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TO: Mr. John Hawkins March 15, 1974

SUBJECT: McGill Study of Asbestos Safety Garments

I am enclosing a copy of comments by John Nagenheimer on your memo to me of March 6 as well as some of my own.

I cannot agree with you that the research was poorly done and must point out that Dr. Gibbs, who is a member of Dr. Corbett McDonald's team at McGill University, has a worldwide reputation as an expert on the biological effects of asbestos. We were fortunate that his services were made available to us.

John Nagenheimer has commented at some length concerning the first point you raised relative to the use of the British procedure. As John noted, the NIOSH procedure does not call for fixing. Dr. Gibbs chose this procedure deliberately to avoid the possibility of migration of fibers while the membranes were being transported from Pittsburgh to the Laboratory in Montreal. Dr. Gibbs is a member of the Joint Aerosol Hazards Committee of the ACGIH and the AIH. He is considered to be an expert on the methods for evaluating airborne fiber. The relative merits of the different procedures have been debated in the Committee for some time. Dr. Gibbs chose the British method because it provided an added measure of safety.

I think John Nagenheimer's comments adequately cover the other points with the exception of the comment about Table VI. There was an erasure in the original document. John Nagenheimer received a carbon copy of the original which showed the correct figure of 12.3. You received a xerox copy of the original in which the erased digit "1" showed up. This error occurred in my office. My apologies.

I should like to point out that this investigation was initiated in part by requests from safety garment manufacturers for assurances that the use of asbestos containing safety garments posed absolutely no health hazard and that the use of such garments did not create conditions in violation of the OSHA standards on airborne concentrations. In addition a specific problem was encountered at U.S. Steel where union officials complained to management that the use of asbestos containing garments might cause lung cancer.

The McGill Study showed there are some problems we had not anticipated. However, it appears these problems can be solved either by special treatment of conventional fabrics, or the use of NOVATEX, or both. The information available to us should be used in a positive manner to give us a competitive advantage and to avoid any undesirable publicity that might result from testing programs conducted by others on asbestos containing protective clothing.

Please let me know if you have any questions.

CC: Dr. J. J. Nagenheimer
Dr. J. T. Trainor

John H. Marsh

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INTER ORGANIZATION COMMUNICATION

Raybestos-Manhattan

Advanced Research Laboratory

DIVISION and LOCATION

TO: J. H. Marsh - Dpt. DATE: March 12, 1974

SUBJECT: McGill Study of Asbestos Safety Garments
Ref.: J. Hawkins Memo to J. Marsh of 3/6/74

I would like to offer some comments concerning Dr. GIBB's report on Part I of the McGill Program and Mr. Hawkins memo.

I agree with John in that the report should be critically analyzed, and I think he has done a good job of picking out points in the report which are suspect. I am sorry he is disappointed with the report. After considering the specific question we wanted answered, i.e., "Can safety garments be a source of intolerable levels of asbestos dust for the workers wearing them?" and the difficulties involved in answering this question, I am pleased with the report. As far as R/M is concerned, Dr. Gibbs has answered our question in his conclusion which have been justified by experiments and he has recommended some possible means to solve the problem.

I would like to comment on some of John's points concerning the report.

1. British Procedure used:

   The differences between the British procedure and the NIOSH procedure are:

   a. The British fix their membrane sample with a chloroform solution of plexiglas (Perspex) as soon after taking as possible. NIOSH procedure does not call for fixing.

   b. The British dissolve the membrane filter in glycerol triacetate (Triacetin). NIOSH calls for the use of a 50/50 mixture of diethyl oxalate and dimethyl phthalate with viscosity increased by dissolving filters in the solution. Properly applied either technique works as well as the other.

   c. The British recommend a Patterson Kaywood reticle. NIOSH recommends a Porton reticle. The Patterson Kaywood reticle encompasses a larger field which makes the counting a little more difficult but the results more significsnt.

   In my opinion, the NIOSH and British technique both leave something to be desired, but they are essentially equivalent.

2. Conversations with people at U.S. Steel and Abest Products gave no leads as to the cloth used for the used coats. These coats, according to Mr. Peter Kovalek of U.S. Steel, could have come from a number of different sources. I did examine the coats and fabrics which in most cases were well worn, but I could not identify a source or a finish conclusively with my inexperienced eye. John is correct that Dr. Gibbs should have said "The coats and gloves appeared to be uncoated,...".

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3. Sampling Technique

It is essentially impossible to know how long the filter is under the hood without having a technician with safety clothing on next to each man being sampled. Even if the hoods were off most of the time - putting them on could only increase the counts.

After watching the sampling procedure, the area the men work in, the diversity of their job locations and the membrane filters, I have no doubt that the source of the asbestos dust is from the safety garments. References 2 and 3 do imply, with justification, that most of the dust would arise from the hoods.

4. R/M Treated Fabric was Dustier

Abest Products were instructed to make the garments out of R/M L-71-1173 fabric This was personally supervised by Mr. Weikart of Abest and shipped under special cover. I compared these suits to a sample of treated L-71-1173 and they appeared the same to me. Visually the cloth is clean. I also observed the sampling technique and recording procedure.

In my estimation, the samples were not crossed and 1173 was used.

5. High Counts at Plant 2

I was not at plant 2, but I have seen fabrics which I think could produce these high counts. The fabric is located very close to the breathing area and sampler which makes these high counts possible. The photomicrographs of the samples from plant 2 show this high fiber concentration.

6. Miscellaneous Areas

Table A-1 C_1 and C_2 are rounded off. C_3 was calculated from values before rounding off.

Table A-1 The British system for dates is day/month/year.

Table 6 My copy of the report read 12.3 not 112.3.

The report was submitted to R/M for internal use and not for publication. The report for publication would be significantly different in format and tabulation of data. I think John's comments could be helpful to Dr. Gibbs in preparing the report for publication. I also think that we should have the opportunity to review the paper before submission to a journal.

By this rebuttal I do not mean to imply that the report is without fault. Dr. Gibbs and I have discussed some other technical difficulties related to this and Part II of the program. However, the report substantiates the conclusion that asbestos safety garments expose workers wearing them to excessive levels of asbestos dust.

The use of greater surface coating could solve the problem if the coating does not

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increase flamability, does not change the hand of the fabric and does not wear off with age. However, a screening technique should be used to document the improvement.

John J. Magenheimer

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cc: J. T. Trainor

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