



**SOUTH AFRICAN ELECTRONIC
COMMUNICATIONS ASSOCIATION**

MOBILE COMMUNICATION AND HEALTH

Committed to the Communicating Community

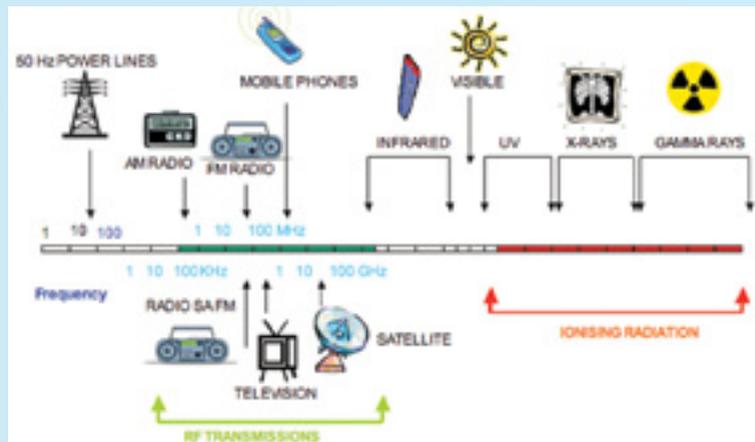
FACTS ABOUT CELLPHONES AND BASE STATIONS

What are RFs and EMFs?

Electric, magnetic and electromagnetic fields (EMF) are produced by alternating electric currents found in electric transmission lines, electric wiring, appliances, mobile phones, and other electric devices.

Radio frequency (RF) is a form of electromagnetic energy that is used by wireless applications. Mobile network base stations use RF EMF or “radio waves” to transmit and receive signals. Other communication facilities which emit radio waves include cordless phones, radar, ham radio, GPS devices, and radio and television broadcasts.

The Electromagnetic Spectrum



The electromagnetic spectrum as seen in the diagram above covers many different frequency bands, each with its own characteristics. The RF EMF emitted by phones and base stations fall into the “non-ionising” portion of the spectrum. This means that the waves are not capable of breaking chemical bonds in biological structures or removing electrons (ionization) from constituent atoms. In this respect, the RF EMF emissions are very different from, and should not be confused with, the ionising radiation produced by x-rays and gamma rays.

Links for further information

Safety guidelines:

- ICNIRP Guidelines www.icnirp.de/PubEMF
- IEEE (2006)C95.1-2005 “IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”.

Electromagnetic fields and public health: mobile phones

- Base stations and wireless networks: Exposures and Health consequences.
- Who handbook on “Establishing a Dialogue on Risks from Electromagnetic Fields.”
- WHO Fact Sheet No 193, June 2011:
www.who.int/mediacentre/factsheets/fs193/en/index.html

Electromagnetic hypersensitivity

- www.who.int/peh-emf/publications/facts/fs296/en/index.html

Global GSM Association - information about base stations

- <http://www.gsma.com/publicpolicy/wpcontent/uploads/2012/03/gsm200904healthbookletenglish.pdf>

MMF - Information about mobile phones

- <http://mmfai.info/public/wireless.cfm?lang=eng>



What are International Exposure recommendations?

The ICNIRP Guidelines are a standard which was developed subsequent to reviews of scientific literature, including thermal and non-thermal effects, and are designed to provide protection against all established health hazards.

These Guidelines are endorsed by the World Health Organisation ("WHO"), the International Telecommunications Union ("ITU") and European Commission and have been adopted worldwide including Africa.

According to the World Health Organisation (WHO):

"Recent surveys have indicated that RF exposures from base stations and wireless technologies in publicly accessible areas including schools and hospitals are normally thousands of times below international standards."

WHO Fact Sheet: Electromagnetic Fields and public health - base stations and wireless technologies, 2006.

How do RF EMF Levels in South Africa Compare?

Members of SAECA have commissioned several independent surveys in order to measure the cumulative RF EMF in the environment from all sources.

These surveys revealed that RF EMF levels, even when measured in close proximity to mobile base stations, are well below the international safety guidelines.

How do base stations work?

A mobile network is divided into a patchwork of cells each which is served by its own base station - a mast or antenna. Each base station communicates with other base stations and mobile phones by exchanging radio signals. When you make a call, your phone will communicate with the base station providing you with the best signal. As you travel, the phone will communicate with different base stations to provide you with the best signal.

Base stations are typically located on masts, roofs of apartment buildings, commercial buildings and industrial estates. They can also be found on structures such as light poles, electricity towers, university campuses, shopping centres and clubs etc.

Your mobile phone transmits at an average power level of 0.25 watts. However, in the midst of the conversation it will only transmit the minimum power required to maintain a call which is 0.063 watts. This automatic power adjustment helps to lengthen the life of the phone battery and reduces interference.

Are there health effects?

As an industry Association that has the interest of the Communities in which it operates at heart, SAECA recognizes that there are health concerns regarding the long term exposure to RF EMF emitted from base stations and mobile phones. In light of this concern, we would like to share the following information:

A substantial amount of studies have been undertaken over the last two decades in order to establish RF EMF exposure limits. These limits are based on credible scientific evidence and incorporate large safety margins, aimed at protecting human health.

What do the experts say?

"...the exposure to the general population that results from transmitters is very weak and one would not expect such exposure to produce a health risk as discussed in the previous report." Statens Striskydd Institut (Sweden), 2008

"...there seems not to be a need to modify the present guidelines to account for the risk of cancer or other long-term adverse effects not scientifically established." International Commission on Non-Ionising Radiation Protection (ICNIRP), 2007

"Mobile phones have been widely used in Australia for nearly 20 years now. Contrary to concerns about mobile phones, we have seen absolutely no associated increase in brain cancer cases in Australia or overseas;" Dr Penman, CEO Cancer Council New South Wales." <http://www.cancercouncil.com.au/55695/news-media/latest-newsnews-media/media-releases-news-room-news-media/brain-cancermobile-phone-panic-should-be-put-on-hold/>, May 2014.

Fears about cancer

Media reports around cancer and exposure to base station and mobile phones have heightened public concern. Scientific evidence through carefully planned studies has been conducted over the past 15 years. These studies have not provided evidence that RF exposure from base stations or mobile phones increases the risk of cancer. Likewise, animal studies have failed to establish a link between the increased risk of cancer and exposure to base stations or mobile phones.

How can we be sure that this research is accurate?

Sophisticated and sensitive research methodologies were applied to investigate the safety of RF EMF exposure from base station and mobile phones. Research Institutions and the guidelines they follow are monitored by Government and independent bodies around the World. These are continually evaluated by organizations such as the International Ionising Radiation Protection (ICNIRP) and World Health Organisation (WHO).

Children and RF signals?

Some parents are worried about the health risks associated with exposure to base stations and mobile phones especially where a base station is in close proximity to a school. Authorities such as the WHO have concluded that current international safety guidelines are protective of all persons including children and pregnant women. Furthermore, there is no scientific evidence to justify the undertaking of additional precautionary safety measures.



The South African Electronic Communications Association

SAECA is an independent non-profit association representing the communications industry within the Republic of South Africa.

SAECA aims to be a source of credible information, guidance, co-operation and communication for the local and global communications industry, the public, regulator and Government on matters relating to radiofrequency electromagnetic field emissions.

Note: The content appearing on this pamphlet has been assembled for general information purposes only. SAECA has taken every reasonable care in compiling the information, however, you are urged to consult with suitably qualified advisors before any reliance or taking any action based on the information contained in this brochure or any other material e.g. Website etc., to which this pamphlet refers.

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