



What do the experts say?

Research into the potential health effect(s) connected with the use of radio waves has been conducted for many decades and there is still ongoing research being undertaken.

The World Health Organization (WHO) has recently published a fact sheet that reviews the most recent reports into the use of radio waves, especially at the frequencies used by mobile phones and their base stations. The WHO concluded:

None of the recent reviews have concluded that exposure to the RF fields from mobile phones or their base stations cause any adverse health consequences.

For further information

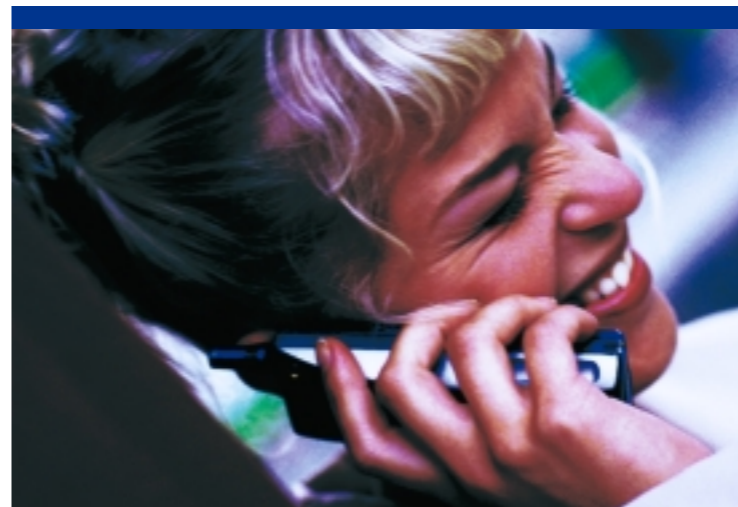
There are a number of independent sources of information directed towards answering questions on the use of radio waves by mobile phones and their base stations.

- **The World Health Organization**
www.who.int/emf
- **Royal Society of Canada**
www.rsc.ca
- **The International Commission on Non-ionizing Radiation Protection (ICNIRP)**
www.icnirp.de

What is the MMF?

The MMF is an international association of radio equipment manufacturers whose members include Alcatel, Ericsson, Mitsubishi Electric, Motorola, Nokia, Panasonic, Philips, Siemens and Sony.

The MMF produces information such as this in accordance with its purpose of developing and presenting industry positions to independent research organisations, government and other research bodies.



**Mobile Manufacturers
Forum**

Mobile Manufacturers Forum
Diamant Building, 80 Blvd. A. Reyers
B-1030 Brussels Belgium
www.mmfai.org

MMF 01/01

Mobile phones

base stations



**Mobile Manufacturers
Forum**

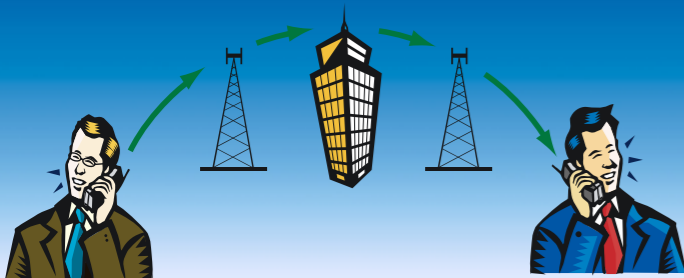
Mobile or cellular phones are very popular in today's society. Many people are, however, unaware of how the mobile phone network operates, especially the role of base stations.

This brochure is designed to explain how base stations operate and answer some of the basic questions people often ask.

How do mobiles work?

When you make a call on your mobile phone, it emits radio waves (also known as radiofrequency or 'RF' energy). These radio waves are received by the antenna of the nearest base station.

A base station consists of one or more radio transmitters and receivers as well as radio antennas that communicate with individual mobile phones in the area.



Once a base station receives the radio waves from a mobile phone, it forwards these to another point (called a 'switch') which then forwards the call to another base station or to the fixed line network depending on the type of call being made.

Base stations have two limiting factors – one is the capacity of calls that they can handle, and the other is the geographical area that they can cover.

To overcome these limitations, base stations are located in strategic areas, known as 'cells'. Base stations, when correctly located, allow the available radio frequency to be reused in other cells, thereby allowing the network to handle many more calls. It also means that the base station must operate at low power levels so that it does not interfere with other base stations in the area.

Where are base stations located?

Base station infrastructure is often located on towers, on the roof of a building or within existing structures. In many offices there are very small base stations located within the building itself.

Many people today use portable telephones in their homes. The base unit that plugs into the telephone connection is really a miniature base station. It operates on the exact same principles as the larger base stations seen in the street.

The important thing about base stations is that regardless of the type, they operate on low power levels, and where people can be exposed to the fields, they are far below the relevant safety limits.

What determines the number of base stations required?

One popular misconception is that there are a lot of base stations because of the number of mobile phone operators. As already mentioned, base stations can only handle a limited number of calls even using advanced technical processes. Therefore the overall number of base stations is determined by both the technology and the number of people using mobile phones.



Are there safety limits for exposure to radio waves from base stations?

Yes. There are a number of national and international guidelines, recommendations and standards for exposure to radio waves. They are very similar and usually based on recommendations from the International Commission on Non-Ionizing Radiation Protection (ICNIRP). The limits provide a wide safety margin from any known adverse health effects and they take the safety of children and other segments of the population into account by providing additional margins of safety.

The intensity of radio waves is dramatically reduced with distance from the antenna. For example, if you are more than a few metres away from a typical outdoor base station antenna, you will be under the recommended exposure limits. If you are in a building with indoor antennas, then the distance required is only a few centimeters.

