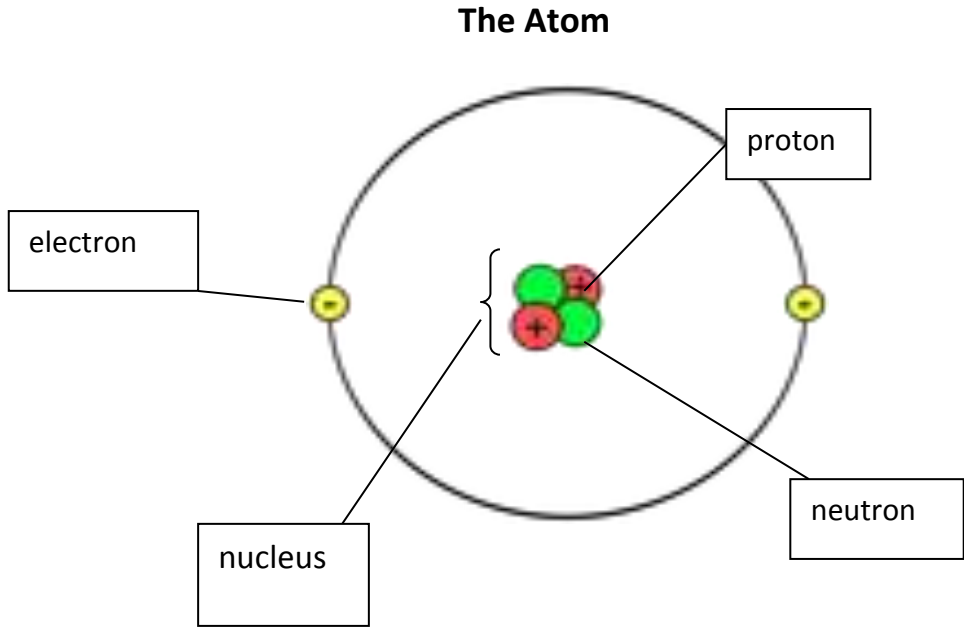


# 10.1 Nuclear Radiation

N4



The above diagram shows a simple model of the atom (it is not to scale).

N4

## Nuclear radiation

Nuclear radiation is so called because it originates in the nucleus of an atom. Nuclear radiation can come from natural sources such as cosmic rays and naturally occurring radioactive materials such as uranium. It can also come from artificial sources such as man-made radioisotopes such as plutonium.

Nuclear radiation can be used in medicine to sterilise instruments by killing germs and bacteria. It can also be used to kill the cells which make up a cancerous tumour, however care must be taken in this procedure as nuclear radiation can also kill or damage healthy cells. Nuclear radiation can also be used to examine the body through using radioactive materials in something called a **tracer**. This is a substance that is injected into the body and detected to analyse its progress through the body.

N5

We will look at three different types of nuclear radiation:

- alpha                       $\alpha$
- beta                          $\beta$
- gamma                       $\gamma$

type of radiation	nature	Minimum absorber
alpha	two protons and two neutrons (helium nucleus)	sheet of paper, few centimetres of air
beta	fast-moving electron	few cm of aluminium
gamma	electromagnetic wave	Several cm of lead



