

There are additional cancers caused by low radiation doses

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Findings

At a February 19, 2009 public meeting of the Canadian Nuclear Safety Commission (CNSC), Dr. Patsy Thompson, CNSC's Director General of Environmental and Radiation Protection and Assessment, stated "there is no experimental evidence of risks of cancer significantly elevated above normal for doses below 100 millisieverts."

Dr. Thompson and the CNSC are ignoring recent studies of Canadian nuclear workers, and failing to acknowledge a growing scientific consensus.

In its seventh report on Biological Effects of Ionizing Radiation (BEIR VII), the US National Academy of Sciences conducted a comprehensive review of all available data. It concludes "that the risk of cancer proceeds in a linear fashion at lower doses without a threshold and that the smallest dose has the potential to cause a small increase in risk to humans." This finding reaffirms similar findings over the last five decades.

Studies of Atomic Workers

The most informative epidemiologic studies of low radiation exposures are for nuclear workers, as doses are objectively measured through the use of personal dosimeters. The International Agency for Research on Cancer (IARC), part of the World Health Organization (WHO), recently completed an assessment of "Cancer risk following low doses of ionising radiation -- a 15-country study." IARC examined 407,391 men and women who wore a radiation dosimeter or badge, and who worked for at least one year in the nuclear industry in one of 15 countries -- including Canada.

The IARC calculated Excess Relative Risk (ERR) of death or disease for workers exposed to a known radiation dose, measured in sieverts (Sv). A positive ERR indicates greater risk among exposed workers. The IARC found increased cancer risk even at low doses typically received by nuclear workers.

Worldwide, ERR for all cancers excluding leukaemia is significantly elevated at 0.97 per sievert – that means a 97% increase in cancer risk for a worker receiving a 1 sievert dose, a 10% increase in cancer for a 100 millisievert dose, and a 1% increase in cancer for a 10 millisievert dose. For leukaemia, IARC findings predict a 19% increase among atomic workers, worldwide, at a 100 millisievert dose.

Canadians at Greater Risk

An "Analysis of mortality among Canadian nuclear power industry workers after chronic low-dose exposure to ionizing radiation" was done in conjunction with the IARC study. Risks to Canadian nuclear workers are higher than global averages. The ERR for all cancers excluding leukaemia is 2.8 – that means a 28% increase at a 100 mSv dose.

The ERR for leukaemia is 52.5 – a 525% increase at 100 mSv.

Canadian researchers (Zablotska et al. 2004, Radiation Research 161: 633-641) could not explain the far higher cancer risks for Canadian nuclear workers. Dr. Rosalie Bertell notes that a significant underestimation of the harmful effects of tritium exposure could explain this discrepancy.