

The Facts about Nuclear Safety

When you start talking about safety in relation to a nuclear reactor, two thoughts typically come to mind: radiation and accidents. However, a deeper look into the safety of nuclear power plants shows that misinformation has led to misplaced fear.

Does having a nuclear facility in your area cause health issues?

Radiation is released naturally from the ground and atmosphere everywhere. Like many things, radiation can be both beneficial and harmful. Large doses are dangerous, while abundant evidence indicates that small doses are harmless.

The radiation produced within the core of nuclear reactors is similar to natural radiation but more intense. At nuclear power plants, protective shielding isolates this radiation, allowing millions of people to live in safety nearby. Typically, the radiation people receive comes 90% from nature and 10% from medical exposures. Radiation exposure from nuclear power is negligible.¹

The most comprehensive Canadian studies on nuclear facilities and health issues have occurred in the area around Port Hope, Ontario. Port Hope is home to uranium conversion, waste management and nuclear fuel conversion facilities, and although a nuclear reactor is not in the immediate

Over 400 reactors are operating safely and reliably around the world. Canada's 18 reactors have been operating safely since the 1960's.

area, these studies provide valuable insight into the risk of living next door to nuclear waste.

The historical and current presence of the nuclear industry in Port Hope has resulted in over 40 studies reporting on the health of its citizens. Canadian Nuclear Safety Commission (CNSC) staff reviewed and considered all relevant, known and recognized studies before concluding that the health of Port Hope residents is not at risk.

None of the studies reviewed show unusual patterns of cancer or any other diseases related to the nuclear industry, either in workers or members of the community. In addition, the health of Port Hope residents is consistent with the rest of the population of Ontario and Canada.²

With regard to nuclear reactors in Canada, the radiation dose to the public as a result of radioactivity from all nuclear power plants in Canada is much less than regulatory limits and the radiation dose from naturally occurring sources.³

A study on the incidence of childhood cancer around nuclear power plants in Great Britain by the Health Protection

Agency concluded that there has been no increase in childhood cancers for children living less than 25 kilometres from a nuclear power plant.⁴

What happened at Three Mile Island and Chernobyl?

The accident at the Three Mile Island Unit 2 (TMI 2) nuclear power plant near Middletown, Penn. in 1979 was the most serious in U.S. commercial nuclear power plant operating history, even though it led to no deaths or injuries.

The cause of the accident was a major loss of the cooling function for a sustained period of time. Despite the fact that a significant portion of the core melted, the safety mechanisms in place protected the local community. The off-site consequences were insignificant and the maximum off-site dose to any member of the public was substantially below levels that could cause health effects.⁵

The 1986 accident at the Chernobyl nuclear power plant in Ukraine is the only accident in the history of commercial nuclear power to cause fatalities from radiation.

The International Atomic Energy Agency (IAEA) and World Health Organization (WHO), attribute 56 deaths directly to the accident (nine children who died of thyroid cancer were added to the 47 initial deaths), and estimate that there may be 4,000 extra cancer deaths among the approximately 600,000 most highly exposed people.⁶

The Chernobyl accident was the result of a severely flawed Soviet-era reactor design that was operated with inadequately trained personnel and without proper regard for safety.

The accident, caused by a sudden surge of power, destroyed the reactor and released at least 5% of the radioactive reactor core into the atmosphere and downwind.⁷

The health of Chernobyl residents has been monitored since 1986, and to date there is no strong evidence for radiation-induced increases of leukemia or solid cancer (other than thyroid cancer). The increase in thyroid cancer occurred among a large number of children and adolescents who in 1986 received substantial radiation doses in the thyroid after drinking milk contaminated with radioactive iodine.⁸

To date, about 4,000 thyroid cancer cases have been detected among these children. Although 99% of these children were successfully treated, nine children and adolescents in the three countries died from thyroid cancer. Fortunately, no evidence of any effect on the number of adverse pregnancy outcomes, delivery complications, stillbirths or overall health of children has been observed among the families living in the most contaminated areas.⁹



The facility at Three Mile Island.

There are currently 436 nuclear power plants operating in the world, with 18 in Canada. Over the last 50 years, thousands of people have built an ever-stronger foundation for the safe and effective use of nuclear energy.

Have a question not answered in this article? Please check out the Chamber's *Frequently Asked Questions on Nuclear Power in Saskatchewan* available at www.saskchamber.com.

Sources

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- 8) The Nuclear Energy Institute (NEI). *The Chernobyl Accident and Its Consequences*. Washington D.C., United States, April 2006
- 9) Ibid.