

# **Health Consultation**

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**AN EVALUATION OF MERCURY CONCENTRATIONS IN FISH  
FROM RIVERS AND LAKES IN UTAH FOR YEARS 1990-2005**

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**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
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Agency for Toxic Substances and Disease Registry  
Division of Health Assessment and Consultation  
Atlanta, Georgia 30333**

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HEALTH CONSULTATION

AN EVALUATION OF MERCURY CONCENTRATIONS IN FISH FROM RIVERS AND  
LAKES IN UTAH FOR YEARS 1990-2005

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## Table of Contents

	Page
Background and Statement of Issues .....	4
Results.....	4
Discussion.....	18
Children’s Health Considerations .....	20
Conclusions .....	21
Recommendations.....	22
Public Health Action Plan.....	23
Authors .....	24
Certification.....	25
References.....	26
Figure 1. Location of fish sampling sites from 1990-1999.....	28
Figure 2. Location of Lake Powell fish sampling sites from 1991-1994. ....	29
Figure 3. Location of fish sampling sites from 2000.....	30
Figure 4. Location of fish sampling sites from 2001.....	31
Figure 5. Location of fish sampling sites from 2002-2003.....	32
Figure 6. Location of fish sampling sites from lakes from 2000-2003.....	33
Figure 7. Location of fish sampling sites from Lake Powell from 2005.....	34
Table 1. Sampling data for fish from the Colorado River and rivers that feed into the Green River, Utah (1996-1997).....	35
Table 2. Sampling data for whole body fish from Great Salt Lake wetlands, Utah (1996-1997). ....	36
Table 3. Sampling data for whole body fish from the Bear and Weber rivers, Utah (1998).....	36
Table 4. Sampling data for fish fillets from the Cub and Weber Rivers, Utah.....	37
Table 5. Sampling data for fish from American Fork, North Fork, Utah County (1999). ....	37
Table 6. Sampling data for fish from 2000.....	38
Table 7. Sampling data for fish from 2001.....	39
Table 8. Sampling data for fish from 2002.....	40
Table 9. Sampling data for fish from 2003.....	41
Table 10. Sampling data for fish from the East Canyon Reservoir, Utah.....	41
Table 11. Sampling data for fish fillets from Lake Powell, Utah (1991-1994).....	42
Table 12. Sampling data for fish from the Jordanelle Reservoir, Utah (1995).....	43
Table 13. Sampling data for fish from Utah lakes 2000-2003.....	43

Mercury Concentrations in Fish  
In Utah 1990 - 2005

Table 14. Sampling data for fish from Utah lakes and rivers 2005. ....44  
Table 15. Summary of health hazards from sampled Utah rivers and lakes. ....45  
Appendix ..... 48

## **Background and Statement of Issues**

The 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation report for Utah (U.S.DI 2003) estimates that approximately 517,000 people, ages 16 or older, fish in the state of Utah. The report also estimates 152,000 residents aged 6-15 years old fish in Utah. Recent public concern has been expressed about potential health risks associated with mercury levels in Utah fish. In response to these concerns, the Environmental Epidemiology Program (EEP) conducted a review of fish sampling data for mercury from fish sampled from Utah water bodies by various state and federal agencies. This Health Consultation is an evaluation of the data available on fish sampling for mercury conducted in Utah by various agencies covering the period of 1990 through 2005, and the potential public health risk associated with mercury contaminated fish in Utah.

Various agencies monitor chemical contaminant levels in fish from rivers and lakes in Utah. The U.S. Bureau of Reclamation (USBR) sampled Rainbow Trout from the Jordanelle Reservoir in 1995 and several fish species from East Canyon Reservoir in 1990. The U.S. Geological Survey (USGS) collected several fish species from several river sites in 1998 and 1999. The U.S. Fish and Wildlife Service (USFWS) collected three Bass species from sites in Lake Powell from 1991-1994, Carp from multiple sites in the Upper Colorado River basin during 1996 and 1997, and fish from Great Salt Lake wetlands in 1996-1997. The Utah Department of Environmental Quality (UDEQ) collected fish from 36 different sites during the years 2000-2003. Additional fish sampling by UDEQ was conducted in July 2005 to further characterize the mercury concentrations in fish from Gunlock Reservoir, Mill Creek, East Canyon Reservoir, and two locations in Lake Powell. Sampling sites are shown in Figures 1 - 7.

## **Results**

### **Mercury Concentrations**

All mercury concentrations are reported as a wet weight concentration in milligrams of mercury per kg fish tissue (mg/kg). The EPA screening value for mercury in fish is 0.3 mg/kg. Fish tissue was analyzed as fillets or whole body fish.

### **Rivers and Streams**

#### *Colorado, Yampa, White, Duchesne, and Price Rivers 1996 - 1997*

Nine Carp collected from three different locations along the Colorado River in 1996 by the U.S. Fish and Wildlife Service had a high mercury concentration of 0.091 mg/kg (Table 1). Carp were sampled as an edible bottom-dwelling species of fish. The low of the dry weight mercury concentration was <0.177 mg/kg, therefore a low mercury wet weight concentration and average could not be calculated. Ten Carp were collected in 1997 from four different rivers at sites above their confluence with the Green River. The high mercury concentration for Carp from the

Mercury Concentrations in Fish  
In Utah 1990 - 2005

Yampa, White, Duchesne, and Price Rivers was 0.085 mg/kg. The low of the dry weight concentration was <0.0925 mg/kg, therefore a low wet weight concentration and average could not be calculated. Mercury concentrations in fish sampled were below the 0.3 mg/kg level of concern. The sampling data provided did not describe if the samples from the Colorado, Yampa, White or Price rivers were analyzed as whole body or fillet.

*Great Salt Lake Wetlands 1996 - 1997*

Whole body fish from eleven different sites from Great Salt Lake wetlands were analyzed for mercury in 1996 and 1997 by the U.S. Fish and Wildlife Service (Table 2). The Great Salt Lake wetlands sites include areas along the eastern edge of the Great Salt Lake (Figure 1). Wet weight mercury levels in Carp ranged from non-detect to 0.015 mg/kg. No mercury was detected in one sample of White Bass collected. Mercury concentrations in fish sampled were below the 0.3 mg/kg level of concern.

*Bear and Weber Rivers 1998*

The U.S. Geological Survey sampled Carp from the Bear River near Corinne, Utah in 1998. The mercury level in a composite of five whole body Carp analyzed had a mercury level of 0.025 mg/kg, below the 0.3 mg/kg level of concern. Results are shown in Table 3.

*Cub and Weber Rivers 1998 -1999*

The US Bureau of Reclamation caught a total of five Mountain Whitefish from the Weber River near Coalville, Utah in 1998-1999. The fillets from these fish were analyzed for mercury resulting in a mean wet weight of 0.11 milligrams mercury per kg fish tissue (0.11 mg/kg) with mercury concentrations ranging from 0.073-0.141 mg/kg. The composite of fillets from two Largemouth Bass from the Cub River near Richmond, Utah had a mercury wet weight of 0.271 mg/kg. Results are shown in Table 4. The composite sample result is close to the EPA screening value of 0.3 mg/kg.

*American Fork, North Fork 1999*

As a part of a monitoring program to assess the potential impacts from abandoned mining operations in American Fork Canyon, personnel from the Uinta National Forest obtained fish (Cutthroat, Brown and Rainbow Trout) tissue samples from several areas of the North Fork of the American Fork River in 1999 (UDOH 2002).

Fillet samples of Brown Trout from below the Tibble Fork Reservoir had mercury levels ranging from 0.040-0.078 mg/kg for an average of 0.055 mg/kg. Brown Trout above the Tibble Fork Reservoir had mercury levels ranging from 0.050-0.068 mg/kg for an average of 0.059 mg/kg. Cutthroat Trout from the North Fork of the American Fork River above Major Evans Gulch had mercury levels of 0.029-0.062 mg/kg for an average of 0.043 mg/kg. Cutthroat and Rainbow Trout from below Pacific Mine ranged from 0.052-0.087 mg/kg mercury, average of 0.068

Mercury Concentrations in Fish  
In Utah 1990 - 2005

mg/kg. Cutthroat, Rainbow and hybrid Trout from above Pacific Mine ranged from 0.031-0.064 mg/kg mercury with an average value of 0.045 mg/kg. Mercury concentrations in fish sampled were below the 0.3 mg/kg level of concern. Results from 1999 are shown in Table 5.

*Silver Creek 2003*

In the summer of 2003, fish were collected from the lower portion of Silver Creek by the U.S. Fish and Wildlife Service (USFWS) and analyzed for a spectrum of metals to assess the potential impacts from historic mining operations. Samples were submitted for analysis as fish fillets. Mercury concentrations in fish were determined as part of the study of metal concentrations in the fish of Silver Creek. Results are shown in Table 9.

One Rainbow Trout sample from Silver Creek in Summit County in 2003 had a mercury concentration of 0.027 mg/kg. Five Brown Trout averaged 0.06 mg/kg mercury with a range of 0.035-0.069 mg/kg. Thirteen Cutthroat Trout were caught from Silver Creek with an average mercury concentration of 0.08 mg/kg with a range of 0.046-0.105 mg/kg. Mercury concentrations in fish sampled were below the 0.3 mg/kg level of concern.

*Environmental Monitoring and Assessment Program 2000 - 2003*

The Utah Department of Environmental Quality (UDEQ) collected fish from 36 different sites during the years 2000-2003. This sampling was in cooperation with a study developed by the Environmental Protection Agency (EPA) called the (EMAP). The primary goal of EMAP is to generate state and regional assessments of the state of ecological resources in the United States. Part of this study involves assessing contaminant levels in fish; mercury is one of the many contaminants analyzed. Approximate locations of these sites studied under EMAP are shown on maps of Utah in Figures 2-5. EMAP fish samples are analyzed as whole fish. Results are shown in Tables 6 - 8.

*Uintah River 2000*

Four species of fish were sampled from the Uintah River in Duchesne County in 2000. Mountain Sucker had an average mercury level of 0.16 mg/kg with a range from 0.136-0.193 mg/kg. Brown Trout had an average of 0.12, ranging from 0.097-0.151 mg/kg. One Rainbow Trout sample had a mercury level of 0.148 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Cottonwood Creek 2000*

Five Cutthroat Trout from Cottonwood Creek in Garfield County had an average mercury level of 0.08 mg/kg in the year 2000. Mercury levels ranged from 0.064-0.096 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

Mercury Concentrations in Fish  
In Utah 1990 - 2005

*Panguitch Creek 2000*

Five Brown Trout from Panguitch Creek in Garfield County had an average mercury level of 0.04 mg/kg in the year 2000. Mercury levels ranged from 0.027-0.063 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Hill Creek 2000*

Four Brook Trout collected from Hill Creek in Grand County averaged 0.03 mg/kg mercury with a range of 0.022-0.031 mg/kg in the year 2000. One Mountain Sucker had a mercury level of 0.081 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Francis Canyon Creek 2000*

Five Mountain Sucker from Francis Canyon Creek in Morgan County had an average mercury level of 0.02 mg/kg in the year 2000. Mercury levels ranged from 0.011-0.024 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Weber River 2000*

Six Mountain Whitefish were collected from the Weber River in Morgan County that ranged in mercury concentration from 0.072-0.130 mg/kg with an average of 0.09 mg/kg. Utah Sucker samples averaged 0.05 mg/kg mercury ranging from 0.037-0.055 mg/kg. Brown Trout from the Weber River averaged 0.08 mg/kg mercury with a range of 0.052-0.098 mg/kg. Mountain Sucker samples averaged 0.10 mg/kg with range of 0.077-0.137 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Burnt Fork Creek 2000*

Five Cutthroat Trout sampled from Burnt Fork Creek in Summit County in the year 2000 had an average mercury level of 0.09 mg/kg with a range from 0.048-0.172 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Weber River, Middle Fork 2000*

Two Brook Trout from the year 2000 mercury levels ranged from 0.027-0.029 mg/kg with an average of 0.03 mg/kg. Cutthroat Trout mercury levels ranged from 0.022-0.035 mg/kg with an average of 0.03 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

Mercury Concentrations in Fish  
In Utah 1990 - 2005

*Logan River 2001*

Three Brown Trout averaged 0.02 mg/kg of mercury with a range of 0.014-0.026 mg/kg from the Logan River in Cache County in 2001. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Gordon Creek 2001*

Three Tiger Trout averaged 0.02 mg/kg of mercury with a range of 0.020-0.022 mg/kg from the Gordon Creek in Carbon County in 2001. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Colorado River 2001*

Four Channel Catfish from the Colorado River in Grand County averaged 0.12 mg/kg of mercury with a range of 0.056-0.171 mg/kg in 2001. Three Yellow Bullheads averaged 0.04 mg/kg, ranging from 0.033-0.043 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Mill Creek, Moab 2001*

Brown Trout from Mill Creek near the city of Moab in Grand County averaged 0.38 mg/kg of mercury with a range from 0.372-0.391 mg/kg in 2001. Both fish were above the EPA screening value of 0.3 mg/kg, the concentration in fish of public health concern. Fish samples were analyzed as whole body. Due to the small sample size, and since the whole body was analyzed instead of the fillet, the potential public health hazard is indeterminate. Additional sampling of Mill Creek is needed to determine the public health significance of mercury levels in fish from Mill Creek.

*Sevier River, Mills 2001*

One sample of Utah Sucker from the Sevier River near Mills in Juab County had a mercury concentration of 0.033 mg/kg in 2001, below the 0.3 mg/kg level of concern.. Fish samples were analyzed as whole body.

*Sevier River 2001*

Three Utah Suckers from the Sevier River in Millard County averaged 0.05 mg/kg mercury with mercury concentrations ranging from 0.043-0.066 mg/kg in 2001. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

Mercury Concentrations in Fish  
In Utah 1990 - 2005

*City Creek 2001*

Three Brown Trout from the City Creek in Salt Lake County in 2001 averaged 0.04 mg/kg mercury with mercury concentrations ranging from 0.033-0.049 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Santa Clara River 2001*

Two Desert Suckers from the Santa Clara River near the town of Santa Clara in Washington County had mercury concentrations of 0.107 mg/kg and 0.110 mg/kg for an average of 0.11 mg/kg in 2001, below the 0.3 mg/kg level of concern.. Fish samples were analyzed as whole body.

*Range Creek 2002*

Three Brown Trout sampled from Range Creek in Carbon County averaged 0.02 mg/kg of mercury with a range of 0.016-0.028 mg/kg in 2002. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Sheep Creek, North Fork 2002*

Cutthroat Trout from the North Fork of Range Creek in Daggett County averaged 0.15 mg/kg of mercury with a range of 0.124-0.177 mg/kg in 2002. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Huntington Creek, Lower Fork 2002*

Three Brown Trout from the Lower Fork of Huntington Creek in Emery County had a mercury concentration average of 0.06 mg/kg with values ranging from 0.050-0.062 mg/kg in 2002. Two Cutthroat Trout samples averaged 0.05 mg/kg with individual concentrations of 0.049 mg/kg and 0.054 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Huntington Creek, North 2002*

Three Brown Trout from North Huntington Creek in Emery County had a mercury concentration average of 0.04 mg/kg with values ranging from 0.040-0.051 mg/kg in 2002. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Summit Creek 2002*

Rainbow Trout from Summit Creek in Iron County averaged 0.10 mg/kg mercury with values ranging from 0.064-0.149 mg/kg in 2002. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

Mercury Concentrations in Fish  
In Utah 1990 - 2005

*East Canyon Creek 2002*

Six Brown Trout from East Canyon Creek in Morgan County averaged 0.11 mg/kg mercury with values ranging from 0.081-0.142 mg/kg. Four Rainbow Trout samples had mercury values ranging from 0.088-0.225 mg/kg with an average of 0.12 mg/kg in 2002. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Sevier River 2002*

One Mountain Sucker sample from the Sevier River in Sanpete County had a mercury level of 0.139 mg/kg in 2002, below the 0.3 mg/kg level of concern.. Fish samples were analyzed as whole body.

*Fremont River 2002*

Brown Trout from the Fremont River in Sevier County had mercury concentrations ranging from 0.027-0.041 mg/kg with an average of 0.04 mg/kg in 2002. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Smiths Fork, East Fork 2002*

Three Brook Trout collected in 2002 from the East Fork of Smiths Fork in Summit County had an average mercury level of 0.06 mg/kg, ranging from 0.048-0.084 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Smiths Fork, West Fork 2002*

Four Brook Trout from the West Fork of Smiths Fork in Summit County averaged 0.06 mg/kg with a mercury concentration range of 0.048-0.103 mg/kg. One Mountain Whitefish sample had a mercury concentration of 0.160 mg/kg in 2002. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

*Green River 2002*

Three Channel Catfish from Desolation Canyon on the Green River in 2002 averaged 0.24 mg/kg mercury, ranging from 0.128-0.307 mg/kg. One Catfish exceeded the EPA screening value of 0.3 mg/kg mercury, the concentration in fish of public health concern. Smallmouth Bass averaged 0.14 mg/kg, ranging from 0.127-0.148 mg/kg. Three Common Carp had mercury values ranging from 0.110-0.114 mg/kg with an average of 0.11 mg/kg. Fish samples were analyzed as whole body.

Mercury Concentrations in Fish  
In Utah 1990 - 2005

*Strawberry River 2002*

Three Brown Trout from the Strawberry River in Wasatch County had an average mercury concentration of 0.04 mg/kg in 2002. Mercury values ranged from 0.018-0.051 mg/kg, all below the 0.3 mg/kg level of concern.. Fish samples were analyzed as whole body.

*Santa Clara River 2002*

Three Brown Trout from the Santa Clara River near the town of Veyo in Washington County in 2002 had an average mercury concentration of 0.06 mg/kg with individual samples ranging from 0.026-0.074 mg/kg. Largemouth Bass had mercury values of 0.087 mg/kg and 0.151 mg/kg with an average of 0.12 mg/kg. Three Desert Sucker samples averaged 0.06 mg/kg with values ranging from 0.042-0.070 mg/kg. All values were below the 0.3 mg/kg level of concern. Fish samples were analyzed as whole body.

**Lakes and Reservoirs**

*East Canyon Reservoir 1990*

In studying metal concentrations in the aquatic life in East Canyon Reservoir, four species of fish were collected in 1990 by the U.S. Bureau of Reclamation. Mercury levels were analyzed from composites of either whole body fish or edible tissue (fillet) (Table 10). Mercury levels ranged from 0.174-0.224 mg/kg in two whole body Kokanee with an average of 0.20 mg/kg. Three Trout whole body mercury levels ranged from 0.100-0.910 mg/kg, average of 0.39 mg/kg. Only one of the three whole body trout fish samples exceeded the EPA screening value of 0.3 mg/kg mercury, the concentration in fish of public health concern. Levels of mercury in two Sucker whole body samples ranged from 0.019-0.265 mg/kg with an average of 0.14 mg/kg. One sample of edible tissue from a Kokanee had a mercury level of 0.162 mg/kg. Edible tissue (fillet) from four trout ranged from 0.132-0.410 mg/kg mercury with an average concentration of 0.23 mg/kg. Only one of the four edible tissue trout samples exceeded the EPA screening value of 0.3 mg/kg mercury. Since only one trout exceeded the SV of 0,3 mg/kg, eating trout from East Canyon is an indeterminate public health hazard. Additional sampling of East Canyon Reservoir is needed to assess the public health significance of mercury concentrations in trout from this reservoir.

*Lake Powell 1991 - 1994*

The U.S. Fish and Wildlife Service conducted a reconnaissance study of trace elements in sediment and biota of Lake Powell during 1991 through 1994 (USFWS 1996). One of the objectives of that study was to determine the trace element concentration in fish for comparison with human health thresholds. Mercury was one of the metals analyzed in that study. Mercury concentrations were determined from fish fillets. Locations of the sample sites on Lake Powell are presented in Figure 2. Results for 1991-1994 data from Lake Powell are shown in Table 11.

Mercury Concentrations in Fish  
In Utah 1990 - 2005

*Bullfrog Bay*

Three Largemouth Bass were collected from Bullfrog Bay. Mercury levels in Largemouth Bass fillets ranged from 0.09-0.14 mg/kg with an average of 0.12 mg/kg; two Smallmouth Bass fillets averaged 0.13 mg/kg, ranging from 0.10-0.15 mg/kg; and three Striped Bass had an average mercury level of 0.14 mg/kg with a range from 0.06-0.26 mg/kg. All values were below the 0.3 mg/kg level of concern. Mercury concentrations were determined from fillets.

*Cha Canyon*

One Largemouth Bass was collected from Cha Canyon with a mercury level of 0.20 mg/kg; one Smallmouth Bass fillet with 0.17 mg/kg mercury; and two Striped Bass had an average mercury level of 0.51 mg/kg with a range from 0.12-0.89 mg/kg. The high value of the Striped Bass is above the EPA screening value of 0.3 mg/kg, the concentration in fish of public health concern. Mercury concentrations were determined from fillets. Since only one fish sample exceeded the SV of 0.3 mg/kg, the public health hazard from eating fish from Cha Canyon is indeterminate. Additional sampling is needed to assess the public health significance of mercury concentrations in fish in Cha Canyon.

*Colorado River*

Two Striped Bass were collected from the Colorado River with an average mercury level of 0.24 mg/kg with range of 0.16-0.32 mg/kg. The high value is above the EPA screening value of 0.3 mg/kg. Mercury concentrations were determined from fillets. Since the mean concentration was below the SV of 0.3 mg/kg and one fish sample exceeded the SV, the public health hazard from eating fish from this area of the Colorado River is indeterminate. Additional sampling is needed to assess the public health significance of mercury concentrations in Striped Bass from the Colorado River.

*Dangling Rope*

One Largemouth Bass was collected from Dangling Rope with a mercury level of 0.14 mg/kg. One Striped Bass was collected with a mercury level of 0.32 mg/kg, slightly above the EPA screening value of 0.3 mg/kg. Mercury concentrations were determined from fillets. Since only one Striped bass was sampled and exceeded the SV of 0.3 mg/kg, eating Striped Bass from Dangling Rope is an indeterminate public health hazard. Additional sampling is needed to assess the public health significance of mercury concentrations in Striped Bass from the Dangling Rope area of Lake Powell.

*Dirty Devil*

Two Largemouth Bass were collected from Dirty Devil with an average mercury concentration of 0.14 mg/kg, ranging from 0.07-0.20 mg/kg. One Striped Bass was collected with a mercury level of 0.41 mg/kg, above the EPA screening value of 0.3 mg/kg. Mercury concentrations were

Mercury Concentrations in Fish  
In Utah 1990 - 2005

determined from fillets. Since only one Striped bass was sampled and exceeded the SV of 0.3 mg/kg, the public health hazard from eating fish from Dirty Devil area of Lake Powell is indeterminate. Additional sampling is needed to assess the public health significance of mercury concentrations in Striped Bass from the Dirty Devil area of Lake Powell.

*Escalante Arm*

Two Largemouth Bass were collected from Escalante Arm with an average mercury concentration of 0.22 mg/kg, ranging from 0.11-0.32 mg/kg and two Striped Bass had an average mercury level of 0.53 mg/kg with a range of 0.33-0.73 mg/kg. The high value for Largemouth Bass, and both Striped Bass sampled were above the EPA screening value of 0.3 mg/kg. Mercury concentrations were determined from fillets. Due to the small sample size of Largemouth Bass and Striped Bass from the Escalante Arm, eating fish from the Escalante Arm of Lake Powell is an indeterminate public health hazard. Additional sampling is needed to assess the public health significance of mercury concentrations in fish from the Escalante Arm of Lake Powell.

*Good Hope Bay*

Two Smallmouth Bass were collected from Good Hope Bay with an average mercury concentration of 0.04 mg/kg, ranging from 0.02-0.06 mg/kg and two Striped Bass had an average mercury level of 0.06 mg/kg with both samples at 0.06 mg/kg. All values were below the 0.3 mg/kg level of concern. Mercury concentrations were determined from fillets.

*Hite Marina*

One Smallmouth Bass was collected from Hite Marina with a mercury concentration of 0.07 mg/kg, and one Striped Bass had a mercury level of 0.04 mg/kg. All values were below the 0.3 mg/kg level of concern. Mercury concentrations were determined from fillets.

*Narrow Canyon*

One Striped Bass was collected from Narrow Canyon with a mercury level of 0.27 mg/kg, below the 0.3 mg/kg level of concern.. Mercury concentrations were determined from fillets.

*Navajo Canyon*

Two Smallmouth Bass were collected from Navajo Canyon with an average mercury concentration of 0.14 mg/kg, ranging from 0.10-0.17 mg/kg and two Striped Bass had an average mercury level of 0.14 mg/kg with a range of 0.12 to 0.15 mg/kg. All values were below the 0.3 mg/kg level of concern. Mercury concentrations were determined from fillets.

Mercury Concentrations in Fish  
In Utah 1990 - 2005

*North Wash*

One Largemouth Bass was collected from North Wash with a mercury level of 0.12 mg/kg, below the 0.3 mg/kg level of concern.. Mercury concentrations were determined from fillets.

*Oak Canyon*

Two Largemouth Bass were collected from Oak Canyon with an average mercury concentration of 0.13 mg/kg, ranging from 0.10-0.15 mg/kg and one Striped Bass had a mercury level of 0.17 mg/kg. All values were below the 0.3 mg/kg level of concern. Mercury concentrations were determined from fillets.

*Wahweap*

Two Smallmouth Bass were collected from Wahweap with an average mercury concentration of 0.22 mg/kg, ranging from 0.13-0.31 mg/kg and one Striped Bass had a mercury level of 0.07 mg/kg. The high value of the Smallmouth Bass is slightly above the EPA screening value of 0.3 mg/kg. Mercury concentrations were determined from fillets. Since only one Smallmouth Bass sampled exceeded the SV of 0.3 mg/kg, the public health hazard from eating Smallmouth Bass from Wahweap is indeterminate. Additional sampling is needed to assess the public health significance of mercury concentrations in Smallmouth Bass from the Wahweap area of Lake Powell.

*Warm Creek*

Two Smallmouth Bass were collected from Warm Creek with an average mercury concentration of 0.16 mg/kg, ranging from 0.14-0.17 mg/kg and two Striped Bass had an average mercury level of 0.12 mg/kg with a range of 0.10 to 0.13 mg/kg. All values were below the 0.3 mg/kg level of concern. Mercury concentrations were determined from fillets.

*Zahn Bay*

One Largemouth Bass was collected from Zahn Bay. Mercury levels in the Largemouth Bass fillet was 0.12 mg/kg; two Smallmouth Bass fillets averaged 0.20 mg/kg, ranging from 0.13-0.27 mg/kg; and three Striped Bass had an average mercury level of 0.39 mg/kg, above the SV of 0.3 mg/kg, with a range from 0.23-0.54 mg/kg. Mercury concentrations were determined from fillets. Since only one Striped Bass sampled exceeded the SV of 0.3 mg/kg, the public health hazard from eating Striped Bass from Zahn Bay is indeterminate. Additional sampling is needed to assess the public health significance of mercury concentrations in Striped Bass from the Zahn Bay area of Lake Powell.

Mercury Concentrations in Fish  
In Utah 1990 - 2005

Jordanelle Reservoir 1995

During the spring of 1995, the U.S. Geological Survey collected Rainbow Trout from the Jordanelle Reservoir at several locations. Mercury levels were analyzed from composites of either whole body fish or eviscerated fish (Table 12). Samples were collected prior to the opening of the fishing season. Concentrations of mercury for whole body Rainbow Trout ranged from 0.076-0.247 mg/kg with an average mercury concentration of 0.16 mg/kg. Mercury levels in eviscerated fish ranged from 0.133-0.189 mg/kg for an average of 0.16 mg/kg. All values were below the 0.3 mg/kg level of concern.

National Fish Tissue Study 2000 - 2003

The Utah Department of Environmental Quality (UDEQ) is cooperating with the Environmental Protection Agency (EPA) in the *National Study of Chemical Residues in Lake Fish Tissue*. The National Fish Tissue Study is a survey of contamination in freshwater fish to estimate the national distribution of selected persistent, bioaccumulative and toxic chemicals in fish tissue from lakes and reservoirs of the contiguous United States (EPA 2004). The objectives of the study are to provide a national estimate of mean concentration of 268 chemicals in lake fish, define a national baseline to track progress of pollution control activities, and identify where contaminant levels are high enough to warrant further investigation. Fish were collected from 500 lakes and reservoirs randomly selected from the estimated 270,000 lakes and reservoirs in the lower 48 states. Gunlock Reservoir, Strawberry Reservoir, Utah Lake, Yuba Reservoir, and Cutler Reservoir were selected for sampling as part of this national study.

*Gunlock Reservoir*

Three Channel Catfish caught from Gunlock Reservoir in 2000 were homogenized (whole body, non-eviscerated) and analyzed as a composite. Mercury levels were 0.284 mg/kg for Channel Catfish. Five Largemouth Bass were collected from Gunlock Reservoir, filleted, and analyzed as a composite. Mercury was 0.324 mg/kg for Largemouth Bass, above the 0.3 mg/kg screening value established by EPA. The contaminant concentration is for the analyzed composite, not individual fish; therefore, the reported value is an average concentration of the contaminant concentrations of all fish in the composite. Since the composite sample of five Largemouth Bass exceeded the SV of 0.3 mg/kg, the level of mercury in Largemouth Bass from Gunlock Reservoir is at levels of public health concern. Additional sampling is needed to further characterize the public health significance of mercury concentrations in Largemouth Bass in this reservoir. Results are found in Table 13.

*Strawberry Reservoir*

Five Cutthroat Trout from Strawberry Reservoir in 2002 were filleted and analyzed as a composite. Mercury levels in Cutthroat Trout were 0.127 mg/kg. Three Utah Sucker fish from Strawberry Reservoir were homogenized (whole body, non-eviscerated) prior to chemical analysis. The mercury concentration in Utah Sucker was 0.041. The contaminant concentration is



































































