

# Low radiation levels pose cancer risk

**Scientists say no threshold below which exposure is harmless**

Kevin Rivoli / AP file



Kodak research associate Phillip Bunch looks over a new X-ray film which cuts a patient's radiation exposure by about 50 percent, while in an office in Rochester, N.Y. A typical single chest X-ray accounts for 0.1 millisievert, average background radiation.

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WASHINGTON - Even very low doses of radiation pose a risk of cancer over a person's lifetime, a National Academy of Sciences panel concluded. It rejected some scientists' arguments that tiny doses are

harmless or may in fact be beneficial.

The findings, disclosed in a report Wednesday, could influence the maximum radiation levels that are allowed at abandoned reactors and other nuclear sites and raises warnings about excessive exposure to radiation for medical purposes such as repeated whole-body CT scans.

“It is unlikely that there is a threshold (of radiation exposure) below which cancers are not induced,” the scientists said.

While at low doses “the number of radiation-induced cancers will be small ... as the overall lifetime exposure increases, so does the risk,” the experts said.

Even common X-rays pose some risk of adverse health effects, the scientists found, although the panel said there was not enough information available to accurately estimate the cancer risk from X-rays. Nevertheless, the report said, there is evidence that per unit of absorbed radiation, X-rays may be more dangerous than other radiation.

The panel also said that approximately one person out of 1,000 would develop cancer from exposure to the amount of radiation from a single, average whole body CT-scan.

But the report should not scare people away from nuclear medicine, said Dr. Henry Royal, a professor of radiology at Washington University in St. Louis. He said most often the benefits of such tests and treatments outweigh the risks.

But Royal also said that procedures such as CT scans should be used to deal with a specific medical problems and not part of annual medical screenings. “You should not be exposed to radiation for superficial reasons,” Royal said in a telephone interview.

Scientists for years have debated how extremely low doses of radiation affect human health.

Pro-nuclear advocates, as well as some independent scientists, have maintained that the current risk models for low-level radiation has produced more stringent requirements than is necessary to protect public health.

It is an issue in determining decontamination requirements at

abandoned reactors and at federal weapons sites.

**'Linear, no threshold' model**

The academy's panel stood by the "linear, no threshold" model that generally is the acceptable approach to radiation risk assessment. This approach assumes that the health risks from radiation exposure decline as the dose levels drop, but that each unit of radiation — no matter how small — is assumed to cause cancer.

"The scientific research base shows that there is no threshold of exposure below which low levels of ionized radiation can be demonstrated to be harmless or beneficial," said Richard R. Monson, the panel's chairman. He is a professor of epidemiology at Harvard's School of Public Health.

The panel said new and more extensive data developed over the past 15 years only strengthen the conclusions of the panel's last report, in 1990, on low-level radiation risks.

The scientists estimated that one out of 100 people exposed to 100 millisievert of radiation over a lifetime probably would develop solid cancer or leukemia, and that half of those cases would be fatal.

It also said that 42 additional cancers can be expected in the same group from other than low-level radiation sources.

A millisievert is a measurement of radiation energy deposited in a living tissue. People absorb about 3 millisievert of radiation annually from natural sources and 0.1 millisievert every time they get a chest X-ray.

The report noted that exposure from a whole body CT scan is about 10 millisievert, much higher than a normal X-ray.

Some anti-nuclear advocates said the study reaffirms that stringent regulations are needed when cleaning up abandoned nuclear sites or considering health risks near nuclear power plants.

"The NAS panel puts to rest once and for all claims that low doses of radiation aren't dangerous ... nuclear advocates have been making this claim for years" said Daniel Hirsch, president of Committee to Bridge the Gap, a Los Angeles-based nuclear watchdog group.

Mitchell Singer, a spokesman for the Nuclear Energy Institute, the

industry's lobbying arm, said the report "is a positive finding. It shows there is very little risk of exposure from low levels of radiation."

The academy is a private organization chartered by Congress to advise the government of scientific matters.

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