



UNIVERSITY OF MINNESOTA  
TWIN CITIES

Division of Environmental  
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April 6, 1989

Larry R. Zobel, M.D.  
Staff Physician  
3M Center  
Medical Department  
220-2E-02  
St. Paul, MN 55144-1000

Dear Larry;

Enclosed please find the tables containing the results of the comparison with the Minnesota population. As I mentioned on the telephone, these must be interpreted cautiously because of the uncertainty regarding the Minnesota rates prior to 1959. Deaths among the study cohort occurred in 41 states; therefore, the U.S. rates may be more appropriate.

As you will see from the tables, the results are similar to those presented previously which used the U.S. rates. The only consistent finding between the two comparisons is for prostatic cancer which we addressed in our initial report. For cancer of the digestive organs and peritoneum there was a statistically significant excess (SMR=176, 95% C.L.=1.09, 2.69) for the entire cohort. However, this was not found among the Clinical Division employees. Furthermore, no single site within the gastrointestinal tract was elevated suggesting that this was probably due to chance. Also worth noting is the fact that these are not sites typically associated with chemical exposures.

If you have any questions please feel free to call me at 626-4810.

Yours sincerely,

Jack S. Mandel, Ph.D.  
Associate Professor

HEALTH SCIENCES



TABLE 5. OBSERVED AND EXPECTED DEATHS BY CAUSE, STANDARDIZED MORTALITY RATIO (SMR), 95 PERCENT CONFIDENCE LIMITS AND CHI SQUARE VALUES, MALES, CHEMICAL DIVISION (COMPARED TO MINNESOTA DEATH RATES)

	OBSERVED	EXPECTED	OBS/EXP	LL	UL	CHISQ
0111 CAUSES OF DEATH	100	89.79	1.11	0.91	1.35	1.05
1111 MALIGNANT NEOPLASMS	23	16.39	1.40	0.89	2.11	2.27
2111 INFECTIVE AND PARASITIC DISEASE	0	0.68	0.00	0.00	5.41	0.05
3111 TUBERCULOSIS	0	0.20	0.00	0.00	18.48	0.46
4111 CANCER OF BUCCAL CAVITY AND PHARYNX	0	0.52	0.00	0.00	7.05	0.00
5111 CANCER OF DIGESTIVE ORGANS AND PERITONEUM (1925-APPROXIMATE)	6	4.23	1.42	0.52	3.09	0.38
6111 CANCER OF ESOPHAGUS (1925-APPROXIMATE)	1	0.40	2.49	0.03	13.83	0.02
7111 CANCER OF STOMACH	0	0.71	0.00	0.00	5.16	0.06
8111 CANCER OF LARGE INTESTINE (1925-APPROXIMATE)	3	1.40	2.14	0.43	6.25	0.86
9111 CANCER OF RECTUM (1925-APPROXIMATE)	0	0.45	0.00	0.00	8.23	0.01
10111 CANCER OF LIVER (1925-APPROXIMATE) 1970 PLUS-PRIMARY ONLY	0	0.27	0.00	0.00	13.68	0.20
11111 CANCER OF PANCREAS (1925-APPROXIMATE)	2	0.88	2.28	0.26	8.23	0.44
12111 CANCER OF RESPIRATORY SYSTEM (1925-APPROXIMATE)	5	4.66	1.07	0.35	2.50	0.01
13111 CANCER OF LARYNX (1925-,1930- APPROXIMATE)	1	0.19	5.16	0.07	28.73	0.48
142111 CANCER OF LUNG-PRIMARY AND SECONDARY (1925-,1930-APPROXIMATE)	4	4.41	0.91	0.24	2.32	0.00
170111 CANCER OF BOBE (1925-,1930,1945-APPROXIMATE)	0	0.12	0.00	0.00	29.60	1.14
177111 CANCER OF SKIN	1	0.40	2.49	0.03	13.85	0.02
185111 CANCER OF PROSTATE (1925-APPROXIMATE)	4	0.51	7.80	2.10	19.96	17.39
186111 CANCER OF TESTIS (OTHER GENITAL ORGANS-1925-49) (1925-,1930-APPROXIMATE)	1	0.38	2.61	0.03	14.55	0.04
188111 CANCER OF BLADDER (1925-APPROXIMATE)	0	0.26	0.00	0.00	14.08	0.22
189111 CANCER OF KIDNEY (1925-APPROXIMATE)	0	0.53	0.00	0.00	6.91	0.00
190111 CANCER OF EYE (1950-1969 ONLY)	0	0.02	0.00	0.00	181.46	11.39
191111 CANCER OF BRAIN AND OTHER CENTRAL NERVOUS SYSTEM (1925-APPROXIMATE)	1	0.87	1.15	0.02	6.42	0.15
193111 CANCER OF THYROID (1950-1969 ONLY)	0	0.04	0.00	0.00	93.44	5.41
200111 LYMPHOSARCOMA AND RETICULOSARCOMA (1950-1969 ONLY)	0	0.52	0.00	0.00	7.04	0.00
201111 HODGKIN'S DISEASE (1940-,1945-APPROXIMATE)	0	0.55	0.00	0.00	6.62	0.01

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204LEUKEMIA AND ALEUKEMIA	0	2.63	0.00	0.00	1.40	1.72
208CANCER OF OTHER LYMPHATIC TISSUE (1950-1969 ONLY)	3	1.42	2.11	0.42	6.15	0.61
209ALL LYMPHOBLASTIC CANCER	6	6.69	0.90	0.33	1.95	0.01
210BENIGN NEOPLASMS (PLUS UNSPECIFIED)	0	0.49	0.00	0.00	7.50	0.00
260ALLERGIC, ENDOCRINE, METABOLIC, NUTRITIONAL DISEASES (1950-1969 ONLY)	4	4.74	0.84	0.23	2.16	0.01
250DIABETES MELLITUS	3	3.71	0.81	0.16	2.36	0.01
280ALL DISEASES OF BLOOD AND BLOOD-FORMING ORGANS (1925-,1930-APPROXIMATE)	1	0.44	2.28	0.03	12.68	0.01
319NEURAL, PSYCHONEUROTIC, AND PERSONALITY DISORDERS (1950-1969 ONLY)	1	1.86	0.54	0.01	3.00	0.07
320ALL DISEASES OF NERVOUS SYSTEM AND SENSE ORGANS	3	3.21	0.94	0.19	2.73	0.03
390ALL DISEASES OF CIRCULATORY SYSTEM	104	96.73	1.08	0.88	1.30	0.47
393CHRONIC RHEUMATIC HEART DISEASE (1925-APPROXIMATE)	3	2.89	1.04	0.21	3.03	0.05
410ARTERIOSCLEROTIC HEART DISEASE, INCLUDING CHD (1925-APPROXIMATE)	84	72.88	1.15	0.92	1.43	1.55
430ALL VASCULAR LESIONS OF CNS	7	10.58	0.66	0.26	1.36	0.90
460ALL RESPIRATORY DISEASES (1925-,1930-APPROXIMATE)	7	8.68	0.81	0.32	1.66	0.16
480ALL PNEUMONIA (1925-,1930-APPROXIMATE)	3	3.09	0.97	0.20	2.84	0.05
492EIPHYSSEMA (1950-,1955 APPROXIMATE)	1	1.95	0.51	0.01	2.86	0.10
493ASTHMA (1925-,1930-APPROXIMATE)	1	0.43	2.34	0.03	13.02	0.01
520ALL DISEASES OF DIGESTIVE SYSTEM	12	11.45	1.05	0.54	1.83	0.00
531ALL GASTRIC AND DUODENAL ULCER	2	1.12	1.78	0.20	6.44	0.13
571CIRRHOSIS OF LIVER	3	6.88	0.44	0.09	1.27	1.66
580ALL DISEASES OF GENITO-URINARY SYSTEM	0	2.16	0.00	0.00	1.70	1.27
582CHRONIC HEPATITIS	0	0.91	0.00	0.00	4.04	0.18
709ALL DISEASES OF THE SKIN AND CELLULAR TISSUE	0	0.14	0.00	0.00	26.14	0.92
739ALL DISEASES OF THE BONES AND ORGANS OF MOVEMENT	1	0.52	1.94	0.03	10.78	0.00
7999SYMPTOMS, SEBILITY, AND ILL DEFINED CONDITIONS	1	1.66	0.60	0.01	3.36	0.01
800ALL EXTERNAL CAUSES OF DEATH	46	52.17	0.88	0.65	1.18	0.62
801ALL ACCIDENTS	34	38.27	0.89	0.62	1.24	0.37
810MOTOR VEHICLE ACCIDENTS	27	21.42	1.26	0.83	1.83	1.20
999SUICIDE	9	10.86	0.83	0.38	1.57	0.17
TOTAL RESIDUAL	1	-65.08	-0.02			

CANCER RESIDUAL

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