

Delivering Quality Mobile Services with Health and Safety as Our Primary Concern

Mobile phones and mobile data devices are an integral of everyday life in just about every society in the world. At Telenor we are respectful of anyone coming forward with concerns for their health or that of their families related to mobile technology. We fully comply with all applicable safety regulations and have confidence in research by health organisations showing that no adverse health effects have been established as being caused by mobile phone use.

For more than 30 years, researchers have investigated the possibility that electromagnetic fields (EMFs) generated by mobile technology could have detrimental health effects. During that period numerous independent scientific and public health authority reviews have been issued and the consensus position, according to the World Health Organization (WHO), is that current international recommendations incorporate large safety factors and are protective of the health of people everywhere.

As mobile phones and connectivity become ever more ubiquitous there are voices that continue to argue that the world still knows too little about the possible health effects of mobile use and about living within close proximity to mobile infrastructure. Others again are convinced that EMFs are the source of a number of health complaints.

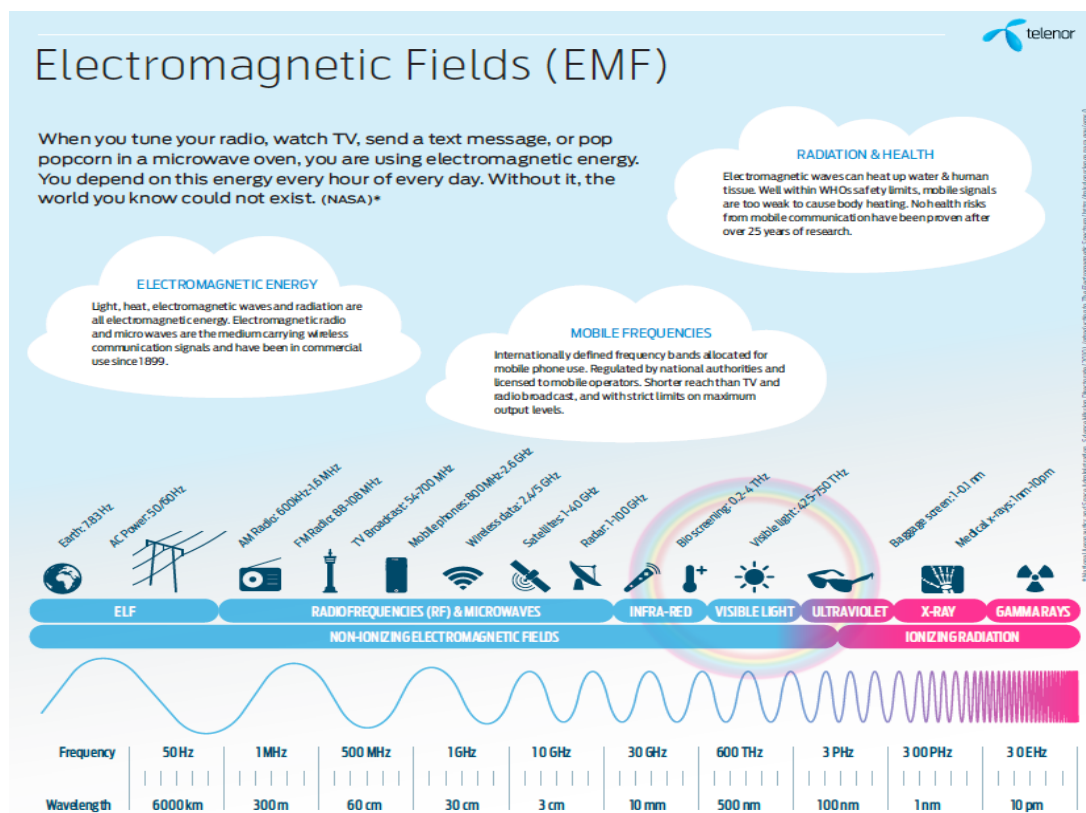
At Telenor we are supportive of serious research efforts to establish whether there may be any negative health effects of exposure to EMF from mobile phones and infrastructure. This paper briefly sets out Telenor Group's position on EMF and health.

In this regard it is important to note that Telenor as a commercial provider of mobile communications services should not be the primary resource for anyone seeking information about EMF and mobile. The world's leading health organisations as well as national health and radiation protection authorities should be active in responding to the concerns of people who want such information and advice. We believe that comprehensive information proactively issued by relevant and trusted public authorities will be the best way to address any such concerns. In all our reactive communications we will reference the guidance of the leading international health and radiation protection authorities.

Mobile communications are delivered via radiofrequency signals that are electromagnetic fields (EMFs). Radio base stations are the essential part of the infrastructure which transmit and receive those signals and the base stations need to be located where people use their mobile devices. A number of base stations will be required, from macro sites to small cells or in-building systems, to provide sufficient coverage and signal strength and data capacity to maintain the quality of service that customers now expect.

Electromagnetic fields can be seen as a spectrum. Such a spectrum runs from extremely low frequency fields and through a range of other forms of non-ionizing radiation (i.e. electromagnetic radiation that can neither break chemical bonds nor cause ionization in the human body) to ionizing radiation, such as x-rays or gamma rays, which may represent a health hazard. Non-ionizing

radiation is produced by a wide variety of products in the home and in the workplace, from lasers to power lines, tanning beds to household appliances, mobile phones and amateur radios – see Figure below.



As far as EMFs in the frequency ranges used for mobile communications are concerned it is important to note that the World Health Organization (WHO) has concluded that ‘Considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak radiofrequency signals from base stations and wireless networks cause adverse health effects.’ The WHO further states that ‘research has not been able to provide support for a causal relationship between exposure to electromagnetic fields and self-reported symptoms, or “electromagnetic hypersensitivity”’.

However, as mobile and wireless solutions become ever more ubiquitous, concerns about possible health risks from the long-term use of mobile communications solutions or from living near mobile communication towers are voiced in all the countries in which Telenor companies operate.

Health effects of mobile usage

As far as mobile phone use is concerned, research has mostly been looking for an association between brain tumours and mobile phone use. As far as cancers are not detectable until many years after the interactions that led to the tumour, and since mobile phones were not widely used until the early 1990s, epidemiological studies at present can only assess those cancers that become evident within shorter time periods. However, results of animal studies consistently show no increased cancer risk for long-term exposure to radiofrequency fields.

Several large multinational epidemiological studies have been completed or are ongoing, including case-control studies and prospective cohort studies examining a number of health endpoints in adults. The largest retrospective case-control study to date on adults, Interphone, coordinated by

the International Agency for Research on Cancer (IARC), was designed to determine whether there are links between use of mobile phones and head and neck cancers in adults.

At Telenor we are supportive of new research that can provide added insights into the long-term effects of heavy mobile use.

Health effects of EMF exposure from base stations

There are currently no international mandatory EMF exposure limits. However, the human exposure guidelines developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) are recommended by the WHO, the International Telecommunications Union (ITU) and the European Union and form the basis for national regulations in many countries.

All Telenor base stations adhere strictly to national regulations for EMF exposure limits and the ICNIRP guidelines. Note that only in areas close to the antennas may the recommended exposure limits be exceeded. Telenor will always take appropriate measures to restrict public access to such areas by placing the antennas near the top of masts or mounting them onto parts of buildings where there the public has no access.

The strength of radiofrequency fields is greatest at its source, and diminishes quickly with distance. Recent surveys have indicated that exposures from base stations and wireless technologies in publicly accessible areas are normally thousands of times below international recommendations.

Challenges relating to EMF and health are often arising on the local level. Parents may be concerned about towers close to their children's day-care centre, or tenants of an apartment building vote not to renew the contract with an operator based on fear of detrimental health effects. This can cause challenges for any mobile operator, both with respect to ensuring good coverage and because of time and costs associated with finding alternative sites.

It should be noted, however, that it is the view of the GSM Association (GSMA) that the number of open research questions relating to EMF, and the funding to address these issues, is in decline.

