

What is radiation?

Radiation is energy in motion in the form of waves or streams of particles.

- Radiation has been around since life began on our planet: certainly well before the evolution of mankind.
- Radiation cannot be seen or heard and can only be detected and measured accurately and in real time by specialist equipment.

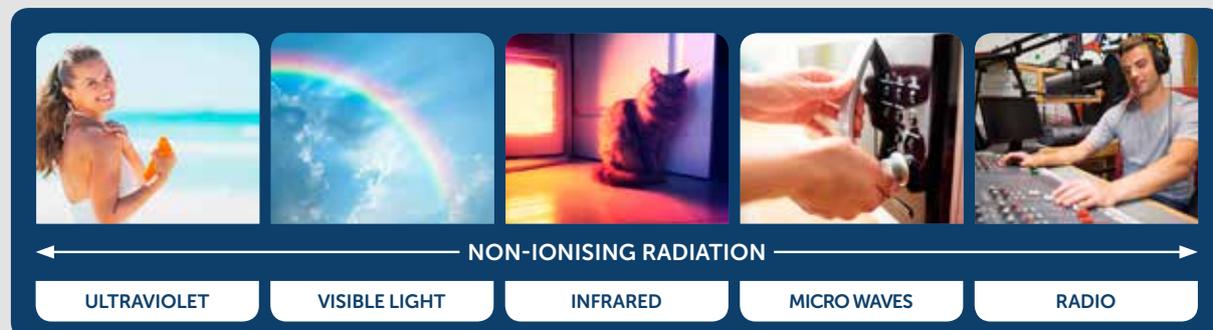
There are different types of radiation. Scientists categorise it based on wavelength and frequency.

THE ELECTROMAGNETIC SPECTRUM.

HIGHER FREQUENCY - SHORTER WAVELENGTH.



LOWER FREQUENCY - LONGER WAVELENGTH.



Ionising radiation has more energy than non-ionising radiation, enough to cause chemical changes in matter. **Radioactive waste is classified as ionising radiation.**

We are continuously exposed and have adapted to natural background radiation.

Natural background radiation arises from a variety of sources, including **rocks and soil** (terrestrial radiation) and **matter in outer space** (cosmic radiation). People are exposed to the natural radiation present in their bodies, **in the food they eat** and in the **radon gas they inhale**, which comes from the ground.



Terrestrial radiation.



Cosmic radiation.



Ingestion of radio potassium.



Inhalation of radon gas.

DID YOU KNOW?

If you sat on the surface of the Earth above a Geological Disposal Facility for 365 days non-stop, the radiation dose you would receive from the material buried is equal to eating 1/10th of a banana. Based on safety case from Nagra, Switzerland.

Radiation dosage.

The radiation dose to a person considers the quantity and type of radiation absorbed by the body as well as the sensitivity of the tissues or organs where it is absorbed.

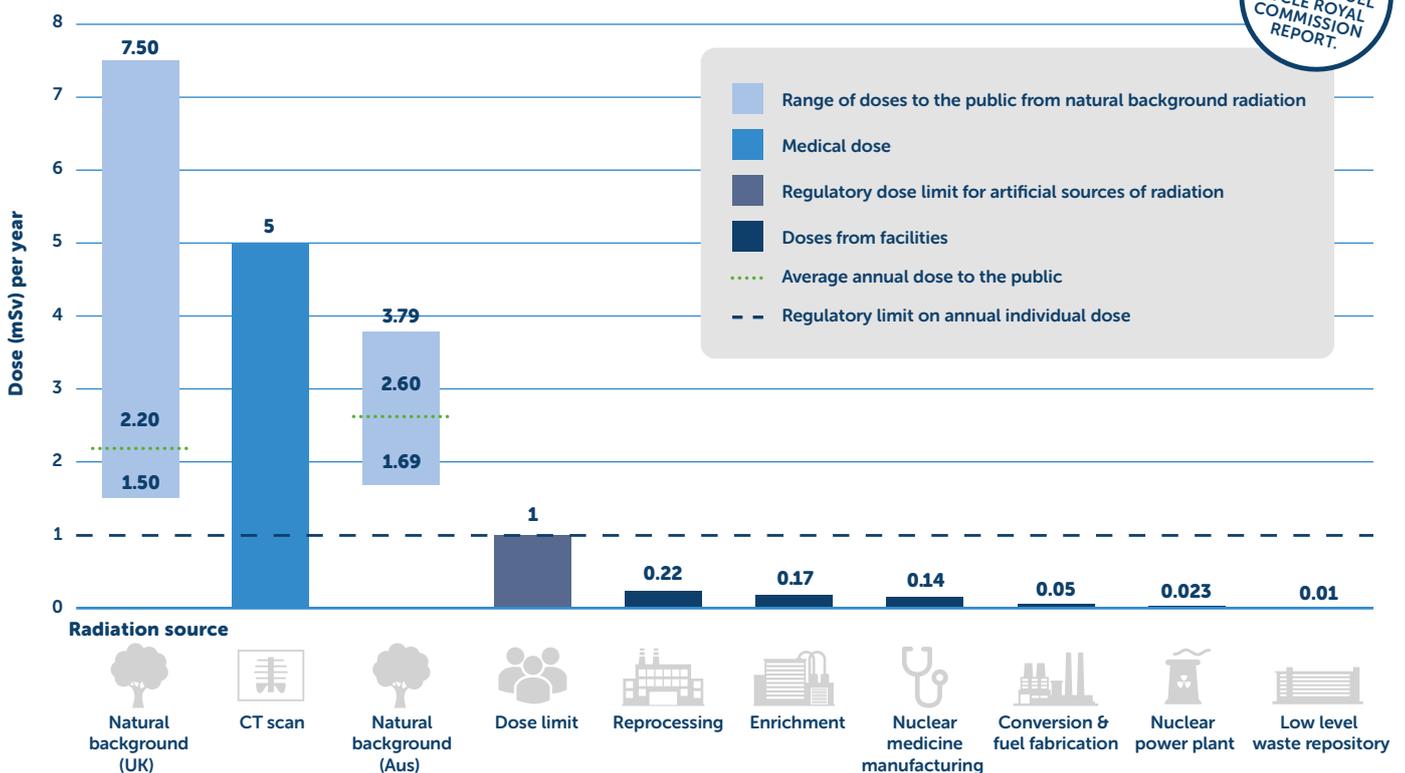
- Radiation dosages measured in sieverts (Sv) or millisieverts (mSv).
- In Australia, the public is exposed to between 1.69 and 3.79 mSv of radiation every year from natural sources.
- In addition to this, the public also receives radiation from artificial sources, like medical procedures.

In countries where there are nuclear fuel cycle facilities in operation, the additional radiation dosage people receive is much lower than those from natural sources.

FINDINGS FROM THE NUCLEAR FUEL CYCLE ROYAL COMMISSION REPORT.



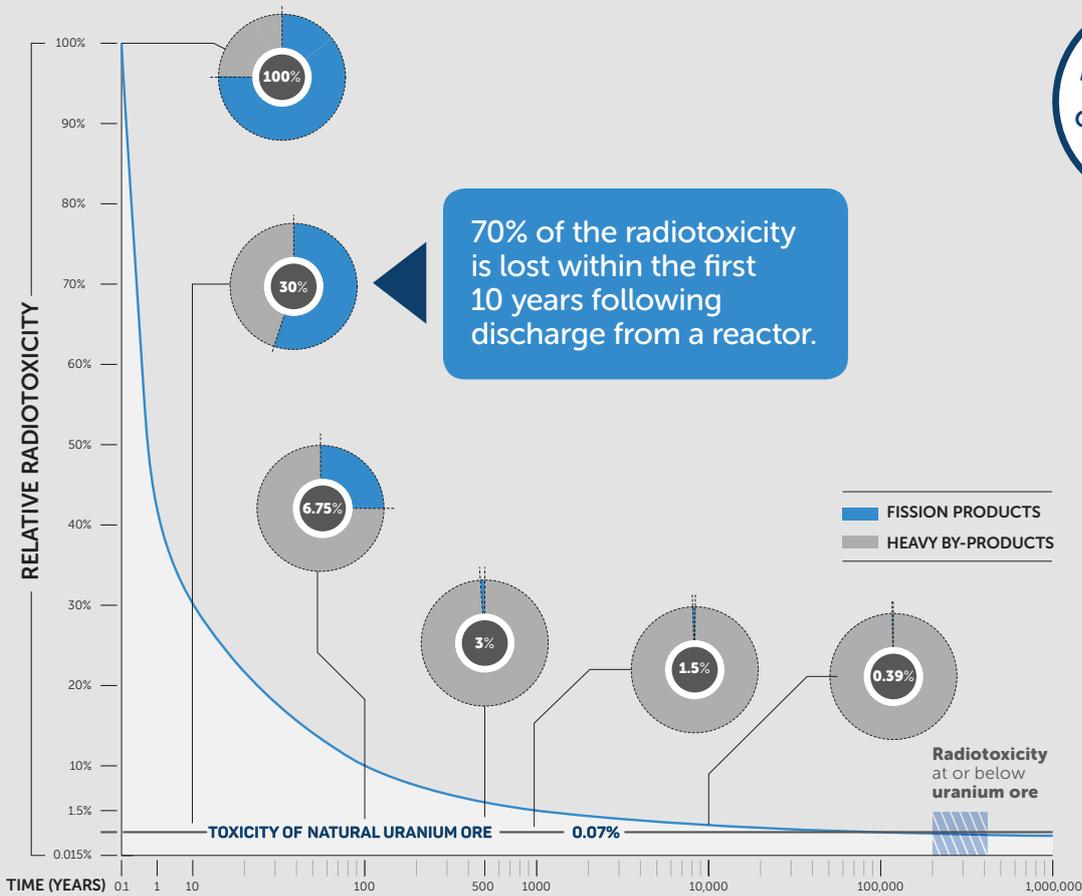
Expected radiation doses to the public from natural background radiation, medical sources and international nuclear fuel cycle facilities, and regulatory limit for doses of radiation to the public additional to natural background sources and medical procedures.



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WHAT IS RADIOTOXICITY?

Radiotoxicity describes the harm which a radioactive substance can cause if people are exposed to it. It specifically describes the potential for an impact on health where a radioactive substance enters the body, through inhalation or ingestion, and emits radiation there.



Within 500 years the radioactivity of the used fuel has decreased significantly. Used fuel requires isolation and containment from the environment for at least 100,000 years.

What are fission products:

Smaller atomic pieces left when a larger atom (such as uranium) is split. Fission products are typically short lived.

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What are heavy-by products: Produced in small quantities in nuclear fuel due to atomic processes in the reactor. Heavy by-products are important because they are long lived and some produce substantial amounts of heat as they decay.

FINDINGS FROM THE NUCLEAR FUEL CYCLE ROYAL COMMISSION REPORT.

Every South Australian has an opportunity to learn more about the nuclear fuel cycle by discovering the facts, understanding the choices, and providing their views on the Royal Commission's Report. This is a discussion about the state's future that all South Australians can have, and will help guide the Government's decision making on the next steps.

Visit nuclear.sa.gov.au to find out more.