

RADIATION AND YOU



Radiation has endured for decades as a popular tool in fiction, providing an enigmatic source of power or danger as needed.

Unfortunately, it is sometimes difficult to separate the perception of these materials and **technologies from their reality**. This pamphlet aims to enrich practical knowledge of the role radiation plays in everyday life and dispel some common misconceptions.



Bismuth¹, formerly the heaviest stable element, was only proven to be radioactive in 2003.²

URANIUM WORLD

Did you know? Uranium is found in trace amounts in air, earth, and water around the globe. You eat about 1 μg of it per day, and it is estimated that there are **4.5 billion tons** of uranium dissolved in the oceans.^{3,4}

Radioactivity is an inherent aspect of matter with significant impacts on health and technology, from radon leaking out of the earth to cosmic ray bombardments. Natural sources of radiation can vary extensively depending on geography and elevation, accounting for just over half of your average annual exposure.⁵ The rest comes from medical procedures.



Bananas⁷ are rich in potassium, including the radioisotope ^{40}K , making them slightly radioactive.

One everyday technology that involves the use of radiation is the household smoke alarm. Many of these devices use the isotope ^{241}Am to produce a current by ionizing air. Smoke disrupts the current, triggering the alarm. And if you've ever had a medical procedure, it is likely that you benefited from Canadian ^{60}Co , contributing to the 40% of single-use medical devices sterilized clean with the isotope's gamma rays.⁶

NATURAL ENGINEERING

While the first human-made reactors date from the 20th century, Earth was rich enough with ^{235}U that a natural reactor operated almost 2 billion years ago in Gabon, Africa.

1. Bismuth crystal photo by Alchemist-hp available through Wikimedia Commons.

2. [Bismuth not so stable after all](#)

3. [Toxicological Profile for Uranium](#)

4. [ACS Central Science](#)

5. [CNSC Radiation Doses](#): type out the full URL if possible

6. [CNA Medical Isotopes](#)

7. Banana photo by Steve Hopson, available through Wikimedia Commons.

8. [IAEA News Center](#)