



INTERNAL CORRESPONDENCE

RECEIVED

20(b)

JAN 22 1974

SAFETY DEPT.

CHEMICALS AND PLASTICS

INSTITUTE PLANT P. O. BOX 2831, CHARLESTON, WEST VIRGINIA 25330

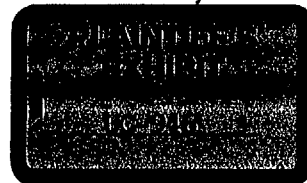
To (Name) Mr. E. B. DelGrande
 Division Building 791
 Location Tech Center

Date 31 Dec 74
 Originating Dept. Medical Department - Plant 512

Answering letter date

Copy to Mr. W. E. Ballard
 Mr. P. Barna
 Mr. L. L. Bissett
 Mr. C. W. Carman
 Mr. F. J. Casabona
 Mr. T. L. Collins
 Mr. H. D. Coombs
 Mr. R. J. DuBrul
 E. Q. Hull, M. D. (6)
 Mr. G. R. Kraft
 Mr. E. C. Shipley
 Mr. B. E. Tissue

Subject 1974 Pneumoconiosis Survey



Enclosed is the Medical Department's report on a Pneumoconiosis Survey conducted for 936 Hourly and some 938 Salary Construction Department employees.

Very truly yours,

R. J. Sexton, M. D.
 Plant Medical Director

RJS:peg

Enclosure

20

Union Carbide Corporation
Chemicals and Plastics
Institute, West Virginia

Special Report
Medical Department
31 December 1974

PNEUMOCONIOSIS

SUMMARY

The second annual medical surveillance program was completed by the Plant Medical Department on 85 Plant 511 employees designated as having been previously or are now at risk to materials capable of causing pneumoconiosis (asbestos and silicon dioxide). Symptoms and findings of disease were mostly minimal but positive x-ray interpretations by the local radiologists and some x-ray interpretations considered as "suspect" by the author indicated that 30 (35%) employees were labeled with a diagnosis of pneumoconiosis. An impartial out-of-town "C" reader diagnosed or implied similar diagnoses in 17 (20%) of the 30 films on the 85 employees at risk.

The number of cases of asbestosis in Construction employees is slightly increased over those diagnosed in the 1973 survey. There were also 85 employees participating then and 24 (28%) were diagnosed locally, while the "C" reader interpreted only 14 (17%) as positive for pneumoconiosis.

The problem of pneumoconiosis is still present and probably will remain a problem for some time.

CURRENT INFORMATION

The William-Steiger Occupational Safety and Health Act (Section 1910.93a (j) of Public Law 91-596) requires that this program be continued annually, so during 1974 this again was accomplished by the Plant Medical Department. The 1973 program's components and results were explained and documented in detail in a special report dated 4 Oct 73. The 1974 program was conducted essentially in the same manner with the same components and the purpose of this report is to document the observations and results of the second medical surveillance program.

Early in 1974 Construction management was requested to poll their payroll lists and provide to the Medical Department names of employees who have been or are still at risk from materials capable of causing pneumoconiosis, namely asbestos and silicon dioxide. These rosters were received and Table 1 shows the number of employees in the various crafts or work assignments in both 1973 and 1974 believed to be at risk.

Table 1 - Plant 511 Employees (936-938) Included in Pneumoconiosis Survey.

Craft	Compound	1973	1974
Laborer	Asbestos	6	5
Field Insulators	Asbestos	50*	48 §
Painter-Sandblasters	Silicon	19†	23 †
Insulation Fabrication Shop	Asbestos	10‡	9 ¶

* - Includes one Construction manager and two Field Insulation Foremen

† - Includes one Field Painter-Sandblaster Foreman

‡ - Includes one Insulation Fabrication Shop Foreman

§ - Includes one Construction manager and three Field Insulation Foremen

¶ - Includes one hourly employee working now as a truck mechanic on permanent restricted work because of Isocyanate sensitization.

As in 1973, all 85 employees that were to participate were sent orders to have chest x-rays completed as soon as possible. All chest x-rays included an anterior-posterior and right lateral views. After the chest x-ray reports interpreted by the local radiologist were received in the Medical Department, the employee could schedule an appointment to complete his examination, including certain nursing procedures, some clinical laboratory procedures and examination by a physician. This information was documented in the employees' medical folder. The films of all x-ray interpretations classified as pneumoconiosis by the local radiologist and others that the author considered as "suspect" were referred to a "C" reader ¶ for a second and expert interpretation, as in 1973.

The local radiologist ("A" reader) diagnosed or implied a diagnosis of pneumoconiosis in 19 of the 85 employees at risk. The author considered an additional 11 cases as suspect; therefore, chest x-ray films on 30 employees (35%) were sent to the "C" reader for interpretation. The "C" reader diagnosed

¶ In 1973, the report on this subject contained erroneous implications on the definitions of "A" and "B" readers because in that survey "A" implied the first reader and "B" implied the second reader. The author has learned that any radiologist can be an "A" reader, while a "B" reader is a radiologist who has completed special studies, takes a special examination and if successful has a title bestowed as "B" reader by the American College of Radiology. A "C" reader is an authority on the subject, such as Doctor Benjamin Felson of the University of Cincinnati Medical School, an internationally recognized authority on pneumoconiosis and other physicians, such as Doctor L. J. Bristol, Trudeau Institute, and Doctor G. Jacobson, Los Angeles, California.

Table 2. - Radiographic Pneumoconiotic Classifications, Tentative Diagnoses and Final Diagnostic Impressions on Construction Employees at Risk

#	Emp. Init.	PR #	Time at Risk	Craft	1973						1974					
					"A" Reader			"C" Reader			"A" Reader			"C" Reader		
					Code	T Y P e	Diagnosis	Code	T Y P e	Diagnosis	Code	T Y P e	Diagnosis	Code	T Y P e	Diagnosis
1	JAB	03838	13	In	0	-	Normal	Not Submitted	Not Submitted	1/0 q	?	1/0 q	Pleural thickening noted	2/2 t	t	Asbestosis
2	JRB	03435	23	In	1/0 q	?	?	Questionable Pneumoconiosis	0/1 s	Questionable Pneumoconiosis	0/1 s	q	Simple Pneumoconiosis Possibly normal	0	-	Normal
3	JRB	01193	20	In	1/1 s		Pneumoconiosis	2/3 t	Complicated Pneumoconiosis	1/1 s	Pleural thickening, Grade I	s	Pleural thickening, Grade I	3/3 t	t	Asbestosis
4	JWB	01181	31	In	1/1 p		Pneumoconiosis	2/1 q	Pneumoconiosis	1/1 q	Asbestosis and/or Pneumoconiosis	q	Asbestosis and/or Pneumoconiosis	0/1 t	t	Non-Pneumoconiosis
5	WMB	02301	15	In	0	-	Normal	Not Submitted	Not Submitted	0/1 s	Probably Normal	s	Probably Normal	1/1 t	t	Asbestosis
6	DHC	33232	33	In Sup	Not Examined			Not Submitted	Not Submitted	2/1 t	Pneumoconiosis	t	Pneumoconiosis	2/2 t	t	Asbestosis
7	DLC	01191	27	In	0	-	Normal	Not Submitted	Not Submitted	0	Normal	-	Normal	0/0 ?	?	Probably Normal
8	SGC	04073	14	In	1/0 q		Pneumoconiosis	0/1 s	Questionable Pneumoconiosis	0/1 q	Simple Pneumoconiosis	q	Simple Pneumoconiosis	0	-	Normal

In - Insulator
? - No answer reported for the entry in the table.

Sup - Supervisor

PS - Painter Sandblaster

L - Laborer IFS - Insulation Fabrication Shop

* Radiographic appearances of pneumoconiosis (including asbestosis) are classified into four categories: 0, 1, 2 and 3 and subclassified into codes. Thus Category 0 includes 0/-, 0/0 and 0/1. The number left of the slant mark is the Category and the number to the right, the degree or extent. Category 1 includes 1/0, 1/1, and 1/2. Category 2 includes 2/1, 2/2 and 2/3 and Category 3 is graded into 3/2, 3/3 and 3/4. Types represent the size of the opacity; i.e., rounded opacities are graded as p, q or r and irregular opacities are graded as, t or u.

Table 2. - Continued

					1973					1974									
#	Emp. Init.	PR #	Time at Risk	Craft	"A" Reader			"C" Reader			"A" Reader			"C" Reader			Impression		
					T Y P e	Code ^a	Diagnosis	T Y P e	Code ^a	Diagnosis	T Y P e	Code ^a	Diagnosis	T Y P e	Code ^a	Diagnosis			
9	REC	01175	28	In	-	0	Pleural Thickening	-	0	Normal	-	0	Pleural Thickening	-	0	Not Pneumoconiosis	Normal		
10	NJE	01220	10	In	0	0	Normal	0	Not Submitted		1/0	t	Ill defined Cardiac outline Grade I	t	2/2	Asbestosis	Definitely Pneumoconiosis		
11	JDH	04001	10	In	0	0	Normal	0	Not Submitted		0/1	q	Minimal Pneumoconiosis	q	0/1	Asbestosis	Definitely Pneumoconiosis		
12	DLJ	01200	25	In	0	0	Normal	0/1	t	Asbestosis	0/1	t	Asbestosis	t	0/1	Asbestosis	Definitely Pneumoconiosis		
13	JWL	01201	20	In	1/0	q	?	2/2	s	Pneumoconiosis Questionable Asbestosis	0		Normal		0/1	Probably no Pneumoconiosis	Uncertain		
14	OHO	00480	10	In	1/2	p	Pneumoconiosis	2/2	p	Pneumoconiosis	1/2	p	Simple Pneumoconiosis	p	0/0	No Pneumoconiosis	Uncertain		
15	JWP	00206	17	In	1/1	p	?	1/0	p	Pneumoconiosis	0	-	Normal	-	0/0	No Pneumoconiosis	Probably Normal		
16	DCS	01218	20	In	1/0	q	Pneumoconiosis	0/1	t	Possible Pneumoconiosis	0/1	t	Borderline Pneumoconiosis	t	2/2	Asbestosis rather than Silicosis or CW Pneumoconiosis	Definitely Pneumoconiosis		

In - Insulator Sup-Supervisor

PS - Painter Sandblaster

L - Laborer

IFS - Insulation Fabrication Shop

? - No answer reported for the entry in the table.

* Radiographic appearances of pneumoconiosis (including asbestosis) are classified into four categories: 0, 1, 2 and 3 and subclassified into codes. Thus Category 0 includes 0/-, 0/0 and 0/1. The number left of the slant mark is the Category and the number to the right, the degree or extent. Category 1 includes 1/0, 1/1, and 1/2. Category 2 includes 2/1, 2/2 and 2/3 and Category 3 is graded into 3/2, 3/3 and 3/4. Types represent the size of the opacity; i.e., rounded opacities are graded s, q or r and irregular opacities are graded t or u.

Table 2. - Continued

1973										1974									
#	Emp. Init.	PR #	Time at Risk	Craft	"A" Reader			"C" Reader			"A" Reader			"C" Reader			Impression		
					T Y P e	Code*	Diagnosis	T Y P e	Code*	Diagnosis	T Y P e	Code*	Diagnosis	T Y P e	Code*	Diagnosis			
17	ECS	33489	37	In Sup	-	0	?		0/0	?	Questionable Pneumoconiosis	-	0	Normal		0/0	?	Asbestosis	Definitely Pneumoconiosis
18	CHS	00620	15	In		0	Normal		Not Submitted				0	Normal		1/0	s	Asbestosis	Probably Pneumoconiosis
19	RBS	00405	22	In		0	Normal		Not Submitted				0	Normal		0/0		Probably Asbestosis	Probably Pneumoconiosis
20	WCS	02966	17	In		0	Normal		Not Submitted				1/0	s	Emphysema	0		Normal	Other disease
21	WST	01180	28	In	1/1	q	Asbestosis		2/2	q	Asbestosis		1/1	q	Asbestosis	0/1	u	Asbestosis	Definitely Pneumoconiosis
22	CAT	01217	23	In		0	Normal		Not Submitted				1/1	t	Asbestosis	0/1	t	Asbestosis	Definitely Pneumoconiosis
23	WJE	01199	25	In IFS	-	0	Asbestosis		3/2	t	Complicated Pneumoconiosis		1/1	t	Asbestosis Shaggy heart	2/3	t	Asbestosis	Definitely Pneumoconiosis
24	CKC	00462	2½	PS		1/0	?		0/0	q	Questionable Pneumoconiosis		0	-	Normal	0	-	Normal	Probably Normal

In - Insulator

Sup-Supervisor

PS - Painter Sandblaster

L - Laborer

IFS - Insulation Fabrication Shop

? - No answer reported for the entry in the table.

* Radiographic appearances of pneumoconiosis (including asbestosis) are classified into four categories: 0, 1, 2 and 3 and subclassified into codes. Thus Category 0 includes 0/-, 0/0 and 0/1. The number left of the slant mark is the Category and the number to the right, the degree or extent. Category 1 includes 1/0, 1/1, and 1/2. Category 2 includes 2/1, 2/2 and 2/3 and Category 3 is graded into 3/2, 3/3 and 3/4. Types represent the size of the opacity; i.e., rounded opacities are graded as p, q or r and irregular opacities are graded as, t or u.

Table 2. Continued

#	Emp. Init.	PR #	Time at Risk	1973				1974			
				A - Reader		C - Reader		V - Reader		C - Reader	
				Code ^a	Diagnosis	Code ^a	Diagnosis	Code ^a	Diagnosis	Code ^a	Diagnosis
25	CPE	00438	23	PS	Not Examined	Not Submitted	0/1 0/1	Probably Pneumoconiosis	0/1 s	Uncertain	Uncertain
26	JLM	00419	22	PS	1/2 p	Pneumoconiosis	2/2 t	Complicated Pneumoconiosis	1/2 t	?	No Pneumoconiosis
27	SWS	00912	2	PS	0 -	?	0/1 s	Questionable Asbestosis	0 -	Normal	?
28	AFU	54884	32	PS Sup	1/0 s	Asbestosis	0/0 ?	Pleural Disease	0 -	Normal	Possible Asbestosis vs. Pleural Disease
29	CMW	00661	13	PS	2/2 q	Pneumoconiosis	2/3 s	Pneumoconiosis	2/2 q	Pneumoconiosis	2/2 p 1/0 s
30	CHAS	03969	2½	L	1/1 p	?	2/2 t	Pneumoconiosis	2/1 t	Simple Pneumoconiosis	2/2 t
											Definitely Pneumoconiosis
											Definitely Pneumoconiosis

In - Insulator Sup - Supervisor
? - No answer reported for the entry in the table.

PS - Painter Sandblaster

L - Laborer

IFS - Insulation Fabrication Shop

* Radiographic appearances of pneumoconiosis (including asbestosis) are classified into four categories: 0, 1, 2 and 3 and subclassified into codes. Thus Category 0 includes 0/-, 0/0 and 0/1. The number left of the slant mark is the Category and the number to the right, the degree or extent. Category 1 includes 1/0, 1/1, and 1/2, Category 2 includes 2/1, 2/2 and 2/3 and Category 3 is graded into 3/2, 3/3 and 3/4. Types represent the size of the opacity; i.e., rounded opacities are graded as p, q or r and irregular opacities are graded as, t or u.

or implied a diagnosis of pneumoconiosis in 17 (20% of the 85) of the 30 cases sent to him. The author studied the radiographic pneumoconiosis classifications and diagnoses advanced by the "A" and "C" readers for the two surveys. This led to the column titled "Impression" in Table 2 and represents the author's conclusions.

A concise summary of the data in Table 2 is contained in Table 3.

Table 3. Summary Classifications of Diagnoses of 30 Employees at Risk

Diagnosis	#	Case #'s (from Table 2)
Definitely Pneumoconiosis	14	1, 3, 5, 6, 10, 11, 12, 16, 17, 21, 22, 23, 29, 30
Probably Pneumoconiosis	3	18, 19, 27
Normal or Probably Normal	7	2, 4, 7, 8, 9, 15, 24
Other Disease	1	20
Uncertain	5	13, 14, 25, 26, 28
Total	30	

The data in Tables 2 and 3 show that as a minimum 17 of the 85 employees at risk have been diagnosed as definite or probable pneumoconiosis. Of this group, 13 are insulators with many years at risk, one is an Insulation Fabrication Shop insulator, two are painter-sandblasters and the remaining one is a laborer. To the author, it is not surprising that insulators with more than 20 years at risk have developed pneumoconiosis. It is also not surprising that the Insulation Fabrication Shop insulator has developed pneumoconiosis after 25 years of exposure. However, it is certainly surprising that other insulators working in this same shop have not developed pneumoconiosis.

It is equally not surprising that painter-sandblaster employees who work regularly at sandblasting have developed pneumoconiosis but again it is surprising that there are a large number of painter-sandblasters who have not developed pneumoconiosis. One painter-sandblaster's data is of special interest (Table 2, #29). This employee's x-ray interpretation by the local radiologist in both 1973 and 1974 indicated that the radiologist believed this employee had pneumoconiosis. In 1973 the "C" reader was not told which x-ray films were those of insulators and which were painter-sandblasters, but this was done in 1974. The "C" reader was told erroneously that CMW (Table 2, #29) was an insulator. The "C" reader in 1974 advised that CMW did have pneumoconiosis but it was silicosis rather than asbestosis or coal worker's pneumoconiosis. The "C" reader was correct. This painter-sandblaster should have silicosis, not asbestosis.

Table 2 shows that nine of the entries (#'s 1, 5, 7, 10, 11, 18, 19, 20 and 22) were included in the 1973 medical surveillance program but their chest x-ray films and examination findings did not warrant the "C" reader interpreting their x-ray films. Two of the entries (#'s 6 and 25) in Table 2 were not listed on the 1973 roster and were not included at all. In 1974 some of the chest films of the above 11 employees were now interpreted as pneumoconiosis by the local radiologists but there were also some x-ray reports that included some abnormality in the radiologist's interpretation that made them "suspect" and thus warranted their review by the "C" reader.

The reader of this report, who studies Table 2 carefully, will probably be surprised to note that the "C" reader (the same "C" reader was used in 1973 and 1974) completely reversed his diagnosis in several of the 1974 diagnoses when compared to his diagnoses of 1973; e.g. #'s 4, 14, 15 and particularly 26. Because of the late writing of this report, there was not sufficient time to again submit the films to the same "C" reader for re-evaluation. However, in the 1975 survey the 1973-74 "C" reader will be requested to pay particular attention to these cases and they will also be referred in consultation to other "C" readers for diagnosis. Eight of the eleven cases were diagnosed by the "C" reader as pneumoconiosis (#'s 1, 5, 6, 10, 11, 18, 19 and 22).

After reviewing the classifications; i.e., codes and types, advanced by both the "A" and "C" readers in the years 1973 and 1974, the author decided that a final diagnostic impression should be included. This led to the column titled "Impression" and further led to the summary information contained in Table 3. There are many features included in the individual x-ray interpretations that were not included in Table 2 because of lack of space and these features are not pathognomonic in themselves. Inclusion of all of these findings would be lengthy and would only confuse the layman. However, there are x-ray findings and also findings on physical examination that would be of interest to both the physician and the layman that can be described in case histories. Therefore, three selected case histories are presented in detail to emphasize pertinent findings that may be of interest to both business administrators and physicians.

CASE HISTORIES

Case No. 1 - ECS (33489) (Table 2, #17), is a 53-year-old insulator supervisor who has had approximately 30 years at risk to materials containing asbestos. His medical history reveals that he has never used tobacco, that he has never had any serious illnesses, and until 1973, his chest x-rays have been normal. His pulmonary function testing results were excellent; i.e., his Vital Capacity is 98% of predicted and his FEV_{1.0} is 94% of predicted. He has no complaints except that recently he has noticed an intermittent non-productive cough. As he terms it, "dry and hacking."