

The Health Impacts of 5G Technology

Plain English Summary



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The Health Impacts of 5G Technology

INTRODUCTION

5G is short for fifth generation. It describes the newest mobile (wireless) technology.

People are interested in this because 5G will be better than 3G and 4G; mobile phones and the internet will be faster, which is good news for everyone, especially businesses.

But the new technology will need a lot more transmitters, known as antennae (aerials), to be able to move this information around, and will use 'radio waves' that travel at higher frequencies than before. Some people are worried that these radio frequency electromagnetic fields (RF-EMF), as they are called, might be bad for the health.

An evidence summary was produced which looks at different pieces of information on 5G and what that says about the effect on people's health. It does not cover everything that is written about it, and it doesn't say how good or bad that information is.

This is a Plain English summary of that evidence summary.

THE POTENTIAL OF 5G

The Government thinks that 5G networks and services will help the country to become a world leader in mobile technology. This is part of the UK's Digital Strategy¹.

In the early stages, 5G will bring in mobile broadband that is faster and can carry more information. This should be good for connecting people and businesses. Over time, 5G may help to increase business in transport, healthcare and manufacturing. It could develop new ways for people to live and work.

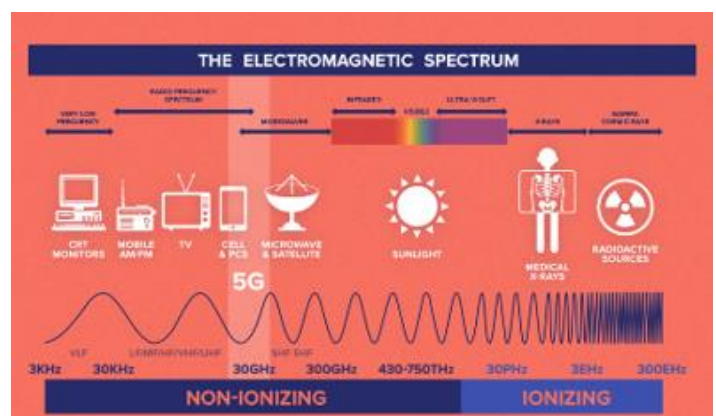
The Department for Digital, Culture Media and Sport asked for an independent review to look at the things that might change after 5G has come in. This found that 3G and 4G helped to improve the economy and that 5G will probably do the same. The effects of 5G technology could:

- Make driving safer, and the roads less busy.
- Lead to new healthcare devices that check how people are doing away from hospital
- Help introduce gadgets to improve street lights and spot floods before they happen
- Check on farm animals and crops
- Develop new manufacturing systems
- Create better media and entertainment products

Local councils could also bring in money by renting space on their land, buildings and lamp posts to locate the 5G antennae.

HOW 5G WORKS

All radio, mobile and wireless communications use radio frequency electromagnetic fields (RF-EMF) to send information. RF-EMF is a form of energy that is produced by all kinds of everyday things including electronic gadgets and equipment, power lines, mobile phones and even the human body. Different frequencies make up what's known as the electromagnetic spectrum. (See image to right)



Source: CNET

The spectrum can be split into two parts: ionising and non-ionising. The non-ionising frequencies used by 3G, 4G, 5G and radios do not produce the kind of energy that can cause damage to cells. This is quite different from ionising radiation which includes ultra-violet rays, x-rays and gamma rays, and can be harmful to cells in a way that causes cancer.

5G technology is also different because it will use frequencies that are higher – and which travel shorter distances – than 3G and 4G. This is why so many more antennae will be needed. The worry is that, because of this, a lot more people will be exposed to the RF-EMF, and that these higher frequencies could affect people's health.

WHAT THE EVIDENCE SAID IN HEALTH OR PUBLIC HEALTH TERMS

When new technologies and innovations are introduced, it is not unusual for there to be some concerns over what effect these could have on people's health. We know that 5G technology will use a network of antennae to send data and that this will increase people's exposure to RF-EMF. The three bullet points below highlight the possible health effects of this.

- 5G uses higher frequencies which travel shorter distances than the technology used for 3G and 4G, which means there will be a lot more antennae in local areas. Because of this network of antennae, people will be exposed to more RF-EMF even if they are not using or wearing a mobile device. The energy from 5G could be absorbed by the skin and might cause small increases in body temperature because of the heat this produces.
- Guidelines from an organisation called the International Commission on Non-Ionizing Radiation Protection (ICNIRP) set out safe levels of RF-EMF for people. This covers all radio frequency electromagnetic fields, not just 5G. Based on this, Public Health England, the World Health Organisation and the European Union Science Committee have looked at the evidence and say that health is unlikely to be affected at these safe levels. The expected levels of exposure from 5G will fall below this. It is recognised that some groups do not agree with this position.
- The International Agency for Research on Cancer (IARC) has classified all RF-EMF, including 5G frequencies, as possibly carcinogenic (having the potential to cause cancer). This falls into the same group as everyday products like talcum powder, petrol fumes and Aloe Vera leaf extracts.

WHAT THE EVIDENCE SAID GENERALLY

- Digital communication will be quicker with 5G. It will improve how technology works for us, how it responds more to what we need, and how it connects us with others. 5G will bring in new ways of doing things, like 'smarter' homes, cars and roads. It could introduce gadgets we can wear to check the state of our health. It could lead to better ways of making and checking factory-made goods.

FIND OUT MORE

If you have any questions about this plain English summary please email KIT@derbyshire.gov.uk.

* Smart technology is electronic equipment that can be linked to other gadgets using wireless connections.