WHAT IS TRITIUM?

Tritium is a naturally occurring radioactive form of hydrogen that is produced in the atmosphere when radiation from outer space collides with air molecules. As a result, tritium is found in very small or trace amounts in surface water and groundwater throughout the world. Tritium is also a byproduct of the production of electricity by nuclear power plants.

The radiation produced by natural tritium is identical to the radiation produced by tritium released from nuclear power plants.

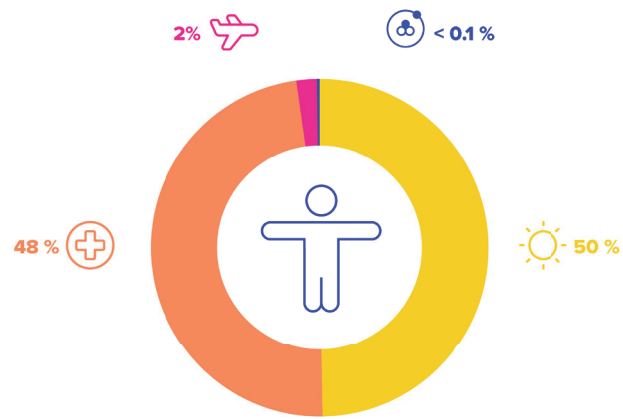
No tritium release from a nuclear power plant has ever posed a public health threat or exceeded regulatory limits, including the Environmental Protection Agency's dose-based drinking water standard of 20,000 picocuries per liter for tritium in a drinking water well or municipal drinking water system.

TRITIUM

HOW DOES TRITIUM IMPACT HUMANS?

Tritium is present naturally in the environment around us. Tritium from both nature and nuclear power plants emits a weak form of radiation that does not travel far in air and cannot penetrate skin. For perspective, the tritium dose from nuclear power plants is much lower than exposures to natural background radiation and medical administrations.

Humans receive approximately **50** percent of their annual radiation dose from natural background radiation, **48** percent from medical procedures like x-rays, and **2** percent from consumer products and activities such as commercial air travel. Doses from tritium related to nuclear power generation account for less than **0.1** percent of the total background dose.

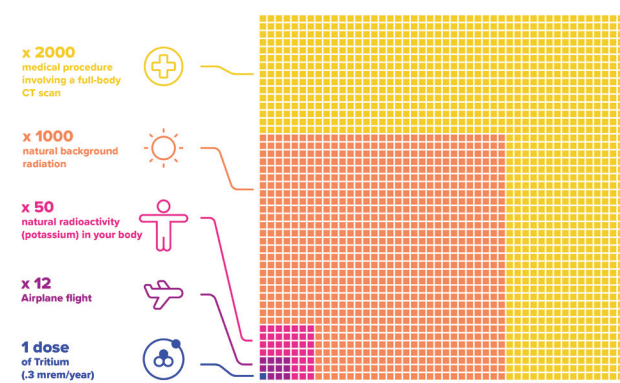


Source: Nuclear Regulatory Commission

Tritium dose from nuclear power plants is very low and significantly below regulatory limits. Tritium has been identified in a drinking water well in the past, with concentrations of approximately 1,600 picocuries per liter. A tritium concentration of 1,600 picocuries per liter is more than twelve times lower than the Environmental Protection Agency's dose-based drinking water standard.

The radiation dose estimate for an individual drinking water for a year from a well with this concentration of tritium is estimated, using EPA assumptions, to be 0.3 millirem (mrem), which is significantly lower than a CT scan or a round-trip cross-country airplane flight.

A radiation dose of 0.3 mrem is at least 2,000 to 5,000 times lower than the dose from a medical procedure involving a full-body CT scan, 50 times lower than the dose from natural radioactivity in your body, and 12 times lower than the dose from a round-trip cross-country airplane flight.



Source: Nuclear Regulatory Commission

"Tritium emits a very weak beta particle. People are exposed to small amounts of tritium every day, since it is widely dispersed in the environment and in the food chain."

-U.S. Environmental Protection Agency

HOW DOES THE NUCLEAR INDUSTRY ADDRESS TRITIUM LEAKS OR SPILLS?

While no tritium release has exceeded regulatory limits nor posed a public health threat, the industry considers any unintended release of radioactive material to be unacceptable.

- The nuclear industry has voluntarily implemented a Groundwater Protection Initiative. The initiative identifies actions to improve utilities' management and response to instances where the inadvertent release of radioactive substances may result in low but detectible levels of plant-related materials in subsurface soils and water.
- The nuclear industry has voluntarily implemented policies and practices to effectively manage underground water sources like underground piping and tanks.
- Plants that detect unintended releases of tritium identify the source, correct the issues and implement measures to prevent recurrence.
- Where leaks have occurred, state and federal officials have evaluated these situations and found no health consequences from the leaks.
- The industry voluntarily provides a report each year to state and federal officials on the groundwater protection program.
- Effluent and environmental monitoring reports for individual nuclear plants are available to the public on the Nuclear Regulatory Commission's website.