

EAST TEXAS TUBERCULOSIS HOSPITAL

BOX 2003 TYLER 75701



A UNIT OF THE
TEXAS STATE DEPARTMENT OF HEALTH

February 3, 1967

Lee B. Grant, M. D.
Medical Director
Pittsburgh Plate Glass Company
One Gateway Center
Pittsburgh, Pennsylvania 15222

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Dear Dr. Grant:

Enclosed you will find a request for Grant-In-Aid, Protocol and related information on the proposed asbestosis survey.

The budget figure was computed in the following manner: supplies and telephone - \$210, radiographs and pulmonary function tests on 52 workers - \$1040, professional services; physicians, technicians and secretarial assistance - \$2250, administrative overhead - \$700 making a total of \$4200. All of us involved in this project are already salaried employees. We propose, therefore, to use the majority of this money to purchase equipment for our Pulmonary Function Laboratory.

The references to tuberculosis were inserted at the suggestion of our Central Office in Austin in order to obviate any possible objection from legislators.

After we receive your approval of this project, we will proceed to get a Collins single breath carbon monoxide diffusion apparatus and perfect our technique (with the supervision of Dr. Cushing). It would probably be mid April or the first of May before we are ready to begin the project and we would hope to finish it as soon as possible. Any suggestions or comments that you might have would be appreciated.

Sincerely yours,

George A. Hurst

George A. Hurst, M. D.
Clinical Director

GAH:vp
enc.

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REQUEST FOR GRANT-IN-AID TO:

Pittsburgh Plate Glass Company
One Gateway Center
Pittsburgh, Pennsylvania 15222
Attention: Lee B. Grant, M. D.

TITLE: Clinical and Laboratory Evaluation of Workers Exposed to Asbestos
fibers

BUDGET REQUESTED: \$4200

PRINCIPAL INVESTIGATOR: George A. Hurst, M. D.
Clinical Director
East Texas Tuberculosis Hospital
Box 2003
Tyler, Texas

Fred H. Y. Liu, M. D.
Box 2003
Tyler, Texas

Ivan Cushing, M. D.
Box 2003
Tyler, Texas

CHECK TO BE MADE TO:

East Texas Tuberculosis Hospital

CHECK TO BE SENT TO:

Sam Topperman, M. D.
Superintendent
East Texas Tuberculosis Hospital
Box 2003
Tyler, Texas

AIM OF PROPOSAL:

This project is designed to assess the extent and degree of pulmonary involvement in workers exposed to low concentrations of amosite, an asbestos fiber. Observations will also be made concerning any recognizable relationship between the inhalation of asbestos fiber and pulmonary tuberculosis.

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METHOD OF PROCEDURE: See attached protocol and forms

BUDGET: See letter

AGREEMENT: Pittsburgh Plate Glass Company agrees to pay \$4200 to East Texas Tuberculosis Hospital for the conduct of this investigation and stipulates, as donor, that these grant funds are to be used solely at the discretion of the Superintendent of the East Texas Tuberculosis Hospital in the support of any expense which he deems necessary in connection with the research program at the East Texas Tuberculosis Hospital.

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George A. Hurst, M.D.
George A. Hurst, M. D.
Clinical Director

Sam Topperman, M.D.
Sam Topperman, M. D.
Superintendent

Lee B. Grant, M. D.
Lee B. Grant, M. D.
Medical Director
Pittsburgh Plate Glass Co.

Robert B. Skinner, M. D.
Robert B. Skinner, M. D.
Director, Tuberculosis Hospitals

Albert C. Randall, M. D.
Albert C. Randall, M. D.
Director, Tuberculosis Control
Division

James E. Peavy, M. D.
James E. Peavy, M. D.
Commissioner of Health

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PROTOCOL

CLINICAL AND LABORATORY EVALUATION OF WORKERS
EXPOSED TO ASBESTOS FIBERS

BACKGROUND: Inhalation of dust containing asbestos fibers may cause a crippling form of pulmonary fibrosis which usually does not appear until many years after initial exposure. (1) Amosite is mined in South Africa. These fibers, with a mean diameter of 0.5 micron, are larger than Canadian asbestos fibers and tend to settle out more rapidly from the atmosphere.

The diagnosis can be suspected when history of exposure is associated with one or more of the following: a) abnormal pulmonary function studies, specifically reduction in pulmonary diffusing capacity. (1,2) This is the hallmark of asbestosis and often precedes definite changes in the radiograph or discernible physical signs, b) radiographic changes consisting of fine diffuse mottling in both bases, c) physical signs such as crepitant rales, clubbing and labored breathing. The last 2 signs occur late in the disease. Although the relationship of asbestosis and tuberculosis has not been emphasized, this project will investigate any potential co-existence of these 2 conditions.

METHODS OF PROCEDURE: Approximately 52 workers exposed to amosite fibers in a pipe insulation manufacturing firm* will be studied at the East Texas Tuberculosis Hospital. Each employee will be administered a questionnaire on respiratory symptoms (Form I) by one of the investigators. This questionnaire was used by Ferris and Anderson in a survey of chronic respiratory disease in a New Hampshire town. (3) It is similar to questionnaires used extensively in Great Britain. (4,5) A brief physical will be done and findings recorded in the first part of Form II.

Sputum Cytology

The following laboratory tests will be done and recorded in the appropriate place on Form II. The forced vital capacity (FVC) and the 0.5 second and 1 second forced expiratory volume (FEV) will be calculated from spiograms obtained with the Stead Wells Spirometer. The mean of 3 tracings will be utilized and volumes will be corrected to body temperature and pressure saturated (BTPS). Nomogram for predicting FVC and FEV will be taken from the Veterans Administration-Army Cooperative Study of Pulmonary Function by Kory, Callahan, Boren and Syner. (6)

The MNC will be performed utilizing the Stead Wells Spirometer. The mean of 3 tests which should check within 5 liters will be recorded. The prediction formula will be calculated according to the method of Motley. (7)

The residual volume will be determined by the helium closed circuit method utilizing the Collins helium residual volume apparatus and single breath carbon monoxide diffusing capacity unit with a 13.5 liter respirometer. This method has been described by Motley. (8)

The single breath carbon monoxide diffusing capacity will be done with the above mentioned apparatus by the method of Consolazio, Johnson and Pecora. (9)

Arterial pO_2 , pH and pCO_2 , before and after exercise will be done only in those cases which show low diffusing capacity. Radiometer ABE equipment with a Clarke electrode will be employed in the above named determinations.

Antero posterior and lateral radiographs of the chest will be taken and read by 2 of the investigators independently. Comparison will be made with earlier pre-employment films.

* Pittsburgh-Corning Corporation, Owentown, Texas

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BIBLIOGRAPHY

- (1) Williams, R., and Hugh-Jones, P.: The Significance of lung function changes in asbestosis, Thorax, 1960, 15, 109.
- (2) Thomson, M. L. and McGrath, M. W., Smither, W. J., Shepherd, J.M.: Some anomalies in the measurement of pulmonary diffusion in asbestosis and chronic bronchitis with emphysema, Clin. Sci., 1961, 21, 1.
- (3) Ferris, B. G., and Anderson, D. O.: The prevalence of chronic respiratory disease in a New Hampshire Town, Amer. Rev. Resp. Dis., 1962, 86, 165.
- (4) Higgs, I. T. T.: Respiratory symptoms bronchitis and ventilatory capacity in a random sample of an agricultural population, Brit. Med. J., 1957, 2, 1198.
- (5) Fletcher, C. M., Elmes, P. C., Fairbairn, A. S., and Wood, C. H.: The significance of respiratory symptoms and the diagnosis of chronic bronchitis in a working population, Brit. Med. J., 1959, 2, 257.
- (6) Kory, R. C., Callahan, R., Boren, H. G., Syner, J. C.: The veterans administration-army cooperative study of pulmonary function I. Clinical spirometry in normal men, Amer. J. Med., 1961, 30, 243.
- (7) Motley, H. L.: Clinical pulmonary physiology II. Detection of early lung function changes in industrial exposure, Indust. Med., 1953, 22, 267.
- (8) Motley, H. L.: Comparison of a simple helium closed circuit method with the oxygen open circuit method for measuring residual air, Amer. Rev. Tuberc. and Pulm. Dis., 1957, 76, 601.
- (9) Consolazio, C. F., Johnson, R. E., Pecora, L. J.: Physiological measurements of metabolic functions in man, 1963, 239. (McGraw Hill Book Company).

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QUESTIONNAIRE ON RESPIRATORY SYMPTOMS

Name.....Sex.....Race.....Date of Birth.....
 Address.....
 Date of questionnaire.....

COUGH

Do you usually have a cough?..... Yes/No
 Do you cough at all on getting up, or first thing in the morn-
 ing..... In winter? Yes/No
 In summer? Yes/No
 Do you go on coughing during the day or at night: In winter? Yes/No
 In summer? Yes/No

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PHLEGM

Do you usually bring up phlegm from your chest (not from the
 back of your nose)?..... Yes/No
 Do you bring up any phlegm at all on getting up, or first thing
 in the morning:..... In winter? Yes/No
 In summer? Yes/No
 Do you continue to bring up any phlegm during the
 day..... In winter? Yes/No
 In summer? Yes/No
 What color is this phlegm: (a) always clear white, gray, or
 blackish? (Check (b) before recording)
 (b) occasionally yellow or green, at least in parts?.....
 (c) usually yellow or green?.....
 (d) don't know.....
 How long have you had this cough and/or phlegm..Less than 3 years?
 3 years or more?
 Do you get bouts of (increased) cough and phlegm last-
 ing for at least 3 weeks each winter?..... Yes/No
 If yes:.....Last 3 winters only?
 More than 3 winters?

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Have you ever coughed up blood?..... Yes/No 2

If yes: When was this?(Years of occurrence).....

How much? (greatest amount)..... Streaks _____ 2

More _____ 2

WHEEZING

Does your chest ever sound wheezy or whistling?

(If no: check: not even when you have a cold?) Yes/No 2

If yes:.....Only with colds? _____ 2

Occasionally (apart from colds?) _____ 2

Most days or nights? _____ 2

TIGHTNESS

Does your chest ever feel tight or your breathing become difficult? Yes/No 2

If Yes:.....Only with colds? _____ 2

Other occasions specify _____ 2

BREATHLESSNESS

Are you troubled by shortness of breath?..... Yes/No 3

(If No: check: Not even on hurrying on level or walking up a hill?)

If disabled by a neurological or muscle-skeletal disease put
"disabled" here...

If Yes: Do you have to walk slower than people of your age on the
level because of breathlessness?..... Yes/No 38

If Yes: Do you ever have to stop for breath when walking at your
own pace on the level?..... Yes/No 39

If Yes: Do you have to stop for breath after walking about 100 yards
(or after a few minutes) on the level?..... Yes/No 40

If Yes: Are you too breathless to leave the house or breathless on
undressing?..... Yes/No 41

COLDS

If you get a cold, does it usually go to your chest?..... Yes/No 42

NASAL CATARRH

Apart from colds do you usually have a stuffy nose or catarrh at the
back of your nose?.....In winter? Yes/No 43

In summer? Yes/No 44

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Have you ever coughed up blood?.....	Yes/No	
If yes: When was this?(Years of occurrence).....		
How much? (greatest amount).....	Streaks	2
	More	2

WHEEZING

Does your chest ever sound wheezy or whistling?		
(If no: check: not even when you have a cold?)	Yes/No	2
If yes:.....Only with colds?		2
Occasionally (apart from colds?)		2
Most days or nights?		2

TIGHTNESS

Does your chest ever feel tight or your breathing become difficult?	Yes/No	2
If Yes:.....Only with colds?		2

BREATHLESSNESS

Are you troubled by shortness of breath?.....	Yes/No	3
(If No: check: Not even on hurrying on level or walking up a slight hill?)		
If disabled by a neurological or muscle-skeletal disease put "disabled" here...		
If Yes: Do you have to walk slower than people of your age on the level because of breathlessness?.....	Yes/No	3
If Yes: Do you ever have to stop for breath when walking at your own pace on the level?.....	Yes/No	3
If Yes: Do you have to stop for breath after walking about 100 yards (or after a few minutes) on the level?.....	Yes/No	4
If Yes: Are you too breathless to leave the house or breathless on undressing?.....	Yes/No	4

COLDS

If you get a cold, does it usually go to your chest?.....	Yes/No	4
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NASAL CATARRH

Apart from colds do you usually have a stuffy nose or catarrh at the back of your nose?.....In winter?	Yes/No	4
In summer?	Yes/No	4

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Does the weather affect your chest?..... Yes/No

If yes: What sort of weather?..... Fog-mist Yes/No

Damp-wet Yes/No

Cold Yes/No

Heat Yes/No

Does any other sort of weather affect your chest? (Specify)..... Yes/No

Does this weather: make you wheeze?..... Yes/No

increase cough or phlegm?..... Yes/No

make you more breathless?..... Yes/No

have any other effect on your chest (Specify)..... Yes/No

CHEST ILLNESSES

During the past 3 years have you had a chest illness which has kept you
off work, indoors at home or in bed?..... Yes/No

(If No: check: Not even "flu"?)

(If Yes: Give details of each illness. If doctor not seen put "none"
in first column.)

Doctor's Diagnosis	Duration in Days	Year	Incr. cough Yes/No	Incr. phlegm Yes/No
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PAST ILLNESSES. If more than three attacks put "recurrent" after age at first attack.

Have you ever had:

	Each age of occurrence		
Pulmonary Tb.	Yes/No.....56	Bronchial Asthma.....	Yes/No 6
Pneumonia	Yes/No.....57	If Yes: Age started.....	
		Age stopped.....	
		Still present?....	Yes/No 6
Pleurisy	Yes/No.....58	Heart trouble.....	Yes/No 6
Bronchitis	Yes/No.....59	Details.....	
Sinusitis	Yes/No.....60		

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SMOKING

Do you smoke?..... Yes/No 64

If No: Have you ever smoked?..... Yes/No 65

If Yes:

	Now	Changes in Past 10 Years
Cigarettes per week.....		
Oz. tobacco/week (handrolled).....		
Oz. tobacco/week (pipe).....		
Cigars/week.....		
Age started regular cigarette smoking..		Age started regular pipe/cigar smokin
Age stopped regular cigarette smoking..		Age stopped regular pipe/cigar smokin
If smoking stopped or reduced give reason.....		

OCCUPATION

How long have you been employed at Pittsburgh Corning? _____ 66

Do you work in a dusty atmosphere? Yes/No 67

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PREVIOUS OCCUPATION

Dates	Ages	Residence	Materials Handled	Actual Occupation (job)

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FORM II

NAME _____ AGE _____ RACE/SEX _____ DATE _____

PHYSICAL FINDINGS

HT WT P R BP
 CHEST LUNGS HEART
 EXTREMITIES

LABORATORY

Ventilatory Studies

	Predicted	Observed	% Predicted
FVC			
FEV		Observed	% Total
0.5 sec			
1.0 sec			

Maximum Breathing Capacity (MBC)

Predicted	Observed

 Diffusion Studies
 Single Breath CO method

Predicted	Observed

Arterial Blood Gas Studies

rest	exercise
pH	
pCO ₂	
pO ₂	
O ₂ sat	

Radiographs:

Normal limits ☐Abnormal ☐
see below

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