



DEPARTMENT OF THE NAVY
NAVY ENVIRONMENTAL HEALTH CENTER DETACHMENT
NAVAL DOSIMETRY CENTER
BETHESDA, MD 20889-5614

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30 Mar 95

Ms. Patricia Broudy
33492 Periwinkle Drive
Monarch Beach, California 92629

Dear Mrs. Broudy,

Thank you for the copy of the 1946 Radiation Safety Instructions. I am impressed with the level of detail and concern for the safety of personnel as reflected in the instruction. The philosophy is consistent with and level of detail exceeds today's regulations.

The instructions are very detailed. Their philosophy is based on the radiation safety standards established in the civilian community in the 1930's and 40's. The "tolerance dose" was first introduced in 1934 by the National Council on Radiation Protection as 0.1 R per day. (The same year the International Committee on Radiation Protection recommended a "tolerance dose" of 0.2 R per day.) This exposure limit was 1/100th of the dose to produce a skin erythema and experience among radiologists indicated it would prevent skin injury. The recommendation for a pre- and periodic radiation physical examination comes from Report No. 2, Radium Protection for Amounts Up to 300 Milligrams, prepared by the International X-ray and Radium Protection Committee in 1934. The detailed radiological procedures are based on experience gained in the Manhattan Project and at the Nevada Test Site.

The Chief of Naval Operation's letter of 27 August 1946 tasked the Chief of the Bureau of Medicine and Surgery with responsibility for establishing radiation safety limits and regulations. Captain G. M. Lyon, MC, USN on the Surgeon General's staff had been on the U.S. Naval Technical Mission to Japan investigating the effects of the atomic bomb explosions at Nagasaki and Hiroshima. He had first hand knowledge of the effects of radiation exposure from an atomic bomb and was probably the Navy's most knowledgeable individual in this area. As Head of the Atomic Medicine Division of the Bureau of Medicine and Surgery he would have reviewed the duplicate physicals that were to be forwarded. I have no indication that this review was for any purpose other than carrying out the CNO directive to ensure safety limits at the test site were effective and people were not being harmed.

As you are aware, we have been unable to find the location or disposition of the classified radiation physical exams required by the 1947 Radiation Safety Instructions. The requirement for classification was canceled in January 1948. We suspect the classified radiation physical exams were not considered permanent records and were destroyed years ago.

The radiation examinations were to be performed on individual's entering radioactive areas, e.g., a target ship prior to radioactive clearance. It is not clear but does not appear exams were required for individuals entering areas that had previously been radioactive but were cleared and released by the radiation monitors. This may explain why some individuals have "radiation" examinations recorded in their records and others do not.

The copies you provided of medical records of your husband appear to be rather thorough, including the 1948 radiation physical and his 1960 pre-retirement physical. In the history for his 1960 pre-retirement physical he states the only time he received radiation exposure was during schooling at the Radiological Defense Officers Course at Naval Station Treasure Island. The chronological history shows that while a student in that course he was monitored for exposure and his exposure was zero. As a cross-reference a zero exposure is what is recorded in our centralized exposure data base for your husband at that course. No other radiation exposure for your husband is indicated in the medical record or our centralized registry.

In our discussions you indicated your husband died of a malignant lymphoma. I researched the etiology of lymphoma's to better understand their probability of causation related to radiation exposure. Current thinking is that lymphoma's are viral in origin. That genes are translocated by a virus from one chromosome (chromosome 8) to another (chromosome 14, less common from chromosome 8 to 2 or 8 to 22). Radiation usually causes breaks in chromosomes as opposed to transfers of genes from one specific chromosome site to another specific chromosome site. There is no direct evidence at present of a specific radiation-induced cancer resulting as a consequence of a translocation activating an oncogene.

I am enclosing copies of excerpts from various references concerning the above comments. I hope you find them useful in better understanding the evolution of radiation safety regulations and your husband's disease.

Sincerely,



J. D. GEORGE
Captain, Medical Service Corps
United States Navy
Officer in Charge

Encl:

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