

# The New York Times

## Higher Cancer Risk Found in Radiation

By PHILIP J. HILTS, Special to The New York Times

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**WASHINGTON, Dec. 19**— The risk of getting cancer from low levels of radiation appears to be four times as high as previously estimated, the National Research Council said today.

The new estimate will probably force regulatory bodies to reduce the maximum radiation exposure allowed for workers in the nuclear industry and other places like hospitals, where exposure to radiation is common. It may also alter calculations of the damage caused by radiation accidents, like the number of people expected to get cancer from the accident at the Soviet nuclear power plant in Chernobyl in 1986.

But even the new estimate that radiation is a more potent carcinogen than previously believed should cause no concern for the average person, experts said, because the public is not exposed to enough radiation to exceed levels considered safe.

The report also found a much greater danger of mental retardation among babies exposed in the womb to low-level radiation from 8 to 15 weeks after conception. 'This Is the Bible'

The study updates risk estimates issued by the council in 1980. The documents are the nation's most authoritative assessments of the health effects of radiation. They are used to set standards for allowable radiation exposure around the world for the hundreds of thousands of workers in nuclear and related industries, as well as the amount the public may be exposed to.

"This is the Bible that the Nuclear Regulatory Commission, the Environmental Protection Agency and others use," said Thomas Cochran, an official of the Natural Resources Defense Council, an environmental group. "This will be it for a long time." Lynne Sairobent of the United States Council for Energy Awareness, a nuclear trade association, said: "This is a major piece of work. These are the experts."

New evidence led the committee to revise the previous estimates of how much cancer is caused by radiation. The estimates are three and a half to five times as high as those in the last report from the National Research Council, the research arm of the National Academy of Sciences, a federally chartered but independent organization that studies technical issues for the Government.

The new report is the fifth in a series on the Biological Effects of Ionizing Radiation. Ionizing radiation occurs when particles given off from atomic reactions penetrate cells, where they break apart, or ionize, the molecules there.

Such radiation arises naturally, and about 55 percent of all radiation exposure the average American receives comes from radon gas, which collects in buildings. But the new report did not deal with exposure to radon because a previous study concentrated on that problem. Another 27 percent comes from other natural sources. Man-made sources, including X-ray machines and medical treatments using radiation account for about 18 percent of the average person's exposure.

Less than one-half of 1 percent of average exposure comes from nuclear power plant exposure, chiefly the exposure to nuclear workers.

The average annual radiation exposure for a person in the United States is about one-tenth of a REM, or radiation equivalent in man, a unit of the biological effect of radiation. For comparison, one chest X-ray gives about two one-hundredths of a REM.

The report said that exposure to an additional one-tenth of a REM per year during a lifetime over the natural amount received, would cause an additional 520 cancers per 100,000 people, roughly four times as high as the previous estimate. About 20,000 of every 100,000 Americans now die from cancer. For a one-time dose of 10

REM, an additional 770 cancers would be caused per 100,000 people, the report said.. Impact of Study

Warren Sinclair, president of the National Council on Radiation Protection and Measurements, the independent body Congress has charged with setting national standards for radiation exposure, said that the current limits were "very likely to be reduced" because of the new report.

For example, he said that the current maximum exposure nuclear workers may get in a year is 5 REM. This now may have to drop to 1 or 2 REM, he said, after the council's committees have studied the matter.

The recommended maximum exposure for the public is one-tenth of a REM per person per year, and Dr. Sinclair said. He added that "it would be very difficult to change that one," because that is the same level people already receive from natural sources.

Other standards, including those that set the maximum amount that nuclear plants may give off, may also be affected. It will take some years for the conclusions of the report to change regulatory standards.

Dr. Arthur Upton, a former head of the National Cancer Institute who was chairman of the committee that wrote the report, said that daily radiation exposure is essentially negligible for individuals. He explained that X-rays for medical treatment only increase a person's risk of cancer by something like one in a million, and these X-rays are the greatest man-made source of radiation to which the average person is exposed.

But Dr. Upton, who is now chief of environmental medicine at New York University, said such small risks when multiplied by the whole population are not negligible and are therefore important in public health studies and policy.

Radiation risks have become important public health concerns largely since World War II. Since that time scientists have carried on much study of the health effects of radiation. The greatest body of evidence on exposure to radiation has come from the study of 76,000 survivors of the atomic bomb attacks in Japan. Changes in those data were the chief factors in altering the research council's conclusions.

It has been difficult to estimate the actual radiation put out by the two nuclear bombs dropped on Japan in 1945. Computer calculations done several years ago revised downward the number of energetic particles, or neutrons, that were given off. At the same time, more cancers than expected were appearing in the survivors.

A number of cancers have already appeared in those who were infants up to 10 years old at the time of the bombings, and the committee used the medical history of those cases to extrapolate how many more cancers might be expected. Risks for Fetus

Infants who were in the womb at the time of the bombing have been followed through adulthood. New studies of their comparative performance on intelligence tests shows marked damage compared with other infants, the report said. The risk of retardation was found to be 4 percent greater in cases involving an instantaneous dose of 10 REM. The damage is most likely for those who were exposed between the 8th and 15th weeks of pregnancy.

Copies of the report on exposure to low levels of ionizing radiation can be obtained from the National Academy Press, 2101 Constitution Avenue, N.W. Washington. D.C. 20418, for \$35 each.