Funding

None.

Conflict of interest

I am a member of the Technical Working Party of the UK Compensation Scheme for Radiation-Linked Diseases (http://www.csrld.org.uk), but the Scheme is not aware of the contents of this letter.

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Authors' response: Solid cancer mortality among US radiation workers

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We thank Dr Wakeford for his interest in our paper and agree that our recent report on solid cancer mortality among 101 363 US nuclear workers provides new and relevant information on risks from protracted low-dose ionizing radiation.[1] With this in mind, we chose to publish risk estimates that best inform contemporary radiation exposures. We intentionally featured results restricted to this large subset of contemporary workers employed in 1960 or later, who have lower average exposures and higher-quality exposure measurement records when compared with earlier hires.

The average exposure among early workers was three times that of contemporary workers (34.9 mSv and 11.6 mSv respectively, when including workers with no recorded dose). It is well documented that exposure estimates for early workers tend to have several weaknesses in comparison with contemporary workers. For this reason, we reported findings on the contemporary sub-cohort but did not provide complementary information on those hired prior to 1960. We agree that more research is needed to better understand the discordance in risk estimates between early and later hires. However, that investigation was beyond the scope of our paper. Differences in risk estimates between subgroups likely reflect important but undefined differences in the groups themselves which are not necessarily limited to sources of dose estimation error. Future efforts could entail further investigation of these differences.

Early nuclear workers' exposure measurements are subject to various uncertainties and biases, which are difficult to quantify and limit causal inference. Fortunately, we were presented with a unique opportunity to examine a large, well-enumerated contemporary group of workers with improved and more relevant exposure measurements and relatively lengthy follow-up. Our findings within this contemporary group clearly indicate that workers exposed to protracted low-dose ionizing radiation exposure are at risk of solid cancer and some subtypes.

Ethics approval

The study which is the subject of this letter was approved by the National Institute for Occupational Safety and Health Institutional Review Board. Approval is not needed for this letter.

Data availability

Data availability is subject to US data protections and regulations. For enquiries, please contact [kkelly-reif@cdc.gov].

Author contributions

K.K.R. produced the initial draft of the letter, which was critically revised and approved by all authors. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the National Institute for Occupational Safety and Health, Centers for Disease Control. Where authors are identified as personnel of the International Agency for Research on Cancer/World Health Organization, the authors alone are responsible for the views expressed in this article and they do not necessarily represent the decisions, policy or views of the International Agency for Research on Cancer/World Health Organization.

Conflict of interest

None declared.

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