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*file
on asbestos
study*

Proposal for Study of Refinery Workers
Exposed to Asbestos

H. A. Sinclair, M.D.
Medical Director
Mobile Oil Corporation
150 East 42nd Street
New York, NY 10017

Dear Dr. Sinclair:

I have reviewed the enclosed and it is my feeling that the Disher proposal is far too vague and too expensive, and in addition I am not sure where he could find 3000 workers definitely exposed to asbestos. I believe the Tabershaw-Cooper Study would be more in line with what API would be interested in.

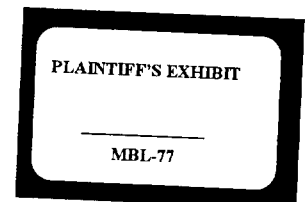
Inasmuch as we are doing a similar study in our own refineries, which is almost parallel to what Tabershaw-Cooper recommend, and also in view of the fact that our Richmond Refinery was involved in both the mortality and morbidity studies, which were done recently by Tabershaw-Cooper, I doubt if our management would agree to participate in this study. I am sure that when we finish our own study, Tabershaw-Cooper would be welcome to a copy of the results.

Sincerely yours,

Gordon Richmond
G. W. Richmond, M.D.

GWR:gs
Enclosure

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PROPOSAL FOR A STUDY
OF REFINERY WORKERS EXPOSED TO ASBESTOS

INTRODUCTION

There is ample documentation to show that many workers exposed to insulating materials develop pneumoconiosis and that they have a high incidence of lung cancer and other neoplasms associated with the inhalation of asbestos (Leathart et al; Selikoff; Cooper and Balzer; Tabershaw, Cooper and Balzer). Balzer and Cooper included workers engaged in refinery construction in their studies of the levels of exposure to asbestos. Both asbestosis and malignancies may not appear until many years after brief but heavy exposures.

For these and other reasons, we think it is prudent for refineries to define their worker populations who are potentially exposed to asbestos and to determine whether or not there is any evidence of asbestos-related disease in those who have been exposed. Useful information may be forthcoming to some extent from the American Petroleum Institute (API) long-term mortality study. Negative information from the mortality study may not be conclusive, however, in view of the dilution of asbestos-exposed workers by a large population that was not exposed, i.e., those actually exposed to asbestos are not identifiable.

TABERSHAW/COOPER METHODOLOGY

We feel that a practical approach would be to perform a cross-sectional survey of individuals who are directly exposed to asbestos, and others indirectly exposed (i.e., in jobs that require them to work in areas near those where asbestos work is going on), to determine the prevalence of changes indicative or suggestive of asbestosis. Our review of chest films of insulating workers in the San Francisco areas shows clearly (See Table) that many exhibit positive findings.

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Table Analysis of Chest X-ray Films

Period of Entering Trade	No. Available for X-ray Films	No. Having X-ray Film(s)	No. with Definite Changes Consistent with Asbestosis	
			No.	%
1906-1910	0	0	0	0
1911-1915	2	2	2	100
1916-1920	8	5	5	100
1921-1925	7	3	2	67
1926-1930	19	13	8	62
1931-1935	17	13	6	46
1936-1940	49	41	17	41
1941-1945	117	101	33	33
1946-1950	61	47	12	26
1951-1955	69	57	5	9
1956-1960	74	55	2	4
1961-1965	57	49	1	2
Total	480	386	93	24

The absence of such findings would be very reassuring to the individual firm as well as to the industry. A cross-sectional survey would provide information which would indicate whether or not a problem exists, and would also define a population which could be the subject of ongoing follow-up, without the need of plant identification. The plan for such a study is detailed in the following paragraphs.

STUDY PLAN

The survey logically falls into five phases:

- I. Definition of the population to be studied;
- II. Development of detailed instructions and forms for use by participants;
- III. Performance of examinations and tests;
- IV. Interpretation of tests and analysis of data; and,

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V. Preparation of final report.

PHASE I. DEFINITION OF THE POPULATION TO BE STUDIED

A. Planning Meeting

After authorization to proceed, members of the Tabershaw/Cooper Associates, Inc. (TCA) project team would meet in a mutually agreed upon location with representatives of participating plants. We anticipate that five (5) plants will be involved, representing approximately 3,000 employees. The purpose of the planning meeting will be to:

- (1) Establish lines of communication and coordination;
- (2) Discuss the format and content of a questionnaire to be completed at each plant.
- (3) Agree upon a schedule for information flow, plant visits by TCA personnel and all other major milestones.

B. Environmental Information

As part of the information required for the study, each participating plant would inform TCA (in a prescribed format) of those plant areas regarded as potentially hazardous; provide quantitative measurements of airborne asbestos (if available); describe the use of materials containing chrysotile and amosite; and, estimate the degree to which there has been recent substitution of fibrous glass or mineral wool for asbestos insulation. Other environmental data, as appropriate, also may be requested from the plants.

C. Listing of Population

In addition to the environmental data, each plant would provide TCA with:

1. The names of all employees currently engaged in the application, repair or removal of insulating materials including sprayed asbestos materials; and,
2. The names of all employees who work in areas where the above cited operations are performed.

3. For all employees identified above, a brief history including date of birth, date of hire, date(s) when possible exposure to asbestos began or ended.

PHASE II. DEVELOPMENT OF INSTRUCTIONS AND FORMS

Given the complete and accurate listing of personnel, TCA will develop standard forms for medical history, physical examination, and laboratory reports on each person. This will assure comparable data and results for the populations at each refinery. The forms will include:

- (1) Detailed occupational history;
- (2) Standardized smoking history;
- (3) Standardized history for dyspnea;
- (4) Examination of lungs with special attention to evidence of rales and thickening of pleura;
- (5) Uniform examination for clubbing of fingers;
- (6) Pulmonary ventilatory tests to determine forced vital capacity and forced expiratory ventilation;
- (7) Chest roentgenograms by techniques designed for maximum detection of early pneumoconiosis; and,
- (8) Use of UICC/Cincinnati classification system films.

So as to assure further the uniformity and comparability of results, staff members of TCA will visit each plant site to discuss methodologies with the medical department. This will include, for instance, instructions on the use of the forms, discussions about the quality of radiography, preview of examinations procedures and the like.

PHASE III. PERFORMANCE OF EXAMINATIONS AND TESTS

There are two logical alternative methods for performing the actual physical examinations and tests on the population. The first, and the one we recommend, would be for each local refinery, in its own medical department, or by arrangement with local physicians and laboratories,

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to accomplish the tasks. The use of TCA forms and instructions would provide uniformity of results. The medical data would then be forwarded to TCA medical personnel for interpretation and inclusion in the final report. The second method would be for staff members of TCA to visit each refinery and carry out part or all of the examination. This method might increase somewhat the uniformity of results but would be considerably more costly. In our schedule and cost section, we have assumed the first method as being acceptable to all parties.

PHASE IV. INTERPRETATIONS OF TESTS AND ANALYSIS OF DATA

Tabershaw/Cooper Associates, Inc. would interpret all chest films. As part of this service, interpretations (without knowledge of exposures) would be made by a radiologist identified with the development of the UICC/Cincinnati classification and major consultant to NIOSH.

All information would then be analyzed and employees would be grouped by age, length, and intensity of potential exposures to asbestos. These characteristics would be correlated with x-ray classifications and pulmonary function results, as well as physical findings and symptoms. From these results it would be possible to determine how the groups compare internally and how they compare with other populations who have had asbestos exposures.

PHASE V. PREPARATION OF FINAL REPORT

At the conclusion of the study, a first draft of a report would be prepared for review by representatives of the participating plants. Following such review, the report will be finalized and thirty copies made available to the review committee. The report will include the following:

- (1) Background discussion;
- (2) Copies of procedures, instructions, the questionnaire, forms etc.;
- (3) Tables summarizing the data;
- (4) Discussion of conclusions reached by the analysis; and
- (5) Recommendations as to the number of individuals needing specialized periodic followup and the nature of such followup action.

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TCA PERSONNEL

This project would be under the direction of Dr. W. Clark Cooper and would include the support of our professional staff such as board certified physicians, registered nurse, statistician and epidemiologists. Resumes of all personnel, and the background of TCA, are included for your information.

SCHEDULE AND COST

We think the study can be completed within twelve (12) months from the date of authorization to proceed. Our estimate for the timing of each phase is as follows:

Phase I	3 months
Phase II	2 months
Phase III	4 months
Phase IV	1.5 months
Phase V	1.5 months

This requires timely action on the part of TCA and the participating plants. To assure milestone definition, a detailed schedule will be established at the Phase I planning meeting.

Our price for the complete study is \$71,325. This includes professional labor, travel, x-ray interpretation and all other costs associated with the completion of the project.

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