



OVERVIEW OF INDIAN POLICY “Electro Magnetic Field(EMF) Radiation from Mobile Towers & Handsets”

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Growing Tele-Density

- Unprecedented growth in telecommunication sector
- Manifold increase in mobile voice & data traffic =>
 - Exponential increase in a number of cellular towers in India with more & more towers erected each year.

Telecom subscribers in India:	892 Million (Wireless segment is the Growth Key Driver with 861.7 Million subscribers)
Tele-density: Feb 2013 data	75.5% (Wireless 73%, wired line 2.5%)



Wireless Telephone Network

- **The popularity of cell phone and wireless communication devices has resulted in a proliferation of cell towers across the country 736 K mobile towers in the country with about 10 Service Providers in each of 22 Licensing Service Areas .**
- **There has been public concerns on possible health hazards and impact on biota & environment due to EMF radiation from Mobile Towers /Handsets.**



EMF Radiation Norms

- Govt of India, in the year 2008, adopted the International Commission for Non Ionizing Radiation Protection (ICNIRP) Guidelines
- License conditions of Operators were amended on 4.11.2008, with directions to comply to ICNIRP prescribed radiation norms.
- Directions to report compliance of radiation limits/ levels through self certification of their BTS to the respective Telecom Enforcement Resource & Monitoring (TERM) Units of Licensor (DoT).



EMF Radiation Norms

- **TERM Cells carry out the compliance monitoring on Radiation levels on random basis for 10% of towers.**
- **If a site fails to meet the EMF Radiation criterion, there is a provision of penalty of US \$ 10,000 per BTS per service provider along with closure of site.**



Revised Radiation Norms

- Based on the Recommendations of an Inter Ministerial Committee constituted by DoT in the year 2010, limiting reference levels of Electromagnetic Radiation from Mobile towers is reduced to $1/10^{\text{th}}$ of the limit prescribed by the ICNIRP with effect from 01.09.2012.

Frequency	ICNIRP Radiation Norms	Revised DoT Norms effective from 01.09.2012
900 MHz	4.5 Watt/ Sqm	0.45 Watt/ Sqm
1800 MHz	9.0 Watt/ Sqm	0.90 Watt/ Sqm
2100 MHz	10.5 Watt/ Sqm	1.05 Watt/ Sqm



SAR Level for Mobile Handsets

- Adoption of Specific Absorption Rate (SAR) limit of 1.6watt/Kg (averaged over 1 gm of tissue) also implemented from 01.09.2012.

Frequency (10 MHz to 10 GHz)	ICNIRP SAR Limit	Revised SAR Limit effective from 01.09.2012
General Public exposure	2watt/Kg (averaged over 10 gm tissue)	1.6watt/Kg (averaged over 1 gm tissue)



Revised Norms for SAR Level of Mobile Handsets

- Mobile handsets with existing designs, compliant with 2.0 Watt/Kg averaged over a mass of 10 gram tissue, to continue to co-exist upto 31st August 2013.
- From 1st September 2013, only the mobile handsets with revised SAR value of 1.6 Watt/Kg shall be permitted for manufacturing or to import in India for domestic market.
- It will be mandatory for manufacturers to display the SAR level on each mobile handset like IMEI (International Mobile Equipment Identity) display from 01.09.2013.
- SAR Test Laboratory has been set up in the Telecom Engineering Centre DoT, for testing of SAR value of Mobile handsets imported/ manufactured in India.



India

**One of the very few countries in the world
having **toughest** EMF Radiation Standards
for Mobile Towers & handsets
(after 1st September 2012)**



Setting up Telecom Towers

- Before installation of tower, the licensee company obtains siting clearance from DoT to ensure that no interference with other wireless users, no aviation hazards and no obstruction to any other existing microwave links.
- Telecom service providers have to obtain the necessary permission from the concerned local authorities/ municipal corporation before installation of tower.



Setting up Telecom Towers

- Ensure that no nearby buildings right in front of the antenna with height comparable to the lowest antenna on tower at a distance threshold as specified .

Number of Multiple antennas with same orientation	Building/Structure distance from the antenna (safe distance) (in mtrs)
1	20
2	35
4	45
6	55

Operators through actual peak traffic time measurements, need to establish that exclusion zone does not cover areas with public exposure .



Setting up Telecom Towers

➤ Wall Mounted/Pole mounted Antenna:

- Pole mounted Antenna height ≥ 5 metre above ground/ road level on flyovers.
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 - No Residential place /office directly in front of the Wall mounted antenna at a height comparable to the antenna in the exclusion zone.
- No restriction for installation of tower on/ near specific buildings such as schools/ hospitals/ playground etc. as new tougher standards based on precautionary principles apply equally to all locations with human presence.



Additional Steps taken by DoT

- **Broad guidelines issued by DoT for issuing clearances for installation of Mobile Towers.**
- **Precautionary Guidelines issued for Mobile Users advising them to take precautions while using/ purchasing the mobile handsets.**
- **These guidelines are available at DoT website.**



Additional Steps taken by DoT

- A Handbook on EMF Radiation Issues Mobile Communications-Radio is available on DoT website.

The Handbook covers :

- Basic introduction to radio waves,
 - Various Terminologies,
 - Clarification of various myths
 - Revised Standards – Mobile Towers & Handsets
 - Frequently asked questions (FAQs) relating to Mobile phones & Human health.
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- The handbook enhances awareness of Public and helps creating an environment where everyone can use the radio wave safely.
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- Advertisement for ensuring safety from radiations of Mobile Towers & handsets are published for awareness of General public in National & Regional Newspapers .



Additional Steps taken by DoT

- **Public complaint handling system for Electro Magnetic Field (EMF) Radiation from Mobile Towers has been made operational**
- **Surprise checks are being conducted by DoT.**



Scientific Study jointly
by
Dept. of Science & Technology
and
Department of Telecom
(Government of India)



Gol Committee

- Department of Science & Technology (DST) constituted a committee on 01.10.2012, under the Chairmanship Former Director General (ICMR), having representative from :
 - Indian Institute of Technology (IIT) Chennai,
 - Indian Institute of Toxicology Research, Lucknow,
 - ICMR , Ministry of Health,
 - Department of Telecom,
 - Ministry of Environment & Forest,
 - Dept. of Science & Technology
- Request for Proposals (RFPs) on scientific assessment of possible health hazards and adverse impact on ecology in **India specific context** from Mobile Hand Sets & Mobile towers.



India Specific Context

- **High Population Density**
- **In-organic Urban Growth**
- **Narrow Lanes**
- **Low Body Mass Index**
- **Low Fat Content**
- **No of Operators much higher: 10-12 in each Licensed Area**
- **High Concentration of RF exposure : Site Sharing**
- **Per Operator Spectrum Lesser and more Towers**
- **Antennas mounted at lower heights**
- **Compliance Verification needs improvement**



Scientific Study in India Specific context-Factors

- **Wall mounted and Pole mounted antennas.**
- **Age group of users and duration of the exposure, and sensitivity to radiation.**
- **Difficulties in RF design for effective planning of mobile / wireless infrastructure complying to exclusive zone.**



EMF Radiation : Further Analysis

- **Identifying critical areas**
- **GIS mapping for quick view and visual analysis**
- **Medical study to analyze possible harmful effects from mobile tower & handsets:**
 - **Population living in the vicinity of towers**
 - **Age based Mobile Usage analysis**
 - **High Usage of mobile phones by population**

GIS Mapping Layers



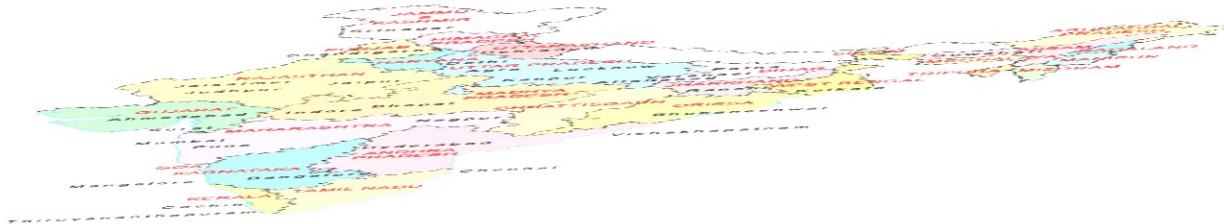
BTS Towers



Population



Area





Thank You