

## **“Do Nuclear Power Plant Emissions Cause Cancer?”**

Alarm bells went off around the world when Japan started the release of hundreds of millions of gallons of radioactive water into the Pacific Ocean. The releases began in August of 2023 and are expected to continue for the next 30 years. Over 60 radionuclides are being discharged. Most are being treated to reduce the amount of radiation, but concern remains about the environmental consequences. To ease public alarm, the Japanese government was quick to point out that nuclear power plants around the world also regularly release even higher concentrations of radioactivity.

In the U.S., all nuclear power plants regularly release low level radioactive effluents into the atmosphere, oceans, and waterways. Few nuclear power plants announce these releases in advance, and the nuclear industry makes efforts to focus only on the concentration of a single release rather than the accumulation of discharges over many decades.

The problem is that the health effects of radioactive exposure are cumulative and may take years to develop. Cancer is now the number one killer in most states, and many wonder if the vast amounts of low-level radiation pumped into the environment for so many decades may have serious health consequences for the public. Over 100 million Americans live near a nuclear power plant. Is it possible that they have higher rates of cancer?

It has long been known that ionizing radiation can cause serious damage to biological tissue. High doses can be lethal. Lower doses can alter cell DNA resulting in various forms of cancer years or decades later. Ionizing radiation is especially dangerous for embryonic tissue or where there is rapid cell division. This is why women and children are much more vulnerable (and the human fetus the most vulnerable of all). Nevertheless, the nuclear industry uses the adult male (called “standard man” or “reference man”) to calculate dose tolerance.

The radiation regularly released from all nuclear power plants is regulated by the Nuclear Regulatory Commission’s motivational guideline called ALARA which means “As Low As Reasonably Achievable.” To illustrate what is released into the environment, it is instructive to look at NRC documents for one nuclear power plant (San Onofre) over one decade. Between 2005 to 2015, the San Onofre conducted 1,285 Pacific Ocean releases totaling over 143 billion gallons of water. The plant also pumped radioactivity into the atmosphere for 389 hours. San Onofre has been conducting these kinds of releases for over a half-century.

It is difficult but not impossible to conduct epidemiological research in populations surrounding nuclear power plants. The National Cancer Institute attempted this in 1991 but the results were inconclusive, partly because the study analyzed where people died, not where they lived or worked. They used county boundaries rather than distance from the source of radiation and they failed to look closely at women and children who are far more vulnerable. More recent and more sophisticated research in Europe has reported cancer effects around nuclear power plants, especially in children. Because of the importance of this issue, in 2010 the prestigious U.S. National Academy of Sciences was charged with studying this issue.

Two years later the NRC released a detailed 427-page report which concluded that more research is necessary. In 2014 it released a second report which proposed a pilot study at seven nuclear facilities in Illinois, Connecticut, California, New Jersey, Tennessee, and Michigan. Both reports were sponsored by the Nuclear Regulatory Commission whose motto is “Protecting People and the Environment”. But instead of supporting the research, the NRC terminated the project saying that the research would probably fail, and it could not afford the \$8 million cost.

Not to be deterred, many in Congress worked hard to support the research and get it moved to a different agency. In 2022, Congress finally funded the project and directed Health and Human Services to administer it. But HHS did nothing until Rep. Levin, Porter, and Carbajal wrote to Secretary Becerra in July of 2022 requesting that the HHS transfer the funds to NAS and get the project started. To everyone’s surprise, Secretary Becerra refused to do so saying that any research is premature and that he would instead assemble a Roundtable to discuss the issue.

The HHS Roundtable was finally convened in Feb. of 2023. Representatives of various government agencies including the NRC were invited but scientists from the National Academy of Sciences were excluded. The Roundtable then concluded that cancer research should not be conducted because each dose from nuclear power plant emissions is small, and the research would probably fail. In sum, the U.S. Government appears to be blocking cancer research on this issue. This raises eyebrows in light of the Biden administration's supposed commitment for a “moonshot” on cancer. The HHS did not post the rejection on their website or circulate it to the public. Many months later, copies have finally surfaced. Below are links to the two National Academy of Sciences reports and the recent HHS report.

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Analysis of Cancer Risks in Populations Near Nuclear Facilities Phase 1 (National Academies Press 2012, 412 pages) available on line: <https://nap.nationalacademies.org/catalog/13388/analysis-of-cancer-risks-in-populations-near-nuclear-facilities-phase>

Analysis of Cancer Risks in Populations Near Nuclear Facilities Phase 2: Pilot Planning (National Academies Press 2014) <https://www.nrc.gov/docs/ml1503/ML15035A135.pdf>

Fairlie, I. Commentary: childhood cancer near nuclear power stations. Environ Health 8, 43 (2009). <https://doi.org/10.1186/1476-069X-8-43>

Federal Roundtable on Potential Health Effects Among Individuals Residing Near Nuclear Power Plants, February 14, 2023 [https://www.samuellawrencefoundation.org/\\_files/ugd/6a4539\\_44db56dda74144f8bc0249f7533498f1.pdf](https://www.samuellawrencefoundation.org/_files/ugd/6a4539_44db56dda74144f8bc0249f7533498f1.pdf)