

ABOUT COAI



COAI was constituted in 1995 as a registered, non-governmental society. COAI's vision is to establish India as the global leader in innovative mobile communications infrastructure, products and services. The Association is also dedicated to the advancement of modern communication systems and towards delivering the benefits of innovative and affordable mobile and broadband communication services to the people of India. Visit www.coai.in

COAI's role in allaying public concerns on emissions from mobile towers:

- ❖ Works closely with the government in ensuring compliance of emission related norms
- ❖ Ensures transparency in communicating the compliance levels to public
- ❖ Coordinates with various expert bodies on EMF, both nationally as well as internationally
- ❖ Ensures dissemination of WHO approved expert studies and information to the public
- ❖ Engages and sensitizes various stakeholders of the telecommunications ecosystem, local government bodies and RWAs
- ❖ Monitors EMF related issues across India and engages with them to make them conform to national and international knowledge on the subject
- ❖ Ensures science-based public communication on the issue of emissions

Contact

Contact us for any query at emf@coai.in

For more information, visit:

<http://www.coai.com/Indian-Telecom-Infocentre/Mobility-and-Health>



MOBILE TELEPHONY AND PUBLIC HEALTH

- *India's EMF emission norms are based on the guidelines for emissions recommended by the World Health Organisation (WHO)*
- *The Government of India has further lowered the emission norms to 1/10th of the norms recommended by WHO for abundant precaution*
- *Telecom Enforcement, Resource and Monitoring (TERM) Cells, an extended arm of the DoT (Department of Telecommunications) monitor and regulate the operations of mobile towers across the country*
- *TERM cells are the nodal authority on any issue related to emissions from mobile towers and phones*
- *Citizens who are concerned about emissions from mobile towers / handsets can contact the TERM Cell offices in their respective states for assistance and guidance*



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Foreword

RAJAN S MATHEWS,
DIRECTOR GENERAL, COAI



India, like the rest of the world community, has recognized that mobile telecommunication contributes significantly to the speedy socio-economic development of a country.

We already have more than 900 million mobile phone connections in India and more than 80 percent of the population has access to mobile telecommunication today. In 1994 only eight out of 1,000 people had access to a telephone. With mobile phones, the common man has been empowered. Many have described this as India's "Telecom Revolution"!

This growth, however, has given rise to concerns regarding the danger to public health caused by the electromagnetic field (EMF) emissions from the antennae on cell towers and mobile handsets. Myths have been floated without any scientific basis by mischief mongers with vested business interests that the EMF emissions

lead to cancer and skin allergies. In spite of a number of rigorous, independent scientific studies and research conducted in many countries, to date not an iota of truth has been found to support these allegations.

Sensitive to the concerns of citizens, the Department of Telecommunications (DoT), under the Government of India, and the cellular phone industry, have undertaken a joint exercise to ensure that all issues regarding the cell tower installations and their functioning are addressed so as to dispel fears about the risks of emissions.

One such step was the decision by the DoT to direct the mobile tower operators to reduce the EMF emissions from antennae on cell towers by a sharp 90 percent from their previous levels. Indian emission norms are now at 1/10th of the international standards. Uniform guidelines for the location and operations of the towers have been formulated by the DoT, which are applicable to all state governments and local civic bodies.

In view of public concerns, an Inter-Ministerial Committee (IMC), consisting of officers from the DoT, Indian Council of Medical Research (ICMR), Department of Biotechnology and the Ministry of Environment and Forests, was constituted on August 24, 2010, to examine the effects of the EMF radiation from antennae on cell towers and phones on human health.

After examining numerous international as well as national studies, the IMC concluded that there is no direct link between the exposure to EMF emissions from the antennae on cell towers / mobile phones and human health. Despite the lack of any scientific evidence, as an extra precaution the IMC recommended lowering of the mobile towers' EMF radiation limits to 1/10th of the

Foreword

RAJAN S MATHEWS,
DIRECTOR GENERAL, COAI

previously prescribed safety limit levels set by the International Commission on Non-ionizing Radiation Protection (ICNIRP).

The new emission norms for India came into effect on September 1, 2012. (DoT link: <http://www.dot.gov.in/access-services/journey-emf>). This has been recently examined and re-emphasized by the Expert Committee constituted by the DoT in its report to the Allahabad High Court.

The Telecom Enforcement Resource & Monitoring (TERM) Cell, a field division of DoT, carries out regular audits of cell towers to ensure that they are in compliance with the DoT-prescribed safety norms. (TERM details: [http://www.dot.gov.in/term/term security](http://www.dot.gov.in/term/term%20security))

All cellular service providers in India are now in compliance with the revised EMF emission guidelines as prescribed by the DoT. Therefore, decommissioning or removal of any cell tower/s due to unfounded concerns regarding EMF emissions, adversely affects the availability of communication services, as well as the quality of services for the customers who have to bear the inconvenience of poor connectivity.

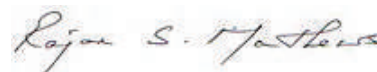
The World Health Organization (WHO) and its associated international agencies such as the International Commission on Non-ionizing Radiation Protection (ICNIRP) determine the global guidelines for EMF emissions. For its part, India had earlier adopted the ICNIRP safety guidelines, but subsequently reduced them following the IMC recommendations. The new safety norms are now way below those adopted by over 95 percent of the countries worldwide.

Research bodies have spent around US\$300 million so far on research and monitoring of EMF emissions and its effects on humans. There is a need to create public awareness about the facts on the issue to counter the misinformation which causes anxiety among people. Such misinformation damages the credibility of the work that the government and industry are doing to address these concerns.

In view of the vast amount of scientific research data available in the public domain to show that EMF emissions from antennae on cell towers do not cause any health hazard, consumers should be able to enjoy the benefits of mobile telephony without any fear. The various State government agencies should not become victims of the fear psychosis, half-truths and myths floated by vested interests.

This booklet is an attempt to highlight the industry's effort to be as transparent as possible, so that the public at large can be reassured about obtaining the benefits of this empowering, nation building technology without any fear – a technology which is currently being used by billions of people across the globe, the numbers of whom continue to grow.

Warm regards,



Please refer to the link:

<https://www.youtube.com/watch?v=kAgK0Vsvp5o>

What is Electromagnetic Field (EMF)?

“EMF is a property of space caused by the motion of an electric charge. A stationary charge will produce only an electric field. If the charge is moving, a magnetic field is also produced. The mutual interaction of electric and magnetic fields produces an electromagnetic field (EMF)” – Encyclopedia Britannica on “Electromagnetic field”

Electromagnetic fields (EMF) have been around since the birth of the universe and are a part of everyday life. They are emitted both by natural sources like the sun as well as by manmade sources including antennae from mobile phone towers, broadcast towers and radar facilities. What is significant, however, is that the EMFs produced by the antennae on mobile towers and mobile phones are at the lower end of the electromagnetic emission spectrum and are “non-ionizing radiations”, i.e., by the principles of physics, the energy carried by them is not enough to break the chemical bonds between molecules.

In contrast, ionizing radiation, such as the X-rays, can strip electrons from atoms and molecules, producing changes that can lead to tissue damage and possibly cancer in living beings. However, as we all know, even these are used for benefit to humans based on specified standards and radiation norms that make them safe to use.

“Radio frequency waves are electromagnetic fields and unlike ionizing radiation such as the X-rays or the gamma rays, can neither break chemical bonds nor cause ionization in the human body” – WHO Fact Sheet No. 193, dated June 2011. (Please refer to the WHO link: <http://www.who.int/mediacentre/factsheets/fs193/en/>)

How does a mobile telecommunication service work?

From a user’s perspective, the two key components of a mobile telecommunication network are an individual’s mobile phone handset and the mobile tower with an antenna – most often mounted on a rooftop or on ground based towers.

Mobile phones periodically detect and access the network from wireless signals emitted from an antenna. The network is divided into geographic areas known as the Cells, each of which is served by a tower, also known as a base station. To communicate with each other, the mobile phones and the base stations located at the tower sites exchange radio signals. The user connects to the base station via a mobile phone and the system ensures that the connection is maintained as the user moves from one Cell (area) to another.

When a mobile phone is switched on, it responds to specific control signals from the nearby base stations. Once it has located a suitable base station, the phone initiates a network connection. When a call is not being made or received, the mobile phone remains in the standby mode.

The mobile connection may also be set up within buildings using an indoor antenna called “In-building solution,” as is done in the buildings which have a high density of users or where the signal coverage from the external base station/s is inadequate. The level of the wireless signal has to comply with the minimum Quality of Service (QoS) levels specified by the telecom services regulator of the particular country.

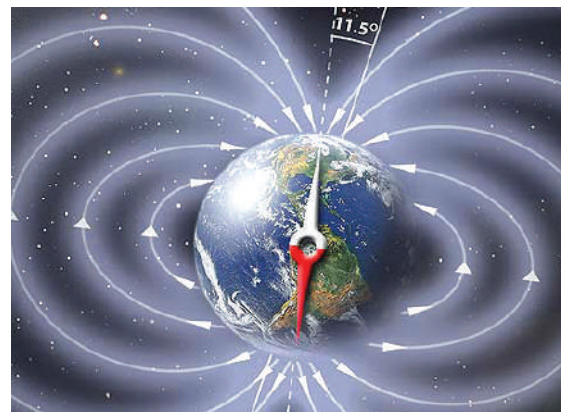
What is Electromagnetic Field (EMF)?

Safety standards for EMF

The International Commission on Non-ionizing Radiation Protection (ICNIRP) is a non-governmental organization that is formally recognized by the World Health Organization (WHO). The ICNIRP, in 1998, evaluated scientific results from all over the world and formulated guidelines recommending limits on the EMF emissions exposure. These guidelines are regularly reviewed by the ICNIRP and suitable changes made based on the updates.

The ICNIRP guidelines include a significant safety margin in their prescribed EMF emissions exposure limits. To illustrate, ICNIRP's 1998 guidelines state that even at 230W/sq. mtr., the resultant rise in body temperature is insufficient to affect human health. Notwithstanding this, the ICNIRP, on a precautionary approach, has specified that the exposure level should be limited to 0.45W/sq. mtr. (for 900 MHz frequency) for the general public, which is 50 times lower than the safe exposure limit.

This exposure limit is sufficient to protect all people, including children and adults of various sizes, and also those who, due to frailty or illness, have bodies that are less able to control the core temperature. In its 2009 review the ICNIRP stated, that for radiofrequency electromagnetic field, the scientific literature published since the 1998 guidelines has provided no evidence of any adverse effects below the basic restrictions and thus does not necessitate an immediate revision of its guidance on limiting exposure to high-frequency electromagnetic fields.



Nearly 95 percent of the countries that have adopted safety standards for EMF emissions are following the guidelines set by the ICNIRP for mobile tower base stations. Currently, two international bodies (¹, ²) have developed exposure guidelines for workers and for the general public, with the exception of those patients undergoing medical diagnosis or treatment. These guidelines are based on a detailed assessment of the available scientific evidence.

1. The ICNIRP statement on the "Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz)", 2009. (Please refer to the link: <http://www.icnirp.de/documents/emfgdl.pdf>)
2. Institute of Electrical and Electronics Engineers (IEEE). The IEEE standard for safety levels with respect to human exposure to Radio Frequency Electro Magnetic Fields, 3 kHz to 300 GHz, IEEE Std C95.1, 2005.

EMF Frequently Asked Questions (FAQs)

What is the mobile tower emissions issue all about?

Massive growth in the number of mobile phones has given rise to concerns regarding public health - namely the impact of electromagnetic field (EMF) emissions from the antennae on the cell towers and from mobile phones on human health. Alarms, without any reasonable scientific basis have been floated by mischief mongers with vested business interests, claiming that EMF emissions lead to cancer, skin allergies and other health hazards. However, to date, rigorous and independent scientific studies and researches across the globe have not found even an iota of truth in these claims.

Is there any study conducted in India on the effects of emissions from cell phones and cell towers on human beings?

The Indian Council for Medical Research (ICMR) has undertaken a study to understand the implications and impact of EMF emissions by mobile towers on human health. The Tata Memorial Centre has also commissioned a study on the topic, in 2013, the results of

which are expected to become available in a couple of years. The Department of Science and Technology, which comes under the Ministry of Science and Technology in India, has earmarked a separate funding mechanism for the interested expert bodies to conduct research on various aspects of the impact of mobile emissions.

Should I be concerned about the wireless (such as Wi-Fi) network in my office or at my child's school or at my home desk?

The United Kingdom's Health Protection Agency (HPA) advises that on the basis of currently available scientific information, Wi-Fi equipment satisfies the international EMF emission guidelines and, therefore, there is no reason why schools and similar bodies should not use Wi-Fi equipment. In May 2006, the WHO said that "...there is no convincing scientific evidence that the weak radio frequency signals from the base stations and wireless networks cause any adverse health effects."



"There is no cause of alarm with regard to possible ill-effects on human health by electromagnetic field emission from cellphone towers and cellphones because the safety limits adopted in India take into account all biological effects of radiation."

— An expert committee constituted in compliance to the directions of the Hon'ble High Court, Allahabad, Lucknow Bench, January 2014

...."we deem it necessary to mention that the concerned authorities should, by way of communication through T.V., Radio etc. bring it to the notice of the people at large that there is no reason for them to fear the erection of the Base Transceiver Station, known as the WIFI Mobile Tower."

— Hon'ble Gujarat High Court in SCA No. 5548 of 2014, dated 09 September 2014

EMF Frequently Asked Questions (FAQs)

I've read stories claiming that mobile phones can affect male fertility and sperm quality. Is it true?

Some preliminary scientific studies have reported some link to this effect. In general, however, these studies have not properly taken into account lifestyle factors, such as diet, smoking habits, lack of exercise, etc. The consensus view of the expert public health bodies, including the WHO, is that there are no adverse health effects associated with the radio signals used by mobile phones or mobile tower base stations.

Why is there a restriction on using mobile phones in hospitals?

At short range, the radio signal from a mobile phone may cause interference with the electronic medical devices used in hospitals. However, at distances greater than 1-2 m, the possibility of interference of radio signals from mobile phones with the medical equipment is substantially reduced. It is possible to use mobile phones in the designated areas of hospitals.

Are 3G, 4G and the other new radio technologies safe?

There is a large quantum of existing scientific research on EMF emissions at frequencies above and below those for 3G, 4G services, and a number of technologies are using these particular signals. Expert groups have not been able to establish any signal-specific effects on human health; so the scientific consensus is that the compliance with the current EMF safety standards provides more than adequate protection against all known health effects.

How are the emission norms related to mobile communications regulated in India?

In 2008, the Government of India adopted the WHO approved guidelines for mobile emissions, for limiting EMF exposure from antennae on mobile towers and handsets. These guidelines are considered to be the most credible in the world with over 95 percent of the countries of the world following them. WHO administers the emissions norms through the ICNIRP.



Prof. Michael Repacholi

Ex-EMF Project Coordinator,
World Health Organization Chairman Emeritus, ICNIRP

"The WHO Fact Sheet states very clearly that the mobile phones do not cause cancer. A number of studies conducted to ascertain the relationship between the electromagnetic radiation and cancer have not found anything to indicate mobile radiation causing cancer. The pregnant women should not worry about the EMF radiation from mobile towers and handsets as penetration depth of the EMF is only 1-2 mm, so it never really gets close to the foetus in any significant amount to cause any damage."

Please refer to the link : <https://www.youtube.com/watch?v=YGbibsFL1dA> I've read stories

EMF Frequently Asked Questions (FAQs)

Owing to public concerns, an Inter-Ministerial Committee (IMC) consisting of officers from DoT, Indian Council of Medical Research (Ministry of Health), Department of Biotechnology and Ministry of Environment and Forests • was constituted in August 2010, to examine the effect of emissions from the base stations and mobile phones on humans and the environment, including birds, insects, flora and fauna.

The IMC examined the environmental and health related concerns and concluded that most of the laboratory studies were unable to find any direct link between the exposure to radio frequency radiation and human health. The IMC recommended lowering the mobile towers' EMF exposure limits to 1/10th of the prevailing prescribed limit only as a matter of abundant precaution. This regulation came into effect on September 1, 2012. It should be noted that the DoT set the safety norms at levels that are sufficient to protect all segments of the population (children, pregnant women, sick persons, students in schools, etc.) instead of adopting different safety levels for different segments.

(Please refer to the DoT link: <http://www.dot.gov.in/access-services/journey-emf>)

The Telecom Enforcement, Resource & Monitoring (TERM) Cells, an extended arm of the DoT, conducts random audits to ensure compliance with the emission norms.

What is the opinion of reputed national and international agencies on mobile phone tower emissions and public health?

In its recent advisory on health risks associated with the mobile phones and mobile base stations, both the WHO and a French government expert group, the Agence Nationale De Securite Sanitaire (ANSES) the French Organization for Food, Environmental and Occupational Health & Safety have said that there is no health hazard to humans and other living beings caused by the emissions emanating from mobile phones and the antennae on towers.

The WHO, in its advisory dated September 20, 2013,



Dr. Rakesh Jalali

Professor, Radiation Oncology and Convener,
NOG, Tata Memorial Centre

"The RF waves used in the mobile phone technology are probably at the lowest end of the electromagnetic spectrum and do not cause any DNA kill."

Please refer to the link: <https://www.youtube.com/watch?v=6QoX4Fz1Agk>

EMF Frequently Asked Questions (FAQs)

has said, **“Studies to date provide no indication that environmental exposure to Radio Frequency fields such as from base stations, increases the risk of cancer or any other disease.** Scientists have reported certain other health effects of using mobile phones including changes in brain activity, reaction times, and sleep patterns. These effects are minor and have no apparent health significance.”

In another related development, the French government agency ANSES, in its recommendation said that **“Given this evidence, proposing new exposure limits for the general population on health grounds does not seem justified.”**

The Mobile Telecommunications and Health Research Programme (MTHR) of the UK recently completed an 11 year long study, and despite exhaustive research, it found no evidence of risks to health from the radio waves emitted by mobile phones or their base stations. The MTHR says that **“there is no link between mobile phones and any health problem.”**

Professor David Coggon, Chairman of the MTHR, said: “This independent programme is now complete, and despite exhaustive research, we have found no evidence of risks to health from the radio waves produced by mobile phones or their base stations. Thanks to the research conducted within the programme, we can now be much more confident about the safety of modern telecommunications systems.”

What are the views of national and international organizations about mobile phone and tower emissions and their impact on the environment and bio-diversity?

The United Nations Environment Programme (UNEP) has taken up several studies and research projects to study the impact of mobile phone and tower emissions on the environment and bio-diversity. One of the popular misconceptions is that the emissions result in a decrease in the bee colonies which, in turn, affects the pollination process which is essential to preserve nature's eco-system. The UNEP commissioned a study on the issue in 2011, which concluded that the key rea-



Dr. Vijayalaxmi

Department of Radiation Oncology,
University of Texas Health Science Center

“The results from several of my acute and chronic exposure studies have revealed that the RF radiation emitted from the mobile phones does not have sufficient energy to cause ‘breakage’ in the genetic material in human and animal cells. Researchers in the other parts of the world have also reported similar observations.”

EMF Frequently Asked Questions (FAQs)

son for instability in the bee population is the deterioration of habitats due to human activities. These activities include acquisition of land, creating increasing air pollution, agricultural practices such as spraying of chemicals/pesticides, increasing pathologies and hastening of climate change. The rise in invasive species/parasitosis also affecting the bee population and behavior.

The non-sighting of sparrows from urban areas is also, at times, attributed to mobile towers. A recent study by the University of Sheffield in the UK concluded that urban noise limiting communication between parent birds and their young may be the key cause of declining sparrow populations.

A project called 'Citizen Sparrow' in India concluded that the changes in the use of land have caused a steep decline in the sparrow population. Construction using modern architectural forms has created a nesting problem for the birds. The use of pesticides has also had a negative impact on the sparrow population.

Is there any ongoing monitoring mechanism in the world on this issue?

The WHO constantly monitors the research and studies on EMF emissions conducted across the globe. The WHO experts analyze the research results of various bodies across the globe on an ongoing basis and release position papers and advisories from time to time. The WHO also continuously follows developments on the subject in various countries including India. It encourages member countries to participate in all deliberations of the group monitoring the effect of mobile emissions on public health.

What is the mobile phone industry's stand on this issue?

The mobile phone industry has voluntarily initiated proactive measures, undertaking a massive transition in its network infrastructure, which was redesigned substantially to meet the DoT-prescribed norms. Considering the scarce spectrum resources available in India compared with the other growth markets, the population density and traffic, redesigning of the network in-



Prof. Vasant Natarajan

Department of Physics Indian Institute of Science (IISc),
Bengaluru

"The cell phone photons do not have enough energy to cause a mutation in your DNA. Period. No matter what their power is. The power density from the sun received on the earth is typically 1000 Watts per square meter, while that at the base of a cellphone tower is ten thousand times smaller at about 0.1 Watts per square meter."

EMF Frequently Asked Questions (FAQs)

frastructure was an extremely challenging task, but was completed with the industry's proactive participation.

As part of the various measures initiated by the Indian government, a specific recommendation of the Inter-Ministerial Committee regarding the need to set up a common online portal has been accepted by the government. This portal will provide the public all relevant information on the status of each mobile tower's EMF emissions compliance. Work on this portal is being undertaken by the government supported by the industry. This will make the system much more transparent and make such vital information accessible and available to the public. The finalization of guidelines for the installation of telecom towers and establishment of the portal indicating all emissions levels of all antennae will provide comfort to citizens about the safety of the mobile towers and their emissions.

The industry has also organized various outreach programmes to sensitize and educate citizens on the issue. Lecture tours by eminent experts on the topic, including members from the medical fraternity, have been organized to address queries and concerns of the people. Media workshops have also been organized and sensitization programmes are held with the Resident Welfare Associations and other citizens' forums to discuss and deliberate on the issue.

All cell phone operators in India are in full compliance with the revised set of guidelines and significant transitions and redesigning have been carried out in the networks to ensure that the revised norms can be implemented. The industry is fully committed to the need to ensure public health, and takes stringent measures to comply with the regulations in this regard.

What are the guidelines for installation of mobile towers across the country?

The telecom service is a centrally-administrated industry. The DoT licenses telecom operators to provide communication services (mobile, landline and internet). The Government of India, through the DoT, has issued comprehensive guidelines for the installation of mobile towers across India. As a licensing authority, and also as the country's only technically-competent agency, the DoT administers the norms related to emissions from telecom towers. The details of the guidelines are available on the official website of DoT on the link:

<http://www.dot.gov.in/sites/default/files/Advisory%20Guidelines%20For%20State%20Govts%20effective%20from%2001-08-13.pdf>

What are the guidelines for mobile handset emissions in India?

The specific absorption rate (SAR), which is a measure of the rate at which energy is absorbed by the human body when exposed to a radio frequency (RF) electromagnetic field, adopted by India for mobile phones is much lower than the world average. The WHO-administrated norm for SAR is 2W/kg (averaged over 10g of tissue), while India has adopted 1.6W/kg (averaged over 1g of tissue) The updated details provided on the DOT website are as per the link:

<http://www.dot.gov.in/sites/default/files/Revision%20of%20SAR%20Limit%20mobile%20handsets.pdf>

Who should one contact in case of doubts in the minds of customers in India about mobile emissions?

The TERM Cells enforce the emission levels in all telecom circles. The officers from the TERM Cells are responsible for ensuring compliance by all telecom towers and also

EMF Frequently Asked Questions (FAQs)

by the mobile handsets. Indian citizens can contact them across the country. The details of this enforcement body (TERM Cells) can be obtained from the DOT website at <http://www.dot.gov.in/term/term-security>

Can the levels of the EMF emissions from cell tower antennae be accurately measured by citizens using hand-held devices marketed by certain companies?

The key instruments required to accurately test the levels of EMF radiations from the cell tower antennae are the Field Strength Meter or Spectrum Analyzer, an antenna to sample the field and a computer to process the measured results. These instruments and accessories have the capability to measure in the frequency range of interest. A Field Strength Meter of required capabilities is needed to measure electromagnetic field and power density in the specified frequency range in V/M, W/square meter as per the DoT limits.

These sophisticated and expensive instruments need to be calibrated and certified by trusted bodies with the requisite technical expertise to ensure accurate results as per the requirements of the tests. The low-cost hand-held devices that are offered by some companies in the market are neither certified by the government nor do they fulfill the testing requirements as specified by the Telecommunication Engineering Centre (TEC) operating under the DoT. These instruments are marketed by some organizations to make money out of the unwarranted scare created on the issue of emissions from mobile towers, but they do not provide accurate readings that can be measured against the DoT safety norms.

Can certain devices (including paints, curtains, shields, etc.) marketed by certain companies pro-

tect from the so-called health hazards of the EMF?

Products like shield cases, buffer-pads, antenna covers, absorber chips and radiation armors, as marketed by some companies are not certified by any government body nor by any expert organization of repute. Some companies are marketing these products for financial gain despite their efficacy being unproven. In fact such devices may be counter-productive as they tend to heat up the mobile phones, increasing their transmission power and reducing the battery life. Thus anything that shields the phone, like these devices, will cause the phone to consume more power in order to catch the signal and this, in turn, reduces its operational efficiency.

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) has said that there is no evidence to support the claimed safety benefits of the so-called "shielding" devices which "are attached to the handset and take the form of shielded cases, earpiece pads/shields, antenna clips/caps and absorbing buttons." In its new consumer Fact Sheet, "How to reduce exposure from mobile phones and other wireless devices", ARPANSA says that such devices could force handsets to work at higher power because they interfere with the mobile phone technology known as automatic power control which automatically reduces the phone's power to the lowest level to maintain the quality of call. ARPANSA has also warned consumers that the slew of 'neutralizing' products often sold in the form of pendants, necklaces or stickers to be placed on the back of phones, also have no proven health benefits. (Please refer to the link: http://www.arpansa.gov.au/RadiationProtection/Factsheets/is_Wireless.cfm)

World Health Organization

WHO Q&A ON MOBILE PHONES AND HEALTH RISKS

Q:What are the health risks associated with mobile phones and their base stations?

A: This is a question that the WHO takes very seriously. Given the immense number of people who use mobile phones, even a small increase in the incidence of adverse effects on health could have major public health implications. Because exposure to the radiofrequency (RF) fields emitted by mobile phones is generally more than a 1000 times higher than from base stations, and the greater likelihood of adverse effects being due to handsets, research has almost exclusively been conducted on possible effects of mobile phone exposure.

Research has concentrated on the following areas:

- Cancer
- Other health effects
- Electromagnetic interference
- Traffic accidents

CANCER: Based on mixed epidemiological evidence on humans regarding an association between the exposure to RF radiation from wireless phones and the head cancers (glioma and acoustic neuroma), the RF fields have been classified by the International Agency for Research on Cancer (IARC) as possibly carcinogenic to humans (Group 2B). Studies to date provide no indication that environmental exposure to the RF fields, such as from the base stations, increases the risk of cancer or any other disease.

OTHER HEALTH EFFECTS: Scientists have reported other health effects of using mobile phones such as changes in brain activity, reaction times and sleep patterns. These effects are minor and have no apparent health significance. More studies are underway to try to confirm these findings.

ELECTROMAGNETIC INTERFERENCE: When mobile phones are used very close to some medical devices (including pacemakers, implantable defibrillators and certain hearing aids), there is the possibility of causing interference with their operation. The risk is much reduced for 3G phones and newer equipment. There is also the potential of interference between mobile phone signals and aircraft electronics. Some countries have allowed mobile phone use on aircraft during flights using systems that control the phone output power.

TRAFFIC ACCIDENTS: Research has shown an increased risk of traffic accidents, some 3-4 times greater chance of an accident, when mobile phones (either handheld or with a "hands-free" kit) are used while driving due to distraction.

CONCLUSIONS: While an increased risk of brain tumors due to the use of mobile phones is not established, the increasing use of mobile phones and the lack of data for mobile phone use over time periods longer than 15 years warrant further research of mobile phone use and brain cancer risk. In particular, with the recent popularity of mobile phone use among younger people, and therefore a potentially longer lifetime of exposure, WHO has promoted further research on this group, and is currently assessing the health impact of the RF fields on all studied endpoints.



Fact Sheet on EMF Issues and Mobile Towers

1. EMF STANDARDS ACROSS THE WORLD

Extensive radiofrequency research has been undertaken by the researchers of the highest integrity for several decades at organizations like the WHO, the British Medical Association (BMA), the Royal Society of Canada (RSC), ICNIRP, the Independent Expert Group on Mobile Phones, the Swedish Radiation Protection Institute, the Food & Drug Administration (USA), ARPANSA, and ICMR. All of the studies conducted so far do not demonstrate any substantive link between human health risks and either the use of digital mobile phones or residing near base stations.

Further, many expert panels have reviewed the large body of existing scientific literature and have consistently concluded that compliance with the existing scientific standards is adequate to protect public health even with a conservative approach. These reviews have concluded that for exposure to radiofrequency energy up to the safety limit levels prescribed by the ICNIRP – and endorsed by the WHO – there is no substantive or convincing evidence of biological effects on human health and environment.

As specified by the WHO, “Radio frequency waves are electromagnetic fields, and unlike ionizing radiation such as X-rays or gamma rays, can neither break chemical bonds nor cause ionization in the human body.”- WHO Fact Sheet No. 193 dated June 2011 <http://www.who.int/mediacentre/factsheets/fs193/en/>

The WHO further states that, “A large number of studies have been conducted over the last two decades to assess if mobile phones pose a potential health risk. To date, no adverse health effect has been established as being caused by mobile phone use.”

2. GUIDELINES ON MOBILE TOWERS: RECENT UPDATES

a) The DoT has developed standardized guidelines for the installation of mobile towers across the country which shall be applicable to all states in India. A copy of the guidelines can be accessed at the DoT website: <http://www.dot.gov.in/sites/default/files/Advisory%20Guidelines%20For%20State%20Govts%20effective%20from%2001-08-13.pdf>



Dr. Rajesh Dikshit

Department of Epidemiology, Urology (DMG), and Tata Memorial Centre

“A number of researches and studies have been conducted around the globe to ascertain if there is any relationship between the RF emissions from the mobile phone and cancer. However, there is not enough evidence proving mobile phones cause cancer in humans.”

Please refer to the link: <https://www.youtube.com/watch?v=TbiJTrcao9E>

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b) The DoT guidelines have been developed after close scrutiny of all parameters and detailed consultations with all stakeholders involved. Hence, they would be adequate to address all issues related to installation of mobile towers across India.

c) On August 1, 2013, the DoT also issued an advisory to all State Governments across the country, recommending uniform implementation of the new DoT guidelines across all states in India. The new guidelines have clearly stated that all EMF related aspects, compliance of the RF exposure field emissions, issues related to the Standing Advisory Committee on Radio Frequency Allocation (SACFA) and licensing etc. are to be handled solely by the DoT's TERM Cells.

They will have the responsibility of auditing the emission levels from the mobile base stations and ensuring that all general public areas are within the safe EMF exposure limits as prescribed by the DoT. The guidelines also clarify that no suo-moto demolition or sealing of a mobile tower for EMF related issues will be permitted without the consent of the TERM Cell.

3. VERDICT FROM THE KERALA HIGH COURT

The Hon'ble Kerala High Court in the W.P. (C) No. 24569 of 2012, vide its judgment dated 9th July 2013, held that, "Whether the commissioning of a telecommunication tower would affect the health of the people of the area is an issue which is still being debated among the scientist communities all over the world. This Court has, in two decisions, held that there is no evidence that the same will affect the health of the people. Whether it will affect the health of the people or not, it is an undisputed fact that we are bound to live for the rest of our lives with mobile phones in our pockets. The statute prescribes certain licenses and permits for erecting telecommunication towers. All what we can ensure is that such requirements are complied with in the erection and operation of the towers. In the above circumstances, if the petitioner has obtained necessary permits and licenses, nobody can prevent them from erecting and commissioning telecommunication towers."

4. JOINT SUBMISSION BY LEADING ACADEMICIANS OF INDIA

In a submission to the Ministry of Communications and Information Technology, **twenty-five leading academi-**



Dr. Bhavin Jankharia

President, Indian Radiology and Imaging Association

"We have been using X-ray radiations for more than 115 years, and we still haven't been able to establish the relationship of cancer and radiation to any great extent. And the mobile tower radiation is inherently a type of radiation that we believe does not produce any kind of significant harm to humans." Please refer to the link: <https://www.youtube.com/watch?v=o-Cy-pFtgAU>

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cians from the prestigious Indian Institutes of Technology (IIT) and Indian Institute of Science (IISc) in India, have urged the government to “exercise caution to avoid ad-hoc decisions regarding the restrictions of tower locations and avoid unnecessary panic and fear among citizens”. The statement says that based on all the facts there is no further knowledge available that warrants a change in the safety recommendations of mobile emissions. Further, this committee of academicians has requested the government to create a public database where all study reports (Pros & Cons) on the health implications of the EMF emissions should be housed. All these academicians have worked on Research and Development in the telecom sector for between five to 35 years.

5. UNITED KINGDOM'S MOBILE TELECOMMUNICATIONS AND HEALTH RESEARCH PROGRAMME (MTHR)

UK's MTHR very recently completed an 11 years long study and **despite exhaustive research, they found no evidence of risks to health from the radio waves produced by mobile phones or their base stations.** There is no link between mobile phones and any health problems, the report has concluded. The study also found no evidence that exposure to base station emissions during pregnancy increases the risk of childhood leukemia. The MTHR programme was the UK's largest research programme to look at possible health risks associated with mobile phone technology. Professor David Coggon, Chairman of MTHR, said: “This independent programme is now complete, and despite exhaustive research, we have found no evidence of risks to health from the radio waves produced by mobile phones or their base stations. Thanks to the research conducted within the programme, we can now be much more confident about the safety of modern

telecommunications systems.”

6. REPORT BY EXPERT COMMITTEE FORMED BY DOT AS PER THE ALLAHABAD HC ORDER

A report submitted by a 13-member committee constituted by the DoT, based on an Allahabad High Court order, dated January 10, 2012, has observed that there is no cause for alarm with regard to possible ill-effects on human health by electromagnetic field (EMF) emissions from antennae on cell towers and cellphones, because the safety limits adopted in India take into account all biological effects of radiation. The committee also took note of the actions taken by DoT with respect to the recommendations of the Inter-Ministerial Committee. The committee observed that DoT has taken adequate steps to increase precautionary limits for EMF emission from antennae on cell towers as well as from cell phones. Members of the committee include professors from



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IIT-Kharagpur, IIT-Kanpur, IIT-Delhi, IIT-Roorkee and experts from the ICMR, All India Institute of Medical Sciences, Department of Science and Technology and Indian Institute of Toxicology Research, besides representatives from the DoT.

7. JOINT INITIATIVE BY THE GOVERNMENT AND THE INDUSTRY

As part of the various measures instituted by the government, the specific recommendation of the IMC regarding the need to set up a common online portal has been accepted by the government. This portal will provide to the public all relevant information on the status of each tower's EMF emissions compliance. Work on this is being undertaken by the government, and supported by the industry. This will make the system transparent and make such vital information accessible and available to the public. The finalization of the guidelines for installation of telecom towers

and establishment of a portal indicating all emissions levels of all antennae will provide comfort to citizens about the safety of the towers and their emissions.

8. EMF EMISSION STANDARDS IN OTHER COUNTRIES

Countries following ICNIRP Guidelines for Mobile Tower Antennae (Power density 9W/m² for 1800 MHz spectrum)

Argentina, Australia, Austria, Brazil, Colombia, Croatia, Czech Republic, Denmark, Ecuador, France, Finland, Germany, Hong Kong, Hungary, Japan, Ireland, Malaysia, Morocco, the Netherlands, New Zealand, Norway, Oman, Pakistan, Paraguay, Peru, the Philippines, Portugal, Romania, Rwanda, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Thailand, Taiwan, Tanzania, Turkey, Uganda, UK, Venezuela and Switzerland (excluding sensitive areas).

Countries following IEEE 1991/NCRP 1986 standard (FCC) for Mobile Tower Antennae (Power density 10W/m² for 1800 MHz spectrum)

Bolivia, Canada, Estonia (IEEE1991), Panama, USA.

Countries below ICNIRP and IEEE

India, Belarus, Bulgaria, Chile, China*, Israel, Lithuania, Poland, Russia* Belgium, Greece, Italy, Liechtenstein.

* China & Russia made decision to move to ICNIRP for SAR

Telecom Enforcement, Resource and Monitoring (TERM) Cells



Who to contact to if there are questions regarding EMF radiations from telecom towers?

All issues related to the emissions from the mobile towers (EMF) are regulated and monitored by the TERM Cells of the DoT, which are appointed in all telecom circles. They continuously monitor the emission levels of the mobile towers on a random basis and take punitive action (fine up to INR 10,00,000) if the EMF emission levels are found to be above the government-prescribed norms.

The Central government has prescribed the EMF emission levels at 1/10th of the WHO recommended norms.

The WHO has recommended that EMF emissions from the cell tower must not exceed 4.5W/ square meter for 900 MHz frequency band. The Government of India has decided that the emission levels must be below 0.45W/square meter which places India amongst the countries with the lowest permitted emission levels.

The Government of India has adopted the lowest (and the safest) EMF emission norms, taking into consideration the fact that Indian urban settings are not set up zone-wise and institutions like schools and hospitals are spread across the area. By bringing down the emission levels to 0.45W/square meter, the government has taken into consideration the population density as well as the vulnerabilities of various population segments.

The government has mandated the TERM Cells as the final authority for the administration, regulation and penal actions on all issues related to emissions from the cell towers. The citizens can contact the local TERM Cells in case of any issues related to the emissions from the mobile towers. The contact details of the TERM Cell officials of each circle can be found at the following link: <http://www.dot.gov.in/term/term-security>

Views of the Minister of Communications & Information Technology, Government of India in Lok Sabha on 7th July 2014, in a written Q&A

MINISTRY OF COMMUNICATIONS AND INFORMATION TECHNOLOGY LOK SABHA UNSTARRED QUESTION NO. 2 ANSWERED ON 07.07.2014 INSTALLATION OF MOBILE TOWERS

Question by Shri Devji Mansingram Patel, Member of Parliament

(a) Whether the threat of occurrence of fatal diseases like cancer is rising due to installation of mobile towers in the populous areas in prominent cities of the country including Jalore-Sirohi districts in Rajasthan;

(b) If so, whether the Government has fixed any time limit for removing these towers from these areas;

(c) If so, the details thereof;

(d) Whether the mobile towers installed in all the schools and hospitals premises of Rajasthan have been removed;

(e) If not, the reasons therefor; and

(f) The steps taken by the Government in this regard?

ANSWER:

SHRI RAVI SHANKAR PRASAD

Hon'ble Minister of Communications & Information Technology and Law & Justice



(a) to (c) Madam, the World Health Organization (WHO) in its Fact Sheet No. 304, May 2006 on Electromagnetic Fields and Public Health (Base Stations and Wireless Technologies) has concluded that "considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak Radio Frequency (RF) Signals from base stations and wireless

Views of the Minister of Communications & Information Technology, Government of India in Lok Sabha on 7th July 2014, in a written Q&A

networks cause adverse health effects.” “From all evidence accumulated so far, no adverse short or long term health effects have been shown to occur from the RF Signals produced by base stations (mobile phone towers)”.

WHO has recommended that ‘National authorities should adopt international standards to protect their citizens against adverse levels of RF fields. They should restrict access to areas where exposure limits may be exceeded.’ WHO has referred to the International Exposure Guidelines developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Department of Telecommunications (DoT) has already prescribed stricter precautionary limits for electromagnetic field (EMF) radiation from mobile towers. The present prescribed limits for EMF radiations from Base Stations in India are one-tenth (1/10th) of the internationally prescribed limits of ICNIRP.

Further, in a Writ Petition filed in Hon’ble High Court Allahabad, Lucknow bench, the Hon’ble Court vide its order dated 10.01.2012 constituted a committee consisting of Members of the IITs, Bombay, Kharagpur, Kanpur, Delhi, Roorkee and other prominent persons of other scientific institutions of the country like AIIMS (Delhi) and the Indian Council of Medical Research which submitted its Report on 17-01-2014. After due consideration of the human health concerns on account of EMF radiation being raised in public as well as the Report of the Committee, the Government has decided in February 2014 that the present prescribed precautionary EMF safe exposure limits are adequate and need no further change at this stage.

In order to ensure compliance with the prescribed stricter precautionary norms of EMF radiation from mobile towers, an extensive audit of comprehensive compliance

self-certificates being submitted by telecom service providers and base transceiver station (BTS) sites is carried out by the TERM field units of DoT. This is regularly done by TERM units for the purpose of limiting the EMF radiation exposure and keeping general public areas in the vicinity of towers safe. Such audits are being conducted in all the License Service Areas in the country, including the Jalore and Sirohi districts in Rajasthan license service area. If any BTS site is found to violate the prescribed EMF norms, actions are taken to impose a penalty of INR 10 lakh per BTS per incidence, as well as closing of the BTS site as per the prescribed procedure.

In Jalore and Sirohi districts, the Rajasthan TERM field unit of DoT has randomly tested 77 BTSs on a sample basis up to 31/05/2014 and all sites were found compliant with the radiation norms prescribed by DoT. One complaint was received from Mount Abu, Sirohi, regarding EMF radiation from the base transceiver station (mobile tower). This was tested by the TERM field unit Rajasthan and it was found to be compliant with the radiation norms prescribed by DoT.

(d) to (f) Hon’ble High Court of Rajasthan in Writ Petition No. 2774/12 had inter alia directed removal of Mobile Towers from hospitals and schools within two months. Two hundred and four mobile towers installed in the school premises of Rajasthan have been removed in compliance with the interim order dated 22/08/2012 passed by Hon’ble Rajasthan High Court. However, regarding removal of mobile towers installed at hospitals, the Hon’ble Supreme Court of India had extended time limit for compliance with the order of Hon’ble High Court of Rajasthan on 21/01/2013 by two months. Subsequently the Hon’ble Supreme Court of India has extended the time limit till further orders, and the matter is sub judice.

Links That You Can Use

- <http://www.dot.gov.in/access-services/journey-emf>
- **What is the WHO EMF Project about:**
http://www.who.int/peh-emf/project/EMF_Project/en/index.html
http://www.who.int/peh-emf/project/EMF_Project/en/index1.html
http://www.who.int/peh-emf/project/EMF_Project/en/index2.html
- **Excerpts from the WHO Fact Sheet on Mobile Phones (#193 June 2011):**
<http://www.who.int/mediacentre/factsheets/fs193/en/>
- **Excerpts from the WHO Fact Sheet on Base Stations and Wireless Technologies (May 2006):**
<http://www.who.int/peh-emf/publications/facts/fs304/en/index.html>
- **Excerpts from the WHO Fact Sheet on electromagnetic hypersensitivity (December 2006):**
<http://www.who.int/peh-emf/publications/facts/fs296/en/index.html>
- **Excerpts from the backgrounder of WHO's Cautionary Policies:**
http://www.who.int/docstore/peh-emf/publications/facts_press/EMF-Precaution.html
- **What are electromagnetic fields, including the Q&A:**
<http://www.who.int/peh-emf/about/WhatisEMF/en/>
<http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html>
<http://www.who.int/peh-emf/about/WhatisEMF/en/index5.html>
- **The Communications Minister 's endorsement of the WHO view:**
<http://164.100.47.132/LssNew/psearch/QResult16.aspx?qref=26>
- **A website with credible information on the topic of radiation and medicine:**
<http://radiationdoctor.org/>
- **Prof. Michael Repacholi, former WHO, EMF Project Coordinator, and an ex-Chairman of ICNIRP on various queries related to emissions from mobile towers:**
 Question about Mobile Towers at Schools- <http://youtu.be/t0vdj6ayu3E>
 Question about Radiation Shielding- <http://youtu.be/zYU4fjF6vqM>
 Question about emissions from TV Sets- <http://youtu.be/E-OamZzGpal>
 Question about excessive use of mobile phones- <http://youtu.be/03UdfEPnE8I>