



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

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NATIONAL CENTER FOR
URBAN AND INDUSTRIAL HEALTH
1616 BROADWAY
CINCINNATI, OHIO 45202

REFER TO:

Mr. L. V. Thatcher
Safety Engineer
Engineering Department
Chambers Works Construction
E. I. du Pont de Nemours & Company
Deepwater, New Jersey 08023

Dear Mr. Thatcher:

We have been concerned with the problem of measuring asbestos dust exposure since the beginning of our epidemiological study in 1964 and I am happy to give you our thoughts on the subject.

The present Threshold Limit Value of 5 mppcf is applicable to counts obtained by the standard light field impinger counting method. Briefly, this method uses a 10X objective to count dust collected in either a Greenburg-Smith or Midget impinger. Although the AIT procedure prefers the Greenburg-Smith, I believe that there is little difference between them. This method is the only one which may be used with reference to standards and codes based on the TLV. However, the impinger method calls for the counting of all dust, both grains and fibers, and thus gives an index of overall dustiness. The impinger is an inefficient fiber collector and the optical system used does not reveal the smaller fibers. In mixed dust environments, such as insulation, the counts will include many particles which are not asbestos.

To provide a more direct index of asbestos exposure, we have developed the membrane filter counting method described in the attached reprint. This method does collect and reveal fibers and provides our best method at present of estimating fiber concentration. Some other methods which have been used are magnesium analysis for chrysotile asbestos, X-ray diffraction and light scattering dust counters. All of these have their disadvantages and we still prefer the membrane filter method in our research despite the difficulties of dust counting.

Based on simultaneous samples taken in asbestos textile mills, we estimate that - 30 fibers longer than 5 μ per cc by membrane filter are about equivalent to the TLV of 5 mppcf by impinger. There is some question, however, about the safety of this TLV. The British, who use a similar fiber counting method, recommend a limit of below 2 fibers

126



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