UNION CARBIDE

INTERNAL
CORRESPONDENCE

PLAINTIFF'S EXHIBIT
UC-3615

APR 7 1983

UNION CARBIDE CORPORATION OLD RIDGEBURY ROAD, DANBURY, CT 06817

To (Name) Mr. John Cornell
Division
Location
Area

Date April 4, 1983
HCL-118
Originating Dept HS&EA

Area P-2590

Copy to Dr. B. Avashia
Dr. R. Holland
Dr. A. A. Lang
Dr. T. A. Lincoln

Subject Recording and reporting of asbestos-related radiographic abnormalities.

At our meeting in Charleston on March 29, 1983 we discussed the radiological diagnosis of asbestos-related abnormalities and their classification for record-keeping purposes. Although it would be desirable to have all x-rays classified in accordance with the ILO Classification by a NIOSH 'B' Reader, it is not essential, provided that a scheme is used which allows some correlation with the ILO standard method of interpretation.

I am attaching hereto the instructions I prepared for use at Raybestos-Manhattan (now Raymark Corporation) when I was Corporate Medical Director. If you should decide to adopt the "Tulane" code referred to, you will be interested in the second attachment which is a copy of the paper (unpublished) which I presented in San Francisco in 1979. You will find an explanation of the code on pages 4-6.

Please let me know if I can be of any further help and call me if you need classification of any of the attached items.

H. C. Lewinsohn

HCL/bd
Attahcment

UCC 008384

V. OSHA Recordkeeping

A. OSHA Log #200 - Recording requirements

1. An injury or illness is considered work related if it occurs in the work environment (defined as any area on the employer's premises, e.g., worksite, company cafeteria, or company lot).

2. All suspected or diagnosed work-related illness must be recorded.

3. All work related injuries requiring medical treatment or involving loss of consciousness, restriction of work or motion, transfer to another job or termination of employment must be recorded. Medical treatment includes treatment (other than first aid) administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment (one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care) even though provided by a physician or registered professional personnel.

4. According to the guidelines for determining recordability published by the U. S. Department of Labor, Bureau of Labor Statistics, 1978, Report 412-3, "What Every Employer Needs to Know About OSHA Record-keeping," a positive x-ray finding is considered to involve medical treatment and must be recorded for a work-related injury. This would also appear to apply to appearances on a chest radiograph consistent with dust effects due to occupational exposure (pleural plaques, pleural thickening, pulmonary fibrosis, etc., category 3 or 4 of the "Tulane" code).

5. The radiological features of asbestos exposure may not always be distinguishable from those of other causes. Whenever pleural changes, or other radiologic appearances which are found to be consistent with a history of dust exposure, are reported, they shall be recorded as follows on OSHA form 200 (category 3 or 4 of the "Tulane" code):

   a. Pleural plaques, pleural thickening and parenchymal changes shall be recorded as "X-ray changes suspicious of dust effect" until a diagnosis is confirmed by physical examination, lung function tests and consideration of exposure history. If the nature of the dust exposure is known with certainty then substitute the name of the type of dust.

   b. The date the finding is reported becomes the date of onset of illness in Column B of OSHA form 200. Unconfirmed cases shall remain in the log recorded as suspicious of dust effect," but the original date of entry will be retained forever and the log for that year amended only for diagnosis. If the nature of the dust exposure is known with certainty then substitute the name of the type of dust.

   c. If pleural plaques or thickening become complicated by lung parenchymal changes consistent with asbestos exposure or vice versa, the entry shall be amended and the date when the new complication is first observed shall be added to the description, but the original date of recording the first change will remain unaltered, i.e., the initial date of onset of illness.

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d. In the case of pre-placement examinations, where an individual has worked in a dusty job and has radiological abnormalities, they do not have to be recorded. If in subsequent films during the course of routine medical surveillance, a change should occur and the appearances deteriorate, then it must be recorded. If the individual is not currently to be employed in a dusty job, it is not necessary to record any of these findings.

6. All work-related fatalities must be recorded, including deaths resulting from such conditions as asbestosis, lung cancer related to asbestos exposure and malignant mesothelioma of the pleura and peritoneum. If the certifying practicioner indicates that any gastro-intestinal or laryngeal carcinoma is asbestos related, it must be recorded.

7. Form 101, or its equivalent, must always be amended to reflect all the changes made on OSHA form 200.

8. Hearing loss entries - When an audiologist indicates that an employee has experienced a significant hearing threshold shift (20 dB or greater, any test frequency), an entry will be made on the OSHA Log, form 200, showing the date first noted.

   a. The entry should be considered an "illness" due to repeated trauma.

   b. If the employee is referred for further evaluation and the loss is determined not to be of occupational origin, the entry will be lined out on the log.

B. Maintenance of Health Records

1. All health records and x-rays will be maintained in such a manner as to guard against loss or damage.

   a. Medical records must be preserved and maintained for duration of employment, plus 30 years.

2. Confidentiality of all medical information will be maintained, and access will be permitted based on the employee's authorization, according to the guidelines for responding to requests for access to employee exposure and medical records. Appendix I.

VI. Miscellaneous Duties

A. Workmen's Compensation

1. Submit accident reports as required by Corporate Policies and Procedures.

2. Obtain wage information and forward wage schedule according to Corporate Policies and Procedures for any injury involving seven days or more lost time.

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THE ESTABLISHMENT OF A MEDICAL SURVEILLANCE PROGRAM IN AN ASBESTOS FACTORY

A COLLABORATIVE EFFORT BY MANAGEMENT, COMPANY PHYSICIANS, CHEST PHYSICIANS AND RADIOLOGISTS

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DRAFT - Subject to amendment and correction. Not to be quoted prior to publication.

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ASBESTOS REGULATION

The Occupational Safety and Health Administration (OSHA) was established within the Department of Labor in April 1971.

A "permanent" standard for occupational exposure to asbestos was published in the Federal Register on June 7, 1972. The standard, applicable "in every employment and place of employment" to every employee exposed to asbestos dust, except those workers otherwise covered by the Federal Coal Mine Health and Safety and the Federal Metal and Nonmetallic Mine Safety Acts as administered by the Mining Enforcement and Safety Administration, became effective July 7, 1972.

The Asbestos Standard requires medical examinations for preplacement purposes, annually thereafter and on work termination or retirement. Medical records must be maintained and kept by the employer for at least 20 years. Medical surveillance must be provided for all persons in an occupation exposed to airborne concentrations of asbestos fibers.

"OSHA" MEDICAL EXAMINATION FOR "ASBESTOS WORKERS"

The medical examination, as a minimum, has to include a chest roentgenogram (posterior-anterior 14" x 17"), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at one second ($FEV_{1.0}$).

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The format for the medical records is not stipulated, standardization of the techniques to be used in obtaining chest roentgenograms and in performing tests of lung function is not required, and no guidance is given as to the methods to be used in the interpretation and reporting of results.

In October 1976 Raybestos-Manhattan appointed a Corporate Medical Director (HCL) for the first time and charged him with the task of implementing a satisfactory medical surveillance program for all the divisions of the company. The legal obligation to provide medical examinations for persons exposed to asbestos and an obvious need to update the medical services at a friction materials plant in Pennsylvania provided the ideal opportunity to introduce a pilot program. It was decided to attempt to correct some of the deficiencies in the medical examination requirements of the OSHA Standard for Exposure to Asbestos Dust.

MEDICAL EXAMINATION PROGRAM PRIOR TO REVISION

The medical examination program at the plant was in accordance with the OSHA requirements, on the whole, but a medical history was not routinely obtained on an annual basis. Prior to the appointment of the Corporate Medical Director, arrangements had been made with a radiologist specializing in the interpretation of chest roentgenograms for the diagnosis of pneumoconioses. His reports were sent to the Safety Director who transmitted them to the Medical Department. The radiologist and the Safety Director agreed upon a system for the classification of the reports into four groups. Group I films bear no evidence of dust effects, Group II films are slightly suspicious for dust effects, Group III films are strongly suspicious of dust effects and Group IV films have findings consistent with dust effects.

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The Plant Physician (JK), a family practitioner in a nearby town, relied upon the radiologist's report classified for him by the plant nurses according to the above agreed scheme and arranged his medical surveillance in accordance with it. The nurses screened the reports and the physician interviewed and counselled all employees in Groups II through IV. He referred all persons with X-rays classified as Group II, III or IV to their own physicians, or if they wished, direct to a chest physician at the local hospital at company expense. No physical examination was conducted as part of the "OSHA" examination. Lung function tests as required by the OSHA Standard for Asbestos Dust were performed at the time of chest X-ray, but the spirometer did not record a permanent tracing and the results, although recorded meticulously, were not compared with predicted normal values and the $FEV_{1.0}$/FVC% was not calculated.

The plant physician relied upon the radiological findings to decide upon the outcome of the "OSHA Medical," but, because the scheme for classifying reports into Groups I-IV did not differentiate clearly enough between pleural abnormalities and parenchymal abnormalities for the benefit of the physician and nurses at the plant, a problem developed with regard to counselling and referral for further investigation. The system probably resulted in over-referral rather than too few referrals, but nevertheless this was an unsatisfactory state of affairs. The plant physician recognized these deficiencies and was eager to improve the arrangements. Management was aware that something was wrong because of inadequate feedback regarding the health of asbestos workers and was also eager to improve the system. The chest physicians at the local hospital were also somewhat puzzled by the nature of some of the cases being referred to them and, when approached by the Corporate Medical Director, indicated a willingness to become more directly involved in the medical program.

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REVISED MEDICAL SURVEILLANCE PROGRAM

The revision of the medical surveillance program dealt essentially with three issues, namely,

1. Improvement of the X-ray reporting system;
2. Reorganization of medical record-keeping and administration;
3. Introduction of a revised medical examination program.

X-RAY REPORTING SYSTEM

Although the International Labour Office introduced the ILO U/C International Classification of Radiographs for Pneumoconioses in 1971[1], and although many authors mentioned its use in the surveillance of asbestos workers, it was felt that the advantages of a narrative report for the plant physician and the chest physicians would be better suited for the clinical use to which it was to be put. In order to avoid confusion when allocating cases for follow-up purposes, the original scheme of classifying cases into one of four groups was modified.

The nurses in the plant Medical Department take all the X-rays, and have been trained by a radiologist. They are not certified X-ray technicians. Developing is done in an automatic processor. The height, weight and exposure details are recorded on the X-ray cover. This enables the radiologist to comment on the quality of the film and suggest modifications in technique where necessary. Instead of allocating a new number to each film, it was decided to continue with the number recorded last prior to introducing the new system and thus insuring continuity for filing purposes and making it easier to trace films incorrectly filed.

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The narrative report is no longer scanned by the nurses for purposes of grouping cases, but this is done by the radiologist interpreting the film. Pleural and parenchymal abnormalities may be separately coded using the 4 point scale previously applied to the content of the entire film. This scale is numbered as follows:

I. Normal or negative; or showing abnormalities not related to dust.

II. Slightly suggestive of dust effects or slightly suspicious for dust effects.

III. Strongly suggestive of, or strongly suspicious for, dust effects.

IV. Consistent with dust effects. This group includes most films which would be placed in Category 1, 2 or 3 of the ILO U/C Classification, all of which would be considered "consistent with dust effects."

Interpretations of current films, with respect to probability of dust effects, can themselves be rated in relation to prior interpretations. A reasonable scheme was evolved as follows:

0. Interpretation of the current film is unchanged from interpretation of previous films: This category is used when the probability code (I-IV) is unchanged, and also when the act of separately grading pleural and parenchymal abnormalities results in <u>apparent</u> change of dust probability code.

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1. Technical factors are probably responsible for the change of interpretation: This code is used where the current film permits more accurate assessment of probability of dust effects.

2. This code number is used when a change in the dust probability code number is judged to result from a change in the physical condition of the subject during the period of observation.

The classification of the film is recorded on the individual film report and a summary sheet accompanies each batch of films being reported on. This summary sheet is illustrated in Table I.

This scheme enables the plant physician and chest physicians to see at a glance what the radiologist's interpretation of the film is in relation to previous films in the series and aids in the differentiation between radiological appearances due to technique and those considered to be due to a change in the physical condition of the subject during the period of observation. This scheme was introduced towards the end of 1977 and is working satisfactorily.

MEDICAL RECORD KEEPING AND ADMINISTRATION

Medical records and X-rays have been kept at this plant since 1943, but their usefulness for purposes of rapid retrieval of data or for morbidity studies is minimal. It was obvious that standardized procedures were required for recording basic medical histories which could be used in subsequent years in epidemiological studies. One of us (HCL) had had recent experience with the use of a respiratory symptoms questionnaire based upon the British Medical Research Council's "Standardized Questionnaire on Respiratory Symptoms"[2] modified for

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use by the British Employment Medical Advisory Services in its national survey of asbestos workers. This questionnaire was adapted for use in the Pennsylvania plant and is attached to this paper as Appendices I and II. Appendix I is used for the initial examination and Appendix II, an abbreviated questionnaire, is used for the annual periodic medical examination. The questionnaire is not intended for self-completion but is completed by the nurses for all employees at the time of their X-ray and pulmonary function test. The recently published "Recommended Respiratory Disease Questionnaires for Use with Adults and Children in Epidemiological Research"[3] are now being studied by us and, if necessary, improvement in format or style will be incorporated in any revision of our questionnaire which we undertake.

It was also decided that an attempt should be made to standardize the recording of findings on physical examination and the form devised for this purpose is shown as Appendix III. It includes a summary of the chest physician's main findings, smoking habits, vital signs, lung function test results and an estimate of the average annual asbestos exposure. We are still attempting to find a satisfactory means for calculating the latter and it is therefore not recorded in every case as yet. The future plans in this area call for electronic data processing of medical records, personnel records and records of environmental monitoring. Record linkage capability, repaid retrieval for real-time use as well as generation of reports, and analyses based upon the results for the factory population will be possible when the system has been developed.

In order to implement this system it has been necessary to reorganize the medical department. Structural alterations have been made to accommodate the chest physician. A supervisor has been appointed and clerical assistance has

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been obtained. A new spirometer has been purchased which gives a tracing of the timed vital capacity measurements. The nurses have been instructed in the use of the respiratory symptoms questionnaire and the technique for measuring lung function. The chest physician maintains a watching brief over their performance.

INTRODUCTION OF "NEW" PROGRAM

Prior to the introduction of the program a letter was sent to the president and vice-president of the local union informing them of the changes in procedure to be adopted. The Industrial Relations Manager called a special meeting with the union and discussed the letter and the program. Each employee received a letter outlining the new program.

One of the defects of the old system was limited communication between medical staff and employees and poor communication between the Medical Department and management. Under the present system the chest physician, after examining the employee, his records and his chest X-ray, informs the plant physician of his findings as indicated in Appendix IV. The employee receives a notification that his chest X-ray and lung function test results are within normal limits if no further action is recommended by the chest physician. He returns a signed copy of the notification to the Medical Department indicating that he has received the information and this is included in his record. Should there be any abnormality noted on examination, he is sent a note indicating that the company physician would like to meet with him in order to discuss the results of his recent tests and physical examination and an appointment is arranged. If the chest physician has not recommended immediate action, this is a counselling session and the employee is given the information and advised that it will be

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provided to his family physician if necessary. If more detailed consultative evaluation has been recommended by the chest physician, arrangements for this are made, either through the family physician or directly with the chest physician. An additional letter is available for use when an employee has previously had a medical problem identified, has already seen the company physician, but shows no significant change in his latest X-ray and lung function test results. If a new problem is found in this case or if there has been a significant change since the last examination, the employee will be contacted by telephone and an appointment arranged with the company physician. All consultative evaluations necessitated through this program are covered by the company's sickness insurance program.

Once a decision has been made about the health of the employee and the employee's job suitability, the Industrial Relations Department (personnel function) is informed as indicated in Appendix V. No clinical details are disclosed and no diagnosis is given. The Occupational Safety and Health Act of 1970 requires employers to prepare and maintain records of occupational injuries and illnesses. OSHA record-keeping requires two forms to be maintained, namely, "The Log and Summary (OSHA No. 200)" and "The Supplementary Record (OSHA No. 101)." The Log classifies injury and illness cases and notes the extent of an outcome of each. To supplement the Log and Summary of Occupational Injuries and Illnesses (OSHA No. 200), each establishment must maintain a record of each recordable occupational injury or illness. This can be recorded on OSHA No. 101 if other acceptable records are not available. Supplementary records must be completed and present in the establishment within six (6) work days after the employer has been notified of an injury or illness case.

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Asbestosis is difficult to diagnose in the early stages and the diagnosis can only be based upon an adequate history of exposure to asbestos, clinical findings consistent with pulmonary fibrosis, radiological appearances which take all available films into account and alterations in lung function which are usually of a restrictive type with or without reduction in gas transfer factor.

The policy at the plant in question is to include all diagnosed asbestosis cases in the log but unfortunately, the physicians can not always be specific when giving an opinion and, therefore, cases with adequate exposure histories, X-rays in Groups II-IV and found to have restrictive lung disease after consultative evaluation by the chest physician can sometimes only be recorded as "possible asbestosis." Definite asbestosis is diagnosed when, in addition to radiologic changes and a restrictive ventilatory capacity defect, the individual has physical signs such as bilateral basal crackles and finger clubbing, and other chest conditions of non-occupational origin have been excluded. This is a diagnosis which is made by the chest physician after complete evaluation of the patient. This has been the practice since late 1976 when, following an OSHA inspection, the company was told to use this method of recording. In 1978 sixteen (16) cases have been reported in this way of which three (3) were definite and thirteen (13) were "possible" cases of asbestosis.

PRELIMINARY RESULTS

In this paper we have briefly outlined a medical surveillance program for workers in an asbestos friction materials plant. Although the concept is not complicated, the difficulties encountered in implementing such a program in industry are many and the time required to organize the system is not insignificant involving management, physicians and medical department staff. The

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efficiency of the system can only be judged in the course of time by the results of the analyses to be performed on the data collected. In the plant in question the opportunity for long-term surveillance of an exposed population is almost ideal as there has been virtually no hiring of new employees since 1974. It is our hope that in the near future a program can be worked out for the continued follow-up of retirees, employees on lay-off and ex-employees, but there are no definite plans drawn up for this as yet.

The revised X-ray reporting scheme was introduced before the record-keeping changes and the changes in the medical examination program outlined above were implemented. It is possible to review the reports between September 1977 and September 1978. 815 employees were X-rayed during this period and classified into Groups I-IV according to the scheme previously described. 620 (76%) of the employees show no parenchymal abnormality related to dust exposure. 103 persons (12.6%) are classified Group II and 40 persons (4.9%) are in Group III. Parenchymal abnormalities consistent with dust effects (Group IV) are present in 52 persons (6.4%). 22 of these also have Group IV pleural abnormalities. (Table II)

Table III indicates that Group IV pleural abnormalities are more common than Group IV parenchymal abnormalities; 96 employees (11.8%) have Group IV pleural abnormalities. 679 (83.3%) are in Group I and only 40 employees are in the indeterminate groups for pleural thickening, 18 (2.2%) in Group II and 22 (2.7%) in Group III. All Group IV parenchymal abnormalities occurred in males.

Figures 1 and 2 relate the data to age for parenchymal and pleural lesions respectively and Figure 3 and 4 relate the data to length of exposure

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(employment). There is minimal evidence of parenchymal abnormality in the youngest age groups. There is an increase in parenchymal abnormalities after age 35. (The 7% of the 20 year-old population with suspected abnormalities represents a single case.) In Figure 2 it is interesting to note that Group IV pleural abnormalities increase with age and cccount for 42% of the employees over age 60.

In Figure 3, the population with less than 5 years exposure appears entirely normal. Between 10-40 years, 10-20% of each exposure group is slightly suspicious (Group II) and an additional 10% are strongly suspicious (Group III) for dust effects. After 40 years exposure, Group IV parenchymal abnormalities are present in 24% of the population.

The effect of prolonged exposure is even more striking in pleural abnormalities (Figure 4). At 40 years exposure only 31% of the population remain in Group I. Group IV pleural lesions are apparently seen after as little as 5 years exposure. After 30 years one-third (1/3) of the population shows pleural abnormalities in Group IV and this increases to nearly two-thirds after 40 years.

Smoking histories are only available, at the time of this review, for employees with Group IV pleural and/or parenchymal abnormalities. Smokers accounted for 76% of the 126 persons (99/126) and non-smokers accounted for only 16% (21/126). Table IV.

No analysis has as yet been undertaken of the clinical and lung function data as insufficient time has elapsed since the program began.

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We believe the OSHA requirements are now met in all respects and in fact improved upon to the benefit of the employee, the employer and the physicians who have to attend to the needs of both of them. Both the employee and the employer should be better informed and the opportunity for the physicians to assess problem cases at an earlier stage than was previously possible should be of value in the treatment and future job-placement of affected people.

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[2] Medical Research Council's Committee on the Aetiology of Chronic Bronchitis: Standardized Questionnaires on Respiratory Symptoms, Br. Med. J., 1960, 2, 1965.

[3] Epidemiology Standardization Project. Benjamin G. Ferris, M.D.: Principal Investigator. Am. Rev. Resp. Dis. 118(Part 2): 7, 1978.

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TABLE I

Summary of Dust Effect Coding - An Example

Film Number	Name	Parenchymal				Pleural				Change		
		I	II	III	IV	I	II	III	IV	0	1	2
143		X				X				X		
179			X			X				X		
560			X			X						X
959			X						X			X
945		X							X			X
176					X				X	X		
915		X							X	X		
177		X						X		X		
194		X				X				X		

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TABLE II

X-Ray Reports of Employees
September 13, 1977 - September 13, 1978

	PARENCHYMAL CHANGES				
	I	II	III	IV	
PLEURAL					
I	547 (67.1)	81 (9.9)	28 (3.4)	23 (2.8)	
II	8 (1.0)	6 (0.7)	2 (0.2)	2 (0.2)	
III	13 (1.6)	1 (0.1)	3 (0.4)	5 (0.6)	
IV	52 (6.4)	15 (1.8)	7 (0.9)	22 (2.7)	
TOTAL	620 (76.0)	103 (12.6)	40 (4.9)	52 (6.4)	815 100%

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TABLE III

X-Ray Reports of Employees

September 13, 1977 - September 13, 1978

	PLEURAL CHANGES				
	I	II	III	IV	
PARENCHYMAL					
I	547 (67.1)	8 (1.0)	13 (1.6)	52 (6.4)	
II	81 (9.9)	6 (0.7)	1 (0.1)	15 (1.8)	
III	28 (3.4)	2 (0.2)	3 (0.4)	7 (0.9)	
IV	23 (2.8)	2 (0.2)	5 (0.6)	22 (2.7)	
TOTAL	679 (83.3)	18 (2.2)	22 (2.7)	96 (11.8)	815 100%

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TABLE IV

X-Rays of Employees Classified Group IV, Smoking Histories
September 13, 1977 - September 13, 1978

Smoking History	Parenchymal	Pleural	Combined	Total
Heavy Smoker*	17 (13.5)	13 (10.3)	8 (6.3)	38 (30.2)
Light Smoker**	7 (5.5)	18 (14.3)	4 (3.2)	29 (23.0)
Quit Smoking	3 (2.4)	24 (19.0)	5 (4.0)	32 (25.4)
Never Smoked	1 (0.8)	15 (11.9)	5 (4.0)	21 (16.6)
Unknown	2 (1.6)	4 (3.2)	0 --	6 (4.8)
TOTAL	30 (23.8)	74 (58.7)	22 (17.5)	126 100%

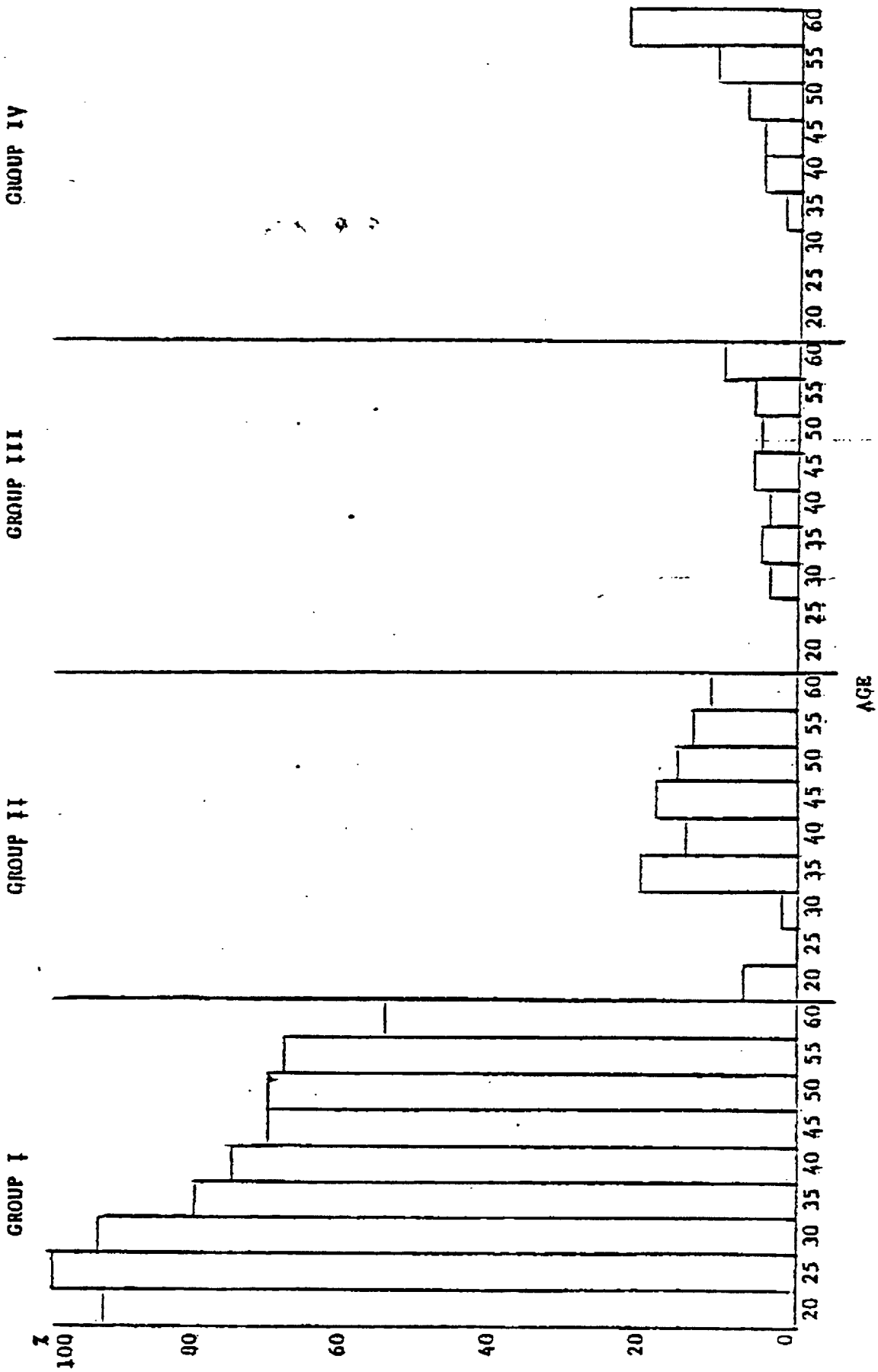
*Person smoking one or more packs of cigarettes per day.

**Person smoking less than one pack of cigarettes per day, or smoking a pipe or cigars.

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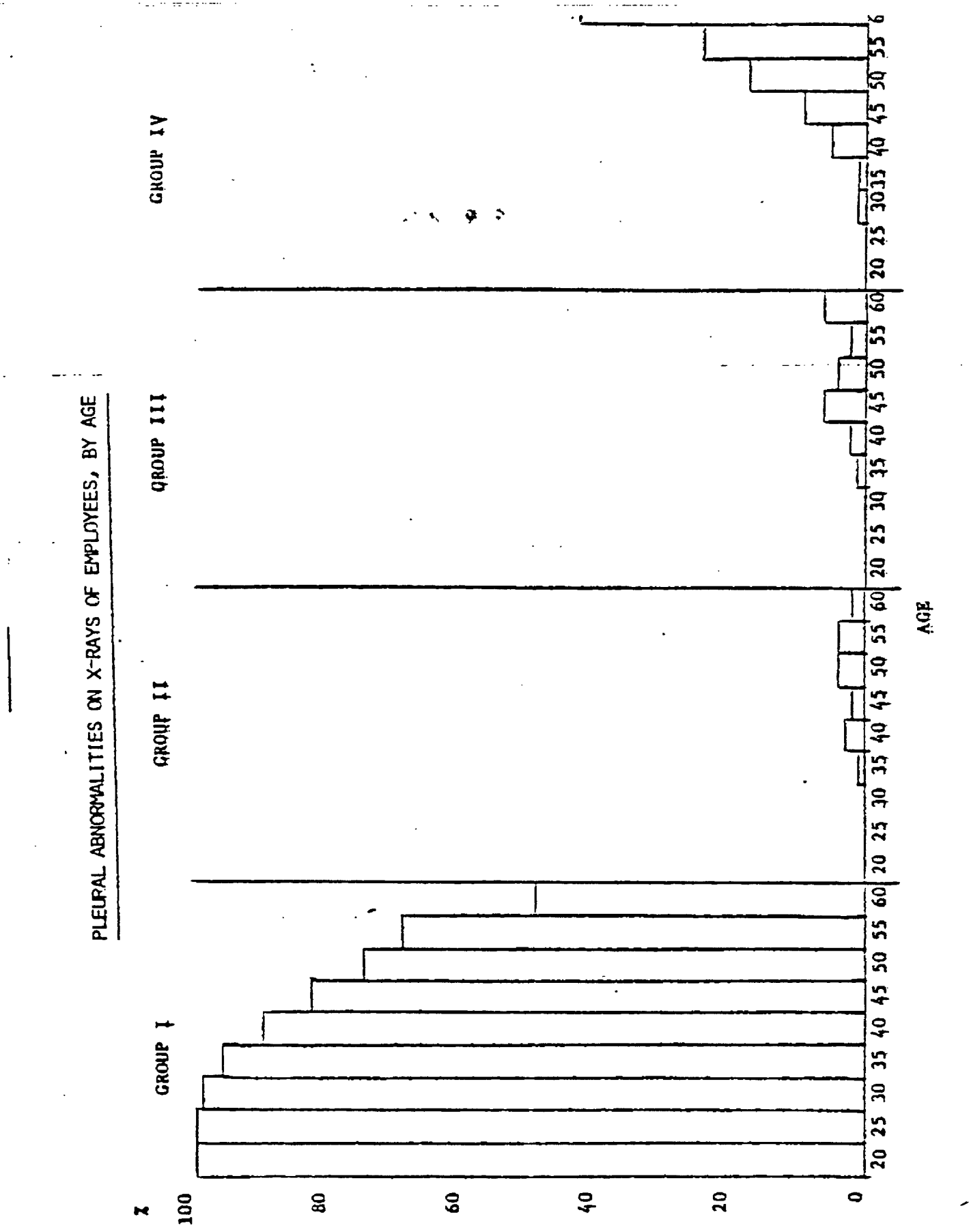
FIGURE 1

PARENCHYMAL ABNORMALITIES ON X-RAYS OF EMPLOYEES, BY AGE



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PLEURAL ABNORMALITIES ON X-RAYS OF EMPLOYEES, BY AGE
GROUP I
GROUP II
GROUP III
GROUP IV
%
100
80
60
40
20
0
20 25 30 35 40 45 50 55 60
AGE

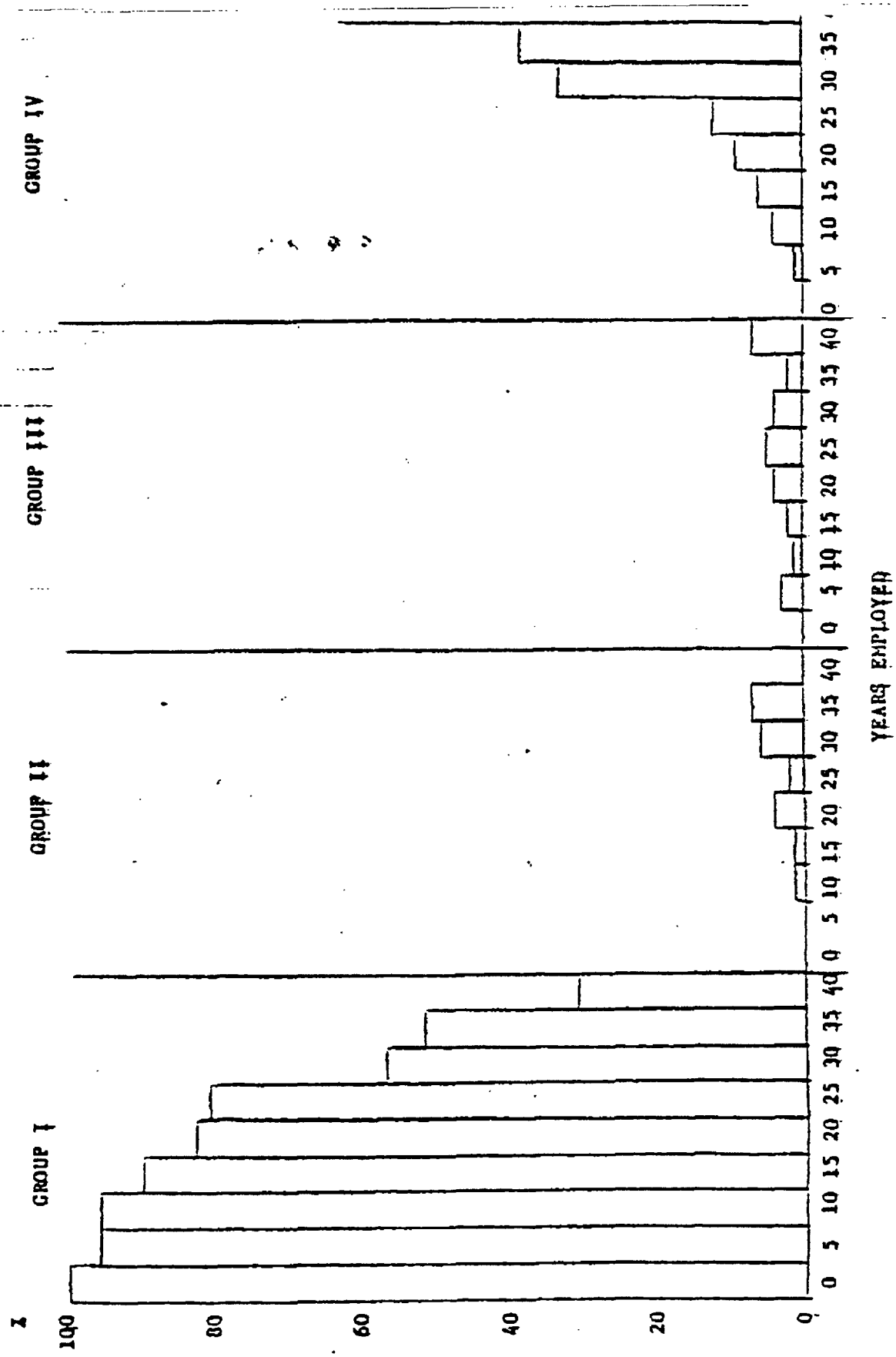
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FIGURE 4

PLEURAL ABNORMALITIES ON X-RAYS OF EMPLOYEES, BY LENGTH OF EMPLOYMENT



UCC 008409

INITIAL MEDICAL SCREENING EXAMINATION

NAME: _____ PLANT: _____

SOCIAL SECURITY # _____ DATE OF EXAMINATION _____

PRESENT OCCUPATION: _____ CLOCK # _____

Use the actual wording of each question. Put X in appropriate square after each question. When in doubt, record "NO".

A: OCCUPATIONAL HISTORY

(Record on lines the years in which subject has worked in any of these industries, e.g. 1960-1969)

Have you ever worked:	YES	NO
1. In a dusty job?	☐	☐
2. In a mine?	☐	☐
3. In a quarry?	☐	☐
4. In a foundry?	☐	☐
5. In a pottery?	☐	☐
6. In a cotton, flax or hemp mill?	☐	☐
7. With asbestos?	☐	☐
8. Or been exposed to any irritant gas or chemical fumes?	☐	☐

B. PAST MEDICAL HISTORY

I am going to ask you some questions about your health. I should like you to answer "YES" or "NO" whenever possible.

	YES	NO
9. Do you consider yourself to be in good health?	☐	☐
If "NO" state reason. _____		
10. Have you any defect of vision?	☐	☐
If "YES" state nature of defect. _____		
11. Have you any hearing defect?	☐	☐
If "YES" state nature of defect. _____		
12. Are you suffering from or have you ever suffered from:		
a. Epilepsy (or fits, seizures, convulsions)?	☐	☐
b. Rheumatic fever?	☐	☐
c. Kidney disease?	☐	☐
d. Bladder disease?	☐	☐
e. Diabetes?	☐	☐
f. Jaundice?	☐	☐
13. Have you ever had:		
a. An injury or operation affecting your chest?	☐	☐
b. Heart trouble?	☐	☐
c. Bronchitis?	☐	☐
d. Pneumonia?	☐	☐

UCC 008410

PHLEGM

	YES	NO
27. Do you usually bring up any phlegm from your chest first thing in the morning (on getting up*)?	☐	☐
Count phlegm with the first smoke or on first going out of doors. Exclude phlegm from the nose. Count swallowed phlegm.		
28. Do you usually bring up any phlegm from your chest during the day or at night?	☐	☐
Accept twice or more. If "NO" to both questions 27 & 28, go to question 32. If "YES" to *either* question 27 or 28:		
29. Do you bring up phlegm like this on most days (or nights*) for as much as three months each year?	☐	☐
30. In the past three years have you had a period of (increased**) cough and phlegm lasting for three weeks or more?	☐	☐
31. Have you had more than one such period?	☐	☐

*For subjects who work at night.
**For subjects who usually have phlegm.

BREATHLESSNESS

32. Are you troubled by shortness of breath when hurrying on a level ground or walking up a slight hill?	☐	☐
If "NO" to question 32, go to question 35 If "YES" to question 32:		
33. Do you get short of breath walking with other people of your own age on level ground?	☐	☐
If "NO" to question 32, go to question 35 If "YES" to question 33:		
34. Do you have to stop for breath when walking at your own pace on level ground?	☐	☐

CHEST ILLNESSES

35. During the past three years have you had any chest illness which has kept you from your usual activities for as much as a week?	☐	☐
If "NO" to question 35, go to question 38 If "YES" to question 35:		
36. Did you bring up more phlegm than usual in any of these illnesses?	☐	☐
If "NO" to question 36, go to question 38 If "YES" to question 36:		
37. How many illnesses like this have you had in the past three years? ..... _____		

SMOKING

(A 'regular smoker' is defined as one who has smoked as much as one cigarette or one small cigar a day or one large cigar a week, or one ounce of tobacco a month, for as long as a year.)

38. Have you ever smoked?	☐	☐
If "NO", proceed to 47 If "YES", proceed to 39		
39. Do you smoke at present?	☐	☐
If "NO", proceed to 40 If "YES", proceed to 41		
40. Have you given up smoking in the last month?	☐	☐

41. How old were you when you started smoking regularly? Enter age in years. _____

42. How many manufactured cigarettes do you usually smoke or were you smoking per day? .. _____

43. How much tobacco do you usually smoke or were you smoking per day in hand-rolled cigarettes? Enter number of grams (1 ounce = 28 grams). _____

UCC 008411

APPENDIX II

PERIODIC MEDICAL EXAMINATION

NAME: _____ PLANT: _____

SOCIAL SECURITY # _____ DATE OF EXAMINATION _____

PRESENT OCCUPATION: _____ CLOCK # _____

Use the actual wording of each question. Put X in appropriate square after each question. When in doubt, record "NO".

PREAMBLE I am going to ask you some questions, mainly about your chest. I should like you to answer "YES" or "NO" whenever possible.

1-7 Total years in dusty work (other than asbestos) ..... _____

7a. Total years exposed to asbestos ..... _____

7b. Date of first exposure to asbestos ..... _____

GENERAL HEALTH

	YES	NO
55. Do you consider yourself to be in good health?	☐	☐

If "NO" state reason. _____

_____

RESPIRATORY SYMPTOMS

COUGH

	YES	NO
24. Do you usually cough first thing in the morning (on getting up)? Count a cough with first smoke or on first going out of doors. Exclude clearing through or a single cough.	☐	☐
25. Do you usually cough during the day or at night? Ignore an occasional cough. If "NO" to both questions 24 & 25, go to question 27 If "YES" to *either* question 24 or 25:	☐	☐
26. Do you cough like this on most days (or nights*) for as much as three months each year *For subjects who work at night.	☐	☐

PHLEGM

	YES	NO
27. Do you usually bring up any phlegm from your chest first thing in the morning (on getting up*)? Count phlegm with the first smoke or on first going out of doors. Exclude phlegm from the nose. Count swallowed phlegm.	☐	☐
28. Do you usually bring up any phlegm from your chest during the day or at night? Accept twice or more. If "NO" to both questions 27 & 28, go to question 32. If "YES" to *either* question 27 or 28:	☐	☐
29. Do you bring up phlegm like this on most days (or nights*) for as much as three months each year?	☐	☐
30. In the past three years have you had a period of (increased**) cough and phlegm lasting for three weeks or more?	☐	☐
31. Have you had more than one such period?	☐	☐

*For subjects who work at night.
**For subjects who usually have phlegm.

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APPENDIX

NAME: _____ SOCIAL SECURITY NO. _____

DATE					
GENERAL CONDITION	Normal (a) Abnormal (b)(c)(d)	Normal (a) Abnormal (b)(c)(d)	Normal (a) Abnormal (b)(c)(d)	Normal (a) Abnormal (b)(c)(d)	Normal (a) Abnormal (b)(c)(d)
Pulse Rate/Min					
Blood Pressure					
Heart Sounds					
Dyspnea 0 = None 1 = Moderate Exertion 2 = Mild Exertion 3 = Rest					
Clubbing: 0 = None 1 = ± 2 = Definite					
Rales 0 = None 1 = End-Inspiratory 2 = Inspiratory 3 = Inspiratory & Expiratory	RIGHT LEFT UZ: MZ: LZ:	RIGHT LEFT UZ: MZ: LZ:	RIGHT LEFT UZ: MZ: LZ:	RIGHT LEFT UZ: MZ: LZ:	RIGHT LEFT UZ: MZ: LZ:
Wheeze 0 = None 1 = FVC-Expiratory 2 = V_T Expiratory 3 = Inspiratory & Expiratory	RIGHT LEFT UZ: MZ: LZ:	RIGHT LEFT UZ: MZ: LZ:	RIGHT LEFT UZ: MZ: LZ:	RIGHT LEFT UZ: MZ: LZ:	RIGHT LEFT UZ: MZ: LZ:
(1) Smoker (2) Non-Smoker (3) Ex-Smoker					
Complete for Smokers	Year Started:	Year Started:	Year Started:	Year Started:	Year Started:
Cigarettes	Number/Day: Pack Years:	Number/Day: Pack Years:	Number/Day: Pack Years:	Number/Day: Pack Years:	Number/Day: Pack Years:
Pipe	Bowls/Day:	Bowls/Day:	Bowls/Day:	Bowls/Day:	Bowls/Day:
Cigars	Number/Day:	Number/Day:	Number/Day:	Number/Day:	Number/Day:
Ex-Smoker's Only to Complete	Year Started: Year Quit:	Year Started: Year Quit:	Year Started: Year Quit:	Year Started: Year Quit:	Year Started: Year Quit:
LUNG FUNCTION	Result (%PN) | Predicted	Result (%PN) | Predicted	Result (%PN) | Predicted	Result (%PN) | Predicted	Result (%PN) | Predicted
FEV_1 Litres FVC Litres FEV_1/FVC % MMF_{25-75}	( )	( )	( )	( )	( )
	Ht: Wgt:	Ht: Wgt:	Ht: Wgt:	Ht: Wgt:	Ht: Wgt:
Average Asbestos Exposure/Year	f/cc	f/cc	f/cc	f/cc	f/cc
Noise Exposure	dBA	dBA			

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MEMORANDUM

TO: John K. Kreider, M.D.
Raybestos Manhattan, Inc.
Manheim, PA 17545

FROM: John D. Eshleman, M.D.
Harshadkumar B. Patel, M.D.
William F. Porter, Jr., M.D.

CLOCK NO. _____

RE: _____ DATE: _____

The above named individual has completed his annual pulmonary evaluation.

The results of this evaluation show: ☐ No abnormality.

☐ Slight abnormality.

☐ Moderate or severe abnormality.

We recommend: ☐ No immediate action.

☐ More detailed consultative evaluation.

☐ Other _____

_____ M.D.
John D. Eshleman, M.D.
Harshadkumar B. Patel, M.D.
William F. Porter, Jr., M.D.

UCC 008414

RAYBESTOS-MANHATTAN, INC.

Plant Location _____ Date _____

A chest examination (consisting of 14" x 17" chest radiograph, measurement of timed vital capacities, completion of a respiratory systems questionnaire and physical examination of the heart and lungs) has been carried out on:

Employee Name _____

Social Security No. _____

Job Location or Department _____

Clock Number _____

This employee is:

*(a) suitable/unsuitable for his/her present occupation

*(b) able/unable to wear a respirator

*(c) suitable for light work only in all areas/non-asbestos areas

*(d) requires immediate/eventual transfer to alternative employment such as

_____

*(e) unsuitable for employment at the present time

*(f) He/she will be re-examined in 3 months/6 months/1 year

*Circle where applicable

I have today advised the employee of the above and he/she has completed Form #1.

_____
Physician Signature

FORM 2

UCC 008415