption of 142.4 grams/day is within

[73]U.S. Environmental Protection Agency, *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* (October 2000) ["AWQC Methodology"].

[74]Under CWA 304(a), the EPA is to develop "criteria" – scientific information and guidance for use by the states and authorized tribes and the EPA itself in establishing water quality standards pursuant to CWA 303(c). Under CWA 303(c), states and authorized tribes have primary responsibility for establishing water quality standards. EPA is charged with reviewing these standards. EPA may promulgate superceding federal standards if a state's or tribe's standards are not consistent with the CWA and its implementing regulations, or if the EPA determines that national standards are necessary. In either event, EPA relies on the criteria it developed under CWA 304(a) as it undertakes review or promulgates standards itself.

[75]See id.

[76]AWQC Methodology at 4-25.

rely – often due to a lack of resources.

399.26 g/day, the 99th percentile value drops to 142.96 g/day.[83] It is unclear why EPA, in setting out to fashion water quality criteria that are protective of the health of humans who are exposed to contaminants through the fish ingestion route, chooses to consider the fish consumption practices of those who do not eat fish at all. People who don't eat fish aren't in any danger of being exposed via this route. And people who do eat a lot of fish will be underprotected by diluted FCRs influenced by so many "zero" values. This choice is akin to including non-smokers in a study of the direct (not indirect) exposure to nicotine, or setting occupational safety standards to protect non-workers from on-the-job hazards.

Finally, the CSFII participants were selected from the forty-eight contiguous states only. 1.48 The authors of the CSFII study note that the exclusion of Alaska and Hawai'i may result in depressed fish consumption values given that Alaska and Hawai'i "could potentially contain" a larger percentage of subsistence and other higher-consuming groups than the forty-eight contiguous states. Given the available data regarding fish consumption practices in Alaska and

default numbers to reflect their higher-consuming populations. And under EPA's revised AWQC Methodology, states and tribes are now expressly encouraged to do so. Nonetheless, the question remains to what extent do the water quality standards *currently in effect* (whether developed by EPA, various states or tribes) reflect fish consumption rates higher than the old 6.5 grams/day default?

Although a handful of states have developed their own default fish consumption rates for use in developing water quality criteria and standards (e.g., WA, NY, MN, others), by and large, states have relied on EPA's default of 6.5 grams/day. Note that EPA, for its part, has never disapproved state water quality criteria or standards developed using the 6.5 grams/day value on the basis that this FCR did not adequately reflect higher-consuming or subsistence fishers affected by that state's standards.[86] As a result, a significant number of the state-issued water quality criteria and standards currently in effect rely on the 6.5 grams/day value.[87]

When EPA develops national water quality criteria or when it steps in to develop water quality criteria for states or tribes,[88] it looks to its own default values. Because EPA's revisions have only been in place since fall of 2000, it is perhaps not surprising that many of the criteria currently in effect still reflect EPA's old default value of 6.5 grams/day.[89]

Taken together, a significant portion of water quality criteria and standards currently in effect still rely on the 6.5 grams/day value. As has been noted, this value grossly underestimates consumption by many communities of color, low-income communities, tribes, and other indigenous peoples, and is thus no longer scientifically defensible.

C. EXPOSURE: ASSUMPTIONS ABOUT SPECIES, PARTS, PREPARATION

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species, and that they refrain from eating a host of others, including "unusual" species such as sea urchin, sea cucumbers or bottom-feeding fish. Agencies typically assume that people eat only the fillet of finfish, and that they do not eat the fat, head, skin, bones, eggs, or internal organs. Agencies typically assume that people dispose of the drippings or cooking fluid. One result is that agencies set water quality standards and issue consumption advisories that are founded on an inaccurate picture of affected communities' and tribes' exposure. In most cases, the resulting standards will therefore not be sufficiently protective of members of these groups, whose different practices often expose them to additional sources of contaminants beyond those considered by the agencies. For example, lead accumulates in the bones, and most PCBs and most other persistent and bioaccumulative toxins accumulate in tissue with high lipid content, such as fat or eggs. Also, consumption advisories may include irrelevant or inappropriate information or recommendations, a point taken up in Chapter Three.

There is considerable evidence that different groups have different practices with respect to species consumed, parts used, and preparation methods employed. Much of this evidence is contained in local knowledge, direct observation, or "anecdote," rather than in formal studies, although there is a growing body of empirical work that confirms what affected communities and tribes know to be the case. For example, an African-American fisher on the Detroit River explains:

> *I keep sheephead and carp [which are bottom-feeding fish] because I have a large family to feed.*[90]

According to a study by the Squamish Tribe:

> *Children still teethe on dried clams . . .* [91]

According to a study recounting subsistence consumption practices in the Chignik Lake area, Alaska:

> *In exchange for the "red" salmon, Chignik Lake [people] received shellfish such as chitons (bidarkies), sea urchins (uduks), and butter clams from Perryville and Ivanof Bay people, resources Chignik Lake people have to travel far to get.*[92]

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[90]Patrick C. West and Brunilda Vargus, *A Subsistence-Culture Model for High Toxic Fish Consumption by Low Income Afro-Americans from the Detroit River* 5 (forthcoming).

[91]The Suquamish Tribe, *Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound* 9 (2001).

[92]Lisa Hitchinson-Scarbrough an

According to a study of fishers on the Lower Fox River in the Green Bay, Wisconsin area:

> *Of those who reported eating the fish, Caucasian anglers reported that they like to eat the walleye . . . Most Asian [Hmong and Laotian] anglers reported that they prefer to eat the White Bass. White Bass is on the list of "Do Not Eat" fish in the fish advisory.*[93]

According to a study of the subsistence hooligan fishery on the Chilkat and Chilkoot Rivers in Alaska:

> *Historically, hooligan oil was used primarily for eating with other foods, but also for preserving certain berries, roots, herbs, and salmon eggs. It was commonly mixed with fresh berries. It was also consumed at feasts.*
>
> *In 1990 and 1991, processors dipped crackers, raw vegetables, dry fish, or meat into the fresh oil while it was still cooking in the vats. Pieces of hooligan meat were scooped up and eaten from cooking vats.*

According to a study of the Greenpoint/Williamsburg ("G/W") community in the Borough of Brooklyn in New York City:

> *[Hispanics and Caribbean A*

frequently, salted, soaked out, and boiled. Tips wer

away, thrown back, etc.), frequency of fishing, and other variables. Based on this data

simply unaccounted for by EPA and other agencies when they set environmental standards is extremely troubling to affected communities whose health is thereby relatively underprotected.

Finally, when agencies issue consumption advisories founded on a misunderstanding of affected communities' baseline practices, they may include irrelevant or inappropriate information or recommendations. This issue will be discussed at greater length in Chapter Three.

D.

ask members to avoid risks by reducing their consumption, by switching to alternative species or fishing locations, by avoiding certain fish parts, or by adopting different preparation methods. Some or

color, a low-income person, or a Native American, it is fair to say that there is a significant correlation for others – prior exposures, or access to adequate health care, for example.[112]

One may also be more or less able to prepare for and recover from exposure to given level or "dose" of an o

There are two circumstances in which suppression effects have implications for an environmental justice policy that seeks to sustain healthy aquatic ecosystems and to protect the health and safety of people consuming fish, shellfish, aquatic plants, and wildlife for subsistence, traditional, cultural, or religious purposes. In the first, a suppression effect may arise when an aquatic environment and the fish it supports have become contaminated to the point that humans refrain from consuming fish caught from particular waters. Were the fish not contaminated, these people would consume fish at more ro

1. Contamination

Health and environmental agencies have increasingly responded to contaminated aquatic environments by issuing fish consumption advisories warning humans to limit or stop their consumption of fish from polluted waters.[118] In many cases, individuals have responded to these advisories and/or to a greater general awareness of the dangers of consuming contaminated fish by eating less fish.[119] The extent to which individuals respond to fish consumption advisories by reducing their consumption varies.[120] In some cases, this is due to the fact that advisories are more effectively communicated to some affected populations than others. Among other things, advisories may not be communicated in culturally or language-appropriate ways. In other cases, this is due to the fact that, for cultural, traditional, spiritual, economic, and/or other reasons, the individuals to whom the advisories are addressed do not respond by reducing their consumption.

When environmental agencies set or approve water quality standards that are meant to be protective of human health, agencies look to gauge humans' exposure by how much fish they are consuming, i.e. their fish consumption rate. Agencies estimate or measure this FCR, and on this basis determine how much pollution can remain in or be discharged to the relevant waters and sediments and still result in what have been deemed "acceptable" levels of contamination and risk to human health. Notably, the FCRs on which agencies rely are meant to represent *current* rates of fish consumption, rates that may reflect a suppression effect as outline above.

When environmental agencies set or approve water quality standards that rely on a

contaminated waters. To the extent that such studies find that people have “complied” with advisories by eliminating or lowering their consu

have were they able to exercise their treaty rights to the fullest extent.[128] Moses Squeochs, Director, Environmental Program, Fourteen Confederated Tribes and Bands of the Yakama Nation, confirms similarly depleted fisheries, diminished opportunities for catching and consuming fish, and compromised treaty rights.[129] A recent study of the Suquamish Tribe reports that approximately 2/3 of respondents (67%) indicated that their consumption patterns had changed over time, with 68% of these indicating that they ate less seafood (57%) or ate a different mix of species (11%) than twenty years ago.[130] "Most explanations for changes in consumption related to changes in family composition which affected harvesting patterns, accessibility/availability of finfish and shellfish, and restricted harvesting opportunities due to 'red tides' and increased pollution."[131] As one respondent elaborated:

> *We used to eat lingcod, sole, rockfish, flounder, and I caught Grunters for my grandfather. All of my brothers used to fish; now, only one of us can because the fish are diminishing in number . . . The water is not clean. Septics are malfunctioning . . . There's pollution from the Navy, and the filling at Keyport had a big effect . . . Beaches are dug out . . . We need to reseed and enhance our beaches in order to have the number of clams we need and are used to . . . We eat more geoduck now, because more are available to us, but we used to dry oysters and clams; they're good for teething . . .*[132]

Similarly, Hawaii's Thousand Friends relates:

> *Many shellfish and limu (seaweed) staples of Native Hawaiian diets are becoming harder to find or have disappeared due to pollution and/or destruction of habitat. Thus Native Hawaiians are unable to continue eating (healthy) foods traditional to their culture and lifestyle.*[133]

There is, however, a need to understand more fully the extent and causes of suppression effects. Among other things, the evidence presented here shows that people's responses to contamination and depletion are complex and varied. Further exploration of these effects would be useful. In particular, where consumption by communities of color, low-income communities, tribes, and other indigenous peoples seems relatively low, research is needed to ascertain whether a suppression effect is at work.

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[128]Telephone Interview with Kelly Toy, Shellfish Biologist, Tulalip Tribes (November 9, 1999).

[129]Moses Squeochs, Director, Environmental Program, Fourteen Confederated Tribes and Bands of the Yakama Nation (Conference Call, Aug. 3, 2001).

[130]The Suquamish Tribe, *Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound* 2 (2001). Note that 31% of those who indicated that their

4. Implications

To the extent that people are prevented from consuming fish as they had or would due to contamination or depletion of the fish and aquatic ecosystems that support the fish, there are important implications for EPA's and other agencies' risk assessment, risk management, and risk communication approaches. As noted above, when environmental agencies set or approve water quality standards that rely on a picture of exposure that takes people to be eating smaller quantities of fish, agencies will permit relatively greater quantities of pollutants to remain in or be discharged to the waters and sediments. That is to say, agencies will set less protective standards. The downward spiral thus begins, as these aquatic environments and the fish they support will be permitted to become increasingly contaminated, and some individuals in turn might be expected to respond by reducing their fish consumption even further. Or some individuals in turn might find that there are fewer fish to be caught (and those that remain to be increasingly contaminated) or there are fewer places open for shellfish harvesting. In either case, studies would reflect even lower FCRs, and agencies would then set new standards assuming that little or no human exposure to contaminants occurs via fish consumption, and permit even greater quantities of pollutants in aquatic ecosy.68 0 Td1.7 0 Td0 Td(ng.os)Tj1.4 0her case, studiet2 Td0 Td(ng.osng.os)TuTDmotı

H. RESEARCH METHODS AND ISSUES

This part highlights two issues respecting EPA's current research methods and priorities: the importance of facilitating community-based or tribally-conducted research, and the need for research that seeks not only to describe affected groups' exposure but also to connect exposure to the sources of contaminants in aquatic environments.

1. Community-Based and Tribally-Conducted Research

It will often be crucial to the relevance, accuracy and acceptabile of

study involving ten ethnic groups with diverse cultural backgrounds."[137] Among other things, the Community Steering Committee was instrumental to several aspects of the study design. It explained that the use of creel, mail, or telephone surveys would be culturally inappropriate, indicating that API community members would be unlikely to participate at all in a survey conducted by these methods; instead, a face-to-face questionnaire method was selected. It identified the seafood species and parts most often consumed by community members, and explained the usual preparation methods – elements crucial to questionnaire design. It also suggested interviewers that would have the requisite cultural knowledge and fluency in both English and the various native languages of the study participants. Thus, for these and other reasons, this study likely produced more accurate data by (1) avoiding the non-response bias that likely plagues other studies attempting to gauge API consumption practices; (2) including quantities consumed where the species or part consumed might have been excluded altogether from other, more generalized studies (e.g., clam stomachs or the hepatopancreas of crabs); (3) identifying consumption and preparation practices that differ from the general population

designed to determine consumption rates by individual type of finfish and shellfish – information of interest to the tribe and unavailable through other relevant fish consumption studies. Consumption data were gathered using a survey questionnaire and face-to-face interviews; these interviews were conducted by tribal members. These interviewers set up and conducted meetings with survey participants “in accordance r

Tribes and their members will thus be uniquely positioned to identify ecological changes,[147] suggests subjects for inquiry, and design and implement useful experiments, surveys and studies.

To the extent that research is conducted by and for communities and tribes, it can serve the additional important function of capacity building or, as Moses Squeochs, Fourteen Confederated Tri

a fuller picture and seeks to connect affected groups' exposures to the sources of the contamination that gives rise to these exposures. As noted above, given their dependence on aquatic resources, communities of color, low-income communities, tribes, and other indigenous peoples have an acute interest in determining the nature, extent, and sources of such contamination, in producing a complete and accurate picture of their exposure, and in seeing that the contamination is addressed. Thus, while further research regarding various groups' exposure is important, it should not be undertaken at the expense of research that aims to identify the sources of the contamination and to understand that mechanisms by which substances that have been or are being emitted or discharged from these sources make their way to contact with humans (and other non-human components of aquatic ecosystems). Nor should research on exposure be undertaken in isolation of renewed efforts to *reduce* the resulting risks, a point echoed repeatedly by affected groups[154] and emphasized throughout this Report. As the Swinomish Indian Tribal Community stresses:

> *We urge [explicitly that EPA undertake and] support[] efforts to establish undeniable connections between contaminants found in harvested fish and shellfish and the sources of those contaminants. . . . [We believe that pinpointing the source of the pollution and mitigating it at the source will be the only successful strategy in accomplishing risk reduction.*[155]

I.

burdens visited on communities of color, low-income communities, tribes, and other indigenous peoples.[159]

While quantitative risk assessment is not without attributes to recommend it, the continued presence of the concerns sketched above – and the observation that these concerns are often amplified when those who bear the risk are environmental justice communities – means that it would be inappropriate to embrace unexamined risk assessment as currently practiced. Reevaluation of the metho

carcinogens," and substances known to cause reproductive, developmental or neurological effects.[166]

Finally, it is possible to refine current risk assessment practices b

Affected groups and others have also worked to envision alternative approaches. Important among these is an approach guided by the *precautionary principle*. As Tom Goldtooth, Executive Director, Indigenous Environmental Network, observes:

> *[W]e are engaged in a clash of two competing paradigms. One is an aging model based upon quantitative risk assessment, assimilative capacities, and acceptable discharges for individual compounds, which has dominated chemical and environmental policy . . . The other is an emerging paradigm based upon prevention, precaution, and clean production processes; and this is what we've been calling precautionary action, or [the] precautionary principle.*[169]

In broad terms, the precautionary principle focuses on *preventing* environmental contamination in the first place. It views prevention as preferable to other approaches as a matter of efficiency, justice, and ethics. That is, prevention avoids the enormous monetary costs of having to cleanup contamination after it has been permitted (and, given the propensity of many pollutants to

Much work remains to be done to explore and specify the contours of the precautionary principle in various contexts; to identify and make use of opportunities for precautionary approaches within the existing legal structure in the United States; and to consider and advocate appropriate changes to existing laws. There is, nonetheless, a significant and growing body of recent work on which to build. For example, recent work by Carl F. Cranor contributes to efforts

CHAPTER II: USING EXISTING LEGAL AUTHORITIES

How might EPA's authority under federal environmental and other laws be implemented more effectively to sustain healthy aquatic ecosystems and to protect the health and safety of people consuming or using fish, aquatic plants, and wildlife?

RISK REDUCTION STRATEGIES AND PROBLEM POLLUTANTS

This chapter focuses on *risk reduction* strategies – that is, strategies by which agencies look to risk-producers to cleanup, limi8IT05s be im

Five contaminants – mercury, PCBs, dioxins, DDT, and chlordane – are responsible for the majority of fish and wildlife consumption advisories issued by federal, tribal, state, or territorial governments.[179] These five contaminants are often also among the contaminants of greatest concern according to those affected. For example, David Ludder, of the Legal Environmental Assistance Foundation in Tallahassee reports that affected communities in Florida, Alabama, and Georgia are concerned in the main with these five contaminants and toxaphene.[180] Similarly, the Asian Pacific Environmental Network cites evidence of the presence of these five chemicals and dieldrin at levels of concern for those consuming fish from San

reasons.[184] The Fond du Lac Environmental Program, for example, is in the process of issuing "tribal consumption guidelines."[185] Contrary to "advisories," these guidelines do not warn *against* consumption of fish or wildlife; rather, they provide guidelines for healthy consumption, consistent with tribal traditions and practices.[186] In addition, fish and wildlife advisories generally arise from one exposure scenario (consuming contaminated fish or wildlife), and so do not account for other routes or sources of exposure to those consuming or using fish, aquatic plants and wildlife for traditional, cultural and religious purposes. (e.g., consuming contaminated aquatic plants; consuming or otherwise being exposed to contaminated waters, etc.). And, fish and wildlife advisories focus on the problem of the contamination of fish and wildlife, and leave unaddressed the problem of the availability of fish, aquatic plants, and wildlife for consumption and use.

Thus, in addition to the five contaminants that have given rise to the bulk of fish and wildlife consumption advisories, there are other contaminants of concern. Chief among these are contaminants that are highly toxic, bioaccumulative, and persistent. The Convention on Persist

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lead levels (along with elevated levels of other metals), particularly for children (given that lead causes adverse developmental effects) and for those, such as Russian immigrants, who consume the whole fish (given that lead concentrates in the bones and brains of fish).[194] Lead is also a source of concern for the Coeur d'Alene Tribe, given its presence (along with cadmium) in and on water potatoes, a staple of the Coeur d'Alene diet.[195]

Fecal coliform, marine biotoxins (e.g., saxitoxin and domoic acid released by algal blooms), and various other bacterial and viral contaminants are sources of concern for those communities, groups and tribes that rely on shellfish for commercial, subsistence, and/or ceremonial purposes. Thus, these contaminants are a source of concern for tribal resource managers in the Puget Sound and coastal regions of Washington,[196] among them the Shoalwater Tribe,[197] the Suquamish Tribe,[198] the Lower Elwha Klallam Tribe,[199] and the Tulalip Tribes.[200] These contaminants are a source of concern for various communities of color and low-income communities in Southern California.[201] And they are a source of concern for Alaskan Natives. For example, at a southeast regional meeting called to discuss Alaskan Natives' concerns with contaminants in native foods, Dangel Helen, Douglas, observes:

> *There is in North Douglas a development not served by a sewer line. A lot of the mud flats are contaminated. The shellfish aren't good to eat.*[202]

Finally, these and several additional pollutants are of particular concern to one or more affected groups or tribes. For example, the Fond du Lac Environmental Program is concerned with contamination from metals, given the negative effects of several metals (aluminum, cadmium, copper, lead, and zinc, in addition to mercury) on the growth of wild rice.[203] The Tulalip Tribes

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[194]Karen Dorn Steele, *Agencies Warn of Lead in River's Fish; Advisory Targets Consumption of Contaminated Fish Caught in Stretch of Spokane River* A1 The Spokesman Review (Jun. 21, 2000).

[195]Telephone Interview with Marc Stifelman, Environmental Protection Agency (Region X)(Oct. 30, 2001).

[196]See, generally, Northwest Indian Fisheries Commission, *Tribal Shellfish Management* available at www.nwifc.wa.gov/ctnrm/2001_shellfish.htm.

[197]E-mail Correspondence with Paul Dible)Tj0.0109 0.0109 Tc 0.0055 Tw 10.98 0 0 11.2022 surTj0.8925Tj0

are concerned with sediment and silt loadings, given their contribution to degradation of salmon habitat and, ultimately, to the depletion of the salmon fishery.[204] The various communities that fish the Devil's Swamp, Devil's Swamp Lake, Bayou Baton Rouge, and Capitol Lake in East Baton Rouge Parish face contamination from lead and arsenic, in addition to hexachlorobenzene, hexachloro-1,3-butadiene, PCBs and mercury.[205] The Fourteen Confederated Tribes of the Yakama Indian Nation and the Confederated Tribes of the Umatilla Indian Reservation are concerned with a host of contaminants

Mercury

Background

Mercury is responsible, at least in part, for nearly 79% of all fish and shellfish advisories issued in the United States; as of December, 2000, it was the basis for 2,242 advisories issued by 41 states, territories or tribes.[208] Thirteen states have issued statewide advisories for mercury in the freshwater lakes and/or rivers within their boundaries; another nine states have issued statewide mercury advisories for their coastal marine waters.[209] Mercury is also responsible for the first ever issuance of a national fish consumption advisory: in January, 2001, the EPA (together with ATSDR) and the FDA each independently issued advisories cautioning various populations against consuming fish due to mercury contamination.[210]

Mercury has been identified as a major pollutant of concern by the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) and the Fond du Lac Environmental Program, given its deleterious effects on both fish and wild rice.[211] Mercury has been identified as a pollutant of concern by the St. Regis Mohawk Tribe Environment Division (although of less significance than PCBs).[212] Hawaii's Thousand Friends observes that mercury has been identified as the major contaminant in fish eaten in Hawai'i.[213] Mercury has been identified as a major concern by the Grand Cal Task Force, given its significant contribution to the contamination of the Grand Calumet River and the Indian Harbor Ship Canal, where "virtually all fish tested in Indiana show levels of mercury and all streams are considered impaired."[214] Mercury has been identified as a source of significant concern in Louisiana, particularly in the heavily contaminated parishes along the Mississippi River between New Orleans and Baton Rouge by the Louisiana Environmental

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[208]See U.S. Environmental Protection Agency, Office of Water, *Mercury Update: Impact on Fish Advisories* 4 (June 2001) available at www.epa.gov/ost/fish/chemfacts.html. [hereinafter "EPA. Mercury Fact Sheet"]

[209]Id.

[210]U.S. Environmental Protection Agency advisories are available at www.epa.gov/ost/fish. U.S. Food and Drug Administration advisories are available at www.cfsan.fda.gov/~dms/admehg.html. Briefing by Rich Healy, U.S. Environmental Protection Agency, Office of Water to Fish Consumption Workgroup (Jun. 26, 2001).

[211]Great Lakes Indian Fish & Wildlife Commission, *Masinaigan Supplement: How to Enjoy Fish Safely* (Fall 2000) available at

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Sources of Mercury in the Environment[222]

Overview: Nearly 80% of the mercury contamination in surface waters comes from mercury emissions to the air. Mercury contamination also comes from direct discharges to the water, from releases to soils, and from naturally occurring mercury in the environment.

Mercury exists in the environment as elemental mercury (metallic mercury), and in inorganic and organic mercury compounds (primarily methylmercury).

Air: Mercury is released to the air by solid waste incineration and fossil fuel combustion, especially coal-fired power plants (in combination, these sources account for approximately 87% of mercury emissions in the United States); mining and smelting operations; industrial operations involving the use of mercury such as chlor-alkali production facilities; cement production; medical waste incineration (accounts for approximately 10% of mercury emissions in the United States),[223] and non-industrial combustion (e.g., wildfires and open burning).

Water/Sediments: Mercury is released to surface waters from naturally occurring mercury in rocks and from industrial processes, including pulp and paper mills, leather tanning, electroplating, and chemical manufacturing, and from some wastewater treatment facilities. Mercury emissions to the air are an important indirect source of mercury in surface waters: mercury is deposited from rain and other processes to water surfaces and to soils. Sediments contaminated with mercury also contribute mercury to surface waters upon being disturbed (e.g., by flooding or dredging).

Soils: Mercury is released to soils through the direct application of fertilizers, fungicides, and sludge or "recycled" industrial waste containing mercury to soils and crops. Mercury is also released to soils when solid waste, including batteries and thermometers, and municipal incinerator ash is disposed in landfills.

Notes

Unlike many other contaminants that are the source of fish consumption advisories, mercury does not accumulate primarily in the fatty tissue of fish but in the muscle (i.e., the portion of fish that comprises a fillet). Thus, skinning and trimming the fish do not reduce the amount of mercury in a fillet, nor is mercury removed by cooking processes.[224]

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[222]Unless otherwise noted, sources information is taken from the EPA Mercury Fact Sheet.

[223]U.S. Environmental Protection Agency, *Mercury Study Report to Congress*, "Vol. 1: Executive Summary" (No. EP Studysl1fd974 0 Td0273l1fd97.norfvoeved(ive)Tjc/p0s]ecembw 14e9 0 Td(Td(vi)oeved(iv 0 Td(i6 108

PCBs[225]

Background

PCBs are responsible, at least in part, for nearly 27% of all fish and shellfish advisories issued in the United States; as of December, 1998, PCBs were the basis for 679 advisories issued by 37 states, territories or tribes.[226] Three st

Health Effects[233]

PCBs have been classified by EPA as "probable human carcinogens." Studies have suggested that PCBs may play a role in inducing breast cancer. Studies have linked PCBs to increased risk of several other cancers as well, including: liver, biliary tract, gall bladder, gastrointestinal tract, pancreas, melanoma, and non-Hodgkin's lymphoma. PCBs may also cause non-carcinogenic effects, including reproductive effects and developmental effects (primarily

other sources, still likely contribute to the presence of dioxins in the sediments.[242] Given dioxins' persistence in the environment, its propensity to bioaccumulate (concentrations of dioxins in aquatic organisms may be hundreds to thousands of times higher than the concentrations found in surrounding waters or sediments), and its extreme toxicity even small amounts of discharge are reason for the Penobscot Nation Department of Natural Resources to be concerned.[243]

Health Effects[244]

Studies suggest a wide variety of adver

Air: Most dioxins are introduced into the environment as emissions to the air. Incineration is a major source of dioxins (including incineration of municipal solid waste, medical waste, sewage sludge, and hazardous waste), although the relative contribution of incineration is projected to decline over the next several years, as regulations require reductions.[247] Dioxins are also emitted from backyard burning, metal smelting, cement kilns, land-applied sewage sludge, residential and industrial wood burning, coal-fired utilities, diesel trucks, and pulp and paper mills.[248] Dioxins released into the air may be suspended for a long time and travel great distances before being deposited to soils and surface waters.

Water/Sediments: Dioxins are discharged directly to surface waters from pulp and paper mills that use chlorine compounds in bleaching processes.[249] Dioxins are also discharged to waters from the industrial production of chlorinated organic chemicals, such as chlorinated phenols. Most dioxins are contained in sediments, where they persist for long periods because of half-lives ranging from months to years. Particles resuspended from sediments to surface waters are an important source of dioxin in surface waters.

Soils: Dioxins enter the soils when industrial wastes and municipal sludge contaminated with dioxins are applied as fertilizer to crops or grazing lands. Dioxins that have been emitted to the air are also deposited to soils. Dioxins in the soils may in turn be released into surface waters through run-off or leaching.

Chlordane[250]

Background

Chlordane is responsible for advisories on Lake Superior, Lake Michigan, and Lake Huron.[251] It is the source of advisories for several National Estuary Program and National Estuarine Research Reserve System sites, including the Potomac, Black and Anacostia Rivers (all of whi.01Rea 0 Tw -37d(d A)Tj1.46 02 0 Td(av1 w)Tj1.8 0nd m

Soils: Chlordane from past releases is also contained in soils, where it is highly persistent. Chlordane has been found in some cases to be present in soil up to 20 years after application.[258]

DDT[259]

Background

DDT is the source of a statewide advisory for lakes and rivers in New York, as well as advisories in California, Texas, and Maine.[260] The total number of advisories for DDT increased from 40 in 1999 to 44 in 2000.[261]

DDT is a contaminant of concern for the Fourteen Confederated Tribes of the Yakama Nation, given that the Yakama River, which forms a reservation boundary and is a tributary to the Columbia River, is contaminated with DDT and currently under a state-issued advisory.[262]

Health Effects

DDT, together with DDD and DDE, is classified by EPA as a probable human carcinogen. DDT may cause damage to the central nervous system at high doses, leading to tremors and seizures.[263]

Sources of DDT in the Environment

Overview: DDT was one of the most widely used pesticides in the United States from 1946 to 1972. Its use has been banned in the United States, except for "public health emergencies."[264]

Other Persistent Organic Pollutants (POPs)/Persistent Bioaccumulative Toxins (PBTs)

Several other contaminants are sources of concern because they are bioaccumulative and persistent. That is, these contaminants accumulate in aquatic organisms at concentrations many times higher than the concentrations present in surrounding waters. They also persist for long

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[258]Id.

[259]"DDT' here refers not only to DDT, but also to its breakdown products, DDD and DDE.

[260]U.S. Environmental Protection Agency, *Update: National Listing of Fish and Wildlife Advisories* 3-5 (2001) available at www.epa.gov/ost.

[261]Id.

[262]Barbara Harper and Stuart Harris, *Proceedings of the American Fisheries Society: Forum on Contaminants in Fish*, "Tribal Technical Issues in Risk Reduction Through Fish Advisories" 17 (1999).

[263]Washington State Department of Ecology, *Proposed Strategy to Continually Reduce Persistent, Bioaccumulative Toxins (PBTs) in Washington State* 44-45 (No. 00-03-054) (December 2000) available at http://www.ecy.wa.gov/pubs/0003054.pdf.

[264]Id.

> *Unfortunately, the main way POPs enter our bodies is through food. POPs have been found in eagles, cormorants, ducks, geese, caribou, reindeer, raccoons, rabbits, quail, deer, moose, bison, turtles, crocodiles, sheep, cows, polar bears, seals, whales, and fish. . . . Advisories prohibiting or discouraging the consumption of traditional foods affect Indigenous Peoples' right to practice our cultural and spiritual ways.*[270]

Similarly, Faith Gemmill, Arctic Village, Alaska, explains:

> *I speak before you today as a young Gwichin woman with an infant daughter and with a deep commitment to ensuring her future and the continuation of the Indigenous way of life. . . . One cannot separate the health of the environment from the health of our peoples. . . . As Indigenous peoples we are greatly concerned when we realize evidence which suggests that women, infants, and children are very vulnerable to POPs. This threatens the very existence of our peoples and cultures. The multigenerational impacts threaten our hope of healthy, thriving, and productive future generations.*[271]

A. PREVENTION AND REDUCTION

How might EPA better prevent contamination in the first place in order to protect the aquatic ecosystems and the health of people consuming or using fish, aquatic plants, and wildlife for subsistence, traditional, cultural, or religious purposes?

Efforts to prevent or reduce contamination in the first place are vital to protecting the health of communities of color, low-income communities, tribes, and other indigenous peoples. These efforts are especially ...

1. Clean Water Act

Enacted in 1972, the Clean Water Act[272] (CWA) and its complex implementing regulations and guidelines focus on protecting public natural resources and welfare and improving water quality through the control of discharges of pollutants into national waters. The statutory objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[273] As stated in the CWA, national goals provide that: (1) the discharge of pollution into navigable waters be eliminated by 1985; (2) an interim goal of water quality that provides for the protection and propagation of fish, shellfish, and wildlife and for recreation be achieved by July 1, 1983; (3) the discharge of toxic pollutants in toxic amounts be prohibited; (4) federal financial assistance be provided to construct publicly owned waste treatment works; (5) areawide waste treatment management planning processes be developed to assure adequate control of pollution sources in each state; (6) major research and demonstration efforts be undertaken to eliminate the discharge of pollutants into national waters; and (7) programs to control point and nonpoint discharges be developed expeditiously to meet the goals of the CWA.[274] Water quality standards are key to implementing the framework of the CWA and are necessary for regulatory and enforcement actions to protect water quality where existing controls like technology-based limitations may be insufficient to maintain [illegible]

recommends that states and tribes prefer local data, EPA will need to provide funding to enable this preference to exist as a meaningful option. And, to the extent that EPA's revised AWQC Methodology proposes that "acceptable" risk for the general population be defined as an incremental cancer risk of 1 in 100,000 to 1 in 1,000,000, but deems a greater level of risk "acceptable" for "more highly exposed subgroups," including subsistence fishers, i.e., up to 1 in 10,000, this is a troubling potential source of environmental injustice.[283] EPA should decline to exercise this option to provide lower levels of protection to communities of color, low-income communities, tribes, and other indigenous peoples as it sets and approves water quality standards. Additionally, as a general matter, EPA needs to take into account the differences in fish consumption rates, practices, and context, as outlined in Chapter One, as it undertakes triennial reviews of state and tribal water quality standards under CWA 303(c)(1).

Additionally, the CWA provides some authority for addressing non-point sources of water pollution (including through TMDLs). Given that non-point sources are major contributors of numerous contaminants of concern, this authority should be interpreted broadly to enable EPA to prevent and reduce contamination from these sources. Non-point sources, moreover, are of particular concern to some affected groups. In Hawai'i, for example, there is a need for further studies on the effect of non-point sources on fish and other aquatic resources on which Native Hawaiians and other communities of color in Hawai'i depend, and for more extensive efforts to prevent and reduce pollution from these sources. As explained by Hawaii's Thousand Friends:

> *When it rains, Hawaii's short watersheds create immediate impacts to coastal areas from non-point source pollution. Studies so far have concentrated on impacts to estuaries, receiving ocean waters and coral, but not on impacts to fish and cru stations.*

Commentators have noted, moreover, the inefficiencies and unfairness, from the perspective of point sources, of failing to recognize and address as well the considerable relative contributions of non-point sources.

Neither the CWA nor its regulations alone will accomplish the objective and goals of the CWA. EPA, and authorized state and tribal governments, simply must ensure strict and widespread compliance with the CWA. Without such enforcement, polluters have absolutely no incentive to comply with the CWA as "noncompliance results in economic benefits (the free use of public waterways for waste disposal), while compliance exacts a financial cost (the construction and operation of expensive pollution removal facilities)."[284]

Water quantity is also of serious concern given, among other things, its recognized connections to and implications for water quality and integrity. For example, congressional goals and policies under the Clean Water Act direct federal agencies to "co-operate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert

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[283]Draft AWQC Methodology at 43,762.

[284]John Cronin and Robert F. Kennedy, Jr., *The Riverkeepers* 178 (1997).

with programs for managing water resources."[285] And the U.S. Supreme Court has recognized the connection between water quantity and quality, upholding a state's imposition of minimum instream flows as part of a Section 401 determination.[286] Wetlands, which provide essential wildlife habitats, are also recognized as an integral and natural way of removing pollutants from water bodies, and the Clean Water Act's Section 404 permitting program as well as EPA's "no net loss" strategy for wetlands preserves both the quality and quantity of these waters. Additionally, reduction in water quality affects surface flows and may increase the concentration of pollutants and other chemicals.[287]

2. Other Authorities

The Clean Air Act (CAA) is an important source of authority for addressing contamination of aquatic environments that results in part from the deposition of toxic contaminants emitted into

is the case, issues of inefficiency and unfairness, from the perspective of regulated sources, mean that agencies should also look to un- and under-regulated sources for reductions. And while some community groups have recently taken it upon themselves to get community members to reduce backyard burning,[290] EPA should not rely on ad hoc, voluntary efforts but should work to coordinate, facilitate, and, where appropriate, require reduction from these and other un- and under-regulated sources.

The CAA also provides authority to address other air-related sources of contaminated waters. For example, the CAA regulates oxides of nitrogen (NOx) through a variety of provisions. NOx causes acidification and euthrophication (a process in which an overabundance of nutrients causes some algae to multiply exponentially causing oxygen depletion that limits the ability of some species to thrive and survive), a potential problem for shellfisheries and other aquatic resources. Among these, the New Source Review program, wh 0 Td(thr)Tj1.38 0 Tdt for sd1.22 0 TTdt

The Pollution Prevention Act (PPA), enacted in 1990, might similarly be mined for tools that EPA might employ more aggressively to prevent pollution from entering aquatic environments in the first place.

Finally, a variety of sources of authority and EPA offices have been gathered in EPA's recent Contaminated Sediment Management Strategy. Given that in terms of volume, some 10% of the sediments underlying the nation's waters are contaminated , that 96 of the watersheds tested indicate contamination at levels of serious concern, and that the contaminants that most frequently contributed to this concern were mercury, PCBs, pesticides (especially DDT), and PAHs, addressing sediment contamination should indeed be a priority.[293]

B. CLEANUP AND RESTORATION

How might EPA enhance restoration efforts in order to rehabilitate aquatic ecosystems and thereby protect the health of people consuming or using fish, aquatic plants, and wildlife for subsistence, traditional, cultural, or religious purposes?

Many aquatic environments remain degraded such that they require restoration in order to ensure the viability of the ecosystem; the health of people consuming or using fish, aquatic plants, and wildlife for subsistence, traditional, cultural, or religious purposes; the ability to support economies dependent on aquatic resources; and the sustainability of tribal homelands. Efforts to cleanup and restore contaminated aquatic environments are vital to protecting the health of communities of color, low-income communities, tribes, and other indigenous peoples. These efforts are especially important given that members of these groups are among the most highly-exposed to environmental contaminants (as discussed in Chapter One) and given that for many of these groups, risk avoidance – eating less fish, using a different preparation method, fishing in a different location – is simply not a realistic or culturally a

predisturbance aquatic functions and related physical, chemical and biological characteristics."[295] Others define restoration more broadly and suggest that the ends and means of restoration can only be contemplated *in context*, i.e. in light of the particular historical, cul 4.cal

the Columbia River treaty tribes explain that "[u]nlike other plans, this plan establishes a foundation for the United States and its citizens to honor their treaty and trust obligations to the four tribes. If implemented, it would at least begin to meet ceremonial, subsistence, and commercial needs of tribal members and to return fish to many of the tribes' usual and accustomed fishing places, as guaranteed in the 1855 treaties."[301] Restoration affecting tribal lands and resources, moreover, must attend to the related matters of cultural flourishing and tribal sovereignty.[302] As John LaVelle observes in the context of restoration plans for *Paha Sapa* or the Black Hills, those pursuing plans "must embrace the restoration of tribal sovereignty and cultural integrity as an indispensable remedial norm to be realized through the proposal's development and implementation."[303]

EPA's Watershed Ecology Team has set forth Principles for the Ecological Restoration of Aquatic Resources.[304] These "Guiding Principles" include (1) preserve and protect aquatic resources; (2) restore ecological integrity; (3) restore natural structure; (4) restore natural function; (5) work within the watershed and broader landscape context; (6) understand the natural potential of the watershed; (7) address ongoing causes of degradation; (8) develop clear, achievable, and measurable goals; (9) focus on feasibility; (10) use a reference site; (11) anticipate future changes; (12) involve the skills and insights of a multi-disciplinary team; (13) design for self-sustainability; (14) use passive restoration, when appropriate; (15) restore native species and avoid non-native species; (16) use natural fixes and bioengineering techniques, where possible; and (17) monitor and adopt where changes are necessary.

1. Clean Water Act

As noted above, the statutory objective of the CWA is "to *restore* and maintain the chemical, physical, and biological integrity of the Nation's waters."[305] In addition to the efforts discussed above in conjunction with prevention and reduction, EPA should read its authority under the CWA consonant with this stated objective and look creatively and aggressively for restoration opportunities.

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[301]Columbia River Inter-Tribal Fish Commission, 1 Wy-Kan-Ush-Mi Wa-Kish-Wit: Spirit of the Salmon, iv (1995).

[302]See, e.g., id. at v ("protect tribal sovereignty" among goals of restoration); *Chairman's Corner: The Exercise of Tribal Sovereignty Lies at the Heart of Healthy Ecosystems*. Fort Apache Scout 2 (May 24, 1996); see, generally, Winona LaDuke, Recycling 6776 0 Td(Sco)Tc 0.015 Tw -35.84 -1.18 Td(rn5.9454 0 Td(in)Tj0.74

2. Other Authorities

CHAPTER III: FISH CONSUMPTION ADVISORIES

What role should fish consumption advisories play in efforts to protect more effectively the health and safety of people consuming or using fish, aquatic plants, and wildlife?

Whereas Chapter Two focused on issues surroundi

A. FISH CONSUMPTION ADVISORIES' ROLE

Risk avoidance strategies such as fish consumption advisories shift the responsibility for addressing environmental contamination's harmful health effects to risk-bearers, as opposed to allocating this responsibility to risk-producers. In the case of fish consumption advisories, this choice disproportionately burdens communities of color, low-income communities, tribes, and other indigenous peoples, given that these groups consume fish at higher rates and according to different practices than the general population, as discussed in Chapter One. When agencies employ fish consumption advisories, moreover, they assume that there are adequate substitutes in the lives of those to whom the advisories are directed for fishing and fish consumption. Although consumption advisories issued by federal or state agencies typically do not state as much explicitly, they rely implicitly on the assumption that there are ready substitutes for being able to fish at the same place, in the same manner, and for the same fish as one had traditionally or would today were the fish not contaminated. This assumption requires a judgment on the part of the agencies that such a substitution (1) is possible, and (2) will not occasion great loss.[306] This is a

Raymond Moseley, a fisher along the Columbia Slough in Portland, Oregon, explain

As Daisy Carter, Project AWAKE, Coatopa, Alabama, summarizes,

> *When it comes to people, their health and survival, EPA must become real. It is not about formality, but reality.*[312]

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> *harvesting sites, substituting with other sources of food, and posting "no fishing" signs are not viable considerations for reducing risk.*[314]

And, as Hawaii's Thousand Friends emphasizes:

> *For the Native Hawaiian, the proposal of not eating fish because of contamination is unimaginable and unacceptable.*[315]

Thus, it is often impossible to conceive of fishing at a different bay, river, lake, or stream – what if it belongs to someone else traditionally, historically and/or legally? This is an issue, in particular, for many tribes, especially the fishing tribes (e.g., of the Pacific Northwest or of the Great Lakes), whose rights to hunt, fish, and gather are tied to particular places and protected by treaties – these place-based rights are not transferable. Nor can many tribal fishers imagine going "somewhere else" to fish, even if they could. Margaret Palmer, a Yakama tribal fisher, elaborates:

> *I don't feel like it's within our rights, as the tribe that we are, to go to a different area and live off of something that maybe God has blessed them with. This is our blessing. This is the way we see it. This is where we should stay. I don't believe that I would leave the area. I believe I would stay where I'm at – by the water. It's our lineage.*[316]

Moreover, the particularized skills and knowledge that tribal peoples have developed over centuries are place-specific and comprise a part of their intergenerational heritage, to be passed from generation to generation. It is often impossible to fish for, hunt for, or gather different species or to fish for younger fish as some advisories suggest – what if a particular species is bound um 0 Td(ec(ion t)Tj1d(e -0.01 a 0 Td(gg T.035.01 a 0 Td(gg T.u,d(ec)Tj0.8 0 Td(fsg.)Tj0 Tc 0.01 T

According to a recent study of African American fishers on the

Pierson Mitchell noted that he had salmon for lunch at home sometimes, when it was available, but he m

altogether. Tribal consumption guidelines may also offer information that the typical federal- or state-issued advisory doesn't about the health benefits to tribal members of eating a "Native diet" and the health risks of turning to a "western diet."[327] Nancy Costa, of Fond du Lac Environment Program, explains:

> "*The last thing we want to do is to discourage tribal members from eating fish – given (among other things) the serious health effects we have seen for those who have gotten away from a Native diet.*"[328]

Similarly, Elaine Abraham, a Tlingit elder from Yakutat, notes efforts to enhance appreciation of the cultural and nutritional value of Native foods,

government" relationship with tribes. Issues particular to American Indian tribes and Alaskan Native villages are discussed further in Chapter Four.

Finally, even where agencies, together with affected groups, opt to continue to issue advisories, they need to redouble their efforts to prevent and reduce new sources of contamination and to cleanup and restore environments and fisheries that are already contaminated. *This caveat was strongly emphasized by affected groups everywhere*. Agency representatives acknowledge this need. For example, Elizabeth Southerland, Standards and Applied Science Division, Office of Science and Technology, Office of Water, opened this year's National Forum on Contaminants in Fish by describing "how water 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 can be rescinded. No one wants consumption advisories in place any longer than necessary."[331] Yet, advisories have been in effect in some places since the 1970s and EPA has created a separate advisory program, which has been in place for about a decade. Furthermore, EPA appears to anticipate continued efforts to issue advisories and to ensure that those affected "comply" with them. In its Strategic Plan, for example, EPA states among its objectives: "[by 2005, consumption of contaminated fish will be reduced."[332] EPA's commitment to ensuring that advisories remain a temporary, second-best response to contamination and its effects on human health needs to be backed up by a reprioritization of goals – prevention, reduction and cleanup first and foremost – and by a redoubling of resources allocated to returning aquatic environments and fisheries to a state where it is safe for people to fish.

B. EFFECTIVENESS: BACKGROUND AND DEFINITION

1. Advisories' Components and Functions

In order to facilitate deliberation about this middle course, it seems useful to examine more closely the components and functions of a typical fish consumption advisory. A typical advisory might be thought of as comprised of three functional parts: (1) iee0

Consider this excerpt for the current advisory for organic contamination in Louisiana:

Water body	Causative pollutants	Recommendations	Approximate size affected
Devil's Swamp, Devil's Swamp Lake and Bayou Baton Rouge (Parish: East Baton Rouge)	Hexachlorobenzene, Hexachloro- 1,3-butadiene, PCBs, Lead, Mercury, Arsenic	Avoid swimming, limit fish consumption to TWO MEALS PER MONTH.	7.0 square miles
Capitol Lake (Parish: East Baton Rouge)	Priority organics (PCBs)	No fish consumption.	0.12 mile

This advisory provides information identifying the relevant contaminants, the affected waterbodies, the approximate geographical extent of the contamination, and, given that the recommendations apply to all "fish," the species covered. This information all serves the first function. Do the recommendations "limit fish consumption to two meals per month" and "no fish consumption" serve mainly to translate information about the nature and extent of the contamination and its health effects into a form that is readily usable by those who would otherwise consume these fish (an extension of the first function)? Or do they serve mainly to discourage fish consumption (the second function) – with all of the pros and cons of doing so, as discussed above in Part A? This information may serve both the first and second functions (and may be perceived to serve different functions by different communities, groups or tribes).

Note that this advisory's recommendations are not accompanied by suggestions of alternative means that would allow the continued consumption of fish, albeit of different species or according to different practices – the third function.

Finally, without more information about the process of fashioning and disseminating this advisory, it is difficult to determine to what extent it serves the additional functions of capacity-building and empowerment from the perspective of the affected groups. To highlight but one aspect of these additional functions: although this advisory identifies the "causative pollutants," it does not go on to provide information about the sources of those pollutants (e.g., particular industrial or other facilities) nor about upcoming risk assessment and risk management decisions relevant to the pollutants and sources of concern.

2. Defining "Effectiveness"

There are likely to be differences in how one defines "effective"in this context – differences among agencies and the various affected communities, groups and tribes. The first function of advisories – to provide information – is the least controversial. There is likely widespread agreement that an effective advisory is one that successfully *communicates* information about the nature and extent of the contamination and about the relevant adverse health effects. Advisories' first function is important to securing environmental justice. Although questions remain about whether current advisories actually communicate this information in understandable and appropriate ways (these will be taken up below, in Parts C and D), there seems to be little question that advisories or something akin to advisories *should* serve this function. As Ticiang Diangson, Supervising Planning and Development Specialist and Environmental Justice Advocate, Seattle Public Utilities, explains:

group, agencies may fail to appreciate the economic, geographic, social, and other practical realities facing the affected group.

The fourth function that advisories might serve – capacity-building and empowerment – are important to securing environmental justice. It is crucial that those affected play central roles in developing and disseminating the information that they deem appropriate to their needs. Such efforts – *led* by those in the community, and *supported* by the EPA and other agencies – can contribute to the larger goals of what the Laotian Organizing Proj3Tf0 m Tw -20.sl4e0.0012 Tse af ltu001ly-eeds.

less likely to be traveling about, fishing in multiple states – this may be so for historic, geographical, cultural, economic, or legal reasons, or some combination of these. These individuals are thus less likely to benefit from consistency among states.

In sum, "effectiveness" from the perspective of communities of color, low-income communities, tribes, and other indigenous peoples is likely to focus on the first and fourth functions, while for some affected groups, it is likely to include the second and third functions. However, definitions of effectiveness and appropriateness will likely vary with varying local and cultural contexts. Thus, it will be important to determine the perspective of the particular affected group on this question, and to look to this perspective to guide every aspect of any advisory process, including evaluation of its success.

C. EFFECTIVENESS: AVAILABLE EVIDENCE

Before discussing to what extent advisories are effective from the perspectives of communities of color, low-income communities, tribes, and other indigenous peoples, it is useful to canvass the available evidence on responses to the fish consumption advisories that have been issued. As a general matter, although advisories have been in effect in some places since the early 1970s, relatively little is known about how they affect humans' behavior.[337] Again, there is more evidence based on anecdote or local knowledge than based on formal study. For example, the California Department of Health Services notes that health advisories extending from Malibu to Newp

groups, and persons with no high school degree."[339] Another survey of fish consumption patterns and advisory awareness among anglers on the Fox River in Wisconsin found that 95% of anglers who ate fish were unaware of Wisconsin's fish advisory pamphlet and 50% of anglers who ate fish had neither heard nor read about the health risks of eating Fox River fish. Asians (primarily Hmong and Laotians) represented 70% of the anglers who had not heard about the health risks (although they represented only 19% of the total anglers surveyed).[340] The survey found further that most of the anglers surveyed did not eat the fish they caught in the Fox River (83%)and that of these, 75% said they did not eat the fish because they were concerned about the contaminants. Of those anglers who ate the fish they caught, Asians made up the largest group, comprising 59% of fish eaters. The survey's authors observed:

> *Eating fish forms a regular part of the diet and culture for the Asians (Hmong and Laotians) living in the Green Bay area. White Bass, listed in the advisory as "Do Not Eat," appears to be their fish of choice. Although the number of Asian anglers fishing along the Fox River decreased after being informed by an interpreter that White Bass is not safe to eat, there is concern that some of these anglers still may be eating White Bass caught from other nearby contaminated waters. Many Asian anglers may not understand the fish advisory because of the language barrier or may not believe the fish advisory because no immediate physical ill effects have been observed from eating contaminated fish.*[341]

A third survey, of Maine open-water anglers, examined the effect of a 1994 statewide fish consumption advisory.[342] 63% of all anglers knew about the issuance of a mercury advisory regarding covering fish from all lakes and ponds in Maine. All socioeconomic characteristics (here: gender, age, fishing "effort") except education and income were the same for the groups who were aware of the advisory and those who were not. Of the anglers who were aware of the advisory, 22% of Maine residents and 23% of non-residents altered their fishing behavior, indicating that but for the advisory they *would* have consumed more fish, fished more days, or fished more or different waters.[343] A fourth survey, of fish consumption patterns and advisory awareness among the Laotian communities in West Contra Costa County, California, found that 48.5% of survey respondents had heard of a health advisory about eating fish and shellfish from the San Francisco Bay. Only a fraction of these (59.5%), however, could recall what the advisory

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said and none could recall an advisory more specific than “pregnant women should not eat large amounts of Bay fish,” or “Bay fish are not safe to eat.”[344] The survey found a statistically significant difference in awareness of the health advisory among ethnic groups within the larger Laotian community, with Khmu respondents being more likely to have heard of the advisory.[345] Of those who were aware of the health advisory, 60.3% said that it had influenced a change in their fishing or fish consumption habits. Of those whose habits were influenced, 62.7% said they no longer eat fish from the Bay or eat less fish from the Bay and 29.9% said they no longer eat fish from any source or eat less fish from all sources.[346] An account of a fifth survey, by the Environmental Health Investigations Branch of the California Department of Health, concludes:

> *Although the health advisory has been in place since 1994, outreach and education about the advisory to different fishing populations has been difficult to accomplish. The recently completed San Francisco Bay Seafood Consumption Study indicates that about two thirds of people fishing have no awareness or limited understanding of the advisory*.[347]

With this and other available evidence to go on, it appears that people of color and people with low incomes, limited English proficiency, or relatively little education are less likely to be aware of fish consumption advisories; that some portion of the people of color who are aware of advisories alters their consumption patterns as a result, but that a significant portion does not alter their consumption patterns; that there are differences among various ethnic groups in these respects; and that while contamination and advisories are not influencing all individuals to reduce their fish consumption, they are influencing individuals at sufficient rates to contribute to suppression effects (discussed in Chapter 1). Additionally, here as elsewhere, there is a need to gather further information especially about those groups and subgroups about which less is known.

D. EFFECTIVENESS: RISK COMM

the risk communication process. This is the single most important lesson that EPA and other agencies should take away from this discussion of effective fish consumption advisories. All of the elements of effective fish consumption advisories will fall into place if agencies and affected communities or tribes consider together the questions and answers. That is to say, communities and tribes will articulate their needs; affected groups and agencies will each share their respective concerns; affected groups will help ensure that the content and medium of advisories are appropriate to their membership (e.g., in terms of language, literacy, culture, practice); affected groups will be able to contribute creative implementation strategies appropriate to their membership; and affected groups will have knowledge indispensable to the evaluation process. As in the case of research in general (discussed in Chapter One), communities and tribes have expertise relevant to risk communication that is simply not going to be able to be replicated by non-member researchers. This is supported by the large body of literature on "participatory research." Members of these affected groups ought to be recognized as the experts they are, and their work ought to be supported financially (whether though dispensing grants to community groups, tribes, and partnerships formed by affected groups, through hiring affected group members as expert consultants, or thr

part of affected groups regarding the intent behind or the accuracy of agencies' messages).[354] To the extent this is the case, the existence of an ongoing, regular relationship would go far toward dismantling this barrier.[355] The importance of gaining trust and building a good relationship bears emphasis. Affected groups often cite agencies' lack of "follow through" as a source of mistrust. Chee Choy, Project Manager for the Columbia Slough Sediment Project, Bureau of Environmental Services, Portland, Oregon, elaborates:

> *After an agency has made a commitment to addressing environmental justice by committing the necessary resources, the next step perhaps is to work on gaining trust and credibility with ethnic minority, immigrant, and low-income communities. . . . Among these communities, there is a severe lack of trust that government will listen to or take care of their concerns.*
>
> *Many immigrant and low-income communities place a strong emphasis on quality relationships. They need to know you care, are sincere, have* their *interests in mind (as opposed to your agency's interest) and there is folloj/T1y_0 1fua*

To best reach Hawaii's diverse multi-ethnic and indigenous Native Hawaiian populations about the risk of fish consumption, we recommend the following: Work through existing community health centers since they have existing outreach infrastructure. This is especially true for health centers in communities with a predominantly Native Hawaiian population and Hawaiian homestead communities; . . . Form partnerships with organizations that work with the same nationality and culture as those targeted, using grants and technical assistance . . . [357]

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Again, this relationship cannot happen without the involvement of communities and tribes; to facilitate this involvement, financi

Often, this approach will not be easy. Not only will it take time – time to sit down and visit, time to ask further questions in order to understand – but also real work.[360] There may be language barriers to hurdle, differences in communication styles to decipher and address, large cultural differences to bridge. "Public comment periods" or "breakout sessions" may not provide useful avenues for conversation from everybody's perspective. Similarly, public meetings held in hotels or convention centers may not provide a very familiar, welcoming or accessible (e.g., by walking or using public transportation) site for many from affected groups.[361] Sometimes, where the participants in a conversation come from radically different cultures or start with radically incompatible worldviews, there may never be complete understanding. But even if there are glimpses of understanding, the process itself is important (e.g., to building good relationships). Moreover, if the conversations are ongoing, understanding is likely to increase over time. For example, Josee Cung, Program Manager, Southeast Asian Program, Minnesota Department of Natural Resources, describes a collaborative effort with the Minnesota Department of Health and community leaders to design and implement culturally appropriate education regarding consumption of contaminated fish, which includes "education delivery" methods such as:

> • *[Sessions in] anglers' homes, as a version of the storytelling tradition and often involving elders*
>
> • *Day field trips that include bus travel to fishing sites, the education component followed*

to accept information they don't (yet) know they need – e.g., the answer to the question that the member of an affected group *wishes* the agency had asked (because this is what is most important from her perspective), the community- or tribally- developed research agenda that frames the issues differently than the agency would. Agencies should work to take in (and redirect if necessary) information that appears to pertain to a related but different program or agency. Thus, in the context of fish consumption advisories, those in environmental agencies' fish advisory programs should work together with those in their water quality standards and clean up programs to ensure that the comments they hear – e.g., "clean up existing contamination so that advisories can be lifted" – get registered with those in relevant programs *as well as with those setting priorities among programs and efforts*. Similarly, those in health agencies should work together with those in environmental agencies to ensure that such comments get passed along and that there is a connection between relevant staff working to address the issues.[363] While it is never easy to hear information that may require one to reevaluate current priorities, methods, or approaches, this reevaluation may be the key to efforts that are defensible as a matter of science and social science, acceptable from the perspective of communities and tribes, and, ultimately, effective as a matter of risk communication.

Involvement by affected groups is necessary as well because they, ultimately, are the ones who will bear the brunt of harms from contamination not addressed and communication not achieved. They, among all "stakeholders," are the ones who face the most immediate and often irreversible losses – it is not just a matter of being out a few dollars on the profit side of the ledger but a matter of the 0 Td(ot)TjTj0.02erB

Ticiang Diangson, Supervising Planning and Development Specialist and Environmental Justice Advocate, Seattle Public Utilities, observes:

> *[I]t takes inordinate effort on the part of harmed communities to gain acknowledgment of the impact of the contamination and to get real-life implementation to solutions to the impact.*

To the extent that research is conducted by and for communities and tribes, it can serve the additional important function of capacity building. This goal is important and an issue of environmental justice in and of itself, for both communities and tribes. And, to the extent that communities and tribes see that their concerns are shaping the research to be conducted, that the information gathered will be relevant from their perspective, and that their members stand to enhance their skills, knowledge and capacity in the process – as opposed to merely providing information that enables others to enhance *their* skills, knowledge and capacity – participation and trust are likely to be increased, and accuracy thereby enhanced.[365]

As noted in Chapter One in the context of research in general, funding is crucial to the ability of affected communities and tribes to be involved in research, including research about risk communication. This point is elaborated below, in Section 7.

Finally, it is important to note that there are considerable resources on which EPA and other agencies interested in improving risk communication with affected groups can draw – resources that have been developed by or with the involvement of communities of color, low-income communities, tribes, and other indigenous peoples. Rather than attempt to repeat their work here, this Report refers to several of these sources: the National Environmental Justice Advisory Council Public Participation Plan; the National Environmental Justice Advisory Council Indigenous Peoples' Subcommittee, Recommendation on Environmental Health and Research Needs Within Indian Country and Alaska Native Villages; the Outreach Strategy developed as a part of EPA's Asian American and Pacific Islander Initiative; and the (Draft) Strategy on Limited English Proficiency.

2. Different Communities and Tribes, Differing Concerns and Needs

The term "affected groups" here includes a large and diverse array of groups, each of which consumes and uses fish, aquatic plants, and wildlife in differing cultural, traditional, religious, historical, economic, and legal contexts. It will be crucial for any risk communication effort to recognize, therefore, the diverse contexts, interests, and needs that characterize affected

[365] See, e.g., id. at 37 (noting that the survey planning team made connections with the Laotian Organizing Project's ongoing capacity building efforts regarding community health and safety, which motivated many community members to participate in the survey and explaining: "The planning team was originally hesitate about the perception commonly held by community members of outsiders taking information from the community without community people seeing the benefits of research. Linking the survey to a community based organization helped counter this perception.").

groups, including but not limited to groups with limited English proficiency; groups with limited or no literacy; low-income communities; immigrant and refugee communities; African-American communities, various Asian and Pacific Islander communities and subcommunities (e.g., Mien, Lao, Khmu, and Thaidum communities within the Laotian community in West Contra Costa, CA); various Hispanic communities and subcommunities (e.g., Caribbean-American communities in the Greenpoint/Williamsburg area of Brooklyn, NY); various Native Americans, Native Hawaiians, and Alaskan Natives (including members of tribes and villages, members of non-federally recognized tribes, and urban Native people). "Affected groups" also refers to subgroups within these larger groups, including but not limited to nursing infants; children; pregnant women and women of childbearing age; elders; traditionalists versus modernists in terms of practices that implicate fish consumption; and subgroups defined by geographical region.

EPA and other agencies have increasingly recognized this diversity and its relevance to fish consumption advisories and other risk communication efforts. For example, EPA, in particular, has recognized the diversity of Asian and Pacific Islander communities, and provides an "Asian American and Pacific Islander Primer" on its Asian American and Pacific Islander Initiative website.[366] This primer identifies Asian Americans as those with origins in one or more of 28 Asian nations, and Pacific Islanders as those with origins in one or more of 19 island nations.[367] EPA has undertaken a number of efforts as part of this initiative that attend to the diversity of this group.[368] Important among these efforts is an extensive Outreach Strategy.[369] Nonetheless, EPA and other agencies

Laotian Organizing Project points, for example, to a state fish consumption warning sign at a popular fishing site in Richmond, CA written in English, Spanish, and Vietnamese and notes:

studies showing a particular group's lack of awareness of advisories, as was the case on the Lower Fox River, where Wisconsin recently posted signs in English and Hmong), and there has been considerable progress in this regard. For example, Chee Choy, Project Manager for the Columbia Slough Sediment Project, Bureau of Environmental Services, Portland, Oregon, recounts the

resistant to reducing communication to writing, preferring instead to give and receive information orally. Some groups have had less formal education, such that some of their members may be illiterate. In all of these cases, advisories should not rely on written words, but on devices such as spoken words, demonstration, or graphics.

Advisories should be accessible. They should use words that are understandable to the particular affected group; they should avoid jargon. To the extent possible, they should use short, manageable sentences. They should employ visual aids such as charts, pictures, models, posters, and hands-on demonstrations. Kristine Wong, the former Project Director of the Seafood Consumption Information Project, which focused on "conducting community-based research, education, outreach, and advocacy on the issue of contaminated fish consumption in San Francisco Bay," observes:

> *[M]any terms used frequently in health warnings need to be changed to reflect the common language of those who fish for food. For example, the term "sportfish" is used in the San Francisco Bay health advisory, yet those who catch and eat bay fish do not interpret the term "sportfish" as the fish that they themselves consume on a regular basis. During our regular visits to the fishing piers we conducted an informal survey to see if people actually understood that "sportfish" applied to all the fish that were being caught in the bay. Most interpreted the term "sportfish" to be the jumbo-sized fish caught on fishing boats, confirming our suspicions.*[380]

As Hawaii's Thousand Friends urges:

> *Use the local name of the fish in any outreach.*[381]

Finally, advisories should be designed to facilitate the two-way exchange that is the hallmark of good risk communication. *Importantly, as many affected groups have noted, advisories need to make available information about the nature, extent, and sources of the contamination that is giving rise to the advisory.* Thus, at a minimum, they should include contact information for the appropriate agencies, tribal government bodies and/or community groups, so that there is a place to lodge comments, ask questions, or obtain further information. Posted signs, for example, often leave those affected with unanswered questions.[382] Advisories should also provide additional relevant information, including information about the nature, extent, and sources of contamination that would enable those affected to participate not only in risk communication efforts but also in risk assessment and risk management decisions. Joanne Bonnar Prado, of the Washington Department of Health, emphasizes just this perspective:

> *[O]ne of the things that I've learned . . . is that we need to incorporate really thoroughly issues of source and where the sources [of contamination] are coming from . . . We understand that, [but] we do not talk about it much within our – or at all within our – health communications about source and source reduction. . . . So supplying information about sources, source reduction that individuals and communities and governments and all the various strategies that can be used on a local, statewide, and worldwide basis to reduce mercury – and this would apply to really all contaminants I would think – is really appropriate for this particular issue.*[383]

4. Medium

What constitutes an effective and appropriate medium for conveying the message will vary from group to group. Sometimes, it will be most effective to try to reach people via multiple media routes. Again, general "one-size-fits-all" recommendations are likely to be unuseful. Again, members of the affected group will possess valuable knowledge about the best medium from their perspective, and should therefore be involved in choices among media.

Several observations can be made. The medium chosen should take into account the habits and customs of the affected groups; it should take into account the access enjoyed by the affected groups. There has been some recent work identifying different media sources as more or less likely to be used or preferred by various affected groups.[384] For example, of those in the Laotian communities in West Contra Costa County who had heard of the health warning in place

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[382]See, e.g., John M. Cahill, Director, Bureau of Community Relations, New York State Department of Health, *National Risk Communication Conference, Proceedings Document* II-43-44 (2001).

[383]Joanne Bonnar Prado, Washington State Department of Health, *Comments to the National Environmental Justice Advisory Council* Vol III-13 (Annual Meeting Transcript) (Dec. 4, 2001).

[384]See, e.g., John M. Cahill, Director, Bureau of Community Relations, New York State Department of Health, *National Risk Communication Conference, Proceedings Document* II-45-49 (2001) (presenting an extensive assessment of the advantages and disadvantages of twelve different categories of media/formats for various audiences, and cataloging available community channels and potential partners).

for San Francisco Bay fish, nearly 60% had heard of it through television news, 37.8% though word of mouth from friends and family, 18.9% via signs at various piers, and 14.4% through the newspaper; others had heard of the advisory though church, a local community-based organization, school, the doctor's office, and the welfare office.[385] Many members of affected communities of color, low-income communities, tribes, and indigenous peoples do not have access to the Internet as a means of apprising themselves of current advisories posted on agencies' websites. According to John Cahill, Director, Bureau of Community Relations, New York State Department of Health:

> *Last year, 56 percent of Americans used the Internet. However, only 23 percent of African Americans had Internet access, compared to 46 percent of White households. A majority, 82 percent, of Americans earning $75,000 or more had access, compared to only 38 percent of those earning less than $30,000.*[386]

Some of those affected may not have a telephone, and so cannot readily call numbers listed on signs or in pamphlets. To the extent information is distributed by agencies or others who give out fishing licenses, Native Americans and others who are not required to obtain a license to fish will not receive information distributed in this way; neither will those who for any number of reasons simply haven't obtained a license. John Cahill points out, for example, that a recent survey of anglers along New York's Hudson River revealed that only 57.5% of them had licenses; and a series of focus groups among Latino anglers in Buffalo found that only about half of them were licensed.[387]

The medium chosen should make advisory information easy to locate and access. Some current advisories may require several steps to locate and access (e.g., the need to consult a fishery regulations book, as in Maine; the need to write to the Department of Natural Resources or to go to local offices or state parks (or on-line), as in Wisconsin; the need to sort through fairly complex information, as in Michigan), which steps impose greater hurdles for those whose educational background or financial resources do not afford them the tools to navigate governmental bureaucracies.

Here again, agencies are making strides although there is work yet to do, and agencies need to ask those affected what would work for them.

5. Implementation

Members of affected communities and tribes will often be particularly well-positioned to take the lead in implementing the advisory and outreach strategy that has been developed by and for their group. Members of affected groups will be active in or aware of community

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[385]Audrey Chiang, Asian Pacific Environmental Network, *A Seafood Consumption Survey of the Laotian Community in West Contra Costa County, California* 30 (1998).

[386]John M. Cahill, Director, Bureau of Community Relations, New York State Department of Health, *National Risk Communication Conference, Proceedings Document* II-43 (2001).

[387]Id. at II-42-43.

organizations, churches and other religious organizations, clubs, schools, and other entities that could play a role in getting the message out and facilitating risk communication. Members of affected groups will likely know precisely which community festivals, ceremonies, or events are likely to be well-attended and appropriate venues for outreach. For example, Detroiters Working for Environmental Justice not only prepared a pamphlet, together with the Lake Erie Binational Public Forum, directed at those eating fish from Lake Erie, the Detroit River, and the Rouge River, but they also work to distribute the pamphlet at local health fairs.[388] Members of affected groups will often be able to put together creative ideas for outreach – a product of their knowledge of norms in the community or tribe; their on-the-ground connections; their shared experience – especially, shared practices exposing them to environmental risks; and their involvement in prior organizing efforts.

Implementation by members of affected groups may also facilitate environmental justice along multiple dimensions. In addition to capacity-building, discussed below, looking to affected groups for implementation may enable them to dovetail efforts regarding fish consumption with other health and environmental outreach efforts (e.g., regarding possible contaminants in breast milk, regarding the value of Native foods in countering diabetes, or regarding nutrition in general) and/or other community-building efforts – efforts that may already be well-established, which would in turn enhance the likelihood that data about fish consumption practices would be complete and accurate, and that advisories regarding these practices would be received. For example, the Asian Pacific Organizing Network explains, in the context of its survey of Laotian communities in West Contra Country, California:

> *Active participation by community leaders who are recognized and respected in the community brings trust and credibility to a survey that could otherwise be seen as intrusive. In this survey project, community leaders made the initial contact with people in the community, explained the goals of the survey to participants, and answered any questions and allayed any fears that people may have. Such collaborative work helped establish important relationships between community leaders and APEN's Laotian Organizing Project (LOP) as a young, emerging organization within the community.*
>
> *Organizationally, APEN is committed to working with youth, in order to foster new leadership within the community. Therefore, 'survey teams' of youth and established community leaders carried out the survey together.*[389]

Agencies, together with affected groups, should consider shifting current approaches to outreach so that it is primarily grassroots, community-based organizations and groups that do the outreach in their respective communities. Where this is appropriate, these groups should be funded to take on this responsibility. For example, they could be hired as contractors to the

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[388]Telephone Interview with Michelle Shewmaker, Detroiters for Environmental Justice (Oct. 26, 2001); Detroiters Working for Environmental Justice and Lake Erie Binational Public Forum, *A Family's Guide to Eating Fish from the Detroit Area* (pamphlet).

[389]Audrey Chiang, Asian Pacific Environmental Network, *A Seafood Consumption Survey of the Laotian Community in West Contra Costa County, California* 8 (1998).

relevant agency. Or, they could receive grants to conduct this work. As Marianne Yamaguchi, Director, Santa Monica Bay Restoration Project, notes, some agencies and others in Southern California are already taking this approach, with benefits not only in terms of effective and appropriate implementation but also in terms of capacity building.[390] Funding and capacity-building are discussed further below, in Section 7.

6. Evaluation

Affected group involvement is critical to evaluaal e [illegible]

Among the issues that have been identified is the need to ensure that the fruits of its work are returned to the affected group. The information gathered – e.g., as part of baseline assessment of fish consumption rates and practices, as part of evaluation processes, or otherwise – needs to get back to the affected group for them to use for their own purposes. Hopefully, the involvement of the affected group from the outset of the process means that its needs have been identified and the results meet those needs. Nonetheless, the information may be valuable to the group in the longer term, as a foundation for other projects, as historical documentation of practices at a particular point in time, or for any number of reasons. In some cases, a community or tribe may want to be custodian of the information about their group, to ensure that they have some amount of control over the ends to which it may be put in the future. Whatever the reasons, it may be important to capacity-building and empowerment that the information about a particular group be returned to that group. Daisy Carter, Project AWAKE, Coatopa, Alabama, highlights communities' lack of empowerment when information is gathered *from* them, but not necessarily for and with them:

> *EPA knows all the problems that exist in every community, state and country. EPA is aware of what is wrong. They know who is impacted by the various contaminants and to what degree citizens are unfairly treated. They know what injustices are being done. They also impose fines upon various companies. It is the policy of these companies and EPA to keep citizens who are at risk seeking and searching for answers and assistance to eliminate their problems and suffering. EPA wants to keep citizens, people of color, and impacted communities talking and asking for help so that EPA can stay informed and keep abreast of the status of the burdens and injustices in these communities.*

In addition, as noted in Chapter 1 in the context of research in general, funding is crucial to the ability of affected communities and tribes to be involved in research, including research about risk communication. Although community and tribal members have considerable expertise to offer, they often have minimal or no funding to support their work. *To a person*, community members, tribal members, inter-tribal organization staff, and state and local agency representatives who work with affected groups stressed the importance of adequate funding. Diane Lee, a research scientist with the California Department of Health Services who has worked extensively with communities as part of the Palos Verdes Fish Contamination Outreach and Education Project and other studies in the San Francisco Bay area, is emphatic:

> *I cannot underscore enough the need to provide funding to affected communities so that they can participate fully in every aspect of the research process, from needs assessment to dissemination of the results. Funding, moreover, needs to be provided on an on-going, rather than one-time, basis.*[394]

Again, EPA and other agencies have often provided much-needed support. For example, the

[394]Telephone Interview, Diana Lee, Research Scientist, California Department of Health Services (Oct. 26, 2001).

training, community-based organizations received a stipend to develop and implement a pilot educational activity for the community they serve. The type of activity was determined by the community-based organization and included a wide range of activities (e.g., organizing a table at a health fair, conducting a workshop, putting together a mediwo2Span0 -1 -72 17.2 cm -0.01 Tw 12 0 0 cl

CHAPTER IV: AMERICAN INDIAN TRIBES AND ALASKAN NATIVE VILLAGES

In determining how EPA should improve the quality, quantity, and integrity of aquatic ecosystems, what special considerations should EPA take into account when protecting the health and safety of federally recognized tribal governments and their members?

American Indian tribes and Alaskan Native villages and their members ("AI/ANs") share many of the concerns explored in the preceding chapters. However, the particular circumstances of AI/ANs also warrant separate discussion. Tribes' political and legal status is unique among affected groups. Tribes are governmental entities, recognized as possessing broad inherent authority over their members, territories and resources. As sovereigns, federally recognized tribes have a government-to-government relationship with the federal government and its agencies, including the EPA. Tribes' unique legal status includes a trust responsibility on the part of the federal government. For many tribes, it also includes treaty rights. Other laws and executive commitments, too, shape the legal obligations owed to AI/AN tribes and villages and their members.

There are some 556 federally recognized tribal governments in the United States, including 223 Alaska Native villages.[399] At the time of the 1990 census, about 1.9 million AI/ANs lived in the United States.[400] In 1993, the Bureau of Indian Affairs estimated that 1.2 million AI/ANs lived within Indian country on lands reserved for their tribes as permanent homelands.[401] "Indian country," which includes reservations, dependent Indian communities, and Indian allotments, comprises approximately 53 million acres of land, much of which is found in remote areas of the nation.[402] The re

Part A of this chapter outlines the legal status of AI/ANs. Part B of this chapter addresses the particular issue of treaty rights. Part C of this chapter outlines issues particular to Alaska Natives. Finally, Part D examines tribes' susceptibilities and co-risk factors; while some of these will also be applicable to other affected groups, the particular combination discussed here is unique to AI/ANs.

A. LEGAL STATUS

Federally recognized Indian tribes possess a unique political and legal status that distinguishes them from all other ethnic and minority groups in the United States. Although subject to applicable federal law, tribes have long been recognized as separate sovereigns possessing broad inherent authority over their members and territories. As governments, the relationship between federally recognized tribes and the federal government is described as "government-to-government" and, in 1994 and 2000, President Clinton explicitly directed each federal agency to operate within this relationship[403] and to maintain it through meaningful consultation and coordination with tribes.[404] Among other things, the government-to-government relationship means that federal agencies may not treat Indian tribes as "interest groups" or simply as part of the general public.

The cornerstone of the government-to-government relationship is the federal government's trust responsibility to federally recognized Indian tribes to protect their status as self-governing entities and their [illegible] The extent of this responsibility is based on treaties, statutes, executive orders, and the historical relations between the federal government and tribes. In practice, the trust responsibility gives rise to distinct [illegible]

generally lack authority over Indian tribes and tribal members within Indian country, unless Congress has expressly delegated that authority to states.

Due to the special legal status of tribes, and because the jurisdictional rules applicable to Indian country left EPA unable to pursue its usual practice of delegating primary enforcement responsibility to states that so request, EPA developed special regulations and policies concerning environmental regulation on Indian reservations and the role to be played by tribal governments. On November 8, 1984, EPA adopted a formal policy, the "EPA Indian Policy for the Administration of Environmental Programs on Indian Reservations" ("Indian Policy"). The Indian Policy sets forth nine principles by which the EPA will pursue its objectives including, but not limited to EPA's commitment to work with tribes on a government-to-government basis, to recognize tribes as the primary decision-makers for environmental matters on reservation lands, to help tribes assume program responsibility for reservations, to remove existing legal and procedural impediments to tribal environmental programs, and to encourage tribal, state, and local government cooperation in areas of mutual concern. Following the adoption of the Indian Policy, every EPA Administrator since has reaffirmed the principles set forth therein. Most recently, on July 11, 2001, EPA Administrator Christine Todd Whitman again reaffirmed the Agency's commitment to the Indian Policy.

A major goal of the Indian Policy is to eliminate statutory and regulatory barriers to the assumption of federal environmental programs by Indian tribes. As originally enacted, most of the federal environmental laws mentioned tribes or Indian reservations and none provided for direct participation by tribal governments. To date, however, tribal amendments to four major federal environmental laws--the Safe Drinking Water Act, Clean Water Act, Clean Air Act, and Comprehensive Environmental Response, Compensation, and Liability Act--have been enacted.[408] Despite these amendments and the Indian Policy, federal funding for tribal environmental programs and environmental enforcement within Indian cog

As noted in Chapter 2, tribes may be involved as co-managers of cleanup and restoration efforts. For example, the Lower Elwha Klallam Tribe recently signed an agreement with federal and state agencies recognizing its role in overseeing cleanup of a contaminated (with dioxins and PCBs) area affecting important off-reservation resources.[409] The Menominee Indian Tribe of Wisconsin and the Oneida Tribe of Indians of Wisconsin are among the Natural Resource Trustees addressing cleanup and restoration of the Fox River and Green Bay.[410] In these roles, tribes will have environmental justice concerns of a different and often complex nature.

B. TREATY RIGHTS

contiguous states.[415] Indeed, as noted above, of the 556 federally recognized tribal governm

resulting environmental harms; to t

Our uncles and possibly our fathers and others who have spent time at North East Cape military site began dying of cancer-related illnesses. Our elders knew why this was happening. They knew that whatever contaminants the military left behind might have been the cause of these deaths. . . .

[We] urge NEJAC to review information on St. Lawrence Island regarding North East Cape and the Native Village of Gambell military clean-up project and recommend that St. Lawrence Island be considered a Superfund site so that there is complete restoration . . .[428]

Rosemary Ahtuangaruak, Native Village of Nuiqsut, explains:

I am from the Native Village of Nuiqsut on the north slope of Alaska, 60 miles west of Prudhoe bay and 130 miles southeast of barrow. We are an Inupiat village, which relies upon the subsistence resources for our survival. The land, sea, and air provide for us and we, in turn, protect them . . .

The long dark months of winter can have many starvation moons until the natural resources of subsistence return. The concerns now are not only can we put enough away but if the supply is safe to consume. . . . [O]ur attempts to harvest are coming back empty and our nets are getting few fish. . . .

The national need for energy is ignoring the need we have for subsisting. We are going without multiple subsistence resources for the benefit of our nation's energy need. There are not means for us to address the assault on our resources, which our elders have taught us to use. The recognition of our loss is belittled in the many public meetings, which come to our village as a public process without the incorporation of our concerns into the proper framework to address them. . . .

The people of Nuiqsut rely upon the fish harvesting and the last six years have seen the devastation of our fish stocks. . . . I feed three families with the harvesting I do and they go without as well as me. I eat fish or whale two times a day and 5-7 days out of the

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week. I have to dig through the ice and in three days, I got only 1-2 fish. This cannot feed my family as well as the extended family members. We are concerned about the quality of the fish, as the meat has changed, they are yellow and not as fat as usual, and they have a bitter taste. Every fisherman in our village has faced the same hardships. We depend on the healing qualities of this resource and now it is being considered a bad thing. The social, economical, cultural, and medicinal [aspects] of our resources are needed to sustain our health . . .[429]

Dr. Delores Garza, Alaska Native Science Commission, explains:

In rural Alaska we have many communities that are still relegated to the "honey bucket." That means that there is no sewer system. The sewage goes into a five-gallon white-lined bucket that's lined with a garbage bag. It goes out to the dump and it's thrown out on the surface. In Southwestern Alaska, primarily in the Yupik area where you have communities built in areas that you might consider bogs, they have high water tables. The sewage is leaching and is contaminating the fresh water source. . . . So you have communities that now may have 70, 80 percent unemployment trying to find the gas money to take their boat upriver or to take their four-wheeler farther out to get fresh water, and while Alaska has worked to reduce the number of communities that have to rely on this honey bucket system, that is still a big issue in many communities in Southwestern Alaska.[430]

Thus, while Alaska Native villages and their members may share many of the concerns articulated by various affected groups throughout this Report, it is critical that EPA and other agencies listen and attend to the particular issues articulated by Alaska Native villages and their members. And, here as elsewhere, this will mean recognizing that there will often be differences *among* the concerns of various Alaska Native villages.

D. TRIBES' UNIQUE SUSCEPTIBILITIES AND CO-RISK FACTORS

Commonly cited statistics all seem to agree that AI/AN's economic wealth, public health, and education are the worst of any group in the nation. Poverty and unemployment rates among AI/ANs are the highest for any ethnic group in the country, and education, per capita income, and home ownership are among the lowest.[431] One out of every three AI/ANs lives

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[429]Rosemary Ahtuagaruak, Native Village of Nuiqsut, Testimony to the National Environmental Justice Advisory Council, Dec. 4, 2001 (Written Testimony).

[430]Delores Garza, Alaska Native Science Commissioce

below the poverty line; approximately 90,000 AI-8(oximat)Tj2.71.2 02v fami1.2 0 3.8.71.2 0es aat

of the country, AI/ANs have poorer survival rates from cancer than do whites, African Americans, Hispanics, and Asians.[438]

AI/ANs are particularly susceptible to health impacts from pollution due to their traditional and cultural uses of natural resources and, in fact, AI/ANs "have greater exposure risks than the general population as a result of their dietary practices and unique cultures that embrace the environment."[439] Fishing, hunting, and gathering often are part of a spiritual, cultural, social, and economic lifestyle, and the survival of many AI/ANs depends on subsistence hunting, fishing, and gathering. In some instances, the right to engage in these activities is legally protected by treaty. Additionally, many AI/ANs also use water, plants, and animals in their traditional and religious practices and ceremonies. As a result, contamination of the water, soil, plants, and animals and the subsequent accumulation of these contaminants in the people through ingestion, inhalation, and contact not only endangers the health of AI/ANs, but also threatens the well-being of their future generations[440] and undermines the cultural survival of tribes and Alaska Native villages. For example, tribes near the Hanford Nuclear Reservation have been working with the Agency for Toxic Substances and Disease Registry to design health assessments focusing on exposure effects from food consumption and other activities. These tribes want to learn if the Hanford releases affect native food items and local materials used in tribal products like storage and cooking baskets, mats, and clothing.[441] Similarly, tribes located in coastal northern California are concerned about the pesticide exposure of some 300 traditional basketmakers who gather their own materials from the forests and roadsides. Basketweavers are exposed to pesticides as they tend and gather basketry materials; as they weave (weavers often hold one end of the grasses

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[438]K. Marie Porterfield, *American Indian Cancer Statistics Under Reported*, Indian Country Today C-1 (Jul. 26, 2000).

[439]See Agency for Toxic Substances and Disease Registry, *Focus on American Indian and Alaska Native Populations* 1-2.

[440]A number of studies have shown that children are uniquely susceptible to pollution and contaminants. For example, since 1992, the Agency for Toxic Substances and Disease Registry has funded research in the Great Lakes states focusing on the health effects of high risk populations, including American Indians, from persistent toxic substances found in fish. One study found that newborns born to mothers who consumed only 2.3 PCB-contaminated Great Lakes fish meals per month scored lower on the Neonatal Behavioral Assessment Scale. See Agency for Toxic Substances and Disease Registry, *Focus on American Indian and Alaska Native Populations* 2-3. Additionally, in Oklahoma, Indian children also suffer harm from their environment. The Tar Creek Superfund Site, a former lead and zinc mine, occupies 40 square miles within the boundaries of the former Quapaw Indian Reservation. Both the Quapaw Tribe's powwow grounds and campgrounds are contaminated from mine tailings, and the EPA Region 6 reports that approximately 25% of the Quapaw children have elevat

APPENDIX A: NEJAC EXECUTIVE COUNCIL MEMBERS

List of Members by Stakeholder Category

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Patrick

APPENDIX C: FISH CONSUMPTION WORK GROUP PROPOSALS

The following proposals were developed by the National Environmental Justice Advisory Council (NEJAC) Fish Consumption Work Group (FCWG) for deliberation and action by the NE

FCWG proposes that EPA work in particular with those affected groups for which few or no empirical data exist, ensuring that studies are undertaken systematically to provide a full account of all affected groups' consumption practices. FCWG notes that, among other things, an appropriate fish consumption rate must account for affected groups' different consumption frequencies or patterns due to seasonal availability and other cultural considerations, particularly those that result in acute or peak exposures.

I-2. The FCWG similarly proposes that EPA account for other aspects of communities' and tribes' different exposure circumstances when it conducts these various activities, including practices that mean different species are consumed, different parts are used (e.g., the highly contaminated hepatopancreas of crabs, often consumed by Asian and Pacific Islanders and by other island people), and/or different preparation methods are employed than those typically assumed by agencies.

I-3. The FCWG proposes that EPA remedy, in measurable and reportable ways, the disparities in the level of protection provided by water quality criteria and standards, cleanup [illegible]

e. EPA addresses relevant cross-media contamination (e.g., mercury emissions to air);

f. EPA undertakes relevant programs and initiatives (e.g., the Persistent Bioaccumulative and Toxic (PBT) Control Program); and

g. EPA provides other relevant guidance (e.g., its Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories).

3. FCWG also proposes that EPA act expeditiously to issue CWA § 304(a) water quality criteria that reflect affected groups' consumption and use practices; FCWG notes that EPA has sufficient data documenting the exposure circumstances of communities of color, low-income communities, tribes, and other indigenous peoples to warrant the issuance of revised criteria and emphasizes that it is unacceptable that criteria are still in effect that employ the outdated 6.5 grams/day fish consumption rate.

4. Specifically, FCWG proposes that EPA take a more active role in ensuring that state and tribal water quality standards are protective of affected groups' consumption and use practices, by assisting states, tribes, and affected groups in their data-gathering efforts; by encouraging states and tribes to employ protective assumptions (e.g., in reliance on EPA's Ambient Water Quality Criteria Methodology), even in advance of federally-mandated deadlines; and, crucially, by disapproving state and tribal standards that do not adequately account for these groups' different practices.

5. FCWG proposes that EPA work together with affected groups to revise its research methods and protocols to ensure that they result in the accurate depiction of these groups' exposure circumstances.

6. FCWG proposes that EPA should then produce and distribute a manual of methods and protocols for determining health risks for persistent and bioaccumulative toxics, for use by tribes and other affected groups who wish to employ local data in investigating and documenting human health risks in their own communities from the consumption and use of fish, shellfish, and other aquatic resources. This manual should include methods that permit analyses of both acute and chronic effects, and incorporation of multiple exposures and cumulative risks.

The contamination of fish, aquatic plants, and wildlife is also troubling to many communities of color, low-income communitiese commun0843 0 Tties

Focused Proposals

I-4

1. In each instance in which these issues are implicated, FCWG proposes that EPA work with the affected group(s) to develop a process for enhancing EPA's understanding of the particular cultural, traditional, religious, historical, economic, and legal context relevant to EPA's decisions in that case. These efforts should be among the first of EPA's fact-finding undertakings, e.g., for each cleanup of contaminated water and sediments under CERCLA. Among other things, such efforts should attend to:

    a. The existence of applicable treaties, e.g., many tribes' treaty-guaranteed rights to hunt, fish, and gather;

    b. The

Focused Proposals

I-5 through I-6

1. FCWG notes that suppression effects need to be accounted for in gathering and interpreting data, and proposes that EPA work with communities of color, low-income communities, tribes and other indigenous peoples to document the existence and extent of suppression effects due to contamination and/or completion. In many cases, increased research documenting the particular cultural, traditional, religious, historical, economic, and legal contexts in which these groups consume and use aquatic resources, proposed above in Proposal I-4(3), will go hand in hand with research documenting suppression effects.

2. FCWG proposes that wherever suppression effects are believed to be at work, EPA work together with the affected group to develop appropriate baseline levels for use when EPA provides guidance for states and tribes, and when EPA sets and approves water quality standards, cleanup standards, and other relevant environmental standards. This proposal might be applicable, for example, to EPA's current cleanup work at the Superfund Site on the Duwamish Waterway.

Current risk assessment methods do not adequately account for susceptibilities and co-risk factors that affect individuals' responses to environmental contaminants. These factors include underlying health status (including existing body burdens), baseline diet quality, genetics, socioeconomic status, access to health care, limited English proficiency, age, gender, pregnancy, lactation, and other factors.

Overarching Proposal

I-7. FCWG proposes further research into the extent to which susceptibilities and co-risk factors are clustered in certain subpopulations, including the extent to which there are disparities in current health status and body burden. To the extent that clusters emerge relevant to communities of color, low-income communities, tribes, or other indigenous peoples, FCWG proposes that EPA incorporate these factors into its risk assessment, risk management and risk communication efforts.

Focused Proposal

I-7

1. FCWG proposes that EPA undertake research to permit a more thorough understanding of these susceptibilities and co-risk factors and how they are distributed between communities.

2. FCWG proposes that, to the extent that clusters emerge relevant to affected groups, EPA develop methods to incorporate them into its risk assessment, risk management and risk communication efforts.

Overarching Proposals

I-8. Where the nature of cumulative effects are known, FCWG proposes their incorporation into EPA's environmental policy and specific standard setting practices. Where they are not well known, FCWG proposes this as a high priority area for research, given that the potential for cumulative effects are perhaps where the greatest danger to human health lurks.

I-9. Although EPA has made some inroads in accounting for multiple exposures and cumulative risks, it is FCWG's view that EPA simply must take a more aggressive, holistic, and integrative approach, especially where fish consumption levels are very high for communities of color, low-income communities, tribes, and other indigenous peoples and where the mix of contaminants to which these people are exposed may be highly toxic.

Focused Proposals

I-8 through I-9

1. FCWG proposes that EPA study the health impacts of chemical mixtures present in fish tissues, given that consumption and use of fish tissues represent one of the most significant and widespread instances of real life (as opposed to hypothetical) environmental exposures to chemical mixtures. FCWG further proposes that EPA incorporate the results of such studies in its risk assessment, risk management, and risk communication efforts.

2. At the same time, FCWG proposes that EPA avail itself of existing data characterizing the health risks of PCB-mercury mixtures present in fish tissues (e.g., data from the Seychelles and Faroe Islands

2. FCWG proposes that EPA, together with communities of color, low-income communities, tribes, and other indigenous peoples, work to explore and specify the contours of the precautionary principle. FCWG notes that there is a considerable and growing body of work to this end, and proposes that EPA draw on this body of work and support efforts further to develop it.

3. FCWG proposes that EPA actively identify and make use of opportunity for precautionary approaches within existing legislative and other authority, and that EPA consider and advocate appropriate changes to existing laws in order to facilitate precautionary approaches.

4. FCWG notes that preventive and precautionary measures will often at the same time reduce costs to regulated entities (e.g., savings through reduced use of toxic inputs, savings through reduced need to treat and dispose of toxic outputs); these cost savings will be particularly important where the particular regulated entities are an important source of jobs for communities of color, low-income communities, tribes and other indigenous peoples. FCWG proposes, therefore, that EPA make it a priority to identify and undertake prevention opportunities where this is the case.

Chapter Two

Aquatic environments remain contaminated, despite the existence of considerable environmental legal authorities designed to address contamination. About 40% of the waters assessed in the United States still do not support "fishable-swimable" uses; about 10% by volume of all sediments under U.S. waters are seriously contaminated; the list of contaminated soils, sediments, and surface waters yet to be cleaned up is long; and the number of fish consumption advisories in effect has increased steadily over the last several years. Contaminated aquatic environments are the result of releases to various enviro

proposes EPA to ensure that reductions in mercury accrue equitably to all, and that mercury reduction efforts do not have the effect of creating "hot spots" or other disparate impacts.

II-4. Further, FCWG proposes that prevention and cleanup of dioxin address all significant sources, and that cleanup of PCBs, DDT, and chlordane (production of which are banned), address all significant sources. Similarly, FCWG proposes that prevention and cleanup of all Persistent Bioaccumulative Toxins(PBTs)/Persistent Organic Pollutants (POPs) address all significant sources.

II-5. Finally, because the concentrations in aquatic organisms of mercury and some other contaminants of concern, such as lead, cannot be reduced by cleaning, trimming, and or cooking, FCWG proposes that regulatory authorities should not rely on advisories suggesting these methods as a way to protect public health.

Focused Proposals

II-1 through II-5

1. FCWG proposes that EPA work expeditiously to *prevent* and *reduce* the release of contaminants of concern and to *clean up* and *restore* aquatic ecosystems contaminated by these pollutants. FCWG emphasizes that, in every instance, EPA must set the relevant environmental standards at levels that protect highly-exposed populations, including communities of color, low-income communities, tribes, and other indigenous peoples. FCWG also emphasizes that, in every instance, EPA account for the particular cultural, traditional, religious, historical, economic, and legal contexts in which these affected groups consume and use aquatic resources.

Specifically, FCWG proposes:

a. With respect to mercury:

(i) EPA address these concerns and expedite the issuance of a Maximum Achievable Control Technology (MACT) standard for emissions from utilities, including coal-fired power plants (a MACT standard for utilities is not scheduled to be proposed until December, 2003; meanwh

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d. With respect to these and other contaminants of concern:

(i) EPA begin expeditiously to include additional contaminants of concern on its list of Persistent and Bioaccumulative Toxics (PBTs), including lindane, endosulfan, lead and a host of other highly toxic, persistent, and bioaccumulative substances, especially those affecting the aquatic resources on which communities of color, low-income communities, tribes, and indigenous peoples depend;

(ii) EPA, under the auspices of its PBT Initiative and otherwise, place a priority on efforts to reduce and eliminate the use of PBTs, and to clean up and restore those ecosystems already contaminated with PBTs.

2. FCWG proposes that, similarly, with respect to its efforts under the Clean Water Act and other statutes addressing water quality and quantity, EPA protect highly-exposed populations, including communities of color, low-income communities, tribes, and other indigenous peoples and account for the particular cultural, traditional, religious, historical, economic, and legal contexts in which these affected groups consume and use aquatic resources.

Specifically, FCWG proposes that:

a. EPA issue guidance clarifying that water quality standards (WQS), whether issued by states, tribes or the EPA, account to the greatest extent possible under law for these affected groups' different consumption and use of aquatic resources by, among other things:

(i) requiring "designated uses" to reflect appropriate rates of consumption and use of fish, shellfish, plants and wildlife by subsistence fishers and other higher-consuming groups;

(ii) requiring that such "designated uses" be recognized not only for those water bodies where subsistence and other fishing currently occurs, but also for those water bodies where subsistence and other fishing *would* occur, but for the contamination and depletion that give rise to suppressed consumption (described in Chapter One of the Report);

(iii) requiring that designated uses support cultural, traditional, and ceremonial uses of aquatic resources, particularly where the quality of the relevant water bodies affects tribal and other culturally important resources (whether located on- or off-reservation);

(iv) requiring triennial reviews of water quality standards under CWA § 303(c)(1) to consider whether state or tribal criteria protect subsistence fishers and other higher-consuming groups where subsistence and other fishing exists, and stipulating that EPA disapprove any criteria that do not protect these groups;

b. EPA issue a Total Maximum Daily Load (TMDL) rule that protects highly-exposed populations, including communities of color, low-income communities, tribes, and other indigenous peoples and accounts for the particular cultural, traditional, religious, historical, economic, and legal contexts in which these affected groups consume and use aquatic resources – especially given that the impaired waters affected by the TMDL rule occur primarily and disproportionately in locations that impact these affected groups;

c. EPA issue a rule for Large Feedlots (also called Concentrated Animal Feeding Operations (CAFOs)) that protects the health and resources of communities located

religious, historical, economic, and legal contexts in which these affected groups consume and use aquatic resources, by among other things:

(i) imposing appropriate permit conditions, when EPA possesses the permitting authority;

(ii) disapproving permits that do not impose appropriate conditions, when states or tribes possess the permitting authority; and

(iii) incorporating the NEJAC proposals regarding permitting: *Environmental Justice in the Permitting Process: A Report from the Public Meeting on Environmental Permitting, Convened by the National Environmental Justice Advisory Council in Arlington, Virginia, No ironmental Permitting, Conve ned byTj0.*

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(i) through expanded cross-program initiatives; and

(ii) when it considers the residual risks after the application of MACT, as part of the 10-year reviews required under CAA § 112(f);

c. EPA better control NOx to prevent acidification and eutrophication;

d. EPA make every use of its authority under the Title V Air Operating Permit program to protect highly-exposed populations, including communities of color, low-income communities, tribes, and other indigenous peoples and account for the particular cultural, traditional, religious, historical, economic, and legal contexts in which these affected groups consume and use aquatic resources, by among other things:

(i) imposing appropriate permit conditions, when EPA possesses the permitting authority;

(ii) disapproving permits that do not impose appropriate conditions, when states or tribes possess the permitting authority; and

(iii) incorporating the NEJAC proposals regarding permitting: *Environmental Justice in the Permitting Process: A Report from the Public Meeting on Environmental Permitting, Convened by the National Environmental Justice Advisory Council in Arlington, Virginia, Nov. 30-Dec. 2, 1999.*

4. FCWG also proposes that, with respect to its efforts under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and other statutes addressing cleanup and restoration of contaminated environments, EPA protect highly-exposed populations, including communities of color, low-income communities, tribes, and other indigenous peoples and account for the particular cultural, traditional, religious, historical, economic, and legal contexts in which these affected groups consume and use aquatic resources.

Specifically, FCWG proposes that:

a. EPA expand its current efforts under its Contaminated Sediment Management Strategy so that in addition to assessing the nature and extent of contamination sediments, it focuses on and prioritizes cleanup and restoration of contaminated sediments, and that in the process, EPA attend to disposal issues raised by contaminated sediments that have been removed;

b. EPA conduct robust cleanups and decline to employ "use-restricted" or "risk-based" methods for sites affecting communities of color, low-income communities, tribes, and other indigenous peoples, and that, in any event, EPA refuse to rely on projected or current reductions in fish, shellfish, and aquatic resource consumption and use as a justification for less protective cleanup standards or assumptions;

c. EPA work through every avenue possible to oppose efforts to eliminate funding for CERCLA's "Superfund;" to ensure that, to the extent these efforts are successful, EPA nonetheless continues to place a high priority on cleanup and restoration of those sites contaminated with pollutants likely to bioaccumulate in the fish, aquatic plants, and wildlife consumed or used for subsistence, traditional, cultural or religious purposes; and to ensure that any resulting delay in addressing such sites not be used to justify less protective cleanup standards;

d. EPA work to retain and effectuate the "polluter pays" principle under CERCLA, by, among other things, looking to potentially responsible parties (PRPs) to ensure funding for full restoration of those ecosystems that support fish, shellfish, aquatic plants and wildlife on which affected groups rely; ensure funding for adequate communication with affected tribes and communities and; if appropriate from the perspective of those affected, funding for alternatives that may serve as substitutes for the contaminated resources until such time as the restoration is complete (Please note, however, that such alternatives will NOT be appropriate from the perspectives of some affected groups – the provision of alternative resources, for example, is not endorsed by the Indigenous Peoples Subcommittee);

e. EPA improve cooperation among EPA offices on cleanup and restoration strategies, particularly initiatives targeted at restoring those aquatic ecosystems that are contaminated with pollutants likely to bioaccumulate in the fish, aquatic plants, and wildlife consumed or used for subsistence, traditional, cultural or religious purposes;

f. EPA revise its Principles for the Ecological Restoration of Aquatic Resources to focus not only "on scientific and technical issues"[450] but also on the historical, cultural, legal, and social contexts within which restoration takes place; that EPA revise these Principles to reflect the interrelation between "physical"structures and functions on the one hand and social and cultural structures and functions on the other hand, such that restoring and maintaining "ecological integrity" includes restoring and maintaining cultural integrity; and that EPA work with tribes and other affected groups to undertake "eco-cultural restoration."[451]

5. FCWG also proposes that, with respect to its efforts under the Toxic Substances Control Act (ToSCA), and other statutes regulating new and existing chemical substances, EPA protect highly-exposed populations, including communities of color, low-income communities, tribes, and other indigenous peoples and account for the particular cultural, traditional, religious, historical, economic, and legal contexts in which these affected groups consume and use aquatic resources.

Specifically, FCWG proposes that:

a. EPA's Office of Pesticides, Prevention, and Toxic Substances (OPPTS) flag to its Office of Water (OW) those chemicals that it registers that are expected to be produced or used in high volume and that will potentially affect aquatic ecosystems; OW should then work with OPPTS to secure additional and higher level testing, and where potential contamination of fish and aquatic resources is suspected, to ensure that additional testing and rulemaking are expedited.

6. FCWG also proposes that, with respect to its efforts under other statutory authorities, EPA protect highly-exposed populations, including communities of color, low-income communities, tribes, and other indigenous peoples and account for the particular cultural, traditional, religious, historical, economic, and legal contexts in which these affected groups consume and use aquatic resources.

Specifically, FCWG proposes that:

a. EPA issue a rule regulating coal combustion waste under the Resource Conservation and Recovery Act (RCRA), especially given the presence of arsenic in this waste and the fact that, in many places, this waste is still being disposed of in unlined facilities and leaching into drinking water sources;

b. EPA tighten hazardous waste rules to prohibit toxic wastes, such as dioxins, mercury, lead, cadmium, and other contaminants of concern from being "recycled" into fertilizer, and eliminate the exemption for steel mill waste;[452] and that EPA rewrite its ten-year-old treatment standard for hazardous waste, ensuring that the new rule does not create disincentives (such as those created by permissive provisions regarding recycling) for developing and implementing improved treatment technologies.

7. In undertaking compliance and enforcement efforts affecting the quality of aquatic ecosystems, FCWG proposes EPA to improve its cooperation, coordination, and collaboration with states and tribes, and, in the case of federally recognized tribes, to improve its consultation with tribal governments.

In setting or approving standards and in making other risk management decisions meant to address these contaminants, EPA aims for a level of risk to human health deemed "acceptable" or safe. That is

[450]U.S. EPA, Principles for the Ecological Restoration of Aquatic Resources (2000), available at www.epa.gov/owow/wetlands/restore/principles.html.

[451]See, e.g., Jeffrey P. Thomas, Director, Forest Resource Protection Program, Fisheries Department, Puyallup Tribe of Indians, Testimony to the National Environmental Justice Advisory Council, Dec. 4, 2001 (Written Comments) (describing the potential role for the Inter-Tribal Cultural Advisory Group (in Washington) to this end).

[452]Toxic wastes from pulp and paper mills, steel mills, tire incinerators and cement kilns is currently "recycled" into fertilizer and applied to crops, grazing lands and gardens. This waste has been found to contain dioxins, mercury, lead, cadmium, and other contaminants of concern. Although hazardous waste regulations address this practice, (1) they may still permit unacceptable levels of these contaminants, and (2) they contain a loophole that exempts steel mill waste. See, e.g., Washington Toxics Coalition, Visualizing Zero: Eliminating Persistent Pollution in Washington State (2000).

to say, for carcinogens or non-threshold contaminants, EPA in effect determines that it will view the increased incidence of cancer in some number of humans (e.g., 1 out of every 1,000,000 humans) to be "acceptable," and will permit environmental standards to be set accordingly. To the extent that EPA's guidance and standards deem a greater level of cancer risk to be "acceptable" for "more highly exposed subgroups" than for the general population, this is inequitable and deeply troubling as a matter of environmental justice, given that we *know* – and EPA *knows* – that it is people of color, low-income people, American Indians/Alaska Natives, and other indigenous people that comprise the "more highly exposed subgroups." Moreover, in the view of FCWG, human lives are not expendable. EPA should strive for standards that do not find "acceptable" the increased risk of cancer for *any* humans.

Overarching Proposals

II-6. FCWG proposes that as a general matter, EPA should ensure that the federal environmental laws are implemented and enforced equitably and effectively to protect the health of all people consuming fish, aquatic plants, and wildlife.

II-7. FCWG proposes that substantive environmental standards be set so as to provide equitable levels of protection to all – levels that protect not only the health of the general population, but also the health of people of color, low-income people, American Indians, Alaska Natives, Native Hawaiians and other Pacific Islanders, and other indigenous people located within the jurisdiction of the United States.

II-8. Specifically, FCWG proposes that EPA rescind any guidance setting "acceptable" risk for subsistence and other.52 0 Td(up)T TdTc lhj8.56d0iMCID 3e4Pmy Tettingand0eptable" risk fore.g.TwTeT642

Focused Proposals

II-10

1. FCWG proposes EPA to imp

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Specifically, FCWG proposes that:

a. EPA work together with affected groups to identify useful alternatives for those who would avail themselves of alternative means of catching or consuming fish or alternative ways of meeting at least some nutritional needs;

b. EPA consider, *together with those affected*, whether there is a role for providing such things as subsidized construction of alternative fishing ponds; subsidized bus passes or other transportation vouchers to alternative fishing sites; subsidized vouchers for purchasing uncontaminated fish; subsidized vouchers for purchasing alternative sources of protein; subsidized aquaculture; or other measures to meet affected groups' immediate needs. *However, FCWG emphasizes that EPA should proceed cautiously here, working closely with the particular affected group(s) and attending to the possible negative effects of such alternatives* (e.g., government "surplus" foods are notoriously high in fat and sugar and providing such foods could exacerbate existing health conditions – such as diabetes, the incidence of which is much greater among N

(B) Ensure that advisories present information in a form that is culturally appropriate and readily understood by the fisher and fish consumer (i.e. no jargon and in the language(s) of the affected communities, utilizi

similar rights of treaty tribes elsewhere to fish, hunt and gather). Other laws and executive commitments, too, shape the legal obligations owed to tribes, American Indian

Focused Proposals

IV-2

1. FCWG proposes EPA to promote the federal policy of tribal self-determination and self-sufficiency by building the environmental protection and environmental health capabilities of federally recognized tribes so that they can participate fully and effectively in the protection of the human health and environment of AI/AN communities. Equitable funding for tribal programs is critical.

2. FCWG proposes EPA to promote collaborative efforts to identify the various environmental exposures affecting each AI/AN community as an ongoing task, undertaken in consultation with federally recognized tribes. Specifically, data about the susceptibilities of AI/AN communities to various environmental agents is needed to help these communities understand and ameliorate some of their excess and disproportionate risk of exposure.

3. FCWG emphasizes EPA's obligation to consult with federally recognized tribes and involve members of AI/AN communities in designing, planning, and implementing specific environmental health research that reflects not only the traditional and cultural practices of such communities, but also their needs and concerns. FCWG proposes EPA to ensure that environmental health research data is reported back to tribal governments and AI/AN communities promptly and in an understandable manner.

4. Whenever possible and appropriate, FCWG proposes EPA to include state and local governments in collaborative efforts with tribes:

   a. to address human health and environmental justice issues within Indian country and Alaska Native villages. Because pollution does not respect jurisdictional boundaries, collaborative efforts in the human health and environmental justice arena similarly should eclipse political differences. Additionally, states must be swayed to incorporate environmental justice principles and goals into their laws, policies, and practices;

   b. to collect environmental and health data relevant to Indian country and Alaska Native villages. For example, state environmental protection agencies may have access to monitoring information on off-reservation facilities that may be causing or contributing to adverse health consequences in AI/AN communities, or the aquatic ecosystems used by these communities, located nearby, down-stream, and/or down-wind;

   c. to ensure that state and locally issues fish advisories that may affect tribal treaty fishers or tribal fish resources are communicated to tribal governments.

5. FCWG proposes EPA to be proactive in helping federally recognized tribes identify financial and technical resources throughout the federal government to address their environmental concerns and related health needs. By marshaling all available resources, federal agencies can promote "one-stop" shopping for tribal environmental and health-related programs and transcr cvdo2s1e0 ronnse(ryne)Tj1.8313 0 Td(ses)j1.1081.8313

Focused Proposals

III-3

1. Consistent with its Indian policy and the federal trust responsibility, FCWG proposes EPA to work with Alaska Native villages in developing effective and appropriate strategies to address the special circumstances that exist in Alaska and to protect the health of Alaska Natives from environmental threats, particularly those threats associated with their extensive subsistence activities.

2. Consistent with its policy of promoting tribal self-determination and self-suffic