

Policy Reviews and Essays

Speaking Like a State: Environmental Justice and Fish Consumption Advisories

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Government agencies fail to communicate effectively to key audiences about the hazards of eating self-caught, contaminated fish. As a result, government is not protecting African Americans, Latinos, and other ethnic groups that are disproportionately exposed to chemicals that contaminate the catch of recreational anglers. This review argues that remedying this environmental injustice requires agencies to change “government-speak” (bland, generic communication) to communication that is culturally relevant to minority audiences. We summarize research indicating that these audiences understand the meaning and significance of properly targeted risk communication. Finally, we explore the organizational problems within government that may hinder effective communication, perpetuating this environmental injustice.

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Because government agencies fail to communicate effectively to key audiences about the hazards of eating contaminated fish, government is not protecting African Americans, Hispanics, and other ethnic groups that are disproportionately exposed to polychlorinated biphenyls (PCBs), mercury, and other chemicals that contaminate the catch of recreational anglers¹ (Connelly et al. 1996; Reinert et al. 1996).

The charge of environmental injustice, the inequitable distribution of environmental risks (Johnson 1995), is usually leveled at the siting of industrial or hazardous waste facilities that are large, visible projects (Preston et al. 2000). In contrast, anglers and their families are less obvious victims of environmental discrimination. Although government agencies are pummeled for permitting highly visible sources of pollution, these victims of contaminated fish consumption, developing fetuses in particular, are being affected by something as mundane as a fried fish dinner.

The goal of this article is to build the following argument: To remedy environmental injustice related to consumption of contaminated fish, agencies must change “government-speak” (bland, generic communication) to communication that is culturally relevant to minority audiences. However, changing communication practices will require changes in government agencies themselves. To make this argument, we (a) review research demonstrating that the risks from eating self-caught fish from contaminated waters disproportionately affect minorities, constituting an environmental injustice; (b) review research showing that generic “government-speak” does not communicate effectively about contaminated fish to communities at risk; (c) review research illustrating how agencies could communicate this information more effectively; (d) propose a conceptual framework (Scott 1998) that may account, in part, for why environmental agencies “speak like states”; and (e) argue that improving communication about fish advisories will depend on changing agencies’ organizational systems that impede effective communication to at-risk populations.

Risks From Fish Consumption

Fish can provide protein and other important health benefits in the form of omega-3 acids, which reduce cholesterol levels and cardiovascular disease (e.g., Anderson and Wiener 1995). However, contaminants in some fish can pose a threat, particularly to fetuses and young children (e.g., National Research Council 1991). For example, there is a positive relationship between contaminant levels in fish, fish consumption by pregnant women, and deficits in neurobehavioral development in children (e.g., Weihe et al. 1996; Jacobson et al. 1989). Substantial research indicates that poor, African American, and Hispanic anglers are disproportionately exposed to contaminants that have adverse health effects, especially to high-risk populations such as pregnant women and children (e.g., Connelly et al. 1996; Reinert et al. 1996).

Researchers have found a significant relationship between race, ethnicity, and several different aspects of fishing including: (1) the percentage of people who consume the fish they catch (Burger et al. 1999a), (2) the number of meals containing fish that are eaten per week (Burger et al. 1999b), (3) the amount of fish in the meal (Burger et al. 1999b), and (4) the species that are eaten (Floyd and Johnson 2002).

For example, studies on the Newark Bay indicate that the amount of fish consumed from the Bay was negatively correlated with income (Burger 2002). While 51% of white fisherman ate their catch, 60% of Hispanics, 76% of Asians, and 78% of African Americans did (chi-square 14.6, $p < .005$) (Burger 2002). Over 28% of African Americans interviewed and more the 20% of Hispanics ate more than the

amount the U.S. Environmental Protection Agency (EPA) stipulates as subsistence level (1401 g/month), while only 17% of whites and 12% of Asians did (chi-square 8.4, $p < .05$).

These researchers (Burger et al. 1999b) also found that, on a portion of the Savannah River passing through parts of Georgia and South Carolina, African Americans consume more fish than whites, with a higher proportion of African Americans consuming over 19 kg/year, the threshold South Carolina uses to compute the risk for recreational fisherman (Burger et al. 1999b). The type, as well as the amount, of fish consumed differs. As a result, at least 25% of African Americans interviewed on this stretch of river were found to exceed the Hazard Index, a risk assessment measure above which adverse health effects are deemed possible. Due to a variety of factors, including individual susceptibility, individuals over this Hazard Index will not necessarily become ill. However, this figure does indicate a *population* risk that is noteworthy.

The studies on consumption of contaminated fish in other areas of the country also show that risks of consumption fall disproportionately on African Americans, Native Americans (Harris and Harper 1998), and other minority groups (Toth and Brown 1997). A study in the Detroit area found that Native Americans consumed 36% more and African Americans 13% more of their catch than whites (West et al. 1992). Thus, there is significant evidence this consumption of fish fits the definition of environmental injustice: environmental and health problems disproportionately faced by those with the least power (Fritz 1999; Johnson 1995).

Communicating About Fish

Fishing is more than a means of acquiring food; it is also a means of socializing and relaxing that may not even be tied to subsequent sharing of a meal. Therefore, non-subsistence anglers' consumption patterns may be amenable to change. For example, anglers can practice "catch and release" or eat different types of self-caught fish. In the Newark Bay, for example, certain species of fish, such as fluke, are safer to eat than other species such as eel, striped bass, and blue crab. Indeed, research in both the Newark Bay Complex and along the Savannah River indicated that people say they would change their behavior following the presentation of information on the hazards of eating some species (or sizes) of fish (Burger and Waishwell 2001; Burger et al. 2003; McDermott et al. 2003).

The New Jersey case not only illustrates the problems of exposure caused by consumption patterns of minorities, but also the communication problems. Since the 1980s, the New Jersey Department of Environmental Protection (NJDEP) has disseminated advisories in the form of signs, press releases, web sites, and the *Fish and Game Digest*, a publication distributed to anglers where they buy fishing licenses. However, fishing licenses are not required for salt water or estuaries (such as the Newark Bay). Moreover, the *Fish and Game Digest* warnings are so detailed that they are difficult for anglers to interpret—even if they can read advanced-level English, which many cannot. Signs are pulled down quickly, press releases often do not end up as news articles, and web sites have limited audiences. Hence, existing means of communication were unlikely to reach many of those fishing in the Newark Bay Complex (Pflugh et al. 1999). A study of the Newark Bay complex found that 70% of whites were aware of warnings about consumption as compared to only 60% of African Americans and 35% of Latinos (chi-square 27.8, $p < .0005$).

(Burger et al. 1999a). This study also showed that African Americans and Hispanics were also less likely to know the effects of contaminants on unborn and young children. In addition, because more anglers are male (Pflugh et al. 1999), the women who prepare and eat the fish are also less likely to know of warnings about them.

Aware of the problem, the NJDEP conducted different forms of outreach and social science research to increase the effectiveness of advisories. However, research suggests that the awareness of advisories had not increased between 1995 and 2000, likely due to failure to reach the appropriate people with information they find sufficiently understandable and credible (Burger 2002).

Research on the Savannah River shows a similar pattern. South Carolina has issued fish consumption advisories as a result of mercury contamination from industry and more recently has raised concerns about radionuclides. Yet interviews with anglers indicate only 50% of African Americans had heard warnings, compared to 66% of whites (chi-square 5.5, $p < .02$) (Burger 1998). Studies in other areas of the country also suggest risk communication problems. African Americans are less likely to know about fish advisories than other ethnic groups in the Everglades (Fleming et al. 1995). A study of fish advisories in the Great Lakes found that "existing advisory programs are less effectively reaching women, nonwhites, and persons with lower level of educational attainment" (Tilden et al. 1997).

Our examination of the web sites of state departments of health and environment found that at least 44 states issued fish advisories during 2002, covering substances such as mercury, PCBs, lead, dioxin, and various agricultural chemicals (e.g., dieldrin). As of the summer of 2002, out of 44 states with advisories, 37 had guidelines specifically for women and children, but only 4 states had informational materials specifically geared toward families or women and children.

Success of Targeted Communication Approaches

Changing behavior concerning risks that are familiar (such as eating fish) is notoriously difficult (e.g., Slovic 1987; Weinstein 1989). However, as we describe next, studies have suggested that fish advisories targeted at specific audiences are more effective. These fish advisories have taken into account the cultural background of the potential readers, literacy levels, and other factors.

For example, in New Jersey, an interdisciplinary team of researchers decided that instead of relying on the state's generic advisories meant to appeal to any angler, they would develop outreach materials targeted at women of childbearing age, particularly Latinas (Burger et al. 2003). By doing so, they hoped to reduce exposure of those most at risk—unborn children, infants, and young children. Because women are more likely to be responsible for selecting and cooking what the family eats, the team was targeting not only those most at risk, but also those most likely to act on the information. In addition, the effort aimed specifically at women because of the likelihood that during and following pregnancy might be the teachable moment, the time when women might be most open to new information and behavioral changes.

Before developing material, we explored channels most likely to reach this audience, focusing on networks for providing prenatal care as the most likely point of contact with the public health and assistance system for poor women, undocumented immigrants in particular. By partnering with organizations such as the Supplemental Nutrition Program for Women, Infants, and Children (WIC), hospital and community health offices, and Union County Cooperative Extension, the team

received valuable advice about the choice and development of appropriate communication media. (For a fuller description of this process see McDermott et al. [2003].)

The team composed messages and graphics (Figure 1) for both the lesson plan and accompanying brochure (Center for Environmental Communication 2002) that were likely to resonate with this audience of women. The text, which reads at the fifth grade level, is as short as possible and much of the story is told in pictures. The Spanish version is an interpretive translation that is appropriate across Spanish-speaking groups (e.g., avoiding words that had different meanings for Puerto Ricans and Mexicans). The brochure was pretested (in either Spanish or English, depending on interviewee's preference) by interviewing women waiting in a WIC clinic. Based on this feedback, the materials were revised. The 15-minute lesson plan, which was tailored to educators' stated time constraints, was also pretested with groups of educators, revised, and then pretested again with women taking the required nutrition classes at WIC.

After revision, more than 70% of women who read the final draft of the brochure felt that eating fish from the port was not a good idea. Given methodological and practical limitations, the team could not measure impact on behavior, but the research found that more than 60% of those who read this brochure intended to make changes in the fish they ate or how they cooked them. Not surprisingly, the lesson was even more effective, based on our interviews after the class. Out of 51 women, all but one stated that eating fish from the port was not a good idea and 70% indicated an intention to change their fish consumption (Burger et al. 2003; McDermott et al. 2003). Just as important, the state office of WIC approved the brochure and lesson plan for use in all their sites in the Newark Bay area.

A targeted effort for the Savannah River was similarly effective (Burger and Waishwell 2001). A consensus was reached among agencies from South Carolina, Georgia, and the U.S. EPA about a fact sheet that contained information about

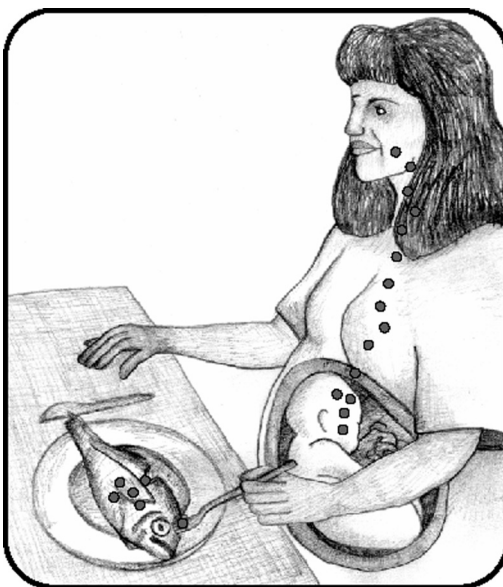


Figure 1. Graphic illustration used in both brochure and lesson.

contamination of fish, risks to women and unborn children, and safer approaches to preparing fish. Because survey information indicated that fishing served social and recreational functions, the fact sheet also made clear that people could continue to enjoy fishing and avoid risk by releasing catch. Based on distribution of the fact sheet to a sample of 93 anglers, more than 40% identified children, including unborn babies, as being at greatest risk, and more than 80% indicated they could reduce their risk by limiting the amount of fish they ate.

Communicating About Fish: Organizational Issues

Since the 1980s researchers have been urging targeted approaches to fishing advisories (e.g., Belton et al. 1986; Knuth 1990; Tilden et al. 1997) and articles since then have focused specifically on the development of effective advisories (e.g., Reinert et al. 1996). Given not only the ample information about the risks of consumption, but also the ineffectiveness of existing advisories, the lack of targeted risk communication is striking.

Historical Analysis

Historical analysis suggests why government may speak in ways that are not specific and clear to the discrete audiences that most need the information. James Scott's thesis, articulated in *Seeing Like a State* (1998), is that in the course of modernizing, government took local systems of measurement and transformed them into uniform metrics as a means of consolidating power. For example, during the transition from the Middle Ages the state made sense of subjects' land holdings by developing measures of equivalence (e.g., hectares) instead of relying on the cacophony of competing local measurement systems. In this way, it was possible to assess taxes systematically.

The advantage for taxpayers was a simpler system. The advantage for government was increased control. Scott illustrates with numerous examples how government-encouraged "agriculture of legibility and simplicity" has "failed in important ways to represent the complex, supple, negotiated objectives of real farmers and their communities" (Scott 1998, 262). In its most disastrous forms, this has led to monocultures wiped out by a single epidemic.

In short, according to Scott, states have a reason to translate what he calls the "illegibility" of local knowledge into a consolidated, easy-to-administer system of "seeing" as a means to impose order. We suggest that in doing so government has also necessarily developed uniform means of communicating. To make administration easier, states develop tax and registration forms, standardized letters, and templates for reports. As a result, states develop an official language. In the United States this is the language of passive voice, third-person narratives, and bland description. This approach ensures that government speaks with uniformity, even as the population increases in demographic diversity. This communication can be effective for explaining basic information, such as reminders to file taxes, directions for completing change of address forms, or explanations of motor vehicle laws.

However, this generic "government-speak" gets in the way of communicating fish consumption advisories. Failing to target audiences, consider cultural and linguistic factors, and develop clear messages perpetuates the environmental injustice; lower income, minority populations suffer a greater degree of environmental

harm by ingesting more contaminants from self-caught fish than do white, higher income anglers.

Other Organizational Factors

The failure to communicate effectively about contaminated fish reflects agency risk communication practice more generally. Risk communication manuals, brochures, and workbooks aimed specifically at practitioners have proliferated (e.g., Forrest and Mays 1997; Lundgren and McMakin 1998). But limited research suggests that agencies' efforts to reach out to audiences lags. For example, one study found that, notwithstanding stated commitment to risk communication, state health agencies' practices were limited, mostly reacting to inquiries (Chess and Salomone 1992). A study of the New Jersey Department of Environmental Protection found a similar gap and indicated that outreach was limited (Shaw and Johnson 1990). A national survey of risk communication researchers and practitioners in a variety of government settings found strong agreement with the statement that "There is a need for considerable improvement in agencies' communication about environmental risks" (Chess et al. 1995a). Case studies have also highlighted agencies' failures to effectively plan and implement risk communication efforts (e.g., Russell et al. 1994; Tinker et al. 2000).

Although it is tempting to assume that merely the lack of resources accounts for this prevalence of "government-speak" over targeted risk communication, respondents to the national survey suggested that a lack of management commitment and expertise were more serious barriers than resources (Chess et al. 1995a). A more recent study exploring public relations also found that resources alone do not account for effectiveness: Nonprofit organizations had more effective (though smaller) communication departments than corporations or government (Grunig et al. 2002).

In addition, effective communication about contaminated fish is not necessarily expensive. Dissemination of information to those at risk may need to be different than traditional government efforts but it need not be costly. Much of Burger's research on fish advisories has been conducted with the assistance of hourly employees. Outreach to WICs in New Jersey was also carried out by a talented, committed undergraduate Latina woman under the supervision of more senior academics.

Practitioners and academics suggest that internal organizational factors other than resource constraints significantly affect agency communication (e.g., National Research Council 1996). Because of reluctance to evaluate risk communication (Chess et al. 1995b), let alone probe the reasons for risk communication failures, there is not a great deal of research on the internal organizational factors that facilitate or hinder effective risk communication. Varying amounts of evidence point to the following barriers.

Interagency Conflict

For some years, South Carolina issued advisories for the Savannah River, but Georgia did not. Although the states used the same data on levels of contamination in fish, the states' risk assessments were computed with different rates of consumption leading to different assessment of hazards. The development of an advisory that would communicate to people on both sides of the border did not occur until the states were pushed into it by university researchers and federal agencies, such as

the U.S. EPA. A lengthy consensus process resolved differences sufficiently to develop a brochure that all agencies could live with (Burger and Waishwell 2001).

In New Jersey, agencies' differing priorities delayed for months dissemination of the fish brochure developed by the team of researchers. Agencies sitting on an inter-agency committee only approved the brochure after protracted discussions about wording. For example, there were extensive interchanges involving representatives from two departments who objected to text discouraging frying fish, which traps contaminants, in contrast to grilling or broiling, which reduces them. During committee meetings in which we participated, these representatives indicated they were withholding approval based on their institutional mandate to promote the healthy image and consumption of New Jersey fish. Any member of the committee could (and did) hold up the (extended) process of review by demanding other members bring in "more studies" to back up a contested position, such as occurred in the debate over "frying." In addition, members of the committee withheld consensus to force the deletion of wording (such as the lesson plan's marginal note to advise pregnant women against eating raw fish).

Other research has noted conflict between agencies that promote tourism and those that promote health messages (e.g., Reinert et al. 1991). While tourism officials and fish and game agencies encourage fishing, health agencies may issue advisories aimed at limiting consumption. In addition, there can be conflicts between state agencies that warn people about contaminants and local entities that want to encourage tourism and use of their waters. These conflicting messages can further confuse those who fish.

Agency Mandates

While the federal Superfund program, which deals with hazardous wastes, has a legislative mandate to communicate with outside stakeholders (U.S. EPA 2002), this is not a focus of most environmental protection programs. In addition, environmental agencies, in contrast to departments of health, traditionally deal with regulating business and industry, and generally have little experience communicating about individual behavior change.

In addition, units within agencies may have conflicting mandates. While fishery professionals are charged with increasing the health of fisheries, risk assessors are charged with protecting public health (Ebert 1996). This problem can be particularly pronounced when fishing licenses fund fishery programs, thus increasing the imperative for fisheries' managers to promote fishing. Thus, fishery professionals may be interested in promoting the sport while risk assessors are concerned with limiting consumption.

Risk Assessment

Risk assessment is a complex process, including numerous value judgments that can lead to differences in the evaluations of risk. While agencies may agree that the fish are contaminated, different assumptions within the risk assessment process (e.g., "average" contamination levels) may lead to varying decisions about consumption thresholds for different populations, particularly women and children. While the bottom line conclusion is often the same (e.g., pregnant women and children should eat little of certain species of fish), agencies may parry over exact figures (e.g., how

many ounces of what species at what frequency) of little consequence to those who may not be aware of any risk. For example, the Savannah River brochure was only developed when agencies were willing to put aside arguments about their differing assessments of risk and focus on a clear message reducing consumption of self-caught fish, particularly by pregnant women (Burger and Waishwell 2001).

The advisory NJDEP distributed with fishing licenses also reflects an approach in which accuracy about risk, which obscures the message with arcane details, takes precedence over communicating key information. At the time of this research, the New Jersey state fish advisory was published as a chart with multiple columns and rows in 8-point type. There are columns for “general population” and “high-risk individual” (defined in a footnote) and cells for the relevant advisory, such as “Do not eat more than once a week” or “Do not eat,” respectively. Determining the bottom-line message was a daunting process, even for researchers with doctorates. The reader of the simpler chart now on NJDEP’s web site still must refer to a footnote to know that the “advisory/prohibition” for a “high-risk individual” means “infants, children, pregnant women, nursing mothers and women of child bearing age.”

Status of Risk Communication Practitioners

The effectiveness of an agency’s communication is associated with whether the communication experts are part of the organization’s dominant coalition, the power elite (Grunig et al. 2002). Unless communication personnel can speak to the human dimensions of environmental issues, such as public perception, these critical issues get short shrift. Many government environmental and health agencies do not involve communications managers in decisions; a national symposium of risk communication practitioners noted that lack of management support was a recurring issue and that risk communication professionals felt a notable lack of power to effect change (Chess et al. 1995b).

Agency Structures and Internal Communication

Limited research suggests risk management and risk communication functions may be so loosely coupled that they do not influence each other (Chess 2001). In other words, decisions about risk management (e.g., reducing sources of contamination) are disconnected from decisions about risk communication (e.g., changing behavior of those exposed to contamination) and vice versa, reducing the possibility of feedback loops. In fact, agency units that issue fish advisories may not even have communication specialists. In units that do, risk managers and risk communicators may not routinely talk. In short, risk communication experts not only have little status, their work is likely to be relatively disconnected from risk management activities.

The development of the fish fact sheet in South Carolina (Burger et al. 2000; Burger and Waishwell 2001) was possible, in part, because the same team conducted the entire effort, including interviewing fishermen, dealing with a range of stakeholders, collecting and analyzing the contaminants in fish, determining the actual risk based on site specific information, and helping to develop the communication tool.

Summary and Conclusions

This research demonstrates that (1) minorities are exposed to greater hazards from self-caught contaminated fish than white, middle-class anglers; and (2) much

government communication to minorities about hazards of self-caught fish has been ineffective.

We argue that this form of environmental injustice arises from historical approaches to governance (Scott 1998) and other organizational factors that encourage government to speak to citizens in the undifferentiated bureaucratic monotone with which we are all familiar. This state-speak perpetuates environmental injustice by failing to consider the cultures, attitudes, and behaviors of the segment of the population that does not look like bureaucrats of the state. By communicating in ways that reach primarily white male anglers, states fail to protect their most vulnerable citizens.

Political will helps to overcome these organizational barriers. The commissioner of the New Jersey Department of Environmental Protection (appointed by a governor elected with major support from urban areas) launched an educational campaign targeted to the minority population of the Newark Bay area. Accompanied by the governor's wife, who translated the message into Portuguese, the commissioner pronounced blue crabs "a toxic threat" (Twyman 2002) and announced the agency's intention to fund five local organizations to conduct culturally appropriate outreach, which included use of the brochure described in this article. By making communication of fish advisories a high-profile effort, the commissioner forced units of the agency to work together. The Latina woman whom he appointed to head his communication office had sufficient credibility to promote involvement of local organizations. In short, agencies can transcend or bypass organizational barriers sufficiently to launch a culturally-relevant communication effort that transcends "government-speak." NJDEP remains fluent in "government-speak," and this educational campaign is conspicuous because of its singularity.

The need for organizational innovation to overcome "government-speak" goes beyond fish advisories. Increasingly, solving environmental problems requires changing individual behavior as well as government policies. For example, reducing solid waste from paper products, bottles, and cans, nonpoint source pollution from lawns and domestic pets, and greenhouse gases from automobile exhaust will require government to go beyond traditional regulatory approaches. Informational strategies, as well as market-based incentives and other innovations, are critical. Effective risk communication, and the organizational changes needed to support it, will be essential to improving environmental health, not only of minorities at risk from self-caught fish, but also the larger society.

Note

1. Although resource professionals make a distinction between crabbing and fishing, recreational crabbers and anglers generally refer to both activities as fishing, which is the terminology we adopt for this article.

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