



# Mine ventilation Society – Northern Branch

## PART I



Date 27 February 2026

Time: 10:00 – 12:00

Venue: MS Teams



### A GUIDE TO DIFFERENT TYPES OF RADIATION

Ionising radiation commonly comes in three different forms: alpha, beta, and gamma radiation. Each of these has a differing composition, and they also differ in their penetration, ionisation ability, and uses. This graphic summarises each type in turn.

| $\alpha$ ALPHA                                                                                                                                                                                                                                                        | $\beta$ BETA                                                                                                                                                                                                                                                                          | $\gamma$ GAMMA                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 protons & 2 neutrons                                                                                                                                                                                                                                                | High energy electron                                                                                                                                                                                                                                                                  | High energy EM radiation                                                                                                                                                                                                                                                     |
| IONISATION ABILITY:                                                                                                                                                                                                                                                   | IONISATION ABILITY:                                                                                                                                                                                                                                                                   | IONISATION ABILITY:                                                                                                                                                                                                                                                          |
| HOW PENETRATING?                                                                                                                                                                                                                                                      | HOW PENETRATING?                                                                                                                                                                                                                                                                      | HOW PENETRATING?                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                              |
| <b>USES</b><br><br>Many smoke detectors contain americium-241, which releases alpha radiation and helps detect smoke. Alpha radiation-emitting elements have also been used to power some heart pacemakers and some space probes, including the Mars Curiosity Rover. | <b>USES</b><br><br>Beta-radiation emitters can be used as tracers in medicine to image inside the body, and have also been used in cancer treatment. In industry, they have been used to find leaks in underground pipes, and to gauge the thickness of materials during manufacture. | <b>USES</b><br><br>Gamma radiation is used to help sterilise medical equipment, and can also help sterilise packaged foods. Gamma ray detection is used by a number of telescopes to produce images. They have also been used in cancer treatment to help kill cancer cells. |

© COMPOUND INTEREST 2015 - WWW.COMPOUNDCHEM.COM | Twitter: @compoundchem | Facebook: www.facebook.com/compoundchem  
This graphic is shared under a Creative Commons Attribution-NonCommercial-NoDerivatives International 4.0 licence.

