

Radiation response a meltdown in reason

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The possibility that low doses of radiation may prevent or delay the progression of cancer is being explored by a Flinders University research team led by Professor Pam Sykes (pictured) in a move that runs counter to the widely held perception that exposure to any radiation is harmful.

Professor Sykes, recently appointed to the University's Strategic Professorship in Preventive [Cancer](#) Biology in the Flinders Centre for Cancer Prevention and Control says the public panic in response to nuclear accidents such as that at Fukushima in Japan is the result of a general ignorance about radiation.

“We have to ensure that radiation is respected and we have to understand what damage radiation can cause – but radiation is not the poison, the dose is,” Professor Sykes said.

“We need radiation in our environment, just as we need vitamins and minerals. Too much is a problem, too little is a problem,” she said.

“Chernobyl was obviously a disaster but there was no increase in leukaemia, solid tumours or birth defects among the 335,000 people who were evacuated and who received less than 100 milliSieverts of radiation – that's five times the dose I'm allowed as a radiation worker.

“There was an increase in thyroid tumours but we're not sure how much that related to the fact that everyone was screened for thyroid tumours, which wouldn't normally happen.

“It’s now been accepted that they should not have evacuated so many people because the biggest detriment from Chernobyl was that they were dramatically disadvantaged, both economically and socially. Many suffered depression thinking they were going to die of cancer.

“And the frightening thing is that it’s been estimated that throughout Europe there were over 100,000 wanted pregnancies aborted, and these were people who didn’t live anywhere near Chernobyl.”

Professor Sykes’ research, which involves doses of radiation that are up to three orders of magnitude lower than those used by other investigators, has been funded by the US Department of Energy Low Dose Radiation Research Program for almost 10 years.

“Using a transgenic mouse that is very sensitive to stressors, we have identified regions in the dose range that cause different biological effects,” she said.

“Some of our colleagues in Germany and Oxford have shown that low doses of radiation to cells in culture trigger a mechanism which removes pre-tumour cells. We’re now working to see if we can identify this response in a mouse.

“If we can understand these mechanisms, we can manipulate them to prevent cancer,” adding it might be “several years” before the potential to humans could be confirmed.

Studies in Canada and Japan have also shown that low doses of radiation given to mice delay the onset of cancer, and reduce the symptoms of diabetes and atherosclerosis, improving the span and quality of life of the affected animals.

Professor Sykes and her team are currently examining low dose [radiation](#)

therapy in reducing or preventing prostate cancer, with a grant from the Prostate Council Foundation of Australia.

Provided by Flinders University

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