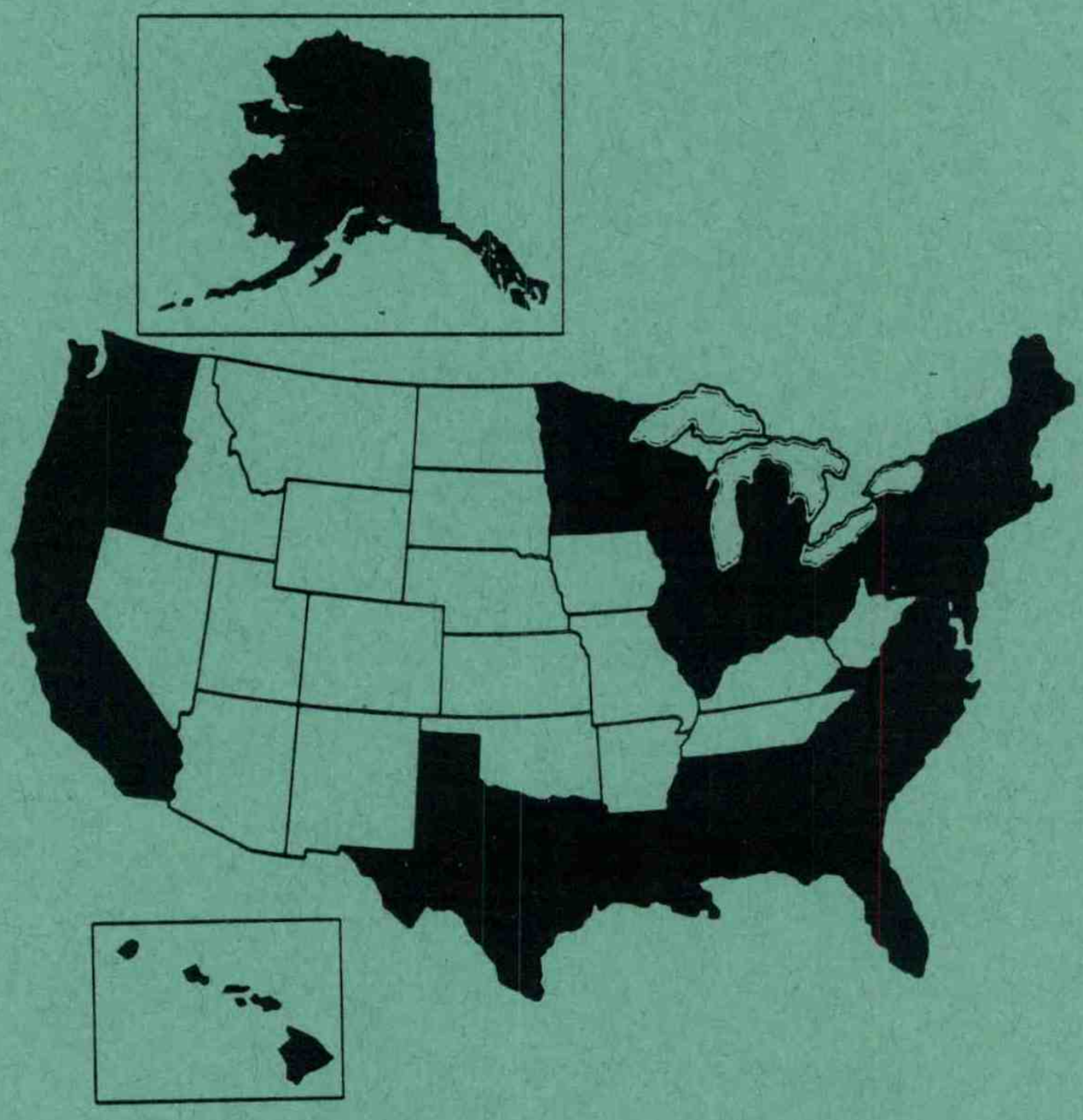
STATE-ISSUED FISH CONSUMPTION ADVISORIES: A NATIONAL PERSPECTIVE



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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of the Chief Scientist
National Ocean Pollution Program Office

STATE-ISSUED FISH CONSUMPTION ADVISORIES: A NATIONAL PERSPECTIVE

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Principal Investigator

February 1990

U.S. DEPARTMENT OF COMMERCE
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National Ocean Pollution Program Office
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ACKNOWLEDGMENTS

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Devorah Zeitlin
July, 1989

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I. Introduction

The presence of toxic substances in the aquatic environment is of growing national concern. More than 50,000 chemicals are in everyday use and approximately 1,000 new chemicals are introduced annually.[1] Some of our aquatic resources have become contaminated by agricultural and urban runoff, discharges of municipal and industrial wastes, and deposits of pollutants from the atmosphere.

Consumption of seafood contaminated with chemical residues may pose a risk to human health. Fish can concentrate chemical contaminants in certain tissues to levels many times greater than those found in the environment, thereby increasing the potential for adverse human health effects. In these times of health and diet consciousness, fish has become more widely used as a source of low fat, high quality protein. Between 1980 and 1988 average fish consumption in the U.S, increased from 10 pounds to an estimated 15 pounds per person per year.[2]

Under the National Ocean Pollution Planning Act of 1978, the National Ocean Pollution Program Office (NOPPO) is assigned the responsibility to facilitate Federal coordination of marine pollution research, development and monitoring activities. NOPPO's responsibilities include developing a five-year plan for the overall marine pollution research, development and monitoring effort.[3] In 1988, NOPPO completed the fourth Federal plan, which established six goals for the overall Federal effort. One of these goals is to understand the implications of marine pollution to human health. In the analysis of this goal, specific problems and research needs are identified, the Federal capability for addressing the problems is described, and recommendations for future Federal actions are posed. The Plan recommended improved evaluation of the effectiveness of public health advisories in reducing risk associated with consumption of contaminated seafoods. This study constitutes the first step toward evaluating the effectiveness of these public health advisories in coastal and Great Lakes States. The major objectives of the survey were:

- To compile a listing of all advisories issued by the 30 coastal and Great Lakes states from 1984-1987 concerning the consumption of contaminated finfish.

1. Office of Technology Assessment. 1987. Wastes in Marine Environments. OTA O-334. U.S. Congress, Supt. Doc., Washington, D.C. 313 pp.
2. National Ocean Pollution Program Office. 1988. National Marine Pollution Program. Federal Plan for Ocean Pollution Research, Development and Monitoring. Fiscal Years 1988-1992. NOAA, Rockville, MD. 205 pp.
3. Ibid.

- To describe the processes used by the coastal and Great Lakes states in issuing advisories encompassing state agency participation, information dissemination and public education programs set up by the states.

- To identify state information needs and appropriate assistance from the Federal government.

This report describes the results of the state fish consumption advisory survey. These results identify those fish species and contaminants that have been most closely linked with health advisories. The report provides information on the advisory process as well as on the form and content of fish advisories themselves. This information should prove useful to Federal and state agencies, the fishing industry, and the general public as efforts continue nationally to improve the effectiveness of finfish public health advisories.

II. The Advisory Process

Federal and state governments share in the responsibility to protect human health through the regulation and control of contaminated foodstuffs. For fish that are sold through interstate commerce in the United States, the U.S. Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA) establish and enforce allowable levels of toxic substances in fish. EPA, under sections 303 and 304 of the Clean Water Act (P.L. 95-217), is responsible for assisting states in the development of water quality standards. Consumption advisories for contaminated fish tissue are often developed in consideration of these water quality standards. FDA has direct enforcement responsibility only for the regulation of fish shipped in interstate commerce. Thus, FDA does not protect consumers of local fish (i.e., local recreational or sport fishermen). FDA's enforcement action is based on regulation of contaminated food under the Food, Drug and Cosmetics Act (21 U.S. C. 301).

Individual states assume responsibility for protecting consumers from health risks associated with eating fish that are not transported across state lines. These consumers include the recreational and subsistence fishermen whose catch does not enter commercial markets. Both of these groups may consume higher than average amounts of fish.

The primary mechanism which states use to alert consumers about the potential risk of contaminated finfish is the fish consumption advisory. Advisories, by definition, inform people of the health risks presented by consumption of contaminated fish. Advisories are issued based on the concentration of the contaminants found in fish tissue as compared to state or Federal standards.

For the purposes of this survey, an advisory was defined as a public notification applied to one aquatic species, for one contaminant, at one location. Fish consumption advisories range from simple recommendations to avoid eating fish from certain locales to recommendations on amounts that could be safely eaten by certain segments of the population at higher risk (e.g., pregnant women, children). Advisories may also describe alternative ways of preparing and cooking fish to reduce risks.

States typically monitor levels of toxic substances in fish for five reasons:

- Location near a Superfund site,
- Proximity to other known pollution sites (e.g., a specific manufacturing site),
- Previously sampled site,
- Site of a chemical spill, and
- Response to public concerns.

Other site selection criteria used by some states are frequency of fishing activity, inclusion in state or Federal water quality programs, and participation in bioaccumulation and sediment analysis programs or other special research programs.

Generally, a state considers issuing an advisory when the contaminant levels found in fish exceed levels set by FDA and/or EPA. FDA, which assumes the primary role for assuring that marketed fish sold through interstate commerce are safe to eat, is responsible for establishing safe levels for poisonous or deleterious substances such as heavy metals and organics. EPA's Pesticides Program advises FDA by recommending the appropriate values for action levels for pesticides only. FDA is responsible for enforcing the action level.

Setting tolerance levels may be impractical when toxicological data are scanty or when additional data are being developed. In these cases, action levels are developed to limit exposure to a contaminant. Action levels meet the same criteria as tolerance levels except they can be more quickly instituted and changed. They are intended for interim periods of time. There are currently eleven regulatory limits set by FDA. The level set for PCBs is a tolerance level--the other ten are action levels.

Different criteria and processes are used by EPA and FDA for establishing thresholds for taking action to protect human health. EPA fish tissue criteria are derived from water quality criteria and are set at potential risk due to the accumulation of toxic substances from ambient water. Potential economic or social costs and benefits are not considered in EPA's formulation. FDA action levels, in general, consider the economic impact on commerce as well as human health effects. The two agencies may also assume different rates of fish consumption amounts in their formulas to calculate maximum allowable intake. Both agencies base their maximum recommended levels on risks of humans to disease (usually cancer) but frequently use different formulas to extrapolate end points from laboratory studies with animals to possible effects on humans. As a result, the levels estimated as "safe" by these two agencies may differ.

Federal authority relevant to state fish advisories is limited. Tolerance and action levels are established on a national basis and are tailored to national needs and levels of consumption. Decisionmakers who are responsible for issuing advisories on the state level may choose among Federal recommendations but also frequently consider other factors, such as vulnerable groups at risk and local seafood consumption patterns. When different health agencies within a state do not agree on risk levels, conflicting advice may be offered to the public for fish containing the same concentration of a contaminant. There are cases as well where inconsistent advisories may be issued for bodies of water shared by states.

State fish advisory programs hold three elements in common: data collection, data analysis, and risk analysis and interpretation. The degree to which various agencies within each state participate in the advisory process depends not only on their technical capabilities but also on historical mechanisms established by the state for coordination and communication. Table 1 shows the basic types of state agencies involved in the development and dissemination of fish advisories. Figure 1 displays the numbers of agencies involved. The simplest case is a centralized department such as South Carolina's Department of Health and Environmental Control (DHEC) which is responsible for all aspects of the advisory process. DHEC supports an in-house expertise in all facets of the advisory process from resource managers to toxicologists and physicians.

Table 1. States and respective administrative agencies involved in the development of fish advisories.

	State Agency			
State	Health	Natural Resource/ Resource Mgt.	Environmental Protection/Reg.	Agriculture
Alabama	x	x	x	x
Alaska	x	x	x	x
California	x	x	x	x
Connecticut	x		x	
Delaware	x	x	x	
Florida	x			
Georgia*	-	-	-	-
Hawaii	x			
Illinois	x	x	x	x
Indiana	x	x	x	
Louisiana	x	x	x	
Maine	x	x	x	
Maryland	x	x	x	
Massachusetts	x	x	x	
Michigan	x	x		x
Minnesota	x	x	x	
Mississippi	x	x	x	
New Hampshire	x	x		
New Jersey	x		x	
New York	x		x	
North Carolina	x	x		
Ohio	x	x	x	x
Oregon	x	x	x	
Pennsylvania	x	x	x	
Rhode Island	x	x		
South Carolina	x		x	
Texas	x			
Virgina	x	x	x	
Washington	x	x		
Wisconsin	x	x		

* Did not respond to survey.

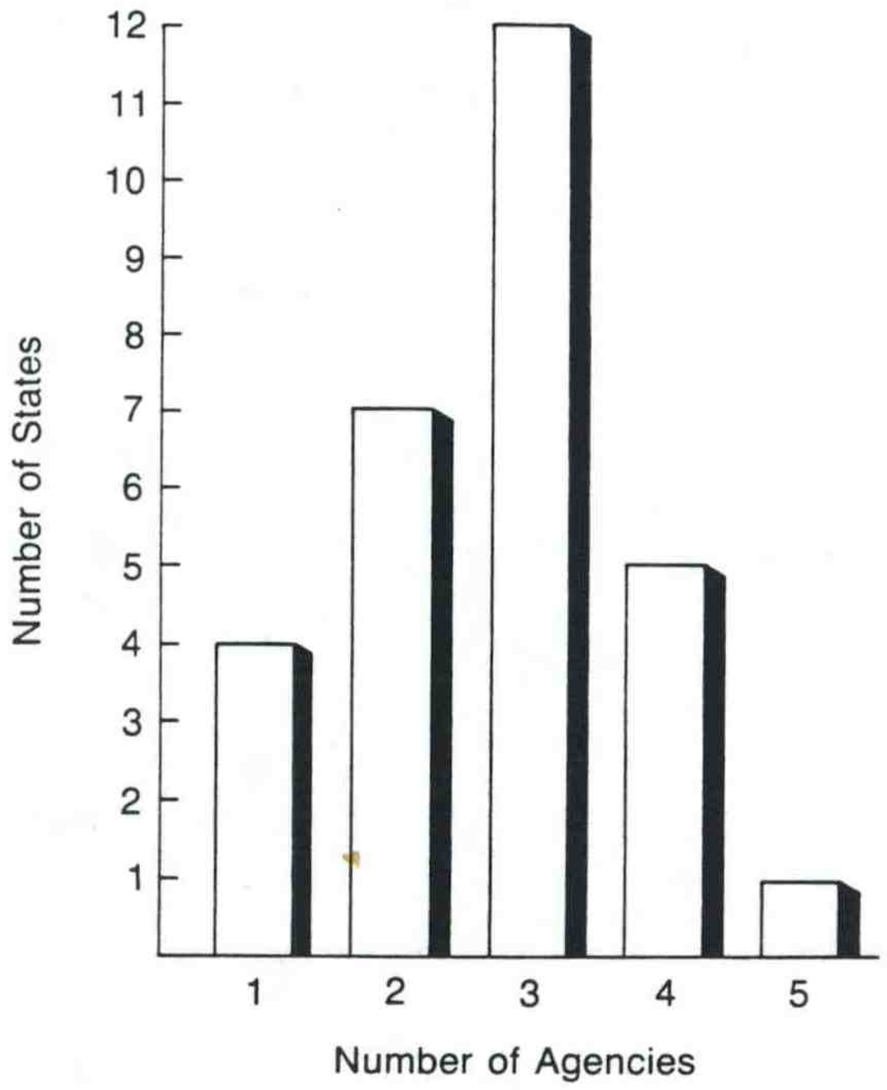


Figure 1. Frequency distribution for numbers of state agencies involved in the process of issuing fish consumption advisories.

At the other end of the spectrum, the Alabama Departments of Public Health, Environmental Managment, Agriculture and Industry, Conservation and Natural Resources each contribute toward the sampling, analysis, risk assessment, dissemination and public education associated with fish advisories.

Nine states have formal agreements among their agencies for issuing their advisories -- Connecticut, New York, Minnesota, Michigan, Pennsylvania, Rhode Island, South Carolina, Virginia and Wisconsin. These are in the form of Memoranda of Agreement or Interagency Committees which delineate responsibilities and roles of departments involved in the advisory process. Several states have also established informal working agreements among agencies. In Maine, for example, the Departments of Environmental Protection, Inland Fisheries and Wildlife and Marine Resources jointly issue advisories for the state. North Carolina has established an informal working agreement between the Departments of Environmental Management and Health Services although the Department of Health Services formally issues the advisory.

A decentralized advisory process, which describes the majority of state programs, often results in the assembling of an interdisciplinary team from local personnel. In many cases fishery managers as well as water resources managers interact directly to coordinate recommendations thereby streamlining the management and expense of addressing complex fish contamination problems. However, a decentralized structure can generate conflict arising from multiple points of view and the lack of detailed responsibilities among the agencies.

III. Methodology

A survey of the 30 states that border on an ocean (including Alaska and Hawaii) or on the Great Lakes was conducted to acquire data on advisories issued by these states against human consumption of finfish. The agency or agencies in each state involved in the process of issuing fish consumption advisories was contacted and asked to provide information on the methods used to develop advisories. Initial contact was made by telephoning department heads of state agencies to describe the nature of the study and request copies of any advisories issued by the state. A survey questionnaire was then used to obtain more detailed information in a standard format from these same state agencies. A copy of this questionnaire is provided in Appendix A.

The survey questions were designed to:

- Identify the fish species and contaminants for which advisories were issued and the locations to which the advisories applied;
- Describe the roles, responsibilities and coordinated efforts of the state agencies participating in the advisory process, and identify any policies dealing with consumption of contaminated fish;
- Describe ways in which the public was made aware of the contamination and how their effectiveness was evaluated; and
- Solicit ideas on what kind of Federal assistance could be provided to support or improve the state advisory process.

Results of the survey were entered into a computerized data base. Each advisory was characterized in the data base by state, type of water (e.g., freshwater, estuary), dates of advisory, aquatic species (recorded by common name only), contaminant, concentration of contaminant, location of water body, and type of advisory issued (e.g., no consumption, restricted consumption). Where appropriate, species and contaminants were consolidated into more general groupings.

After the survey was completed, a profile was developed for each state summarizing the information in the survey responses. These profiles are included in Appendix B and are organized as follows:

(1) Advisories issued. The numbers of advisories issued, species of concern, contaminants of concern, and locations of advisories are included in this section.

(2) Agency roles. The functions of various state agencies, or sections of agencies involved in the advisory process are delineated in this section. State policy and/or legislation concerning issuance of advisories was included wherever possible.

(3) Sampling Procedures. Fish sampling procedures which may have resulted in the issuance of a consumption advisory are outlined in this section. Sampling sites, frequency of sampling, species, and contaminants the fish were analyzed for are indicated. Where possible, types of samples, analytical techniques and fish tissues were monitored also.

(4) Action levels/Data management. The tolerance and action levels as well as criteria and/or guidance used by the states to evaluate tissue sample levels are cited. In some cases, risk assessment/risk management efforts are described and data management practices are noted.

(5) Contacts. Names, addresses and telephone numbers of key contact personnel are included in this section.

Each state profile was returned to the original respondee for review and comment.

IV. State Advisories - Results

The coastal states, the Great Lakes states, Hawaii and Alaska were included in the sampling survey. Of the 30 states asked to participate, 29 responded (See page B-12, Georgia). Three states--Texas, Florida and Hawaii--reported no issuance of advisories for the years 1984-1987 (See Table 2 in Appendix B). A total of 2,094 advisories were issued by the 29 states during those years. This total includes all advisories issued for coastal marine waters, estuaries, rivers, and inland waters. Overall, the majority of the advisories were issued for freshwater finfish (87%).

Among the 26 states that issued advisories during these years, the numbers of advisories ranged from one each issued by Alaska, Alabama, New Hampshire, and Oregon to 665 issued by Minnesota. Consistently high numbers of advisories were issued by the Great Lakes states. The numbers of fish advisories issued by each of the coastal and Great Lakes states responding to the survey show great variability. These differences do not necessarily reflect the degree of pollution in fish tissue but more likely reflect the effectiveness of state systems in identifying potential health risks and issuing advisories. Budgetary constraints often limit the state capacity for sampling and monitoring toxic substances in fish populations. The Great Lakes states have had programs in place for issuing advisories since the early 1970's and are working together to issue consistent advisories for the Great Lakes basin. Figure 2 shows the range of distribution of advisories by region. The Great Lakes states, having the oldest and most highly developed systems in place, have historically issued the greatest number of advisories.

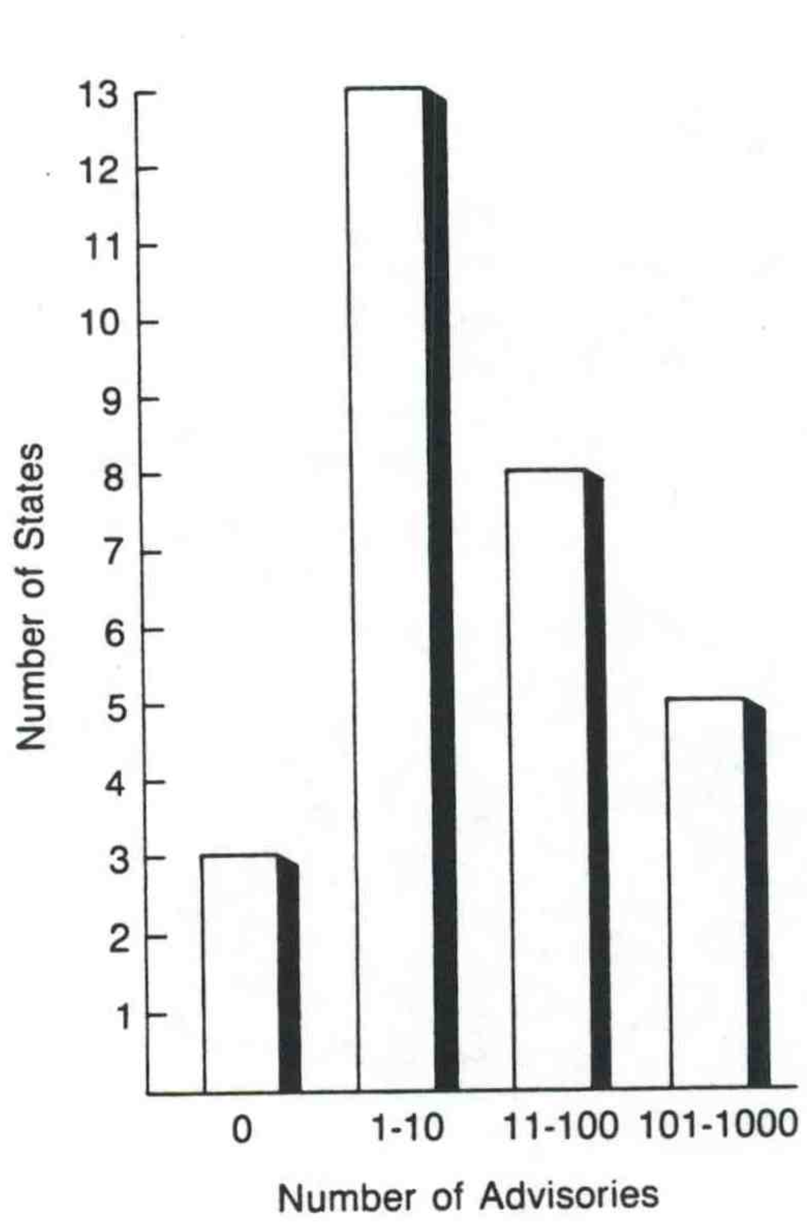


Figure 2. Frequency distribution for numbers of advisories issued by state (1984-1987).

PCBs were the most prominent contaminant for which advisories were issued, accounting for 43% (908) of all advisories documented in this study (Figure 3). Mercury was the second major contaminant of concern, accounting for 40% of the advisories issued (843). Chlordane and dioxin were mentioned in 8% and 2% of the advisories, respectively. The remaining 7% (128) were issued for various toxic substances, including kepone, dieldrin, DDT, PAHs, heptachlor epoxide, petroleum compounds, selenium, and chlorinated benzenes.

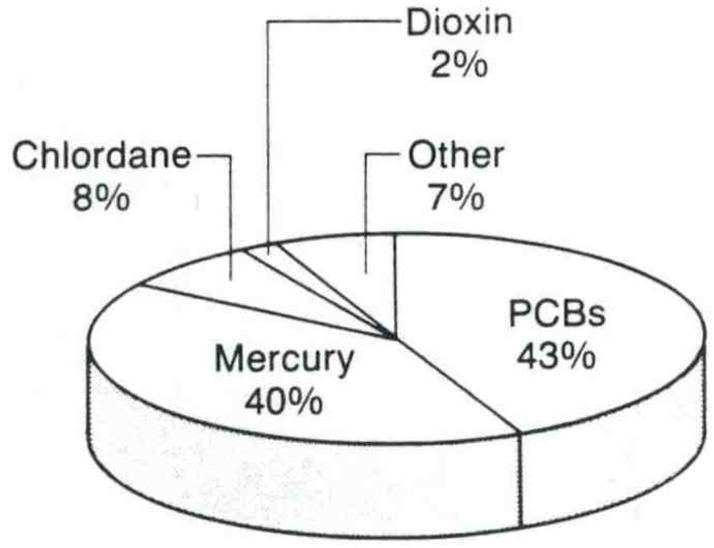
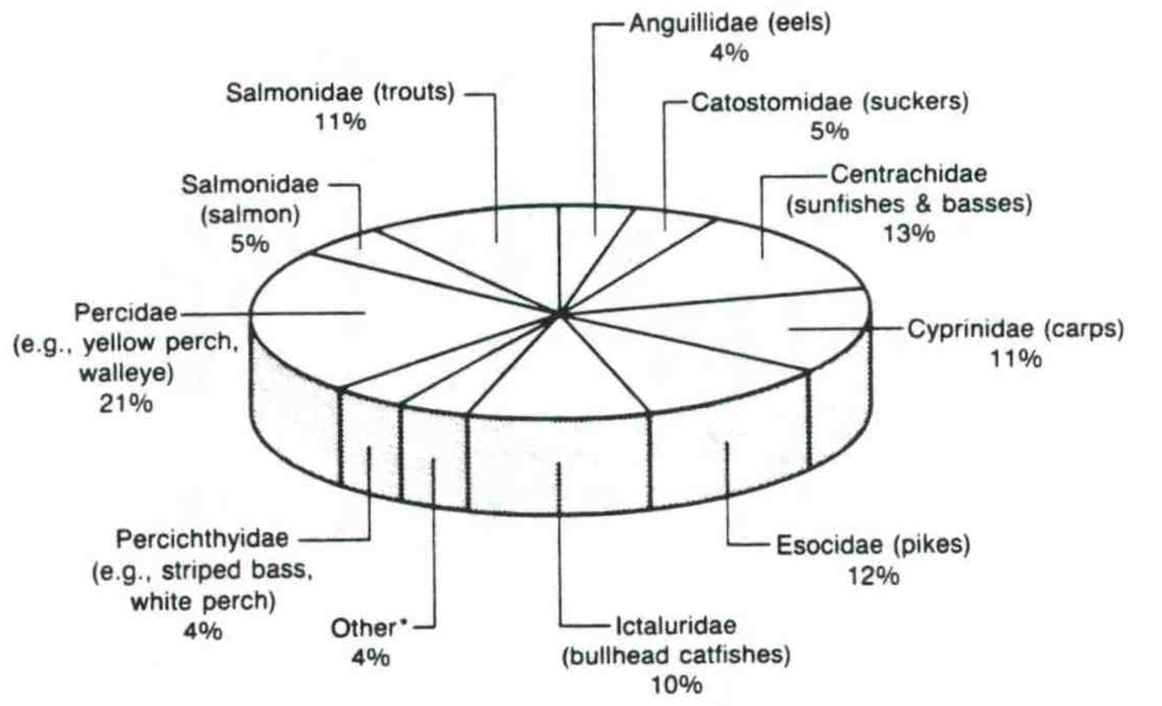


Figure 3. Advisories by contaminant (1984 – 1987).

The approximately 67 species of fish identified in the advisories were categorized by fish family. Fish families are apportioned among the advisories in Figure 4. Species of perch (Percidae, e.g., yellow perch, walleye) accounted for the largest number of advisories (21%), followed by the salmonids (trouts 11%, salmon 5%). Centrachids (sunfishes and basses) accounted for 13% of advisories, pikes (Esocidae) 12%, and carps (Cyprinidae) 11%. Remaining advisories were divided among the bullheaded catfishes (Ictaluridae) 10%, suckers (Catostomidae) 5%, freshwater eels (Anguillidae) 4%, striped basses and white perch (Percichthyidae) 4%, and other species (4%).



*includes unknown species

Figure 4. State-issued advisories by fish family.

Methods used by states to disseminate advisories include media announcements, printed brochures, posting notices in public places, and incorporating information in fishing license applications. Most states use media announcements in conjunction with other methods to ensure that the information reaches the population segments most at risk (Figure 5). In addition, members of the medical community were contacted to disseminate information to patients. For example, New York, Maine, Michigan, Minnesota and Wisconsin involve the medical community in communicating risk to the public. Indiana, New York, New Jersey, Michigan, Minnesota, Washington and South Carolina have organized public outreach and education programs.

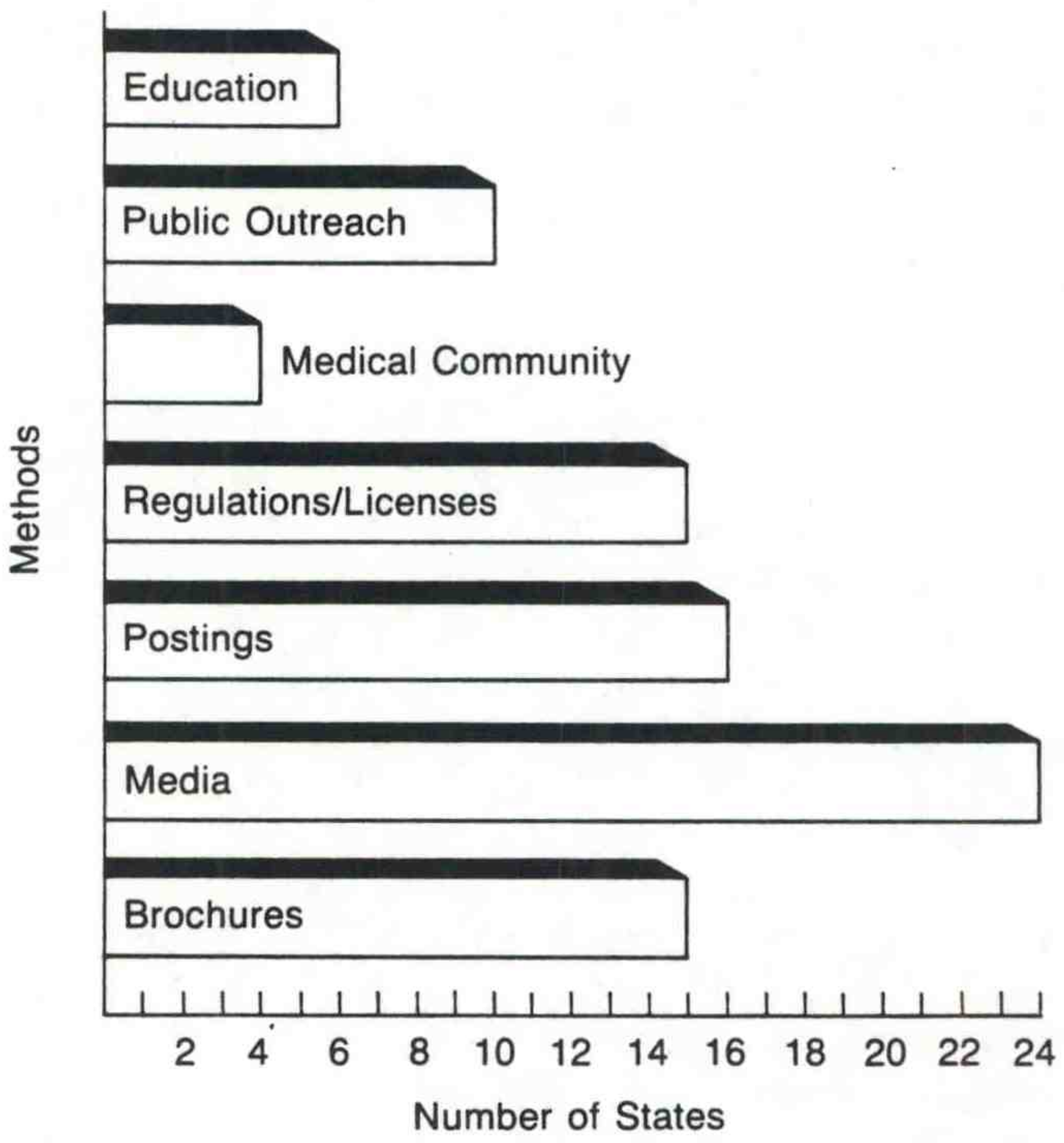


Figure 5. Frequency with which methods of disseminating advisories are used by states.

V. Conclusions and Recommendations

Fish consumption advisories are widely used by states to help consumers make an informed choice to reduce risks to health. Advisory procedures have been designed to ascertain where contaminated fish exist in local waters and to alert the general public concerning potential risks associated with consumption of these fish. Advisories are not designed to predict trends in contaminant distribution or to determine the long-term impacts of contaminants on human health or fish populations.

During the course of this study several problem areas associated with the collection of data, development of advisories and dissemination of information were identified. In general, they can be summarized as follows:

- Sampling programs that provide the basis for issuing advisories are often limited in scope (i.e., too few species, too few contaminants, too few sampling sites).

- Terminology, sampling techniques and reporting procedures vary among state agencies and from state to state.

- Exposure data, consumption estimate and risk assessment models differ among state agencies and from state to state.

- Guidelines and criteria supplied by the Federal government are rare and sometimes contradictory.

- Although different methods have been used to disseminate information concerning advisories, the most effective methods have not been identified through controlled testing.

Currently, fish consumption advisories and bans on catching certain fish species are the only methods used to limit consumption of contaminated fish. The effectiveness of advisories in convincing the general public to voluntarily alter their fish preparation and consumption habits is, for the most part, unknown. Very few epidemiological or social studies have been conducted. The inherent difficulty in changing pleasurable human behavior is not a novel concept and public perception of risk is often difficult to measure. Adherence to hazard warnings often depends on how much confidence the public has in the credibility of the agency issuing the warnings. Since communication through the media is often faster than through routes established between different participating agencies, local agency staff may be asked to comment on agency policy before an official policy is established or the policy is known to all agencies represented.

During the survey, state and local officials responsible for various phases of the advisory process identified several areas where federal assistance would be useful to them. Proposed areas for Federal assistance include:

- o Provide additional guidelines and levels for acceptable exposures to toxic contaminants (including consideration for multiple exposures);
- o Provide guidance for more consistent and clearer usage for risk assessment models;
- o Promote uniformity of analytical procedures and techniques; and
- o Encourage the development of consensus on format and content of all advisories.

Federal assistance, such as that outlined above, could promote consistency among state advisories, improve the general public's confidence in these warnings, and enable the states to develop new and more effective methods for altering fish consumption patterns in at-risk segments of the population.

APPENDIX A: SURVEY QUESTIONNAIRE

9/3/87

NEW YORK SEA GRANT INSTITUTE

FISH CONSUMPTION ADVISORY SURVEY

STATE _____ AGENCY NAME _____

YOUR NAME _____ POSITION _____

ADDRESS _____ PHONE ( ) _____

_____

FUNCTION WITH REGARD TO STATE FISH CONSUMPTION ADVISORIES _____

_____

PLEASE RESPOND EVEN IF NO ADVISORIES HAVE BEEN ISSUED

I. Sampling for toxics in fish and water

A. Has any sampling for toxic contaminants in finfish, shellfish, and water been done by, or for, your agency in the last three years? Yes _____ No _____

Location(s): _____

Fish species: (Please be specific) _____

Contaminants sampled for: (Please list) _____

_____

Contaminants found and their concentrations: (Please attach range and mean) _____

Frequency and duration of sampling (# of samples, season)

_____

_____

Please enclose a description of your state's sampling and monitoring program. What changes or additional components would you like to see in your program? (Use back of page if necessary)

B. How were sites chosen for sampling? (check)

Previously been tested or sampled _____

In response to an environmental accident/emergency _____

Situated near an industrial discharge, landfill area or treatment site _____

In response to public concerns _____

Superfund or National Priority List site (or nearby) _____

Other (specify) _____

II. FISH CONSUMPTION ADVISORIES

Have there been any fish consumption restrictions or advisories officially issued by your state during the past three years based on concerns about toxic contaminants in finfish or shellfish?

Yes ( ) No ( ) How many? ( )

If yes, please enclose copies of advisories or restrictions and complete the following information for <u>each</u>.

NAME OF ADVISORY _____ DATE _____

A. Location of water body and extent of restricted area.

B. Type of water: Freshwater____ Estuarine ____ Coastal Marine _____
Other _____

C. Advisory applies to: Recreational Fishing ____ Commercial Fishing ___

D. Contaminant(s) found: _____

_____

Source, if known: Spill ____ Industrial Discharge _____

Non-point _____ Other _____

Extent of contamination: Specific____ Widespread _____

Size of area (estimate) _____

Species of fish affected: (Be specific and, if possible, include genus and species)

_____

_____

E. Date and duration of restriction or advisory: _____

_____

III. STATE AND LOCAL AGENCY PARTICIPATION AND COORDINATION

A. Which state agencies participate in the advisory and sampling process?

AGENCY	Agency Initials	Agency Contact	Telephone

B. Which local agencies participate?

AGENCY	Agency Initials	Agency Contact	Telephone

C. In your area, which agency is responsible for the following:

	State Agency (initials)	Local Agency (initials)
Choice of site sampled		
Frequency of sampling		
Number of samples taken		
Choice of species sampled		
Choice of contaminant(s) sampled		
Sample collection		

	State Agency (initials)	Local Agency (initials)
Risk assessment	_____	_____
Decision to issue advisory	_____	_____
Dissemination of advisory	_____	_____
Public Outreach / Education Programs	_____	_____
Enforcement	_____	_____
Epidemiological studies	_____	_____
Tolerance or action levels used (which ones)	_____	_____

D. How much money and how many full-time staff equivalents were devoted to consumption advisories by your agency in the last fiscal year? (Round-off or estimate to nearest thousand and give time period)

	STATE $K / Staff	LOCAL $K / Staff
Sampling/Staff	$ ____ / ____	$ ____ / ____
Issuing/Staff Dissemination	$ ____ / ____	$ ____ / ____
Public Outreach Education/Staff	$ ____ / ____	$ ____ / ____
Enforcement/Staff	$ ____ / ____	$ ____ / ____
Other	$ ____ / ____	$ ____ / ____
Total $/Total staff	$ ____ / ____	$ ____ / ____

E. Describe the coordination efforts and shared responsibilities of your state and local agencies in the issuance of advisories or restrictions, e.g., MOUs, Interagency Committees, informal working agreement, workgroups. Please include an organizational or flow chart of the process if possible. (Use back of page if necessary)

F. Is there a formal state policy for dealing with contaminated water and/or fish? Is there state legislation pertaining to advisories? Regulations? Please enclose copies of applicable guidelines, policies, state laws and regulations if possible.

G. In the absence of a formal state policy, legislation or regulation, please explain how and under what authority restrictions or advisories are issued. (Use back of page if necessary)

IV. PUBLIC NOTIFICATION

A. How has the public been made aware of contamination in fish? (Fill in "C" for commercial and "R" for recreational fishing)

_____Special brochures or publications

_____ Media notices and announcements

_____ Included in regulations/licenses

_____ Posting of notices

_____ Medical community involvement/clinic dissemination

_____ Public outreach/extension programs

_____ Educational programs

Other (specify) _____

B. How was the public notified when the advisory was rescinded? (Use categories provided for A above if applicable)

C. Have opportunities been available for public comment on policies? If yes, please describe the process used for obtaining and considering public comment. (Use back of page if necessary)

V. ADVISORY EFFECTIVENESS

A. Has any follow-up been done to assess the effect of advisories on fish consumption? Which agency?

Studies/Surveys/Interviews _____

Site revisiting and sampling _____

Other _____

None _____

B. Are records of advisories kept? What methods are used?

Manual records _____

Written files _____

PC data files _____ (indicate type of computer)

_____ (indicate software)

Mainframe _____ (indicate type of computer)

_____ (indicate software)

C. Are disk copies of your data available? Which format?

WHAT CAN THE FEDERAL GOVERNMENT DO TO ASSIST STATE AGENCIES IN IMPLEMENTING OR IMPROVING THEIR ADVISORY PROGRAMS? (If funding, for what?, guidance, workshops etc.)

APPENDIX B: DATA SUMMARY AND STATE PROFILES

TABLE 2. Total numbers of advisories, species and contaminants by state (1984 - 1987).

State	Total # Advisories Issued	Total # Species Identified	Total # Contaminants Identified	Index-Page #
Alabama	1	1	1	B- 3
Alaska	1	1	1	B- 5
California	21	12	5	B- 7
Connecticut	4	4	2	B- 9
Delaware	5	3	2	B-11
Florida	0	0	0	B-13
Georgia*	-	-	-	B-15
Hawaii	0	0	0	B-17
Illinois	47	9	3	B-19
Indiana	202	10	4	B-21
Louisiana	4	4	1	B-23
Maine	3	3	1	B-25
Maryland	6	4	1	B-27
Massachusetts	5	4	3	B-29
Michigan	138	16	6	B-31
Minnesota	665	14	3	B-33
Mississippi	4	2	2	B-35
New Hampshire	1	1	1	B-37
New Jersey	29	4	2	B-39
New York	355	16	9	B-41
North Carolina	11	4	2	B-43
Ohio	19	4	3	B-45
Oregon	1	1	1	B-47
Pennsylvania	66	9	5	B-49
Rhode Island	2	2	1	B-51
South Carolina	16	6	2	B-53
Texas	0	0	0	B-55
Virginia	13	4	1	B-57
Washington	10	3	3	B-59
Wisconsin	457	15	5	B-61

* Did not respond to survey.

ALABAMA

I. Advisories Issued

- o Advisories issued: one advisory (10/77) still in effect
- o Species of concern: channel catfish
- o Contaminant of concern: PCBs
- o Location: Weiss Reservoir

II. Agency Roles

The Alabama Department of Public Health (ADPH), the Alabama Department of Environmental Management (ADEM), the Alabama Department of Agriculture and Industry (ADIG) and the Alabama Department of Conservation and Natural Resources (ADCNR) each contribute toward the sampling, analyzing, risk assessment and decision to issue and disseminate advisories.

III. Procedures

There is no formal sampling plan. DPH samples upon request or when another agency's samples show a residue above a tolerance level.

IV. Action Levels/Data Management

EPA levels for PCBs

V. Contacts

Mr. James Martin
Alabama Department of Conservation and Natural Resources
64 North Union Street
Montgomery, AL 36130
(205) 261-3486

Mr. Bill Knight
Alabama Department of Public Health
321 State Office Building
Montgomery, AL 36130
(205) 261-5003

Mr. John Williford
Alabama Department of Environmental Management
1751 Congressman WL Dickerson Drive
Montgomery, AL 36130
(205) 271-7700

Mr. Oscar D. Lecompt
Alambama Department of Agriculture and Industry
P.O. Box 370
Auburn, AL 36831-0370
(205) 821-2300

ALASKA

I. Advisories Issued

- o Number of advisories: 1
- o Species affected: salmon
- o Contaminant of concern: crude oil
- o Location: Cook Inlet

II. Agency Roles

The Alaska Department of Environmental Conservation (ADEC), the Alaska Department of Fish and Game (ADFG) and the Alaska Department of Health and Social Services (ADHSS) participate in the advisory process.

ADEC/ADFG:	collect and analyze fish tissue samples, issues and disseminates advisories
ADEC:	conducts public outreach/education programs
ADEC/DHSS:	conduct epidemiological studies

ADEC has regulations which prohibit the sale of fish adulterated during processing. However, at the time this survey was conducted, there was no formal state policy dealing with environmentally contaminted fish.

III. Procedures

The only sampling conducted was in response to an oil spill in July 1987. Initially 13 fish samples per lot were taken but this number was reduced to one as the salmon run was completed. There is no sampling of fish for toxic chemical contamination on a routine basis. Sampling is only conducted in response to an environmental accident or emergency or if a problem is suspected. In this case, 125,000 gallons of crude oil leaked from an oil tanker and 110,000 pounds of fish were contaminated. This occurred during the largest salmon run in Cook Inlet when over 10 million salmon returned to the Inlet.

IV. Action Levels/Data Management Approach

Not applicable

V. Contacts

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Ms. Myra Munson
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CALIFORNIA

I. Advisories Issued

- o Advisories issued: 21
- o Species affected: bass, carp, catfish, crappie, drum, grunt, sunfish, tilapia, white croaker
- o Contaminants of concern: chlordane, DDT, mercury, PCBs, selenium
- o Locations: Santa Monica Bay, Palos Verdes Penninsula, Los Angeles-Long Beach Harbor area, Salton Sea, San Francisco Bay Delta region, several lakes

II. Agency Roles

The Department of Fish and Game (DFG), the State Water Resources Control Board (SWRCB) and the Toxic Substances Control Division-Department of Health Services (TSCH-DHS) participate in the advisory process The agencies are responsible as follows:

DFG: sampling and analysis of fish tissue
DHS: conducts risk assessment, issues advisories, conducts epidemiological studies
DHS/
DFG: joint issuance published in Fish and Game Regulations

Some local county health departments also participate.

III. Procedures

Samples of white croaker, halibut, bonita, mackerel, rockfish sampled for PCB's, DDT, and chlordane done as a one-time study.

IV. Action Levels/Data Management

FDA action and tolerance levels

V. Contacts

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Dr. Gerald A. Pollack
California Department of Health Services
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CONNECTICUT

I. Advisories Issued

- Number of advisories: 4
- Species affected: bass, pickerel, sunfish, trout, striped bass bluefish
- Contaminants of concern: PCBs
- Location: Long Island Sound, Housatonic River

II. Agency Roles

The Department of Health Services (DHS) and the Department of Environmental Protection (DEP) participate in the advisory process and are responsible for the following activities:

DEP: collects samples of fish tissue
DHS: conducts risk assessment and epidemiological studies
DHS/DEP: make joint decision to issue advisories; disseminate advisories

These are informal agreements. Local health departments cooperate with state agencies.

III. Procedures

Sampled species: winter flounder, blackfish, striped bass, trout, catfish, large mouth bass

Contaminants sampled: toluene, some metals, PCBs, chlordane

Locations: Housatonic River, New Haven Bight, Central Long Island Sound, freshwater bodies throughout the state

IV. Action Levels/Data Management Approach

FDA tolerance and action levels are used when applicable, although not on a strict basis. Public hearings were held for striped bass ban. The ban on striped bass was modified to allow eating the equivalent of one fish per week. The DEP closed Connecticut waters to fishing for striped bass in July 1986 for reasons relating to fisheries management rather than the PCB issue.

V. Contacts

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Freshwater Division
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Hartford, CT 06106
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DELAWARE

I. Advisories Issued

- o Number of advisories: 5
- o Species affected: trout, carp, perch
- o Contaminants of concern: dichlorobenzenes, tetrachlorbenzene, PCBs
- o Locations: Red Lion Creek, Red Clay Creek

II. Agency Roles

The Division of Public Health (DPH) and the Department of Natural Resources and Environmental Control (DNREC) participate in the advisory process.

DNEC/DPH: choose contaminant to be sampled
DNEC: collects and analyzes fish tissue
DPH: performs risk assessment and epidemiological studies; issues and disseminates advisories

III. Procedures

Sampling of trout, carp and perch. Response to spill in Red Lion Creek. Special study with EPA for PCBs in Red Clay Creek.

IV. Action Levels/Data Management

FDA action levels for PCBs.

V. Contacts

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and Environmental Control
Water Pollution Branch
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Mr. Richard Howell III
Delaware Division of Public Health
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FLORIDA

I. Advisories Issued

There have been no advisories issued during the years covered by this survey.

II. Agency Roles

The Department of Health and Rehabilitative Services (DHRS) is the lead agency responsible for developing and issuing advisories when needed.

III. Procedures

During 1983-84 fish samples were collected from stations along north Florida rivers. These samples were analyzed for cadmium, chromium, copper, lead and mercury.

An interagency work group composed of personnel from DHRS, the Department of Environmental Regulation (DER), and the Florida Game and Freshwater Fish Commission conducted a survey of the Chipola and Santa Fe Rivers in north Florida to determine baseline concentrations of selected heavy metals in fish (and clams). During 1985-1986 large numbers of largemouth bass, sunfish and suckers were sampled for lead, cadmium and mercury.

The DHRS has conducted sampling of finfish in selected freshwater rivers. This project will be expanded in scope by the DER to include additional sites and other contaminants including pesticides.

IV. Action Levels/Data Management

FDA action levels are used when applicable.

V. Contacts

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GEORGIA

Acknowledged receipt of questionnaire. Has state policy not to respond to surveys.

HAWAII

I. Advisories Issued

No advisories issued during the period of time covered by this survey.

II. Agency Roles

All sampling is conducted by the Environmental Health Division of the Department of Health (DOH).

III. Procedures

Sampling was conducted in 10 estuaries throughout the island. Mullet, wahoo, and barracuda were tested for DDT, PCBs and 129 priority pollutants. Approximately 300 samples are taken per year.

The Pollution Investigation and Enforcement (PIE) Branch of the Hawaii State Department of Health monitors environmental pollutants in two annual programs; Basic Water Monitoring Network and the EPA Toxics Monitoring. Sampling sites chosen are areas suspected of heavy pollution which may not be commercial or even sports fishing areas. These programs, therefore, may not necesarily reflect the toxic contaminant levels in edible tissue.

V. Contacts

Maurice Tamura, DOH Food Products Section (808)548-3280

Eugene Akazawa, DOH Pollution Investigation and Enforcement Branch (808)548-6355

Steve Terrell-Perica, DOH Epidemiology Branch (808)548-5985

Alden Henderson, DOH Environmental Epidemiology (808)548-2076

ILLINOIS

I. Advisories Issued

- o Number of advisories: 47
- o Species affected: carp, catfish, drum, salmon, sturgeon, sucker, sunfish, smallmouth bass
- o Contaminants of concern: PCBs, chlordane, dieldrin
- o Locations: statewide

II. Agency Roles

There is a Memorandum of Agreement (MOA) among the Illinois Environmental Protection Agency (IEPA), the Department of Conservation (IDOC), the Department of Public Health (IDPH), and the Department of Agriculture (IDOA) for the Illinois Fish Contaminant Monitoring Program. This ensures a cooperative effort of the agencies within the state. In addition, Illinois is part of the Great Lakes Governors' Toxic Substances Control Agreement. The MOA is the formal policy and designates the agencies to be responsible for the following activities:

IDOC: collects fish tissue samples with IEPA, analyzes fish tissue samples; data management/computerization; publishes sport fish advisories in Guide to Illinois Fishing Regulations

IDPH: issues advisories and news releases; publishes the Guide to Eating Illinois Sport Fish with IEPA.

III. Procedures

There are 73 permanent stream stations sampled biennially, approximately 36 non-permanent stream stations sampled annually, and 19 lake stations sampled annually. Where possible, these were made to coincide with IEPA's Water Quality Monitoring Network. A total of 14 parameters are routinely analyzed in all composite filets and whole fish. These include aldrin, endrin, heptachlor, epoxide, hexachlorobenzene, lindane, methoxychlor, mirex, PCBs and toxaphene.

IV. Action Levels/Data Management

FDA action and tolerance levels are used.

IEPA forwards computer printouts of fish contaminant data to IDOC and IDPH and also prepares a biennial report of fish contaminant monitoring data and trend analysis. Data received from the field and the laboratories are sent through IEPA to the Infomation Systems Division. These disks are then transferred to STORET datasets.

V. Contacts

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Springfield, IL 62706
(217) 782-6424

INDIANA

I. Advisories Issued

- o Number of advisories: 202
- o Species affected: bass, carp, catfish, northern pike, perch
- o Contaminants of concern: chlordane, dieldrin, PCBs
- o Locations: rivers, creeks, reservoirs statewide, Lake Michigan

II. Agency Roles

The State Board of Health (ISBH), the Department of Environmental Management (DEM), and the Department of Natural Resources (DNR) participate in the advisory process.

DEM: samples fish tissue (with DNR)
ISBH: performs risk assessment, issues and disseminates advisory, conducts public outreach programs and does epidemiology

There is no state legislation pertaining to advisories. Indiana is included in the Great Lakes Governors' Toxics Substances Control Agreement.

III. Procedures

Approximately 60-75 samples per year are taken from inland lakes, reservoirs, creeks and Lake Michigan during the months from July through November. Contaminants sampled and monitored were PCB's, chlordane and dieldrin. The state sampling plan for (1985-89) included over 80 lakes, rivers, creeks and reservoirs (as of 1987). Most of these were chosen because of their susceptibility and proximity to agricultural runoff, municipal and industrial discharges, known toxic spills and waste water treatment plants.

IV. Action Levels/Data Management

FDA action and tolerance levels are used.

V. Contacts

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Indianapolis, Indiana 46204
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LOUISIANA

I. Advisories Issued

- o Number of advisories: 4
- o Species affected: catfish, drum, trout
- o Contaminants of concern: chlorinated volatile hydrocarbons
- o Locations: bayous, lakes, rivers

II. Agency Roles

The Department of Health and Human Resources (DHHR), the Office of Preventive and Public Health (OPPH), the Department of Environmental Quality (DEQ) and the Department of Wildlife and Fisheries(DWF) participate in the advisory process and are responsible for the following activities:

DHHR/OPPHS/DEQ: collect, sample and analyze fish tissue
DHHR: makes decision to issue advisories
DEQ/DHHR: issue written statements for immediate media release, post advisory warnings
DWF: additional dissemination

While there is no written formal agreement or legislation concerning contaminated fish, the State Health Officer can issue advisories to protect public health when warranted.

III. Procedures

Samples of water and seafood were taken at eight sites along the Calcasieu Estuary/Bayou D'Inde. The edible portions of the seafood were analyzed by gas chromatography and gas chromatography mass spectroscopy for halogenated organic contaminants. Approved EPA or FDA methods were used in the laboratory.

IV. Action Levels Approach

FDA tolerance or action levels are used. In the absence of FDA tolerance or action levels for hexachlorobenzene, the DHHR is using an emergency guideline of .060 ppm for HCB in edible portions for determing the comparative safety of seafood. This guideline was extrapolated from an interim guideline which has been used by the FDA for determining the safety of Louisiana beef. The agencies are also using 0.060 ppm for hexachlorobutadiene since published data suggest the potential toxicity to be in the same range as HCB.

Written and PC data files are used to maintain advisory records.

V. Contacts

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Mr. Maurice Watson
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MAINE

I. Advisories Issued

- o Number of advisories: 3
- o Species affected: white sucker, largemouth bass, brown bullhead
- o Contaminants of concern: dioxin
- o Locations: Androscoggin River (entire length)

II. Agency Roles

The Department of Human Services (DHS), the Department of Environmental Protection (DEP), the Department of Inland Fisheries and Wildlife (DIFW) and the Department of Marine Resources (DMR) participate in the advisory process.

DEP/DMR/DIFW: sample and collect fish tissue
[U.S. EPA, US Fish and Wildlife Service and fishermen are involved in these activities as well]
DHS: performs risk assessment and epidemiological studies

Advisories are issued jointly by the three agencies through an informal working agreement.

III. Procedures

While the issue of public health is within the domain of the DHS, DEP administers the water classification law which provides "that water quality be sufficient to protect the public and provide for recreation in and on the water" and also states that the DEP shall not allow any discharge which "causes fish for human consumption to be injurious to human health as determined by the U.S. FDA". DEP assumes some responsibility for monitoring levels of contaminants in fish.

The US F&WS, in its National Bioaccumulation Monitoring Program, has collected data on tissue residues in fish biennially since 1969. Since 1982 DEP has collected data at other sites on the rivers below major discharges

In 1985 and 1986 collections were made under the purview of EPA's National Dioxin Survey.

Approximately 16 species were sampled for cadmium, chromium, mercury, lead, DDT and PCB's.

Advisories are issued as press releases and/or included in fishing regulations booklet under the authority of the Commissioners of the departments involved.

IV. Action Levels/Data Management

DHS calculates safe consumption levels based on reference doses or

cancer potency factors. These are obtained from EPA or developed by DHS. FDA action levels are generally not considered to be applicable to sport fishermen.

V. Contacts

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P. Bourque
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P. Estabrook
Department of Marine Resources
(207) 289-2291

MARYLAND

I. Advisories Issued

- o Number of advisories issued: 6
- o Species affected: American eel, carp, catfish, crappie
- o Contaminants of concern: chlordane
- o Locations: Baltimore Harbor, Back River, Lake Roland

II. Agency Roles

The Maryland Department of the Environment (MDE), the Department of Natural Resources (DNR) and Department of Health and Mental Hygiene (DHMH) participate in the advisory process.

MDE: collects and samples fish tissue, performs risk assessment, issues advisories, conducts public outreach and educational programs, epidemiological studies and enforcement
DNR: along with MDE samples fish tissues and enforces
DHMH: performs risk assessment, public outreach programs and epidemiological studies

III. Procedures

Maryland conducts extensive sampling programs throughout the Chesapeake Bay and its tributaries. Approximately thirty fixed station locations are supplemented with short-term intensive studies in areas of special concern. Trend monitoring stations are visited annually with at least two species being collected. Special studies may consist of a single sampling effort or extend for several seasons over a limited multiyear period.

IV. Action Levels/Data Management

Maryland Department of Environment action levels are based on EPA and FDA guidance documents.

V. Contacts

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Mr. David Resh
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(301) 333-3154

Mr. Pete Jensen
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Tawes Office Building, C2
580 Taylor Avenue
Annapolis, MD 21401
(301) 974-3558

MASSACHUSETTS

I. Advisories Issued

- o Advisories issued: 5
- o Species affected: lake trout, smallmouth bass, white perch, channel catfish
- o Contaminants of concern: mercury, lead, PCBs
- o Locations: Quabbin Reservoir, Ten Mile River, Connecticut River

II. Agency Roles

The Department of Environmental Quality Engineering (DEQE), the Division of Fisheries & Wildlife (DFW), the Division of Marine Fisheries (DMF), and the Department of Public Health (DPH) participate in the advisory process.

DEQE: collects samples of fish tissue
DPH: performs risk assessment, decides to issue advisory and conducts epidemiological studies
DFW: disseminates advisory, does public outreach and education
DMF: enforces (as in closures)

III. Procedures

No information available

IV. Action levels/Data Management

DPH bases its decisions on FDA action/tolerance levels

V. Contacts

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Department of Public Health
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Mr. Arthur Johnson
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Mr. Richard Keller
Division of Fisheries & Wildlife
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Mr. Lee Bridges
Division of Marine Fisheries
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MICHIGAN

I. Advisories Issued

- o Advisories issued: 138
- o Species affected: bass, carp, catfish, crappie, drum, gizzard shad, muskie, northern pike, perch, salmon, sucker, sunfish, trout, white sucker, walleye, bullhead, pumpkinseed
- o Contaminants of concern: PCBs, PAHs, mercury, dioxin, chlordane, PBBs
- o Locations: Lake Michigan watershed, Lake Huron watershed, Lake Superior watershed, Lake Erie watershed, Lake St. Clair

II. Agency Roles

A Memorandum of Understanding (MOU) between Michigan Departments of Public Health (MDPH), Natural Resources (MDNR) and Agriculture (DOA) delineates the following roles and responsibilities for each agency. The MOU also establishes a mechanism to coordinate contaminant monitoring among the three departments.

MDNR/MDPH/
MDA: All have input in the sample plan including sites, species, contaminants, and number of samples taken

MDNR/
MDA: collect fish tissue samples
MDPH: performs risk assessments, issues advisories , conducts public outreach and epidemiological studies

Pursuant to the broad powers of the Michigan Public Health Code, issuance of the advisories is the responsibility of the MDPH.

Michigan is a member of the International Joint Commission and is signatory to the Great Lakes Governors' Toxic Substance Control Agreement.

III. Procedures

The MDNR has written extensively about its state fish contaminant program. Included in the file are statements on procedures and philosophy.

IV. Action Levels/Data Management Approach

The MDPH uses most of FDA's action levels but is more stringent for mercury (0.5 ppm) and dioxin (10 ppt).

V. Contacts

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MINNESOTA

I. Advisories Issued

- o Number of advisories: 665
- o Species affected: bass, bigmouth buffalo, carp, catfish, crappie, drum, northern pike, perch, salmon, splake, sucker, sunfish, trout, walleye, white sucker
- o Contaminants of concern: dioxin, mercury, PCBs
- o Locations: statewide

II. Agency Roles

The Minnesota Department of Health (MDH) issues annual fish advisories in cooperation with the Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Natural Resources (MDNR). These three agencies comprise the Interagency Pesticides Contaminant Committee.

MPCA: the Division of Water Quality decides on sites, frequency, and species to sample
MPCA/MDH: choose contaminants to be sampled
MPCA/MDNR: collect and analyze fish tissue samples
MDH: performs risk assessment
MDH/MPCA/MDNR: issue advisories, disseminate advisories and conduct public outreach and education programs

The MDH and the MPCA along with the states of Michigan and Wisconsin are part of the EPA Region 5 Great Lakes Advisory group and issue joint advisories for Lake Superior.

The MDH, MPCA and MDNR also participate in the International Joint Commission (IJC) and in conjunction with the Wisconsin Department of Health and the Wisconsin Department of Natural Resources issue commercial advisories for the Mississippi River and sport fish advisories for the Mississippi and St. Croix rivers.

III. Procedures

Statewide sampling is done annually during the fall for PCBs, dioxin, mercury and organics. Species sampled for were pike, perch and carp.

IV. Action Level/Data Management Approach

FDA tolerance and action levels are used. EPA risk assessment guidance is used. STORET/EPA databases used.

V. Contacts

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Dr. Pamela Shubert
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Mr. Jack Skryper
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St. Paul, MN 55155

MISSISSIPPI

I. Advisories Issued

- o Number of advisories: 4
- o Species affected: catfish, largemouth bass
- o Contaminants of concern: PCBs, DDT
- o Location: Lower Yuckanookany River, Old Little Tallahatchie River

II. Agency Roles

The Mississippi Bureau of Pollution Control (MBPC), the Mississippi Department of Wildlife Conservation (MDWC), and the Mississippi Department of Health (MDH) participate in the advisory process.

MBPC: collects and processes fish tissue, verifies data and informs MDWC and MDH
MBPC/DWC/MDH: perform risk assessment
MBPC: decides, in conjunction with MDWC and MDH, to disseminate advisory
MDWC: issues ban on commercial fishing, if needed, does public outreach
MDH: performs epidemiological studies

III. Procedures

In order to monitor levels of toxic substances in fish tissue, samples from as many as 36 sites are collected yearly from around the state and analyzed for 29 chemicals. One predator species and two bottom fish are collected and wholefish composites are analyzed. Other sites such as downstream from potential pollution sources, fish kill locations, etc. are sampled and analyzed for toxic substances.

IV. Action Levels/Data Management Approach

FDA tolerance and action levels are used. EPA risk assessment guidance is used.

V. Contacts

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NEW HAMPSHIRE

I. Advisories Issued

- o Number of advisories: 1
- o Species of concern: bluefish
- o Contaminants of concern: PCBs
- o Location: eastern seaboard of state, Atlantic Ocean

II. Agency Roles

The New Hampshire Division of Public Health (DPH), the New Hampshire Fish and Game Department (F&G) and the U.S. Fish and Wildlife Service (FWS) participate in the advisory process.

DPHS/FWS/F&G: choose site to sample
FWS/F&G: collect fish tissue, provide technical expertise
DPH: chooses species and contaminants to sample; performs analytical work, performs risk assessment, issues and disseminates advisory, does public outreach programs and epidemiological studies

III. Procedures

As an example of a cooperative agreement between the U.S. FWS, NH F&G, and the DPH, the fish in Country Pond and Great Pond were reevaluated in order to revise and modify previous health-based recommendations for consuming fish from the pond. Fillet portions of largemouth bass, sunfish, golden shiners, yellow perch, white perch and brown bullhead were analyzed for PCB's by gas chromatography. Mercury was analyzed by atomic absorption spectophotometry. Based on the results of this study (3/87), the DPH concluded that the detectable levels of PCBs and mercury in County and Great Pond did not pose a significant health risk and no restrictions on consuming fish were necessary at that time.

IV. Action Levels/Data Management

FDA tolerance level used.

V. Contacts

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New Hampshire Division of Public Health
6 Hazen Drive
Concord, NH 03301-6527

NEW JERSEY

I. Advisories Issued

- o Advisories issued: 29
- o Species affected: American eel, bass, bluefish, carp, catfish, crappie
- o Contaminants of concern: dioxin, PCBs
- o Locations: statewide (PCBs), Passaic River (dioxin), Hudson-Raritan estuary

II. Agency Roles

The Department of Environmental Protection (DEP), Department of Health (DOH). A technical group has been formed of the various elements of the agencies working on toxic substances in New Jersey's biota. This group provides a central clearinghouse for studies and communication efforts. Since 1983, the Toxics in Biota Policy Committee has consisted of personnel from the Office of Science and Research, the Division of Fish, Game and Wildlife and the Division of Water Resources. The technical group established to work under the Policy Committee is "responsible for sampling, design and strategy, sampling schedules and data analyses." Additionally, representatives from the Division of Waste Management and the Department of Health are included in the Technical Group.

III. Procedures

A study of dioxin conducted by DEP, DOH and the U.S. EPA in 1985 showed widespread contamination in the tidal Passaic River and resulted in a limited consumption advisory and a ban on the sale of striped bass. (Newark Bay, tidal Hackensack Bay, Arthur Kill, Kill Van Kull.) PCB's have been collected from the northeast corner of the state. Contaminated species include eel, perch, catfish, striped bass and bluefish.

IV. Action Levels/Data Management

FDA levels, PC IBMS, STORET

V. Contacts

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Mr. Joseph Wellin
New Jersey Department of Health
John Fitch CN-360
Trenton, NJ 08625

NEW YORK

I. Advisories Issued

- o Advisories issued: 355
- o Species affected: American eel, Atlantic needlefish, bass, bluefish, catfish, crappie, muskie, northern pike, perch, salmon, smelt, splake, sunfish, trout
- o Contaminants of concern: chlordane, DDT, dieldrin, dioxin, heptachlor epoxide, lead, mercury, mirex, PCBs
- o Locations: statewide lakes and Hudson River

II. Agency Roles

The Department of Environmental Conservation (DEC) and the Department of Health (DOH) participate in the advisory process.

DEC: chooses sites, frequencies, species to sample (with input from the DOH), samples fish tissue
DOH: risk assessment, decision to issue advisory, epidemiological studies
DOH/DEC: disseminate advisories, conduct public outreach and education

III. Procedures

New York State has extensive, statewide toxic monitoring programs. The major programs are:

- o Striped Bass PCB Project in New York Marine Waters
- o Hudson River PCB Analysis
- o Onondaga Lake Mercury Trend Analysis
- o Finger Lake Contaminant Surveillance - DDT in Lake Trout
- o Lake Ontario Contaminant Trend Analysis - Mirex in Salmonids
- o Great Lakes Nearshore Fish Contaminant Surveillance
- o Statewide Toxic Substances Monitoring Program - PCBs, organochlorine pesticides and mercury

IV. Action Levels/Data Management

FDA/EPA action or tolerance levels

V. Contacts

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NORTH CAROLINA

I. Advisories Issued

- o Number of advisories: 11
- o Species affected: bass, carp, catfish, sunfish, panfish, trout
- o Contaminants of concern: dioxin, selenium, methyl mercury
  (Dioxin advisory developed jointly with EPA)
- o Locations: Abbott Creek, Pigeon River, with EPA in west Tennessee, Belews Lake

II. Agency Roles

There is an informal working agreement between the Department of Environmental Management (DEM) and the Department of Health Sciences (DHS) to participate in the advisory process.

DEM: collects and samples fish tissue
DHS: performs risk assessment, decides to issue advisory, disseminates advisory, does public outreach and education programs, and performs epidemiological studies

III. Procedures

The North Carolina DEM has an extensive network of sampling stations for fish tissue (approximately 175 stations). Sampling for metals occurs at 25 core stations on a three year rotating schedule. Special studies are performed on selected drainages to assess both organic and metal contamination. To prioritize the most prevalent pesticides, whole fish sampling has been conducted around the state. Mercury - sampled annually since 1986, biannually 1980-85. Selenium - one time by NCDEM, annually by Duke Power Co.

IV. Action Levels/Data Management Approach

FDA tolerance or action levels are used generally, however a more stringent level for dioxin has led to a no consumption advisory issued on 30 miles of the Pigeon River. Since no FDA level exists for selenium, DHS has developed its own level based on their own risk assessment.

V. Contacts

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OHIO

I. Advisories Issued

- o Number of advisories issued: 19
- o Species affected: carp, channel catfish, largemouth bass, white sucker
- o Contaminants of concern: PCBs, mirex, chlordane
- o Locations: Lake Erie, Little Beaver Creek, Lake Nesmith, Summit Lake, Portage Canal

II. Agency Roles

The Ohio Department of Health (ODH), the Ohio Environmental Protection Agency (OEPA), the Ohio Department of Natural Resources (ODNR), and the Ohio Department of Agriculture (ODA) participate in the advisory process. Ohio is also signatory to the Great Lakes Governors' Toxic Substances Control Agreement.

OEPA/OPH: choose sites, species and contaminants to sample, collects fish tissues

ODA: analyzes fish tissue samples

ODH: performs risk assessment, decides to issue advisory, disseminates advisory, does epidemiological studies

An Interagency Fish Advisory Committee was established in August 1987 to delineate responsibilites.

III. Procedures

Sporadic sampling is conducted by the Ohio EPA. Carp, catfish, largemouth bass, white suckers and walleye are tested for PCBs and organic pesticides. Areas sampled include the Great Miami River, the Cuyahoga River, Lake Erie and Maumee River. Ohio is also signatory to the Great Lakes Governors' Toxic Substances Agreement.

IV. Action Levels/Data Management Approach

FDA are used where applicable. Where none exist, the ODH uses their "best professional judgment."

V. Contacts

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Mr. Frank Neel
Ohio Department of Agriculture
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Mr. Ken Patonk
Ohio Department of Natural Resources
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(614) 265-6565

OREGON

I. Advisories Issued

- o Advisories issued: 1
- o Species affected: trout
- o Contaminant of concern: mercury
- o Location: Cottage Grove Reservoir

II. Agency Roles

The Oregon State Health Division (OSHD), the Department of Environmental Quality (DEQ) and the Oregon Department of Fish & Wildlife (ODF&W) participate in the advisory process.

DEQ: determines frequency, number of samples and species
OSHD/
DEQ: chooses site, contaminants, collect samples, perform risk assessment
OSHD: decides to issue advisory, disseminates advisory, does public outreach and education

Covered under Clean Water Act and state Water Quality Standards and Guidelines.

III. Procedures

Under Oregon's Administrative Rules, there is extensive regulation relative to water quality control and environmental monitoring using fish as bioaccumulators. The 1985 Monitoring Plan was based on the EPA Water Monitoring Program. The joint report with EPA, titled Oregon Ambient Water Quality Toxics Data Summary 1979-87, recommended that a cooperative Department of Environmental Quality/EPA regional toxic screening program be carried out; 25 sites for tissue composites and 13 sites for duplicate sediment samples. At present there is sampling once a year in the late summer/early fall for pesticides, heavy metals and PCBs.

IV. Action Levels/Data Management

EPA/FDA levels used . STORET

V. Contacts

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Portland, OR 97207
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Mr. Tom Gaumer
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Mr. Andy Schaedel
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PENNSYLVANIA

I. Advisories Issued

- o Number of advisories: 66
- o Species affected: carp, catfish, sucker, sunfish, trout white sucker
- o Contaminants of concern: chlordane, kepone, mirex, PCBs
- o Location: statewide, Lake Erie

II. Agency Roles

A Memorandum of Understanding (MOU) was signed in May 1986 by the Pennsylvania Fish Commission (PFC), the Department of Health (DOH), and the Department of Environmental Resources (DER) to develop a systematic approach and coordinated procedures for issuing health advisories concerning contaminated fish tissues. The MOU is the formal policy and designates the agencies to be responsible for the following activities:

PFC/DER: collect fish tissue samples
DER: analyzes fish tissue samples
DOH: reviews results of analyses and determines if consumption of fish would constitute a health risk
DOH/DER/PFC: issue joint advisories to limit consumption and oversee public news releases pertaining to advisories
DOH: epidemiological studies

Pennsylvania is also a member of the Great Lakes Governors' Toxic Substances Control Agreement.

III. Procedures

There is annual sampling at 30 ambient monitoring stations around the state. These stations are rotated so that 166 stations can be sampled over a period of 5-6 years. The samples are skin-on composite fillets. An additional 20 samples are collected each year in known or suspected problem areas. As part of the Ohio River Valley Water Sanitation Commission Lock Chamber Study (ORSANCO) six sites are sampled annually for PCBs, chordane, DDE, TDE, epoxide, dieldrin and HCB. As part of the Coho Salmon Element of the Great Lakes International Surveillance Plan, Pennsylvania continues to annually analyze adult coho salmon Composite fillets are analyzed for various organics.

IV. Action Levels/Data Management Approach

FDA tolerance or action levels are used when applicable. Results of chemical analyses are stored in STORET.

V. Contacts

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RHODE ISLAND

I. Advisories Issued

- o Advisories issued: 2
- o Species affected: striped bass (ban), bluefish (health advisory)
- o Contaminant of concern: PCBs
- o Location: Coastal - Narragansett Bay, Rhode Island Sound

II. Agency Roles

The Department of Health (DOH) and the Department of Environmental Management (DEM) participate in the advisory process through an Interagency Committee under Rhode Island Health Laws.

DEM: chooses sample site and collects fish tissue samples
DEM/DOH: choose species, numbers and contaminants sampled, decide to issue advisory
DOH: performs risk assessment, dissemminates advisory, conducts epidemiology studies

III. Procedures

Striped bass has been sampled annually during 1985-87 for PCBs. During the last 10 years bluefish have been sampled two to three times a year for PCBs. In 1987, sampling for copper, lead, cadmium, zinc, chromium was conducted in Narragansett Bay.

IV. Action Levels/Data Management

FDA tolerance levels.

V. Contacts

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Government Center
Towerhill Road
Wakefield, RI 09872
(401) 789-3094

SOUTH CAROLINA

I. Advisories Issued

- o Number of advisories: 16
- o Species affected: bass, catfish, crappie, perch, sunfish
- o Contaminants of concern: mercury, PCBs
- o Locations: Lake Hatwell (PCBs), Langley Pond (mercury)

II. Agency Roles

The South Carolina Department of Health and Environmental Control is responsible for all aspects of the advisory process. The Bureau of Water Pollution Control and Health Hazard Evaluation toxicologists and physicians are all within the Department of Health and Environmental Control.

III. Procedures

Sampling is conducted at approximately 100 statewide sites for priority pollutants including heavy metals, agricultural pesticides, PCB's etc. There is annual collection of multiple species for the trend monitoring program. Special work may dictate more frequent collection. The basic program was initiated in 1974.

IV. Action Levels/Data Management

FDA guidance and action levels are used when applicable. Information in available through STORET.

V. Contacts

Mr. Russell W. Sherer
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

TEXAS

I. Advisories Issued

No advisories were issued during the period of time covered by this survey.

II. Agency Roles

III. Procedures

No routine state sampling for finfish. The Department of Health could respond under the expanded Aquatic Life Law. An informal working agreement with local officials would be used to disseminate information.

V. Contacts

Mr. Richard Thompson
Texas Dept. of Health
1100 West 49th Street
Austin, TX 78756

VIRGINIA

I. Advisories

- o Advisories issued: 13
- o Species of concern: largemouth bass, pumpkinseed, bluegill, smallmouth bass, sunfish, white sucker
- o Contaminant of concern: mercury
- o Locations: Lake Newman, Holston River-Saltville, Waynesboro to Overall, South River, Shenandoah River

II. Agency Roles

The Virginia Department of Health (VDH), the State Water Control Board (SWCB), the Virginia Institute of Marine Science (VIMS), the Marine Resources Commission (MRC) and Game and Inland Fisheries (GIF) participate in the advisory process.

VIMS: decides on numbers of samples, species to sample and does fish tissue sample collection

SWCB: decides on frequency of sampling

VDH: decides which contaminants to sample for, performs risk assessment, decides to issue advisory, does public outreach, dissemination of advisory and education and conducts epidemiological studies

MRC/
GIF: helps disseminate advisory

III. Procedures

One sampling was done in 1985 on 5 largemouth bass, 4 pumpkinseed and one bluegill in Harrisonburg. The sampling was for mercury.

IV. Action Levels/Data Management

FDA mercury guidance used.

V. Contacts

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Ms. Gail Walton
Virginia State Water Control Board
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WASHINGTON

I. Advisories Issued

- o Advisories issued: 10
- o Species of concern: English sole
- o Contaminants of concern: PAHs, PCBs,
- o Locations: Elliot Bay, Eagle Harbor, Everett Harbor, Sinclair Inlet Commencement Bay, Puget Sound

II. Agency Roles

The Department of Social and Health Services (DSHS), the Department of Ecology (DOE) participate in the advisory process.

DOE: chooses sites, frequency, number of samples, species and contaminants to sample, collects fish tissue

DOE/
DSHS: perform risk assessment, decide to issue advisory, do public outreach and education, conduct epidemiological studies

III. Procedures

- o Catch and consumption surveys
- o Bottomfish-metal conncentration in Puget Sound
  --arsenic, cadmium, copper, lead, mercury, selenium, silver
  --cod, perch, rockfish, flatfish
- o Muscle tissue concentration of PCBs and DDT in bottomfish of Puget Sound
- o Sampling and monitoring of other organic contaminants - PAHs, MAHs, phthalate esters, halogenated diphalic hydrocarbons, nitrosomines in muscle tissue

IV. Action Levels/Data Management

FDA tolerance and action levels.

V. Contacts

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MS.S LD - 11
Olympia, WA 98504
(206) 753-1146

WISCONSIN

I. Advisories Issued

- o Advisories issued: 457
- o Species affected: Bass, carp, catfish, crappie, largemouth bass, northern pike, perch, salmon, splake, sunfish, trout, walleye, white sucker
- o Contaminants of concern: chlordane, dieldrin, dioxin, mercury, PCBs
- o Locations: statewide lakes and rivers, Lake Michigan

II. Agency Roles

The Department of Health and Social Service (DHSS) and the Department of Natural Resources (DNR) participate in the advisory process. Wisconsin participates in the International Joint Commission and is signatory to the Great Lakes Governors' Toxic Substances Control Agreement

DNR: collects and analyzes fish tissue; decides which sites to sample and which species; publishes advisory and does public outreach

DHSS: suggests chemicals to sample, sites and sample size, determines actual "safe" levels for consumption, determines human health effects

DNR/
DHSS: meet to discuss the lab results and whether changes are needed in the collection process and in the upcoming advisory taking into account public reaction and communication efforts

This is done on an informal basis. There are no specified roles for either agency but an MOU is being developed which will both clarify and formalize the process and each agency's imput.

III. Procedures

Wisconsin has had extensive sampling and monitoring procedures in place for many years. They are briefly summarized below.

- o Mercury - Under the Fish Contamination Program. Since 1982 there has been mercury monitoring in gamefish (walleyes). In 1987, under the Water Quality Monitoring Program, yellow perch were sampled at 20 lakes.

- o Chlorinated Pesticides, heavy metals - Since 1977 sampling have been taken at 29 sites for parameters such as PCBs, chlordane, dieldrin, and DDT.

- o EPA's Great Lakes National Program Office - Lake Superior, Michigan and tributaries. This program is designed to (1) determine trends and geographic patterns and (2) provide information for health advisories and tracking contaminant levels in key salmonoid species.

IV. Action Levels/Data Management

DHSS uses FDA commercial fish action levels or reviews the information available on a chemical and decides on its own risk level.

V. Contacts

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