Letter to the Editor

In Response to Altered Molecular Profile in Thyroid Cancers From Patients Affected by Three Mile Island Nuclear Accident

To the Editor:

Goldenberg and colleagues document a potential link between thyroid cancer cases near the Three Mile Island nuclear plant after the 1979 meltdown, and a lower incidence of single nucleotide oncogenic driver mutations with higher incidence of gene fusions (both associated with radiation exposure). This finding raises the question of whether relatively low-dose exposures raise the risk of thyroid and other radiosensitive malignancies.

Thyroid cancer incidence exceeding expected rates has been observed in Hiroshima/Nagasaki survivors and in the child population near the Chernobyl meltdown, each representing relatively high-dose exposure. Because the Fukushima meltdown only occurred in 2011, no data on thyroid cancer incidence are yet available after the expected 5-year latency between exposure and cancer manifestation.

Up to 212 thousand Americans are estimated to have developed thyroid cancer from exposures to iodine-131 particles in atmospheric nuclear weapons test fallout, disseminated from Nevada across the U.S. continent from 1951 to 1962 and entering the food chain through precipitation. Bomb fallout constitutes relatively low-dose exposures, as measured in milk by the U.S. Public Health Service.

Nuclear power installations routinely release radiiodine particles into the air and water. Because many plants have operated more than 40 years and in vivo concentrations of radiiodine are difficult to calculate with precision, recent findings call for continued research on the incidence of radiation-related mutations in local thyroid cancer cases.

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BIBLIOGRAPHY


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