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**Mortality of workers at a nuclear materials production plant at Oak Ridge, Tennessee, 1947-1990.**

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The Y-12 plant at Oak Ridge, Tennessee, produced nuclear materials for the U.S. government's nuclear weapons program beginning in 1943. Workers at Y-12 were exposed to low dose, internal, alpha radiation and external, penetrating radiation, as well as to beryllium, mercury, solvents, and other industrial agents. This paper presents updated results from a long-term mortality study of workers at Y-12 between 1947 and 1974, with follow-up of white men through 1990 and data reported for the first time for women and men of other races. Vital status was determined through searches of the National Death Index and other records, and the workers' mortality was compared to the national population's using standardized mortality ratios (SMRs). Total mortality was low for all Y-12 workers and total cancer mortality was as expected. Among the 6,591 white men, there were 20% more lung cancer deaths than expected (95% confidence interval [CI] 1.04-1.38). Death rates from brain cancer and several lymphopoeitic system cancers were also elevated among white men, with SMRs of 1.28 and 1.46. Mortality from cancer of the pancreas, prostate, and kidney was similarly elevated. There was evidence of excess breast cancer among the 1,073 female workers (SMR 1.21, 95% CI 0.60-2.17). Lung cancer mortality among these workers warrants continued surveillance because of the link between internal alpha radiation exposure and this disease, but other agents, notably beryllium, also merit considerations as potential causes of lung cancer. Other cancers and agents should also be investigated as part of a comprehensive study of the health consequences of the production of nuclear weapons.

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