



Safety of New Wireless Technologies

There is a large body of existing scientific research at frequencies above and below those for 3G services, and a growing body of science using these particular signals. The scientific consensus is that there are no established modulation dependent effects for mobile communications signals and that current safety standards provide protection against all known adverse health effects.

Emerging Wireless Technologies

In addition to GSM, the standard used by more than 70% of the world's mobile phone users, other evolutionary radio technologies are in use providing services to customers on the move. Many people will have seen references to GPRS (General Packet Radio Service) and EDGE (Enhanced Data rate for GSM Evolution), which enable higher capacity services such as multimedia messages or 3G (3rd Generation), which supports faster access to Internet type and video services. In addition, some people use Bluetooth headsets for handsfree phone operation.

Evidence for Signal Specific Effects

It has been suggested that 3G is a totally new radio frequency (RF) signal, in fact, it is based on CDMA (Code Division Multiple Access), a modulated radio signal used to provide digital mobile services for more than 10 years. In 2004, the US National Council on Radiation Protection concluded that:

'...the scientific literature related to modulation-dependence of biological effects of RF energy is not sufficient to draw any conclusions about possible modulation-dependent health hazards of RF fields, nor is there any apparent biophysical basis from which to anticipate such hazards...'

International Safety Guidelines

The International Commission on Non-Ionizing Radiation Protection has developed safe exposure guidelines that are endorsed by the World Health Organization (WHO) and include substantial safety factors to provide protection for all persons against established health hazards. These guidelines cover the full range of





frequencies and modulations used for radio services and are reviewed in the light of all available scientific evidence. In July 2005 the WHO stated:

'To date, all expert reviews on the health effects of exposure to RF fields have reached the same conclusion: There have been no adverse health consequences established from exposure to RF fields at levels below the international guidelines on exposure limits published by the International Commission on Non-Ionizing Radiation Protection...'

Mobile communications services operate at very low powers and even when several services are operating in the same area, the combined levels are often many times below the allowable level in safety standards.

Compliance of Mobile Phones

Mobile phones are tested for compliance with safety standards when operating at maximum power and many manufacturers have made this information to customers. During a call the power of a mobile phone is automatically adjusted to operate on the lowest level needed for call quality. Holding a phone at arms length during a video call or using a personal handsfree device significantly reduces exposure.

GPRS and 3G Base Stations

As GPRS and EDGE are essentially changes in the signals sent between antenna sites and phones, new sites are not generally required. 3G networks usually require more base stations than existing networks due to the capacity needs of higher data rate services. Many 3G base stations will be able to share existing sites, however some new sites need to be installed. Since people are a lot further from base stations than their mobile phone, the levels from base stations are a lot weaker than from a user's mobile phone. Australian authorities have stated that the average power from a 3G base station is a little more than one tenth of the power of a taxi's two-way radio.

Where to go for more information

Australian Communications and Media Authority (ACMA): <http://www.acma.gov.au/>

GSM Association: <http://www.gsmworld.com/using/health/index.shtml>

International Commission on Non-Ionising Radiation Protection: <http://www.icnirp.de/>

National Council for Radiation Protection: <http://www.ncrponline.org/>

World Health Organization: <http://www.who.int/peh-emf/>

(17 January 2006)



GSMA London Office: 1st Floor, Mid City Place, 71 High Holborn, London WC1V 6EA, United Kingdom • T +44 (0) 20 7759 2300

GSMA Dublin Office: Block 2, Deansgrange Business Park, Deansgrange, Co. Dublin, Ireland • T +353 (0) 1 289 1800

www.gsmworld.com