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June 17, 1975

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Mr. C. R. Ross, P. Eng.  
Consultant, Occupational Environments  
Health and Welfare  
Medical Services Branch  
370 Catherine Street  
Ottawa, Ontario, Canada K1A-0L3

Dear Mr. Ross:

In response to your letter of June 11 requesting documentation for the TLV for ARSENIC, we are pleased to enclose a copy of the documentation for Arsenic Trioxide Handling and Use and one for Arsenic Trioxide Production.

The distinction of the separate industrial air standards was made on the basis that different types of exposure occur under different conditions of industrial operations, requiring, according to a new policy established by the Threshold Limits Committee, the tailoring of the industrial air standard (TLV) to the particular industrial operation.

This is in distinct contrast to the NIOSH recommendation for inorganic arsenic. NIOSH's Criteria Document on Inorganic Arsenic makes a blanket air standard for all inorganic compounds of arsenic, and, furthermore, is proposing in a document yet to appear, an unrealistically low level of  $2 \mu\text{g}/\text{m}^3$  as arsenic.

\* \* \*

Thank you for sending on the copy of your recent results of arsenic levels in the hair of residents in Yellowknife. They seem to bear out very well the degree of exposure of mine and mill workers vs. other residents of Yellowknife.

We might, however, offer a word of caution in the use of hair analyses as a measure of trace metal exposure, particularly in the case of arsenic, which, as you know, is a ubiquitous element occurring in many dietary items. In connection with this, we had occasion to analyze the nails of a number of our staff here some time ago for their arsenic contents. To everyone's surprise, the arsenic content of the nails of my wife was approximately 100 times the



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average of the workers in our facility here and that of mine was more than 130 times the average. Neither of us, to our knowledge, had any peculiar exposure to arsenic other than dietary, possible contributors being wines and seafood. On analyzing our nail specimens a few months later, the arsenic content had gone down respectively to 17 and 30 times normal. During this period and to date, we have been in perfect health these many years (my wife is a physician).

What we make of these fluctuating arsenic levels in dermal appendages is that unless the dietary intake of arsenic is uniform, all sorts of unexplained levels can occur, and urinary values are of no use as a measure of exposure unless a method is developed, which has not yet been done, to separate organically bound arsenic from inorganic arsenic.

Sincerely yours,

A handwritten signature in cursive script, reading "H. E. Stokinger".

Herbert E. Stokinger, Ph.D.

Chairman

Committee on Threshold Limits

2 Enclosures