

## **The Relevance of Occupational Epidemiology to Radiation Protection Standards**

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### **ABSTRACT**

Large-scale epidemiological studies of U.S. Department of Energy workers have been underway since the 1960s. Despite the increasing availability of information about long-term follow-up of badge-monitored nuclear workers, standard-setting bodies continue to rely on the Life Span Study (LSS) of A-bomb survivors as the primary epidemiological basis for making judgments about hazards of low-level radiation. Additionally, faith in the internal and external validity of studies of A-bomb survivors has influenced decisions about the design, analysis, and interpretation of many worker studies. A systematic comparison of the LSS and worker studies in terms of population characteristics, types of radiation exposures, selection factors, and dosimetry errors suggests that the priority given to dose response findings from the LSS is no longer warranted. Evidence from worker studies suggests that excess radiation-related cancer deaths occur at doses below the current occupational limits; low-dose effects have also been seen in studies of childhood cancers in relation to fetal irradiation. These findings should be considered in revising current radiation protection standards.

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