Friebee
Describe Cohort in more detail
Monson
Other Co's.

PROPORTIONAL MORTALITY STUDY

OF

1974 - 1980 DEATHS

Confidential

Reynolds Metals Company

June 1981

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RMC0042261

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STUDY GOAL

TO IDENTIFY HIGHER INCIDENCES OF DISEASES IN REYNOLDS EMPLOYEES WHICH COULD BE RELATED TO THE WORK ENVIRONMENT.

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CONCLUSIONS

1. FAVORABLE MORTALITY RATIOS (PMR < 100) WERE FOUND FOR MOST DISEASES.

2. A SIGNIFICANT EXCESS OF DEATHS WAS DETECTED DUE TO RESPIRATORY AND GENITAL CANCER, HYPERTENSIVE HEART DISEASE, AND ACCIDENTS.

3. LUNG CANCER WAS SPREAD FAIRLY EVENLY ACROSS ALL WORK ENVIRONMENTS.

4. GENITAL CANCER WAS HIGH PRIMARILY AT TILO, CORPORATE HEADQUARTERS, JONES MILLS, AND PHOENIX.

5. THE INCIDENCE OF LYMPHOMA WAS STATISTICALLY SIGNIFICANT PRIMARILY IN THE REDUCTION DIVISION.

6. DIGESTIVE ORGAN CANCER WAS HIGH IN THE FLEXIBLE PACKAGING DIVISION.

7. NO EVIDENCE WAS FOUND TO SUPPORT A SIGNIFICANTLY HIGH INCIDENCE OF LEUKEMIA.

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DISTRIBUTION OF EMPLOYEES BY AGE
AND YEAR OF DEATH

YEAR	YEARS OF AGE 15-29	30-39	40-49	50-59	60-69	70-79	80 OR MORE	ALL AGES
1974	15	9	36	73	82	51	23	289
1975	6	11	20	72	89	68	23	289
1976	5	9	20	59	120	79	15	307
1977	8	16	22	67	113	101	18	345
1978	7	9	21	62	111	94	36	340
1979	8	9	19	68	117	91	23	335
1980	14	15	23	63	127	93	38	378
Total	63	78	161	464	759	577	176	2278

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PROPORTIONAL MORTALITY RATIO
(PMR)

$$PMR = \frac{\text{OBSERVED DEATHS}}{\text{EXPECTED* DEATHS}} \times 100$$

*EXPECTED NUMBERS INCLUDE ADJUSTMENTS FOR SEX AND AGE AT DEATH.

1974-1980 EMPLOYEE DEATHS
UNITED STATES

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CAUSE OF DEATH (I.C.D. NUMBER[1])	TOTAL OBSERVED	1976 EXPECTED	1976 PMR	1978 EXPECTED	1978 PMR
Tuberculosis (010-019)	0	5.1	--	4.6	--
Malignant Neoplasms (140-209)	582	511.2	114*	538.4	108+
Buccal Cavity & Pharynx (140-149)	9	15.1	60	15.5	58
Digestive Organs & Peritoneum (150-159)	143	131.6	109	135.6	105
Respiratory System (160-163)	230	181.4	127*	195.7	118+
Genital Organs (180-187)	68	44.6	152*	45.3	150*
Urinary Organs (188-189)	15	26.0	58	26.4	57
Leukemia & Aleukemia (204-207)	16	18.1	88	18.0	89
Lymphomas (200-203, 208, 209)	33	25.3	130	28.3	117
Diabetes Mellitus (250)	27	33.8	80	33.7	80
Major Cardiovascular & Renal Diseases (390-458, 580-584)	1092	1135.9	96	1111.8	98
Rheumatic Fever & Chronic Rheumatic Heart Disease (390-398)	18	15.7	115	15.0	120
Hypertensive Disease (400-404)	21	15.8	133	14.8	142+
Ischemic Heart Disease (410-413)	737	807.9	91	787.1	94
Nonrheumatic Endocarditis (421)	0	1.1	--	1.0	--
Cerebrovascular Disease (430-438)	155	158.5	98	143.1	108
Arteriosclerosis (440)	19	17.6	108	17.1	111
Chronic & Unspecified Nephritis & Renal Sclerosis (580-584)	5	9.9	51	10.1	49
Influenza & Pneumonia (470-486)	43	56.3	76	53.2	81
Ulcer of Stomach & Duodenum (531-532)	4	9.1	44	7.2	56
Appendicitis (540-543)	0	0.9	--	0.9	--
Hernia & Intestinal Obstruction (550-553, 560)	4	4.6	87	4.2	95
Gastritis, Duodenitis, Enteritis & Colitus (535, 561, 563)	2	1.7	118	1.7	118
Cirrhosis of Liver (571)	35	59.3	59	57.1	61
Hyperplasia of Prostate (600)	2	1.5	133	1.1	182
Symptoms, Senility & Ill-Defined Conditions (780-796)	74	33.7	220*	32.7	226*
Accidents (800-949)	146	126.4	116*	131.6	111+
Suicide (950-959)	36	43.9	82	43.9	82
Homicide (960-978)	24	30.4	79	30.9	78
All Other Causes	207	224.2	92	225.0	92
TOTAL - ALL CAUSES	2278				

* Statistically significant at the 5 percent level.
+ Statistically significant at the 10 percent level.
NOTE . Eighth Revision International Classification of Disease. Adapted 1965.

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LOCATIONS WITH ABOVE AVERAGE INCIDENCE OF RESPIRATORY CANCER

LOCATION	1976 PMR	OBSERVED DEATHS	TOTAL DEATHS	PERCENTAGE OF TOTAL DEATHS[1]
All Locations	127*	230	2278	10.1%
RASCO Locations	250*	4	24	16.7%
A&BP Division (Tilo)	179	5	37	13.5%
Flexible Packaging Division	165*	39	337	11.6%
South Plant	213*	13	76	17.1%
St. Louis Printing	208+	5	35	14.3%
Alumina & Mining Division	143	20	164	12.2%
Hurricane Creek	172*	15	106	14.1%
Sherwin	147	5	36	13.9%
Reduction Division	131*	55	499	11.0%
St. Lawrence	250	2	10	20.0%
Jones Mills	186*	16	105	15.2%
Electrical Division	130	3	27	11.1%
Malvern Cable	400*	2	7	28.6%
Can Division	125	7	73	9.6%
Louisville Machinery Plant	333+	2	7	28.6%
Macauley	200	1	12	8.3%
Mill Products Division	116	90	955	9.4%
Bellwood Extrusion	278*	5	20	25.0%
Louisville 15	250+	4	22	18.2%

[1] National male percentage is 6.9 percent.

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LOCATIONS WITH ABOVE AVERAGE INCIDENCE OF GENITAL CANCER

LOCATION	1976 PMR	OBSERVED DEATHS	TOTAL DEATHS	PERCENTAGE OF TOTAL DEATHS[1]
All Locations	123*	55	2278	2.4%
A&BP Division	429*	3	37	8.1%
Tilo	428*	3	34	8.8%
RASCO Locations	400*	2	24	8.3%
Corporate Headquarters	304*	7	94	7.4%
Reduction Division	157+	14	499	2.8%
Jones Mills	454*	10	105	9.5%
Patterson	250	2	43	4.6%
Can Division	111	1	73	1.4%
Footeburt	333	1	18	5.6%
Mill Products Division	101	19	955	2.0%
Louisville 3	250	3	39	7.7%
Phoenix	195+	8	191	4.2%
Torrance Warehouse	-	1	5	20.0%

[1] National male percentage is 2.1 percent.

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LOCATIONS WITH ABOVE AVERAGE INCIDENCE OF LYMPHOMAS

LOCATION	1976 PMR	OBSERVED DEATHS	TOTAL DEATHS	PERCENTAGE OF TOTAL DEATHS[1]
All Locations	138	35	2278	1.5%
Recycling & Reclamation Division	-	1	11	9.1%
Bellwood Reclamation	-	1	6	16.7%
Alumina & Mining Division	222	4	164	2.4%
Bauxite	500	1	22	4.6%
Hurricane Creek	250+	3	106	2.8%
Flexible Packaging Division	184	7	337	2.1%
Louisville 1	278*	5	167	3.0%
South Plant	125	1	76	1.3%
Bellwood Printing	-	1	12	8.3%
Reduction Division	175+	10	499	2.0%
Longview	429*	3	60	5.0%
San Patricio	375*	3	66	4.6%
Troutdale	333*	3	79	3.8%
Mill Products Division	104	11	955	1.2%
Grand Rapids	250	1	38	2.6%
McCook	143	4	255	1.6%
Listerhill Alloys (Sheet & Plate)	105	4	340	1.2%

[1] National male percentage is 1 percent.

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LOCATIONS WITH ABOVE AVERAGE INCIDENCE OF DIGESTIVE ORGAN & PERITONEUM CANCER

LOCATION	1976 PMR	OBSERVED DEATHS	TOTAL DEATHS	PERCENTAGE OF TOTAL DEATHS [1]
All Locations	109	143	2278	6.3%
RASCO Locations	333*	4	24	16.7%
Electrical Division	214	3	27	11.1%
Longview Cable	-	1	5	20.0%
Malvern Cable	-	1	7	14.3%
Chester Cable	111	1	15	6.7%
Corporate Headquarters	143	8	94	8.5%
Can Division	139	5	73	6.8%
Macauley	250	1	12	8.3%
Footeburt	167	2	18	11.1%
San Francisco	-	1	3	33.3%
Alumina & Mining Division	113	11	64	17.2%
Sherwin Alumina	145	3	36	8.3%
Hurricane Creek	113	7	106	6.6%
Flexible Packaging Division	106	21	337	6.2%
Kentucky Southern Gravure	600*	3	12	25.0%
Bellwood Printing	333+	2	12	16.7%
North Plant	250+	4	25	16.0%
Grottoes	250	1	6	16.7%

[1] National male percentage is 5.3 percent.

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LOCATIONS WITH ABOVE AVERAGE INCIDENCE OF URINARY CANCER

LOCATION	1976 PMR	OBSERVED DEATHS	TOTAL DEATHS	PERCENTAGE OF TOTAL DEATHS[1]
All Locations	108	28	2278	1.2%
Flexible Packaging Division	189+	7	337	2.1%
South Plant	333*	3	76	3.9%
St. Louis Printing	250	1	35	2.9%
Louisville 1	158	3	167	1.8%
Reduction Division	121	7	499	1.4%
Longview	286	2	60	3.3%
San Patricio	250	2	66	3.0%
Troutdale	111	1	79	1.3%
St. Lawrence	-	1	10	10.0%
Mill Products Division	117	13	955	1.4%
Grand Rapids	500*	2	38	5.3%
Louisville 3	200	1	39	2.6%
Listerhill Alloys (Sheet & Plate)	154	6	340	1.8%

[1] National male percentage is 1.1 percent.

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LOCATIONS WITH ABOVE AVERAGE INCIDENCE OF LEUKEMIA & ALEUKEMIA

LOCATION	1976 PMR	OBSERVED DEATHS	TOTAL DEATHS	PERCENTAGE OF TOTAL DEATHS[1]
All Locations	77	14	2278	0.6%
A&BP Division	333	1	37	2.7%
Ashville	-	1	3	33.3%
Can Division	167	1	73	1.4%
Footeburt	-	1	18	5.6%
Alumina & Mining Division	154	2	164	1.2%
Hurricane Creek	250	2	106	1.9%

[1]National male percentage is 0.8 percent.

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LOCATIONS WITH ABOVE AVERAGE INCIDENCE OF BUCCAL CAVITY & PHARYNX CANCER

LOCATION	1976 PMR	OBSERVED DEATHS	TOTAL DEATHS	PERCENTAGE OF TOTAL DEATHS[1]
All Locations	60	9	2278	0.4%
A&BP Division	500	1	37	2.7%
Tilo	500	1	34	2.9%
Can Division	400*	2	400	0.5%
Louisville Machinery	-	1	7	14.3%
Bristol End	-	1	4	25.0%
Corporate Headquarters	167	1	94	1.1%

[1] National male percentage is 0.6 percent.