Mobile Phones & Health

Mobile Manufacturers Forum

GSMA

Explained Series – Wireless Technology and Health

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Overview

A mobile phone is essentially a small low powered radio transmitter and receiver which connects to a mobile network to enable telephone calls.

Mobile phones use radio frequency (RF) fields to send and receive calls, texts, emails, pictures, web, TV and downloads. A radio signal is sent to the nearest base station, which sends the signal to a digital telephone exchange and on to the main telephone network. This connects the signal to the receiving phone, again via a base station if it is another mobile phone.

How do mobile handsets work?

When a mobile handset is switched on, it periodically communicates with the base station which provides coverage in the specific area where they are located. In this way, the mobile phone sends its position to the mobile network so that the user can make or receive a call from any point where there is coverage from the service provider. If the subscriber is on the move then the signal transmitted by the mobile phone is identified by the respective base station in the area in which he or she is moving.

Each time we make or receive a call using our mobile phone, radio signals in the form of electromagnetic waves are transmitted from our handset to the closest base station. The base station connects our call to the main telephone network.

How much power does a mobile phone use?

A mobile phone is a low powered device. For GSM phones, the maximum transmitter power is approximately 0.25 watts and the minimum is approximately 0.002 watts. For other mobile phone technologies the maximum power is similar but the minimum power may be lower due to a wider range of available power levels.

During a phone call the transmitter will automatically reduce power to the lowest possible to maintain a good quality connection. The power is automatically reduced to minimize interference to other nearby mobile phones. This also means lower EMF.

When do mobile phones use the lowest power?

Mobile phones use the lowest possible power when in a good reception or coverage area. This is typically when close to a mobile base station as the phone only has to transmit over a short distance back to the nearest base station.

The mobile network automatically adjusts the mobile phone and base station power required to maintain a connection. So mobile phones produce the lowest EMF when in a good coverage area and close to a base station.

Are mobile phones safe?

Over 50 years of scientific research has already been conducted into the possible health effects from mobile phones, base stations and other wireless services.

The data from this research has been analysed by many expert review groups. Weighing the whole body of evidence, there is no evidence to convince experts that exposure below the guidelines set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) carries any health risks, for adults or children.

On mobile phone safety the World Health Organisation advise,

> *"The overall evidence available to date does not suggest that the use of mobile phones has any detrimental effect on human health".*

Is it safe for children to use mobile phones?

The EMF safety guidelines for mobile phones recommended by the World Health Organisation do include children, and incorporate a large safety margin

With respect to children the WHO advise,

> *The ICNIRP guidelines were developed to limit human exposure to electromagnetic fields (EMF) under conditions of maximum absorption of the fields, which rarely occurs, and the limits incorporate large safety factors to protect workers and even larger safety factors to protect the general public, including children. Thus, the limits in the ICNIRP guidelines are highly protective and are based on all the available scientific evidence.*

Use of hands-free devices

Compliance with strict rules ensures that mobile handsets placed on the market operate properly and comply with EMF safety guidelines. However, people who want to further reduce their exposure to RF fields can use hands-free devices. In addition to being easy to use, these devices allow the handset to be kept away from the body.

Independent tests confirm that these devices when used can reduce the quantity of RF energy absorbed by the body.

Current WHO advice

http://www.who.int/peh-emf/en/

The World Health Organisation advises "Considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak RF signals from base stations and wireless networks cause adverse health effects."