

Differences in Mortality by Radiation Monitoring Status in an Expanded Cohort of
Portsmouth Naval Shipyard Workers

Silver SR¹, Daniels RT¹, Taulbee TT¹, Zaebst DD¹, Kinnes GM¹, Couch JR², Kubale
TL¹, Yiin, JH¹, Schubauer-Berigan MK¹, Chen PH¹

1 Division of Surveillance, Hazard Evaluations, and Field Studies, National Institute for
Occupational Safety and Health

2 Westat Inc.

ABSTRACT

Previous studies at the Portsmouth Naval Shipyard (PNS) yielded conflicting results for leukemia and lung cancer mortality. We examined standardized mortality and risk ratios (SMRs and SRRs) in an expanded cohort of PNS workers employed between January 1, 1952 and December 31, 1992 and followed through 1996. The all-cause SMR was 0.95 (95% confidence interval 0.93-0.96). SMRs based on employment duration were elevated with confidence intervals excluding 1.00 for lung cancer, esophageal cancer, and all cancers combined. Leukemia mortality was as expected overall but exhibited a statistically significant positive linear trend with increasing cumulative external dose in SRR analyses. The role of solvent exposures could not be evaluated at the cohort level. Several findings differed markedly by radiation monitoring subcohort. Excess asbestosis deaths were limited to radiation workers, while several smoking-related causes of death had higher elevations among non-monitored workers. At PNS, asbestos and other occupational exposures, and possibly smoking, may be non-randomly distributed with respect to radiation exposure, suggesting potential for confounding in internal analyses of an occupational cohort.