

Even low doses of radiation increase risk of dying from leukaemia in nuclear workers, says IARC

Lyon, France, 22 June 2015 - A study coordinated by the International Agency for Research on Cancer (IARC), the specialized cancer agency of the World Health Organization, shows that protracted exposure to low doses of ionizing radiation can cause leukaemia. The study, published today in [The Lancet Haematology](#), shows that the risk of death from leukaemia increases linearly with the radiation dose.

“To date, this study provides the most precise evaluation of the risk of developing leukaemia linked to the protracted low doses of radiation received by nuclear workers throughout their careers,” says IARC researcher Dr Ausrele Kesminiene, a study co-author. “It shows that the nuclear workers we studied have a small increase in the risk of dying from leukaemia as their exposure to radiation increases.”

Low-dose exposures are typical of environmental or occupational exposures, such as exposure of nuclear workers at their workplace, but also of medical exposures, such as patients undergoing multiple computed tomography (CT) scans through medical diagnostic procedures.

The study

Based on the strongest evidence currently available, the International Nuclear Workers Study (INWORKS), a collaboration¹ among international partners, evaluated the exposures of more than 300 000 nuclear workers in France, the United Kingdom, and the USA over a period of time between 1943 and 2005.

The study assessed the risk of developing certain cancers, such as leukaemia, lymphoma, and multiple myeloma.

The results

- The study results highlight strong evidence for a positive association between exposure to ionizing radiation and risk of death from leukaemia and show that the risk of leukaemia increases linearly with radiation dose.
- The risk associated with the exposure varies with the type of leukaemia; the risk was highest for chronic myeloid leukaemia, and there was no increased risk for chronic lymphocytic leukaemia.
- The study shows little evidence of associations between exposure to ionizing radiation and risk of death from multiple myeloma or lymphoma.

“Current standards used for radiation protection remain primarily based on acute high-dose exposures, derived from studies based on atomic bomb survivors in Japan,” says IARC Director Dr Christopher Wild. “This assessment of the carcinogenic impact of low-dose exposures strengthens the evidence on which to base radiation protection measures. These new findings are important when considering radiation exposure in different settings, including use in medical diagnosis.”

¹ See Note to the Editors.

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Note to the Editors:

INWORKS is an international collaboration between research partners including Institut de Radioprotection et de Sûreté Nucléaire, Fontenay-aux-Roses, France; Department of Epidemiology, University of North Carolina, Chapel Hill, NC, USA; Center for Research in Environmental Epidemiology, Barcelona, Spain; Universitat Pompeu Fabra, Barcelona, Spain; CIBER Epidemiología y Salud Pública, Madrid, Spain; National Institute for Occupational Safety and Health, Cincinnati, OH, USA; Public Health England Centre for Radiation, Chemical and Environmental Hazards, Chilton, United Kingdom; and Department of Environmental and Occupational Health, Drexel University School of Public Health, Philadelphia, PA, USA.

For more information, please contact

Véronique Terrasse, Communications Group, at +33 (0)4 72 73 83 66 or terrassev@iarc.fr
or Dr Nicolas Gaudin, IARC Communications, at com@iarc.fr

The International Agency for Research on Cancer (IARC) is part of the World Health Organization. Its mission is to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships. If you wish your name to be removed from our press release e-mailing list, please write to com@iarc.fr.