

MORTALITY AMONG PLUTONIUM AND OTHER WORKERS AT ROCKY FLATS

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A detailed study of mortality and radiation exposure for Rocky Flats workers was reported at the Sixteenth Mid-Year Topical Symposium of the Health Physics Society in January 1983.¹ We found significantly fewer deaths than expected due to all causes, all malignant neoplasms, lung cancer, and cancer of the digestive organs. No bone cancers were observed and cancers commonly associated with radiation exposure were not more frequent than expected (Table XI). Significantly more deaths than expected were observed for two causes, cancer of the prostate and benign and unspecified neoplasms. Further investigation revealed that the deaths from benign and unspecified neoplasms all involved intracranial tumors. A case control study² found no association between

TABLE XI. Standardized Mortality Rates (SMRs) for Selected Causes of Death Among White Males Employed at Least 2 Yr

Cause (ICD)	Observed	Expected	SMR	95% CI
All causes (1-998)	334	522.44	64	57-71
All cancers (140-209)	79	105.02	75	60-94
Lung (162,163)	22	35.9	62	38-93
Liver (155,156)	3	1.75	171	31-500
Pancreas (157)	(157)	5.73	70	19-179
Bone (196)	0	0.54	0	0-674
Brain (191-192)	6	4.04	149	54-324
Benign and unspecified neoplasms (204-207)	6	1.48	405	148-881
Leukemia and aleukemia (204-207)	5	4.26	117	38-274
Lymphopioetic (200-209)	8	11.27	71	31-140

Note: See Ref. 1.

TABLE XII. Relative Risk for Workers Exposed to ≥ 2 nCi Plutonium Compared with Workers Exposed to <2 nCi

Cause of Death	White Males Employed at Least 2 Yr		
	No. Cases Exposed	Risk Ratio	95% CI
All causes	67	1.16	0.88-1.52
All cancers	14	0.98	0.55-1.75
Lung	1	0.20	0.03-1.26
Leukemia and aleukemia	1	0.98	0.11-8.75
All lymphopioetic	3	2.64	0.67-10.49

TABLE XIII. Relative Risk for Workers Exposed to ≥ 1 rem External Radiation Compared with Workers Exposed to <1 rem

Cause of Death	White Males Employed at Least 2 Yr		
	No. Cases Exposed	Risk Ratio	95% CI
All causes	155	1.07	0.83-1.33
All cancers	37	1.09	0.69-1.72
Lung	10	0.97	0.41-2.28
Pancreas	1	0.36	0.04-3.25
Brain	3	1.10	0.21-5.69
Benign and unspecified neoplasms	4	2.86	0.46-17.62
Leukemia and aleukemia	3	1.64	0.28-9.77
All lymphopoeitic	4	1.17	0.29-4.81

these brain tumors and exposure to radiation, including plutonium depositions or type of occupation. The excess deaths from intracranial tumors remain unexplained but do not appear to be associated with employment at Rocky Flats.

Relative risks among Rocky Flats workers with cumulative plutonium depositions of 2 nCi or more did not indicate a significantly greater risk of death among workers exposed to plutonium than among unexposed workers (Table XII). Similar results were found for workers with cumulative radiation exposure of at least 1 rem (Table XIII).

References

1. G. S. Wilkinson, G. L. Voelz, J. F. Acquavella, G. L. Tietjen, M. Reyes, R. Brackbill, and L. Wiggs, "Mortality Among Plutonium and Other Workers at a Nuclear Facility," in "Epidemiology Applied to Health Physics," *Proceedings of the 16th Mid-Year Topical Symposium of the Health Physics Society*, CONF-83101 (National Technical Information Service, Springfield, Virginia, 1983).
2. M. Reyes, G. Wilkinson, G. Tietjen, G. Voelz, and J. Acquavella, "Case-Control Study of Brain Tumors Among White Males Employed at the Rocky Flats Plant," Los Alamos National Laboratory report LA-9804-MS (June 1983).

CANCER INCIDENCE AMONG WORKERS AT THE LOS ALAMOS NATIONAL LABORATORY

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An analysis of cancer incidence among Los Alamos workers was reported at the Sixteenth Mid-Year Topical Symposium of the Health Physics Society.¹ Cancer incidence was especially low among Anglo-American males for cancer of the lung and oral cancer, cancer sites commonly associated with cigarette smoking (Table XIV). No cases of cancer of the lung, oral cavity, pancreas, or bladder were observed among Anglo-American females in the population. Standard-