



850-5-12

P.A.

TO
À

Dr. L.M. Black,
Director General,
Program Management

FROM
DE

A/Coordinator,
Environmental Contaminants Program

SECURITY - CLASSIFICATION - DE SÉCURITÉ

OUR FILE - N/RÉFÉRENCE

YOUR FILE - V/RÉFÉRENCE

DATE

January 28, 1977

SUBJECT
OBJET

Mercury Program - Enquiries from N.D.P. Research Unit, 27th January, 1977

A request was made by Miss Mo Davies of the N.D.P. Research Unit to talk with me regarding certain details relating to releases and reports on arsenic in Yellowknife. The matter was cleared with the Deputy Minister's Office before replying.

Miss Davies had a number of questions relating particularly to the press release dated 3rd October, 1975 and the Schaefer Report which was attached. The answers to a number of the questions were discussed with Dr. D. Eaton of Northern Medical Unit, Camsell Hospital and with Mr. J.P. Farrant of the Occupational Health Laboratory, Ottawa, before being provided to Miss Davies. Questions and answers were as follows:

1. Apparent discrepancies in totals of individuals with raised urine levels of arsenic between the main press release document of 3rd October, 1975 and the attached Schaefer Report. The press release notes five individuals. From the details in the Schaefer Report, it is possible to arrive at totals of either 6 or 14. After clarification with Dr. Eaton, it was shown that the figure 5 related to a statement in page eight of the Schaefer Report, which notes that 5 of the individuals with raised hair levels also had raised urine levels. The total number of individuals with urine levels raised above 0.1 milligrams per 24 hours is 14. The table on page six of the Schaefer Report contains two errors of transcription. The final two columns should be entitled "urine" and the second of these columns should be headed "mean micrograms per 24 hours". The figure 6 which had also been mentioned, referred to this column and was therefore not relevant in context.

2. The reference for the statement that 0.7 to 1 milligram arsenic per 24 hours in urine does not constitute an undue hazard, was noted to be H.B. Elkins, Chemistry of Industrial Toxicology, published by John Wiley and Sons, New York, First Edition 1950, second edition, 1959. This remains the standard text. There was some discussion of the phrase "undue hazard". I pointed out that this meant what it said, whether one was talking about working environment or particular body levels of any substance. I suggested if Miss Davies wished for further discussion on this matter, she might like to contact the Health Protection Branch who are more directly involved in setting of standards.

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KS

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3. Normal urine arsenic levels were quoted as 15 to 60 micrograms per litre, as stated by Neal, Dreeson, et al., New United States, Public Health Bulletin No. 5, page 267, 1941. It was noted that these figures are still being quoted in major text books, such as, Harrison's Principles of Medicine. It was also pointed out that there appears to be considerable differences of opinion amongst experts regarding so-called normal levels of arsenic, both in urine and in hair. Many experts state that non-exposed individuals have levels in hair below 1 part per million. Five parts per million appears to be a generally accepted figure but some experts quote up to 15 parts per million as within normal limits.

4. The laboratory testing method used for estimating the arsenic levels in the hair and urine in 1975 was quoted as being the colorimetric method, also described as the silver di-ethyl - di-thio carbamate method which is the standard method for estimating arsenic. The estimations in 1975 were carried out by Bonder Clegg Associates, not by the Occupational Health Laboratory.

5. Miss Davies asked for figures on arsenic levels, urine volumes and urine collection times. Much of this information is already contained in the table on page six of the Schaefer Report, once the correct headings to the columns had been clarified. However, it was agreed that an attempt would be made to obtain the raw data with identification removed. Dr. Eaton is sending this data. The propriety for release needs to be reviewed with the coming into existence of the independent Task Force.

E. Stephenson
for Brian Wheatley



850-5-12

YELLOW

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A

Dr. L.M. Black,
Director General,
Program Management

FROM
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Environmental Contaminants Program

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E. Stephenson
for / Brian Wheatley



MEMORANDUM

NOTE DE SERVICE

850-5-12 P.A.

TO
A

Dr. B. Wheatley,
Senior Staff Medical Officer,
Program Management.

FROM
DE

Occupational Medicine Consultant,
Public Service Health,
Program Development.

SUBJECT
OBJET

ARSENIC - Normal Biological Levels

SECURITY-CLASSIFICATION - DE SECURITE

OUR FILE - N/RÉFÉRENCE

YOUR FILE - V/RÉFÉRENCE

DATE

January 28, 1977.

In reviewing the literature the following levels can be determined for supposedly unexposed persons.

Hair 0 - 15 ppm. Levels of 100 ppm or greater have been identified without any evidence of clinical diseases.

Urine 0 - 330 ppb. Browning quotes a paper by Pinto and McGill to the effect that evidence of systemic poisoning is rare at even 4,000 - 5,000 ppb.

Nails. This analysis relates only to cases 0 - 420 ppm.

Blood. A range of 200 - 1,000 ppb has been quoted for unexposed women.

Drills pharmacology gives a figure of 0 - 20 ppb.

A recent paper by Dr. Andrew L. Reeves, Wayne State University at the Arsenic Conference in Fort Lauderdale, Florida gives the following ranges for normal unexposed population;

Hair	0.5 - 2.00 ppm
Urine	10 - 330 ppb
Nails	0.5 - 5.50 ppm
Blood	100 - 500 ppb.

T.H. Patterson
T.H. Patterson

c.c.: Dr. F.H. Hicks

Al Cuon - VU
c.c. L.H. Black

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