



# Electromagnetic Waves

## Ultraviolet Radiation

### Task

Use the internet to research answers to the questions below. Your answers do not need to be long, most can be answered with one or two sentences.

1. What effect does UV radiation have on the skin?
2. How can people protect their skin against UV radiation?
3. Why are people with darker skin less affected by UV radiation?
4. What does the SPF of sun cream mean?
5. What is ozone?
6. What is the ozone layer?
7. How does the ozone layer protect humans?
8. What are CFCs?
9. What effect do CFCs have on the ozone layer?
10. What are the health risks associated with a depletion of the ozone layer?
11. What is the Montreal Protocol and why was it introduced?
12. Why is it important that every country agreed to the Montreal Protocol?



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## Ultraviolet Radiation

### Example Answers

1. What effect does UV radiation have on the skin? **Sun tans, sun burn or skin cancer caused by UV radiation killing or damaging cells.**
2. How can people protect their skin against UV radiation? **Sun cream, or by wearing long clothes.**
3. Why are people with darker skin less affected by UV radiation? **Dark skin contains a chemical called melanin, which absorbs UV radiation, preventing it from reaching the tissues underneath the skin. Melanin is produced after exposure to UV radiation, giving lighter skinned people a sun tan.**
4. What does the SPF of sun cream mean? **Sun Protection Factor. Reduces the amount of UV radiation reaching the skin, meaning the user can stay in the sun safely for longer. E.g. SPF 20 only allows 1/20<sup>th</sup> of the radiation through, meaning (with regular re-application) someone who would burn in 15 minutes could stay out for 5 hours.**
5. What is ozone? **An oxygen molecule containing 3 oxygen atoms.**
6. What is the ozone layer? **A layer of ozone gas in the atmosphere.**
7. How does the ozone layer protect humans? **Absorbs (97-99% of) the Sun's UV radiation.**
8. What are CFCs? **Chlorofluorocarbons. Used as coolants and in aerosols.**
9. What effect do CFCs have on the ozone layer? **They destroy it, causing holes to appear.**
10. What are the health risks associated with a depletion of the ozone layer? **More UV radiation reaches the surface, increasing the risk of skin cancer.**
11. What is the Montreal Protocol and why was it introduced? **A global ban on the use of CFCs introduced in 1989 after a hole in the ozone layer was discovered over Antarctica.**
12. Why is it important that every country agreed to the Montreal Protocol? **Otherwise CFCs would still be released into the atmosphere, and the ozone layer would not be able to recover.**