

## **FISH/SHELLFISH IMPLEMENTATION PLAN**

***By 2008, improve the quality of water and sediments to allow increased consumption of fish and shellfish by the strategic targets described below.***

Across the U.S., states and tribes have issued fish consumption advisories for 39 contaminants with mercury, PCBs, chlordane, dioxin, and DDT together accounting for 96% of all these advisories. Most fish consumption advisories, however, are issued because of unhealthy levels of mercury in fish. Since only small amounts of mercury are discharged to waters, it is believed that most mercury in inland and estuarine fish originates from combustion source releases into the air by coal-fired power plants and incinerators.

Shellfish safety is managed through the Interstate Shellfish Sanitation Conference (ISSC), a partnership of the U.S. Food and Drug Administration (FDA); the state shellfish control agencies; the National Oceanic and Atmospheric Administration (NOAA); and the EPA. The state shellfish control agencies monitor shellfishing waters and can prohibit or restrict harvesting if the waters from which shellfish are taken are considered unsafe. Most shellfish growing waters are closed to harvesting due to actual levels of bacteria in the water or because of the potential for pollution to occur so rapidly that shellfish could be harvested before preventative measures could be taken. While the bacteria monitored are indicators of fecal pollution, other microorganisms such as viruses, may actually pose the risk to human health.

There are challenges in meeting the strategic targets to increase the safe consumption of fish taken from rivers and lakes and to increase the percentage of shellfish growing waters which are monitored by states and approved for use. These challenges include the following:

- # the reduction of mercury releases to the air,
- # remediation of contaminated sediments,
- # enhanced management of wastewater discharges, and
- # using the appropriate metrics to measure progress.

This plan identifies the 2008 strategic targets, the FY 2005 interim strategic targets, and the program activity measures (PAMs) to support the strategic targets. It identifies initial approaches for overcoming the challenges with the expectation that Regional Offices, with their states, will identify additional approaches as they finalized their strategic plans and targets.

## 2008 Strategic Targets

To allow increased consumption of fish and shellfish, the following targets are identified:

- (1) Improve the quality of water and sediments in at least 3 percent of the river miles or lake acres identified by states or tribes as having a fish consumption advisory in 2002. [H]
- (2) Approve for use 85 percent of the shellfish-growing acres monitored by states. [I]

## FY 2005 Interim Strategic Targets

Interim targets are suggested to provide a check on progress. The first of these interim targets is to improve the quality of water and sediments such that increased fish consumption will be allowed in at least 1 percent of the water miles or lake acres of those waters identified by states or tribes in 2002 as having a fish consumption advisory. (In 2002, the states and tribes identified 485,205 river miles and 11,277,276 lake acres as having fish with chemical contamination levels resulting in an advisory of potential human health risk from consumption.)

The second interim target is to improve water quality in shellfish growing areas such that 80 percent of the shellfish growing acres monitored by states are approved or conditionally approved for use. (The 1995 baseline is 77 percent approved for use of 21.6 million acres monitored: 69 percent approved 8 percent conditionally approved.)

Reference: [http://oceanservice.noaa.gov/websites/retiredsites/sotc\\_pdf/SGW.PDF](http://oceanservice.noaa.gov/websites/retiredsites/sotc_pdf/SGW.PDF)

## Program Activity Measures to Achieve Targets

By 2008, fish tissue will be assessed to support waterbody-specific or regional consumption advisories, or a determination will be made that no consumption advice is necessary for at least 40% of lake acres and 20% of river miles. This is identified as PAM-28. The FY 2002 Baseline has 32.9% of lakes (Great Lakes measured separately and AK not included) and 15% of river miles (AK not included) as having been assessed. (PAM-28) [FY 2002 Baseline: 32.9% of lakes; 15% of river miles]

There will be an increase in the number of States that monitor and assess fish tissue contamination based on national guidance. (Indicator - PAM-29) [FY 2002 Baseline: 82% of States]

By 2008, EPA will assist and support the development of tribal fish advisory programs so that at least 10 tribes will have adopted and applied the nation fish advisory guidance to making fish advisory determinations for local waters. (PAM-30) [FY 2002 Baseline: 2 Tribes of 565 Federally recognized Tribes and Alaska Native Villages]

There will be an increase in the number of States and authorized Tribes that have adopted the new fish tissue criterion for mercury. (Indicator PAM-31) [FY2002 Baseline: 0 States/Tribes]

Increase the number of States that are part of the Interstate Shellfish Sanitation Conference and participate in the national Shellfish Information Management System (SIMS). (Indicator PAM-32) [FY 2002 Baseline: 0 States]

#### Related Program Activity Measures

In addition to the Program Activity Measures for this subobjective, there are other Program Activity Measures for other subobjectives that will help achieve the strategic targets.

From the Goal 2 clean watershed objective:

- ! By 2008, reduce pollution loadings to waterbodies from industrial dischargers by an estimated 2.4 billion pounds of pollutants [2004-2008] as a result of national industrial water pollution control regulations. (PAM-61) [FY 2002 Baseline: 0.6 million pounds]
- ! Estimated annual reduction in pounds of pollutants discharged to waters as a result of NPDES permits for storm water, POTWs, CAFOs, CSOs, and industrial discharges. (PAM-62) [FY 2003 Baseline: 109 billion pounds annual reduction]

From the Goal 2 safe swimming objective:

- ! By 2008, 75% of communities with CSOs will have schedules in place to implement approved Long Term Control Plans (LCTPs). (PAM-36) [FY 2002 Baseline: 772 communities with CSOs; 34% have submitted draft LTCPs; 17% have begun implementation]
- ! Number of States that have adopted the Voluntary Management Guidelines for On-site/Decentralized Wastewater Treatment Systems. (cumulative) (PAM-37) [FY 2002 Baseline: 2 States (cumulative)]

From the Goal 4 Great Lakes subobjective:

- ! Beginning in 2004, and in each year thereafter, complete three sediment remedial actions. (PAM-IV-GL-2) [FY 2002 Baseline: 3 to be initiated in 2002]

From the Goal 4 Gulf of Mexico subobjective:

- ! By 2007, reduce the rate of shellfish-borne *Vibrio vulnificus* illnesses caused by consumption of commercially-harvested raw or undercooked oysters by 60% on average (0.121/million) from the average illness rate for the years 1995-1999. (PAM IV-GM-4) [FY 2002 Baseline: 1995-1999 average rate equals 0.303/million]

From the Goal 1 air deposition subobjective:

- ! Goal 1: Clean Air, Sub-objective 1.1.2: Reduced Risk from Toxic Air Pollutants. By 2010, through the President's Clear Skies legislation, reduce mercury emissions from electric-generating units by 22 tons from the 2000 level of 48 tons.

From the Goal 3 hazardous waste subobjective:

- ! Goal 3 Protect and Restore the Land, Sub-objective 3.2.2: Clean Up and Reuse Contaminated Land.

## **APPROACHES**

### ***WHAT ARE THE MAJOR PROBLEMS/HOW WILL THEY BE ADDRESSED?***

Excessive levels of bioaccumulative pollutants are frequently found in fish tissue and excessive levels of bacteria are frequently found in shellfish growing waters.

#### **Mercury in Air**

Most of the fish consumption advisories are for mercury. Recognizing that global cycling of mercury is a natural phenomenon, we anticipate being able to reduce levels of mercury in fish tissue by reducing combustion sources of mercury in the United States. On a nationwide basis, by 2010, federal regulatory programs are expected to reduce electric-generating unit emissions of mercury from their 2000 level of 48 tons.

By using *Mercury Maps* ([www.epa.gov/waterscience/mercurymaps](http://www.epa.gov/waterscience/mercurymaps)) we can evaluate the benefits of technology-based air emission reduction standards or the use of TMDL analyses for individual or multiple watersheds. This tool can also be used to coordinate watershed level efforts to address mercury contamination through water quality standards, TMDL, and wastewater permitting programs.

These analyses can be refined by using refined mercury models. EPA Region 1 is working with the New England states, NEIWPC, and USGS to develop regional GIS-based models that provide information about sources of mercury, the susceptibility of fish to mercury contamination, the influences of certain landscape and water-quality variables on mercury in fish tissue, and relative magnitude of loading from mercury sources in watersheds throughout New England. The models will be used to estimate the amount of mercury reduction needed from sources, especially air deposition, necessary to meet EPA's mercury criterion of 0.3 mg/kg methyl mercury in fish tissue.

In addition, states and regions in developing TMDLs for mercury have frequently found that air deposition is the largest contributor of mercury loading to watersheds, and that reductions in mercury emissions are necessary to result in sufficient reductions of mercury in fish tissue. Given this information, EPA believes that the primary action for achieving fish to eat is to reduce mercury emissions.

#### **PCBs in Sediments**

The second most frequent cause of fish consumption advisories is PCBs. Based on this historical phase out of PCB manufacture, EPA expects that the most likely current source of PCBs is sediment release. For this reason, sediment remediation under the CERCLA program is an important action for reducing the extent of current fish advisories.

In addition, EPA Region 5 is working with Great Lake states to improve the quality of water and sediments in the Great Lakes and other waters affected by contaminants contributing

to fish advisories. Sediment is a significant source of the toxic pollutants impacting benthic organisms, fish, and wildlife, as well as human health with the bioaccumulation of toxic substances through the food chain. The needed improvements in water and sediment quality are expected to result by using the Great Lakes Legacy Act to support source controls and remediation of toxic sediments to reduce contaminated sediments as a source of toxic pollutants contaminating sediments in the Great Lakes Areas of Concern. They will continue to support state/tribal adoption of the mercury fish tissue criterion as the basis for evaluating the safety of mercury levels found in fish. They will target more stringent controls for the POTW, stormwater/CSO, CAFO and nonpoint source discharges with contaminants contributing to fish consumption advisories. Additionally, they will identify sediment sites that are on the Superfund National Priority List which contains contaminants contributing to fish consumption advisories scheduled for remediation and evaluate whether these site remediations will enable increased consumption of fish by 2005 and 2008.

### **Pathogens in Dischargers**

The primary sources of pathogens in shellfish growing areas are point and nonpoint sources of human fecal material. The core water protection program (monitoring water quality standards, TMDLs, NPDES permits) provides the mechanism for controlling these sources. The activities for these programs are identified in the Goal 2 clean watershed and safe swimming subobjectives.

In addition, EPA Region 5 is working with Great Lake states to increase the number of days that shellfish-growing areas are open for harvesting. They will target more stringent controls for the POTW, stormwater/CSO, CAFO and nonpoint source discharges with contaminants contributing to shellfishing growing-area closures.

Other Regional Office Strategies: *Regions please identify any strategies for reducing pathogen loadings into shellfish-growing waters.*

### **CHALLENGES**

Significant challenges exist to the successful attainment of these goals, including how to best measure progress.

#### **Fish**

The data for the target of allowing a percentage increase in fish consumption were developed on a watershed basis rather than on a combination of lake acres and river miles. Measuring a percentage increase in fish consumption based on a combination of different units of measure (river miles/lake acres) is problematic. An alternative to consider is an increase in fish consumption for a percentage of river miles and one for lake acres. Although the time lag between source reduction and reductions in fish tissue concentrations was considered in developing the targets, this lag is only an estimate and the actual reductions in fish tissue concentrations may be slower than projected.

## **Shellfish**

Once the ISSC Shellfish Information Management System (SIMS) is complete, measuring trends in “acres classified” will be easier. However, because “acres classified” is the result of an administrative action (output), the assessment may need to look at the underlying water quality monitoring data and shoreline surveys for the causes for classification change.

Preliminary 2003 statistics from the ISSC show that, due to a combination of increases and decreases in classifications and total area classified, the current performance measure masks important trends in shellfish area classification. EPA will be exploring options on how to overcome this problem with the ISSC.

### ***WHERE SHOULD PRIORITIES BE PLACED?***

Much of the success in achieving the fish consumption strategic target depends on the efforts of others outside of the Office of Water. We must strengthen coordination and cooperative efforts within EPA (OAR, OSWER, OECA), state and local programs for water, pesticides, air, and enforcement. In specific, without commitment to reduce mercury air emissions and remediate PCBs in sediments, we may not achieve this strategic target.

Success in achieving the shellfish target relies on expeditious implementation of CWA programs, e.g., expanded monitoring, review and revision (if appropriate) of water quality standards, development of TMDLs, revision of permit limits based on the TMDLs, follow-up monitoring and assessment of progress. Important new technologies include pathogen source tracking, new indicators of pathogen contamination and predictive correlations between environmental stressors and their effects. One useful action is to develop a risk-based pathogen water quality criterion for the protection of human health from consuming shellfish.

Success in achieving the shellfish goal also depends on the efforts of others outside of the Office of Water. We must strengthen coordination and cooperative efforts with states and NOAA on coastal, seafood populations, pollution status and trends monitoring. One current example of coordination is to enter shellfish program monitoring data into STORET with CWA data, where it all can be accessed by both SIMS and CWA programs.