

Copy to Dr. Caramody
7/7/76

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SOUTH CHARLESTON PLANT P. O. BOX 2004, SOUTH CHARLESTON, W. VA. 25303

Dr. E. Q. Hull

June 2, 1976

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Analysis and Additional Data on
the Organization Resources
Counselors Epidemiology Study
on PVC Fabricating Workers

Analysis and more data on the ORC PVC fabricating industry study shows the following items:

1. An incremental study of seven companies of the seventeen in the study including Union Carbide Corporation showed the following significant differences.

WHITE MALES

	<u>ORC Study PMR</u>	<u>Seven Companies PMR</u>	<u>Union Carbide Corporation Alone PMR</u>
All cancers	1.18	2.0	1.48
Selected types			
Digestive include liver	1.29	1.77	1.62
Respiratory	1.16	2.15	1.32
Genitals	0.72	1.34	1.57
Urinary	1.09	1.37	1.01
Lymphatic	1.09	2.05	1.38
Cirrhosis of liver	0.67	1.38	0.58

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As the groups become smaller the significance of PMR is more difficult to evaluate. However, excesses at Union Carbide Corporation appear to be in the digestive and respiratory cancer areas.

2. On May 6, 1976 I reported a seeming excess of pancreatic cancer in the Union Carbide Corporation workers in New Jersey. Comparison of this data with the foregoing item appears to account for the Union Carbide Corporation excess of digestive cancers. The cases of pancreatic cancer involved the following workers:

64-73
not at
Pasquale Barone
Charles P. Barry
Claude Beitz
John A. Carter
Antonio Colantuono
John J. Coyne
J. O. Van Middlesworth
Leo Spira

Frank J. Kalman
Arthur J. Arculian
Shonahan 2-13-60
Alan H. Frozier
Frozier Draft

ca of Institute

All are New Jersey workers except Leo Spira.

The excess of respiratory cancer deaths was in the bronchus and lung area. Additional data could be obtained if needed in this area.

3. Western Electric was a member of the seven-company increment. They too were informed regarding their employees. As a result of this disclosure Western Electric has notified Dr. William Loyd of NIOSH that they have excess cancers in their Baltimore, Maryland, Buffalo, New York and Omaha, Nebraska plants and has asked for help in determining the cause. I have no specific knowledge as to details of their problem

Very truly yours,

R. N. Wheeler Jr.
R. N. Wheeler, Jr.

RNWJr. /pm
Attachments

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INCREMENTAL STUDY OF ORC EPIDEMIOLOGY REPORT
ON PVC FABRICATORS

Seven Companies Including Union Carbide Corporation
and Western Electric

WHITE MALES

<u>Cause of Death</u>	<u>Number</u>	<u>Expected</u>	<u>PMR</u>
All causes	730	-	-
All cancers	262	131	2.0
Selected types of cancer			
Buccal Cavity and Pharynx	5	4.3	1.162
Digestive (Includes liver)	64	36.17	1.769
Liver	2	0.99	2.02
Respiratory	93	43.3	2.147
Genitals	20	14.88	1.344
Urinary	10	7.28	1.374
Lymphatic (Includes leukemia)	28	13.64	2.05
Diabetes	6	11.08	0.54
Diseases of circulatory system	325	391.0	0.83
Cirrhosis of liver	25	18.05	1.38

INCREMENTAL STUDY OF ORC EPIDEMIOLOGY REPORT
ON PVC FABRICATORS

Seven Companies Including Union Carbide Corporation
and Western Electric

WHITE FEMALES

<u>Cause of Death</u>	<u>Number</u>	<u>Expected</u>	<u>PMR</u>
All Causes	167	-	-
All Cancers	68	46.93	1.45
Selected types of cancer			
Buccal cavity and pharynx	3	0.67	4.48
Digestive (Includes liver)	21	10.43	2.01
Liver	0	0.63	-
Respiratory	4	4.32	0.93
Breast	20	12.1	1.65
Genitals	6	8.47	0.71
Urinary	1	1.187	0.84
Lymphatic (Includes leukemia)	4	4.28	0.93
Diabetes	3	4.7	0.64
Circulatory disease	56	69.48	0.81
Cirrhosis of liver	0	5.06	-

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DISTRIBUTION OF DEATHS FROM SELECTED CAUSES
AMONG EMPLOYEES OF PVC FABRICATORS (UNION CARBIDE)
BY COLOR* AND SEX, 1964-1973

B B, OTH & Centerville

Cause of Death	ICDA Code	<i>Wayne</i>		Female	
		Male	Percent	Number	Percent

WHITE

ALL CAUSES	..	197	100.0	10	100.0
All Cancers	140-209	53	26.9	6	60.0
Buccal & Pharynx	140-149	1	0.5	0	0
Digestive	150-159	16	8.1	1	10.0
Liver	155	0	0	0	0
Respiratory	160-163	16	8.1	2	20.0
Breast	174	-	-	2	20.0
Genital	180-187	4	2.0	1	10.0
Urinary	188-189	2	1.0	0	0
Brain	191	3	1.5	0	0
Lymphatic	200-209	5	2.5	0	0
Leukemia	204-207	3	1.5	0	0
Others	..	6	3.0	0	0
Diabetes	250	0	0	0	0
Circulatory Diseases	390-458	85	43.1	2	20.0
Cirrhosis of Liver	571	3	1.5	0	0
All other Causes	..	56	28.4	2	20.0

NONWHITE

ALL CAUSES	..	6	100.0	0	
All Cancers	140-209	0	0		
Buccal & Pharynx	140-149				
Digestive	150-159				
Liver	155				
Respiratory	160-163				
Breast	174				
Genitals	180-187				
Urinary	188-189				
Brain	191				
Lymphatic	200-209				
Leukemia	204-207				
Others	..				
Diabetes	250	0	0		
Circulatory Diseases	390-458	5	83.3		
Cirrhosis of Liver	571	0	0		
All other Causes	..	1	16.7		

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*Col r unknown in 40 cases which are not included in this table

OBSERVED AND EXPECTED DEATHS DUE TO SELECTED CAUSES
AMONG EMPLOYEES OF PVC FABRICATORS (UNION CARBIDE) 1964-1973

Cause of death	Observed	Expected	FMR*
WHITE MALE			
All Cancers	53	35.74	1.48
Buccal & Pharynx	1	1.20	0.83
Digestive	16	9.91	1.62
Liver	0	0.27	-
Respiratory	16	12.10	1.32
Genitals	4	2.54	1.57
Urinary	2	1.98	1.01
Lymphatic	5	3.61	1.38
Leukemia	3	1.43	2.10
Diabetes	0	2.96	-
Circulatory Diseases	85	106.48	0.80
Cirrhosis of Liver	3	5.14	0.58

WHITE FEMALE			
All Cancers	6	2.92	2.06
Buccal & Pharynx	0	0.04	-
Digestive	1	0.63	1.59
Liver	0	0.01	-
Respiratory	2	0.27	7.43
Breast	2	0.77	2.60
Genital	1	0.54	1.86
Urinary	0	0.07	-
Lymphatic	0	0.26	-
Leukemia	0	0.10	-
Diabetes	0	0.25	-
Circulatory Diseases	2	4.05	0.49
Cirrhosis of Liver	0	0.33	-

FMR = ratio of Observed to Expected where the expected number is calculated on the basis of the 1968 U.S. white male (or female) distribution of deaths specific for cause and age.
Caution should be exercised in interpreting the FMR when the corresponding number of observed deaths is small.

TABLE 11-4

DISTRIBUTION OF DEATHS AMONG
EMPLOYEES OF PVC FABRICATOR (UNION CARBIDE)

BY SEX AND COLOR, 1964 - 1973

Category	Number	Percent
BY SEX		
Male	239	94.5
Female	14	5.5
TOTAL	253	100.0
BY COLOR		
White	207	81.8
Nonwhite	6	2.4
Unknown	40	15.8
TOTAL	253	100.0

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TABLE 11-5

DISTRIBUTION OF DEATHS AMONG
EMPLOYEES OF PVC FABRICATOR (UNION CARBIDE)
BY COLOR*, AGE, AND SEX, 1964-1973

AGE	BOTH SEXES		MALE		FEMALE	
	Number	Percent	Number	Percent	Number	Percent
WHITE						
All ages	207	100.0	197	100.0	10	100.0
Under 35	5	2.4	5	2.5	0	-
35 - 44	15	7.2	12	6.1	3	30.0
45 - 54	40	19.3	39	19.8	1	10.0
55 - 64	70	33.8	66	33.5	4	40.0
65 & over	77	37.2	75	38.1	2	20.0
Unknown	-	-	-	-	-	-
NONWHITE						
All ages	6	100.0	6	100.0	0	
Under 35	0	-	0	-		
35 - 44	1	16.7	1	16.7		
45 - 54	3	50.0	3	50.0		
55 - 64	2	33.3	2	33.3		
65 & over	0	-				

*Color was unknown in 40 cases which are not included in the tables

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SUMMARY

UNION CARBIDE

cancer/liver

Illinois

Chicago

Augustana Hospital	1
Billings Hospital	1
Christ Community Hospital	1
Holy Cross Hospital	3
South Suburban Hospital	1

Hinsdale

Hinsdale Sanitarium & Hospital	1
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La Grange

Community Memorial General Hospital	2
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La Salle

St Mary Hospital	1
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Oak Park

West Suburban Hospital	2
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Ottawa

Ryburn Memorial Hospital	1
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Peru

People's Hospital	1
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Spring Valley

St. Margaret's	1
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Hines

VA Hospital	1
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Unknown

4

TOTAL ILLINOIS

21

Iowa

Council Bluffs

Mercy Hospital	1
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Des Moines

Luthern Hospital	1
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Red Oak

Murphy Memorial Hospital	1
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Unknown

4

TOTAL IOWA

7

New Jersey

Denville

St. Clare's	1
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Edison

John F. Kennedy Community Hospital	4
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Flemington

Hunterdon Medical Center	1
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Hackensack

Hackensack Hospital	2
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New Brunswick			
Middlesex General Hospital	1		
St. Peter's Hospital	6		
Neptune			
Jersey Shore Medical Center	1		
Orange			
Orange Memorial Hospital	1		
Perth Amboy			
Perth Amboy General Hospital	2		
Pequannock			
Chilton Memorial Hospital	1		
Plainfield			
Muhlenberg Hospital	5		
Ridgewood			
Valley Hospital	1		
Somerville			
Somerset Hospital	12		
Summit			
Overlook Hospital	1		
E. Orange			
VA Hospital	1		
Lyons			
VA Hospital	1		
Nursing Homes	6		
Unknown	<u>21</u>	41	
TOTAL NEW JERSEY			68 69
Missouri			
Columbia			
Boone County Hospital	1		
New York			
New York City			
Memorial Hospital	1		
Pennsylvania			
Philadelphia			
Nazareth Hospital	1		
Out of the Country	<u>2</u>		
TOTAL MISC.			<u>5</u>
TOTAL CANCER/LIVER			101 102

FROM: R. N. Wheeler, Union Carbide

OBSERVED AND EXPECTED DEATHS DUE TO SELECTED CAUSES AMONG EMPLOYEES
OF 17 PVC FABRICATORS[†], 1964-1973

Cause of Death	WHITE MALE		
	Observed	Expected	PMR*
ALL CANCERS	665	562.814	1.18
Selected Types of Cancer			
Buccal Cavity and Pharynx	15	16.898	0.89
Digestive	210	162.373	1.29
Liver <i>(component of digestive)</i>	6	4.192	1.43
Respiratory	205	176.899	1.16
Breast	---	---	---
Genitals	42	57.981	0.72
Urinary	36	33.178	1.09
Lymphatic	61	55.837	1.09
Leukemia	19	23.402	0.81
Diabetes	43	49.676	0.87
Diseases of Circulatory System	1933	1835.244	1.05
Cirrhosis of Liver	42	62.947	0.67

Cause of Death	WHITE FEMALE		
	Observed	Expected	PMR*
ALL CANCERS	179	135.933	1.32
Selected Types of Cancer			
Buccal Cavity and Pharynx	3	1.872	1.60
Digestive	53	34.929	1.52
Liver	---	0.627	---
Respiratory	12	11.715	1.02
Breast	44	31.907	1.38
Genitals	19	22.971	0.83
Urinary	11	4.487	2.45
Lymphatic	10	12.481	0.80
Leukemia	1	4.951	0.20
Diabetes	10	15.274	0.65
Diseases of Circulatory System	277	305.578	0.91
Cirrhosis of Liver	3	12.136	0.25

[†]Excluding Company #11.

*PMR = ratio of Observed to Expected where the expected number is calculated on the basis of the 1968 U.S. white male (or female) distribution of deaths specific for cause and age.