

Mobile Matters

Answering your mobile phone questions



Contents

| | |
|---|----|
| Mobile phones, masts, health and the environment | 3 |
| How do mobile handsets work? | 5 |
| How do base stations work? | 6 |
| Where are base stations situated? | 8 |
| How are base stations integrated into the environment? | 10 |
| Radio frequency and your health | 13 |
| What is SAR and how does it relate to mobile communications? | 16 |
| Do handsets and base stations pose a threat to health? | 18 |
| What are the guidelines for the use of mobile phones by children? | 22 |
| Should mobile phones be used while driving? | 24 |
| Can mobile phones interfere with medical devices and aircraft? | 25 |
| Frequently asked questions | 29 |



Mobile phones, masts, health and the environment

Bringing the Important Things Closer

Mobile Telecommunications are now an integral part of our everyday lives. In Ireland over 85% of the population already uses a mobile phone and the numbers are growing. As Ireland's leading mobile communications operator Vodafone Ireland takes community, health and environmental concerns very seriously. This report seeks to address these areas.

How have mobile phones changed our lives?

Mobile phones enable us to keep in touch with family, friends and colleagues wherever they or we happen to be. The sound of a familiar voice brings reassurance with the knowledge that all is safe and well. And even when we cannot talk directly, voice mail facilities enable us to leave and receive voice messages so that we never need to be left wondering what happened.

When it's difficult to talk...

Whether we're in a noisy environment, required to keep quiet or simply unable to find the privacy we need to make a voice call, we can remain in contact by sending and receiving text and picture messages. Text messaging has even brought with it a whole new language with short-forms and graphics for everyday words and phrases.

International communication

Mobile phones have made it easy to stay in touch even while out of the country. No more high hotel telephone charges, no more searching for a public telephone, no more grappling with foreign languages and strange systems. With International Roaming, your mobile phone automatically connects with a compatible network abroad, making it simple and affordable to call, or text, home and office.



Multi media and Internet access

With technology moving at an impressive pace, we can now send and receive emails and faxes, personalise ring tones and graphics, find out what's on television, read news headlines, receive traffic reports, enjoy games, music and connect to the Internet all via our mobile phones.



The new world of mobile communications

As wireless networks converge with the Internet and broadcasting, and a wider range of services becomes available, people will expect to travel the world and be able to access everyday services from their own mobile devices. As well as wanting to make simple phone calls across greater distances and with greater ease, the new world will demand mobile commerce, information, entertainment, business services, device-to-device communication, location services and security services.

3G mobile technology

Newer mobile technologies sometimes referred to as 3G, are subject to the same exposure standards as the current digital, 2G technology. As 3G uses smart technology to encode information on the radio signal, and the 3G waves cover a smaller area compared to 2G, a 3G network is very low powered. When assessing exposure levels, health and safety standards ensure that cumulative levels from all radio frequency signals are taken into account. All technologies are therefore accounted for in exposure calculations or measurements.





How do mobile handsets work?

Radio communications

The Italian electrical engineer Guglielmo Marconi first demonstrated the use of radio waves for communications in 1895 by using a transmitter to send out radio waves and a receiver to intercept them. Since then, radio communications have evolved to include radio, television, radar and of course mobile telecommunications.

Two way radios

Mobile phones are basically two-way radios that use ultra high frequency (UHF) radio waves to communicate information. The radio signals from the handset are transmitted through the air to the antenna (or aerial) of the nearest base station, which then passes the signal on to the network and through to its destination.

Mobile phone network

The building blocks of mobile phone networks are radio base stations that transmit and receive calls. When a mobile phone connects to a network, it uses radio signals to communicate with the nearest base station. Each station covers a small area called a cell, hence the term "cellular" (or "wireless") phone. As radio waves reach only limited distances, mobile communications over a large geographical area require a network of many base stations, with each station providing radio coverage over a particular geographical area.

Network transmission

Radio signal transmission can be likened to water being distributed from a garden sprinkler. The area immediately under the sprinkler remains almost dry. As the distance from the sprinkler increases, the grass becomes progressively drier. Similarly, antennae are designed so that signals travel directly outwards, rather than downwards, so transmission in the area

immediately beneath the base station is significantly lower than recommended limits. To ensure there are no breaks in coverage, networks are designed so that each cell partially overlaps its neighbours.



How do base stations work?

Radio frequency fields

Radio frequency fields are a type of electromagnetic field used in television, radio, walkie-talkies, baby listening devices and mobile phones.

Virtually everyone is exposed to electromagnetic fields both from natural sources such as daylight and lightening, and from man-made sources. These include ordinary electrical household appliances like televisions, radios, remote controls and electronic car keys. Various regulations and guidelines apply to the construction and operation of radio base stations and all Vodafone installations comply with the International Commission on Non-Ionising Radiation Protection (ICNIRP) guidelines on general public exposure.



Transmitting and receiving signals

For any radio communications system to work there must be antennae (aerials) to transmit and receive radio signals. We have all seen radio and television transmitters on hills and points around the country, broadcasting over long distances to antennae on homes and other buildings. Typically, a large television and radio transmitter sends radio waves in one direction. Mobile communications, however, involve two-way radio transmissions between the handset and nearby base stations. Each base station covers a small area, or cell. The size of a cell may vary from a few hundred square metres up to several square kilometres.



Low power

Radio base stations consist of antennae fixed to a supporting structure, such as a mast or building, connected to radio transmission equipment stored in a secure cabinet. Large television transmitters send radio waves to television sets at a power in the region of 100,000 watts. But mobile base stations transmit much lower power levels, ranging from just a few watts to around 150 watts, depending on the area covered. This is why mobile phones must be fairly close to a base station in order to pick up a signal. Mobile phone networks work most efficiently when the transmitted power is kept to a minimum, and it is Vodafone policy to reduce the base station power levels to the minimum required for the network to function effectively.

Mobile phone networks work most efficiently when the transmitted power is kept to a minimum. Therefore, Vodafone Group networks are designed so that, during each call, the network instructs each phone to reduce its transmit power to the minimum required for service. This has the additional beneficial effect of minimising the user's exposure to radio frequency fields and maximising battery life.



Capacity

Each base station can carry only a relatively small number of calls simultaneously. As the number of base stations in a geographical area increases to meet demand from callers, each individual station covers a smaller part of that area. The base stations then operate at an even lower power because they are nearer to the mobile phones with which they have to communicate. This is true of phones too: radio frequency fields from mobile phones are much lower when there is a good signal from a nearby base station.

Where are base stations situated?

Mobile phone base stations operate at much lower power than large television and radio transmitters, and are smaller and more discreet. Therefore they need to be sited near to mobile phone users.

The need for proximity

Large television transmitters, operating at powers of 100,000 watts, can be sited on hillsides or high points around towns and cities. Mobile phone radio base stations operate at much lower power - from just a few watts up to 150 watts - and as a result have to be sited close to mobile phone users. Due to the often close proximity of base stations to mobile phone users, they often attract more attention than large and more powerful television and radio transmitters further away.

Minimising effects on the environment

The design of a mobile network is a complicated process, balancing the needs of customers with the constraints of the local terrain and minimising the effects on the environment.





Vodafone radio frequency engineers monitor network activity to determine the level of customer demand. High usage at one radio base station may require an additional site to be installed at another location nearby. It is important the new site does not interfere with the signal from neighbouring sites - or with the aesthetics of the local environment.

Coverage

Radio signals generally travel in straight lines. Mobile phone sites are located in places where they can avoid obstructions such as tall buildings and large hills, which can cause pockets of poor coverage. In open rural areas one radio base station can cover a radius of over 12 kilometres. In urban areas, where surrounding buildings can obstruct the signal, this range can be reduced to as little as a few hundred metres. In undulating countryside a number of stations may be required to provide network services to towns and roads in the shadow of surrounding hills.

Siting and appearance

When asked to visualise a mobile phone mast, some people may picture an ugly, top-heavy latticework structure crowned with an unsightly forest of antennae. In reality Vodafone is highly conscious of its obligation to communities, and has invested considerable time and resources over many years to develop new designs that minimise the visual impact. It makes every effort to identify sites for radio base stations that can be located on existing structures such as masts, pylons and buildings. A high proportion of radio base stations are not seen by the public at all: these are located in highly dense traffic areas such as airports and railway stations. Vodafone policy states that there must be a documented radio base station site selection process. This ensures that sites are selected to not only deliver satisfactory network performances, but also to minimise public and occupational exposure to radio frequency fields from company controlled equipment. Safe and controlled access to the site must also be possible at all times.

How are base stations integrated into the environment?

Vodafone Ireland is committed to openness and transparency, and responds constructively to views on radio frequency fields and health in the deployment of its network.

Environmental impact

Vodafone takes its responsibility to the environment very seriously. The selection of radio base station sites is guided by established environmental principles. Long-standing measures are in place to ensure that radio base stations are carefully sited, and that the concerns of the public are addressed whenever possible. Care is also taken to ensure that redundant installations are removed and disposed of with minimal environmental impact.





Choosing locations

Vodafone continually monitors its mobile networks to determine the level of customer demand and to identify areas where coverage is unsatisfactory. Once an area has been identified as needing a new site, detailed investigations are undertaken to work out the available locations. This involves consulting with relevant authorities, conducting a detailed environmental assessment, and considering the feasibility of site sharing with other telecommunications providers.

Environmental integration

In particular, stations are carefully sited to minimise visual impact on areas such as National Parks or Areas of Outstanding Natural Beauty. Every effort is made to site stations close to other similar structures, to mount antennae on existing buildings, to make use of natural screening, or to create new screening wherever possible.

Site sharing

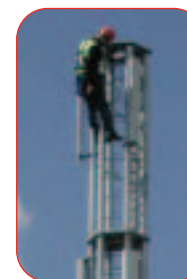
Mounting radio base station antennae on an existing building is generally more acceptable than erecting a new mast. Additionally, every effort is made to share sites with other operators and applications to local authorities to build new sites are only submitted once all other site-sharing opportunities have been fully investigated. However, site sharing may not always result in the most visually acceptable structure because each additional set of antennae usually increases the height of the structure by between 4 and 6 metres.

In some cases, a second radio base station is installed adjacent to an existing site. This is known as a "co-location".



Health concerns

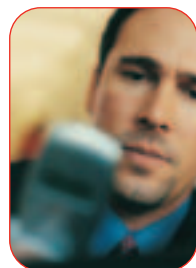
When base stations are planned, radio frequency engineers design the site so that members of the public are not exposed to radio frequency fields in excess of the guidelines set by the International Commission on Non-Ionising Radiation Protection (ICNIRP). (See later sections on health issues.)



Radio frequency exposure standards for base stations are based on whole body exposure. For public exposure, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) has set a safety factor of 50 between the level at which health effects have been established, and allowed exposure.

Base stations operate at low power and emit low levels of radio frequency fields, i.e. typically, when measured, field strengths are less than 1% of the ICNIRP general public guideline limits at ground level.





Radio frequency and your health

Vodafone acknowledges that some people are concerned about radio frequency fields from mobile phones and their base stations. Based on current scientific review there is no evidence of an impact on human health when exposure levels are below internationally recognised guidelines such as those given by ICNIRP. Mobile phones and their base stations are designed and operated so that people are not exposed above these guideline levels.

This position is supported by independent expert reviews such as the World Health Organisation, the Health Council of the Netherlands and the UK Stewart Report.

"None of the recent reviews have concluded that exposure to the radio frequency fields from mobile phones or their base stations cause any adverse health consequence. However, there are gaps in knowledge that have been identified for further research to better assess health risks."

(WHO, June 2002 and reaffirmed in Jan 2003)

Public health responsibility

The increased popularity of mobile phones over the last few years, and the need for an increase in radio base stations, has refocused public concern over health issues. Recognising these concerns, Vodafone has committed 7 million (Euros) towards electro magnetic frequency (EMF) research programmes all to be undertaken before the end of 2007.

Expert reviews of the science conclude that the balance of evidence to date does not suggest that mobile phone technologies put the health of the general population at risk. Vodafone Ireland has a team dedicated to EMF issues, supports and assists Vodafone Group research wherever appropriate, and is committed to a fully open approach. It will keep local staff, customers and the general public informed of any significant developments.

The effect of radio frequency fields on health

Mobile phones, and the radio base stations required to transmit their signals, emit electromagnetic energy sometimes known as electromagnetic fields or radio frequency (RF) fields. The possible effects of exposure to these RF fields has been the subject of an enormous body of research for over sixty years with the conclusion that, within the international guidelines, there is no established link to adverse health effects.

High levels of RF fields could cause the body temperature to rise which could cause adverse health effects. The international standards with which Vodafone companies comply require base stations and handsets to operate substantially below these levels and include a significant safety margin. At these RF field levels there are no known health effects.





Possible heating effects at exposure below the limits are completely within the ordinary temperature variation ranges of humans and are well below biological significance. For example: the body heating effect from a short walk in the sun or drinking a cup of tea is greater than the heating effect of exposure to radio frequency fields at the international guideline limits.

In addition, current scientific evidence indicates that exposure to RF fields, such as those emitted by mobile phones and their base stations, is unlikely to induce or promote cancer.

The conclusion reached by a recent Swedish expert panel review on mobile phones and cancer risk was as follows:

"Presently...there is no evidence that cellular telephones pose a cancer risk and ongoing studies should provide further data on any possible carcinogenic effects from long-term usage of cellular phones."

Non-Ionising radiation

Several important considerations must be kept in mind when evaluating possible health effects of RF fields. One is the frequency of operation. Current mobile phone systems operate at frequencies between 800 and 2170 million cycles per second or hertz (Hz) or cycles per second. It is important not to confuse such RF fields with ionising radiation, such as X-rays or gamma rays. Unlike these ionising radiation sources, RF fields cannot cause ionisation or radioactivity in the body.

Exposure levels

Mobile phone handsets and base stations present quite different exposure situations. RF exposure to a person living near a radio base station is typically lower than that of a user of a mobile phone. However, apart from infrequent signals used to maintain the links with nearby base stations, handsets transmit RF energy only while a call is being made.

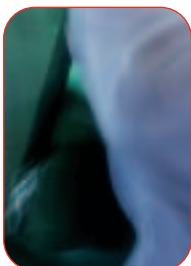
Furthermore, a good signal from a nearby base station will mean a reduction in radio frequency fields around a mobile phone handset.



What is SAR and how does it relate to mobile communications?

Radio frequency exposure standards from mobile phones and terminal equipment are based on Specific Absorption Rate (SAR) for partial body exposure.





Specific Absorption Rates (SAR)

Some radio frequency fields emitted from electrical devices (such as televisions, radio transmitters, mobile phones and radio base stations) are absorbed by the body. Like all absorbed energy, energy from mobile phones and base stations produces a very small amount of heat, which the body's natural thermo-regulatory process then disperses.

The International Commission on Non-Ionising Radiation Protection (ICNRP) has published guidelines for limiting public exposure to RF energy. The guideline limits are defined as the power absorbed per kilogram of body mass and are called the Specific Absorption Rates or SAR. The ICNRP recommended limit for public exposure is 0.08 watts per kilogram, so a person weighing 50 kilograms may absorb up to 4 watts of RF energy in the whole body and still be in compliance with the guidelines. This is a very small amount when compared to the heat normally produced by a 50 kilogram person at rest, which is about 50 watts: 1 watt per kilogram.

In addition, the guidelines also recommend partial body peak SAR limits. For example, the head-only limit is 2 watts per kilogram. Even low-power handsets that inherently meet the whole body criteria have to meet the peak SAR limits to restrict possible localised heating.

Base stations typically operate at 100 times below the guidelines. While the guidelines permit energy absorption up to 0.08 watts per kilogram of body mass, exposure levels near a Vodafone base station are typically less than 1 percent of the guidelines. That means that the RF absorption rate for a 50 kilogram person near a base station would be less than 0.04 watts, about one hundredth of the 4 watts allowed by the guidelines.

All mobile phones must meet radio frequency exposure guidelines. A mobile phone is a low-power radio transmitter and receiver. When turned on, it emits low levels of radio frequency energy (also known as radio waves or radio

frequency fields). ICNRP guidelines established permitted levels of radio wave exposure and mobile phones are designed to operate within these stringent levels.

The levels include a safety margin designed to assure the safety of all persons, regardless of age and health. Mobile phones are designed to use the minimum power required to reach the network. Therefore, the closer you are to a base station, the more likely that the SAR level will decrease.



Do handsets and base stations pose a threat to health?

Based on current scientific review there is no evidence of a biological health risk from mobile phones or terminal equipment when exposure levels are below internationally recognised guidelines such as those of the ICNIRP.



Emission from handsets

Mobile phone handsets are low-powered radio frequency transmitters, emitting maximum powers in the range of 0.2 to 0.6 watts. Other types of hand held transmitters, such as walkie-talkies, may emit 10 watts or more. The RF field strength (and hence the RF exposure to a user) falls off rapidly with distance from the handset. Therefore the RF exposure to a user of a mobile phone located a short distance from the head (as when used with a hands-free appliance) is far lower than to a user placing the handset against the head. RF exposure to people nearby is very low indeed.

Furthermore, many mobile phone applications such as texting and surfing the Internet do not involve holding the phone against the head at all.



Emissions from radio base stations

Public concern over mobile telecommunications is largely focused on radio base stations - partly because of their visual impact on the environment and partly because of RF emissions. Base stations transmit power levels from a few watts to around 150 watts, depending on the size of the region or "cell" that they are designed to service.



Base station antennae are typically about 20-30 centimetres in width and 2 metres in length, mounted on buildings or towers usually at a height of about 15 metres above the ground. Because of the narrow vertical spread of the beam, the RF field intensity at the ground directly below the antenna is low. Fences and barriers keep people away from places where RF fields exceed exposure limits and since antennae direct power outward and do not emit significant amounts of energy from their back surfaces or towards the top or bottom, the levels of RF energy inside and to the sides of buildings are normally very low.

ICNRP guidelines

The International Commission on Non-Ionising Radiation Protection (ICNRP) sets the legal level of allowable public exposure to radio frequency emissions. Base station emissions are currently 50 times lower than the recommended ICNRP threshold levels for the protection of the general public. Radio frequency signal levels in areas of public access are therefore well within international safety guidelines.

All Vodafone radio base stations meet the radio frequency exposure guidelines set out in the EU recommendation for general exposure, which in turn is based on the findings of the International Commission on Non-Ionising Radiation Protection (ICNRP).





Vodafone is committed to ensuring that fields to which members of the public are exposed are kept to the lowest levels possible while still maintaining an effective telecommunications system.

Expert scientific panels who have evaluated research to date have not identified any biological health risk associated with radio frequency fields from mobile phone handsets. There are anecdotal reports of transient discomfort in a very small number of mobile phone users. However, the Health Council of the Netherlands points out that:

"Various studies have been conducted among mobile telephone users on the occurrence of non-specific symptoms, such as a headache, dizziness and insomnia. This type of symptom is very general in nature and may have all kinds of causes. On the basis of the presently available data, the Committee believes that the electromagnetic fields generated by mobile telephones cannot be regarded as a cause of such symptoms."

Possibly, discomfort sensations may be related to other factors such as the ergonomics of holding the phone in a position that produces muscle tension, or of the strain of a telephone call and its subject matter, rather than the absorption of radio frequency fields. The new Australian ARPANSA Standard (2002) states that:

"It would appear that although non-thermal effects of mechanisms cannot be ruled out the evidence for them is inconsistent and further confirmatory studies need to be carried out, particularly in relation to SAR estimations."



What are the guidelines on the use of mobile phones by children?

The protection of children is paramount. Scientifically based international guidelines such as those set by the ICNIRP apply a safety factor of 50 to radio frequency limits to ensure their protection of children. Radio frequency signal emissions in areas of public access are therefore kept at an average safety factor of 100, well within international guidelines to ensure child safety. Vodafone follows the World Health Organisation's advice that individuals may choose to limit exposure from mobile phones. Vodafone recognises that parents may choose to balance this decision with the safety and security benefits associated with carrying a mobile phone.

In 2004 the Irish Government launched the first ever Irish Code of Practice for the responsible and secure use of mobile services, on behalf of the Irish Cellular Industry Association (ICIA). The Code of Practice represents a common commitment by the mobile industry to a set of clear standards that mobile operators in Ireland will adhere to on a range of issues and will be updated by the ICIA in line with technological developments. Issues covered



by the code include matters relating to parental control of the access of minors to mobile services, malicious or offensive person-to-person communications, unsolicited commercial communications (Spam), internet access and premium rate services.

Vodafone also supports the ICIA publication *The Knowledge - A Parents' Guide to Mobile Phones*. The guide is designed to help parents gain a more complete understanding of the range of mobile phone services on offer in Ireland to which their children may gain access. Vodafone is committed to supporting parents' efforts to ensure safe and responsible use of mobile services by their children.

Other national groups take a different view. For example, the Health Council of the Netherlands concluded that: "The committee feels that there is no reason to recommend that children should restrict the use of mobile phones".

Reducing exposure via the use of headsets

People concerned about avoiding even potential risks can take a few simple steps to minimise exposure to radio frequency fields. One such step is the use of a headset. As exposure level drops off rapidly with distance, frequent users can place more distance between the body and the handset, which is the source of the radio frequency fields, by using a headset and carrying the wireless phone away from the body.

Location of base stations

All Vodafone base stations comply with the most stringent national or local safety guidelines. Careful consideration is given to selecting a site for a base station, especially with regard to schools and colleges.



Should mobile phones be used while driving?

Responsibility and legislation

Holding and operating a mobile phone while driving will reduce concentration and effectiveness. In addition, the distraction of using a hands-free phone while driving can contribute to the likelihood of an accident.

Responsibility for safe control of vehicles always rests with the driver. Each operating company within the Vodafone Group issues advice to customers on how to use mobile phones while driving. The Group also supports responsible national legislation to promote the safe use of mobile phones while driving.

Accident and emergency calls

If an incident on the road requires immediate attention, make every effort to contact the emergency services in a safe manner.





Can mobile phones interfere with medical devices and aircraft?

Vodafone Ireland relies on health authorities and relevant expert bodies for advice on any potential undesired responses to radio frequency fields from mobile phone technology such as interference to electronic or electrical equipment, and transmission in hazardous environments. Vodafone Ireland supports the dissemination of that advice in the interests of the public, its customers and its employees.

Immunity to interference

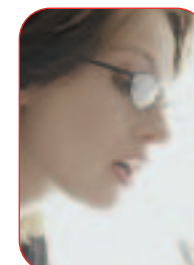
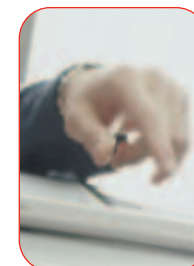
In electromagnetic terms, interference is the disturbance of the normal operation of an electronic or electrical device due to an undesired response to radio signals from an external source. In relation to mobile phones, it is possible to detect a short audible signal over radios and personal computers just seconds before the phone rings. These audible signals do not, however, interfere with the operation of the radio, computer, or phone.

In 1989, The European Commission (EC) issued a directive (80/336/EEC) governing all forms of electronic equipment regarding the interference that such equipment produces and its immunity to interference from outside. Any equipment compliant with that directive (including Vodafone mobile phone and radio base station equipment) is unlikely to suffer or cause interference.

A radio base station, even if nearby a hospital roof, should not interfere with hospital equipment. Vodafone carries out special field strength studies in hospitals to make sure emissions are even lower than those recommended in the EC interference directive. Furthermore a study in the UK by the Medical Devices Agency (MDA Device Bulletin DB9702: Electromagnetic Compatibility of Medical Devices with Mobile Communications) found no significant levels of interference to medical devices from radio base stations.

In most areas in hospitals, mobile phones do not pose any problems either. However, using a mobile phone close to some sensitive electronic devices could possibly result in interference. For this reason, people are asked to switch their mobile phones off in some selected areas in hospitals, a recommendation that Vodafone fully supports.

Vodafone Ireland complies with the emission levels set in the European Commission's EMC (Electromagnetic Compatibility) Directive and follows national health authority advice to ensure that interference is fully managed regarding medical equipment and hospitals.



Hearing devices

People with hearing aids and cochlear implants may experience noise when using mobile digital phones, or when one is in use nearby. The level of interference will depend on the type of phone, the type of hearing device, and the distance between the two. Interference may be reduced by using a hands-free accessory kit so that a distance can be kept between the phone and the hearing device. It may also be helpful to use the phone in the "unaided" ear, or to change the hearing aid to a newer, shielded model.



Cardiac pacemakers, implanted defibrillators and other medical implant devices

It is possible that some mobile phones/terminal equipment may interfere with some types of pacemakers or implanted defibrillators when operated very close to the implanted device.

You should always seek advice from your doctor for your specific implant. Vodafone Ireland reflects the advice given by the Irish Health Authority and at a basic level advises that there should be a distance of at least 15cm between mobile phones or terminal equipment and the embedded device.

Use of mobile phones aboard aircraft

Aircraft contain a vast array of complex electronic equipment and sophisticated communications systems. It is possible that using a mobile phone could cause interference to these systems so it is clearly a sensible precaution not to do so. Similar restrictions apply to the use of personal computers, portable stereos and other personal electronic equipment. It should be noted that some aircraft now provide special mobile phones for passenger use. These phones have been specially designed to rule out possible interference.

Vodafone Ireland respects the advice given by airlines that is designed to rule out any possibility of interference in aircraft.

Use of mobile phones/terminal equipment in petrol filling stations

There have been a number of reports of fires attributed to mobile phones at petrol stations. However, the Technical Proceedings of the Institute of Petroleum Seminar "Can mobile phones communications ignite petroleum vapour" (11 March 2003) states that:

"The seminar showed the findings of research undertaken to date demonstrating that although the majority of mobile phones are not specifically designed and constructed to prevent them igniting a flammable atmosphere (in accordance with standards for 'protected equipment'), the risk they present as a source for ignition is negligible. The Institute of Petroleum is not aware of any fire incident that has been substantiated as having been caused by a mobile phone anywhere in the world."



In line with the advice of the Institute of Petroleum, Vodafone advises that when conducting a potentially hazardous activity such as filling a vehicle with fuel, distractions should be minimised and thus you should follow any applicable safety instructions or signs to switch your mobile phone off.

Frequently asked questions

Q. How much RF power is transmitted by a radio base station antenna?

A. Vodafone radio base stations transmit at different power levels depending upon a number of factors, including the area the cell is designed to cover and the number of users at any one time. Depending on the base station, the power level will normally be between 2 and 150 watts and is controlled to ensure that human exposure to RF fields is within recommended guidelines.

Q. Can exposure to RF fields from a radio base station affect the health of people (i.e. the public) who are nearby?

A. There are international guidelines that set recommended limits for exposure to RF fields from all sources. Radio base stations are one such source. Guidelines are based on what is known about the biological effects of emissions and they specify the level and duration of exposure that should not be exceeded.

For areas accessible by the general public, Vodafone Group applies guidelines set by ICNRP (International Commission for Non-Ionising Radiation Protection). Exposure in areas accessible to the general public is typically hundreds of times below the guidelines. Where some countries set their own national or local guidelines, these will apply.

For controlled areas, recommendations given by ICNRP or specific national guidelines will apply. Signage is used to indicate warnings not to enter the very limited area immediately around an antenna, where exposure above the guidelines may be possible.

Q. Do we need to use shielding devices on our mobile phones?

A. No, Vodafone networks are designed in such a way that the phone will operate at the minimum power level required for service, thereby reducing the user's exposure to RF fields. The use of accessories that seek to shield the phone from the user are not recommended because they can cause the phone to increase output power and reduce the quality of service experienced by the customer.

Q. Are mobile phones more harmful to children than adults?

A. On the basis of the evidence currently available, there are no known adverse health effects from the use of mobile phones by children or adults. The report from the UK's independent Expert Group on Mobile Phones (May 2000) acknowledged this view.

However, the group also suggested that, if future scientific research were to identify any adverse health effects, children may be more susceptible. As a result the report advised that the widespread use of mobile phones by children for non-essential voice calls should be discouraged. Many parents already adopt a similar approach, restricting the use of technology by children. This is demonstrated by control of the hours spent by children in front of a TV or computer, listening to loud music, or by controlling the cost of mobile phone usage by their children. The report also recommended that mobile phone marketing should not be specifically targeted at children but recognised that there may be circumstances where the use of a mobile phone by a child could promote safety.





Other national groups take a different view. For example, the Health Council of the Netherlands concluded "The Committee feels that there is no reason to recommend that children should restrict the use of mobile phones".

Q. Will a radio base station interfere with hospital equipment?

A. This is very unlikely to occur.



In 1989, The European Commission (EC) issued a directive (80/336/EEC) governing all forms of electronic equipment regarding the interference that such equipment produces and its immunity to interference from outside. Vodafone carries out special field strength studies in sensitive areas to limits even more stringent than those suggested by the EC directive for the purpose of avoiding interference with electronic equipment.

Q. Will my mobile interfere with my car?

A. Ensure that any installation in your car is made in compliance with the recommendations of the car manufacturer. Car manufacturers have investigated the possibility of interference with the onboard computer in a car. It has been found that cellular phones do not interfere with the safe operation of airbags, automatic braking, stabilising systems or cruise control systems. However, they have been shown to cause some interference with car radios and remote locking systems.

Making or receiving a call may distract your attention from driving, which may lead to an accident. You should never use hand-held mobile phones while driving. In addition, the distraction of using a hands-free phone while driving can contribute to the likelihood of an accident.



Q. Why are you requested not to use mobile phones on board aircraft?

A. Aircraft contain a vast array of complex electronic equipment and communications systems. Using a cellular phone in an aircraft could cause interference to those systems because they were not designed to tolerate such interference. Similar guidelines apply to the use of personal computers, portable stereos and other personal electronic equipment in aircraft. It should be noted that the credit-card mobile phones now provided on some aircraft do not interfere with aircraft systems because they are wired to a special base-station that has been designed to safely receive and transmit radio signals to and from the aircraft.

Q. Where can I find more information on this matter?

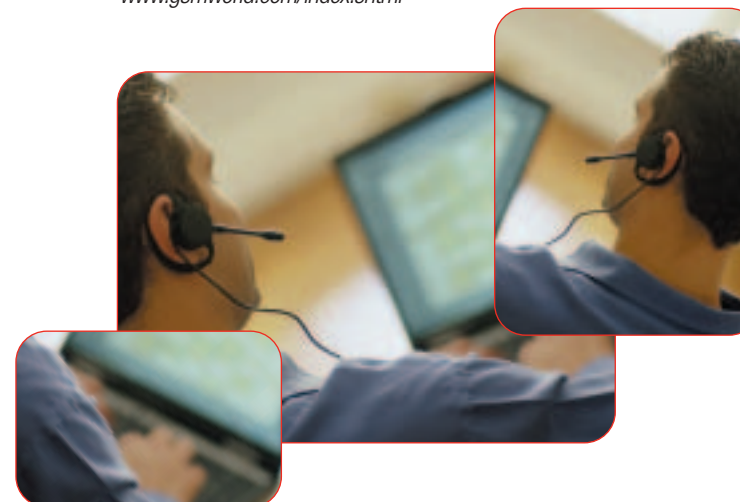
A. The following list of documents and websites provide further information on this subject.

International bodies

www.who.int/peh-emt/
www.icnirp.de
www.gsmworld.com/index.shtml

National/Government Bodies

www.comreg.ie
www.dcmnr.ie



Assurance and further information

- contact us at:
Vodafone Ireland
MountainView
Leopardstown
Dublin 18
Ireland
- Telephone 00353 1 203 7777
- Fax 00353 1 203 7778
- Website www.vodafone.ie
- or email mobilematters.ie@vodafone.com

This document has been printed in Ireland on 100% recycled paper.

Vodafone Ireland
MountainView
Leopardstown
Dublin 18
Ireland

Tel: 00 353 1 203 7777
Fax: 00 353 1 203 7778
Web: www.vodafone.ie