OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT

GOOD CATCH CALIFORNIA
Your Fish Advisor

Health Advisory and Guidelines for Eating Fish from Lexington Reservoir (Santa Clara County)

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Fish, Ecotoxicology, and Water Section
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LIST OF ACRONYMS AND ABBREVIATIONS

ATL	Advisory Tissue Level
CDFW	California Department of Fish and Wildlife
DDT(s)	dichlorodiphenyltrichloroethane (DDT) and its metabolites dichlorodiphenyl dichloroethane (DDD) and dichlorodiphenyldichloroethylene (DDE)
FDA	Food and Drug Administration
Hg	mercury
OEHHA	Office of Environmental Health Hazard Assessment
MDL	method detection limit
mm	millimeters
N	sample size
PCBs	polychlorinated biphenyls
ppb	parts per billion
RL	reporting limit
RWB-2	Regional Water Quality Control Board, San Francisco Bay Region
SWAMP	Surface Water Ambient Monitoring Program
USDA	United States Department of Agriculture
USDHHS	United States Department of Health and Human Services
US EPA	United States Environmental Protection Agency

PREFACE

The Office of Environmental Health Hazard Assessment (OEHHA), a department in the California Environmental Protection Agency, is responsible for evaluating potential public health risks from chemical contamination of sport fish. This task includes issuing fish consumption advisories, when appropriate, for the State of California. OEHHA's authorities to conduct these activities are based on mandates in the:

- California Health and Safety Code
  - Section 59009, to protect public health
  - Section 59011, to advise local health authorities
- California Water Code
  - Section 13177.5, to issue health advisories

The health advisories are published in the California Department of Fish and Wildlife Sport Fishing Regulations in the section on public health advisories.

This report presents guidelines for eating fish from Lexington Reservoir in Santa Clara County. The report provides background information and a description of how the guidelines were developed. The resulting advice is summarized in the illustration after the Table of Contents and List of Figures and Tables.

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A Guide to Eating Fish from Lexington Reservoir

Women 18 - 45 years and Children 1 - 17 years

Rainbow Trout ♥

Inland Silverside

Threadfin Shad

Sunfish species

Black bass species

2 servings a week OR 7 servings a week of Rainbow Trout	OR	1 serving a week		Do not eat

Women 46 years and older and Men 18 years and older

Rainbow Trout ♥

Inland Silverside

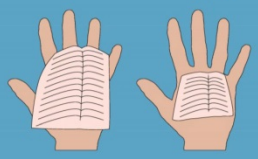
Threadfin Shad

Sunfish species

Black bass species ♥

7 servings a week	OR	3 servings a week	OR	1 serving a week

What is a serving?



For Adults **For Children**

A serving is the size and thickness of your hand. Give children smaller servings.

♥ Why eat fish?

Eating fish is good for your health. Fish have Omega-3s that can reduce your risk for heart disease and improve how the brain develops in unborn babies and children.

♥ = Fish high in Omega-3s

What is the concern?

Some fish have high levels of mercury and PCBs. Mercury can harm the brain, especially in unborn babies and children. PCBs can cause cancer.

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INTRODUCTION

This report presents guidelines for eating fish from Lexington Reservoir (Figure 1) in Santa Clara County, California, between Los Gatos and Santa Cruz.

LOCATION

Managed by the Santa Clara County Park Service, this reservoir is in the Guadalupe River Watershed on Los Gatos Creek and covers the former towns of Lexington and Alma. Lexington Reservoir is near the New Almaden mine but is not downstream from mercury mining. Lexington Reservoir was created in 1952 with the completion of the James J. Lenihan Dam. The reservoir has a surface area of about 412 acres. Lexington Reservoir is connected to a few urban creeks but flows northeast into Los Gatos Creek.[1] This advisory only applies to Lexington Reservoir and not adjacent water bodies.

FIGURE 1. LOCATION OF LEXINGTON RESERVOIR IN CALIFORNIA

[1] SWRCB, San Francisco Bay Region, Guadalupe River Watershed Mercury TMDL Project Report, 2006a.

APPROACH USED

The Office of Environmental Health Hazard Assessment (OEHHA) used the results from two monitoring studies described in this report to develop the fish advisory for Lexington Reservoir. OEHHA uses the following general process in developing consumption advice for sport fish:

1) Evaluation of all fish contaminant data available from a water body and selection of appropriate data that meet data quality criteria and sampling plan guidelines.
2) Determination of fish species for which adequate data are available to issue fish consumption advice.
3) Calculation of an appropriate measure of central tendency (often a weighted arithmetic mean) and other descriptive statistics of the contaminant data, as appropriate, for a chemical of potential concern for the selected fish species.
4) Comparison of the chemical concentrations with the OEHHA Advisory Tissue Levels (ATLs) for each chemical of potential concern.
5) Development of final advice based on a thorough review of the data and best professional judgment relating to benefits and risks of consuming a particular fish species.

The ATLs (discussed further in a subsequent section of this report) are chemical levels in fish tissue that are considered acceptable, based on chemical toxicity, for a range of consumption rates. Development of the ATLs also included consideration of health benefits associated with including fish in the diet (OEHHA, 2008). The ATLs should not be interpreted as static “bright lines”, but one component of a complex process of data evaluation and interpretation used by OEHHA in the assessment and communication of benefits and risks of consuming sport fish.

CHEMICALS OF POTENTIAL CONCERN

Certain chemicals are considered to be of potential concern for people who eat fish because of their toxicity and their ability to accumulate in fish tissue. The majority of fish consumption advisories in California are issued because of methylmercury (the more toxic form of mercury found in fish), followed by polychlorinated biphenyls (PCBs), and in a few cases, some legacy pesticides (pesticides that are no longer used but remain in the environment).

High levels of methylmercury can harm the brain, especially in fetuses and children as they grow. PCBs are man-made chemicals previously used in electrical transformers, plastics, and lubricating oils, often as flame retardants or electrical insulators. Their use was banned in the 1970s, but they persist in the environment because they do not break down easily and can accumulate in fish. Depending on the exposure level, PCBs may cause cancer and other health effects, including neurotoxicity, in humans. Chlordanes, DDT, and dieldrin are pesticides that were banned from use in 1973 (DDT) and in the late 1980s (chlordanes and dieldrin) but have been found in some fish in certain water bodies in California. Depending on the exposure level, these chemicals

may cause cancer or other adverse effects on the nervous system. Detailed discussion of the toxicity of these chemicals and references are presented in "Development of Fish Contaminant Goals and Advisory Tissue Levels for Common Contaminants in California Sport Fish: Chlordane, DDTs, dieldrin, methylmercury, PCBs, selenium, and toxaphene" (OEHHA, 2008).

Fish samples from Lexington Reservoir were analyzed for mercury (as a measure of methylmercury), PCBs, and the pesticides dieldrin, chlordanes, and DDTs (DDT and its metabolites). Fish species that do not normally accumulate PCBs or other organic chemicals may not be analyzed for those contaminants in a particular monitoring study.

DATA SOURCES

The guidelines for eating fish from Lexington Reservoir are based on chemical analysis of fish samples from the two monitoring studies described below. These studies met OEHHA's data quality criteria, including adequate documentation of sample collection, fish preparation, chemical analyses, quality assurance, and low detection limits.

REGIONAL WATER QUALITY CONTROL BOARD, SAN FRANCISCO BAY (RWB-2) AND SWAMP LAKES SPORT FISH CONTAMINATION STUDY

The RWB-2 staff collected Largemouth Bass and Pumpkinseed to analyze for mercury in 2004-2005. Bluegill, Channel Catfish and Rainbow Trout were also collected in the same years to characterize levels of chlordanes, DDTs, dieldrin, PCBs, and mercury as part of a statewide sampling effort, in cooperation with SWAMP, to survey contaminants in sport fish found in California lakes and reservoirs.

TOTAL MAXIMUM DAILY LOAD PROGRAM (TMDL)

The US Environmental Protection Agency (US EPA) TMDL Program develops plans and actions to help impaired water bodies comply with water quality standards, pursuant to Section 303(d) of the Clean Water Act (1972)[2]. The Guadalupe River Watershed TMDL project was formed to establish a numeric target TMDL for this region (SWRCB 2006a, 2008). Fish sampling is a multi-agency effort and integral part of the TMDL. US EPA and the Santa Clara Valley Water District, in cooperation with Region 2 Water Board staff, collected Largemouth Bass, Inland Silverside, Pumpkinseed and Threadfin Shad from Lexington Reservoir during the fall seasons of 2004 and 2006 (SWRCB 2006a, 2006b; Tetra Tech, 2005a, 2005b). Since Lexington Reservoir does not receive mining waste or urban runoff, the sampling objective was to provide local 'reference' information on background levels of toxic substances for comparison with other water

[2] US EPA Clean Water Act §303(d). http://www.epa.gov/tmdl

bodies of the Guadalupe River Watershed, such as those downstream from the New Almaden Mining District. Fish samples were analyzed for mercury.

The fish sampled from Lexington Reservoir are shown in Table 1, including the species, number of samples collected, total number of fish, project name, year, and contaminants analyzed. The samples collected either met the California Department of Fish and Wildlife's (CDFW) legal size requirements (for Largemouth Bass: CDFW, 2015-2016), or OEHHA's criteria for minimum "edible" size based on species size at maturity and professional judgment (OEHHA, 2005). There are no minimum legal or "edible" size requirements for forage or prey fish species, such as Inland Silverside and Threadfin Shad.

TABLE 1. FISH COLLECTED FROM LEXINGTON RESERVOIR

Common Name	Scientific Name	Number of Samples	Total Number of Fish	Project	Year	Contaminants Analyzed
Bluegill	*Lepomis macrochirus*	2	11	RWB-2	2004-2005	Chlordanes, DDTs, Dieldrin, Hg, PCBs
Channel Catfish	*Ictalurus punctatus*	1	2	RWB-2	2004-2005	Chlordanes, DDTs, Dieldrin, Hg, PCBs
Inland Silverside	*Menidia beryllina*	15	15	TMDL	2006	Hg
Largemouth Bass	*Micropterus salmoides*	1	3	RWB-2	2005	Hg
		11	11	TMDL	2004	Hg
		15	15	TMDL	2006	Hg
Pumpkinseed	*Lepomis gibbosus*	2	9	RWB-2	2004-2005	Hg
		5	5	TMDL	2006	Hg
Rainbow Trout	*Oncorhynchus mykiss*	2	9	RWB-2	2005	Chlordanes, DDTs, Dieldrin, Hg, PCBs
Threadfin Shad	*Dorosoma petenense*	15	15	TMDL	2006	Hg
White Catfish	*Ameiurus catus*	1	1	RWB-2	2005	Hg

RWB-2 = San Francisco Regional Water Quality Control Board
TMDL = Guadalupe River Watershed Mercury Total Maximum Daily Load Program
Hg = Mercury

CHEMICAL CONCENTRATIONS

Fish samples were prepared as skinless fillets or eviscerated whole bodies (Inland Silverside, Threadfin Shad). They were analyzed for total mercury, legacy pesticides, and PCBs (54 congeners[3]), either as individual fish or composite samples, prepared from equal amounts of tissue from several similarly sized fish of a species. For composite samples, the total length of the smallest fish in the sample must be at least 75% of the length of the largest fish in the composite. OEHHA used the arithmetic mean (average) of the chemical concentrations for each fish species to estimate average human exposure.

MERCURY

Depending on the study, the CDFW Moss Landing Marine Laboratories (SWAMP/RWB-2) or the US EPA Region 9 Laboratory (TMDL) analyzed species collected from Lexington Reservoir for total mercury, either as individual fish or composite samples, using either a DMA (direct mercury analyzer) or FIMS (flow injection mercury system). Both approaches analyze mercury concentrations via atomic absorption spectroscopy. The DMA method is an integration of thermal decomposition and atomic absorption and the FIMS approach combines cold vapor flow injection and amalgamation concentration with atomic absorbance. OEHHA assumed all total mercury detected was methylmercury; methylmercury is the most common form found in fish and is also the more toxic form (Bloom, 1992). Table 2 shows the averages and ranges for total length[4] and mercury concentrations in each fish species. The RWB-2 data were reported in wet weight. The method detection limit (MDL)[5] for total mercury was 9 parts per billion (ppb) (FIMS) and the reporting limit (RL)[6] was 26 ppb (FIMS). The TMDL total mercury results were reported in dry weight and were subsequently converted to wet weight based on the percentage of solid matter in a given sample[7]. The MDL was 60 ppb (DMA) and the RL was 110 ppb (DMA), on a dry weight basis.

PESTICIDES AND PCBS

Composite samples comprised of 2-5 individual fish were analyzed for legacy pesticides and PCBs in Bluegill, Channel Catfish and Rainbow Trout. Pesticides and PCBs were analyzed by gas chromatography at the CDFW Water Pollution Control Laboratory.

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[3] Congeners are related compounds with similar chemical forms. Of the 209 possible PCB congeners, 54 are generally reported.
[4] Total length is the maximum length of the fish, measured from the tip of the closed mouth to the tip of the pinched tail fin.
[5] The MDL is the lowest quantity of a chemical that can be distinguished (as greater than zero) in a sample.
[6] The RL is the lowest quantity of a chemical that can be accurately quantified in a sample.
[7] SWRCB 2006a. Total mercury (mg/kg, wet wt.) = (% solids/100) x total mercury (mg/kg, dry wt.)

For PCBs, chlordanes, and DDTs, each of the concentrations presented was the sum of the detected parent compound, congeners, or metabolites, where applicable. Since the MDLs or RLs were relatively low, ≤ 0.05 and ≤ 0.2 ppb, respectively, individual congeners or metabolites with concentrations reported as non-detects were assumed to be zero. This is a standard method of handling non-detect values for PCBs and other chemicals with multiple congeners or metabolites in a given sample when detection levels are adequate (US EPA, 2000a). Table 2 shows the averages and ranges for total length and PCB concentrations in each fish species. Concentrations of chlordanes, dieldrin, and DDTs were not sufficiently high to alter consumption advice and are not shown.

TABLE 2. MERCURY AND PCB CONCENTRATIONS IN FISH FROM LEXINGTON RESERVOIR

Fish Species	Number of Samples	Total Number of Fish	Mean* Total Length (mm)	Range of Total Lengths (mm)	Mercury (ppb)	
					Mean*	Range**
Bluegill	2	11	155	129-196	142	138-147
Channel Catfish	1	2	629	616-641	365	***
Inland Silverside	15	15	88	56-120#	92	53-206
Largemouth Bass	27	29	399	306-512	608	374-966
Pumpkinseed	7	14	149	124-167	212	55-278
Rainbow Trout	2	9	310	278-339	19	19
Threadfin Shad	15	15	94	92-99	74	39-104
White Catfish	1	1	267	267	120	***
					PCBs (ppb)	
Bluegill	1	5	170	155-196	3	***
Channel Catfish	1	2	629	616-641	6	***
Rainbow Trout	1	5	320	308-339	7	***

*Means are an arithmetic average of individual values and/or a weighted average of composites.
**Range of individuals and/or range of the average of composites.
***Not available; concentration was derived from an individual fish or composite of 2-5 fish.
#Fork length. No conversion factor to total length available for this species.

DEVELOPMENT OF GUIDELINES FOR EATING FISH FROM LEXINGTON RESERVOIR

GENERAL INFORMATION

The OEHHA fish advisory process considers the health benefits of fish consumption as well as the risk from exposure to the chemical contaminants found in fish. Benefits are included in the advisory process because there is considerable evidence and scientific consensus that fish should be part of a healthy, well-balanced diet. Fish contain many nutrients that are important for general health and, in particular, help promote optimal growth and development of babies and young children and may reduce the incidence of heart disease in adults (FDA/US EPA, 2014; American Heart Association, 2014; OEHHA, 2008; Institute of Medicine, 2007; Kris-Etherton et al., 2002). Fish is a significant source of the specific omega-3 fatty acids, docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) thought to be associated with these beneficial health effects (USDA/US DHHS, 2015; Weaver et al., 2008).

The 2015-2020 U.S. Dietary Guidelines recommend that 1) the general population "consume eight or more ounces per week (less for young children)" of a variety of seafood[8] "for the total package of nutrients that seafood provides, including its EPA and DHA content" and 2) "women who are pregnant or breastfeeding should consume at least eight and up to 12 ounces of a variety of seafood per week from choices that are lower in methylmercury" (USDA/USDHHS, 2015). The particular fish that people eat is an important factor in determining the net beneficial effects of fish consumption. For example, studies have shown that children of mothers who ate low-mercury fish during pregnancy scored better on cognitive tests compared to children of mothers who did not eat fish or ate high-mercury fish (Oken et al., 2005, 2008). Accordingly, because of the high mercury content of certain fish species, the Food and Drug Administration and US EPA recommend that women who are pregnant (or might become pregnant) or breastfeeding and young children do not consume shark, swordfish, tilefish, or king mackerel, and limit consumption of white (albacore) tuna to six ounces per week (FDA/US EPA, 2004; 2014).

In order to address the potential health concerns associated with consuming contaminants in sport fish, OEHHA has established ATLs for chemicals that are known to accumulate in the edible tissues of fish. ATLs consider both the toxicity of the chemical and potential benefits of eating fish. OEHHA uses the ATLs to determine the maximum number of servings per week that consumers can eat, for each species and at each location, to limit their exposure to these contaminants. Consumers can use

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[8] "Marine animals that live in the sea and in freshwater lakes and rivers. Seafood includes fish, such as salmon, tuna, trout, and tilapia, and shellfish, such as shrimp, crab, and oysters" (USDHHS/USDA, 2015).

OEHHA's guidance when choosing which fish and how much to eat as part of an overall healthy diet.

There are two sets of ATLs for methylmercury in fish because of the age-related toxicity of this chemical (OEHHA, 2008). The fetus and children are more sensitive to the toxic effects of methylmercury. Thus, the ATLs for the sensitive population, including women who might become pregnant (typically 18 to 45 years of age) and children, are lower than for women 46 years and older, and men. The lower ATL values for the sensitive population provide additional protection to allow for normal growth and development of the brain and nervous system of unborn babies and children. Detailed discussion about the toxicity of common fish contaminants and health benefits of fish consumption, as well as derivation of the ATLs, are provided in "Development of Fish Contaminant Goals and Advisory Tissue Levels for Common Contaminants in California Sport Fish: Chlordane, DDTs, dieldrin, methylmercury, PCBs, selenium, and toxaphene" (OEHHA, 2008). A list of the ATLs used in this report is presented in Appendix I.

For each fish species in this advisory, OEHHA compared the mean mercury, PCB, DDTs, chlordane, and dieldrin concentrations detected in the fillet to the ATLs for each of the chemicals to establish the maximum number of servings per week that could be consumed (see Appendix I). The concentrations of DDTs, chlordanes, and dieldrin were lower than the corresponding ATL threshold values for daily consumption (OEHHA, 2008). These pesticides were therefore not considered further for developing consumption advice. Consumption advice was based on mercury and PCB concentrations.

The consumption advice for a fish species is initially based on the chemical with the lowest allowable number of fish servings per week. Because both mercury and PCBs are known to affect the nervous system, particularly during brain development, additivity of toxicity is assumed and assessed by using a multiple chemical exposure methodology (US EPA, 1989 and 2000b). The presence of both chemicals in fish tissue may result in advice for the sensitive population to consume fewer meals per week than would be the case for the presence of either chemical alone, in a similar concentration. For the Lexington Reservoir advisory, the potential effect of multiple chemical exposure was assessed and determined not to affect consumption advice for the species that were evaluated. When consumption advice is followed, the exposure to mercury and PCBs from eating fish caught at Lexington Reservoir would be at or below the average daily reference dose or cancer risk as outlined in "Development of Fish Contaminant Goals and Advisory Tissue Levels for Common Contaminants in California Sport Fish: Chlordane, DDTs, dieldrin, methylmercury, PCBs, selenium, and toxaphene" (OEHHA, 2008).

OEHHA recommends that individuals strive to meet the US Dietary Guidelines seafood consumption recommendations, while also adhering to federal and OEHHA recommendations to limit the consumption of fish with higher contaminant levels. The advice discussed in the following section represents the maximum recommended number of servings per week for different fish from this water body. People should eat

no more than the recommended number of servings for each fish species or species group. OEHHA's advice on consuming a particular fish species can be extended to other closely related fish species[9] known to accumulate similar levels of contaminants.

Consumption advice should not be combined. That is, if a person chooses to eat a fish from the "one-serving-a-week'' category, then they should not eat any other fish from any source until the next week. If a person chooses to eat a fish from the "two-servings-per-week" category, they can combine fish species from that category for a total of two servings in that week. Then they should not eat any other fish from any source until the following week.

CONSUMPTION ADVICE FOR FISH FROM LEXINGTON RESERVOIR

OEHHA's advisory protocol requires at least nine fish of a species to be collected from a water body before an advisory can be developed for the primary contaminant of concern. This is to ensure the sample dataset is representative of the population in the water body. Sample sizes were sufficient to develop advice for black bass species (Largemouth), Inland Silverside, Rainbow Trout, sunfish species (Bluegill, Pumpkinseed) and Threadfin Shad. Only three individual catfish (two Channel Catfish and one White Catfish) were collected so advice was not developed for this species group.

BLACK BASS SPECIES (LARGEMOUTH)

Based on the mean mercury concentration in Largemouth Bass, 608 ppb, OEHHA recommends no consumption of black bass species for the sensitive population (women 18 to 45 years and children 1 to 17 years) and a maximum of one serving a week for the general population (women 46 years and older, and men 18 years and older). Black bass species include Largemouth, Smallmouth, Redeye, and Spotted Bass, all members of the same genus.

OEHHA evaluated mercury concentrations in black bass species in California and found a similar range of mercury concentrations when two or more of these species were caught from the same water body. Therefore, the advice for Largemouth Bass can be extended to other black bass species. Largemouth Bass were not analyzed for PCBs.

INLAND SILVERSIDE

The mean mercury concentration in Inland Silverside was 92 ppb. OEHHA recommends that women 18-45 years and children 1-17 years eat a maximum of two servings per week and up to 7 servings per week for the general population (women 46

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[9] Fish species within the same genus are most closely related, and Family is the next level of relationship.

years and older and men 18 years and older). Inland Silverside were not analyzed for PCBs.

Rainbow Trout

The mean mercury and PCB concentrations in Rainbow Trout were 19 and 7 ppb, respectively. OEHHA recommends a maximum of 7 servings per week of Rainbow Trout for the sensitive population. The same advice is recommended for women 46 years and older, and men 18 years and older.

Sunfish Species (Bluegill, Pumpkinseed)

The mean mercury level in sunfish species was 181 ppb[10]. PCBs were detected in Bluegill at a concentration of 3 ppb but were not evaluated in Pumpkinseed. OEHHA recommends a maximum of one serving a week of sunfish species for the sensitive population and three servings a week for women 46 years and older, and men 18 years and older.

OEHHA evaluated the mercury levels in small sunfish species in California including Bluegill, Redear Sunfish, and Green Sunfish, and found the concentrations within a water body were similar between species. Therefore, the advice for Bluegill and Pumpkinseed can be extended to the other small sunfish species.

Threadfin Shad

Threadfin shad (*Dorosoma petenense*) is a member of the herring family and feeds on plankton (Moyle, 2002). The mean mercury concentration in Threadfin Shad was 74 ppb. OEHHA recommends that women 18-45 years and children 1-17 years eat a maximum of two servings per week and up to 7 servings per week for the general population (women 46 years and older and men 18 years and older). Threadfin Shad were not analyzed for PCBs.

RECOMMENDED MAXIMUM NUMBER OF SERVINGS

The recommended maximum numbers of servings per week for fish from Lexington Reservoir are shown in Table 3.

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[10] Determined using the weighted average mercury values from Bluegill (142 ppb, N=11) and Pumpkinseed (212 ppb, N=14).

TABLE 3. RECOMMENDED MAXIMUM NUMBER OF SERVINGS PER WEEK FOR FISH FROM LEXINGTON RESERVOIR

Fish Species	Women 18–45 years and Children 1–17 years	Women 46 years and older and Men 18 years and older
Black Bass Species	0	1
Inland Silverside	2	7
Rainbow Trout	7	7
Sunfish Species	1	3
Threadfin Shad	2	7

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APPENDIX I. Advisory Tissue Levels

Advisory Tissue Levels (ATLs) guide the development of advice for people eating sport fish. ATLs are levels of contaminants found in fish that correspond to the maximum numbers of recommended fish servings. OEHHA uses ATLs to provide advice to prevent consumers from being exposed to:

- More than the average daily reference dose[11] for chemicals not known to cause cancer, such as methylmercury, or
- For cancer-causing chemicals, a risk level greater than one additional cancer case in a population of 10,000 people consuming fish at the given consumption rate over a lifetime. This cancer endpoint is the maximum acceptable risk level recommended by the US EPA (2000b) for fish advisories.

For each chemical, ATLs were determined for both cancer and non-cancer risk, if appropriate, for one to seven eight-ounce servings per week. The most health-protective ATLs for each chemical, selected from either cancer or non-cancer based risk, are shown in the table below for zero to seven servings per week. When the guidelines for eating fish from Lexington Reservoir are followed, exposure to chemicals in fish from Lexington Reservoir would be at or below the average daily reference dose or the cancer risk probability of one in 10,000.

ADVISORY TISSUE LEVELS FOR SELECTED ANALYTES

Contaminant	**Consumption Frequency Categories (8-ounce servings/week)[a] and ATLs[b] (in ppb)**							
	7	6	5	4	3	2	1	0
Chlordanes	≤ 80	>80-90	>90-110	>110-140	>140-190	>190-280	>280-560	>560
DDTs	≤ 220	>220-260	>260-310	>310-390	>390-520	>520-1,000	>1,000-2,100	>2,100
Dieldrin	≤ 7	>7-8	>8-9	>9-11	>11-15	>15-23	>23-46	>46
MeHg (Women 18-45 and children 1-17)	≤ 31	>31-36	>36-44	>44-55	>55-70	>70-150	>150-440	>440
MeHg (Women > 45 and men)	≤ 94	>94-109	>109-130	>130-160	>160-220	>220-440	>440-1,310	>1,310
PCBs	≤ 9	>9-10	>10-12	>12-15	>15-21	>21-42	>42-120	>120

[a] Serving sizes (prior to cooking, wet weight) are based on an average 160 pound person. Individuals weighing less than 160 pounds should eat proportionately smaller amounts.

[11] The reference dose is an estimate of the maximum daily exposure to a chemical likely to be without significant risk of harmful health effects during a lifetime.