



MEMORANDUM

NOTE DE SERVICE

TO: Regional Director,
N.W.T. Region.

ATTENTION: Dr. E.L. Fischer,
Dir. of Program Development

FROM: Dr. R.D.P. Eaton,
DE: ~~Director~~,
Northern Medical Research Unit.

SUBJECT: Mercury Programme, N.W.T., December, 1976
OBJET:

SECURITY - CLASSIFICATION - DE SÉCURITÉ
OUR FILE - N/RÉFÉRENCE
YOUR FILE - V/RÉFÉRENCE
DATE January 24, 1977.

Dr. Eaton was away throughout the month of December, 1976.
No new programmes were therefore developed from Edmonton.

Interviews were held in Ste. Anne de Bellevue with Dr. Heather Farmer, in an attempt to gain information on Vit. A levels in ringed seal liver (the attempt met no success) and with Dr. Thomas G. Smith of the Arctic Research establishment of the Canadian Fisheries and Marine Service to obtain information on the most appropriate source for seal liver.

Dr. Smith was interested in our project and undertook to obtain the seal liver for us in Holman Island, package it and ship it South via Yellowknife. He also undertook to have the analyses for Mercury done in the Fisheries laboratories in Winnipeg.

This assistance will be invaluable as the obtaining of the liver was the major problem as far as we were concerned. With this arrangement made it appears that the summer project should go smoothly. A veterinary student experienced with experimental cats has been identified and hiring arrangements are being made at present.

Results of hair analyses done on samples from Baker Lake, Fort Franklin, Igloolik, Tuktoyaktuk and Holman Island were received during December.

It appears that our results confirm the findings of Environmental Research Consultants of Vancouver that Tuktoyaktuk does in fact have the highest levels in hair of those settlements that have been sampled; with two out of twenty samples showing maximum hair levels above 40 p.p.m. One of these two is a female of childbearing age.

The presumed source of Mercury in Tuktoyaktuk is the Beluga whale. According to John Hnatiuk writing in the June, 1976 issue of "The Beaufort Seer" the annual harvest of Belugas, which mostly end up in Tuktoyaktuk is 150, which quantity would provide a large

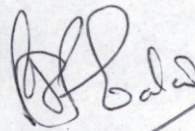
supply of meat and liver, and I am informed that both are eaten in present times.

Further investigations of dietary in Tuktoyaktuk are planned.

In other communities sampled the levels found, though high in some, were not found to be as high as we had been led to expect from previous work by our department, by E.R.C., and by the University of Manitoba. The inland communities of Fort Franklin and Baker Lake which are fish eating communities both showed moderately raised levels; Fort Franklin more than Baker Lake. Igloolik and Holman Island gave results comparable with Arctic Bay, to be expected in view of their similar dependence on seal.

A photocopy of a news item referring to a Federal release of Arctic Bay data is attached.

Other data has been forwarded with separate communications and is not duplicated here.

A handwritten signature in dark ink, appearing to read 'R.D.P. Eaton', with a long diagonal stroke extending from the bottom right of the signature.

R.D.P. Eaton, Ph.D., M.B., Ch.B.

RDPE/ms
Encl.

Toxic mercury found in Arctic natives

OTTAWA (CP) — Toxic mercury is reaching the bloodstreams of some Arctic residents, federal health department tests show.

Five people tested recently at the tiny Baffin Island community of Arctic Bay all had more than 20 parts per billion of mercury in their blood. Two of the five had levels above 50 — one 60 to 69 and one between 90 and 99.

Nine northern Quebec communities were tested and most revealed mercury levels in the normal range. However, at Mistassini, considered a mercury hot spot, 32 per cent of 461 people tested had levels of more than 20 ppb, 24 exceeded 50 and four topped 100.

The acceptable range for toxic mercury into human blood is 0-20 parts per million. The National Indian Brotherhood, which has a mercury research program, considers prolonged levels of more than 50 dangerous and higher than 100 critical.

Arctic Bay is one of Canada's northernmost settlements and its population of 350 consists mostly of Inuit who live off the land.

The tests results were contained in a report released yesterday by the health department.

The figures show the health department must begin serious research into mercury contamination in the far North, a brotherhood official said.

"What is of concern is that mercury and other pollutants are accumulating in the Arctic," he said.

It is believed the mercury

comes from eating seals, known to have high levels of the toxic substance.

High levels in humans at Arctic Bay may not be as worrisome as similar levels in the south because the seals also carry selenium, a heavy metal that reduces the harmful effects of mercury, said the official.

The department figures also show continuing mercury contamination in northwestern Ontario and Northern Quebec, areas where some natives are suspected of having Minamata disease — terminal mercury poisoning.

Tests at Grassy Narrows reserve, near Dryden, Ont., showed that more than half of 18 people checked had levels of more than 20 parts per billion while three had levels above 100.

At nearby Whitedog reserve, of the 90 people tested seven had levels of more than 20 ppb, three registered in excess of 80 and one more than 100.

The high levels in Ontario result from eating fish from the mercury-contaminated English-Wabigoon river system. The pollution, from the Reed Paper Ltd. mill at Dryden, was made public six years ago and has created economic, social and health problems on the reserves.

In 17 Manitoba locations most persons had normal levels. Results from God's Lake Narrows and God's River, however, showed a substantial number of natives with levels in the 20-50 ppb range.

mean,

I have just detected an error in my calculation of the Blood/Hair ratios on the Arctic Bay material. In the Right Hand column (A/c) I had by error repeated the A/B calculation for # 38 (fourth line down).

Following correction of the error reworking of the data brings the mean to 2.15 and the S.D. to .68

The same error appears in the first calculation on 18 residents. Here the correction results in a change of the mean to 2.26 and the S.D. to 0.64.

New copies of the reworked data are attached. Please destroy the originals.

Franks.

Joe

TABLE II

NO	BLOOD p.p.b. (A)	HAIR MEAN p.p.m. (B)	A/B	(C)	A/C
				HAIR p.p.m MAX.	
29	28.9	11.15	2.59	15	1.93
34	27.1	7.48	3.62	9.2	2.95
37	34.3	11.54	2.97	14.4	2.38
38	16.3	5.18	3.15	7.6	2.14
43	24.3	8.35	2.91	9.8	2.48
45	31.5	9.94	3.17	13	2.42
49	21.8	6.73	3.24	12	1.82
51	26.9	8.01	3.36	13	2.07
55	29.4	8.57	3.43	10.4	2.83
59	22.8	9.45	2.41	12	1.90
60	13.1	4.09	3.20	6	2.18
63	7.5	3.09	2.43	4.6	1.63
65	-	2.11	-	3.1	-
71	28.9	13.68	2.11	18.7	1.55
73	9.6	1.70	5.65	2.5	3.84
75	10.3	2.45	4.20	3.2	3.22
76	5.6	2.38	2.35	4.8	1.17
78	19.3	7.11	2.71	8.6	2.24
82	21.7	9.06	2.40	11.2	1.94
MEAN			3.11		2.26
S.D.			0.83		0.64

Comparison of Blood/hair levels of Mercury in 18 residents of Arctic Bay.

TABLE II

NO.	BLOOD p.p.b. (A)	HAIR MEAN p.p.m.(B)	A/B	HAIR MAX(C)	A/C
29	28.9	11.15	2.59	15	1.93
34	27.1	7.48	3.62	9.2	2.95
37	34.3	11.54	2.97	14.4	2.38
38	16.3	5.18	3.15	7.6	2.14
43	24.3	8.35	2.91	9.8	2.48
45	31.5	9.94	3.17	13	2.42
49	21.8	6.73	3.24	12	1.82
51	26.9	8.01	3.36	13	2.07
55	29.4	8.57	3.43	10.4	2.83
59	22.8	9.45	2.41	12	1.90
60	13.1	4.09	3.20	6	2.18
63	7.5	3.09	2.43	4.6	1.63
65	-	2.11	-	3.1	-
71	28.9	13.68	2.11	18.7	1.55
73	9.6	1.70	5.65	2.5	3.84
75	10.3	2.45	4.20	3.2	3.22
76	5.6	2.38	2.35	4.8	1.17
78	19.3	7.11	2.71	8.6	2.24
82	21.7	9.06	2.40	11.2	1.94
27	12.7	7.4	1.72	8.8	1.44
36	45	15.99	2.81	22.5	2.0
44	40.6	16.42	2.47	19.8	2.05
50	49.3	13.63	3.62	23.9	2.06
54	42.2	15.65	2.70	19.1	2.21
66	47.3	13.34	3.55	15.6	3.03
138	30.8	4.78	6.44	9.9	3.11
225	23.8	11.88	2.0	15.3	1.56
262	19.0	18.14	1.05	27.5	0.69
303	28.7	15.65	1.83	20.0	1.44
MEAN			3.0	MEAN. 2.15	
S.D.			1.10	S.D. 0.68	

Comparison of Blood/Hair levels of Mercury in 28 residents of Arctic Bay.