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Columbia Riverkeeper Fish Tissue Lab Results

Project: Is your Fish Toxic?

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Lab: **ALS | Environmental, Formerly Columbia Analytical Services, Inc.**

2014 Results:

SPECIES: Steelhead **LOCATION:** Cascade Locks **TYPE:** Whole fish

Pollutant	Result (wet weight)	units	Limit for unrestricted consumption	Source of limit value	Recommended consumption in meals per month
PCB	ND	ppm	<0.0015 ⁱ	EPA 2000	>16, Unrestricted
Arsenic**	0.4	ppm			
Cadmium	ND	ppm	<0.088 ⁱⁱ	EPA 2000	>16, Unrestricted
Mercury	0.091	ppm	<0.029 ⁱⁱⁱ	EPA 2000	8
Selenium	0.38	ppm	<1.5 ^{iv}	EPA 2000	>16, Unrestricted
Silver	ND	ppm	2.46	WA-DOH	>16, Unrestricted
Barium	0.07	ppm	98.3	WA-DOH	>16, Unrestricted
Chromium	ND	ppm	*		>16, Unrestricted
Copper	0.35	ppm	*		
Lead	ND	ppm	*		>16, Unrestricted
PBDEs	Not tested	ppm	0.042	WA-DOH	

SPECIES: Walleye (small) **LOCATION:** Mult. Channel **TYPE:** Whole fish

Pollutant	Result (wet weight)	units	Limit for unrestricted consumption	Source of limit value	Recommended consumption in meals per month
PCB	0.067	ppm	<0.0015 ^v	EPA 2000	0.5
Arsenic**	0.3	ppm			
Cadmium	ND	ppm	<0.088 ^{vi}	EPA 2000	>16, Unrestricted
Mercury	0.105	ppm	<0.029 ^{vii}	EPA 2000	8
Selenium	ND	ppm	<1.5 ^{viii}	EPA 2000	>16, Unrestricted
Silver	ND	ppm	2.46	WA-DOH	>16, Unrestricted
Barium	0.61	ppm	98.3	WA-DOH	>16, Unrestricted
Chromium	0.37	ppm	*		
Copper	0.32	ppm	*		
Lead	ND	ppm	*		>16, Unrestricted
PBDEs	Not tested	ppm	0.042	WA-DOH	

SPECIES: Walleye (large) **LOCATION:** Mult. Channel **TYPE:** Partial

Pollutant	Result (wet weight)	units	Limit for unrestricted consumption	Source of limit value	Recommended consumption in meals per month
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PCB	0.263	ppm	<0.0015 ^{ix}	EPA 2000	0
Arsenic**	0.4	ppm			
Cadmium	ND	ppm	<0.088 ^x	EPA 2000	>16, Unrestricted
Mercury	0.093	ppm	<0.029 ^{xi}	EPA 2000	8
Selenium	ND	ppm	<1.5 ^{xii}	EPA 2000	>16, Unrestricted
Silver	ND	ppm	2.46	WA-DOH	>16, Unrestricted
Barium	0.73	ppm	98.3	WA-DOH	>16, Unrestricted
Chromium	0.79	ppm	*		
Copper	0.63	ppm	*		
Lead	ND	ppm	*		>16, Unrestricted
PBDEs	Not tested	ppm	0.042	WA-DOH	

SPECIES: Shad 1 LOCATION: Below Bonneville Dam TYPE: Whole Fish

Pollutant	Result (wet weight)	units	Limit for unrestricted consumption	Source of limit value	Recommended consumption in meals per month
PCB	ND	ppm	<0.0015 ^{xiii}	EPA 2000	>16, Unrestricted
Arsenic**	2.4	ppm			
Cadmium	0.024	ppm	<0.088 ^{xiv}	EPA 2000	>16, Unrestricted
Mercury	0.019	ppm	<0.029 ^{xv}	EPA 2000	>16, Unrestricted
Selenium	2.1	ppm	<1.5 ^{xvi}	EPA 2000	16
Silver	ND	ppm	2.46	WA-DOH	>16, Unrestricted
Barium	0.098	ppm	98.3	WA-DOH	>16, Unrestricted
Chromium	ND	ppm	*		>16, Unrestricted
Copper	1.05	ppm	*		
Lead	ND	ppm	*		>16, Unrestricted
PBDEs	0.021	ppm	0.042	WA-DOH	

*Fish tissue limits for human health criteria unavailable

SPECIES: Shad 2 LOCATION: Below Bonneville Dam TYPE: Whole Fish

Pollutant	Result (wet weight)	units	Limit for unrestricted consumption	Source of limit value	Recommended consumption in meals per month
PCB	ND	ppm	<0.0015 ^{xvii}	EPA 2000	>16, Unrestricted
Arsenic**	2.2	ppm			
Cadmium	0.029	ppm	<0.088 ^{xviii}	EPA 2000	>16, Unrestricted
Mercury	0.016	ppm	<0.029 ^{xix}	EPA 2000	>16, Unrestricted
Selenium	1.8	ppm	<1.5 ^{xx}	EPA 2000	16
Silver	ND	ppm	2.46	WA-DOH	>16, Unrestricted
Barium	0.10	ppm	98.3	WA-DOH	>16, Unrestricted
Chromium	ND	ppm	*		>16, Unrestricted
Copper	0.99	ppm	*		
Lead	ND	ppm	*		>16, Unrestricted
PBDEs	Not tested	ppm	0.042	WA-DOH	

*Fish tissue limits for human health criteria unavailable

2013 Results:

SPECIES: Carp LOCATION: Vancouver Lake TYPE: Whole Fish

Pollutant	Result (wet weight)	units	Limit for unrestricted consumption	Source of limit value	Recommended consumption in meals per month
PCB	0.045	ppm	<0.0015 ^{xxi}	EPA 2000	1
Arsenic**	ND	ppm			>16, Unrestricted
Cadmium	0.16	ppm	<0.088 ^{xxii}	EPA 2000	16
Mercury	0.1025	ppm	<0.029 ^{xxiii}	EPA 2000	8
Selenium	0.375	ppm	<1.5 ^{xxiv}	EPA 2000	>16, Unrestricted
Silver	ND	ppm	2.46	WA-DOH	>16, Unrestricted
Barium	3.5	ppm	98.3	WA-DOH	
Chromium	0.3	ppm	*		
Copper	0.8	ppm	*		
Lead	0.1525	ppm	*		
PBDEs	0.00077	ppm	0.042	WA-DOH	

*Fish tissue limits for human health criteria unavailable

SPECIES: Catfish LOCATION: Columbia Slough TYPE: Whole Fish

Pollutant	Result (wet weight)	units	Limit for unrestricted consumption	Source of limit value	Recommended consumption in meals per month
PCB	0.109	ppm	<0.0015 ⁱ	EPA 2000	0
Arsenic**	ND	ppm			>16, Unrestricted
Cadmium	0.00795	ppm	<0.088 ⁱⁱⁱ	EPA 2000	>16, Unrestricted
Mercury	0.1007	ppm	<0.029 ^{iv}	EPA 2000	8
Selenium	0.3445	ppm	<1.5 ^v	EPA 2000	>16, Unrestricted
Silver	ND	ppm	2.46	WA-DOH	>16, Unrestricted
Barium	0.54855	ppm	98.3	WA-DOH	
Chromium	ND	ppm	*		>16, Unrestricted
Copper	0.0583	ppm	*		
Lead	0.01325	ppm	*		

*Fish tissue limits for human health criteria unavailable

2012 Results

SPECIES: Bass LOCATION: Bonneville Pool TYPE: Filet with skin

Pollutant	Result (wet weight)	units	Limit for unrestricted consumption	Source of limit value	Recommended consumption in meals per month
PCB	ND	ppm	<0.0015 ^{xxv}	EPA 2000	>16, Unrestricted
Arsenic**	0.241	ppm			
Cadmium	ND	ppm	<0.088 ^{xxvi}	EPA 2000	>16, Unrestricted
Mercury	0.12291	ppm	<0.029 ^{xxvii}	EPA 2000	4
Selenium	0.1446	ppm	<1.5 ^{xxviii}	EPA 2000	>16, Unrestricted
Silver	ND	ppm	2.46	WA-DOH	>16, Unrestricted

Barium	0.4097	ppm	98.3	WA-DOH	
Chromium	0.1205	ppm	*		
Copper	0.2651	ppm	*		
Lead	0.01446	ppm	*		

*Fish tissue limits for human health criteria unavailable

SPECIES: Sucker LOCATION: Columbia Slough TYPE: Whole Fish

Pollutant	Result (wet weight)	units	Limit for unrestricted consumption	Source of limit value	Recommended consumption in meals per month
PCB	0.410	ppm	<0.0015 ⁱ	EPA 2000	0
Arsenic**	0.2184	ppm			
Cadmium	0.01365	ppm	<0.088 ⁱⁱⁱ	EPA 2000	>16, Unrestricted
Mercury	0.07371	ppm	<0.029 ^{iv}	EPA 2000	12
Selenium	0.3822	ppm	<1.5 ^v	EPA 2000	>16, Unrestricted
Silver	ND	ppm	2.46	WA-DOH	>16, Unrestricted
Barium	2.08845	ppm	98.3	WA-DOH	
Chromium	0.7098	ppm	*		
Copper	0.7371	ppm	*		
Lead	0.09828	ppm	*		
PBDEs	0.1043	ppm	0.042	WA-DOH	

*Fish tissue limits for human health criteria unavailable

SPECIES: Sturgeon LOCATION: Estuary TYPE: Belly tissue with meat

Pollutant	Result (wet weight)	units	Limit for unrestricted consumption	Source of limit value	Recommended consumption in meals per month
PCB	0.111	ppm	<0.0015 ⁱ	EPA 2000	0
Arsenic**	0.5542	ppm			
Cadmium	ND	ppm	<0.088 ⁱⁱⁱ	EPA 2000	>16, Unrestricted
Mercury	0.05542	ppm	<0.029 ^{iv}	EPA 2000	16
Selenium	0.6846	ppm	<1.5 ^v	EPA 2000	>16, Unrestricted
Silver	ND	ppm	2.46	WA-DOH	>16, Unrestricted
Barium	0.3586	ppm	98.3	WA-DOH	
Chromium	0.0652	ppm	*		
Copper	0.31622	ppm	*		
Lead	ND	ppm	*		>16, Unrestricted

*Fish tissue limits for human health criteria unavailable

*Total Arsenic

ⁱ EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition p. 4-26*

PCB Chart p. 4-26 http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/risk/upload/2009_04_23_fish_advice_volume2_v2cover.pdf

ⁱⁱ EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition p. 4-4*

Cadmium Chart p. 4-4 http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/risk/upload/2009_04_23_fish_advice_volume2_v2cover.pdf

^{xx} EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition* p. 4-26
PCB Chart p. 4-26
http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/risk/upload/2009_04_23_fish_advice_volume2_v2cover.pdf

^{xxii} EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition* p. 4-4
Cadmium Chart p. 4-4 http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/risk/upload/2009_04_23_fish_advice_volume2_v2cover.pdf

^{xxiii} EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition* p. 4-5
Mercury Chart p. 4-5 http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/risk/upload/2009_04_23_fish_advice_volume2_v2cover.pdf

^{xxiv} EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition* p. 4-6
Selenium Chart p. 4-6 http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/risk/upload/2009_04_23_fish_advice_volume2_v2cover.pdf

^{xxv} EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition* p. 4-26
PCB Chart p. 4-26
http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/risk/upload/2009_04_23_fish_advice_volume2_v2cover.pdf

^{xxvii} EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition* p. 4-4
Cadmium Chart p. 4-4 http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/risk/upload/2009_04_23_fish_advice_volume2_v2cover.pdf

^{ssviii} EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition* p. 4-5
Mercury Chart p. 4-5 http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/risk/upload/2009_04_23_fish_advice_volume2_v2cover.pdf

^{xxix} EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition* p. 4-6
Selenium Chart p. 4-6 http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/risk/upload/2009_04_23_fish_advice_volume2_v2cover.pdf

^{xxx} EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition* p. 4-26
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^{xxxi} EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition* p. 4-4
Cadmium Chart p. 4-4 http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/risk/upload/2009_04_23_fish_advice_volume2_v2cover.pdf

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^{xxxiii} EPA 2000; *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2: Risk Assessment and Fish Consumption Limits Third Edition* p. 4-6
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