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Subject: Meeting Minutes - Fluorochemicals
Technical Review Committee

April 12, 1978

C O N F I D E N T I A L

THOSE PRESENT:

J. D. LaZerte	236-1
J. E. Long	220-2E
L. J. Magill	223-6SE
R. A. Nelson	218-3
R. E. Ober	218-2
R. A. Prokop	236-3B
A. L. Rosenthal	230-3
F. A. Ubel	220-2E

Those present met to discuss the following topics:

1. Notification of all chemical workers of the presence of fluorochemical blood levels in certain tested employees.
2. Medical examinations to date.
3. Epidemiological study of Chemolite chemical workers.
4. Future medical examination of chemical workers.

F. A. Ubel reviewed medical examinations of chemical workers which have been done thus far. Plant employees at Chemolite, Decatur and Cordova have been given physical examinations including a panel of blood chemistry tests. Those employees at Chemolite have had two such examinations. In these examinations, some abnormalities were detected; however, these were generally a result of non-work related diseases such as high blood fats, hypertension, diabetes, heavy smoking, etc. There did not appear to be any significant grouping of abnormalities. Results of the two Chemolite examinations are being subjected to a statistical analysis to see if there is any trend in the health of Chemolite employees between the two examinations. These results should be available soon.

Exhibit
2594

State of Minnesota v. 3M Co.,
Court File No. 27-CV-10-28862

3MA10066974

The question then arose as to whether 3M should notify chemical workers and the appropriate government agency that some 3M employees have trace amounts of fluorochemicals in their blood. Before making a recommendation on this subject, the Committee considered a number of factors which were pertinent to the question. These factors are included in the following paragraphs.

Recent animal studies have shown that FC-95 is more toxic than was previously believed. Some chemical workers are exposed to this material and are known to have FC-95 in their blood. It was suggested that this information might constitute a substantial risk under the Toxic Substances Control Act. However, during the discussion it was pointed out that FC-95 is present in some employees blood in trace amounts and there is no evidence of ill effects from its presence. Furthermore, the fact that FC-95 is toxic in animals gives no indication that it is harmful at trace levels in man. The committee, therefore, decided that the currently available information on the toxicity of FC-95 in animals did not constitute a substantial risk under the Toxic Substances Control Act.

The problem of employee exposure to fluorochemicals was discussed. Due to the multiplicity of operations at our plants, there is difficulty in identifying the routes by which fluorochemicals enter the blood. In view of this, the committee considered it of prime importance that exposure to all fluorochemicals be held to an absolute minimum in all factory operations. It was suggested that some method of monitoring employees for fluorochemical exposure should be developed in order to determine if methods for minimizing exposure are effective. A possible way of doing this would be an analysis for amounts of fluorochemical in the urine of employees. The committee recommended that this be investigated. The committee also felt that the status of what is being done to minimize employee exposure to fluorochemicals is unclear and that R. L. Ahlness and C. W. Hanson should be invited to appear before the committee with a status report.

It was pointed out that NIOSH is requesting information on fluorocarbons for use in developing recommended standards for workplace exposure. The requested information will include levels of fluorocarbons or metabolites which may be present in man without his suffering ill effects, and effects of fluorocarbons on the circulatory, respiratory, urinary and nervous systems. Information on analytical methods for determining the amount of fluorocarbons in man is also being requested. The committee felt that NIOSH would be contacting 3M with a request for this information in the near future.

The possible carcinogenicity of fluorochemicals was discussed. FC-95, FC-143 and FM-3422 have been submitted for Ames testing. Results were negative. Some doubt was expressed as to the value of the Ames test. It was suggested that the Syrian Hamster Cell Transformation and the Mouse Lymphoma Tests are

more meaningful screening procedures. However, at present data are not sufficient to establish the test procedures as predictive for carcinogenic risk in man. Since there are no currently accepted short term screens for carcinogenicity, it will likely be necessary to assess the carcinogenic potential of FC-95, FC-143 and FM-3422 in long term rodent tests.

The possibility of doing an epidemiology study on 3M employees who are exposed to fluorochemicals was discussed. B. F. McDonagh, a Riker biostatistician has been consulted to determine if such a study would be reliable. In his opinion, it would be difficult. We have no records of fluorochemical exposure and employees have been exposed to a variety of fluorochemicals. Information gathering would be very difficult. McDonagh further felt that an epidemiologist would want to investigate to determine if such a study were feasible. If feasible, such a study would likely have to include all chemical workers.

After discussion, the committee recommended retaining an epidemiologist from outside 3M. The epidemiologist should determine the feasibility of carrying out a study which would give reliable information concerning the effects of fluorochemical exposure on the health of chemical workers.

The committee again discussed whether chemical workers and the appropriate government agencies should be informed that some 3M employees have trace amounts of fluorochemicals in their blood. After discussion, the committee recommended the following:

1. As defined in EPA's published guidelines pertaining to the Toxic Substances Control Act, there is no evidence from animal or human health studies that trace levels of fluorochemicals in blood are harmful. Therefore notification of a government agency is not necessary at the present time. However notification should be reconsidered when complete results of the 90 day animal studies on FC-95, FM-3422 and FC-143 are known.
2. More information should be available before considering when to inform chemical workers. Workers should be informed when (a) results of 90 day animal studies on FC-95, FM-3422 and FC-143 are known, (b) recommendations of an epidemiologist are made, (c) statistical evaluation of employee health is complete, (d) detailed plans for minimizing exposure to fluorochemicals are complete, and (e) when the committee completes a detailed action plan for all other work related to trace fluorochemicals in blood.

The committee then discussed what subjects should be considered at the next meeting. It was decided that R. L. Ahlness and H. E. Freier should be invited to appear before the committee. R. L. Ahlness will be asked to give a status report on the measures being taken to reduce worker exposure to fluorochemicals. H. E. Freier will be asked to give a status report on analytical methods for determining trace fluorochemicals in blood and tissue.



R. A. Prokop

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