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.

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).

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

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.