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Tritium Fact Sheet

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- **Tritium** (hydrogen 3 or H-3) is an isotope of hydrogen that is radioactive, and like all hydrogen it reacts with oxygen to form water. Tritium is produced naturally in the upper atmosphere when cosmic rays strike atmospheric gases. Tritium also is produced in commercial nuclear reactors.
- Cosmic rays produce 4 million curies of tritium each year; the total amount of tritium in the environment is about 70 million curies. A picocurie (pCi) is one-trillionth of a curie.
- The U.S. EPA's drinking water limit for tritium is **20,000 pCi per liter** (pCi/l). The millirem (mrem) is a unit of dose. At this concentration, drinking two liters of water per day will result in **4 mrem** per year.
- The highest concentration of tritium found in a well supplying drinking water near Exelon's Braidwood generation facility is **1,524 pCi/l**. If we irrigate a garden with water from this well, the dose from tritium in a one pound tomato will be **5 x 10⁻⁵ mrem**. Drinking two liters of this water per day will result in **0.3 mrem** per year, about the same radiation dose as from eating one banana or drinking one glass of orange juice every week because of the naturally occurring radioactive potassium 40 in fruit, or from flying for one hour in an airplane at 30,000 feet because of cosmic rays.
- The dose from naturally occurring K-40 in the one pound tomato will be **1.5 x 10⁻² mrem**, **300** times the dose from the tritium in the well water used to irrigate the garden.
- The US EPA estimates that the average background radiation dose from all sources is **655 mrem** per year.

Sources of radiation and average annual dose

Radon:	200 mrem	X-rays:	320mrem
Cosmic rays:	27 mrem	Nuclear medicine:	13 mrem
Terrestrial:	30 mrem	Consumer products:	10 mrem
Diet:	35 mrem	Research:	2 mrem
Natural:	292 mrem/year	Man-made:	345 mrem/year

Average yearly dose from the intake of naturally occurring radionuclides in diet

Carbon 14 (C-14): **Between 2 and 5 mrem** depending on caloric intake

Potassium 40 (K-40): **Between 10 and 25 mrem** depending upon potassium in diet

The annual dose from K-40 in various foods is:

- One banana per day: 2.6 mrem
- One 8-ounce glass of orange juice per day: 2.5 mrem
- One medium baked potato per day: 4.3 mrem
- One cup raisin bran cereal per day: 1.8 mrem
- One double hamburger per day: 2.9 mrem
- One large order of French fries per day: 4.7 mrem
- One cup cantaloupe per week: 0.4 mrem
- One cup spinach per week: 0.6 mrem
- Six-ounce halibut fillet per week: 0.7 mrem

Tobacco, smoking: **2,000 mrem/year**

Hot spots (bronchial bifurcations) may receive up to 16,000 mrem per year