

Letter to the Editor

The high price of public fear of low-dose radiation*

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Two critical issues of international concern lie before us: (1) the fear of low-dose ionizing radiation and (2) the very high price that society pays because of such fear.

Health effects of relatively high radiation doses have been studied for more than a century and are well understood. But what about doses within the wide range of natural background radiation? Here, increases in cancer incidences have been inferred using models that extrapolate outcomes from high dose data. This has led to a widely-used, most cautious radiation protection system. However, significant adverse effects have not been unequivocally observed within the low dose range.

A lesson learned from the environmental presence of radioactive materials released from the highly damaged Fukushima nuclear plant is that major health problems arose mainly due to the psychological conditions caused by fear of radiation, even though the radiation intensity was low. Public apprehension, magnified by the disruptive emergency protective measures, resulted in many human tragedies and actual victims. Public fear of low-level radiation has had a significant impact on our quality of life, jeopardizing many beneficial human endeavors that use radiation, such as medical diagnosis and energy production.

The biological responses to low doses are complex. And there are controversies about whether health effects at such doses exist at all, are detrimental or even beneficial. A long-term research commitment to improve the current understanding on low-dose effects, their link to human health and to radiation protection is an appropriate response to these critical challenges. We believe the cost to attain a more thorough understanding of the biology and epidemiology related to low-doses is a small price to pay.

*This letter reflects the thinking of a 6-member international scientific gathering held 5–8 May 2015.