Radiation study suggests even low levels can be deadly over long term

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Long-term exposure to low levels of radiation increases nuclear workers' [cancer](http://www.chicagotribune.com/topic/health/diseases-illnesses/cancer-HEDAI0000010-topic.html) risk, a new study suggests.

The findings provide scientific support for radiation-protection standards, according to the international team of researchers.

"This study provides evidence of a linear increase in the excess relative rate of cancer mortality with increasing exposure to ionizing radiation at the low-dose rates typically encountered in the nuclear industries in France, the U.K., and the U.S.A.," the researchers wrote.

For the study, published Oct. 20 in the BMJ, they analyzed data from more than 308,000 nuclear industry workers in the United States, France and the United Kingdom. The workers, mostly men, were followed for an average of 27 years.

The estimated death rate from all cancers other than [leukemia](http://www.chicagotribune.com/topic/health/diseases-illnesses/leukemia-HEDAI0000054-topic.html) increased with cumulative dose by 48 percent per gray (Gy). This suggests that about 209 of the 19,064 cancer-related deaths (other than leukemia) among the workers were associated with low-level radiation exposure, the researchers said.

They noted that the risk per unit dose was similar to that seen in Japanese atomic bomb survivors. This challenges the belief that high-dose rate exposures are more dangerous than low-dose rate exposures, they said.

However, the study doesn't actually prove a cause-and-effect relationship between cancer and the workers' exposure to low-level radiation. Others factors, such as smoking and occupational asbestos exposure, may have influenced the results, the researchers say.

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