



جامعة الإمام عبد الرحمن بن فيصل
IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY

مستشفى الملك فهد الجامعي
King Fahad Hospital The University

Radiation protection





What does it mean by radiation protection?

The principles and legislation followed in protection from ionizing radiation are agreed upon all over the world, as national and international bodies monitor the activities related to radiation in order to keep exposure to radiation at a minimum, which is known in the English language:

As Low as Reasonably Achievable (ALARA)

Are there principles for radiation protection?

There are three principles of radiation protection recommended by the International Atomic Energy Agency and the International Committee for Radiation Protection and general instructions for protection from ionizing radiation in the Kingdom of Saudi Arabia:

Justification



The practice should lead to adequate benefit for the people exposed to radiation and take into account both immediate and future damages.

Optimization of protection (examples).



This means reducing the incidence of radiation exposure resulting from practices and activities to the lowest possible level.

Are there principles for radiation protection?

Dosing Limits



It is necessary to set an upper limit on the radiation dose to which any individual or any worker can be exposed in cases of exposure (other than medical exposures).

What is radiation?

Radiation is energy in the form of electromagnetic waves or particles that travel through matter or a vacuum.

What are the types of radiation?

Radiation is classified into two types

1- Ionizing radiation



Radiation with high energy ionizes the medium in which it passes due to the collision of the beam with the atoms of the medium, which leads to the expulsion of some electrons of the atoms and the ions are formed in the medium. Ionizing radiation is in the form of particles such as (alpha particles, electrons, and neutrons) or electromagnetic energy such as X-rays and gamma rays.

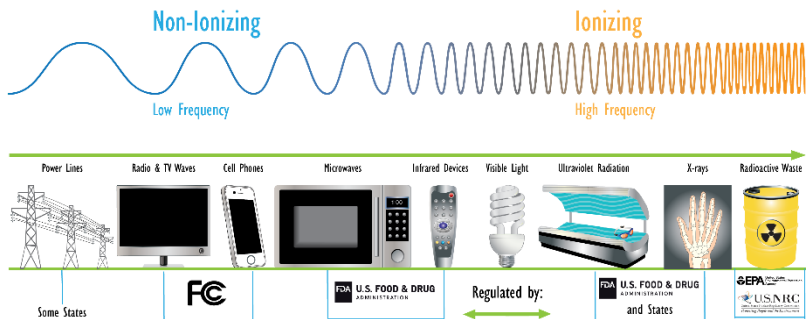
What are the types of radiation?

2- Non-ionizing radiation:

It does not carry enough energy to ionize atoms of the medium they pass through, such as light, radio waves and microwave.



Electromagnetic Spectrum



What are the applications and uses of ionizing radiation?

Ionizing radiation is used in many areas of our daily life, for example:

1- Medical field:

Ionizing radiation and radioactive materials are used in the diagnosis and treatment of diseases in nuclear medicine and radiotherapy.



Radiological diagnosis



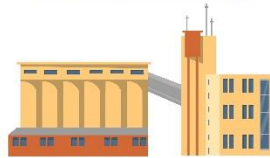
Radiation therapy

What are the applications and uses of ionizing radiation?

Ionizing radiation is used in many areas of our daily life, for example:

1- Industrial field :

They are used in non-destructive testing, in measuring soil moisture and density, and in oil and gas exploration



References:

Illustration pictures are taken from

<https://www.freepik.com/>

Reviewed by:

Radiologists of KFHU.



Health Awareness Unit

IAU-20-75



جامعة الإمام عبد الرحمن بن فيصل
IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY

مستشفى الملك فهد الجامعي
King Fahad Hospital The University