

# Summary of Responses to the 2010 National Survey of Fish Advisory Programs



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# 1.0 Introduction

In 1993, the U.S. Environmental Protection Agency (EPA) began compiling information on fish advisories provided by the states in their biannual 305(b) Water Quality Inventory Reports; however, the EPA soon determined that some states did not report up-to-date information about fish advisories in their 305(b) reports. In many states, the water quality or environmental agencies were responsible for preparing the 305(b) report, whereas the state health department generally was responsible for issuing the advisories. In 1994, the EPA Office of Water (OW) began conducting a voluntary annual fish advisory program survey to obtain the most up-to-date information on fish advisories and state advisory programs. The Agency began surveying the state health departments or other state agencies directly responsible for the issuance of fish and wildlife advisories. Today, the EPA collects three distinct types of information from the states regarding their fish consumption advisory programs:

1. **Number and geographic extent** of fish advisories in each state,
2. **Contaminant residue data** from fish tissue analyses,
3. **State methodology** for fish tissue monitoring, analysis, and risk communication.

This report summarizes the results of the third data collection effort, a compilation of information obtained from a survey of state methods and procedures called the National Survey of Fish Advisory Programs. This survey is now conducted biannually through the use of a dedicated survey website. The survey collects information on state fish advisory programs, including differences in monitoring procedures used to collect and analyze fish samples, risk assessment methodologies used to evaluate chemical residue data and issue advisories, risk management approaches employed to protect the public, and risk communication procedures used to communicate the human health risks associated with the consumption of chemically contaminated species. From this information, the EPA can assess the implementation of EPA guidance recommendations in state fish advisory programs and determine what steps are needed to provide assistance to state, territorial, and tribal fish advisory programs. The results of the survey are analyzed, compiled into a report, and shared with government agencies and the general public.

In 2011 this survey report will be available via the newly redesigned National Listing of Fish Advisories (NLFA) website, along with the other two categories of data. The NLFA website (<http://water.epa.gov/scitech/swguidance/fishshellfish/fishadvisories>) provides information about fish advisories, fish consumption advice, risk and benefits of fish consumption, and mercury in fish; a monthly fish advisory newsletter; and the NLFA database. The website also includes an easy-to-use interactive mapping tool that allows the public to search for information about advisories where they live, and advanced search options for more detailed advisory information on advisory and fish tissue contaminant data for 49 states, territories, and tribes. By using the website fishers can determine whether the waterbodies they want to fish have been monitored to assess the level of chemical contamination in the fish and whether any advisories or bans have been issued. This gives consumers information that they can use to make informed decisions concerning the waterbodies they fish and the amount and types of fish they consume.

## 1.1 Uses of the Data

The EPA uses the National Survey of Fish Advisory Programs to accomplish the following goals:

1. Enhance the public's understanding about the safety of consuming fish, shellfish, and other water-dependent wildlife harvested from local waters by making this information available on a national fish advisory website.
2. Improve the scientific and policy foundation in support of state, territorial, tribal, and local actions.
3. Provide up-to-date sampling and analysis methods, and risk assessment, risk management, and risk communication procedures for the states' use to better protect the health of recreational and subsistence fishers.

The EPA uses the fish advisory survey information to determine whether recreational and subsistence fishers are at additional risk of exposure to chemical contaminants through their consumption of locally caught fish and shellfish. The survey results provide data on the types of contaminants that trigger the issuance of advisories; the appropriateness of the state monitoring effort design with respect to the number of samples collected and the number of stations surveyed; the number of chemical contaminants being analyzed in the fish tissue; the risk assessment methodology currently being used to evaluate the potential health risk to fish consumers; the risk management approaches selected to protect public health; and the ways in which advisory information is being communicated to the fish-consuming population.

The EPA is using and will continue to use National Survey of Fish Advisory Programs information to examine the success of current fish advisory programs and to evaluate scientific research needs and policy implications. Information from the survey stimulates nationwide dialogue on fish consumption advisories involving agencies and the public and is used to identify and clarify issues that lead to the continued development of national guidance for states on sampling and analysis, risk assessment procedures, risk management practices, and risk communication procedures that will further protect human health.

## 1.2 Current Data Collection Effort

EPA OW prepared an initial information collection request (ICR) to cover fish advisory program data collection for the 2000 through 2003 reporting periods. Several ICR extensions have been approved by the Office of Management and Budget (OMB), most recently for the period from 2010 – 2011 under OMB control number 2040-0226.

This report is a summary of responses obtained from state and tribal fish advisory contacts to the 2010 National Fish Advisory Program Survey. The survey was conducted through a password-protected website that was announced to the state contacts in February 2011 as part of the annual update process for the EPA National Listing of Fish Advisories database. Unique user names and passwords were sent to all 50 states, the District of Columbia, several Native American tribes (the Great Lakes Indian Fish and Wildlife Commission [GLIFWC], the Minnesota Chippewa Tribe, the Aroostook Band of Micmacs of Maine, the St. Regis Mohawk Tribe of New York, and the Cheyenne River Sioux Tribe of South Dakota), and the U.S.

Territories of American Samoa, Guam, Puerto Rico, and the U.S. Virgin Islands. The 2010 collection effort involved 60 potential respondents, and the survey covered fish advisory information collected by the states and tribes from January 1 to December 31, 2010.

All 50 states, the District of Columbia, four tribes (the Aroostook Band of Micmacs, GLIFWC, the Cheyenne River Sioux Tribe, and the St. Regis Mohawk Tribe), and the U.S. Territory of Guam responded to the 2010 survey, for a total of 56 respondents. No responses were received from the Minnesota Chippewa Tribe, American Samoa, Puerto Rico, or the U.S. Virgin Islands.

### 1.3 Report Contents and Format

Section 2 of this document presents a narrative summary of the results of the 2010 survey. Appendix A includes a copy of the Questionnaire for the Fish Consumption Advisory Program that appeared on the survey website. Appendix B provides spreadsheets with summaries of each state's response to each question.

Section 2 provides the reader with a statement of each question asked in the survey, followed by a short summary of the state responses. Appendix B supplements the national summary by providing a complete listing of the individual state survey responses presented alphabetically by state abbreviation using the following conventions:

- For each question the state, territory, or tribe response is listed after the state/territory/tribal abbreviation.
- For questions in which states, territories, or tribes provided comments, their specific remarks or information related to the question are also presented. For example, if "Other methods" was an answer category and the state or tribe was asked to specify what other methods were used, then the other methods described by the fish advisory contact appear in the text following the primary response heading, "Other methods."
- If the question is not applicable to the state, territorial, or tribal fish advisory program, a notation of "not applicable" was used.
- If no response to the question was provided by the state, territorial, or tribal contact, the answer section is left blank.

Several of the questions request that respondents select all answers that apply. For this reason, not all of the reported responses will add up to 56 (the number of respondents). In a small number of cases, state, territorial, or tribal contacts entered responses in the "Other methods" category that were actually listed as primary response choices. In these cases, information in the "Other methods" category was counted in the appropriate primary choice selection category for reporting in Section 2.

In some areas, respondents answered related questions inconsistently. In those cases, we have reported the answers as given; as a result, some of the tallies in Section 2 may appear inconsistent from one question to another. The interested reader can refer to Appendix B for more detail on the answers of specific states.



## 2.0 Summary of State Responses—National Perspective

The 2010 National Survey of State Fish Advisory Programs was conducted through the Internet using password-protected survey forms already populated with each state's responses to the previous survey conducted in early 2009. The link to the survey web site along with a unique user name and password was sent to the states in February 2011. Responses to the survey were received from all 50 states, the District of Columbia, the U.S. Territory of Guam, and four tribes (GLIFWC, Aroostook Band of Micmacs, St. Regis Mohawk, and Cheyenne River Sioux). Note that the term "states" is used throughout this report to refer to respondents in general, including the District of Columbia, territories, and tribes. The questionnaire covered nine basic areas:

- Fish tissue monitoring programs.
- Types of fish advisories.
- Sample preparation and analysis procedures.
- State advisory program funding.
- Other uses of state advisory data.
- Risk assessment methodology.
- Targeting fish consumers.
- Risk management.
- Risk communication methods.

In addition, states provided information to EPA on any studies they were aware of that focused on evaluating human tissue contaminant levels or health effects related to fish consumption. Some of the state health agencies that participated in the survey had difficulty providing information related to the monitoring aspects of their state's fish advisory programs. In many states, monitoring and analysis of fish tissue samples for chemical contaminants are typically conducted by the state environmental protection agency or the fish and wildlife department and are not under the purview of the health department. Therefore, the number of total responses received for each question varied slightly. The following national perspective of the fish advisory programs was developed based on state responses to the survey.

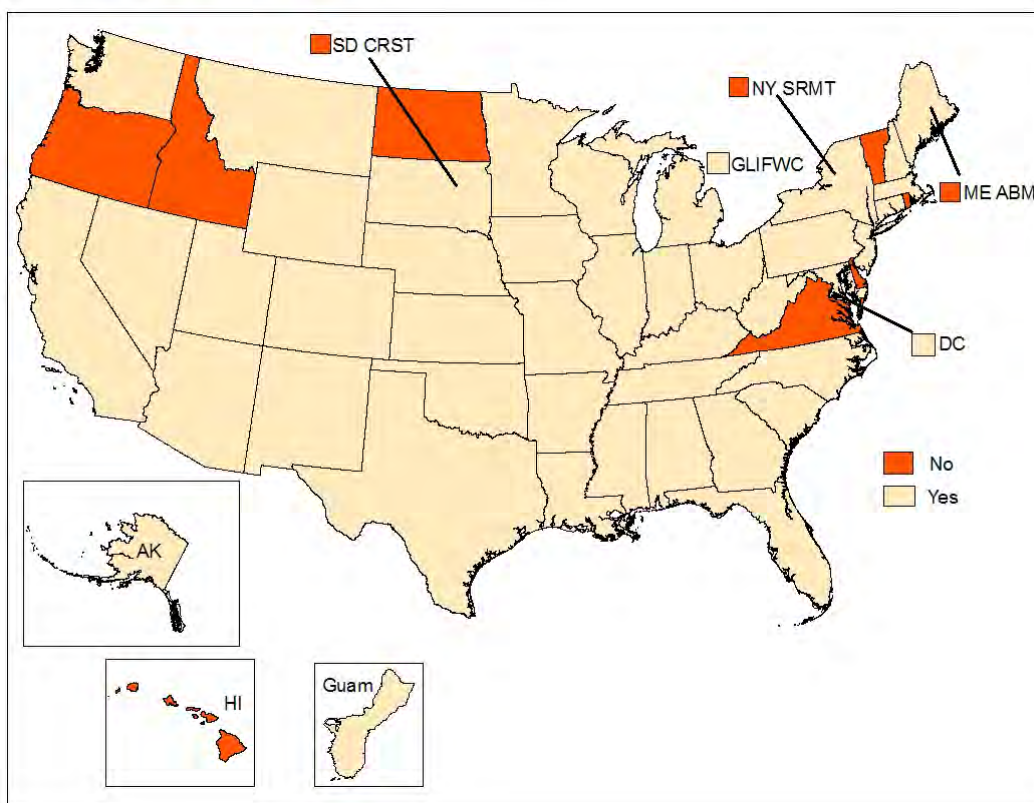
### 2.1 Fish Tissue Monitoring Program

This section summarizes responses to questions concerning each state's fish tissue monitoring program, including information on the nature, extent, and frequency of the monitoring effort by the state. In addition, the states provided information on their methods of assessing fish contaminant problems, including their site selection criteria and the quantitative extent of their monitoring programs in various waterbody types (e.g., rivers, lakes and reservoirs,

estuarine and coastal marine waters) that had been assessed as part of the fish advisory program. This section includes responses to survey questions one through eleven.

**Q1. Did your state or tribal agency conduct monitoring during this past year (2010) to obtain information about the concentrations of chemical contaminants in fish tissue for assessing human health risks?**

Forty-five states conducted monitoring during 2010 to obtain information about the concentrations of chemical contaminants in fish tissue. Eleven states did not conduct any monitoring of contaminant levels in fish in 2010 (Figure 2-1).



**Figure 2-1. Did your state conduct routine monitoring during 2010?**

*Native American tribe acronyms are GLIFWC: Great Lakes Indian Fish and Wildlife Commission, ME ABM: Aroostook Band of Micmacs of Maine, NY SRMT: St. Regis Mohawk Tribe of New York, SD CRST: Cheyenne River Sioux Tribe of South Dakota.*

**Q2. What kind of data does your state or tribal agency collect to evaluate chemical contaminant levels in fish?**

To evaluate chemical contaminant levels in fish tissue, 55 of 56 respondents catch fish and send tissue samples to a laboratory for analysis. The Cheyenne River Sioux Tribe does not analyze tissue samples, but monitors water quality and uses data to estimate contaminant concentrations in fish. Alaska, Iowa, Washington, and Maine's Aroostook Band of Micmacs also monitor water quality to estimate contaminant concentrations likely to occur in fish, in addition

to sampling fish tissue directly. Montana also monitors sediments and uses data to estimate contaminant concentrations in fish. Four states also use other methods, such as biomonitoring (Cheyenne River Sioux tribe), evaluating results of water and sediment sampling to determine the need for additional fish sampling (Connecticut), identifying bioaccumulative pollutants in samples from other studies or agencies to determine targeting of the area for fish tissue sampling (Maryland), and continuing to collect water quality and fish contaminant data to try to develop relationships to estimate contaminant concentrations (Florida).

**Q3. How does your state or tribe conduct monitoring of contaminants in fish tissue for fish advisories?**

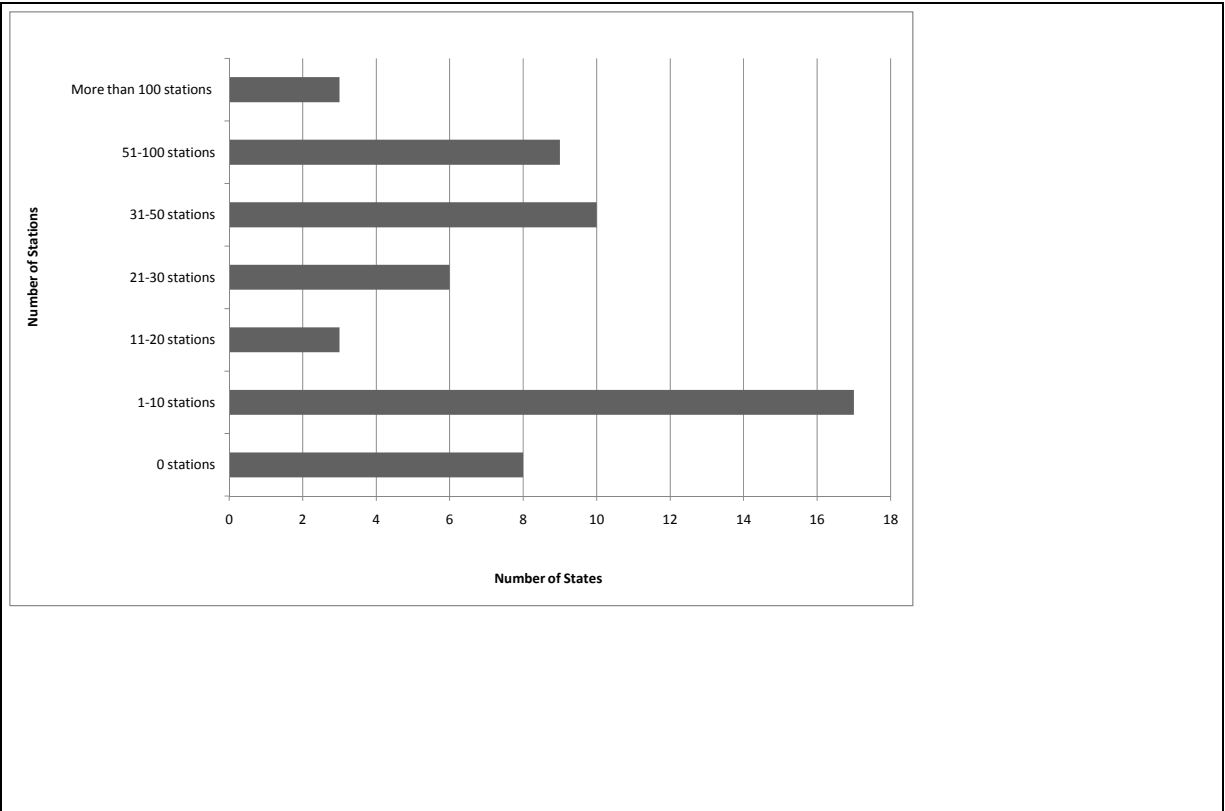
States use a number of different monitoring methods for sampling contaminants in fish tissue. Forty-five states conduct one-time, nonrecurring monitoring or special surveys in particular fishing areas; and forty states monitor the same fishing areas at regular intervals. Nineteen states use a variety of other methods, such as targeting high-use areas, easily accessed sites, areas of special concern, or areas of suspected contamination (e.g., hazardous waste sites); sampling areas based on public requests; reevaluation monitoring of waterbodies where fish advisories have been issued; conducting statewide rotating basin sampling programs over a multi-year period; using data collected by other agencies or volunteers to locate areas in need of fish tissue monitoring; monitoring same areas on a yearly basis if high contaminant level is found; and commercial fish sampling.

**Q4. During the past year, please estimate the number of stations from which your state or tribal agency collected fish tissue that was analyzed for chemical contaminants and was used for the fish advisory program?**

When asked to estimate the number of stations from which their state agencies collected fish tissue for chemical contaminant analysis (as part of the tissue monitoring program) in 2010, eight states sampled no stations. Of the 48 states that reported sampling at least one station; 17 states sampled 1 to 10 stations; three states sampled 11 to 20 stations; six states sampled between 21 and 30 stations; ten states sampled 31 to 50 stations; nine states sampled 51 to 100 stations; and three states (Minnesota, South Carolina, and Washington) sampled more than 100 stations (Figure 2-2).

**Q5. How frequently does your state resample fish from waterbodies where advisories are in effect?**

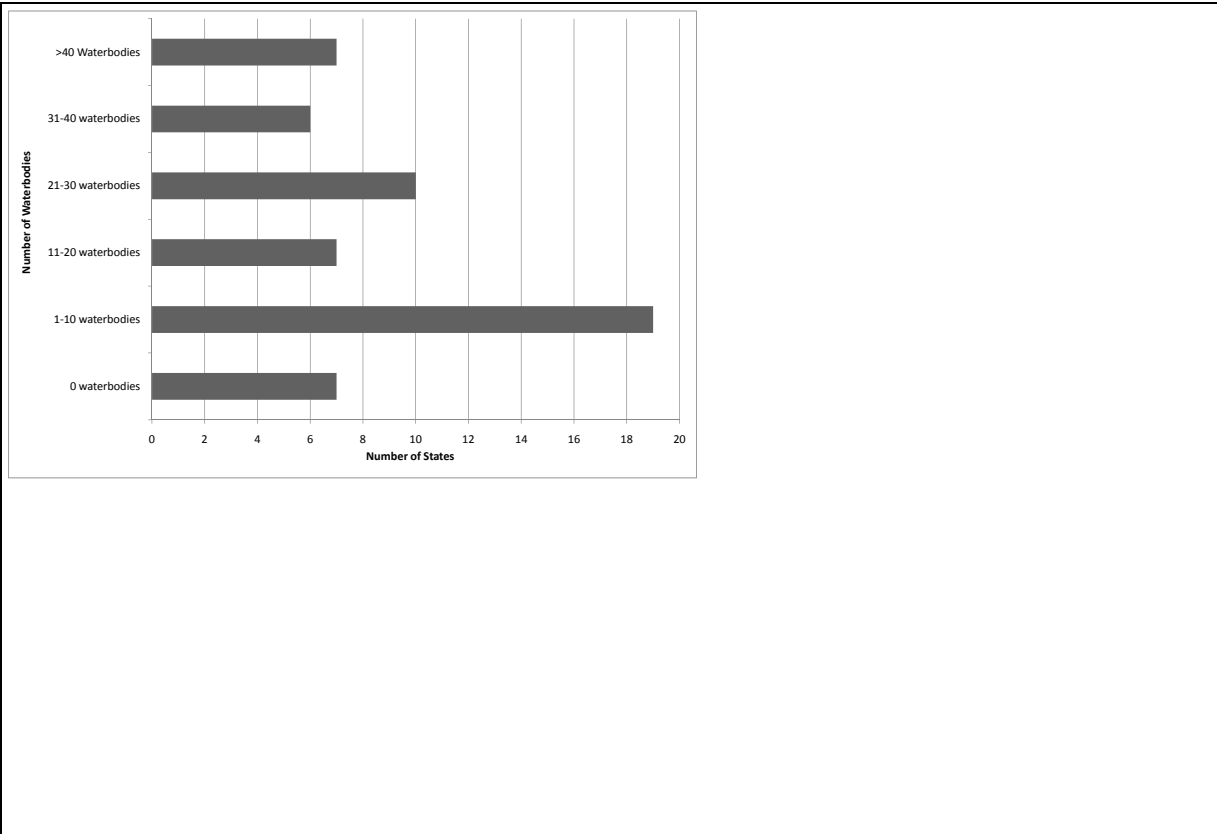
Five states reported that they typically resample waterbodies under advisory annually, four states reported sampling every two to four years, and five states reported sampling every five years. In 18 states, resampling followed no set schedule and was conducted on an as needed basis. Twenty-three states reported sampling on other schedules; usually, sampling frequency was variable. These states listed many factors used to determine the frequency of sampling, including funding availability, contaminant levels, presence of an advisory, and the popularity of the waterbody for recreational fishing.



**Figure 2-2. Number of sampling stations at which states collected fish tissue samples in 2010.**

**Q6. In approximately how many waterbodies was fish tissue monitoring conducted within your state during the past year?**

Seven states reported that they did not conduct any fish tissue monitoring in their waterbodies during 2010. Nineteen states reported conducting fish tissue monitoring in one to 10 waterbodies during the past year. Seven states monitored 11 to 20 waterbodies, 10 states monitored 21 to 30 waterbodies, six states monitored 31 to 40 waterbodies, and seven states monitored more than 40 sites during the past year (Figure 2-3). Please refer to Appendix B for the number of stations sampled by state.



**Figure 2-3. Number of waterbodies in which fish tissue monitoring was conducted in 2010.**

**Q7. How does your state determine which sites to monitor?**

Most states use several different criteria to select sites for fish tissue monitoring. Forty-nine states use the pollution potential of an area as a criterion, 46 states use the extent of angling pressure at the site, 35 states sample in areas of concern, 31 states monitor at fixed stations, 28 states select sampling sites based on citizen or agency requests, 27 states monitor in major fishery resource areas, 17 states select sites based on accessibility, and 26 states select sites at random. Nineteen states also select sampling sites using other methods, including probabilistic survey design; basin rotation; targeting waterbodies already under advisory, those that are historically undersampled or have known contamination, or where water and sediment samples indicating that there may be a problem at that location; using data from ongoing scientific studies and collection efforts of other state and federal agencies; and where total maximum daily loads (TMDLs) are required.

**Q8. How many river, stream, or canal miles were assessed at least once during the last 3 years specifically for the fish advisory program?**

Three states noted that they either do not collect this information or were not able to calculate it for the survey. Of the remaining states, five assessed more than 2,000 miles at least once in the past three years; eight states assessed from 1,000 to 2,000 miles; 27 states assessed from one to 999 miles; and 13 states assessed zero miles.

**Q9. How many lake or reservoir acres were assessed at least once during the past 3 years specifically for the fish advisory program?**

Three states noted that they either do not collect this information or were not able to calculate it for the survey. Twelve states assessed zero acres. Of the states that reported assessing some lake acres, 27 states assessed one to 99,999 acres, 13 states assessed from 100,000 to one million acres, and Illinois assessed more than one million lake acres.

The Great Lakes are not included in the states' estimates of lake acres assessed. Some states do report Great Lakes coastal shoreline miles assessed as a response to Question 11. Indiana reported assessing 41 linear coastline miles of Lake Michigan for the fish advisory program.

**Q10. How many square miles of estuarine waters were assessed at least once during the past 3 years specifically for the fish advisory program?**

Of the 56 states that responded to the survey, 39 states reported that they did not assess any estuarine waters, either because they are not coastal states with estuarine waters, or because they do not conduct fish monitoring programs in estuarine waters. Two states either do not collect this information or were not able to calculate it for the survey. Eleven states assessed from one to 999 square miles of estuarine waters, and three states assessed more than 1,000 square miles of estuarine waters.

**Q11. How many miles of marine coastline (coastal waters) were assessed at least once during the past 3 years specifically for the fish advisory program?**

Forty-two states and tribes reported that they did not assess any marine coastal waters, either because they are not coastal states or they did not conduct fish monitoring programs in coastal waters in the past three years, and four states reported the question was not applicable. Of the remaining states, eight states assessed one to 1,000 coastline miles, and two states assessed more than 1,000 coastline miles (Alaska and Florida).

**2.2 Types of Fish Advisories**

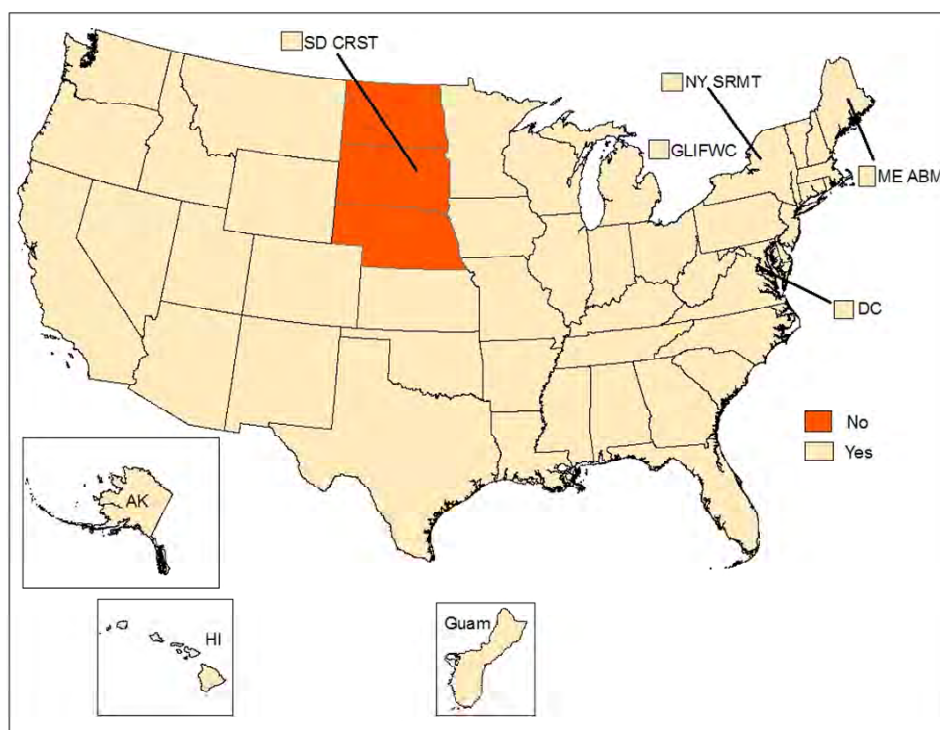
This section summarizes responses to questions concerning each state's fish consumption advisories, including information on the types of advisories issued by the state. The types of advisories include no consumption versus restricted consumption advisories and regionwide (encompassing one or more watershed cataloging units) versus statewide advisories (including blanket advisories for all lakes, all rivers, or all coastal estuarine or marine waters in a state). In States also provided information on the enforcement status of their fish advisories, the nature of their commercial fishing bans, and whether they issue fish or shellfish advisories for biological contamination (e.g., bacterial and viral contamination) in addition to chemical contamination. This section includes responses to survey questions 12 through 19.

**Q12. Does your state issue fish consumption advisories advising individuals to restrict fish consumption?**

When chemical contamination levels in fish tissue are moderate, all 56 states responding to the survey issue advisories recommending that individuals restrict their fish consumption.

**Q13. Does your state issue fish consumption advisories advising individuals not to consume any fish or any fish of a particular species from a particular waterbody?**

When chemical contaminant levels are high, 53 states issue advisories warning individuals not to consume any fish or any fish of a particular species from a particular waterbody. Nebraska, North Dakota, and South Dakota responded that their advisories do not contain “no consumption” advice (Figure 2-4).



**Figure 2-4. Does your state or tribe issue fish consumption advisories advising individuals not to consume certain fish from particular waterbodies?**

*Native American tribe acronyms are GLIFWC: Great Lakes Indian Fish and Wildlife Commission, ME ABM: Aroostook Band of Micmacs of Maine, NY SRMT: St. Regis Mohawk Tribe of New York, SD CRST: Cheyenne River Sioux Tribe of South Dakota.*

**Q14. Fish consumption advisories issued in your state pertain to the following (Please check all that apply):**

Fish consumption advisories in most states typically are issued for more than one specific category of fish, depending on the extent of the contamination. Fifty-five states issue advisories for specific fish species; 37 states issue advisories for specific size classes of the species

analyzed; 18 states issue advisories for selected trophic groups, specifically for predators and bottom feeders, because of potential bioaccumulation of chemical contaminants in their tissues, or for panfish, because they are typically less contaminated than larger predatory species; and 36 states issue advisories for the entire fish community (e.g., all fish). Eleven states reported that consumption advisories issued in their state pertain to certain species of fish purchased in stores or restaurants. Seven states also reported using other methods, such as listing all species from waterbodies with limited data; statewide advice for all fish and all waterbodies as well as site-specific advice for tested waters; and advice based on whether or not the fish is resident (excluding migratory fish such as salmon).

**Q15. Does your state issue statewide or regionwide “blanket” advisories based on your sampling effort?**

As of December 31, 2010, 38 states (including the District of Columbia) had statewide advisories in effect for chemical contaminants in one or more waterbody types (e.g., freshwater lakes and/or rivers, or coastal marine waters) (Table 2-1). In 19 of these states, the statewide advisories cover all coastal marine and estuarine waters (see Table 2-1).

In responding to the survey, however, several states did not accurately answer this question relative to the situation in their state, usually because they did not classify an advisory for all coastal marine waters as a statewide advisory. For clarification, the EPA defines a statewide advisory as including all state waters of a particular waterbody type (such as all lakes, rivers, or coastal marine waters), whereas a regionwide advisory is a state-defined area, such as all river waters in a particular basin or a regional area. By this definition, 38 states had issued statewide advisories as of December 31, 2010. However, on the survey, only 34 states reported issuing statewide advisories.

Sixteen states reported issuing regionwide advisories, and 39 states have not issued regionwide advisories. One state did not think the question was applicable to its fish advisory program.

**Table 2-1. Summary of Statewide Advisories by Waterbody Type and Year Issued**

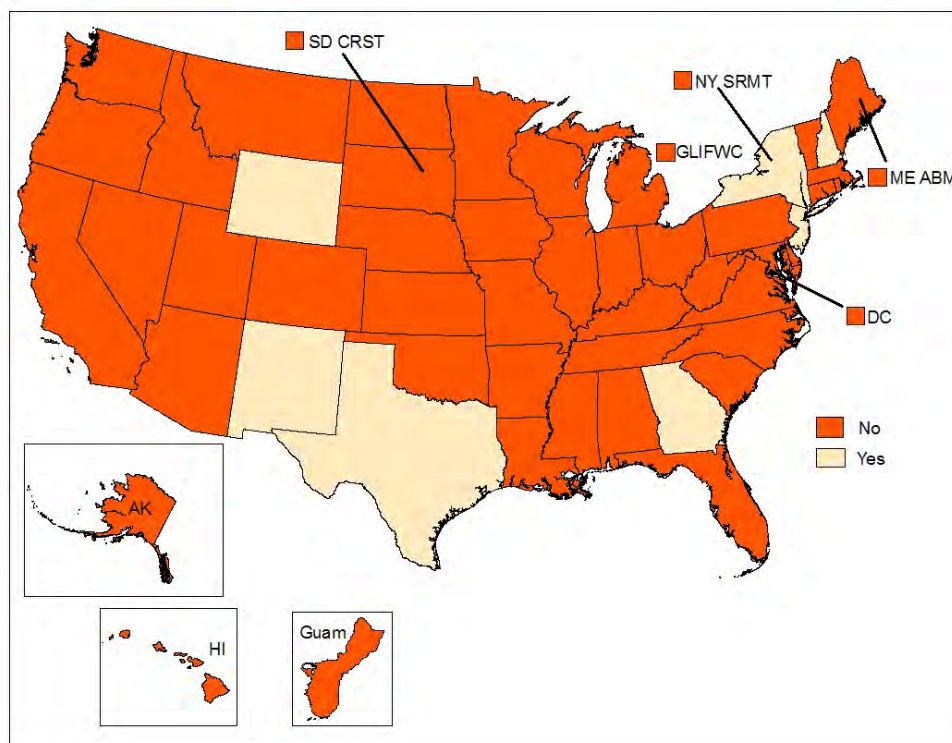
State	Lake (issued)	River (issued)	Coastal Waters (issued)
Alabama	—	—	Mercury (1996)
Alaska	—	—	Mercury (2007)
Connecticut	Mercury (1996)	Mercury (1996)	PCBs (1993)
Delaware	Multiple Pollutants (2007)	Multiple Pollutants (2007)	Mercury, PCBs (2006), Multiple Pollutants (2007)
Dist. of Columbia	PCBs (1993)	PCBs (1993)	—
Florida	Mercury (2002)	Mercury (2002)	Mercury (1993)
Georgia	—	—	Mercury (2000)
Hawaii	—	—	Mercury (2003)
Idaho	Mercury (2010)	Mercury (2010)	—
Illinois	Mercury (2002)	Mercury (2002)	—



<b>State</b>	<b>Lake (issued)</b>	<b>River (issued)</b>	<b>Coastal Waters (issued)</b>
Indiana	Mercury (2004)	PCBs (1996), Mercury (2004)	—
Kentucky	Mercury (2000)	Mercury (2000)	—
Louisiana	—	—	Mercury (1997)
Maine	Mercury (1994)	Mercury (1994)	Dioxins, Mercury, PCBs (1994)
Maryland	Mercury (2001), PCBs (2007)	Mercury (2004), PCBs (2007)	Mercury, PCBs (2009)
Massachusetts	Mercury (1996)	Mercury (1996)	PCBs, Mercury (1994)
Michigan	Mercury (1993), PCBs (2009)	PCBs (2009)	—
Minnesota	Mercury, PCBs (1999)	—	—
Mississippi	—	—	Mercury (1998)
Missouri	Mercury (2001)	Mercury (2001)	—
Montana	Mercury (2003)	Mercury (2003)	—
New Hampshire	Mercury (1995)	Mercury (1995)	PCBs, Mercury, Dioxin (1994)
New Jersey	Mercury (1995)	Mercury (1995)	PCBs, Dioxins (1993)
New York	Multiple Pollutants (1994)	Multiple Pollutants (1994)	Cadmium, PCBs, Multiple pollutants (1995)
North Carolina	Mercury (2006)	Mercury (2006)	Mercury (2000)
North Dakota	Mercury (2001)	Mercury (2001)	—
Ohio	Mercury (1997)	Mercury (1997)	—
Oklahoma	Mercury (2005)	Mercury (2005)	—
Oregon	Mercury (2010), PCBs (2010)	Mercury (2010), PCBs (2010)	—
Pennsylvania	Not specified (2001)	Not specified (2001)	—
Rhode Island	Mercury (2002)	Mercury (2002)	PCBs, Mercury (1993)
South Carolina	—	—	Mercury (2001)
Texas	—	—	Mercury (1997)
Vermont	Mercury (1995)	Mercury (1995)	—
Washington	Mercury (2003)	Mercury (2003)	—
West Virginia	Mercury (2005), PCBs (2006)	Mercury (2005), PCBs (2006)	—
Wisconsin	Mercury (2000)	Mercury (2000)	—
Wyoming	Mercury (2010)	Mercury (2010)	—

**Q16. Do you have legally enforced advisories or bans within your state (e.g., are fines or citations given for fishing in posted waters)?**

Forty-nine states do not legally enforce advisories or bans by the use of fines or citations given for fishing in posted water. Only seven states legally enforce their fish advisories or bans (Figure 2-5).



**Figure 2-5. Do you have legally enforced advisories or bans?**

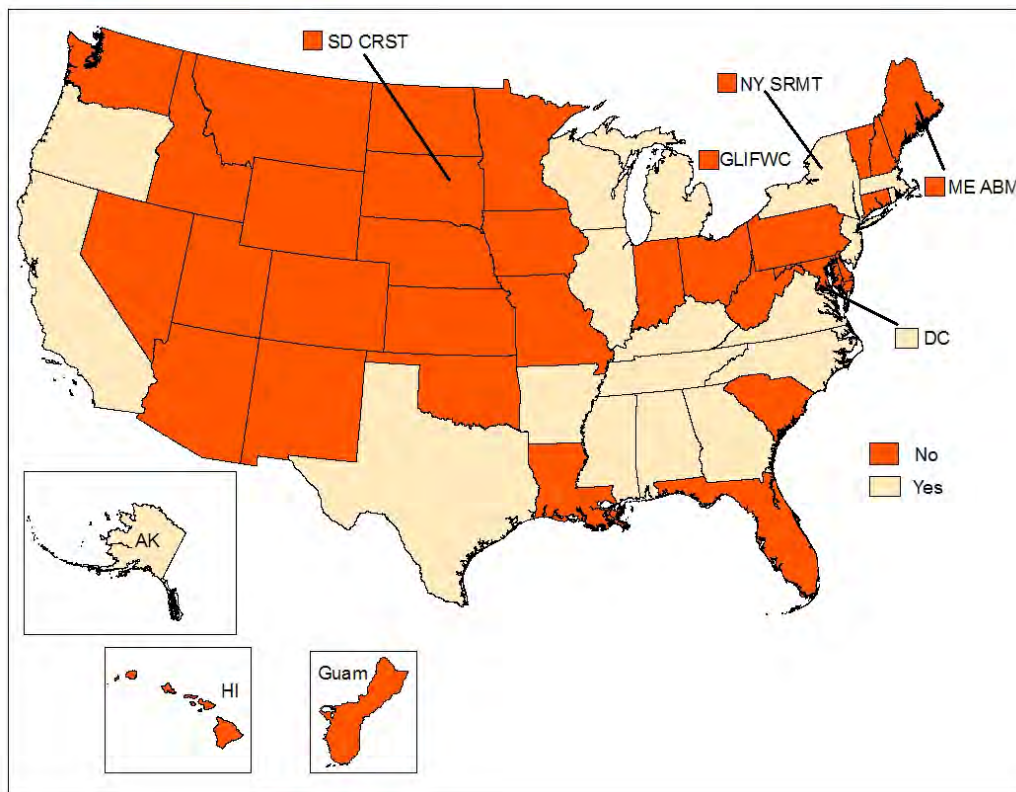
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**Q17. Does your state issue commercial fishing bans for chemically contaminated fish or shellfish?**

Thirty-six states do not issue commercial fishing bans in their jurisdictional waters; however, 20 states do issue commercial fishing bans (Figure 2-6).

**Q18. If your state or tribe has commercial fishing bans in a waterbody, do they include consumption information for sport and subsistence fishers?**

Seventeen states include consumption information for sport and subsistence fishers in their commercial fishing ban information, and only one state does not (or would not). The question did not apply to the remaining 38 states.

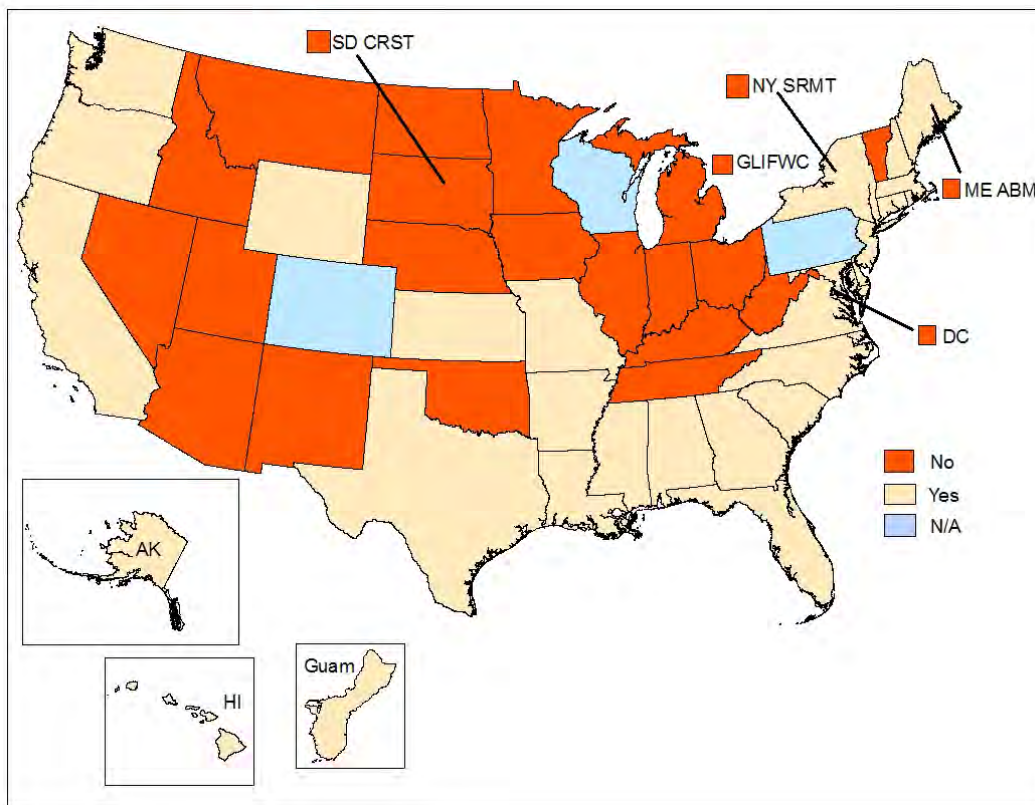


**Figure 2-6. Does your state or tribe issue commercial fishing bans for chemically-contaminated fish or shellfish?**

*Native American tribe acronyms are GLIFWC: Great Lakes Indian Fish and Wildlife Commission, ME ABM: Aroostook Band of Micmacs of Maine, NY SRMT: St. Regis Mohawk Tribe of New York, SD CRST: Cheyenne River Sioux Tribe of South Dakota.*

**Q19. In addition to chemical contaminants, does your state or tribe also issue fish and/or shellfish advisories (closures) for microbial contamination (e.g., bacteria or viruses)?**

In addition to chemical contaminants, 28 states issue fish and/or shellfish advisories for microbial contamination, such as contamination by bacteria or viruses. Twenty-five states do not issue advisories based on microbial contamination, and three states said the question was not applicable to their program (Figure 2-7).



**Figure 2-7. Does your state or tribe issue fish and/or shellfish advisories for microbial contamination?**

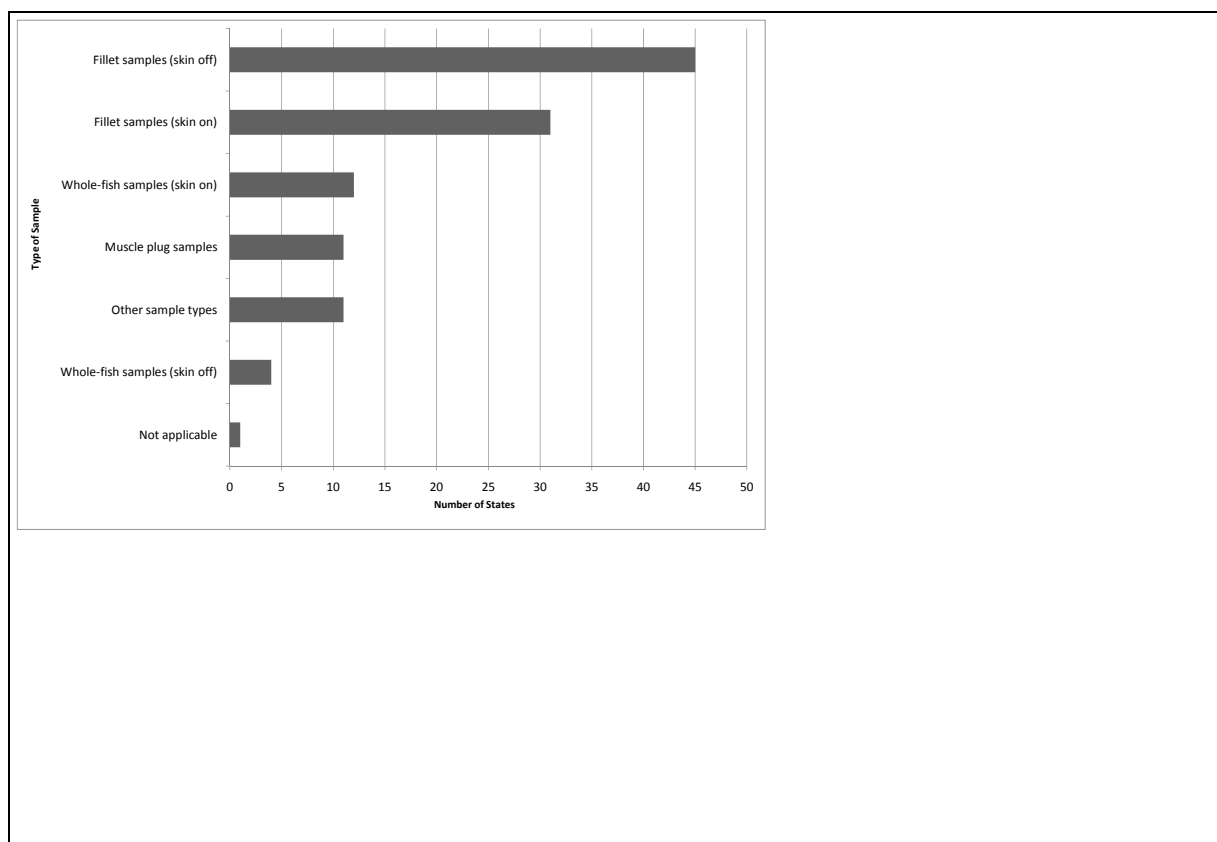
*Native American tribe acronyms are GLIFWC: Great Lakes Indian Fish and Wildlife Commission, ME ABM: Aroostook Band of Micmacs of Maine, NY SRMT: St. Regis Mohawk Tribe of New York, SD CRST: Cheyenne River Sioux Tribe of South Dakota.*

## 2.3 Sample Preparation and Analysis Procedures

This section contains responses to questions concerning each state's fish tissue sample preparation methods and assumptions and chemical analysis procedures used in the fish consumption advisory program. Sample preparation methods include questions on the types of fish samples used for both fish consumption advisories and commercial fishing bans, collection of indicator species, collection of multiple size classes of fish species, and use of composite and individual samples to support issuance of an advisory. The survey also requests information on the number of samples and number of years of sampling required to support issuance of a fish advisory or commercial fishing ban, as well as the number of years of data that are required before a fish advisory can be rescinded. In addition, the survey asks states to provide information on the number of samples submitted for chemical analysis, the specific chemical contaminants analyzed in the fish tissue samples, and the chemical contaminants of particular public health concern within their jurisdictions. This section includes responses to survey questions 20 through 35.

**Q20. Fish consumption advisories (no consumption and/or restricted consumption advisories) issued in your state are based on the analysis of the following.**

Many states base fish consumption advisories on the chemical analysis of more than one type of fish sample. The largest number of states, 45, reported that they analyze fillet samples with the skin off, whereas 31 states analyze fillet samples with the skin on (Figure 2-8). Twelve states use whole fish, skin-on samples, and four states use whole fish, skin-off samples. Eleven states use muscle plug samples to analyze for chemical contaminants, and 11 states reported using other sample types such as carcass samples, edible portions, shucked shellfish, and crab muscle and hepatopancreas tissues.



**Figure 2-8. Number of states using various types of fish tissue samples as a basis for fish advisories.**

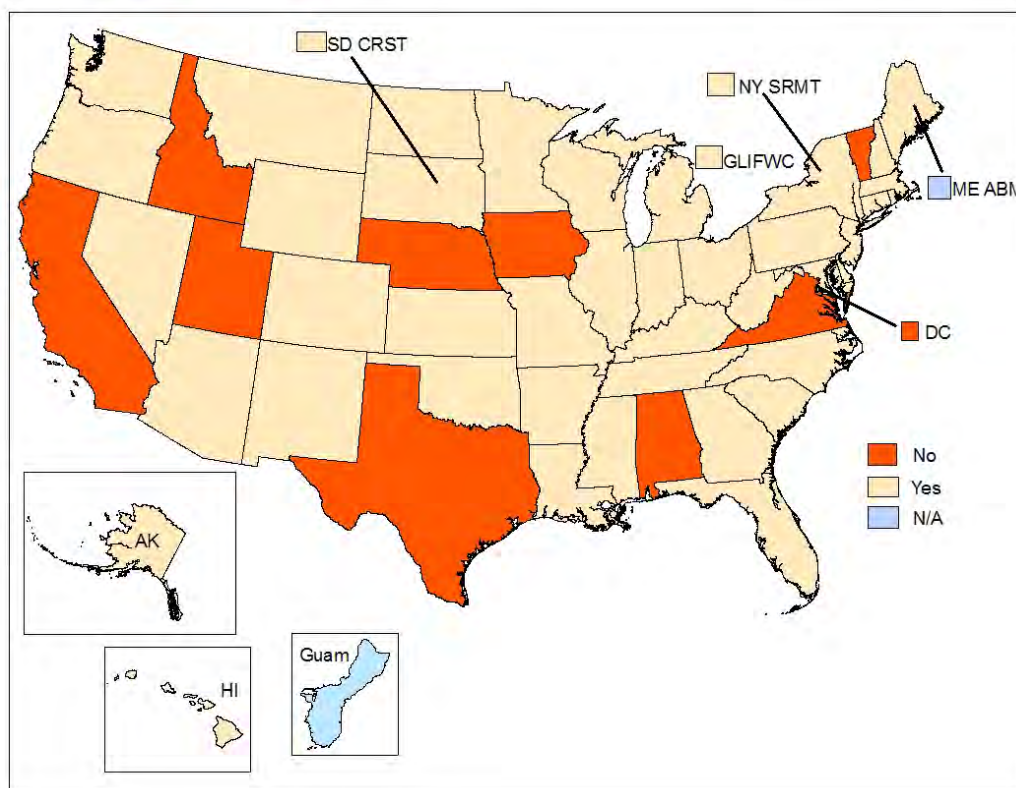
**Q21. Does your state target the collection of particular indicator species, and on what is this decision based?**

Forty-six states base their decisions to target indicator species for monitoring on a number of different factors, while nine states do not target the collection of indicator species, and one state found the question not applicable. Of the states that target particular species, the availability of the fish species is a key factor for 45 states. Forty states take into account the desire to maintain consistency with past collections; 26 states follow EPA target species recommendations; 19 states use angler survey data; and 14 states respond to citizen requests when targeting indicator species. Twelve states consider other factors in the collection of

indicator species, including the following: species that are commonly used for commercial, tribal, and/or subsistence purposes; species which are likely to be the most contaminated; and specific trophic groups.

**Q22. Does your state collect multiple size classes, by species, and submit these individual size classes for residue analyses?**

Forty-four states collect multiple size classes of fish, by species, and submit them for tissue residue analysis, either routinely or in special cases only. Ten states do not collect multiple size classes for submission, and the question did not apply to two states (Figure 2-9).



**Figure 2-9. Does your state or tribe collect multiple size classes, by species, and submit these individual sizes for residue analysis?**

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**Q23. Are individual fish samples or composite samples submitted for residue analyses in your state?**

For contaminant residue analysis of fish tissue samples, six states submit only individual fish samples, 10 states submit only composite fish tissue samples, and 39 states submit both individual and composite samples. One state found the question not applicable.

**Q24. If individual fish samples are used, how many “individual fish” are needed to support an advisory determination in a waterbody?**

Four states require only one individual fish sample in exceedance of human health criteria to support an advisory determination in a waterbody. Seven states require a minimum of three fish, and 10 states require a minimum of five fish to support an advisory determination. Eight states reported that six to 10 fish are needed to support an advisory determination, while Virginia requires between 11 and 20 fish, and New York’s St. Regis Mohawk Tribe requires more than 20 fish. Seventeen states reported other numbers of fish were required to support an advisory in their state or that the number varies depending on site-specific considerations. The question did not apply to eight states because they reported using only composite samples.

**Q25. If composite samples are used, how many individual fish are typically combined in each of your state’s composite samples for residue analysis?**

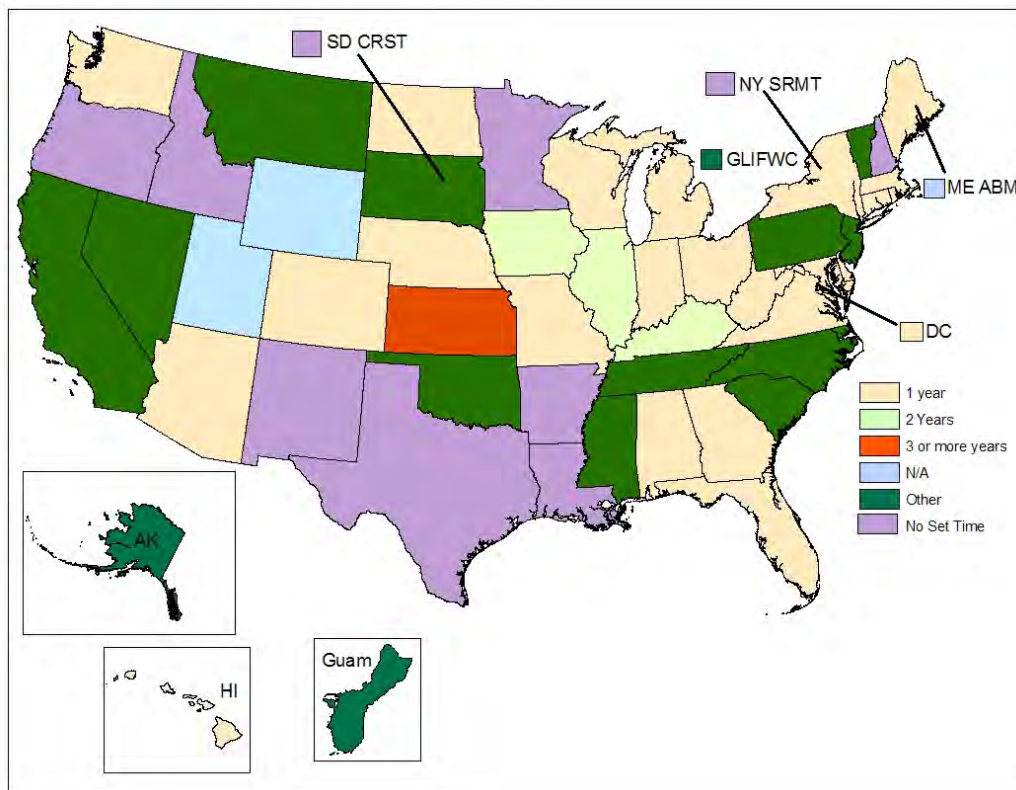
Of the states that use composite samples alone or in combination with individual samples, 18 states reported that five fish is the target number of individual fish included in composites submitted for residue analysis, while four states reported that three individual fish per composite sample typically are used. Twenty-five states reported using a different number of fish per composite sample or a range in the number of individual fish that are composited. Nine states indicated that the question was not applicable to their program because they use only individual samples.

**Q26. If composite samples are used, how many composite samples are needed to support an advisory determination in a waterbody?**

Fourteen states require only one composite sample in exceedance of human health criteria to support an advisory determination in a waterbody; eight states require two composite samples; and six states require three composite samples. Four states report using variable numbers of composite samples or that no set number of samples is required in their state. Fourteen states reported using other numbers of samples depending on site-specific factors, the size of the fish, and the level of contamination. Ten states indicated that the question was not applicable to their programs because they do not use composite samples.

**Q27. Assuming your state finds residue levels in exceedance of state criteria, how many years of sampling are required at a given waterbody before a fish consumption advisory can be issued?**

After a state finds chemical contaminant residue levels in fish tissue that exceed the state criteria, 24 states require only one year of sampling at a given waterbody before a fish consumption advisory can be issued (Figure 2-10). Three states require two years of sampling, and Kansas requires three or more years of sampling before an advisory can be issued. Ten states reported that issuance of an advisory is a site-specific decision and that no set time period has been established in their state. Fifteen states reported that they use other criteria for determining when a fish advisory should be issued. For instance, seven states describe issuing an advisory immediately or within the same year if the data support that decision. Three states found the question not applicable to their programs.



**Figure 2-10. How many years of sampling are required before a fish consumption advisory can be issued?**

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**Q28. If commercial fishing bans are issued in your state, on which of the following sample types are they based?**

Among the states that issue commercial fishing bans, 14 states use fillet samples (skin off) and nine states use fillet samples (skin on) as the basis for those bans. One state uses whole fish samples (skin on), and one state uses whole fish samples (skin off). Four states use other types of samples. The question did not apply to 38 states because they do not issue commercial bans.

**Q29. How many fish tissue samples must be analyzed and found to be in exceedance of state criteria before a commercial fishing ban is issued?**

Eight of the states that issue commercial fishing bans reported that chemical contaminant levels in three or more samples must be found to exceed the state criteria before a commercial ban can be issued. Kentucky requires two samples and Alabama requires one sample to be in exceedance of the state criteria for contaminant levels before a commercial ban can be issued. Seven states reported that the numbers of samples that must be in exceedance of state criteria before a commercial fishing ban is issued is a site-specific decision and that no set number of



exceedances have been established. Thirty-nine states reported that the question was not applicable to their program because their state has never issued a commercial fishing ban or for other reasons.

**Q30. How many years of sampling are conducted at a given waterbody before a commercial fishing ban can be issued?**

Seven states require only one year of sampling at a given waterbody before a commercial ban can be issued. Four states require at least two years of sampling before a commercial ban is issued. Five states indicated that the number of years of sampling required in a waterbody before a commercial advisory can be issued is a site-specific decision and that no set number of years have been established in their state. Forty states found the question not applicable to their program because their state has never issued a commercial fishing ban or for other reasons.

**Q31. Once an advisory is issued for a specific waterbody, what must occur for the state to rescind the advisory?**

Seven states require residue levels of chemical contaminants to decline below the state criteria for at least one year for an advisory to be rescinded. Twelve states require the residue levels of chemical contaminants to decline below the state criteria for at least two years for an advisory to be rescinded. Kansas and the Cheyenne River Sioux Tribe require the contaminant level to decline for at least three years before an advisory can be rescinded. Eighteen states report that this is a site-specific decision and that no set protocol or schedule has been established for rescinding advisories in their state. Fourteen states reported that the process is variable and case-dependent, that they do not yet have a procedure, or that they use other procedures or schedules for rescinding advisories. Three states found the question not applicable to their programs.

**Q32. During this past year, please estimate the number of fish tissue samples that were submitted for chemical analyses by your state.**

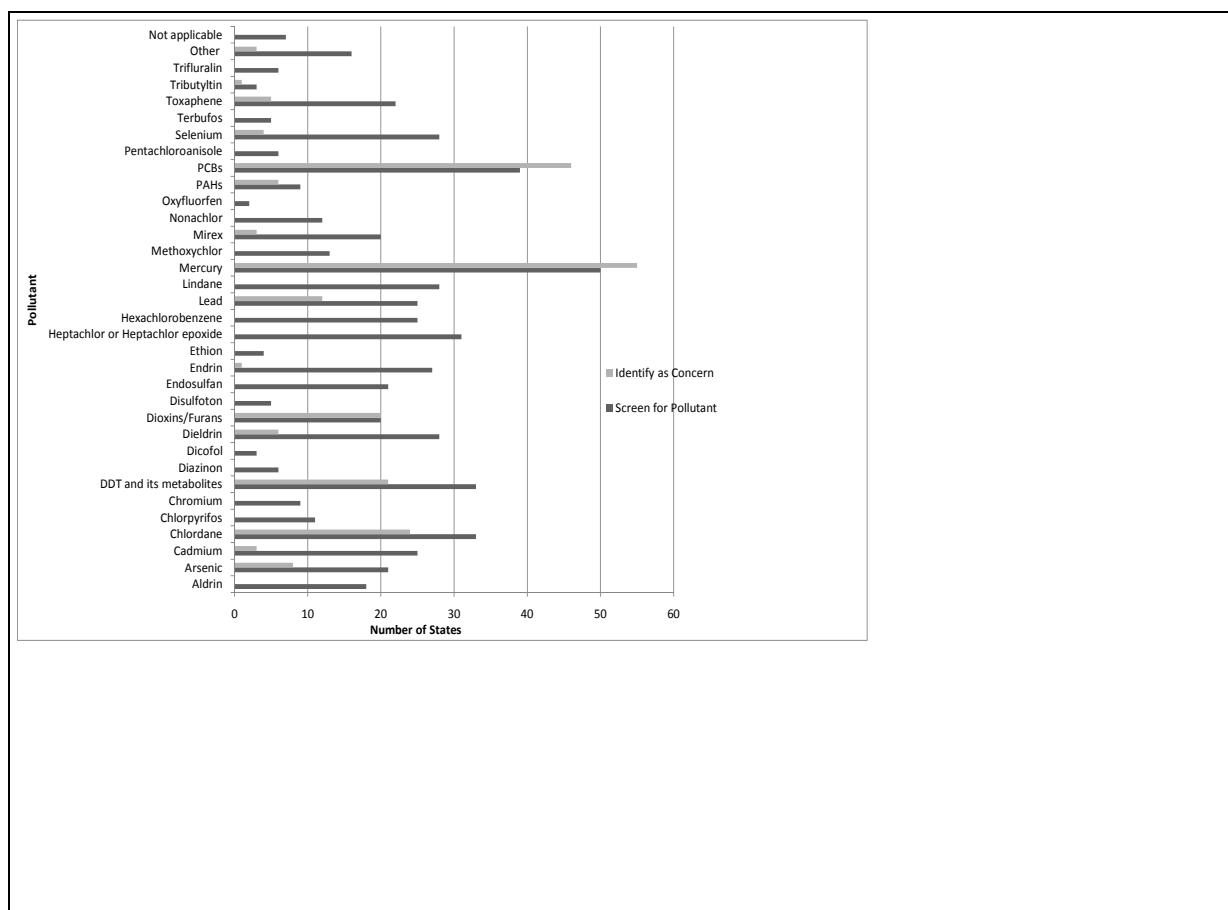
Most states (32) submitted more than 60 fish tissue samples for analysis in 2010, and Florida, Louisiana, Minnesota, New York, and Washington each submitted 1,000 or more samples last year. Eleven states submitted fewer than 60 samples and 12 states reported that they did not submit any samples for chemical analysis in 2010.

**Q33. What pollutants did your state screen for in fish tissue samples during this past year?**

Although there are advisories in the United States for almost 40 different chemical contaminants, most advisories in effect in 2010 involved five bioaccumulative chemical contaminants: mercury, PCBs, chlordane, dioxins, and DDT. Mercury is monitored in 50 states, PCBs are monitored in 39 states, chlordane is monitored in 33 states, DDT and its derivatives are monitored in 33 states, and dioxins/furans are monitored in 20 states (Figure 2-11). Seven states marked the question as not applicable for the year 2010.

### Q34. Of the pollutants listed below, which ones are of primary health concern in your state waters?

Fifty-five states identified mercury as a contaminant of primary human health concern in their jurisdictions. Forty-six states listed PCBs, 24 states listed chlordane, 21 states listed DDT and its metabolites, and 20 states listed dioxins/furans as additional pollutants of primary human health concern in their jurisdictions (Figure 2-11). Note that some states are concerned about chemical contaminants that they do not monitor for, usually due to budget constraints.



**Figure 2-11. Number of states that screen for each pollutant and identify each pollutant as a primary health concern.**

### Q35. If your state analyzes for PCBs, what specifically is analyzed?

Fifteen states analyze individual congeners, 10 states analyze all Aroclor groups, 15 states analyze for selected Aroclor groups, and 14 states analyze for a combination of Aroclors and congeners. Eleven states found the question not applicable to their state programs.

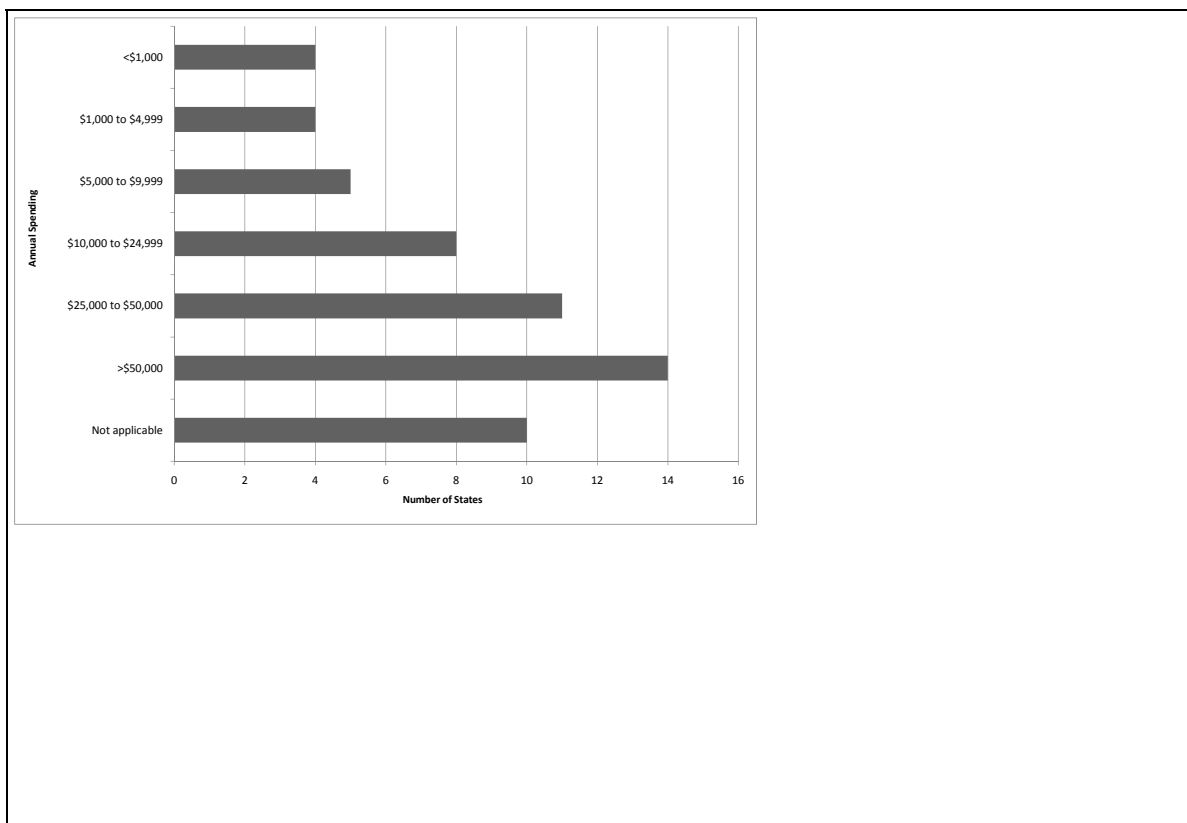
## 2.4 State Advisory Program Funding

This section contains responses to questions concerning state fish advisory program funding levels and sources. States were questioned about the amount and sources of funding for

both their fish sample collection efforts and their chemical analysis programs. If states were not conducting a fish advisory program because of resource constraints, the states were also requested to provide information on whether they were seeking additional funding to enhance their current fish advisory program. This section includes responses to survey questions 36 through 40.

**Q36. How many dollars are spent annually in your state on routine fish tissue field collection activities?**

States provided information on the amount of money spent annually by their state on routine fish tissue field collection activities. Fourteen states spend more than \$50,000 annually for routine fish tissue collection activities, although several of these states reported that the exact amount was unknown or difficult to quantify (Figure 2-12). Four states (California, Florida, Indiana, and New York) reported spending more than \$100,000. Four states spend less than \$1,000; four states spend \$1,000 to \$4,999; five states spend \$5,000 to \$9,999; eight states spend \$10,000 to \$24,999; and 11 states spend \$25,000 to \$50,000. Ten states found the question not applicable to their programs.



**Figure 2-12. Amount spent annually on routine fish tissue field collection activities.**

**Q37. What was the funding source for your state's fish tissue collection activities during the past year?**

Thirty-two states reported that they use state general funds at least in part to fund their fish advisory tissue collection program. Eleven states use revenue from fishing licenses, 18 states use EPA Section 106 funds, two states use Section 205(j) funds, seven states use EPA grant funds, and four states use EPA Regional funds. Tennessee receives funding from a state sales tax. Twenty-nine states reported other sources for their program funding, including state environmental trust funds and federal excise tax money from the U.S. Fish and Wildlife Service. Some states report that they also receive fish or data collected for other purposes from other state agencies or scientific studies. Three states reported that the question was not applicable to their program or funding sources were unknown.

**Q38. How many dollars are spent annually in your state on laboratory analysis of fish tissue samples?**

Twenty-two states spend more than \$50,000 annually on laboratory analyses of fish tissue samples. Six states spend less than \$1,000 on laboratory analyses of fish tissue samples; five states spend \$1,000 to \$9,999; nine states spend \$10,000 to \$24,999; and five states spend \$25,000 to \$50,000. Nine states reported the question was not applicable.

**Q39. What was the funding source for your state's laboratory analyses of fish tissue samples during this past year?**

Twenty-nine states reported that funding for laboratory analyses came from the state general funds; four states reported funding from state fishing license revenues; six states reported funding from EPA grant funds; five states reported funding from EPA Regional funds; 13 states reported funding from EPA Section 106 funds; and one state reported funding from EPA Section 205(j) funds. Tennessee received state sales tax revenue to fund lab analyses of fish tissue last year. Twenty-six states reported other sources of funding, such as federal grants and the National Oceanic and Atmospheric Administration. Seven states reported the question was not applicable to their program or funding sources were unknown.

**Q40. If no funding is currently available, is your state seeking funding to conduct a monitoring and assessment program?**

Twenty-three states reported that they do not have sufficient funding currently available to conduct a fish tissue monitoring and assessment program. Of these states, 17 are currently seeking funding, and six states are not seeking funding. Thirty-three states found the question not applicable because sufficient funding to conduct a monitoring program was available.

## 2.5 Other Uses of State Advisory Data

This section contains responses to questions concerning other uses of the state's fish advisory data. States were asked about the use-support designation assigned to waterbodies placed under a fish consumption advisory or a commercial fishing ban and whether the state subsequently places these waters on the state's 303(d) list of impaired waters. In addition, states

were asked whether “fish consumption” is an assigned beneficial use for waters in their state and to identify where the criteria for beneficial use have been established. This section includes responses to survey questions 41 through 45.

**Q41. For your state’s biennial 305(b) water quality report, what use-support designation is assigned to waterbodies placed under fish consumption advisory?**

Thirty states reported that they assign a waterbody to a use-support designation of “not supporting” in their biennial 305(b) water quality report if a fish consumption advisory is in effect for that waterbody. Fifteen states designate such waterbodies as “partially supporting,” five states list them as “fully supporting,” and Wisconsin and the Cheyenne River Sioux Tribe list them as “threatened.” Three states do not make this type of assessment, and another eight states reported the question was not applicable.

**Q42. If fish consumption advisories have been issued for waterbodies in your state, does your state place these waterbodies on the state’s 303(d) list of impaired waters?**

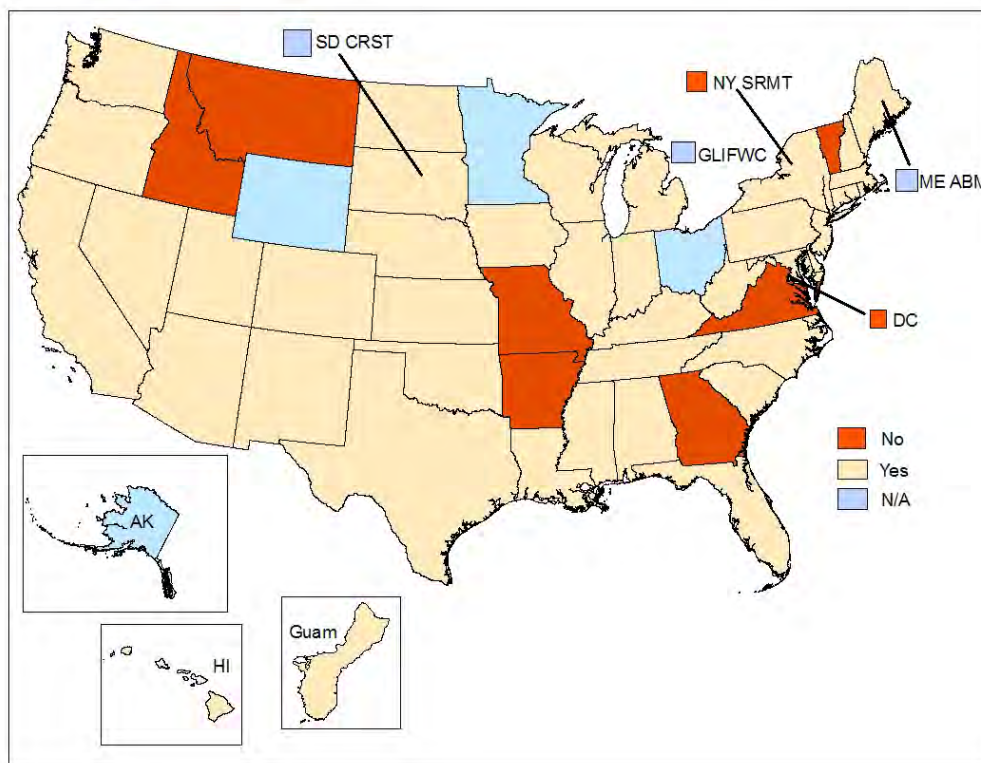
Forty states place waterbodies under fish advisories on their 303(d) list of impaired waters, and nine states do not list these waterbodies as impaired (Figure 2-13). Seven states found the question not applicable to their program.

**Q43. If commercial fishing bans have been issued for waterbodies in your state, does your state place these waterbodies on the state’s 303(d) list of impaired waters?**

Among the states that have issued commercial fishing bans, 10 states reported that waterbodies under such a ban are placed on the 303(d) list of impaired waters, and four states responded that such waterbodies are not placed on the 303(d) list. This question did not apply to 42 states because they have never issued a commercial fishing ban or for other reasons.

**Q44. Is “fish consumption” an assigned beneficial use for waters in your state?**

Fish consumption is an assigned beneficial use for state waters in 36 states. Twenty states reported that fish consumption is not specifically assigned as a beneficial use.



**Figure 2-13. If fish consumption advisories have been issued in your state, does your state place these waterbodies on the state's 303(d) list of impaired waters?**

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#### **Q45. If yes, where have these criteria for beneficial use been established?**

The criteria for the assignment of fish consumption as a beneficial use are listed in the state water quality standards for 27 states, in the standard operating procedure (SOP) for assessing beneficial uses for two states (North Carolina and Rhode Island), and in other documents for six states (i.e., in the Listing Rationale for Delaware Clean Water Act Section 303(d) list; in the Guidelines for 305(b) Assessment Procedures for Illinois; a Tribal-EPA Agreement (TEA) for the Aroostook Band of Micmacs, the EPA for Cheyenne River Sioux Tribe; and addressed indirectly as recreational use for Tennessee and West Virginia). Oklahoma uses a continuous planning process. Maine has no formal policy to assign fish consumption as a beneficial use; however, state statutes do say state waters must be fishable. Twenty-one states marked the question as not applicable.

## **2.6 Risk Assessment Methodologies**

This section contains responses to questions concerning risk assessment methodologies or other procedures used in the state's fish advisory program. States were asked about the methods they use to calculate carcinogenic and noncarcinogenic health risks for individuals who consume fish harvested from state waters. For the carcinogenic and the noncarcinogenic risk

procedures, states were asked what risk level or procedures they used to post waterbodies, as well as what resources they use to obtain cancer potency factors and reference doses (RfDs). States were asked to identify the proportion of advisories issued by the state that have been issued using the various methods they have identified and to indicate whether the state intends to reevaluate data from sites where outdated methods were used to issue advisories. States were also asked to identify default values that they are using in their risk assessments, including daily fish consumption rates for recreational and subsistence fishers and for children; exposure duration in cancer risk assessments; and estimated life expectancy. States also were asked if they recommend a meal frequency format for their advisories, what assumptions they make about meal size for adults and children, and what default body weight values they use for adult men, adult women, and children (including the age range of children). States were queried about their assumptions concerning the amount of a chemical absorbed by the body after ingestion; the state's use of contaminant reduction factors for estimating contaminant losses from fish tissues during cleaning, preparation, and cooking; and the factors used and their basis. States were also asked what their procedures are for evaluating the health risks for fish samples contaminated with multiple chemicals with the same human health endpoints, whether they assign different noncarcinogenic toxicity values for mercury to different populations, what these mercury toxicity values are, how the state handles non-detects in its risk assessments, whether they screen for lead, and what assessment method is used for lead since no human health benchmark values are currently available in EPA's Integrated Risk Information System (IRIS). This section includes responses to survey questions 46 through 76.

**Q46. What method(s) does your state currently use to calculate “carcinogenic” health risks and to issue advisories for individuals who consume fish harvested from your state waters?**

When asked what methods their state agency currently uses to calculate carcinogenic health risks for individuals who consume fish, 43 states indicated that they use a risk assessment methodology, and 34 of those states use only risk assessment and no other methods. Thirteen states indicated that they use U.S. Food and Drug Administration (FDA) action levels, but of these, 10 states use both the FDA values and a risk assessment method. Three states (Iowa, Michigan, and South Dakota) use only FDA action levels. Other approaches used included conducting risk management in conjunction with risk assessment and following EPA Guidance on recommended meals/month. North Dakota indicated it does not calculate carcinogenic health risks because all of its advisories are for mercury contamination. Five states indicated the question was not applicable.

**Q47. What carcinogenic risk level (i.e., individual risk within an exposed population) does your state use to issue advisories and/or post waterbodies?**

In their risk assessment methodology, 11 states use a carcinogenic risk level of 1:10,000 ( $10^{-4}$ ), 15 states use a risk level of 1:100,000 ( $10^{-5}$ ), and five states use a risk level of 1:1,000,000 ( $10^{-6}$ ). The FDA action level is used by seven states to issue advisories. Six states use other risk levels, risk levels vary with contaminant or level of restriction, or they use other approaches to issue advisories. Twelve states reported the question was not applicable.

**Q48. What sources does your state use to obtain cancer potency factors to help calculate “carcinogenic” health risks?**

Most states use more than one source of information to obtain cancer potency factors to help calculate carcinogenic health risks. Forty-three states use IRIS, 18 states use EPA’s Health Effects Assessment Summary Table (HEAST), 17 states use the EPA Fish Guidance documents, 15 states use the ATSDR Toxicological Profiles, 13 states use International Agency for Research on Cancer (IARC) monographs, 10 states use the Hazardous Substance Data Bank (HSDB) from the National Library of Medicine, five states use EPA’s Toxicology One-Liners Database (Office of Pesticide Programs), and four states use the Great Lakes Protocol. Fourteen states reported they use other sources, such as scientific literature; Office of Environmental Health Hazard Assessment (OEHHA) or California Environmental Protection Agency cancer potency factor (CPF); Toxline and the National Toxicology Program (NTP) database; EPA Water Quality Criteria 304(a)(1) documents; EPA Provisional Peer Reviewed Toxicity Values (PPRTV); Toxicology Excellence for Risk Assessment (TERA); ATSDR; and Great Lakes Sport Fish Advisory Task Force (PCBs). Eight states reported the question is not applicable to their program.

**Q49. What method(s) does your state currently use to calculate “noncarcinogenic” health risks and to issue fish advisories for individuals who consume fish harvested from your state’s waters?**

The Hazard Index is the ratio of estimated daily dose to the daily RfD for the contaminant of interest. To calculate noncarcinogenic health risks for individuals who consume chemically contaminated fish from state waters, most states (37) employ Hazard Index calculations using a risk assessment methodology. Of these states, 11 states use only the Hazard Index, while the others use the Hazard Index in addition to other approaches. Twenty-four states report using the EPA Fish Guidance documents and nine states report using the Great Lakes Protocol. Fifteen states use the FDA action levels, and of those, only Indiana and Nevada use the FDA action levels alone while 13 states use the FDA action levels in addition to other methods. Eighteen states use other approaches either alone or in addition to either the Hazard Index or FDA action limits. Other methods include state-derived advisory levels and risk assessment methods; ATSDR minimum risk levels; scientific literature (Madsen et al. 2008); and the Great Lakes Protocol. Two states indicated the question was not applicable.

**Q50. What noncarcinogenic risk level (i.e., individual risk within an exposed population) does your state use to issue advisories and/or post waterbodies?**

When asked about the noncarcinogenic risk level used to issue advisories, 21 states reported using only a Hazard Index greater than 1.0, four states used a Hazard Index equal to or greater than 1.0, and two states used a Hazard Index less than 1.0. FDA action levels are used by 12 states to set advisories. Seventeen states use other methods, including the Great Lakes Protocol and EPA guidance. Six states indicated the question was not applicable to their program.



**Q51. What sources does your state use to obtain potency factors (reference dose) to help calculate noncarcinogenic health risks?**

EPA's IRIS database is used by the largest number of states (46) as a source to obtain RfDs. Twenty-six states use ATSDR Toxicological Profiles, 16 states use the EPA's Fish Guidance documents, 19 states use EPA's HEAST database, six states use EPA's Toxicology One-Liners Database, eight states use the HSDB from the National Library of Medicine, and eight states use the Great Lakes Protocol. Seventeen states reported that they use information from other sources, such as the scientific literature; Toxline and the NTP database; TERA; ATSDR documents; OEHHA or California EPA's reference exposure levels (RELs); EPA guidance documents; and Great Lakes Task Force. Four states indicated the question was not applicable to their program.

**Q52. Enter the percentage of advisories now in effect which were issued using risk assessment methods, FDA action levels, or other methods specified in question 46 and 49.**

State contacts were asked what percentage of all the fish advisories currently in effect in their jurisdiction, including those issued in 2010 and in earlier years, were issued using different methods. Thirty-one states indicated that 100 percent of advisories now in effect were issued using risk assessment methods. Four states (Arkansas, Iowa, Nevada, and South Dakota) indicated that 100 percent of advisories now in effect in their states were issued using FDA tolerances and/or action levels. Five states (GLIFWC, Maryland, North Dakota, New Mexico, and Pennsylvania) indicated that 100 percent of the fish advisories were issued using other methods. Four states indicated the question was not applicable to their programs.

**Q53. Does your state or tribal agency have a plan to reevaluate data from sites where outdated assessment methods were used to issue fish advisories?**

Twenty-three states reported that they plan to reevaluate data from sites where outdated assessment methods were used. Fourteen states do not plan to revisit these sites or reevaluate data. Nineteen states indicated that the question was not applicable.

**Q54. Is your state currently re-evaluating the method or approach used to establish fish advisories?**

Twenty-nine states are currently reevaluating their methods, and 26 states are not currently reevaluating their methods. One state indicated that the question was not applicable.

**Q55. What default value does your state use in its risk assessments as a daily fish consumption rate for recreational fishers?**

For recreational fishers, states use a wide range of daily fish consumption rates. For example, four states use a default daily fish consumption rate value of 6.5 g/d, two states use 15 g/d, seven states use 17.5 g/d, and eight states use a value of 30 g/d. Twenty-four states reported using a default value different from the five choices presented. The reported values included a total range from 0 g/d up to 286 g/d, and states noted that they often use a range of values rather

than a single value for daily fish consumption rate. Eleven states responded that the question was not applicable.

**Q56. What default value does your state use in its risk assessments as a daily fish consumption rate for subsistence fishers?**

For subsistence fishers, Tennessee uses a default daily fish consumption value of 6.5 g/d, four states use 30 g/day, and two states use 142 g/d. Twenty-four states use other consumption rates. The question was not applicable to 25 states.

**Q57. What default value does your state use in its risk assessments as a daily fish consumption rate for children?**

Among the states using a daily fish consumption default value for children, two states use a value of 4 g/d, and three states use a value of 6.5 g/d. Twenty-four states use other default values or a range of values which vary depending on the site of the advisory, meal frequency, age, and weight. Twenty-seven states reported the question was not applicable to their programs.

**Q58. What default value does your state use for exposure duration in its cancer risk assessments?**

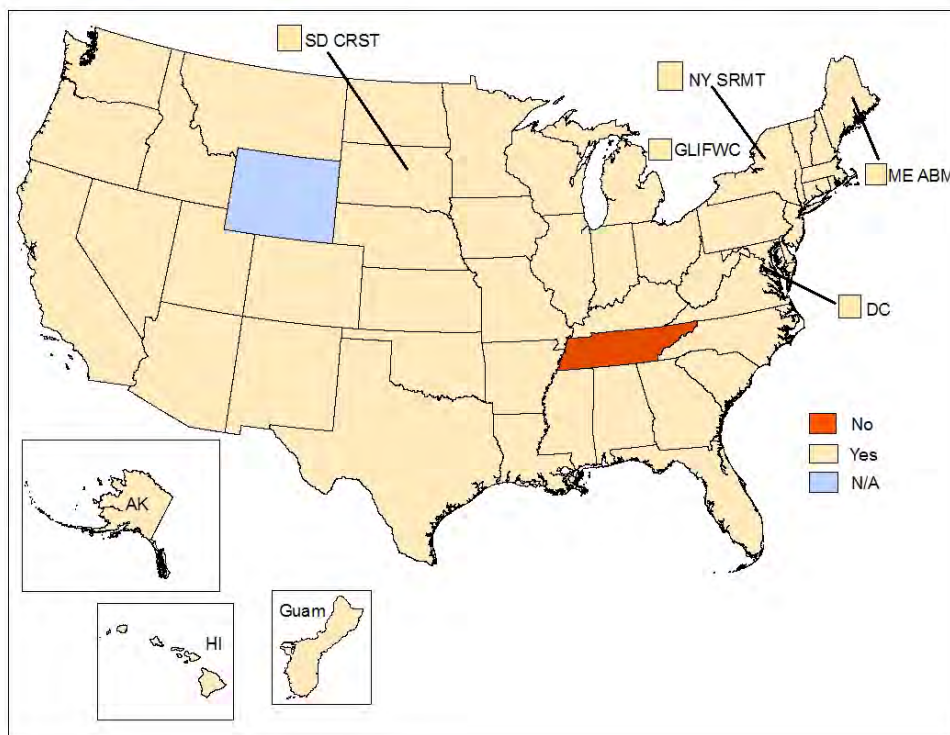
In cancer risk assessments, 30 states use 70 years as the default value for exposure duration and 10 states use 30 years as the duration value. Two states reported using other duration values (Delaware uses 30 years for adults and 6 years for children and Nebraska uses 10 years, 30 years, and 71 years (71 years for advisory status)). Fourteen states reported that the question was not applicable.

**Q59. What default value does your state use to estimate life expectancy in its risk assessments?**

The majority of states (32) also use 70 years as the default value to estimate life expectancy in risk assessments. Delaware uses 75 years, and Nebraska uses 71 years. Colorado uses chronic exposure for non-cancer endpoints. Twenty-one states responded that the question was not applicable to their programs.

**Q60. Does your state recommend a meal frequency format or number of meals over time in its advisories (e.g., number of meals per month)?**

Most states (54) recommend meal frequency values in their advisories, depending on the severity of the chemical contamination (Figure 2-14). Tennessee does not recommend meal frequencies, and Wyoming responded that the question was not applicable to its program.



**Figure 2-14. Does your state recommend a meal frequency format or number of meals over time in its advisories?**

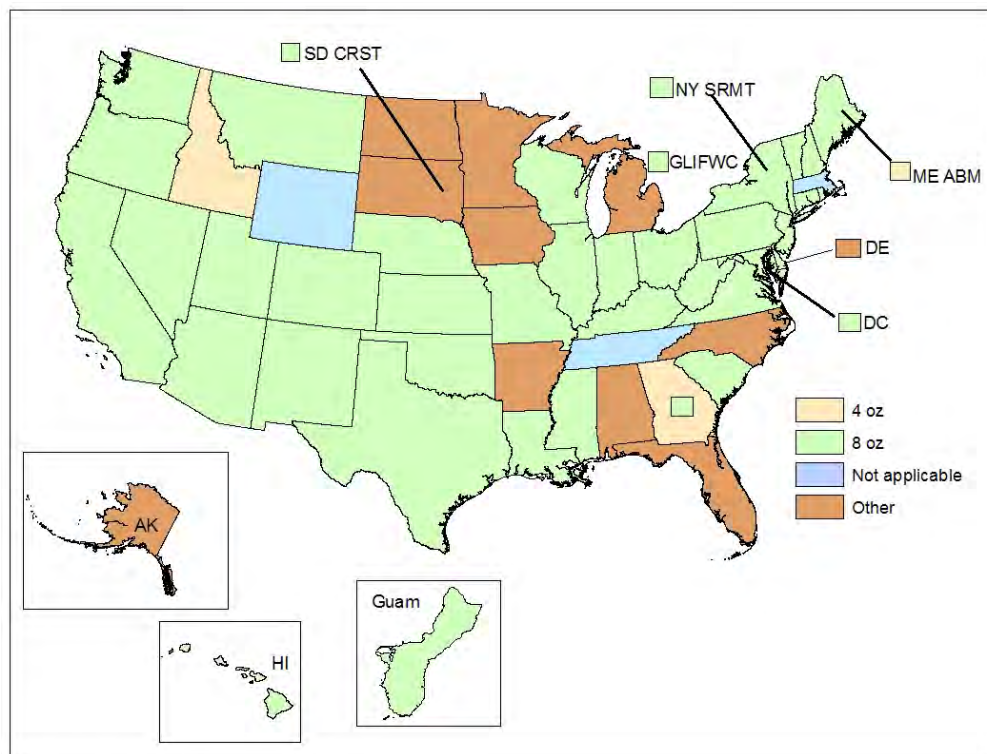
*Native American tribe acronyms are GLIFWC: Great Lakes Indian Fish and Wildlife Commission, ME ABM: Aroostook Band of Micmacs of Maine, NY SRMT: St. Regis Mohawk Tribe of New York, SD CRST: Cheyenne River Sioux Tribe of South Dakota.*

**Q61. If your response to question 60 is yes, what assumption does your state make in its risk assessments about meal size or portion for adults?**

When calculating health risks for all adults, most states (41) assume a meal size of 8 oz (227 g) (Figure 2-15). Three states use a meal size of 4 oz (114 g). Georgia answered that meal size assumptions of both 4 oz. and 8 oz. are used. Eleven states use other meal sizes, ranging from 4 to 10 ounces. Three states found the question not applicable.

**Q62. If your response to question 60 is yes, what assumption does your state make in its risk assessments about meal size or portion for children?**

When calculating risk for children, 16 states assume a meal size of 4 oz (114 g) and five states assume a meal size of 8 oz (227 g) (Figure 2-16). Twenty-four states reported that they use other meal sizes for children, including 10 states that use 3 ounces or less. Eleven states responded that the question was not applicable.



**Figure 2-15. What assumption does your state make in its risk assessments about meal size or portion for adults?**

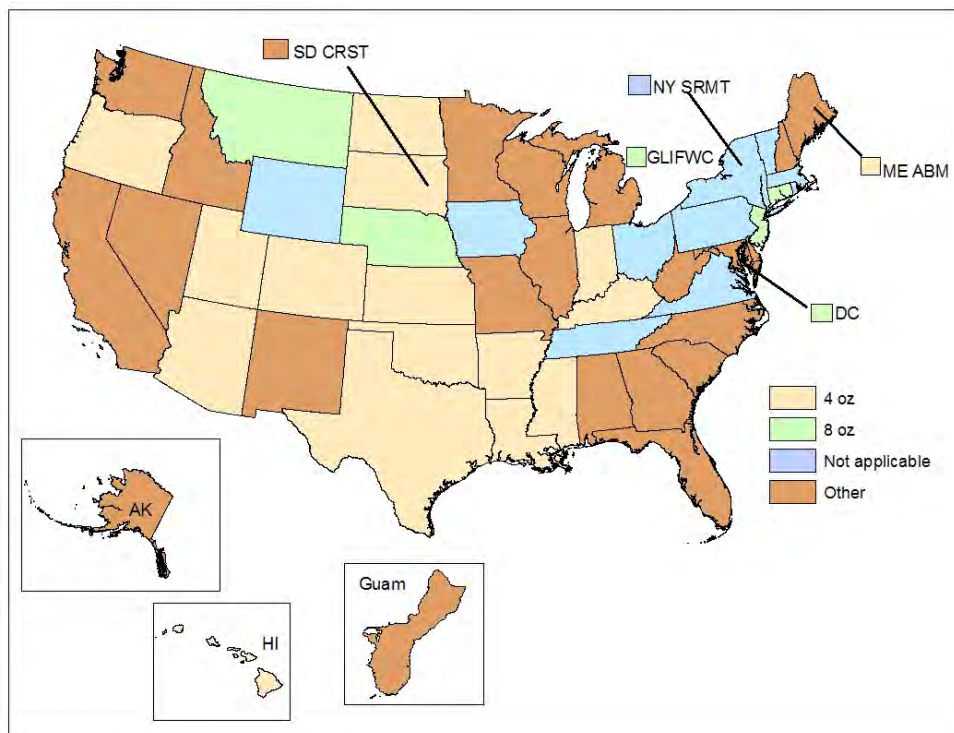
*Native American tribe acronyms are GLIFWC: Great Lakes Indian Fish and Wildlife Commission, ME ABM: Aroostook Band of Micmacs of Maine, NY SRMT: St. Regis Mohawk Tribe of New York, SD CRST: Cheyenne River Sioux Tribe of South Dakota.*

**Q63. What default value does your state use for body weight of an adult male consumer in its risk assessments?**

Forty-four states use a default value for the body weight of an adult male consumer of 70 kg. Two states assume a body weight of 71 kg for risk assessment calculations, and the Cheyenne River Sioux Tribe uses a value of 65 kg. Four states use other values, and five states indicated that the question was not applicable.

**Q64. What default value does your state use for the body weight of an adult female consumer (including pregnant women and nursing mothers) in its risk assessments?**

Twenty-five states use a default value of 70 kg for the body weight of an adult female consumer (including pregnant women and nursing mothers), three states use a value of 65 kg, three states use a value of 62 kg, and nine states use a value of 60 kg. Six states reported that they use other values, and nine states reported that the question was not applicable.



**Figure 2-16. What assumption does your state make in its risk assessments about meal size or portion for children?**

*Native American tribe acronyms are GLIFWC: Great Lakes Indian Fish and Wildlife Commission, ME ABM: Aroostook Band of Micmacs of Maine, NY SRMT: St. Regis Mohawk Tribe of New York, SD CRST: Cheyenne River Sioux Tribe of South Dakota.*

**Q65. What default value does your state use for body weight of a child in its risk assessments?**

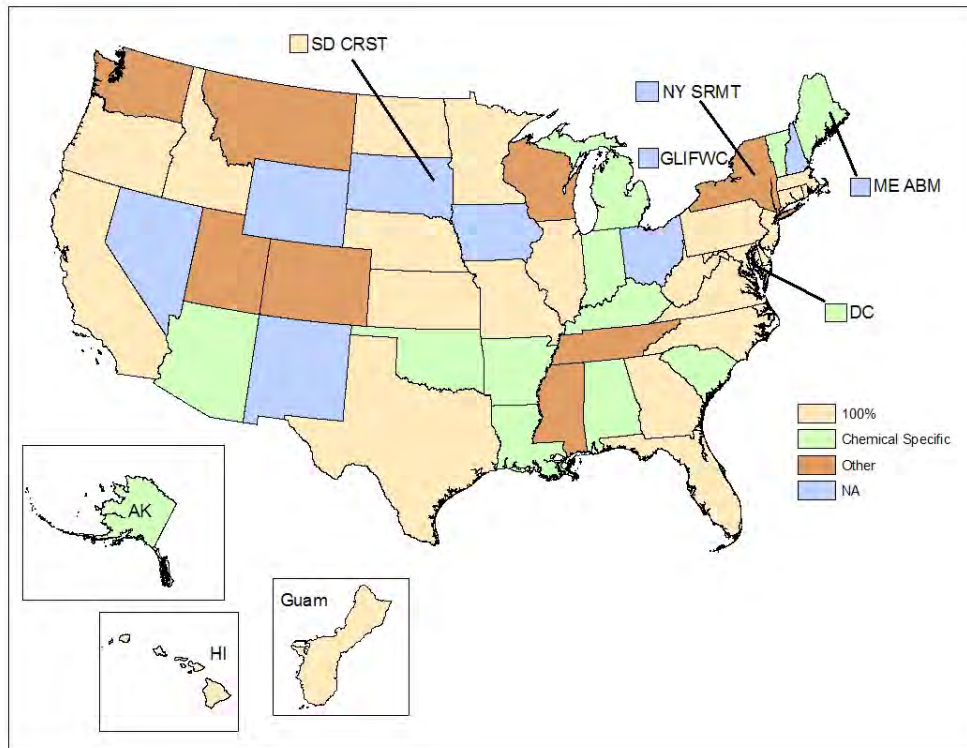
Six states use a child's body weight default value of 10 kg in their risk assessment calculations, seven states use a value of 14.5 kg, and two states use a value of 15.5 kg. However, the largest number of states (17) reported that they use other body weight values, ranging from 14 to 36 kg. Eleven states reported that they do not conduct risk assessments for children and 13 states said the question was not applicable.

**Q66. Please specify what age range or ranges your state uses to calculate risk with respect to children.**

When asked what age range states use in their risk assessments for children, 16 states use an age less than six years old, five states use an age less than seven years old, six states use an age less than 12 years old, seven states use an age less than 15 years old, and two states use an age less than 18 years. Seven states use other age ranges or more than one age range. Thirteen states answered that they do not assess risks for children separately from those for adults, and seven states reported that the question was not applicable.

**Q67. What assumption does your state make in its risk assessments about the amount of the pollutant absorbed by the body after ingestion (percent absorption by the gut) (e.g., in pharmacokinetic modeling)?**

When asked what assumption is made in their risk assessment methods about the amount of pollutant absorbed by the body after ingestion, most states (25) responded that they assume 100 percent absorption for all pollutants (Figure 2-17). Thirteen states said the assumption was chemical-specific based on available data, and eight states reported using other assumptions. Ten states indicated that the question was not applicable.

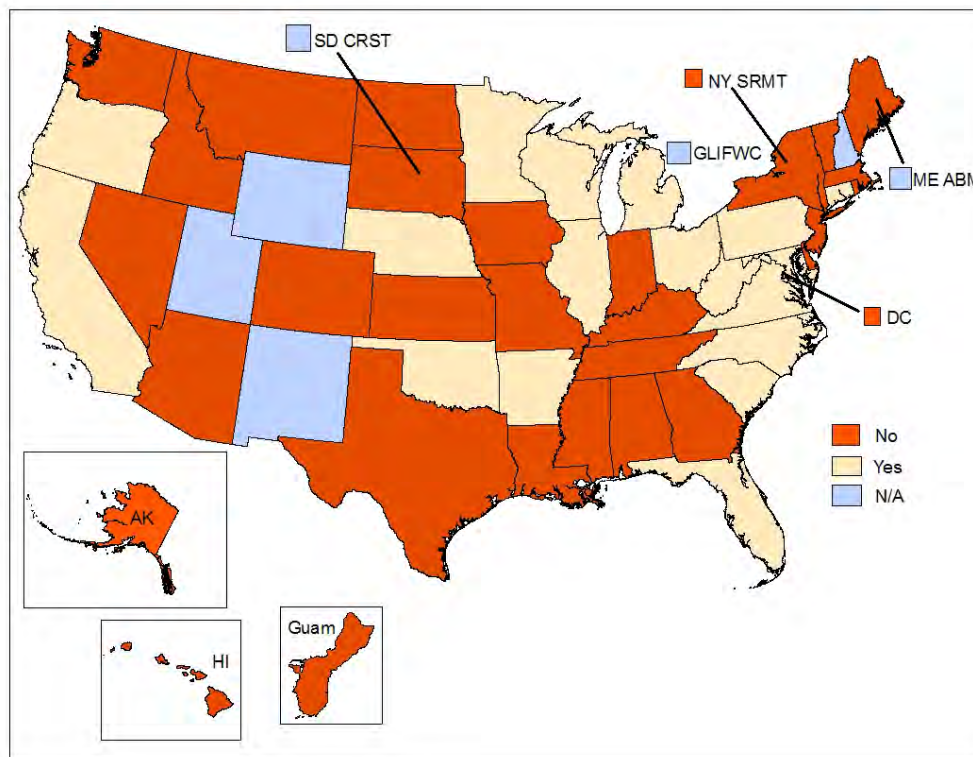


**Figure 2-17. What assumption does your state make about the amount of pollutant absorbed by the body after ingestion?**

*Native American tribe acronyms are GLIFWC: Great Lakes Indian Fish and Wildlife Commission, ME ABM: Aroostook Band of Micmacs of Maine, NY SRMT: St. Regis Mohawk Tribe of New York, SD CRST: Cheyenne River Sioux Tribe of South Dakota.*

**Q68. Does your state use “contaminant reduction factors” in its risk calculations to account for contaminant losses of PCBs and other organochlorine pollutants from fish tissues during cleaning, preparation, and cooking of the fish?**

Eighteen states use contaminant reduction factors in their risk assessment calculations to account for contaminant losses of PCBs and other organochlorine pollutants from fish tissues during food preparation and cooking (Figure 2-18). Thirty-one states do not use any contaminant reduction factors and seven states found the question not applicable.



**Figure 2-18. Does your state use “contaminant reduction factors” to account for contaminant losses of PCBs from fish tissues during cleaning, preparation, and cooking of the fish?**

*Native American tribe acronyms are GLIFWC: Great Lakes Indian Fish and Wildlife Commission, ME ABM: Aroostook Band of Micmacs of Maine, NY SRMT: St. Regis Mohawk Tribe of New York, SD CRST: Cheyenne River Sioux Tribe of South Dakota.*

**Q69. If yes, what are the pollutants and their associated contaminant reduction factors (% reduction in pollutant level resulting from cleaning, preparing, and cooking of fish) assumed by your state?**

Eighteen states reported contaminant reduction factor values. Two of these states use a reduction factor of 30% for PCBs, while 16 use a factor of 50% for PCBs. Factors for other contaminants can be found in Appendix B. Thirty-eight states reported that the question was not applicable.

**Q70. If contaminant reduction factors are used, what is their basis?**

Nineteen states use a variety of information sources as the basis for contaminant reduction factors. Eight states use the Great Lakes Protocol as the basis for the contaminant reduction factors, twelve states use the scientific literature, and four states use the EPA Guidance documents as the basis for the contaminant reductions. Florida uses the 2006 North Carolina Risk Assessment Document. Thirty-six states reported that the question was not applicable.

**Q71. How does your state evaluate health risks for fish samples contaminated with multiple chemicals with the same human health endpoints (e.g., two organochlorine pesticides)?**

When faced with fish samples that are contaminated with multiple chemicals with the same human health endpoint, seven states use cumulative risk methods (adding individual risks from each contaminant together). Three states calculate single contaminant risk based on the most conservative carcinogenic risk value, 14 states use either the cumulative risk or the single contaminant risk method, depending on the chemicals involved, and 22 states do not evaluate health risks from multiple chemical contaminants. Five states use other methods, such as calculating cumulative risk for chemicals with common mechanisms of carcinogenicity; back-calculating acceptable consumption rate based on most toxic chemical; and providing meal frequency advice based on the most stringent advice for multiple chemicals present. Five states found the question not applicable.

**Q72. Regarding mercury, does your state assign different noncarcinogenic toxicity values to different populations (e.g., does the state use an RfD of  $1 \times 10^{-4}$  mg/kg/day for women of child-bearing age and/or children versus using an RfD of  $3 \times 10^{-4}$  mg/kg/day for adults in the general population)?**

For mercury contamination, 23 states assign different noncarcinogenic toxicity values to different populations, while 28 states do not assign different values (Figure 2-19). Five states reported the question was not applicable to their programs.

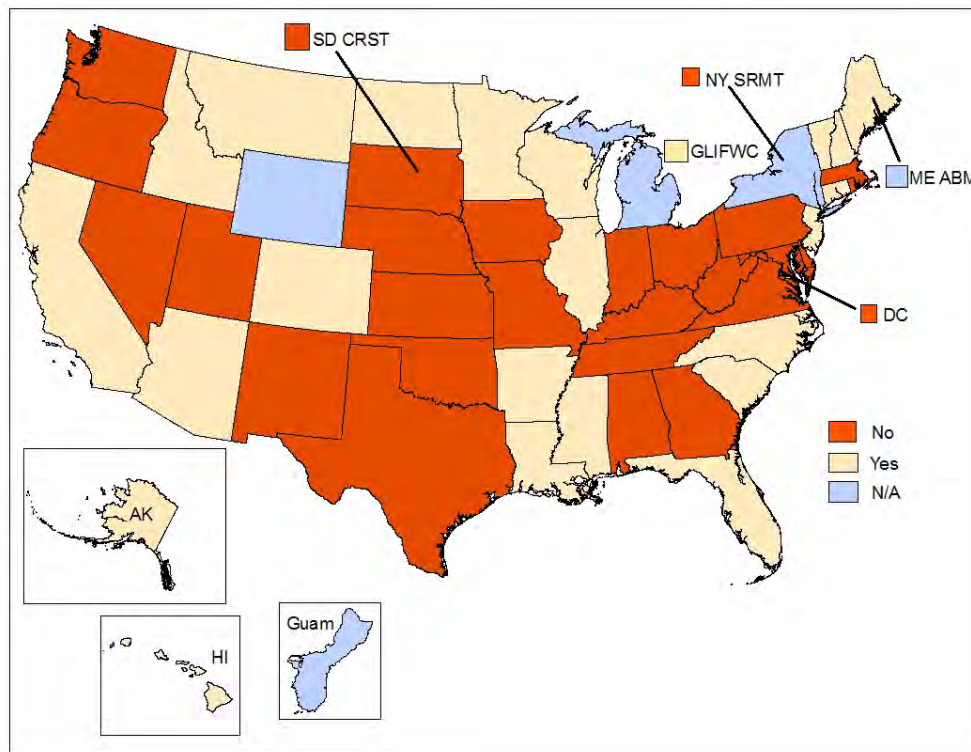
**Q73. What is the mercury toxicity value (i.e., RfD) used for each of the following populations?**

Most states (24) assigned a mercury toxicity value of  $3 \times 10^{-4}$  mg/kg/d to adults in the general population, but 20 states assigned values of  $1 \times 10^{-4}$  mg/kg/d. Oklahoma assigns a value of  $2 \times 10^{-4}$  mg/kg/d to adults, Alabama uses  $3.3 \times 10^{-4}$  mg/kg/d, and New Jersey uses  $3.4 \times 10^{-4}$  mg/kg/d. Alaska has not yet established an RfD for this population. Six states reported that the question was not applicable to their programs.

For women of childbearing age and nursing mothers, 39 states assigned a toxicity value of  $1 \times 10^{-4}$  mg/kg/d for this population, and four states assigned a mercury toxicity value of  $3 \times 10^{-4}$  mg/kg/d. Alaska assigns a value of  $4 \times 10^{-4}$  mg/kg/d for this population, while three other states (Colorado, Indiana, and New Jersey) assign a value of  $7.5 \times 10^{-5}$  mg/kg/d or lower. Seven states reported that the question was not applicable.

For children, 37 states assigned a toxicity value of  $1 \times 10^{-4}$  mg/kg/d and four states assigned a mercury toxicity value of  $3 \times 10^{-4}$ . Colorado and Indiana assign a value of  $7.5 \times 10^{-5}$  mg/kg/d or lower, and Alaska uses  $4 \times 10^{-4}$  mg/kg/d. Ten states reported that the question was not applicable.





**Figure 2-19. Does your state assign different noncarcinogenic toxicity values to different populations?**

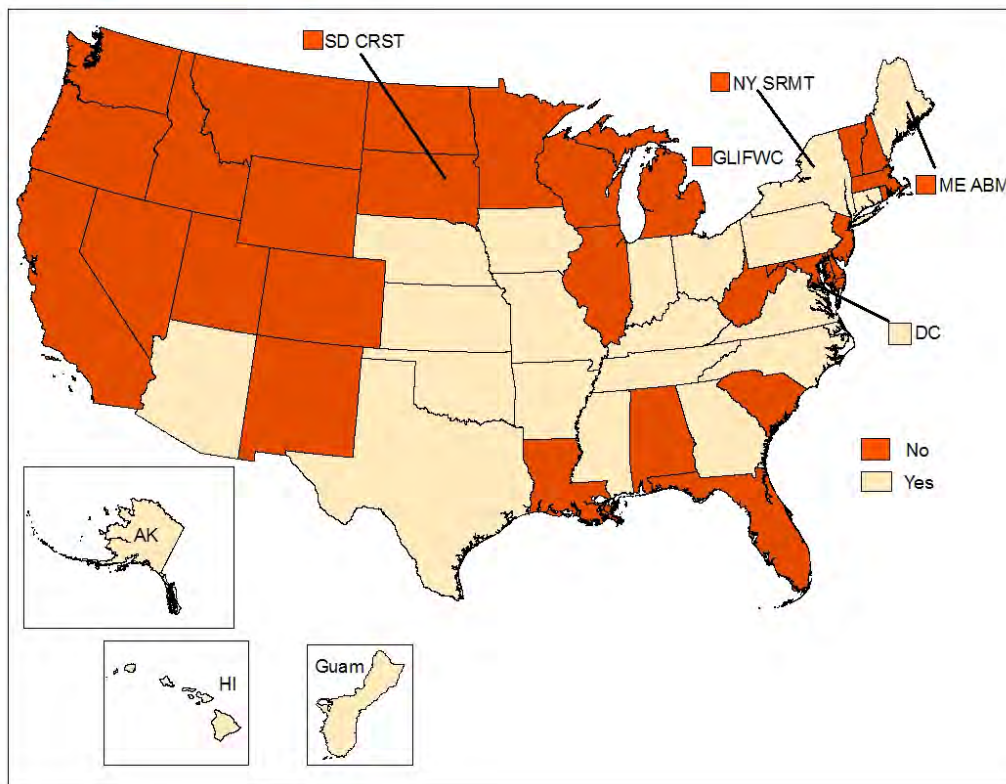
*Native American tribe acronyms are GLIFWC: Great Lakes Indian Fish and Wildlife Commission, ME ABM: Aroostook Band of Micmacs of Maine, NY SRMT: St. Regis Mohawk Tribe of New York, SD CRST: Cheyenne River Sioux Tribe of South Dakota.*

**Q74. When your state receives method detection limits (MDLs) as the reportable concentration for contaminants from the laboratory, what value do you use for non-detects in your risk assessment?**

When states receive MDLs from the laboratory, 25 states use a value of one-half the pollutant's MDL for non-detects in risk assessment. Four states use the pollutant's MDL for non-detects, which is the most conservative approach; and eleven states use a value of zero, which is the least conservative approach. Three states use the maximum likelihood indicator. Three states reported using other values or using more than one value, depending on the chemical being analyzed. Ten states found the question not applicable.

**Q75. Does your state screen for lead in its fish tissue samples?**

Twenty-four states screen for lead in fish tissue samples and 32 states do not screen for lead (Figure 2-20).



**Figure 2-20. Does your state screen for lead in its fish tissue samples?**

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### **Q76. What assessment method do you use for lead since lead does not currently have an associated reference dose in IRIS?**

Seven states report using the EPA Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK) approach. Ten states used other methods, such as screening for the level present; comparing to the background level; ATSDR (oysters-shellfish program); FDA total tolerable daily intake; and current scientific literature. Thirty-seven states found the question not applicable because they do not screen for lead in fish tissue samples.

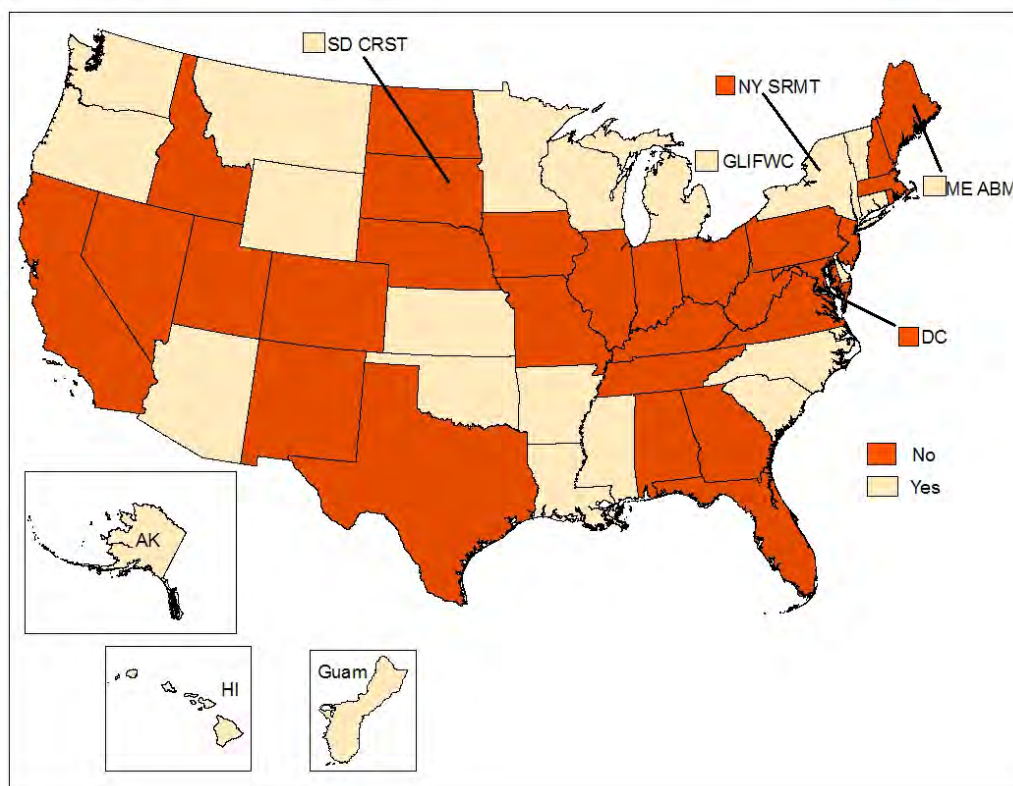
## **2.7 Targeting Fish Consumers**

This section contains responses to questions concerning the state's assessment of health risks to target groups of fish consumers whose culinary habits differ from the customs of the majority of Americans regarding meal preparation and consumption. States were asked about whether they had identified the primary waterbodies where these target populations fish, whether they had identified the fish species and the sizes of fish consumed by these target populations, and what procedures they use to obtain this information. The states were also asked if they had altered their state monitoring program and, if so, to describe how they have altered the monitoring program to better assess the health risks of target populations. Last, the states were

asked if they plan to address the needs of target populations in the future if they were not currently doing so. This section includes responses to survey questions 77 through 83.

**Q77. Are health risks being assessed in your state for target groups of people whose culinary habits may differ from the customs of the majority of Americans regarding meal preparation and consumption?**

Twenty-four states are currently assessing health risks for target groups of fish consumers whose culinary habits differ from the majority of Americans and 32 states are not assessing the health risks for target groups (Figure 2-21).



**Figure 2-21. Are health risks being assessed in your state for target groups of people whose culinary habits may differ from the customs of the majority of Americans?**

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**Q78. Has your state identified the primary waterbodies fished by these target populations?**

Twenty-three states reported that they have identified the primary waterbodies fished by the target populations in their jurisdictions. Twenty-four states reported that they have not identified the primary waterbodies, either because they do not target specific populations or

because they use other methods. Nine states did not find the question applicable to their programs.

**Q79. Has your state made efforts to identify the fish species and the sizes of fish consumed by these target populations?**

Twenty-nine states have made efforts to identify the fish species and sizes of fish consumed by target populations. Twenty-four states have not identified fish species, either because they do not target specific populations or because they use other methods. Seven states did not feel the question was applicable to their programs.

**Q80. If yes, has your state used any of the following procedures to obtain information from these target populations?**

Among states that have obtained some type of information about the fishing habits of target populations, many have done so using several different methods: local fish consumption surveys (creel surveys) (23 states), collection of anecdotal information from the populations of interest (18 states), behavioral risk surveillance surveys funded by the CDC (four states), and fishing license surveys (five states). Thirty states did not find the question applicable to their programs.

**Q81. Has your state altered its monitoring approach to address the needs of these target populations?**

Eighteen states reported that they have altered their monitoring approaches in some way to address the needs of target populations of fish consumers. Twenty-nine states reported they did not alter their monitoring approach. Nine states did not find the question applicable to their program.

**Q82. If your state has altered its monitoring approach to address the needs of these target populations, what actions have been taken?**

Twenty states have altered their monitoring approaches in some way to address the needs of target populations of fish consumers, primarily by targeting species consumed by the population for residue analysis (16 states) and by adding monitoring stations in waterbodies where these populations frequently fish (12 states). Seven states use other methods, including sampling fishing sites used by target populations; issuing special advisories or addressing unique practices within advisories; and analyzing whole fish samples for contaminants. One state commented that analyzing whole fish samples is important to adequately assess the risks to target populations. Thirty-six states responded that the question did not apply because they have not altered their monitoring approaches.

**Q83. If your state is not currently addressing the concerns of populations with a higher perceived risk, is there a plan to do so in the future?**

Twenty-one states are currently planning to begin targeting certain populations with a perceived higher health risk from consumption of contaminated fish. Seventeen states currently do not have plans to do so, and 18 states found the question not applicable.

## 2.8 Risk Management

This section contains responses to questions about the agency in each state that is responsible for preparing risk assessments on behalf of the state fish advisory program, the state's written procedures for evaluating health risks associated with consumption of chemically contaminated fish, the existence of a committee or group that oversees the fish advisory process, and the professional disciplines that are represented on that committee. The states were also asked who in the state government has the ultimate risk management decision to issue, modify, or rescind fish consumption advisories. This section includes responses to survey questions 84 through 88.

### **Q84. Who prepares risk assessments on behalf of your state or tribal fish advisory program?**

In most states (33), risk assessments are prepared by the state or tribal public health department. In 19 states, risk assessments are prepared by the state or tribal environmental department. Two states use risk assessments prepared by consultants, and one state reports that a university helps prepare their risk assessments. Nine states use risk assessments prepared by other sources, including assessments prepared jointly by two or more state agencies (agriculture, health, environmental, natural resources, and fisheries departments). Three states reported that the question was not applicable to their programs.

### **Q85. Does your state or tribe have written procedures for evaluating the health risks associated with consumption of chemically contaminated fish?**

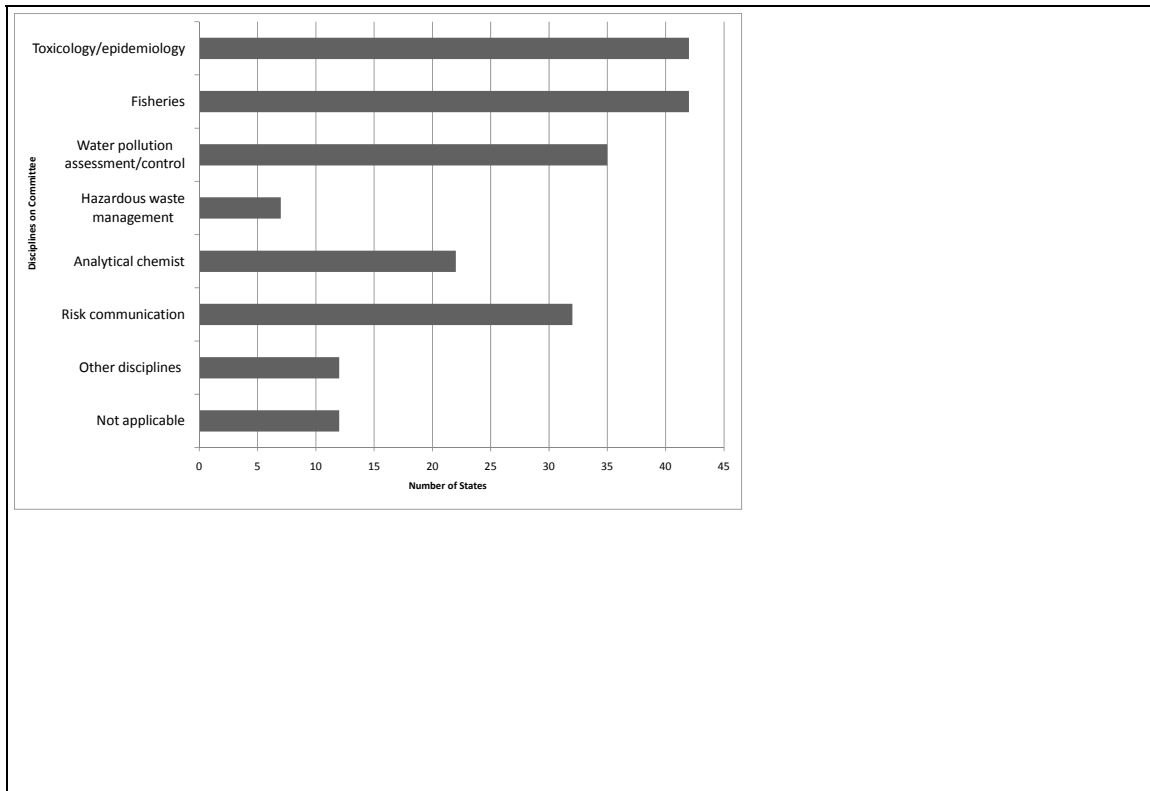
Forty-two states have written procedures for evaluating the health risks associated with chemical contaminants in fish. Fourteen states have no written procedures.

### **Q86. Does your state or tribe have a group or committee that oversees the fish advisory program/processes?**

Forty-five states have a group or committee that oversees the fish advisory processes; eleven states do not have a committee.

### **Q87. If the answer to question 86 is yes, what professional disciplines are represented on that committee?**

Forty-two states have toxicology/epidemiology representatives, 42 states have fisheries representatives, 35 states have water pollution assessment/control representatives, 32 states have risk communication representatives, 22 states have analytical chemistry representatives, and seven states have hazardous waste management representatives (Figure 2-22). Eleven states also have members with expertise in other areas, including representatives of the food safety sector, public health risk managers, physicians, university researchers, members of the state wildlife federation, health educators, elected officials, and private citizens. Eleven states reported that the question was not applicable to their programs.



**Figure 2-22. Professional disciplines represented on state fish advisory committees.**

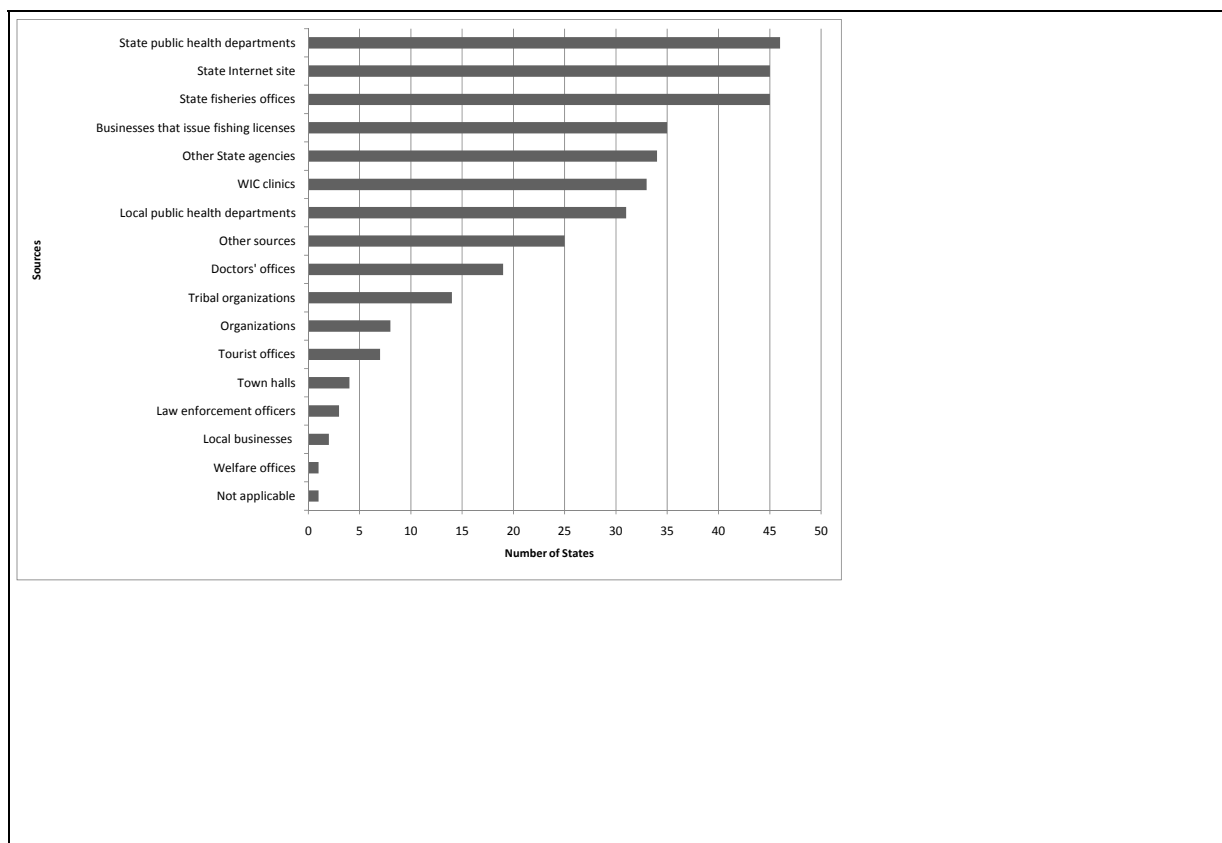
**Q88. Who in your state or tribe makes the ultimate risk management decision to issue, modify, or rescind fish advisories?**

In most states (25), the head of the public health agency or department makes the ultimate risk management decision to issue, modify, or rescind fish advisories. The head of the environmental agency makes these decisions in 10 states. In Iowa, the head of the fisheries agency makes this decision, and the Tribal Chief/President's Office makes the ultimate decision for the Cheyenne River Sioux Tribe, the Aroostook Band of Micmacs, and the St. Regis Mohawk Tribe. In 17 states, individuals in other departments make the decision, or individuals from more than one of these agencies make a joint decision (Figure 2-23).



### Q90. Where can the public obtain copies of your agency's printed advisory materials?

Typically, the general public can obtain printed copies of state agency fish advisory materials from several different sources. The most common sources of these materials are state public health departments (46 states), state fisheries offices (38 states), state Internet sites (36 states), businesses that issue fishing licenses (34 states), other state agencies (33 states), Women, Infants, and Children (WIC) clinics (32 states), and local health departments (26 states) (Figure 2-24). Twenty states also make these materials available through other sources, such as through material posted at public fishing sites or monitoring sites, mailings to fish retailers, state parks, state fair booths or expositions, media outlets, public requests, national and state parks, conservation organizations, public service announcements, pharmacies, churches, schools, town halls, libraries, and fishing regulations guidebooks. Wyoming indicated that the question was not applicable to its program.



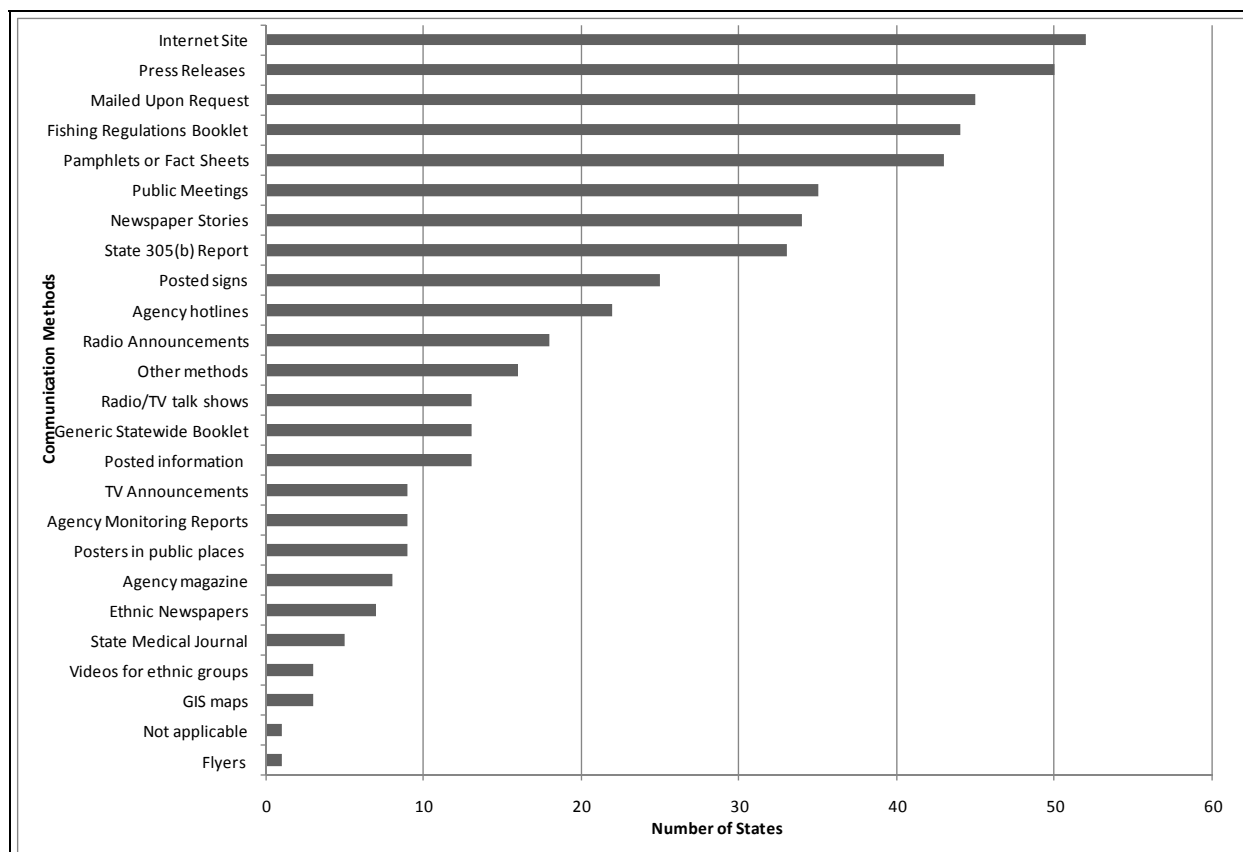
**Figure 2-24. Sources of printed state fish advisory information available to the general public.**

### Q91. How are your agency's fish advisories communicated to the public?

In addition to making written advisory materials available at many locations, the states communicate fish advisory information in a variety of different ways. The most common methods of communication are Internet sites (52 states), press releases (49 states), mailings to the public upon request (45 states), annual fishing regulations booklets (44 states), and printed



pamphlets or fact sheets (42 states) (Figure 2-25). Sixteen states reported that they used other methods of communicating advisory information to the public, including state fair exhibits, hospitals and physicians, mailings to couples at marriage, mailings to churches, fish markets, and grocery stores, physician association newsletters, Indian Affairs, Cooperative Extension, public health newsletters, direct contacts with anglers, Geographic Information System (GIS) web applications, and fishing shows. One state indicated that the question was not applicable to its program.



**Figure 2-25. Methods of communication used by states to disseminate fish advisory information.**

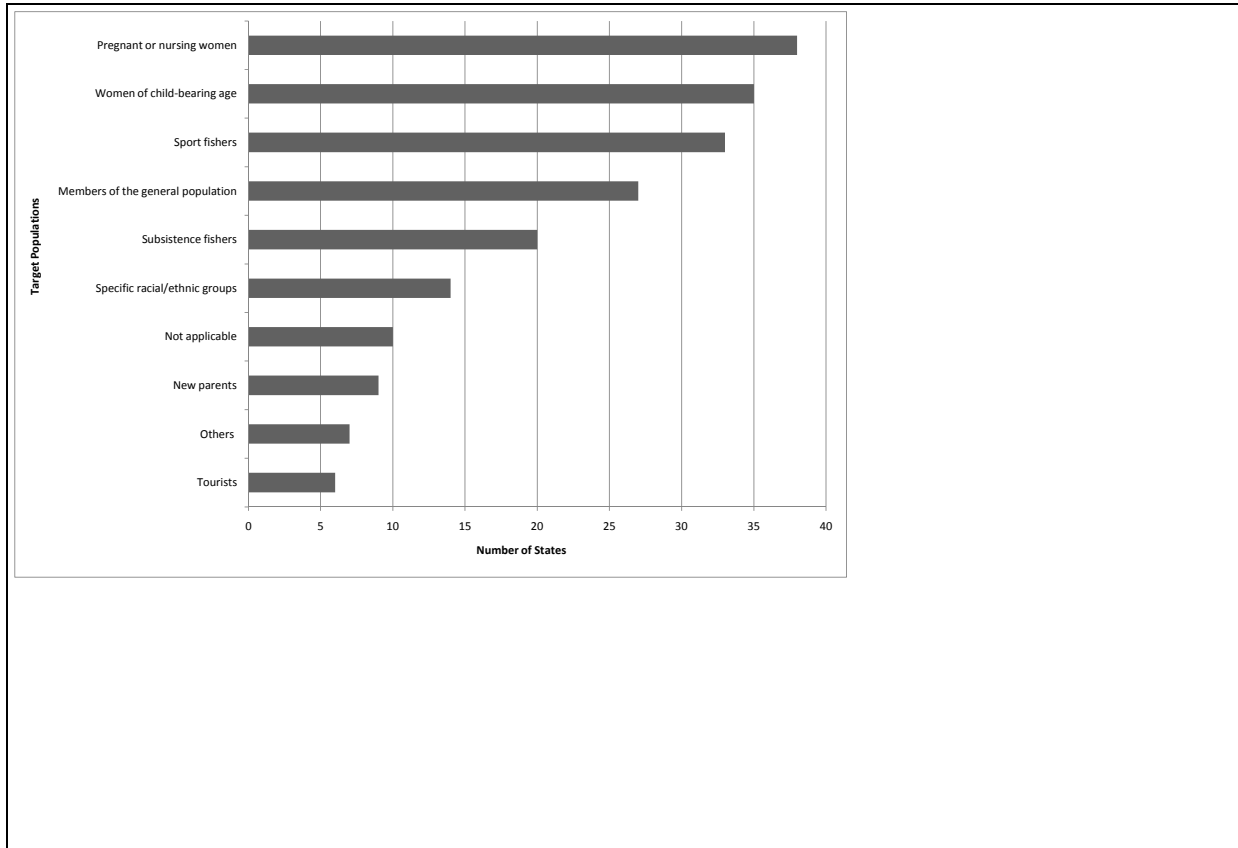
**Q92. Does your state or tribal fish advisory distribution plan specifically target some populations to receive advisory information?**

The fish advisory distribution plans of 45 states specifically target certain populations to receive advisory information. Eleven states do not target specific populations.

**Q93. If yes, please identify all populations that are targeted.**

The most targeted populations are pregnant or nursing women (37 states), women of child-bearing age (34 states), sport fishers (32 states), subsistence fishers (19 states), and members of the general population (26 states) (Figure 2-26).

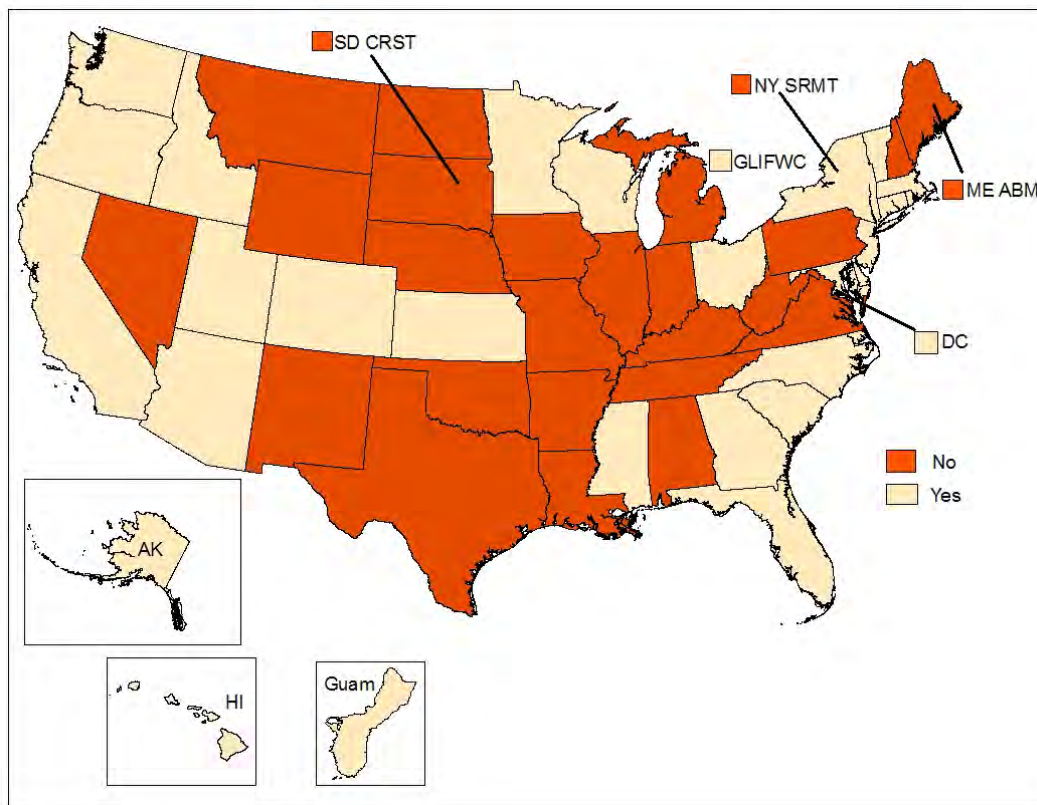
Thirteen states target specific racial or ethnic groups. Ten states reported that the question was not applicable to their programs.



**Figure 2-26. Fish-consuming populations targeted by states to receive fish advisory information.**

**Q94. Are your state or tribal fish consumption advisories distributed to the public in languages other than English?**

Twenty-nine states distribute fish consumption advisories to the public in languages other than English, and 27 states distribute advisories in English only (Figure 2-27).

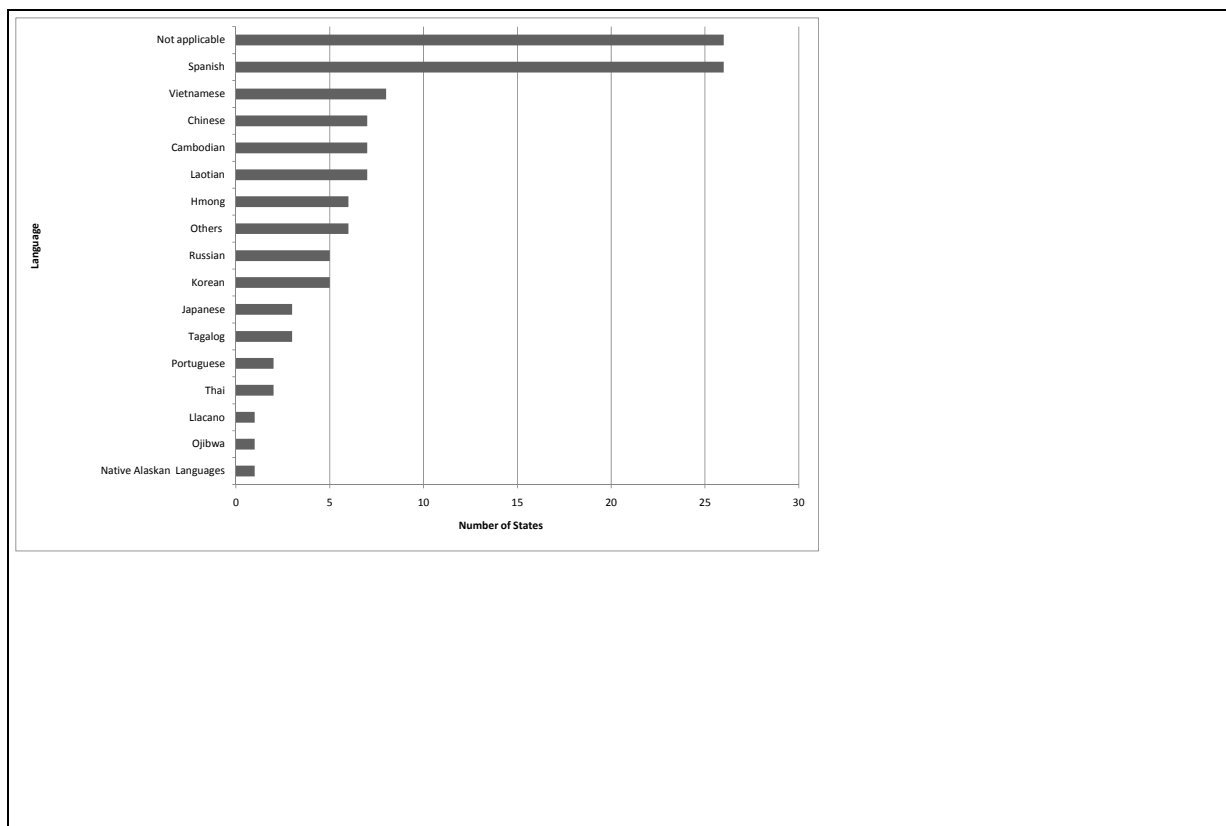


**Figure 2-27. Are your state or tribal fish consumption advisories distributed to the public in languages other than English?**

*Native American tribe acronyms are GLIFWC: Great Lakes Indian Fish and Wildlife Commission, ME ABM: Aroostook Band of Micmacs of Maine, NY SRMT: St. Regis Mohawk Tribe of New York, SD CRST: Cheyenne River Sioux Tribe of South Dakota.*

**Q95. If yes, please specify all languages that apply.**

The most common language used to communicate advisories other than English is Spanish (26 states). Other languages reported by more than one state include Vietnamese (8 states), Chinese (7 states), Cambodian (7 states), Laotian (7 states), Hmong (6 states), Korean (5 states), Russian (5 states), Japanese (3 states), Tagalog (3 states), Thai (2 states), and Portuguese (2 states). Six states issue advisories in other languages, including Haitian Creole, Chamorro, French, Serbo-Croatian, Native American languages, Arabic, and Somalian. The Cheyenne River Sioux tribe does not distribute written advisories in languages other than English, but the tribe does hire people to present the advisories in Native languages. Twenty-six states that issue fish advisories only in English reported the question was not applicable (Figure 2-28).



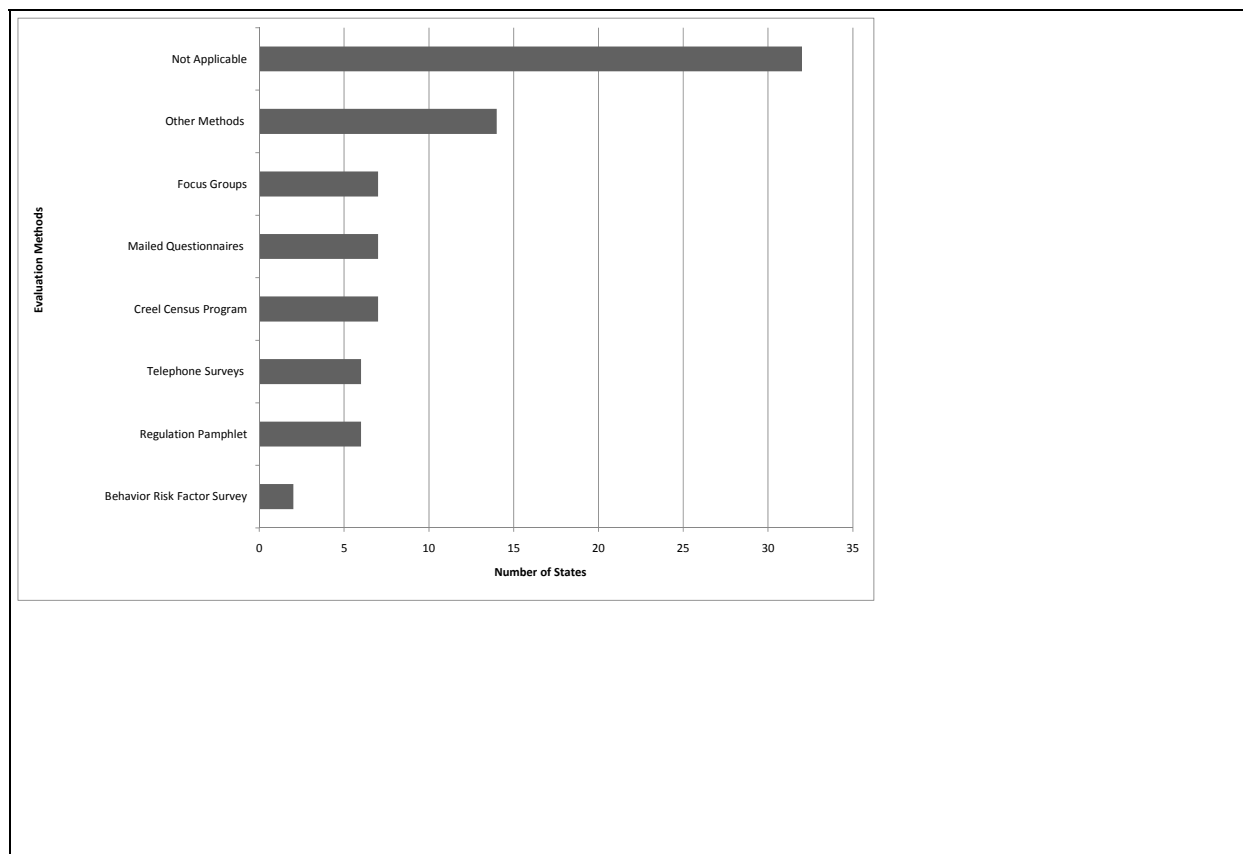
**Figure 2-28. Languages other than English used to distribute information on fish advisories to target populations.**

**Q96. Does your state or tribe evaluate the effectiveness of the fish consumption advisories?**

Only 24 states evaluate the effectiveness of fish consumption advisories. Thirty states do not, and two states reported that the question was not applicable to their programs.

**Q97. If yes, how is their effectiveness determined?**

Only 24 states reported that they evaluate the effectiveness of fish consumption advisories; however, many of these states use more than one method to do so. The most common methods include focus groups (7 states), mailed questionnaires (7 states), questions included in creel surveys (7 states), telephone surveys (6 states), feedback forms/postcards included in regulation pamphlets (6 states), and questions included in state Behavior Risk Factor Surveys (2 states) (Figure 2-29). Thirteen states also use other methods, including site visits to subsistence villages; informal conversation with citizens; responses to pier questionnaires; Health Department surveys, and surveys of licensed anglers. Thirty-two states reported that this question was not applicable to their fish advisory programs.



**Figure 2-29. Methods used by states to evaluate the effectiveness of fish advisories.**

## 2.10 Health Effects Studies Related to Fish Consumption

This section contains responses of the state fish advisory contacts as to whether there have been any studies conducted in their state that evaluate human tissue contaminant levels or adverse health effects related to consumption of chemically contaminated fish. This section includes answers to question 98.

**Q98. To your knowledge, have there been any studies in your state (including federal, tribal, and university-based studies) to evaluate human tissue contaminant levels (e.g., in blood, urine, breast milk, or adipose tissues) or adverse human health effects related to fish consumption?**

Thirty-two states reported that they were aware of studies to evaluate human tissue contaminant levels or adverse human health effects related to fish consumption in their state, and 19 states reported that they had no knowledge of such studies. Five states reported that they did not know of any studies conducted in their state. See Appendix B, Question 98, for the specific references given by the states in regard to the studies they identified.

## **Appendix A**

# **Questionnaire for Fish Consumption Advisory Program**

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
FISH CONSUMPTION ADVISORY PROGRAMS QUESTIONNAIRE FOR  
SURVEY YEAR 2010**

**Please provide the following information about the agency in your state or tribe that is responsible for issuing noncommercial (sportfishing/subsistence) advisories or closures for chemical contamination in fish and shellfish.**

---

Agency name

---

Agency address

---

Agency fish advisory contact

---

Contact's e-mail address

---

(\_\_\_\_) \_\_\_\_\_  
Contact's phone number

---

(\_\_\_\_) \_\_\_\_\_  
Contact's fax number

## Fish Tissue Monitoring Program

1. **Did your state or tribal agency conduct monitoring during this past year to obtain information about the concentrations of chemical contaminants in fish tissue for assessing human health risks?**  
 Yes     No
  
2. **What kind of data does your state or tribal agency collect to evaluate chemical contaminant levels in fish? (Please check all that apply.)**  
 Captures fish and sends tissues to a lab to determine contaminant concentrations  
 Monitors water quality and uses data to estimate contaminant concentrations in fish  
 Monitors sediments and uses data to estimate contaminant concentrations in fish  
 Other methods (please specify)  
 Not applicable
  
3. **How does your state or tribe conduct monitoring of contaminants in fish tissue for fish advisories? (Please check all that apply.)**  
 Conducts one-time, nonrecurring or special surveys in particular fishing areas, watersheds, or basins  
 Monitors the same fishing areas, watersheds, or basins at regular intervals  
 Other methods (please specify)  
 Not applicable
  
4. **During the past year, please estimate the number of stations from which your state or tribal agency collected fish tissue that was analyzed for chemical contaminants and was used for the fish advisory program. (Please check only one answer.)**  
 0 stations  
 1-10 stations  
 11-20 stations  
 21-30 stations  
 31-50 stations  
 51-100 stations  
 >100 stations (please specify number)
  
5. **How frequently does your state resample fish from waterbodies where advisories are in effect? (Please check only one answer.)**  
 Every year  
 Every 2 years  
 Every 3 years  
 Every 4 years  
 Every 5 years  
 Every 6 -10 years  
 On an as needed basis (no set schedule)  
 Other schedule (please specify)  
 Not applicable



**6. In approximately how many waterbodies was fish tissue monitoring conducted within your state during the past year?**

- 0 waterbodies  
 1-10 waterbodies  
 11-20 waterbodies  
 21-30 waterbodies  
 31-40 waterbodies  
 >40 (please specify total number sampled—NO TEXT)

**7. How does your state determines-which sites to monitor (please check all that apply).**

- Accessibility of site  
 Area of concern  
 Citizen or Agency request  
 Degree of angling pressure the site receives  
 High pollution potential at the site  
 Fixed-station sites  
 Randomly selected sites  
 Major fishery resource  
 Other method (please specify)  
 Not applicable

Answers to questions 8 through 11 should be based on your Agency's evaluation of fish tissue monitoring data. Sediment analysis or water quality monitoring data may be included in your evaluation only if they are used **as the basis for determining when an advisory is needed**. Note: For these questions, you may need to consult with other individuals in your state or tribal organization.

**8. How many river, stream, or canal miles were assessed at least once during the last 3 years specifically for the fish advisory program?**

\_\_\_\_\_ miles

**9. How many lake or reservoir acres were assessed at least once during the past 3 years specifically for the fish advisory program?**

\_\_\_\_\_ acres

**10. How many square miles of estuarine waters were assessed at least once during the past 3 years specifically for the fish advisory program?**

\_\_\_\_\_ square miles

**11. How many miles of marine coastline (coastal waters) were assessed at least once during the past 3 years specifically for the fish advisory program?**

\_\_\_\_\_ miles

## Types of Fish Advisories

12. Does your state issue fish consumption advisories advising individuals to restrict fish consumption? (Please check only one answer.)  
 Yes    No    Not applicable
13. Does your state issue fish consumption advisories advising individuals not to consume any fish or any fish of a particular species from a particular waterbody? (Please check only one answer.)  
 Yes    No    Not applicable
14. Fish consumption advisories issued in your state pertain to the following (please check all that apply):  
 Specific fish species analyzed (e.g., largemouth bass)  
 Specified size class(es) for the given species analyzed (e.g., largemouth bass 15-20 inches)  
 Select trophic groups (e.g., game fish, bottom feeders, or panfish)  
 The entire fish community (e.g., all fish)  
 Certain fish species purchased in stores or restaurants  
 Others (please specify) \_\_\_\_\_  
 Not applicable
15. Does your state issue statewide or regionwide “blanket” advisories based on your sampling effort? (Note: A statewide advisory may be issued for all lakes, all rivers, or all coastal waters within state jurisdiction. A regionwide advisory may be issued for an individual HUC, river drainage basin, or a portion of the state). (Please check only one answer for statewide and one for regionwide.)  
Statewide:    Yes    No    Not applicable  
Regionwide:    Yes    No    Not applicable
16. Do you have legally enforced advisories or bans within your state (e.g., are fines or citations given for fishing in posted waters)? (Please check only one answer.)  
 Yes    No
17. Does your state issue commercial fishing bans for chemically-contaminated fish or shellfish? (Please check only one answer.)  
 Yes    No
18. If your state or tribe has commercial fishing bans in a waterbody, do they include consumption information for sport and subsistence fishers? (Please check only one answer.)  
 Yes    No    Not applicable
19. In addition to chemical contaminants, does your state or tribe also issue fish and/or shellfish advisories (closures) for microbial contamination (e.g., bacteria or viruses)? (Please check only one answer.)  
 Yes    No    Not applicable

## Sample Preparation and Analyses Procedures

**20. Fish consumption advisories (no consumption and/or restricted consumption advisories) issued in your state are based on the analysis of the following (please check all that apply):**

- Whole-fish samples (skin on)
- Whole-fish samples (skin off)
- Fillet samples (skin on)
- Fillet samples (skin off)
- Muscle plug samples
- Other sample types (please specify) \_\_\_\_\_
- Not applicable

**21. Does your state target the collection of particular indicator species, and on what is this decision based? (Please check all that apply.)**

- Angler survey data
- Availability of the species
- Desire to maintain consistency with past collections
- EPA target species recommendations based on bioaccumulation potential/trophic group
- Citizen requests
- State does not target collection of indicator species
- Other reasons (please specify) \_\_\_\_\_
- Not applicable

**22. Does your state collect multiple size classes by species and submit these individual size classes for residue analyses? (Please check only one answer.)**

- Yes     No     Not applicable

**23. Are individual fish samples or composite samples submitted for residue analyses in your state? (Please check only one answer.)**

- Individual fish samples only
- Composite samples only
- Both individual and composite samples are used
- Not applicable

**24. If individual fish samples are used, how many individual fish are needed to support an advisory determination in a waterbody? (Please check only one answer.)**

- 1 fish
- 3 fish
- 5 fish
- 6 to 10 fish
- 11 to 20 fish
- > 20 fish
- Other number (please specify) \_\_\_\_\_
- Not applicable; state uses only composite fish samples

- 25. If composite samples are used, how many individual fish typically are combined in each of your state's composite samples for residue analysis? (Please check only one answer.)**
- 2 fish  
 3 fish  
 4 fish  
 5 fish  
 Other number (please specify) \_\_\_\_\_  
 Not applicable; state uses only individual fish samples
- 26. If composite samples are used, how many composite samples are needed to support an advisory determination in a waterbody? (Please check only one answer.)**
- 1 composite sample  
 2 composite samples  
 3 composite samples  
 Variable; no set number used  
 Other number (please specify) \_\_\_\_\_  
 Not applicable; state uses only individual fish samples
- 27. Assuming your state finds residue levels in exceedance of state criteria, how many years of sampling are required at a given waterbody before a fish consumption advisory can be issued? (Please check only one answer.)**
- 1 year  
 2 years  
 3 or more years  
 Site-specific decision; no set time period established  
 Other (please specify) \_\_\_\_\_  
 Not applicable
- 28. If commercial fishing bans are issued in your state, on which of the following sample types are they based? (Please check all that apply.)**
- Whole-fish samples (skin-on)  
 Whole-fish samples (skin-off)  
 Fillet samples (skin-on)  
 Fillet samples (skin-off)  
 Other sample types (please specify) \_\_\_\_\_  
 Not applicable
- 29. How many fish tissue samples must be analyzed and found to be in exceedance of state criteria before a commercial fishing ban is issued? (Please check only one answer.)**
- 1 sample  
 2 samples  
 3 or more samples  
 Site-specific decision; no set number established  
 Not applicable

**30. How many years of sampling are conducted at a given waterbody before a commercial fishing ban can be issued? (Please check only one answer.)**

- 1 year  
 2 years  
 3 or more years  
 Site-specific decision; no set number established  
 Not applicable

**31. Once an advisory is issued for a specific waterbody, what must occur for the state to rescind the advisory? (Please check only one answer.)**

- Residue levels of the chemical must decline below the state criterion for at least 1 year  
 Residue levels of the chemical must decline below the state criterion for at least 2 years  
 Residue levels of the pollutant must decline below the state criterion for at least 3 years  
 Site-specific decision; no set time period established  
 Other schedule or procedure (please specify) \_\_\_\_\_  
 Not applicable

**32. During this past year, please estimate the number of fish tissue samples that were submitted for chemical analyses by your state agency? (Please check only one answer.)**

- 0 samples  
 <20 samples  
 21-30 samples  
 31-40 samples  
 41-50 samples  
 51-60 samples  
 >60 samples (please specify number) \_\_\_\_\_  
 Not applicable

**33. What pollutants did your state screen for in fish tissue samples during this past year? (Please check all that apply.)**

- |   |   |
|---|---|
| <input type="checkbox"/> Aldrin                           | <input type="checkbox"/> Hexachlorobenzene  |
| <input type="checkbox"/> Arsenic                          | <input type="checkbox"/> Lead               |
| <input type="checkbox"/> Cadmium                          | <input type="checkbox"/> Lindane            |
| <input type="checkbox"/> Chlordane                        | <input type="checkbox"/> Mercury            |
| <input type="checkbox"/> Chlorpyrifos                     | <input type="checkbox"/> Methoxychlor       |
| <input type="checkbox"/> Chromium                         | <input type="checkbox"/> Mirex              |
| <input type="checkbox"/> DDT and its metabolites          | <input type="checkbox"/> Nonachlor          |
| <input type="checkbox"/> Diazinon                         | <input type="checkbox"/> Oxyfluorfen        |
| <input type="checkbox"/> Dicofol                          | <input type="checkbox"/> PAHs               |
| <input type="checkbox"/> Dieldrin                         | <input type="checkbox"/> PCBs               |
| <input type="checkbox"/> Dioxins/Furans                   | <input type="checkbox"/> Pentachloroanisole |
| <input type="checkbox"/> Disulfoton                       | <input type="checkbox"/> Selenium           |
| <input type="checkbox"/> Endosulfan                       | <input type="checkbox"/> Terbufos           |
| <input type="checkbox"/> Endrin                           | <input type="checkbox"/> Toxaphene          |
| <input type="checkbox"/> Ethion                           | <input type="checkbox"/> Tributyltin        |
| <input type="checkbox"/> Heptachlor or Heptachlor epoxide | <input type="checkbox"/> Trifluralin        |
| <input type="checkbox"/> Other (please specify) _____     |   |

**34. Of the pollutants listed below, which ones are of primary human health concern in your state waters (please specify up to 5 pollutants).**

- |   |   |
|---|---|
| <input type="checkbox"/> Aldrin                       | <input type="checkbox"/> Heptachlor or Heptachlor epoxide |
| <input type="checkbox"/> Arsenic                      | <input type="checkbox"/> Hexachlorobenzene                |
| <input type="checkbox"/> Cadmium                      | <input type="checkbox"/> Lead                             |
| <input type="checkbox"/> Chlordane                    | <input type="checkbox"/> Lindane                          |
| <input type="checkbox"/> Chlorpyrifos                 | <input type="checkbox"/> Mercury                          |
| <input type="checkbox"/> Chromium                     | <input type="checkbox"/> Methoxychlor                     |
| <input type="checkbox"/> DDT and its metabolites      | <input type="checkbox"/> Mirex                            |
| <input type="checkbox"/> Diazinon                     | <input type="checkbox"/> Nonachlor                        |
| <input type="checkbox"/> Dicofol                      | <input type="checkbox"/> Oxyfluorfen                      |
| <input type="checkbox"/> Dieldrin                     | <input type="checkbox"/> PAHs                             |
| <input type="checkbox"/> Dioxins/Furans               | <input type="checkbox"/> PCBs                             |
| <input type="checkbox"/> Disulfoton                   | <input type="checkbox"/> Pentachloroanisole               |
| <input type="checkbox"/> Endosulfan                   | <input type="checkbox"/> Selenium                         |
| <input type="checkbox"/> Endrin                       | <input type="checkbox"/> Terbufos                         |
| <input type="checkbox"/> Ethion                       | <input type="checkbox"/> Toxaphene                        |
| <input type="checkbox"/> Tributyltin                  |   |
| <input type="checkbox"/> Other (please specify) _____ |   |

**35. If your state analyzes for PCBs, what specifically is analyzed? (Please check all that apply).**

- Individual congeners
- All Aroclor groups
- Selected Aroclor groups
- A combination of both Aroclors and congeners
- Others (please specify) \_\_\_\_\_
- Not applicable

### State Advisory Program Funding

**36. How many dollars are spent annually in your state on routine fish tissue field collection activities? (Please check only one answer.)**

- <\$1,000
- \$1,000 to \$4,999
- \$5,000 to \$9,999
- \$10,000 to \$24,999
- \$25,000 to \$50,000
- >\$50,000 (please specify) \_\_\_\_\_
- Not applicable

**37. What was the funding source for your state's fish tissue collection activities during the past year? (Please check all that apply)**

- State general funds
- State fishing license revenues
- State sales tax
- EPA Section 106 funds
- EPA Section 205j funds
- EPA Region funds
- EPA Grant funds
- Other (please specify) \_\_\_\_\_
- Not applicable

**38. How many dollars are spent annually in your state on laboratory analyses of fish tissue samples? (Please check only one answer.)**

- <\$1,000
- \$1,000 to \$4,999
- \$5,000 to \$9,999
- \$10,000 to \$24,999
- \$25,000 to \$50,000
- >\$50,000 (please specify) \_\_\_\_\_
- Not applicable

**39. What was the funding source for your state's laboratory analyses of fish tissue samples during this past year? (Please check all that apply)**

- State general funds
- State fishing license revenues
- State sales tax
- EPA Section 106 funds
- EPA Section 205j funds
- EPA Regional funds
- EPA Grant funds
- Other (please specify) \_\_\_\_\_
- Not applicable

**40. If no funding is currently available, is your state seeking funding to conduct a monitoring and assessment program? (Please check only one answer.)**

- Yes     No     Not applicable

### Other Uses of State Advisory Data

**41. For your state's biennial 305(b) water quality report, what use support designation is assigned to waterbodies placed under fish consumption advisory? (Please check only one answer.)**

- Fully supporting
- Threatened
- Partially supporting
- Not supporting
- No assessments were made
- Not applicable

42. If fish consumption advisories have been issued for waterbodies in your state, does your state place these waterbodies on the state's 303(d) list of impaired waters? (Please check only one answer.)  
 Yes     No     Not applicable
43. If commercial fishing bans have been issued for waterbodies in your state, does your state place these waterbodies on the state's 303(d) list of impaired waters? (Please check only one answer.)  
 Yes     No     Not applicable
44. Is "fish consumption" an assigned beneficial use for waters in your state? (Please check only one answer.)  
 Yes     No
45. If yes, where have these criteria for beneficial use been established? (Please check only one answer.)  
 State water quality standards  
 SOP for assessing beneficial uses (or related document)  
 Other (please specify) \_\_\_\_\_  
 Not applicable

### Risk Assessment Methodology

46. What method(s) does your state currently use to calculate "carcinogenic" health risks and to issue advisories for individuals who consume fish harvested from your state waters? (Please specify all current methods used).  
 Risk assessment methodology  
 Food and Drug Administration (FDA) action levels  
 None  
 Other approach (please specify) \_\_\_\_\_  
 Not applicable
47. What carcinogenic risk level (i.e., individual risk within an exposed population) does your state use to issue advisories and/or post waterbodies? (Please check only one answer.)  
 1:10,000 ( $10^{-4}$ )  
 1:100,000 ( $10^{-5}$ )  
 1:1,000,000 ( $10^{-6}$ )  
 FDA action level  
 Other (please specify) \_\_\_\_\_  
 Not applicable



**48. What sources does your state use to obtain cancer potency factors to help calculate “carcinogenic” health risks? (Please check all that apply.)**

- ATSDR Toxicological Profiles
- EPA Fish Guidance documents
- EPA Health Effects Assessment Summary Table (HEAST)
- EPA Integrated Risk Information System (IRIS)
- EPA Toxicology One-Liners Database (Office of Pesticide Programs)
- Great Lakes Protocol
- Hazardous Substance Data Bank (HSDB) from the National Library of Medicine
- IARC Monographs
- Other sources (please specify) \_\_\_\_\_
- Not applicable

**49. What method(s) does your state currently use to calculate “noncarcinogenic” health risks and issue fish advisories for individuals who consume fish harvested from your state waters? (Please specify all methods used.)**

- EPA Fish Guidance Document
- Great Lakes Protocol
- Hazard Index calculations using risk assessment methodology (IRIS RfD)
- FDA Action Levels
- None
- Other approach (please specify) \_\_\_\_\_
- Not applicable

**50. What noncarcinogenic risk level (i.e., individual risk within an exposed population) does your state use to issue advisories and/or post waterbodies?**

- Hazard index is  $> 1$
- Hazard index is  $\geq 1$
- Hazard index is  $< 1$
- FDA action levels
- Other (please specify) \_\_\_\_\_
- Not applicable

**51. What source does your state use to obtain potency factors (reference dose) to help calculate noncarcinogenic health risks? (Please check all that apply.)**

- ATSDR toxicological profiles
- EPA Integrated Risk Information System (IRIS)
- EPA Health Effects Assessment Summary Table (HEAST)
- EPA Toxicology One-Liners Database (Office of Pesticide Programs)
- EPA Fish Guidance
- Great Lakes Protocol
- Hazardous Substance Data Bank (HSDB) from the National Library of Medicine
- Other sources (please specify) \_\_\_\_\_
- Not applicable

**52. Of all the fish advisories currently in effect in your jurisdiction, including those issued last year and in earlier years, what percentage were issued based on each of these methods? (Please enter your best estimate of the percentage for each method.)**

\_\_\_ % of advisories now in effect were issued using risk assessment methods.

\_\_\_ % of advisories now in effect were issued using FDA action levels.

\_\_\_ % of advisories now in effect were issued using other methods specified in question 46 and 49.

Not applicable

**53. Does your state or tribal agency have a plan to reevaluate data from sites where outdated assessment methods were used to issue fish advisories? (Please check only one answer.)**

Yes     No     Not applicable

**54. Is your state currently re-evaluating the method or approach used to establish fish advisories? (Please check only one answer.)**

Yes     No     Not applicable

**55. What default value does your state use in its risk assessments as a daily fish consumption rate for recreational fishers? (Please check only one answer.)**

6.5 g/day

12 g/day

15 g/day

17.5 g/day

30 g/day

Other consumption rates (please specify value in g/day) \_\_\_\_\_

Not applicable

**56. What default value does your state use in its risk assessments as a daily fish consumption rate for subsistence fishers? (Please check only one answer.)**

6.5 g/day

15 g/day

30 g/day

87 g/day

124 g/day

142 g/day

Other consumption rates (please specify value in g/day) \_\_\_\_\_

Not applicable

**57. What default value does your state use in its risk assessments as a daily fish consumption rate for children? (Please check only one answer.)**

2.0 g/day

4.0 g/day

6.5 g/day

Other consumption rates (please specify value in g/day) \_\_\_\_\_

Not applicable

**58. What default value does your state use for exposure duration in its cancer risk assessments? (Please check only one answer.)**

- 30 years  
 70 years  
 75 years (the value EPA is currently recommending).  
 Other exposure duration (please specify value in years) \_\_\_\_\_  
 Not applicable

**59. What default value does your state use to estimate life expectancy in its risk assessments? (Please check only one answer.)**

- 70 years  
 75 years  
 80 years  
 Other life expectancy (please specify value in years) \_\_\_\_\_  
 Not applicable

**60. Does your state recommend a meal frequency format or number of meals over time in its advisories (e.g., number of meals per month)? (Please check only one answer.)**

- Yes     No     Not applicable

**61. If your response to question 60 is yes, what assumption does your state make in its risk assessments about meal size or portion for adults? (Please specify all that apply.)**

- 4 oz (114 g)  
 8 oz (227 g)  
 12 oz (341 g)  
 16 oz (454 g)  
 Other (please specify value in grams) \_\_\_\_\_  
 Not applicable

**62. If your response to question 60 is yes, what assumption does your state make in its risk assessments about meal size or portion for children? (Please specify all that apply.)**

- 4 oz (114 g)  
 8 oz (227 g)  
 12 oz (341 g)  
 Other (please specify value in grams) \_\_\_\_\_  
 Not applicable

**63. What default value does your state use for body weight of an adult male consumer in its risk assessments? (Please check only one answer.)**

- 71 kg  
 70 kg  
 65 kg  
 Other weight (please specify value in kg) \_\_\_\_\_  
 Not applicable

**64. What default value does your state use for body weight of an adult female consumer (including pregnant women and nursing mothers) in its risk assessments? (Please check only one answer.)**

- 70 kg  
 65 kg  
 62 kg  
 Other weight (please specify value in kg) \_\_\_\_\_  
 Not applicable

**65. What default value does your state use for body weight of a child in its risk assessments? (Please check only one answer.)**

- 10 kg  
 14.5 kg  
 15.5 kg  
 Other weight (please specify value in kg) \_\_\_\_\_  
 Risk assessments are not conducted for children  
 Not applicable

**66. Please specify what age range or ranges your state uses to calculate risk with respect to children. (Please specify all age ranges used in your state's risk assessments for children.)**

- <1 year  
 <6 years  
 <7 years  
 <12 years  
 <15 years  
 <18 years  
 Other age ranges (please specify age) \_\_\_\_\_  
 Risk assessments are not conducted for children  
 Not applicable

**67. What assumption does your state make in its risk assessments about the amount of the pollutant absorbed by the body after ingestion (percent absorption by the gut) (e.g., in pharmacokinetic modeling)? (Please check only one answer.)**

- 100% for all pollutants  
 75% for all pollutants  
 50% for all pollutants  
 Chemical-specific percentage based on available data  
 Other (please specify percent absorption assumed) \_\_\_\_\_  
 Not applicable

**68. Does your state use "contaminant reduction factors" in its risk calculations to account for contaminant losses of PCBs and other organochlorine pollutants from fish tissues during cleaning, preparation, and cooking of the fish? (Please check only one answer.)**

- Yes     No     Not applicable

**69. If yes, what are the pollutants and their associated contaminant reduction factors (% reduction in pollutant level resulting from cleaning, preparing, and cooking of fish) assumed by your state?**

- % chlordane
- % DDE
- % DDT
- % dieldrin
- % heptachlor epoxide
- % mercury
- % mirex
- % total PCBs
- % toxaphene
- % other (please specify)
- Not applicable

**70. If contaminant reduction factors are used, what is their basis? (Please check only one answer.)**

- EPA Guidance Documents
- Great Lakes Protocol
- Scientific literature review
- Conducted own research
- Other (please specify) \_\_\_\_\_
- Not applicable

**71. How does your state evaluate health risks for fish samples contaminated with multiple chemicals with the same human health endpoints (e.g., two organochlorine pesticides)? (Please check only one answer.)**

- Cumulative risk (add individual contaminant risks from each chemical together)
- Calculate single contaminant risk based on the most conservative carcinogenic risk value
- Either cumulative risk or single contaminant risk depending on the chemicals involved
- Other method (please specify) \_\_\_\_\_
- State does not evaluate health risks for multiple contaminants
- Not applicable

**72. Regarding mercury, does your state assign different noncarcinogenic toxicity values to different populations (i.e., does the state use an RfD of  $1 \times 10^{-4}$  mg/kg/day for women of child-bearing age and/or children versus using an RfD of  $3 \times 10^{-4}$  mg/kg/day for adults in the general population)? (Please check only one answer.)**

- Yes     No     Not applicable

**73. What is the mercury toxicity value (i.e., RfD) used for each of the following populations?**

**Adults in the general population (please choose only one):**

- $3 \times 10^{-4}$  mg/kg/day
- $2 \times 10^{-4}$  mg/kg/day
- $1 \times 10^{-4}$  mg/kg/day
- $7.5 \times 10^{-5}$  mg/kg/day
- $7 \times 10^{-5}$  mg/kg/day
- Other (please specify): \_\_\_\_\_
- Not applicable

**Women of childbearing age and nursing mothers (please choose only one):**

- $3 \times 10^{-4}$  mg/kg/day  
  $2 \times 10^{-4}$  mg/kg/day  
  $1 \times 10^{-4}$  mg/kg/day  
  $7.5 \times 10^{-5}$  mg/kg/day  
  $7 \times 10^{-5}$  mg/kg/day  
 Other (please specify): \_\_\_\_\_  
 Not applicable

**Children (please choose only one):**

- $3 \times 10^{-4}$  mg/kg/day  
  $2 \times 10^{-4}$  mg/kg/day  
  $1 \times 10^{-4}$  mg/kg/day  
  $7.5 \times 10^{-5}$  mg/kg/day  
  $7 \times 10^{-5}$  mg/kg/day  
 Other (please specify): \_\_\_\_\_  
 Not applicable

**74. When your state receives method detection limits (MDLs) as the reportable concentration for contaminants from the laboratory, what value do you use for non-detects in your risk assessment?**

- Zero  
 Pollutant's MDL  
 Half the pollutant's MDL  
 Other value (please specify) \_\_\_\_\_  
 Maximum likelihood indicator  
 Not applicable

**75. Does your state screen for lead in its fish tissue samples? (Please check only one answer.)**

- Yes     No

**76. What assessment method do you use for lead since lead does not currently have an associated reference dose in IRIS? (Please specify assessment method used.)**

- Method used (please specify) \_\_\_\_\_  
 Not applicable

**Targeting Fish Consumers****77. Are health risks being assessed in your state for target groups of people whose culinary habits may differ from the customs of the majority of Americans regarding meal preparation and consumption? (Please check only one answer.)**

- Yes     No     Not applicable

**78. Has your state identified the primary waterbodies fished by these target population(s)? (Please check only one answer.)**

- Yes     No     Not applicable

79. **Has your state made efforts to identify the fish species and the sizes of fish consumed by these target populations? (Please check only one answer.)**  
 Yes     No     Not applicable
80. **If yes, has your state used any of the following procedures to obtain information from these target populations? (Please check all that apply).**  
 Local fish consumption surveys (creel surveys)  
 Fishing license surveys  
 Anecdotal information from populations of interest  
 Behavioral risk surveillance surveys funded the Centers for Disease Control  
 Not applicable
81. **Has your state altered its monitoring approach to address the needs of these target populations? (Please check only one answer.)**  
 Yes     No     Not applicable
82. **If your state has altered its monitoring approach to address the needs of these target populations, what actions have been taken? (Please check all that apply.)**  
 State has added stations in waterbodies where the targeted populations frequently fish  
 State has targeted species consumed by the targeted populations for residue analyses  
 Other actions (please specify) \_\_\_\_\_  
 Not applicable
83. **If your state is not currently addressing the concerns of populations with a perceived higher risk, is there a plan to do so in the future? (Please check only one answer.)**  
 Yes     No     Not applicable

## Risk Management

84. **Who prepares risk assessments on behalf of your state or tribal fish advisory program? (Please check all that apply.)**  
 State or Tribal Environmental Agency/Department  
 State or Tribal Public Health Agency/Department  
 State or Tribal Fisheries Agency/Department  
 Consultant  
 University  
 Other (please specify) \_\_\_\_\_  
 Not applicable
85. **Does your state or tribe have written procedures for evaluating the health risks associated with consumption of chemically-contaminated fish? (Please check only one answer.)**  
 Yes     No     Not applicable
86. **Does your state or tribe have a group or committee that over sees the fish advisory program/processes? (Please check only one answer.)**  
 Yes     No     Not applicable

**87. If the answer to question 86 is yes, what professional disciplines are represented on that committee? (Please check all that apply.)**

- Toxicology/epidemiology
- Fisheries
- Water pollution assessment/control
- Hazardous waste management
- Analytical chemist
- Risk communication
- Other disciplines (please specify) \_\_\_\_\_
- Not applicable

**88. Who in your state or tribe makes the ultimate risk management decision to issue, modify, or rescind fish advisories? (Please check only one answer.)**

- Head of Environmental Agency/Department
- Head of Public Health Agency/Department
- Head of Fisheries Agency/Department
- Governor's Office or Tribal Chief's/President's Office
- Other official (please specify by title) \_\_\_\_\_
- Not applicable

**Risk Communication Procedures****89. How often does your Agency revise the fish consumption advisory listings and release the information to the public? (Please specify all that apply.)**

- Annually; released on \_\_\_\_\_ (specify date: day/month)
- Whenever data become available (on an as-needed basis)
- Other schedules (please specify) \_\_\_\_\_
- Not applicable

**90. Where can the public obtain copies of your agency's printed advisory materials? (Please check all that apply.)**

- Local public health departments
- State public health departments
- Other State agencies
- Doctors' offices
- Local businesses (e.g., hair styling salons)
- Businesses that issue fishing licenses (e.g., bait and tackle shops)
- WIC (Women, Infants, and Children) clinics
- Welfare offices
- Organizations (e.g., sporting or women's clubs)
- Tourist offices
- State fisheries offices
- Tribal organizations
- Town halls
- Law enforcement officers
- State Internet site
- Other sources (please specify) \_\_\_\_\_
- Not applicable



**91. How are your Agency's fish advisories communicated to the public? (Please check all that apply.)**

- Mailed to public upon request
- Press releases distributed to media sources
- Targeted newspaper stories
- Published articles in ethnic newspapers
- Videos for ethnic groups
- Radio announcements
- Television announcements
- Radio/television talk shows
- Internet site
- Agency telephone information service (i.e., hotlines)
- Agency magazine
- Posted signs (at boat launches, stream access points, public docks, etc.)
- Posted information where fishing licenses issued
- Posters in public places (libraries, town halls, etc)
- Annual fishing regulations booklet
- Generic statewide listing booklet separate from fishing regulations
- Printed pamphlets or fact sheets
- Information presented at public meetings
- Publication of articles in state medical journal
- Publication of articles in agency annual monitoring report
- Publication of information in state 305(b) report
- Flyers distributed with trout and salmon stamps
- GIS maps posted for tribal members
- Other methods (please specify) \_\_\_\_\_
- Not applicable

**92. Does your state or tribal fish advisory distribution plan specifically target some populations to receive advisory information? (Please check only one answer.)**

- Yes     No     Not applicable

**93. If yes, please identify all populations that are targeted.**

- Sport fishers
- Subsistence fishers
- Specific racial/ethnic groups (please specify)
- Women of child-bearing age
- Pregnant or nursing women
- New parents
- Tourists
- Members of the general population
- Others (please specify) \_\_\_\_\_
- Not applicable

**94. Are your state or tribal fish consumption advisories distributed to the public in languages other than English? (Please check only one answer.)**

- Yes     No     Not applicable

**95. If yes, please specify all languages that apply.**

- Alaskan native languages  
 Bosnian  
 Cambodian  
 Chinese  
 Creole  
 Hmong  
 Japanese  
 Korean  
 Laotian  
 Llacano  
 Ojibwa  
 Portuguese  
 Russian  
 Spanish  
 Tagalog  
 Thai  
 Vietnamese  
 Others (please specify) \_\_\_\_\_  
 Not applicable

**96. Does your state or tribe evaluate the effectiveness of the fish consumption advisories? (Please check only one answer.)**

- Yes     No     Not applicable

**97. If yes, how is their effectiveness determined? (Please check all that apply.)**

- Feedback form/postcard in regulation pamphlet  
 Questions included in creel census program  
 Questions included in state BRFS (Behavior Risk Factor Survey)  
 Focus groups  
 Mailed questionnaires (to whom?) \_\_\_\_\_  
 Telephone surveys (of whom?) \_\_\_\_\_  
 Other methods (please specify) \_\_\_\_\_  
 Not applicable

**98. To your knowledge, have there been any studies in your state (including federal, tribal, and university-based studies) to evaluate human tissue contaminant levels (e.g., in blood, urine, breast milk, or adipose tissues) or adverse human health effects related to fish consumption? (Please check only one answer.)**

- Don't know  
 No  
 Yes (please specify organization or agency) \_\_\_\_\_