

## Draft Project Concept

### Options for Mitigating Risks of Public Health Impacts Due to Pollutants in Fish

#### Background

Elevated concentrations of mercury, PCBs, dioxins, and legacy pesticides in San Francisco Bay fish impair beneficial use of the Bay for sport fishing (Water Board, 2002). Although no regulatory criteria have yet been established for PBDEs, the presence of these pollutants in fish is an additional cause for concern.

A fish consumption study (California Department of Health Services and San Francisco Estuary Institute, 2001) indicates that because of different consumption rates, species consumed, and methods of preparation, anglers from particular ethnic groups (including African-Americans, Filipinos, and Pacific Islanders) are disproportionately exposed to pollutants in fish. About 40% of anglers reported that women of childbearing age in their households consumed some of their catch. Anglers fishing from piers were more likely to share their catch with household members than those who fish from boats.

The study found that differences in income, education, or fishing mode did not significantly correlate with the amount of fish consumed. However, environmental advocates and environmental justice advocates have expressed concern that a combination of factors that affect specific subpopulations—dependence on Bay fish as a food source, location in areas where Bay waters, sediments, and fish are more polluted than in the Bay as a whole, differences in methods of fish preparation, and a higher likelihood of consumption by children and women of childbearing age—could be multiplicative, resulting in relatively high exposure to multiple pollutants.

The health consequences of such exposure are well-documented. The most significant consequence of exposure to elevated levels of pollutants—and of mercury and PCBs in particular—is an increased likelihood of neurodevelopmental disorders in children. Neurodevelopmental disorders include attention-deficit hyperactivity disorder (ADHD) and mental retardation. Incidence of such disorders is closely correlated with poverty (USEPA, 2003).

The San Francisco Bay Regional Water Control Board's TMDL reports for mercury (Johnson and Looker, 2004) and PCBs (Water Board, 2004) indicate that impairment of Bay waters will persist for generations to come, regardless of control measures.

#### Project Objectives

There is considerable uncertainty regarding the public health impacts of mercury, PCBs, and other Bay pollutants. Given such uncertainty, the precautionary principle calls for (1) consideration of options that might reduce the risk of impacts and (2) selection of feasible options that will minimize the risk to public health.

To date, advisories to limit fish consumption (including posting signs) have been the only option implemented.

The purpose of this project is to develop and examine other options that may reduce risk, with particular focus on subpopulations believed to be most at risk. In particular, the following risk-reduction options should be considered:

- Screening of at-risk persons for habitual consumption of Bay fish (by interview), for exposure to pollutants of concern (e.g., by hair samples), and for neurological effects.

Screening may be conducted in conjunction with provision of perinatal, pediatric, and/or primary care.

- Examination of dietary attitudes and options among at-risk consumers of Bay fish and evaluation of potential consumer acceptance of alternative food sources. This examination could be conducted by survey or focus group or both.
- Potential actions that might offset or mitigate specific health risks by improving the health status of persons and communities most likely to be affected by pollutants. Options may include reducing other pathways of exposure to environmental contaminants or mitigation of other factors linked to neurological and other health effects.

### **Project Phases**

The project will be implemented in three phases:

Phase 1. Convene and organize a project team. It is suggested that the project team include participants and advisors with the following experience and expertise:

- Epidemiology, including experience with health disparities
- Public health outreach, community organizing, and program management
- Neurology and diagnosis of neurological disorders, especially among children
- Provision of family health care to low-income and disadvantaged persons and communities
- Toxicology
- Dietary science, including experience with cultural dietary preferences

Phase 2. Develop, assess, and select potential risk-reduction options. Document the process used and describe how the selected options could be implemented.

Phase 3. Implement, on a pilot basis, one or more options. The extent of the pilot will be limited by current project funding. It is anticipated that startup of a successful pilot may create a basis for attracting future funding from the CEP and from other sources for ongoing mitigation of health risks associated with pollutants in fish.

### **Project Budget**

Phases 1 and 2: \$20,000

Phase 3 (initial pilot): \$80,000

### **Recommended Contractor:**

It is suggested that the conceptual project plan be circulated to persons who provide public health services and primary care to disadvantaged communities with a request for recommendations. The resulting list might be used to distribute a request for qualifications or request for proposals.

## References

- California Department of Health Services and San Francisco Estuary Institute. 2001. *Public Summary of the San Francisco Bay Seafood Consumption Study*. 13 pp. [www.sfei.org](http://www.sfei.org).
- Johnson, Bill and Richard Looker. 2004. *Mercury in San Francisco Bay: Total Maximum Daily Load (TMDL) Proposed Basin Plan Amendment and Staff Report*. April 30, 2004. 118 pp. + app. [www.swrcb.ca.gov/rwqcb2](http://www.swrcb.ca.gov/rwqcb2)
- USEPA. 2003. *America's Children and the Environment: Measures of Contaminants, Body Burdens, and Illnesses*. EPA 240-R-03-001. February 2003. 181 pp. <http://www.epa.gov/envirohealth/children/report/index.htm>
- Water Board. 2002. California Regional Water Quality Control Board for the San Francisco Bay Region. Clean Water Act 303(d) List of Water Quality Limited Segments. Approved by USEPA July 2003. [www.swrcb.ca.gov/rwqcb2](http://www.swrcb.ca.gov/rwqcb2)
- Water Board. 2004. *PCBs in San Francisco Bay: Total Maximum Daily Load Project Report*. January 8, 2004. 73 pp. [www.swrcb.ca.gov/rwqcb2](http://www.swrcb.ca.gov/rwqcb2)