

United States Government

Department of Energy

# memorandum

2/21 Rod Nelson (action)  
 Dan Wilken (information) Received  
 Jim Reafsnyder " Office Of The Manager  
 Tom Jelinek " FEB 19 1991  
 Dean Helms "

DATE FEB 07 1991

REPLY TO: EH-421  
ATTN OF:

--Egli

SUBJECT Updated Analysis of Mortality Among Oak Ridge National Laboratory (ORNL) Workers

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TO Managers, DOE Operations Offices (List Attached)  
Managers, DOE Area Offices (List Attached)

The attached bulletin has been prepared by the Office of Health to inform workers of some recent scientific findings from a mortality study of the ORNL workers commissioned by the Department of Energy (DOE). The findings presented in the attached fact sheet were presented to ORNL workers on January 28, 1991. Please ensure that this bulletin is made available to all DOE and DOE contractor workers by the appropriate means.

The Office of Health is developing formal procedures for future information releases of this type. Until these procedures have been formalized, any additional information releases to workers of this nature should be provided by or coordinated through this office.

Your assistance in this matter is greatly appreciated. Please refer any questions to Dr. Robert Goldsmith at FTS 233-5926.

Harry J. Pettengill  
Deputy Assistant Secretary  
for Health

Attachment

cc w/attachment:  
Occupational Medical Directors (List Attached)  
ERCC Members (List Attached)  
Jeff Sherwood, PA-1

REPOSITORY Oak Ridge Operations Office (OEO)  
 COLLECTION Energy Programs Div (ER-11)  
 BOX No. Active Records Gathered for Human Radiation Exp. Pt.  
 FOLDER \_\_\_\_\_

K-10 SITE OFFICE  
 4530N  HFIR  
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DEPARTMENT OF ENERGY (DOE)  
OFFICE OF HEALTH – BULLETIN

On January 28, 1991, Dr. Steve Wing, University of North Carolina (UNC), presented the results of an epidemiologic study to Oak Ridge National Laboratory (ORNL) workers. The investigation updated a previous mortality analysis performed by Dr. Harvey Checkoway of UNC. Dr. Checkoway's 1985 study included 8,375 white male ORNL workers and reported less than expected mortality from all causes combined and a statistically nonsignificant increase in mortality from leukemia. The earlier study found no cause of death associated with increased radiation exposure. Dr. Wing's study included 17,517 ORNL workers, but focused specifically on a group of 8,318 white male workers who had worked at ORNL between 1943 and 1972. The study focused primarily on white males because their larger numbers provided the best basis for statistically meaningful results.

Dr. Wing reported that mortality rates for most causes of death were lower among white male workers than among the general United States' population; a finding consistent with other studies of DOE workers and consistent with Dr. Checkoway's study of 1985. However, in a separate analysis comparing workers exposed to external ionizing radiation with workers who had no recorded exposure, there was an apparent association between very long-term low-level radiation exposure and an increased risk of death from all types of cancer combined. The association was strongest for workers exposed 20 or more years before their deaths. For most workers, total career doses of external radiation exposure were quite low (average 1.7 rem); approximately 8 percent of the 8,318 workers had received career exposures of 5 rem or more.

An additional finding was a greater than expected number of deaths from all types of leukemia combined (28 deaths observed versus 17.2 expected among white males). Although this observation was statistically significant, it apparently was not related to radiation exposure.

The study could not determine whether the associations were causal or simply statistical. In an epidemiologic study, it is possible for two factors to be closely related because of the way in which the study was designed or the method by which participants were selected, rather than because the two factors are biologically related as a cause and effect. Thus, it is important to emphasize that an association is not necessarily causal. Moreover, the broad category of "all cancers combined" should not be interpreted to mean that an increased risk was detected for each individual type of cancer. Cancer is actually a group of diseases with diverse causes, and a given category of cancer may contain tumors with very different underlying causes. The "combined" category does not permit detection of different risks for specific types of cancer. An additional concern is that the investigators were unable to examine other potential risk factors for cancer such as exposure to solvents or other environmental factors such as smoking.

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The results of the Wing study contrast with a number of other studies at DOE facilities that have shown no association between low-levels of occupational radiation exposure and increased cancer mortality risk. The study will be published in the March 20, 1991, issue of the Journal of the American Medical Association. The recently signed Memorandum of Understanding between DOE and the Department of Health and Human Services (DHHS) provides for the transfer of continued mortality followup of DOE workers and many other types of epidemiologic research to DHHS. Future research conducted under DHHS auspices may provide opportunities for more indepth investigations of the diverse causes of specific cancers such as leukemia, and thereby, offer opportunities for further investigation of the findings reported by Dr. Wing.

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