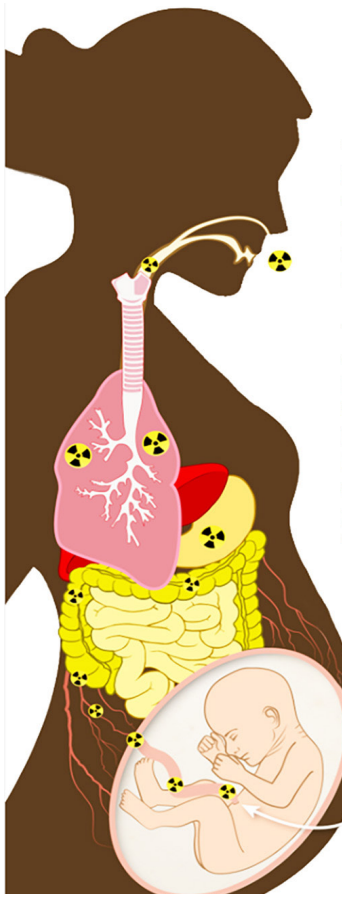
The NRC and EPA's Toxic Double Standard:
Sacrificing Women, Children, and Decades of Health Research for Profit

Provided by the Rainbow Warrior Collective and Coalition for a Nuclear-Free Mississippi River

Sacrificing Science

The staggering discrepancy in regulatory standards for radiation-induced cancer versus other toxic substances in our drinking water is a glaring example of environmental injustice and discriminatory policymaking. The Environmental Protection Agency deems a lifetime cancer risk of one in one million acceptable for most toxins in our drinking water (like glyphosate, PFOA, PFOS, chromium(VI), PCBs, and vinyl chloride) while allowing radiation levels resulting in a lifetime cancer risk of one in only 143. This equates to a shocking 7,000-fold higher risk, underscoring a disturbing disregard for public health when it comes to radiation exposure. [1]



Set during the peak of nuclear weapons testing in the U.S., the 20,000 picocuries-per-liter limit for tritium in drinking water stands as a relic of a less informed and reckless era. This standard, still to this day never grounded in health research, has persisted despite our growing understanding of radiation's risks and human vulnerabilities.

The 20,000 pCi/L limit was first recommended in the 1960 report by the Federal Radiation Council (FRC). According to a review by the late Prof. John W. Gofman, a molecular and cell biologist, this limit was not based on a rigorous analysis of health risks. Instead, it was derived from the existing concentrations of radionuclides in water supplies that were already contaminated by fallout from nuclear weapons testing. [2]

The EPA did not rely on health studies to set its original standards for tritium in drinking water. Instead, it back-calculated acceptable levels based on radiation exposure from existing radionuclides in surface waters, none of which were beta emitters like tritium. "It's not a health-based standard, it's based on what was easily achievable," remarks David Kocher of the Oak Ridge Center for Risk Analysis, who has evaluated health risks from tritium and spent 30 years at Oak Ridge National Laboratory. The standard of 20,000 pCi/L for drinking water made compliance easy. "No drinking water anywhere was anywhere close, so it cost nothing to meet." [3]

According to "The Dangers of Tritium" by Cindy Folkers and Mary Olson, published in 2022 by the Nuclear Information and Resource Service, "Research indicates that tritium can cross the placenta, posing heightened risks to fetuses during critical early developmental stages due to its radiological properties. The embryo and fetus are much more sensitive to radiation compared to adults." [4]

The developing fetus is especially sensitive to the effects of ionizing radiation. At minute doses received in drinking water, radiation can impair fetal growth, cause birth defects, and damage brain development. There is no evidence of a dose threshold below which a fetus would be safe from these effects. This means that even very small amounts of radioactive contaminants in tap water may pose a risk during pregnancy. [5]

Sacrificing Women and Children

The current radiation protection standards are based on the "Reference Man" model, which represents a healthy, white, adult male. This model assumes a level of radiation resistance that does not accurately reflect the increased vulnerability of women and children to radiation-induced cancers:

- Women can have up to 53% higher cancer risk than men from the same radiation exposure. [6]

- Girls exposed as children have a 3-5 times higher risk of breast cancer in adulthood. [7]

- Children have a 7.7 times higher risk of thyroid cancer. [8]

- Children under 5 years living near nuclear reactors had a 1.6-fold increase in all cancers and a 2.2-fold increase in leukemias. [9]

By adjusting the 20,000 pCi/liter standard to account for scientific advancements and health risks specific to women and children, using established correction equations, some experts suggest a more health-protective level of just 0.00049225 pCi/liter.

Why States and Local Communities Should Take the Lead on Safety Standards

The EPA permits states to set stricter standards for water protection. Many are unaware of this responsibility or the potential dangers of tritium. This is a call to action for municipalities to take the lead in protecting its residents — especially women and children. We can demand the replacement of outdated federal guidelines and safeguard our water supplies based on the latest scientific evidence, specific risks like repeated tritium spills. There is no known treatment to filter out tritium from drinking water.

Through simple measures like enacting laws, statutes, executive orders, or mutual binding agreements, municipalities can ensure that entities like nuclear reactor operators are required to promptly inform the public of any tritium contamination to their water source as soon as it is known.

Clear and timely notification of contaminated water reaching drinking water sources can provide ample timing for testing and emergency action, if needed. Most importantly, it provides *informed consent*. Some states, such as Colorado and California, have set stricter limits for the tritium in drinking water. The Environmental Working Group Health Guideline of 400 pCi/L for tritium was defined by the California Office of Environmental Health Hazard Assessment as a public health goal, the level of a drinking water contaminant that does not pose a significant health risk. This health guideline protects against cancer. [5]

References:

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9. Kaatsch, P. (2008). Leukemia in young children living in the vicinity of German nuclear reactors. *International Journal of Cancer*, 122(4), 721-726.

Missing Data and Cover-ups: Final Environmental Impact Statement Issued for Monticello Reactor

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The ARERR says that well 37A is monitored only quarterly. However, a December 18, 2023 letter to the NRC shows that Xcel was conducting 36 weekly, some of them biweekly, well and river water tests in 2023. The vast majority of these supposed weekly test results are missing from the ARERR. Xcel only reported more detailed test data when it was requested in the NRC's December letter. Most of the data is compiled from samples Xcel has collected and tested in-house. Xcel's simulations for calculating radioactive contamination of the river are based on its own modeling.

According to Xcel's scant data, the level of tritium in neighboring well 33A was rising during the fall of 2023. Though Xcel admitted to the NRC it was testing 33A weekly, it only gives four well tests in its ARERR — they show that from August to November, the level of tritium in well 33A grew seven-fold. Wells 33A and 37A are relatively close to each other, the river, and the sheet pile wall. So the sheet pile wall was unable to abate tritium flow to 33A until December at the earliest. The wall is causing tritium to be trapped, with some still seeping through to the river, while Xcel hurries to pump clean incoming groundwater to keep it from reaching to plume of tritium. Meanwhile, the company is pumping the tritiated water to ponds where it sits and evaporates, spreading radioactive water vapor over the City of Monticello, neighboring fields, houses, and bodies of water.

Anomalies abound in well test data and Xcel's data does not necessarily match in the different documents it has published. Take, for example, well 29A, which reportedly tested for 1,660 pCi/L on July 12, 2023 according to the 2023 ARERR but is recorded as 2,320 pCi/L for that same date in a separate letter from Xcel to the NRC sent Dec. 18, 2023. Well 29A, according to the December letter, tested for 37,300 pCi/L on Aug.17, 2023, but in the ARERR, Xcel reports the same well tested for 60,900 on August 23 - technically then beyond the scope of the NRC's interest. No test is reported for September, even though Xcel claims to be testing well 29A weekly, and then reportedly the tests fall to 613 pCi/L in October. Where did all of that tritium go in these wells that sit next to the Mississippi River?

TABLE 8: MODELED ABNORMAL DISCHARGE FROM MNGP TO MISSISSIPPI RIVER

Month	^{3}H Activity Discharged (Ci)
July 2023*	0.00401
August 2023	0.0525
September 2023	0.0997
October 2023	0.00865
November 2023	0.00105
December 2023	0.00109
Total 2023	**0.167**

**July 2023 is the first date of detection, 7/27/23, through the end of the month.*

Table 8 from Xcel's Annual Radioactive Effluent Release Report showing Xcel's modeled estimates for radioactive tritium releases into the Mississippi River from July to December 2023, contradicting Xcel's website that insists tritium-contaminated water has not reached the Mississippi River. Photo: Xcel Energy.

Despite its own charts illustrating measurable tritium leaked to the river, Xcel's own website maintains: "We test the river regularly for tritium and have not found any … We have not identified any tritium in the river that would be due to the leak that had occurred." Table 8 in Xcel's ARERR estimates the greatest quantity of tritium leaked to the river in September 2023, outside of the time frame of the NRC's data-collection period for determining the environmental impact of continued reactor operations.

Xcel has a long list of accidents, leaks, and failures, and a record of falsifying information — a trend continuing with the cooperation of the NRC.