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British Columbia

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Mr. Wilbur G. Hallauer,
Director,
Department of Ecology,
Olympia, Washington. 98504

A small, handwritten mark or signature, possibly a stylized 'f' or a similar character, located to the right of the recipient's address.

Dear Mr. Hallauer:

Further to my letter of October 29, 1980,
I enclose for your information, data regarding mercury
concentrations detected in fish both above and below
Cominco operations at Trail, British Columbia.

Yours very truly,

A large, handwritten signature in cursive script, appearing to read 'B. E. Marr', written over a horizontal line.

B. E. Marr,
Deputy Minister of Environment.

encl.

MERCURY FOUND IN FISH MUSCLE TISSUE IN FISH TAKEN FROM

THE COLUMBIA RIVER NEAR THE OLD TRAIL BRIDGE, AUGUST 6, 1980.

(.8 km downstream of Cominco)

<u>SPECIES</u>	<u>Tag #</u>	<u>Lab #</u>	<u>Length(cm)</u>	<u>Mercury μg/g wet weight</u>		
				<u>Province</u>	<u>Federal</u>	
Rainbow	06367	012980 w	59.0	.17	.13	.17
Walley	06368	012999 w	36.5	.23		
M. Whitefish	06369	013000 w	37.0	.15		
M. Whitefish	06370	013001 w	36.5	.15		
M. Whitefish	06371	013002 w	35.5	.16		
M. Whitefish	06456	013009 w	26.5	.09		
Peanouth Chub	06372	013003 w	32.0	.27		
Peanouth Chub	06373	013004 w	29.5	.21		
Coarse Scale Sucker	06374	012981 w	50.0	.16	.17	.16
Coarse Scale Sucker	06375	013005 w	46.5	.11		
Coarse Scale Sucker	06451	012982 w	56.0	.16	.13	.13
Coarse Scale Sucker	06452	013006 w	44.0	.22		
Coarse Scale Sucker	06453	013007 w	51.5	.20		
Coarse Scale Sucker	06454	013008 w	40.0	.15		
Coarse Scale Sucker	06455	012983 w	46.5	.13	.12	.1

MERCURY FOUND IN FISH MUSCLE TISSUE IN FISH TAKEN FROM
 THE COLUMBIA RIVER NEAR BIRCHBANK, AUGUST 5, 1980.

(8 km upstream of Trail)

<u>SPECIES</u>	<u>Tag#</u>	<u>Lab#</u>	<u>Length(cm)</u>	<u>Mercury μg/g wet weight Province</u>	<u>Federal</u>
Mountain Whitefish	06351	012988 w	33.5	.10	
Mountain Whitefish	06352	012989 w	31.0	.09	
Mountain whitefish	06353	012990 w	20.5	.06	
Mountain whitefish	06355	012991 w	33.0	.21	
Mountain whitefish	06356	012976 w	41.5	.13	.12 .12
Mountain whitefish	06357	012992 w	23.0	< .05	
Mountain whitefish	06358	012977 w	37.5	.14	.12 .11
Mountain whitefish	06359	012993 w	33.5	.10	
Rainbow trout	06360	012994 w	20.0	< .05	
N. Squawfish	06361	012995 w	47.0	.79	
Coarse Scale Sucker	06362	012978 w	47.0	.21	.18 .11
Coarse Scale Sucker	06363	012996 w	43.5	.12	
Coarse Scale Sucker	06364	012979 w	52.5	.16	.14 .11
Coarse Scale Sucker	06365	012997 w	44.0	.16	
Coarse Scale Sucker	06366	012998 w	50.0	.15	

MERCURY FOUND IN FISH MUSCLE TISSUE IN FISH
 TAKEN FROM THE COLUMBIA RIVER NEAR WANETA

AUGUST 6, 1980 - (16 km downstream of Cominco)

<u>SPECIES</u>	<u>TAG #</u>	<u>LAB #</u>	<u>LENGTH (cm)</u>	<u>MERCURY ug/g wet weight</u>	
				<u>Province</u>	<u>Federal</u>
Walleye	06457	013010W	31.5	.25	
Walleye	06458	013011W	33.0	.16	
N. Squawfish	06459	013012W	28.0	.26	
N. Squawfish	06460	013013W	31.5	.24	
N. Squawfish	06463	013016W	32.5	.70	
N. Squawfish	06464	012984W	40.0	.86	.83 .75
Peamouth Chub	06461	013014W	30.0	.20	
Peamouth Chub	06462	013015W	29.5	.26	
Coarse Scale Sucker	06465	012985W	43.5	.19	.18 .18
Coarse Scale Sucker	06467	013018W	39.0	.09	
Coarse Scale Sucker	06468	012986W	45.5	.21	.19 .19
Coarse Scale Sucker	06469	012987W	44.5	.19	.16 .19
Coarse Scale Sucker	06466	013017W	42.5	.15	
Coarse Scale Sucker	06470	013019W	40.0	.11	
Kokanee	06471	013020W	23.0	.11	

COLUMBIA RIVER HISTORICAL DATA FOR MERCURY IN FISH MUSCLE TISSUE

(All results expressed as µg/g wet weight.)

1975 (March - April)

Obtained from Kootenay Air and Water Quality Study Phase I
Water Quality in Region 8. The Lower Columbia River Basin -
B.C. Ministry of the Environment August 1977.

Sampling Location - 3 miles below Cominco

<u>SPECIES</u>	<u>MEAN</u>	<u># OF VALUES</u>
Kokanee	.15	2
Rainbow Trout	.11	1 fish, 2 samples analyzed
Large Scale Sucker	.14	2 fish, 4 samples analyzed
Sculpin (whole fish)	<.05	1

1976 (July)

Obtained from Kootenay Air and Water Quality Study Phase II
Water Quality in the Lower Columbia River Basin. B.C.
Ministry of Environment 1979.

<u>SPECIES</u>	<u>LOWER ARROW LAKES</u>		<u>DOWNSTREAM FROM CANCEL</u>		<u>DOWNSTREAM FROM CC</u>	
	<u>Range</u>	<u>Mean(# of values)</u>	<u>Range</u>	<u>Mean(# of values)</u>	<u>Range</u>	<u>Mean(# of values)</u>
Coarse Scale Sucker	.18-.24	.22 (3)	.07-.13	.10(6)	.05-.20	.11(10)
Peamouth Chub	.13-.19	.15(3)			.10-.23	.15(5)
Rainbow Trout	.06-.14	.11(3)				<.05(1)
Kokanee	<.05	<.05(3)	.06-	.07(2)		.09(1)
Mountain Whitefish	.06-.08	.07(4)	.06-.08	.07(2)	.05-.10	.07(9)

COMPARISON OF MEAN VALUES FOR MERCURY IN FISH MUSCLE TISSUE TAKEN FROM THE COLUMBIA RIVER DOWNSTREAM OF COMINCO DISCHARGES IN 1975**, 1976**, and 1980.

(All results in µg/g Mercury on a wet weight basis.)

SPECIES	1975 MEAN (# of values)	1976 MEAN (# of values)	1980*	
			Waneta	Trail Bridge
Coarse Scale Sucker	.14(2)	.11(10)	.16(6)	.16(7)
Peamouth Chub		.15(5)	.23(2)	.24(2)
Rainbow Trout	.11(1)	<.05(1)		.16(5)
Kokanee	.15(2)	.09(1)	.11(1)	
Mountain Whitefish		.07(9)		.14(4)
Northern Squawfish			.52(4)	
Sculpin	<.05(1)			
Walleye			.20(2)	.23(1)

* 1980 means include samples donated by the public during April-May 1980 and samples obtained by the Federal and Provincial governments in August 1980.

** from Kootenay Air and Water Quality Study Phase I. Water Quality in Region 8. The Lower Columbia River Basin. B.C. Ministry of the Environment August 1977.

and

Kootenay Air and Water Quality Study Phase II. Water Quality in the Lower Columbia River Basin. B.C. Ministry of Environment April 1979.

BACKGROUND LEVELS FOR MERCURY IN FISH MUSCLE TISSUE AT VARIOUS LOCATIONS IN
BRITISH COLUMBIA

(All results in $\mu\text{g/g}$ wet weight.)

1. Baillie K. and Morrison, M.
Heavy Metal Values for Fish of Vancouver Island. Waste Management
Branch January 1977.

Alice Lake

Dolly Varden mean of 5. .05 $\mu\text{g/g}$ wet weight

Bensen Lake (Cominco Old Sport Mine discharged tailings August 1962- January 1973)

Dolly Varden & mean of 22. .05 $\mu\text{g/g}$ wet weight
Cutthroat

Conox Lake

Cutthroat, Dolly
Varden, Rainbow,
& Steelhead mean of 5. .03 $\mu\text{g/g}$ wet weight

Great Central Lake

Rainbow, Cutthroat,
Dolly Varden mean of 12. .03 $\mu\text{g/g}$ wet weight

Kennedy Lake

Peamouth Chub,
Bullfish mean of 29. .21 $\mu\text{g/g}$ wet weight

2. Sheehan, S.W., Ennis, G.L., and Fallam, R.L.
A Water Quality Study of the Flathead River Basin in B.C. Prior to
Proposed Coal Mining. Environment Canada July 1980.

Slimy Sculpins (*cottus cognatus*)
Flathead River Basin
(reported levels for whole fish) .02 - .05 $\mu\text{g/g}$ wet weight (25 samples).