United States Environmental Protection Agency
Office of Water
4305
EPA-823-F-02-007
May 2002

Fact Sheet

Update: National Listing of Fish and Wildlife Advisories

Summary

The 2001 ***National Listing of Fish and Wildlife Advisories (NLFWA)*** *is now available from the U.S. Environmental Protection Agency (EPA). States, tribes, and territories report that 109 new advisories were issued in 2001 and that currently 28% of lake acres and almost 14% of river miles in the United States are under advisory. Although the total number of advisories decreased from 2,838 in 2000 to 2,618 in 2001, the number of lake acres and river miles under advisory continued to increase as they have since 1993. The decrease in the total number of advisories is largely due to the removal of advisories in Wisconsin and North Dakota. Both states recently issued statewide advice, prompting the removal of several hundred waterbody-specific advisories that are now covered under a single statewide advisory in each jurisdiction. The 2% increase in lake acres and 3.5% increase in river miles under advisory primarily resulted from issuance of statewide mercury advisories for all lakes and rivers by four states (Maryland, Missouri, North Dakota, and Pennsylvania) in 2001. Alaska also issued statewide advice to inform the public that fish caught in Alaska are safe for all people to eat with no restrictions. Although the number of advisories decreased, the size of waters under advisory (excluding the size of No Restriction advisories) increased substantially from 2000 to 2001. The number of lakes acres under advisory increased from 26% in 2000 to almost 28% in 2001 (11,277,276 acres), a total of 79,119 individual lakes, and the number of river miles under advisory increased from 10.5% in 2000 to 14% in 2001 (a total of 485,205 river miles). In addition, 100% of the Great Lakes and their connecting waters and 71% of all coastal waters of the contiguous 48 states were under advisory in 2001.*

The national listing is available on the Internet at: http://www.epa.gov/waterscience/fish/

Background

The states, territories, and Native American tribes (hereafter referred to as states) have primary responsibility for protecting residents from the health risks of eating contaminated fish and wildlife. If high concentrations of chemicals, such as mercury or PCBs, are found in local fish and wildlife, then a state may issue a consumption advisory for the general population, including recreational and subsistence fishers, as well as for sensitive subpopulations (such as pregnant women, nursing mothers, and children). A consumption advisory may include recommendations to limit or avoid eating certain fish and wildlife species caught from specific waterbodies or, in some cases, from specific waterbody types (e.g., all lakes). Similarly, in Canada, the provinces and territories have primary responsibility for issuing fish consumption advisories for their residents.

States typically issue five major types of advisories and bans to protect both the general population and specific subpopulations.

- **No-consumption advisory for the general population** – Issued when levels of chemical contamination in fish or wildlife pose a health risk to the general public. The general population is advised to avoid eating certain types of locally caught fish or wildlife.
- **No-consumption advisory for sensitive subpopulations** – Issued when contaminant levels in fish or wildlife pose a health risk to sensitive subpopulations (such as children and pregnant women). Sensitive subpopulations are advised to avoid eating certain types of locally caught fish or wildlife.
- **Restricted consumption advisory for the general population** – Issued when contaminant levels in fish or wildlife may pose a health risk if too much fish or wildlife is consumed. The general population is advised to limit eating certain types of locally caught fish or wildlife.
- **Restricted consumption advisory for sensitive subpopulations** – Issued when contaminant levels in fish or wildlife may pose a health risk if too much fish or wildlife is consumed. Sensitive subpopulations are advised to limit eating certain types of locally caught fish or wildlife.
- **Commercial fishing ban** – Issued when high levels of contamination are found in fish caught for commercial purposes. These bans prohibit the commercial harvest and sale of fish, shellfish, and/or wildlife species from a designated waterbody.

In addition to the five major types of advisories, states are increasingly issuing notices of no restriction or statewide advisories. A **No Restriction advisory** is issued to inform the public that fish from specific waterbodies have been tested for chemical contaminants, and the results have shown that specific species of fish from these waters contain very low levels and are thus safe to eat without consumption restrictions. In contrast, a **Statewide advisory** is issued to warn the public of the potential human health risks from widespread chemical contamination of certain fish species or of species from certain types of waterbodies (e.g., lakes, rivers, and/or coastal waters) within the state. It should be noted that an advisory for each waterbody name or type of waterbody may be listed as one advisory regardless of the number of fish or wildlife species affected or the number of chemical contaminants detected.

2001 National Listing of Fish and Wildlife Advisories Web Site

The 2001 NFLWA web site lists 2,618 advisories in 49 states, the District of Columbia, and the U.S. Territory of American Samoa. The web site includes

- Information on species and size of fish or wildlife under advisory
- Chemical contaminants identified in the advisory
- Geographic location of the waterbody
- Lake acreage or river miles under advisory
- Population for whom the advisory was issued
- Fish tissue residue data for 45 states
- State and tribal contact information.

The web site can generate national, regional, and state maps that summarize advisory information. Also included on the web site are the names of each state and tribal contact, a phone number, fax number, and e-mail address. Comparable advisory information (excluding tissue residue data) and contact information for 1997 are provided for each Canadian province or territory.

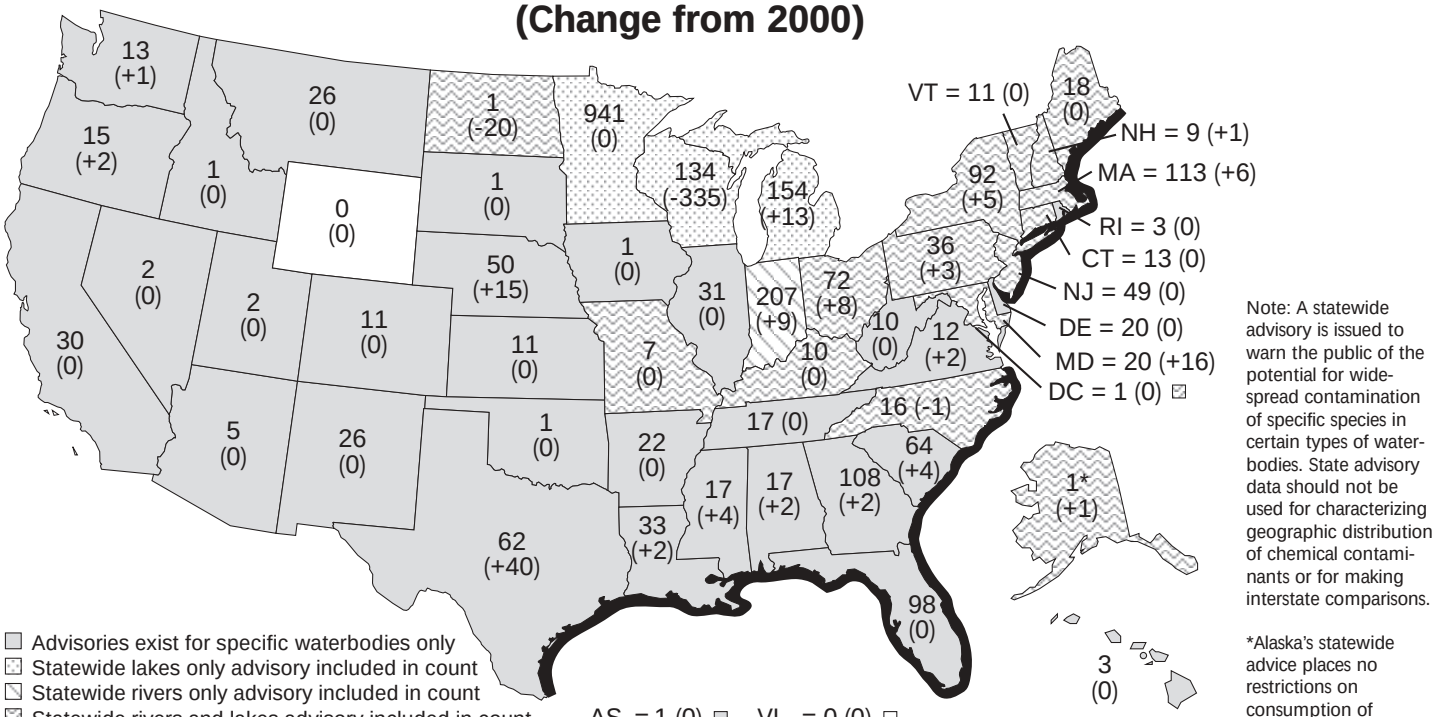
Advisory Trends

In past years, EPA has reported fish advisories based on the number of advisories in effect; however, this does not provide any indication about the geographic extent of the contamination. For example, a waterbody-specific advisory may be issued to cover a single waterbody (e.g., a 20-acre lake), while a single statewide lake advisory can represent all lake acres within the state's jurisdiction (up to 12,787,200 acres in one state). Because of the dramatic range in the geographic size of lake acres and river miles affected by chemical contaminants that may be contained under a single advisory, the number of advisories is not as accurate a measure of the degree of contamination as is the geographic extent. Thus, EPA is providing information on the total lake acres and total river miles where advisories are currently in effect.

The reason for this change is clearly illustrated by results obtained for the 2001 advisory data. Although the number of advisories has increased overall by 107% since 1993, the number of advisories actually decreased by 8% between 2000 and 2001 (Figure 1). Over the same period between 2000 and 2001, the percentage of the nation's lake acres and river miles under advisory increased. The percentage of total lake acres and river miles under advisory has also increased from 1993 to 2001 (Figure 2). Currently, the 2,618 advisories in the national listing represent almost 28% of the nation's total lake acreage and 14% of the nation's total river miles. Approximately 79,119 lakes (11,277,276 lake acres) and 485,205 river miles were under advisory in 2001, compared to 14,962 lakes and 74,505 river miles under advisory in 1993. The percentages of lake acres and river miles under advisory in 2001 in each state are shown in Figure 3. In addition, 100% of the Great Lakes and their connecting waters are also under advisory (Table 1). The Great Lakes and their connecting

Figure 1

Total Number of Fish Consumption Advisories – 2001 (Change from 2000)



Note: A statewide advisory is issued to warn the public of the potential for widespread contamination of specific species in certain types of waterbodies. State advisory data should not be used for characterizing geographic distribution of chemical contaminants or for making interstate comparisons.

*Alaska's statewide advice places no restrictions on consumption of fish or wildlife.

waters are considered separately from other waters and are not included in the above calculations of total lake acres or river miles.

The increase in the total size of waters under advisory is in part due to an increase in the number of assessments of chemical contaminants in fish and wildlife tissues and the states' increasing use of statewide advisories.

A statewide advisory is issued to warn the public of the potential for widespread contamination of specific species of fish or wildlife (e.g., moose or waterfowl) in certain types of waterbodies (e.g., lakes, rivers, or coastal waters). Twenty-eight states currently have statewide advisories (see Table 2). Four states issued statewide advisories in 2001: Maryland, Missouri, North Dakota, and Pennsylvania each added statewide mercury advice for all lakes and rivers. Also in 2001, Alaska issued statewide No Restriction advice, to inform the public that all of Alaska's fish are safe to eat without restriction. Alaska's advisory is not included in the waterbody size calculations for chemically contaminated lakes or rivers.

Figure 2

Percentage of River Miles and Lake Acres Under Advisory 1993-2001

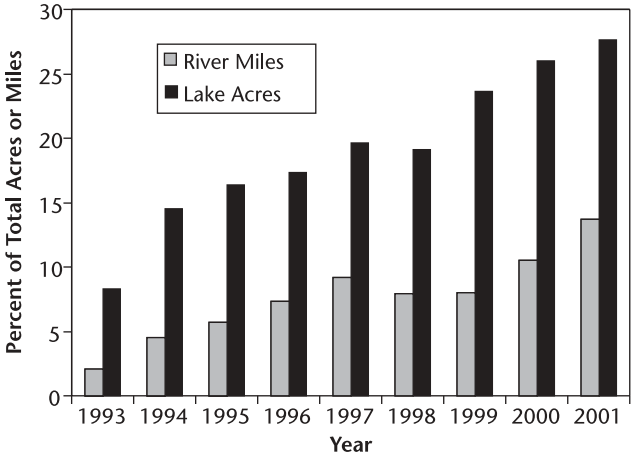
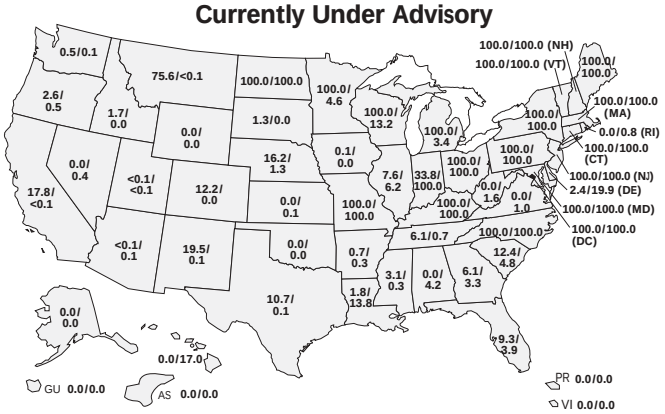


Table 1. Fish Advisories Issued for the Great Lakes

Great Lakes	PCBs	Dioxins	Mercury	Chlordane
Lake Superior	●	●	●	●
Lake Michigan	●	●	●	●
Lake Huron	●	●		●
Lake Erie	●	●		
Lake Ontario	●	●		

Figure 3

Percentage of Lake Acres/River Miles Currently Under Advisory



Eighteen states have 100% of their lake acres under fish advisories (including those with statewide advisories), 10% to 50% of lake acres in 8 states are under advisories, 17 states have <10% of their lake acres under advisories, and 12 states have no lake acres under advisories.

Sixteen states have 100% of their river miles under fish advisories (states with statewide advisories), 4 states have 10% to 50% of their miles under advisories, 24 states have <10% of their river miles under advisories, and 11 states have no river miles under advisories.

Table 2. Summary of Statewide Advisories by Waterbody Type

State	Lake	River	Coastal Waters
Alaska*	N/A	N/A	
Alabama			Mercury
Connecticut	Mercury	Mercury	PCBs
Dist. of Columbia	PCBs	PCBs	
Florida			Mercury
Georgia			Mercury
Indiana		Mercury PCBs	
Kentucky	Mercury	Mercury	
Louisiana			Mercury
Maine	Mercury	Mercury	Dioxins Mercury PCBs
Maryland	Mercury	Mercury	
Massachusetts	Mercury	Mercury	PCBs
Michigan	Mercury		
Minnesota	Mercury		
Mississippi			Mercury
Missouri	Mercury	Mercury	
New Hampshire	Mercury	Mercury	PCBs
New Jersey	Mercury	Mercury	PCBs Cadmium Dioxins
New York	PCBs Chlordane Mirex DDT	PCBs Chlordane Mirex DDT	Cadmium Dioxins
North Carolina	Mercury	Mercury	Mercury
North Dakota	Mercury	Mercury	
Ohio	Mercury	Mercury	
Pennsylvania	Mercury	Mercury	
Rhode Island			PCBs
South Carolina			Mercury
Texas			Mercury
Vermont	Mercury	Mercury	
Wisconsin	Mercury		

*Alaska's statewide advice places no restrictions on consumption of fish or wildlife.

In addition to the Great Lakes, many other Great Waters of the United States are currently under fish advisories for a variety of pollutants. The Great Waters include not only the Great Lakes, but also Lake Champlain (PCBs and mercury), the Chesapeake Bay, 20 National Estuary Program (NEP) sites, and 14 National Estuarine Research Reserve System (NERRS) sites (see Table 3). Although the Chesapeake Bay is not under any advisories, the Potomac, James, Back, and Anacostia Rivers, which connect to it, are all under advisories. All of these rivers, with the exception of the James River (which is under advisory for kepone) are under PCB advisories. Baltimore Harbor, which also connects to the Chesapeake Bay, is under advisory for chlordane and PCB contamination in fish and blue crabs.

Table 3. Fish Consumption Advisories Active for NEP and NERRS Sites – 2001

Waterbody	PCBs	Dioxins	Mercury	Cadmium	Chlordane	Others
Casco Bay, ME *	●	●	●			
Wells, ME #	●	●	●			
Great Bay, NH #	●					
Great Bay, Little Bay, and Hampton Harbor, NH *	●					
Massachusetts Bay, MA *	●					
Buzzards Bay, MA *	●					
Waquoit Bay, MA #	●					
Narragansett, RI * #	●					
Long Island Sound, NY/CT *	●	●		●		
Peconic Bay, NY *		●		●		
Hudson River, NY #	●	●		●	●[1]	●[2,3]
New York/New Jersey Harbor *	●	●		●	●	
Barnegat Bay, NJ *	●	●		●	●	
Jacques Cousteau-Great Bay and Mullica River, NJ #	●	●		●	●	
Delaware Estuary, DE/NJ/PA * #	●	●	●	●	●	
Albemarle-Pamlico Sounds, NC *		●				
North Carolina sites #			●			
Ashepoo-Combahee-Edisto Basin, SC #			●			
North Inlet/Winjah Bay, SC #			●			
Sapelo Island, GA #			●			
Indian River Lagoon, FL *			●			
Charlotte Harbor, FL *			●			
Rookery Bay, Fl #			●			
Sarasota Bay, FL *			●			
Tampa Bay, FL *			●			
Apalachicola Bay, FL #			●			
Mobile Bay, AL *			●			
Weeks Bay, AL #			●			
Galveston Bay, TX *		●				
Puget Sound, WA *	●	●	●			●[4]
Columbia River, OR/WA *	●	●				●[3]
San Francisco Bay, CA *	●		●		●	●[5]

[1] For waterfowl.
[2] Mirex.
[3] DDT.
[4] Specific embayments of Puget Sound are listed for the following pollutants: creosote, pentachlorophenol, volatile organic compounds (VOCs), tetrachloroethylene, arsenic, metals (unspecified), vinyl chloride, polyaromatic hydrocarbons (PAHs), polynuclear aromatics, and pesticides (unspecified).
[5] DDT, dieldrin, and other unspecified pesticides.

*NEP site.

#NERRS site.

Source: EPA 2001 NLFWA Database (Advisories current through December 2001).

Many of the major estuaries listed in the NEP and/or designated as NERRS sites are under fish and/or shellfish advisories for multiple chemical contaminants (see Table 3). Sixty-five percent of the total number of NEP, NERRS, and combined sites are under fish consumption advisories. There are 17 sites that have no current fish consumption advisories.

Several states have issued fish advisories for all of their coastal waters. Using coastal mileages calculated by the National Oceanic and Atmospheric Administration, an estimated 71% of the coastline of the contiguous 48 states currently is under advisory. This includes 92% of the Atlantic Coast and 100% of the Gulf Coast. No Pacific Coast state has issued a statewide advisory for any of its coastal waters, although several local areas along the Pacific Coast are under advisory. The Atlantic coastal advisories have been issued for a wide variety of chemical contaminants including mercury, PCBs, dioxins, and cadmium. All of the Gulf Coast advisories have been issued for mercury, although other contaminants may also be present.

Bioaccumulative Pollutants

Although there are advisories in the United States for a total of 39 chemical contaminants, most advisories have involved five primary contaminants: mercury, PCBs, chlordane, dioxins, and DDT. And while almost 75% of all advisories have been issued at least in part because of mercury contamination, other chemical contaminants are also likely to be present at many of these same advisory locations. These chemical contaminants accumulate in the tissues of aquatic organisms at concentrations many times higher than concentrations in the water. These chemical contaminants also persist for relatively long periods in sediments where bottom-dwelling animals can accumulate and pass them up the food chain to fish.

Concentrations of these contaminants in the tissues of aquatic organisms may increase at each level of the food chain. As a result, top predators in a food chain, such as largemouth bass or walleye, may have concentrations of these chemicals in their tissues that may be a million times higher than the concentrations in the water. Mercury, PCBs, chlordane, dioxins, and DDT (and its degradation products, DDE and DDD) were at least partly responsible for 96% of all fish consumption advisories in effect in 2001.

Mercury

Advisories for mercury decreased 14% from 2000 to 2001 (2,242 to 1,933) and increased 115% from 1993 to 2001 (899 to 1,933). The number of states that have issued mercury advisories has risen steadily from 27 in 1993 to 44 in 2001. The decrease in the number of mercury advisories in 2001 can largely be attributed to the changes in North Dakota and Wisconsin, where individual waterbody-specific advisories were removed when statewide mercury advice

was issued. Although the total number of mercury advisories declined in 2001, the geographic extent of the contamination in number of lake acres (10,179,247) and river miles (414,973) under mercury advisories increased by almost 7% and 48%, respectively, over 2000 (Figures 4 and 5). The rapid increase in number of lake acres and river miles under advisory has resulted from the issuance of statewide mercury advisories. Maryland, Missouri, North Dakota, and Pennsylvania all issued statewide advisories for mercury in 2001.

Currently, 17 states (Connecticut, Kentucky, Indiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, North Carolina, North Dakota, Ohio, Pennsylvania, Vermont, and Wisconsin) have issued statewide advisories for mercury in freshwater lakes and/or rivers. Another nine states (Alabama, Florida, Georgia, Louisiana, Maine, Mississippi, North Carolina, South Carolina, and Texas) have statewide advisories for mercury in their coastal waters. Although the total number of mercury advisories declined, 16 states issued new mercury advisories in 2001. Seven states (Indiana, Massachusetts, Michigan, New York, Ohio, South Carolina, and Wisconsin) account for the majority (70%) of the number of mercury advisories that were added.

PCBs

Advisories for PCBs increased 5% from 2000 to 2001 (from 726 to 764) and increased 139% from 1993 to 2000 (319 to 764). The number of states that have issued PCB advisories remained at 38 states (including American Samoa) in 2001, up from 31 states in 1993 and 36 states in 1998. Four states (Mississippi, Missouri, New Hampshire, and Wisconsin) added a total of 9 new advisories for PCBs in 2001; however, the increase in advisories for PCBs is primarily due to states where PCBs were added as a contaminant to a preexisting advisory. Alabama, California, Georgia, Louisiana, Maryland, Massachusetts, Michigan, Ohio, Pennsylvania, Texas, and Virginia each added advice concerning PCBs to existing advisories. In contrast to the increase in the number of PCB advisories nationally, the total number of lake acres (1,740,834) and river miles (115,623) under PCB advisories decreased by 13% and 26%, respectively, from 2000 to 2001. This decrease was due in large part to the rescinding of a regional PCB advisory in Missouri (Figures 4 and 5). Three states (District of Columbia, Indiana, and New York) have issued statewide freshwater advisories (river and/or lake) advisories for PCBs. Six other states (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, and Rhode Island) have issued PCB advisories for all of their coastal marine waters.

Figure 4

Trends in Number of Lake Acres Under Advisory for Various Pollutants

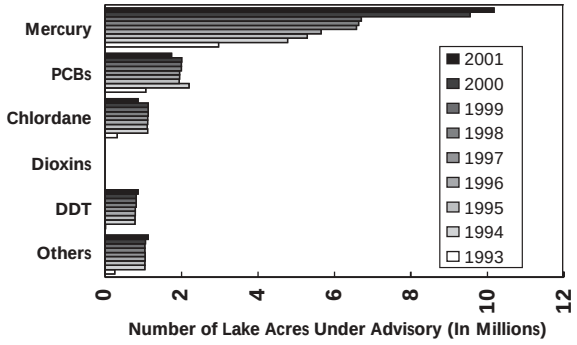
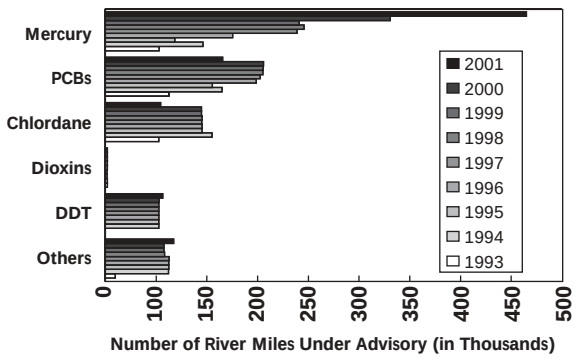


Figure 5

Trends in Number of River Miles Under Advisory for Various Pollutants



Chlordane

Many advisories for the pesticide chlordane have been rescinded in recent years, primarily because all uses of chlordane were banned in the United States in 1988 and the compound continues to degrade in the environment. The number of chlordane advisories decreased nationwide from 101 advisories in 2000 to 99 advisories in 2001. Similarly, the number of lake acres (863,897) and river miles (54,563) declined 23.5% and 42.5%, respectively, from 2000. These declines were primarily due to the rescinding of a regional PCB advisory in Missouri. From 1994 (when Missouri and New York first issued statewide chlordane advisories) until 2000, the extent of chlordane contamination nationwide remained relatively constant. In 2001, Missouri, Texas, and West Virginia each rescinded chlordane advisories, while Michigan added one advisory.

Dioxins

The total number of advisories for dioxins decreased from 76 in 2000 to 75 in 2001, a drop of 1%. Similarly, the total lake acres (2,326) and river miles (1,946) under advisory for dioxin in 2001 declined by 6% and 2%, respectively, over 2000. The number of lake acres and river miles under advisory for dioxins have remained below 2604 acres and 2064 miles, respectively, since 1993. Although dioxins are one of the five major contaminants that have resulted in the issuance of health advisories, the geographic extent of the contamination (only 0.4% of all waters under advisory) is extremely limited compared to that for the other four major contaminants. This is due in part to the limited monitoring of dioxins resulting from the high cost of chemical analysis and in part because dioxin contamination has been associated primarily with pulp and paper plants using a bleach kraft process and other specific types of chemical manufacturing facilities or incineration facilities. In 2001, North Carolina added one advisory for dioxins and rescinded one, while Mississippi also rescinded an advisory.

Dioxins are one of several chemical contaminants for which advisories have been rescinded in recent years, in part because pulp and paper mills have changed their chemical processes.

DDT

Although the use of DDT, an organochlorine pesticide, has been banned since 1975, the total number of advisories currently in effect for DDT (and its degradation products, DDE and DDD) increased from 44 advisories in 2000 to 48 advisories in 2001. In addition to the increase in advisory number, the total number of lake acres (868,486) and river miles (56,544) increased by 6% and 7%, respectively, above previous years. This increase was due primarily to the issuance of a regional DDT advisory in Mississippi in 2001 (Figures 4 and 5, respectively). California had the greatest number of DDT advisories active in 2001 (14), followed by New York (4), and Texas (4), while Mississippi added 2 new DDT advisories. New York is currently the only state with a statewide advisory for DDT.

Other Pollutants

Although the five major pollutants account for 96% of the total number of advisories, the remaining 4% of all fish advisories are caused by a variety of other groups of chemicals. These include heavy metals (arsenic, cadmium, chromium, copper, lead, selenium, and zinc), organochlorine pesticides (aldrin, dieldrin, heptachlor epoxide, kepone, lindane, mirex, and toxaphene), as well as a myriad of other chemical compounds including creosote, polyaromatic hydrocarbons (PAHs), hexachlorobenzene, pentachlorophenol, and vinyl chloride to name just a few. While these other chemical contaminants represent only 4% of the total number of advisories, the extent of the contamination they cause slightly exceeds the lake acres and river miles under advisory for DDT. In 2001, the total number of lake acres (1,130,267) and river miles (67,454) under these advisories increased by 6.5% and 17%, respectively, over 2000. This increase was the result of the issuance of a regional advisory in Mississippi for toxaphene. The majority of lake acres and river miles under advisory for other chemical contaminants is a result of a statewide advisory in New York for mirex.

Wildlife Advisories

In addition to advisories for fish and shellfish, the web site also contains several wildlife advisories. Four states have issued consumption advisories for turtles: Arizona (3), Massachusetts (1), Minnesota (8), and New York (statewide advisory). One state (Massachusetts) has an advisory for frogs. New York has a statewide advisory for waterfowl (including mergansers). Arkansas has an advisory for wood ducks. Utah has an advisory for American coot and ducks. Maine issued a statewide advisory for moose liver and kidneys due to cadmium.

Summary of Canadian Advisories

No new information was collected about fish advisories in Canada for 2001. Beginning in 1996, EPA contacted health and environmental officials in the 12 Canadian provinces and territories to obtain narrative and geographic information system (GIS) information on advisories throughout Canada. The number of Canadian advisories in effect in 1997 was 2,625. Provincewide advisories for mercury were also in effect in 1997 for Nova Scotia and New Brunswick. With respect to chemical contaminants, advisories in Canada have been issued for a total of five bioaccumulative chemical contaminants including mercury (2,572), dioxins/furans (68), PCBs (59), toxaphene (16), and mirex (9). More than 97% of all Canadian advisories have been issued for mercury.

For More Information

For more information on specific advisories within a state, contact the appropriate state agency listed on the NLFWA web site at *www.epa.gov/waterscience/fish*. This is particularly important for advisories that recommend consumers restrict their consumption of fish from certain waterbodies. State health departments provide more specific information for restricted consumption advisories on the appropriate meal size and meal frequency (number of meals per week or month) that is considered safe to eat.

The data available on the national listing web site may also be used to assist the public in making informed decisions about the waterbodies where they choose to fish or harvest wildlife, and the species and size of fish they choose to eat. The NLFWA web site includes advisory information for all states through December 2001. For some states, the web site includes data on advisories issued in 2002.

For more information on how to properly clean fish to reduce exposure, consult EPA's brochure "Should I Eat the Fish I Catch," available in several languages on EPA's fish advisory web site: *www.epa.gov/waterscience/fish*.

For more information on the National Fish and Wildlife Contamination Program, contact:

Jeff Bigler
U.S. Environmental Protection Agency
Office of Science and Technology
National Fish and Wildlife Contamination Program (4305T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone 202-566-0400
e-mail *bigler.jeff@epa.gov*