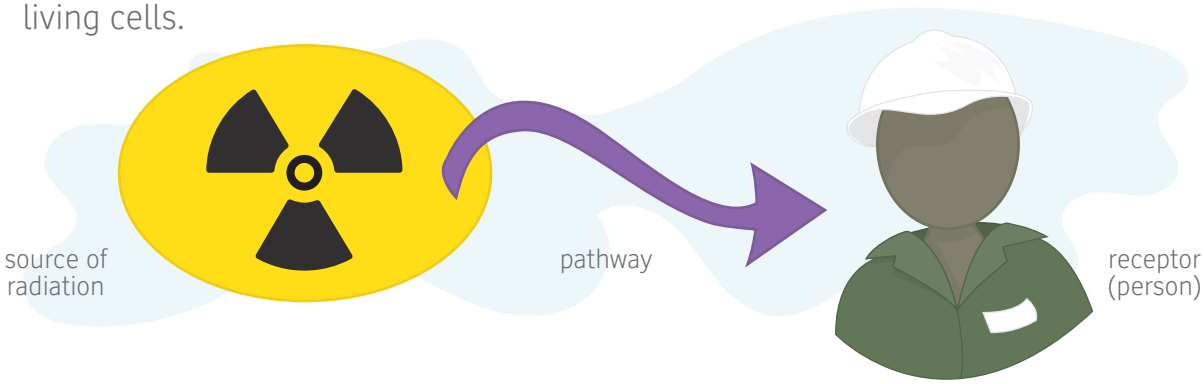
WHEN IS THERE A RADIATION EXPOSURE RISK?

Ionising radiation carries enough energy to liberate electrons from atoms, thereby 'ionising' them – for this reason it has the potential to damage living cells.

A risk of human exposure to ionising radiation exists if there is an exposure **pathway** from a radiation source to a receptor (a person).



Sources of ionising radiation include:

- Naturally-occurring radioactive materials in our environment (uranium, thorium, potassium)
- Industrially-manufactured radioactive sources used in medicine or industrial measuring (cesium-137, cadmium-109, iodine-131 and many more)
- Industrial X-ray sources (medical, industrial measurement and security applications)
- Cosmic radiation (high-energy particles and electromagnetic radiation) from the sun and deep space, and
- Radon gas (occurs everywhere in the air, at concentrations that depend on the uranium content of the soil).

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The **exposure pathway** describes the method by which receptors (people) can get exposed to radiation, that is:

- External exposure: direct irradiation (mostly by gamma rays, which are the most penetrating form of radiation)
- Internal exposure from inhaling (breathing in) radon gas and radon gas decay products
- Internal exposure from inhaling radioactive particles contained in dust
- Internal exposure from ingesting (eating or drinking) radioactive materials.

The risk of exposure to radiation can be reduced or removed altogether by minimising or eliminating either the **source** or the **pathway**, or by removing the **person** from the site where exposure occurs.