

JOHN SPELLMAN
Governor



STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504 • (206) 753-2353

September 7, 1984

Mr. Jeff Sher
Editorial Department
Spokane Spokesman Review
P.O. Box 2160
Spokane WA 99210

Dear Mr. Sher:

PCB's in fish taken from the Spokane River

Enclosed are the data you requested concerning ~~_____~~ by the U.S. Environmental Protection Agency (USEPA) and the Washington State Department of Ecology (WDOE). Included are:

- A table of PCB values from fish collected by WDOE under the Basic Water Monitoring Program (BWMP)
- A table of PCB values from fish collected by USEPA in 1978 and 1980 under their Toxics Survey Program
- A map showing fish collection sites
- A memorandum from Brad Hopkins to John Bernhardt with a summary of state-wide 1983 fish tissue collection results

I will point out that the values in the tables are in parts per billion (ug/Kg). In order to compare the edible portion tissue values to the Food and Drug Administration (FDA) criterion, values must be divided by 1,000; e.g., 369 ppb = 0.369 ppm; 5,250 ppb = 5.25 ppm, etc. The FDA criterion for PCBs in edible fish tissue was 5 ppm until May 1984 when it was lowered to 2 ppm.

If you have any further questions concerning these data, please do not hesitate to call John Bernhardt of WDOE (206) 753-2826. He has responsibility for much of the data presented here, and he would be the proper person to contact for any further information.

Sincerely,

Joe Joy

Joe Joy
Water Quality Investigations Section

JJ:cp

Enclosures

cc: Claude Sappington
Dick Cunningham
John Bernhardt
Bob Monn

Basic Water Monitoring Program tissue collections - ug/Kg (ppb) wet weight.

Location & Station No.	Collection Date	Organism	Tissue	Percent		PCB	Total
				Lipids	Solids		
Spokane River at Riverside St. Park 54A120	9/20/80	Squawfish	Whole	4	26	1254	1,200
	9/20/80	Largescala Sucker	Whole	0.4	21	1260	230
	8/04/81	Squawfish	Whole	12	34		160
	8/04/81	Largescala Sucker	Whole	5.2	31		160
	9/13/82	Bridgelip Sucker	Whole	[.67]	22[22.1]	200	300
	9/13/82	Bridgelip Sucker	GI11		(25)		500
	9/13/82	Northern Squawfish	Whole	[1.2]	26[25.7]	1,400	890
	9/13/82	Northern Squawfish	GI11		(25)		2,300
	8/31/83	Bridgelip Sucker	Edible	4.0	21.4	369	<10
	8/31/83	Bridgelip Sucker	Viscera	8.4	27.6	1,464	<10
	8/31/83	Bridgelip Sucker	Whole	5.3	23.3	697	<10
	8/31/83	Bridgelip Sucker	GI11		20.3		697
	8/31/83	Mountain Whitefish	Edible	8.6	36.0	226	<10
	8/31/83	Mountain Whitefish	Viscera	11.7	41.5	424	<10
	8/31/83	Mountain Whitefish	Whole	9.3	37.3	273	<10
	8/31/83	Mountain Whitefish	GI11		32.0		273
Spokane River at River Mile 87.4	9/01/83	Longnose Sucker	Whole	2.5	21.1	93	<10
	9/01/83	Longnose Sucker	Whole	5.8	22.3	36	<10
	9/01/83	Cutthroat Trout	Edible		[21.1]		36
	9/01/83	Cutthroat Trout	GI11		[21.1]		
Spokane River at River Mile 86.8	9/01/83	Longnose Sucker	Whole	3.2	21.3	270	<10
	9/01/83	Longnose Sucker	Whole		[21.3]		270

{ } = Percent solids estimated, not measured.
 [] = Percent solids from pesticide analyses.
 < = Less than.

EPA Toxic 1978, 1980 Tissue Collections

(tissue ug/Kg wet weight)

Location	Collection Date	Media	Portion	PCB				Total PCBs
				1242	1248	1254	1260	
Spokane River 0.5 mile above STP	9/78	Northern Squawfish	Whole	95	1,650	1,650	1,000	5,250
	4/80	Northern Squawfish	Whole		520	520		1,040
Spokane River at STP	9/78	Northern Squawfish	Whole		1,100	1,100		2,200
	4/80	Northern Squawfish	Whole		1,120	1,120		2,240
Spokane River 0.5 mile below STP	9/78	Northern Squawfish	Whole	270	250	250	250	1,020
	4/80	Northern Squawfish	Whole		310	310		610
Spokane River 1.5 miles below STP	9/78	Northern Squawfish	Whole	380	540	540	490	1,950
	4/80	Northern Squawfish	Whole		230	230		460

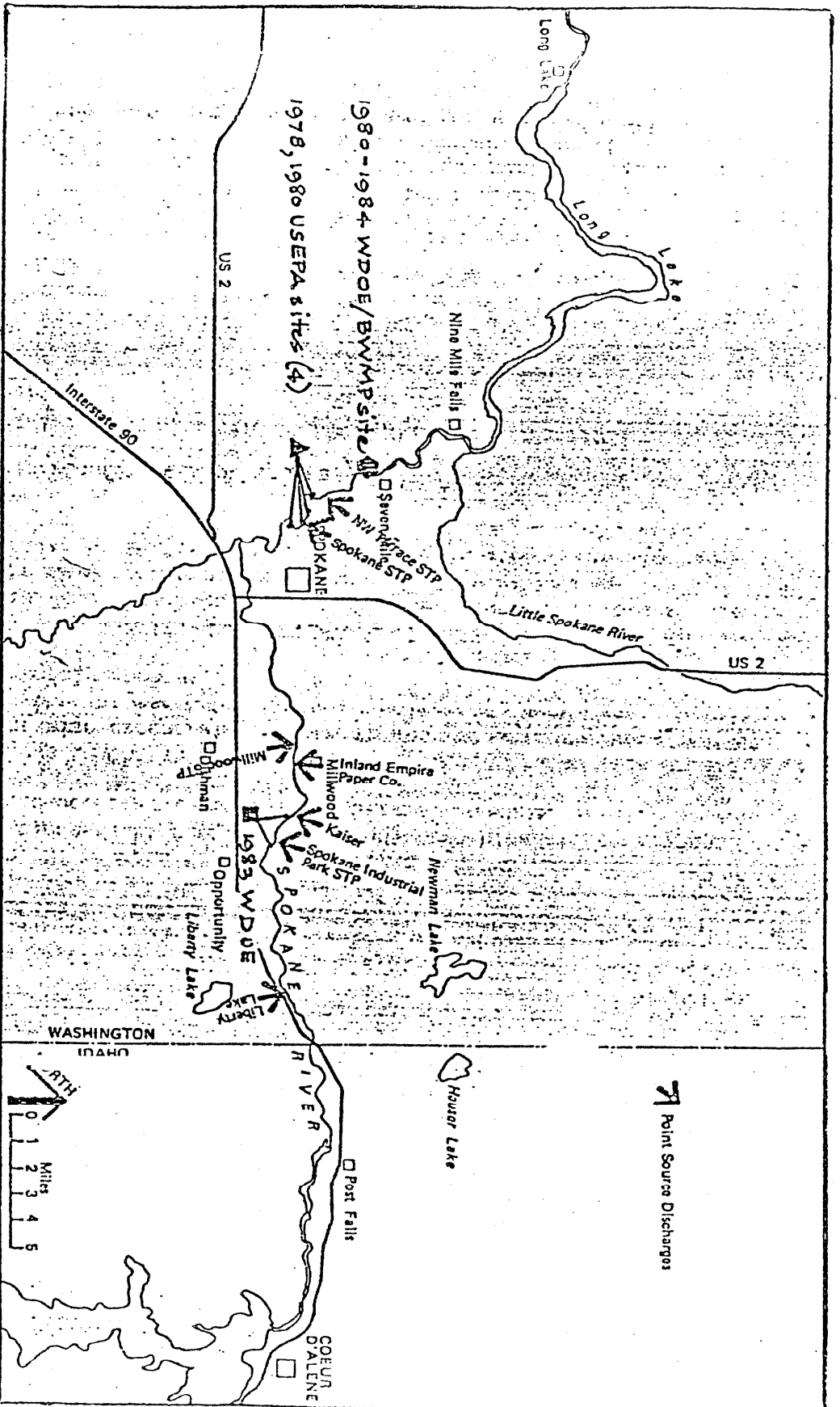


Figure 1. U.S. Environmental Protection Agency (USEPA) and Washington Department of Ecology (WDOE) fish tissue collection sites on the Spokane River.

- ◆ Basic Water Monitoring Program (BWMP) annual site
- ▲ USEPA special toxic survey sites
- ▣ WDOE Spokane Industrial Park Receiving Water Survey, 1983 (Bailey and Singleton, 1984)

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M E M O R A N D U M

July 3, 1984

To: John Bernhardt
From: Brad Hopkins *BH*
Subject: 1983 BWMP Fish Tissue Analysis

During the period between August 23 and September 1, 1983, twelve stations were sampled for fish with the use of an electroshocking boat. Of those fish collected, a representative grazer and a higher order predator were collected, whenever possible, for analysis at the EPA laboratory in Manchester, Washington. The parameters analyzed for and detection limits are given below in Table 1.

Table 1. Parametric coverage and detection limits for fish tissue samples collected during 1983 BWMP sampling program in Washington State.

Parameter	Detection Limits wet-weight based (ug/Kg)*	Part of Fish			
		Total	Edible	Viscera	Gills
aldrin	1.0	X	X	X	
dieldrin	1.0	X	X	X	
chlordane	1.0	X	X	X	
(alpha cis, gamma trans, dis nanachlor, trans nanachlor)					
DDT analogs	1.0	X	X	X	
hexachlorobenzene	1.0	X	X	X	
BHC isomers	1.0	X	X	X	
methoxychlor	1.0	X	X	X	
PCB compounds	1.0	X	X	X	
metals	**	X (some)			X

*Parts per billion.

**Detection limits vary depending on sample size. In our analysis no value approached detection limits.

Table 2 (attached) lists the top three sample stations for selected parameters (1983 wet-weight based only).

The FDA action levels in wet-weight edible portions for total DDT analogs, total PCB forms, and BHCs are given in Table 3.

Table 3. Action levels; wet-weight edible tissue¹.

Compound	Action Levels	
	ug/gm wet weight (ppm)	ug/Kg wet weight (ppb)
Total DDT & analogs	5	5000
Total PCB	5	5000
BHCs	1	1000

Table 2 addresses various parts of the fish; therefore, strict comparison with action levels cannot be made. Further, descriptions in parentheses may be detailed as follows:

- whole - weighted average of edible and viscera totals
- edible - skin and fillet
- gills - gill bar and lamelli (metals analysis only)
- viscera - everything not previously analyzed (including gill bar and lamelli, organic analysis only)

After reviewing the results of the 1983 analysis, stations or areas which should be considered for action or further sampling in 1984 were tentatively selected. These are listed below and as an initial step were listed in a technical memorandum dated June 4, 1984 entitled "Proposed 1984 BWMP Fish Tissue Sampling Sites." by Brad Hopkins.

- | | |
|--------------------------------------|-------------------------------------|
| 1. Skagit River at Concrete | 6. Yakima R. blw Birchfield Drain |
| 2. Green/Duwamish River at Allentown | 7. Wenatchee River at Wenatchee |
| 3. Palouse River at Hooper | 8. Lake Chelan Outlet Dam |
| 4. Columbia River at Vernita | 9. Okanogan River at Okanogan |
| 5. Yakima River 10 miles below Kiona | 10. Spokane R. at Riverside St. Pk. |

Because of the amount of data accumulated thus far (1979 to present), this is the last year these tables will be presented in the current form. In the future, only the year's current results will be provided. Historical data will be referenced as necessary to put current results into perspective.

BH:cp

Attachments

¹U.S. FDA "Administrative Guidelines" (Action Levels)*: Edible tissue memorandum dated October 14, 1982 by Bill Yake. ug/gm = parts per million

Table 2. Summary of 1983 BMAP fish tissue data ranking stations where the highest levels of selected parameters were observed (ug/Kg).

Parameter	Rank		
	1	2	3
DDT & Analogs	Yakima below Birchfield 5,071 (whole)	Yakima 10 miles below Kiona 2,989 (whole)	Lake Chelan Outlet Dam 1,839 (whole)
PCB (total)	Green/Duwamish at Allentown 1,600 (whole)	Spokane River at Riverside 1,464 (whole)	Yakima below Birchfield 606 (whole)
BHC (alpha)	Columbia River at Vernita 59 (whole)	Spokane River at Riverside 59 (whole)	Okanogan River at Okanogan 34 (whole)
<u>Metals</u>			
As	Hylebos Creek at Fife 350 (gill)	Spokane River at river mile 87.4 150 (whole)	Spokane River at river mile 86.8 130 (whole)
Cd	Spokane River at river mile 87.4 1,150 (gill)	Spokane River at river mile 86.8 429 (whole)	Spokane River at Riverside 310 (gill)
Cr	Skagit River at Concrete 520 (gill)	Green/Duwamish R. at Allentown 520 (gill)	Hylebos Creek at Fife 360 (gill)
Cu	Spokane River at river mile 86.8 7,590 (gill)	Spokane River at river mile 87.4 4,980 (edible)	Yakima below Birchfield 1,700 (gill)
Hg	Yakima below Birchfield 191 (gill)	Skagit River at Concrete 59 (gill)	Green/Duwamish at Allentown 44 (gill)
Pb	Spokane River at river mile 87.4 2,190 (whole)	Spokane River at Riverside 1,860 (gill)	Spokane River at river mile 86.4 1,320 (whole)
Zn	Spokane River at river mile 87.4 195,300 (gill)	Spokane River at river mile 86.4 61,600 (whole)	Lake Chelan Outlet Dam 35,000 (gill)