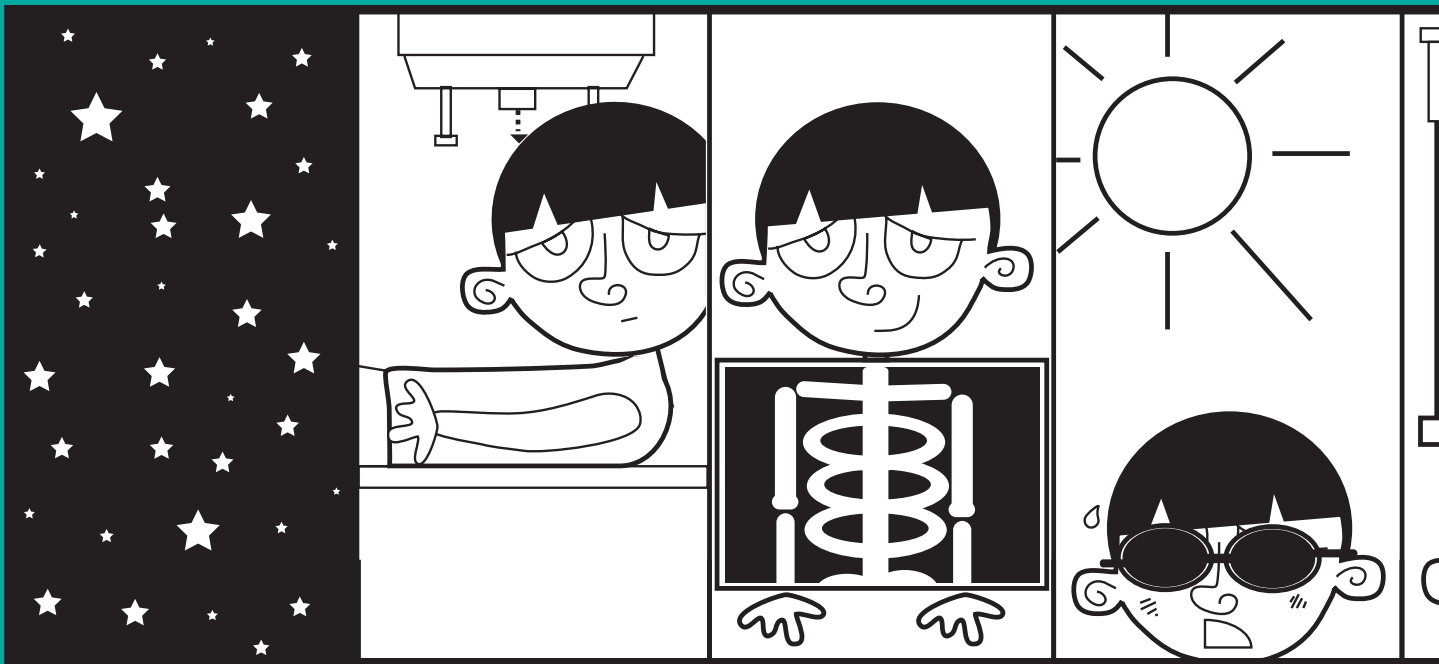


# Radiation, the Media, Assessment and Presentation



## **Radiation Sources**

Radiation is energy. Radiation travels as waves through space. Radiation comes in various forms and can have different effects on living things, including people. Natural radiation is as old as our world, but scientists and engineers have found new ways to use some types of radiation to make our lives healthier and more convenient. Let's look at some of the sources and some of the good and not so good effects of radiation.



**Cosmic**

**Gamma**

**X-Rays**

**Ultra-Violet**

**Radio waves** from transmitters help us to communicate

**Microwaves** from ovens help us to heat food and drinks

**Infra-red rays** from electric heaters keep us warm

**Light** enables us to see

**Ultra-violet rays** from the Sun can give us sunburn

**X-rays** can be used by the dentist to 'see' into our teeth.

**Gamma rays** can be used in hospitals to destroy cancer cells

**Cosmic radiation** from space can harm living cells

**X-rays, gamma rays and cosmic radiation** are called **ionising** radiation and can cause damage to living tissue - our bodies for example. So it is necessary to control our exposure to ionising radiation.

Atoms are the basic building blocks of matter in our world and beyond, and radiation comes from atoms. Most atoms are 'stable' and do not change, but some are 'unstable'

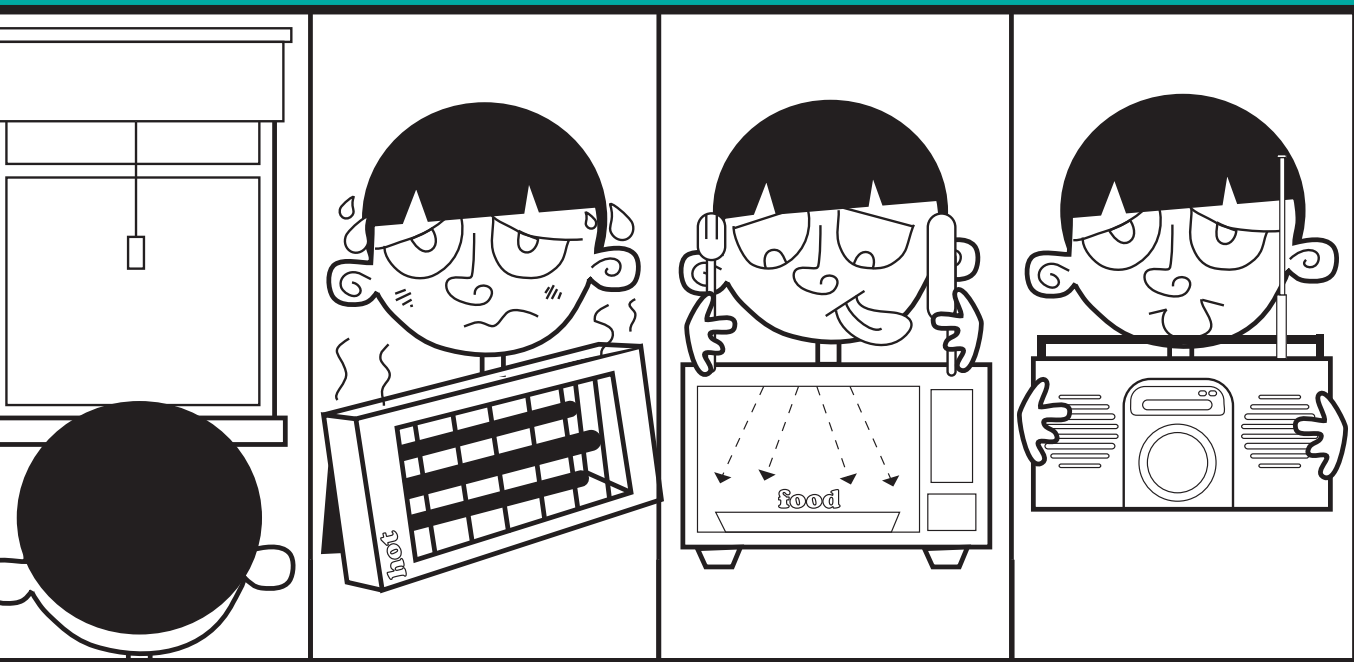
or 'radioactive'. X-rays, gamma rays and cosmic radiation all contain 'radioactive' atoms.

It is important to know that there is this basic difference between ionising radiation and non-ionising radiation when we hear the topic of radiation being talked about on the TV, read about it in the papers, or studied in science at school.

## Media Types

Who would want to communicate anything about **radiation** through the media (the press, radio or TV)?

The page on **radiation sources** shows clearly that radiation is a big topic involving science, and that some forms of radiation and some uses of radiation are more interesting to some people than they are to others.



**Visible Light**

**Infra-red**

**Microwaves**

**Radio**

For example, which people might be interested in information in the media about **ultra-violet rays**, and why might they be interested?

**Parents** who have young children might be very interested to know more about the harmful effects of **ultra-violet rays** on their children's skin.

Companies who sell sun cream will certainly be interested in providing information to parents through the media. Most likely, the information will be about the important benefits that **ultra-violet ray** screening creams have on children when they are out in the sun on holiday, for example.

Would very old people be as interested in media coverage of the effects of **ultra-violet rays**, and would companies selling sun screening products target their media coverage specifically at very old people?

If the messages about the protection of young children from **ultra-violet rays** are

targeted to reach parents, in what kind of media do you think they will appear?

And if you were a parent, which media would you trust the most to provide you with reliable, scientific information on the effects of **ultra-violet rays** on young skin?

## Check out the short list below:

- Leaflets in the doctor's surgery
- Information on sun cream packaging
- Articles in women's magazines
- TV adverts
- Articles by scientists on the Internet

## Assessment Skills

If different people have different sorts of interest in different types of radiation, how difficult or easy is it to spot the intention of media coverage of radiation? Here are three pieces of information about radiation.

### First Piece

'Our bodies are constantly exposed to a variety of radiation sources. This natural background radiation is in the food we eat, it is in the soil, and reaches us from the stars via cosmic rays.

But the biggest single source of radiation in our lives is radon gas, which occurs naturally and seeps into people's homes from radioactive rocks buried deep underground.

For most UK residents, radon will account for half of their annual radiation dosage. Even so, this presents very little risk: the dosage is well within the safety limits of the International Committee on Radiological Protection. But in some parts of the country levels are raised because of local geological conditions.

It has been estimated that 50,000 people in Cornwall, Northamptonshire, Derbyshire and Scotland have higher than average concentrations of radon in their homes.'

### Second Piece

'Malignant melanoma kills almost 1,800 Britons every year, and instances of this type of skin cancer are likely to triple in the next 20 years. Sunburn can double your risk of contracting the disease, so how can we enjoy the sun and stay safe?

Sun cream is one line of defence, but a recent magazine found that most people apply just 10% of the recommended amount. And don't think you are safe just because you haven't burned. Even the visible damage that happens before we go red may lead to skin cancer.'

### Third Piece

'On average we receive about 3% of our total radiation exposure from consumer products. For example:  
Smoke detectors that use americium-241  
Lawn fertilizer containing potassium-40  
Cigarettes  
Gas lanterns  
Exit signs  
Natural gas appliances  
Brick and stone houses  
Colour television sets.'

**Are the three pieces aimed at the same sort of people?**

**Are any of the pieces intended to influence your opinions?**

**Do you believe or disbelieve what they say?**

**What further information would you like to have about (or in) the pieces?**

## Presentation Styles

State clearly what type(s) of radiation you are presenting your conclusions on.

It is not helpful if your presentation causes confusion, allowing readers to be unclear whether you are dealing with ionising or non-ionising radiation, for example.

Identify exactly the sources of the material you have considered in coming to your conclusions.

Quote clearly the name of the website, newspaper, book etc, and where possible, name the author(s) and the date at which he/she produced the information.

If you look at the three pieces printed in **Assessment Skills**, you will see that much of this vital information is missing.

Explain why you would consider some of the media items that you have considered reliable and some unreliable.

For example, if you are presenting your conclusions on 'radiation and mobile phones' can you clearly say who are the experts on this issue and can you have confidence in the views of parents who are rightly concerned for their children's welfare?

You will need to sort information and fact from opinion.

Opinion may not be wrong but facts may tell only part of the story.

Consider if people have been paid money to create the content of the media reports, and who might have paid them?

Consider if any of the authors have reasons other than scientific enquiry to communicate their pieces on radiation.