



RF Radiation Hazards and Solutions

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OUTLINE OF PRESENTATION



RF Sources



Microwave Heating Principle



Radiation Pattern of Antenna



EMF Exposure Safety Norms



Radiation Measurements

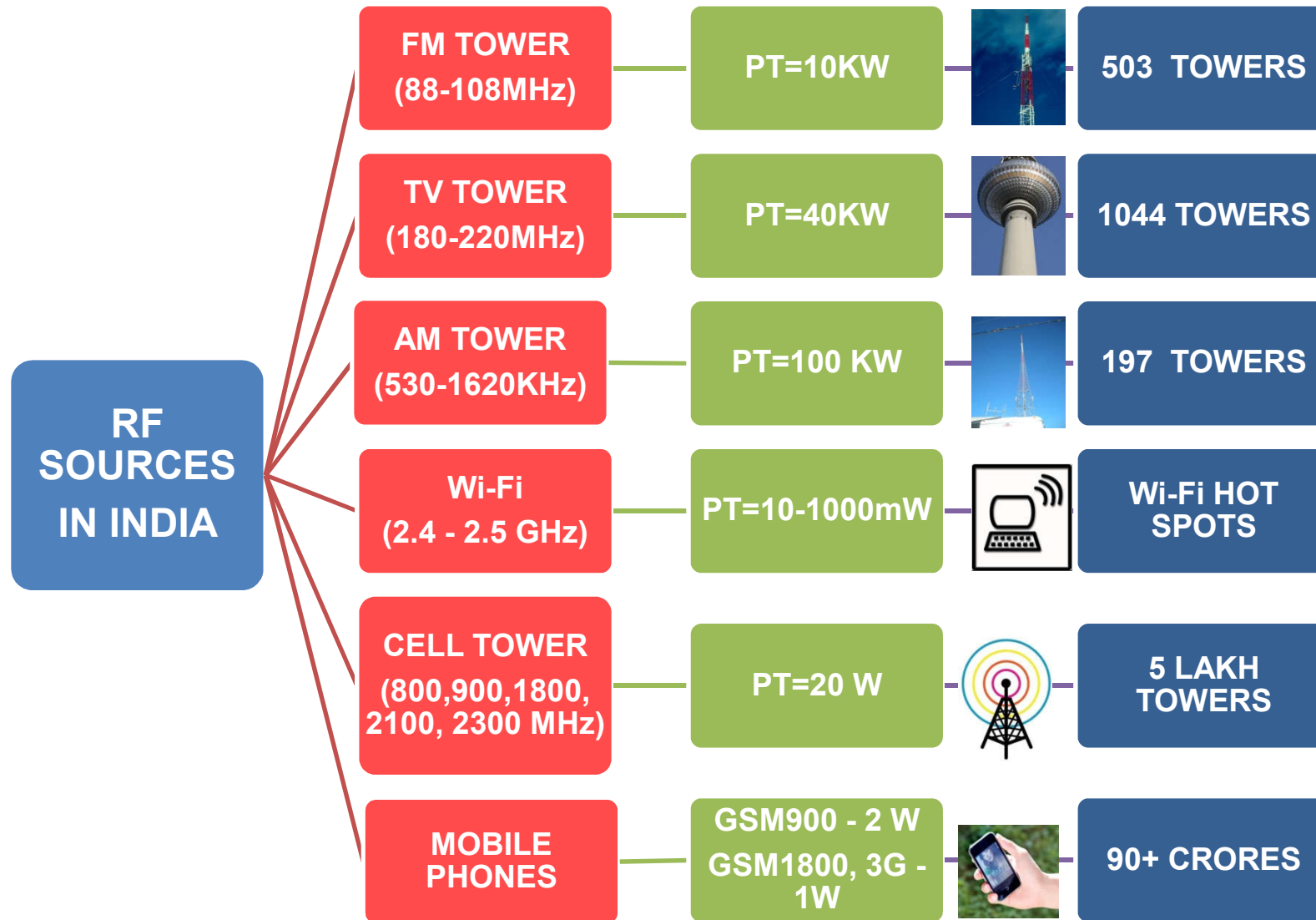


Review Biological Effects



Solutions

RF Sources - Commercial



RF Sources - Defense

Radar Systems – Pulsed and Continuous

High Power Microwave Sources

HF, VHF, UHF, and Microwave Transmitters

Microwave Bomb

Microwave Weapon

High Power Microwave Generation at Satellite
using Solar Cells and Transmitter to Earth

Microwave Heating Principle

Microwave radiation causes vibration in the water molecules, which leads to friction and heating. The radiation effects are classified as:

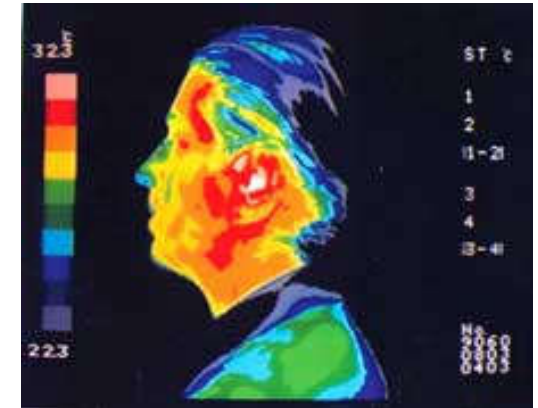
- **Non-thermal**
- **Thermal**

Current exposure safety standards are mainly based on the thermal effects, which are inadequate.

Non-thermal effects are several times more harmful than thermal effects.

Cell Phone - Ear Warming?

Have you ever noticed warm sensation in ear after using mobile phone for a long time?



Temp. of ear lobes increases by 1°C when cell phone is used for approx. 20 minutes.

Warm sensation -> pain -> irreversible hearing loss

All these effects lead to Ear Tumor

SAR and Cell Phone Use Time Limit



6 minutes/day usage.

A cell phone transmits
1 to 2 watts of power

SAR (Specific absorption rate) - Rate at which radiation is absorbed by human body, measured in watts per kg (W/kg).

In USA, max. SAR limit for cell phones is **1.6W/Kg** which is for **6 minutes**. It has a safety margin of 3 to 4, so a person should not use cell phone for more than **18 to 24 minutes per day**.

This information is not given to people in India.

Warning from Blackberry

BlackBerry device keep the BlackBerry device at least 0.98 in. (25 mm) from your body when the BlackBerry device is transmitting. When using any data feature of the BlackBerry device, with or without a USB cable, hold the BlackBerry device at least 0.98 in. (25 mm) from your body. If you use a body-worn accessory not supplied by RIM when you carry the BlackBerry device, verify that the accessory does not contain metal and keep the BlackBerry device at least 0.98 in. (25 mm) from your body when the BlackBerry device is transmitting.

To reduce radio frequency (RF) exposure consider these safety guidelines:

- Use the BlackBerry device in areas where there is a strong wireless signal. The indicator that provides information about the strength of the wireless signal is located in the upper-right corner of the Home screen and displays five ascending bars. Three or more bars indicate a strong signal. A reduced signal display, which might occur in areas such as an underground parking structure or if you are traveling by train or car, might indicate increased power output from your BlackBerry device as it attempts to connect to a weak signal.
- Use hands-free operation if it is available and keep the BlackBerry device at least 0.98 in. (25 mm) from your body (including the abdomen of pregnant women and the lower abdomen of teenagers) when the BlackBerry device is turned on and connected to the wireless network. For more information about carrying your BlackBerry device, see the holster information in the "Additional safety guidelines" section of this document.
- Reduce the amount of time spent on calls.

Page 18 - Complete manual can be downloaded from -

http://docs.blackberry.com/en/smartphone_users/deliverables/11261/BlackBerry_Bold_9700_Smartphone-US.pdf

Results of Re-evaluation of Interphone Study

INTERPHONE – WHO -10 years, 13 countries, largest (5,117 brain tumor cases), \$25 million dollars to evaluate risk on brain tumors. **Report in May 2010**

Conclusion - no overall ↑ risk, but suggestions of ↑ glioma - heavy users & ipsilateral exposures

- Heavy users (**1/2 hour/day**) over 8 to 10 years:
Doubled - quadrupled brain tumor risk
- Children, young adults – excluded.
For children, new study - Mobi-kids

WHO: Cell Phones can Increase Cancer Risk

International Agency for Research on Cancer (IARC), a part of **WHO** designates cell phones as “Possible Human Carcinogen” [Class 2B]



World Health Organization

Found evidence of increase in glioma and acoustic neuroma brain cancer for mobile phone

International Agency for Research on Cancer



World Health
Organization

PRESS RELEASE
N° 208

31 May 2011

IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS
POSSIBLY CARCINOGENIC TO HUMANS

SUGGESTED SOLUTIONS

**POPULAR
SCIENCE**
THE FUTURE NOW

**‘Are cell phones injurious
to your health’ by
Prof. Girish Kumar
Sep. 2011.**



While the cell has become an additional appendage for most of us, all this, of course, does not mean that we have to stop using cell phones. Just ensure you take precautions:

- Limit your use
- Talk for short durations
- If possible, use SMS
- Use cell phone with lower SAR value
- Use the speakerphone or wired hands free or Bluetooth, but keep the cell phone at a distance of at least 12 inches from your body
- Use the land-line, when available
- Do not keep cell phones in your hand/pocket for long.
- At home/office, keep the phone away from you

Cell Tower Antenna Radiation

Antennas on Cell tower transmit in the frequency range of:

- 869 - 890 MHz (CDMA)
- 935 - 960 MHz (GSM900)
- 1805 – 1880 MHz (GSM1800)
- 2110 – 2170 MHz (3G)
- 2300 – 2400 MHz (4G)*
- 2400 – 2500 MHz (Wi-Fi, Bluetooth)



<http://www.wifiinschools.com/>

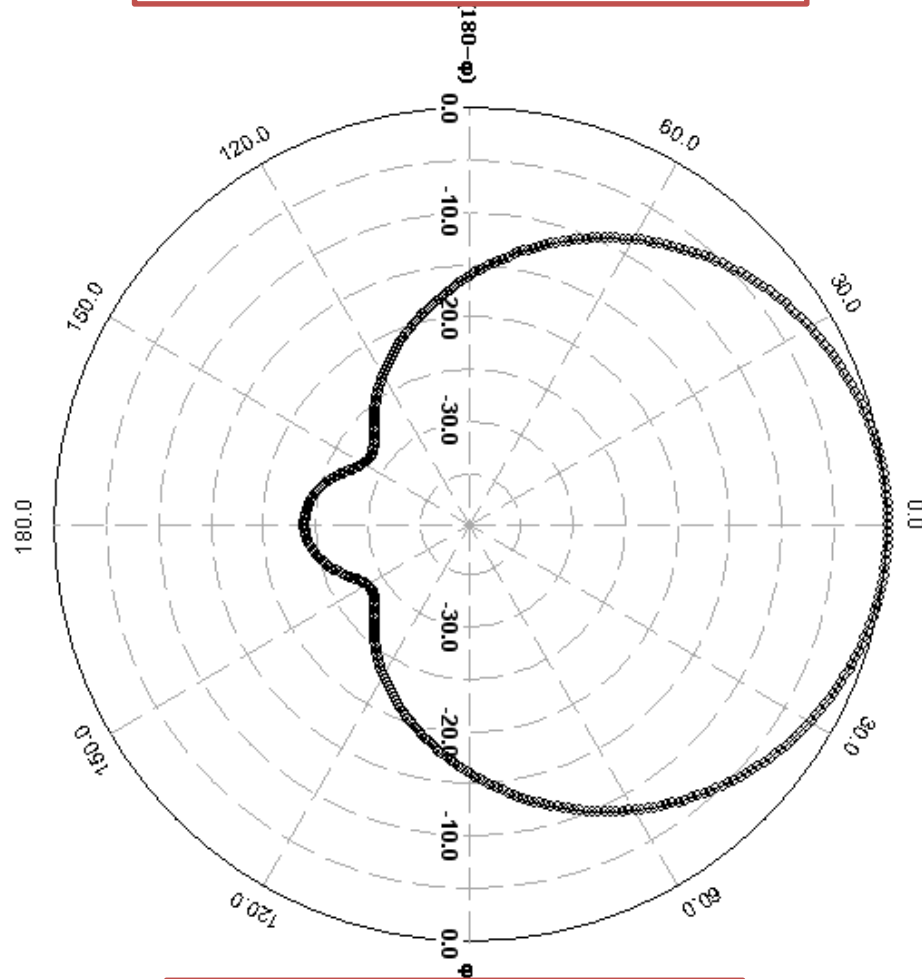
This website is dedicated to help the public realize that wireless internet, or WiFi, emits radiation that causes a myriad of serious health effects, including damage to DNA, cancer, and infertility.

Cell Towers Installed in Mumbai



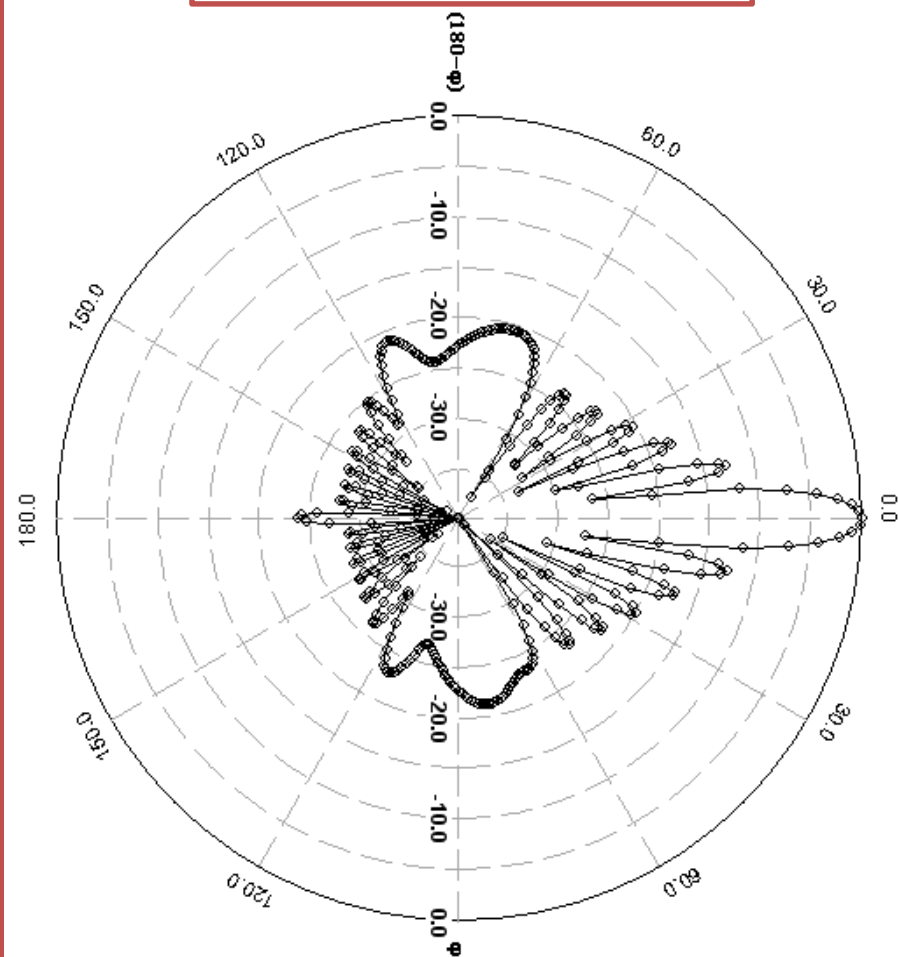
Radiation Pattern of Antenna

Horizontal plane



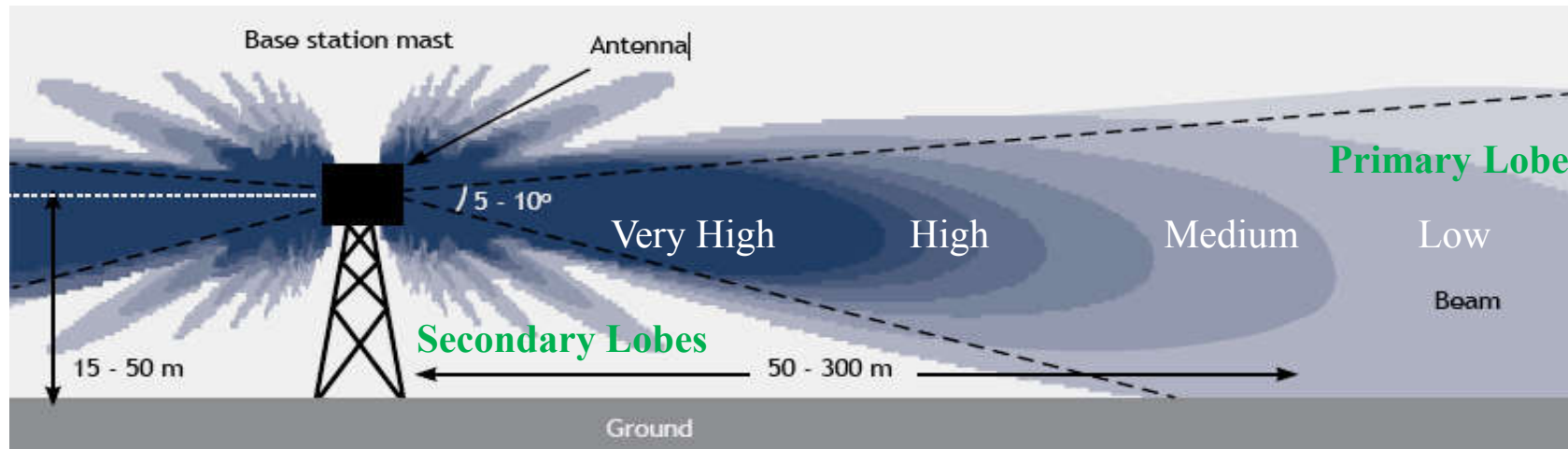
Beam is wide

Vertical plane



Main beam is narrow with
secondary side lobes

Radiation Pattern of a Cell Tower Antenna



People living within 50 to 300 meter radius are in the high radiation zone (dark blue) and are more prone to ill-effects of electromagnetic radiation

People living at $< 50\text{m}$ are in extremely high radiation zone

Power varies by $1/R^2$, where R = Distance from tower

CASE STUDY

Usha Kiran Building, Worli, Mumbai



The cell phone towers installed on the Vijay Apartments terrace at Carmichael Road pic/Bipin Kokate



Usha Kiran Building

Six cancer cases in consecutive floors (5th, 6th, 7th, 8th and 10th) directly facing and at similar height as the mobile phone towers of four telecom companies placed on the roof of opposite building.

ICNIRP Guidelines – Adopted by India till Aug. 31, 2012

Table 7. Reference levels for general public exposure to time-varying electric and magnetic fields (unperturbed rms values).^a

Frequency range	E-field strength (V m ⁻¹)	H-field strength (A m ⁻¹)	B-field (μT)	Equivalent plane wave power density S_{eq} (W m ⁻²)
up to 1 Hz	—	3.2×10^4	4×10^4	—
1–8 Hz	10,000	$3.2 \times 10^4/f^2$	$4 \times 10^4/f^2$	—
8–25 Hz	10,000	$4,000/f$	$5,000/f$	—
0.025–0.8 kHz	$250/f$	$4/f$	$5/f$	—
0.8–3 kHz	$250/f$	5	6.25	—
3–150 kHz	87	5	6.25	—
0.15–1 MHz	87	$0.73/f$	$0.92/f$	—
1–10 MHz	$87/f^{1/2}$	$0.73/f$	$0.92/f$	—
10–400 MHz	28	0.073	0.092	2
400–2,000 MHz	$1.375f^{1/2}$	$0.0037f^{1/2}$	$0.0046f^{1/2}$	$f/200$
2–300 GHz	61	0.16	0.20	10

^a Note:

1. f as indicated in the frequency range column.
2. Provided that basic restrictions are met and adverse indirect effects can be excluded, field strength values can be exceeded.
3. For frequencies between 100 kHz and 10 GHz, S_{eq} , E^2 , H^2 , and B^2 are to be averaged over any 6-min period.

Figure 1 Reference (ICNIRP, Pg 18 Table 7)

According to ICNIRP, for general public exposure, safe power density = $f/200$ for frequency range of 400-2,000 MHz. So for GSM900, safe power density is $900/200 = 4.5\text{W/m}^2$, which is for 6 min period as mentioned in Note no. 3.

EMF Radiation Standards for GSM900

Country	Milliwatt / m ²	Watt / m ²
INDIA (adopted ICNIRP)	4500	4.5 (f/200)
INDIA (Adopted 1/10th of ICNIRP on Sep. 1, 2012)	450	0.45 (f/2000)
AUSTRALIA (New South Wales proposed)	0.01	0.00001
AUSTRIA (Salzburg city)	1	0.001
BELGIUM	45 to 1125	0.045 to 1.125
BELGIUM (Luxembourg)	24	0.024
BIO-INITIATIVE REPORT (Outdoor)	1	0.001
BIO-INITIATIVE REPORT (Indoor)	0.1	0.0001
CANADA (Toronto Board of Health - proposed)	100	0.1
CHINA	400	0.4
FRANCE (Paris)	100	0.1
GERMANY (ECOLOG 1998 - Precautionary Recommendation)	90	0.09
GERMANY (BUND 2007 - Precautionary Recommendation)	0.1	0.0001
ITALY	100	0.1
NEW ZELAND (Aukland)	500	0.5
POLAND	100	0.1
RUSSIA	100	0.1
SWITZERLAND (Apartments, Schools, Hospitals, Offices & Playgrounds)	42	0.042
USA (Implementation is strict)*	3000	3 (f/300)
Final Recommendations		
Indoor - include apartments, schools, hospitals, offices & playgrounds.	0.1	0.0001
Outdoor - where people spend few minutes a day.	10	0.01

***USA - FCC Guidelines OET56: Power transmitted is 0.5 to 1 W in the Urban Area**

Guidelines of the Austrian Medical Association

Adopted on 3rd March 2012 in Vienna

Irrespective of the ICNIRP recommendations for acute effects, the following benchmarks apply to regular exposure of more than four hours per day.

High-frequency electromagnetic radiation (as power flow density)

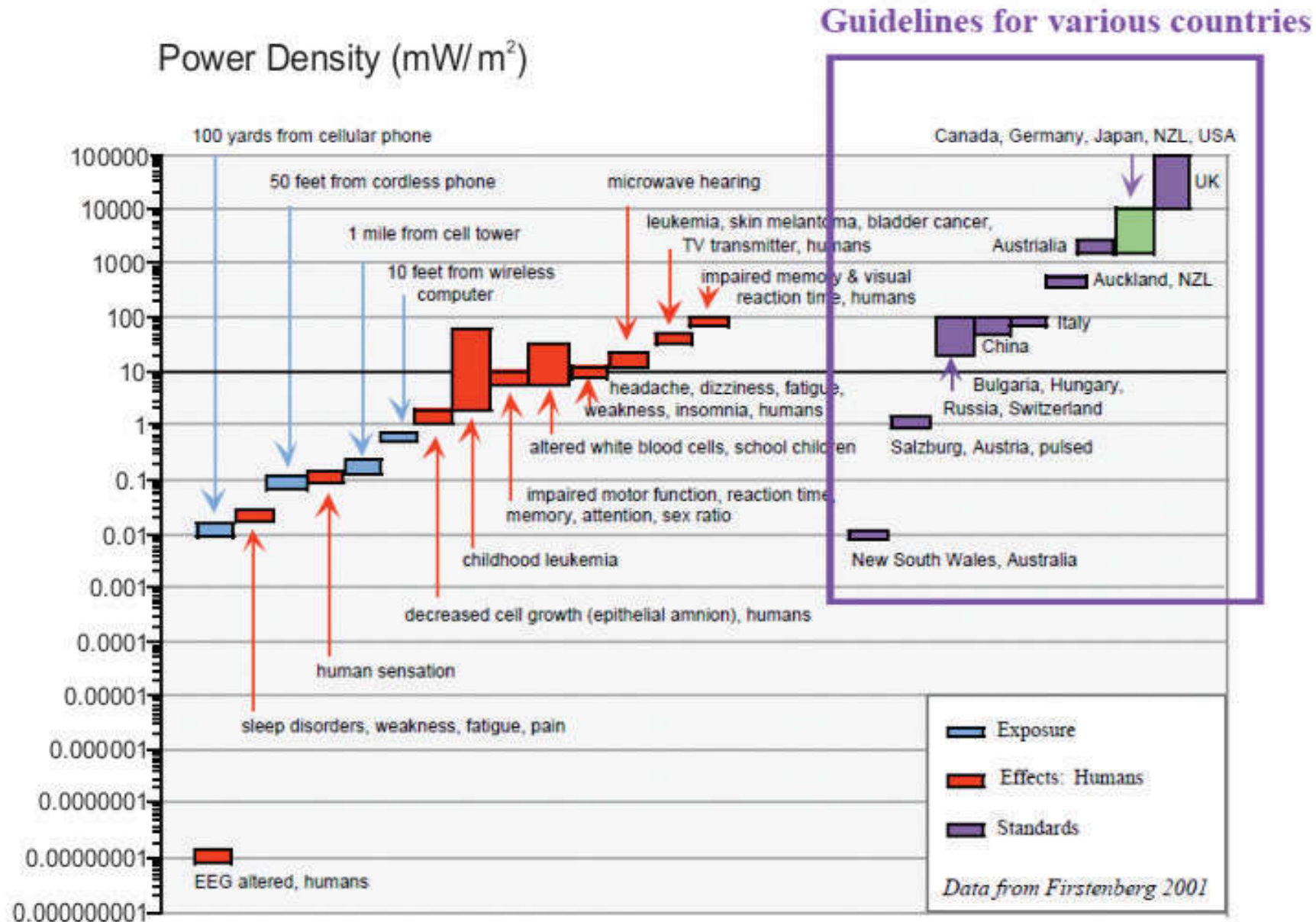
- | | |
|--|-----------------------|
| ▫ $\geq 1000 \mu\text{W}/\text{m}^2$ ($\geq 1 \text{ mW}/\text{m}^2$) | very far above normal |
| ▫ $10\text{-}1000 \mu\text{W}/\text{m}^2$ ($0.01\text{-}1 \text{ mW}/\text{m}^2$) | far above normal |
| ▫ $1\text{-}10 \mu\text{W}/\text{m}^2$ ($0.001\text{-}0.01 \text{ mW}/\text{m}^2$) | slightly above normal |
| ▫ $\leq 1 \mu\text{W}/\text{m}^2$ ($\leq 0.001 \text{ mW}/\text{m}^2$) | within normal limits |

Radiation Measurement at Various Locations

Cumulative Readings including CDMA, GSM 900, and GSM 1800

Location	Reading in dBm	Readings in W/m2	Readings in milliW/m2
Terrace, New Rajindra Nagar, Delhi	+09	0.561	561
Resident 1, Bedroom - Chowpatty	+06	0.281	281
Resident 2, Bedrooms - Opera House	+05	0.223	223
Resident 3, Bedroom – ML Dahanukar Marg	+05	0.223	223
Delhi-Gurgaon Highway - near Toll (3 towers)	0	0.0706	70
Vashi Bridge - after Railway Station	-4	0.0282	28
Resident 3, 4 th Fl: Sergeant House Lady w/cancer	-6	0.0177	17.7
Resident 4, Dadar East, Lady w/cancer	-6	0.0177	17.7
Resident 5, Opposite roof, Rane Society, Powai	-10	0.007	7
Ustav Chowk, Kharghar	-12	0.0045	4.5
Govandi- Residential towers - near Indian Oil	-14	0.0028	2.8
Lower Parel Employees-headaches, forgetfulness	-16	0.0018	1.8
Vashi Highway – near Turbhe	-18	0.0011	1.1
Nerul Bridge	-20	0.0007	0.7
Vivero pre School (opposite powai lake)	-22	0.0004	0.4
Rajeev Gandhi nagar	-26	0.00018	0.18
On road near Evita (Hiranandani Building)	-28	0.00011	0.11
D-Mart,Hiranandani, Powai	-34	0.000028	0.028
IIT Bombay School of Management - Entrance	-46	0.0000018	0.0018

Health Concerns with Current Safety Guidelines



Data from Firstenberg 2001. Diagram was prepared by Dr. Magda Havas, Trent University, Canada

BIOLOGICAL EFFECTS

Most Common Complaints:

- Sleep disruption
- Headache
- Concentration
- Forgetful memory
- Depression
- Fatigue
- Dizziness
- Palpitations of the Heart
- Visual Disorders
- Cardiovascular Problems
- Buzzing in the Head
- Altered Reflexes



Many of these are related to changes in the electrical activity of the brain

BIOLOGICAL EFFECTS (contd.)

Neurodegenerative Disorders –Alzheimer, Parkinson's

Immune System Degradation

Tinnitus and Ear Damage

Irreversible Infertility

Effect on Skin

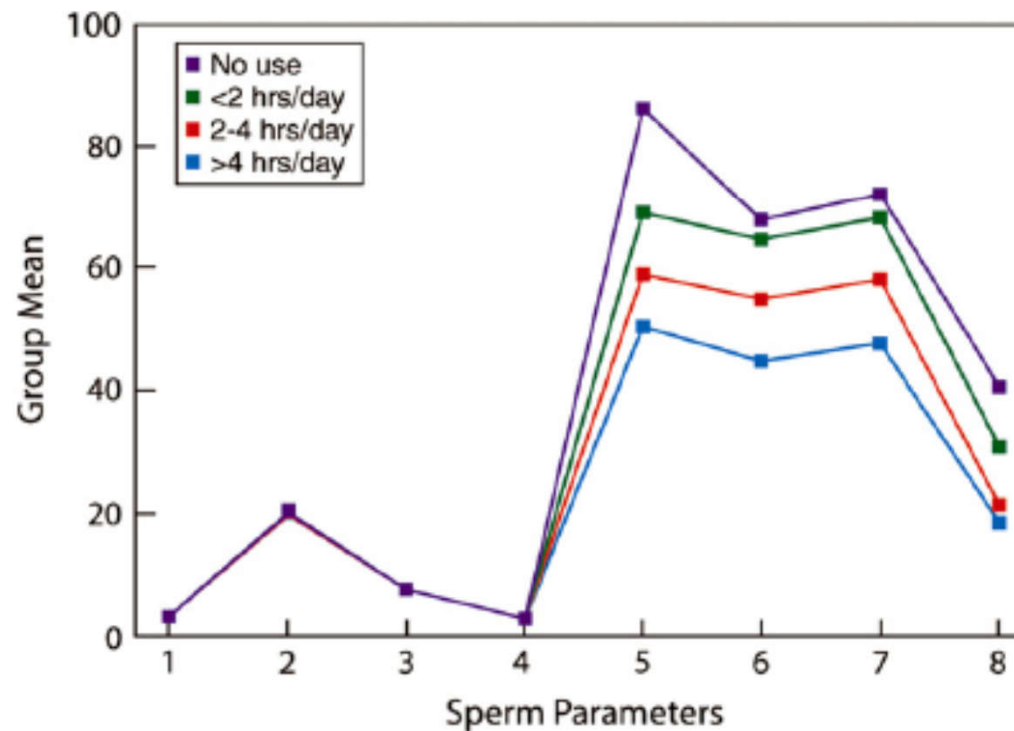
DNA Damage

Increase in Cancer Risk



Irreversible Infertility

Sperm parameter profile for cell phone use groups. The x-axis lists eight sperm parameters: 1 = volume; 2 = liquefaction time; 3 = pH; 4 = viscosity; 5 = sperm count; 6 = motility; 7 = viability; and 8 = percent normal morphology. The y-axis depicts the mean value of the corresponding sperm parameters for each cell phone use group.



Agarwal. Cell phone usage and male infertility. Fertil Steril 2008.

Continuous use over a few years leads to 30% sperm decrease in intensive mobile users, in addition to damage of sperms

DNA Damage

Single and double strand breaks observed in DNA from microwave exposure at levels below the current FCC exposure standard.



Prof. Henry Lai

University of Washington

1995, Diem *et al.* 2005

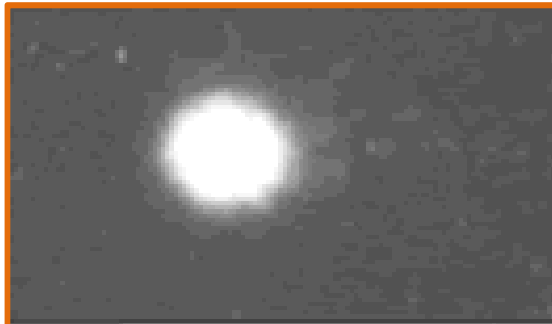


Fig.1 Unexposed control. Bundle of DNA (No-Tail)



Fig.2 X-ray calibration 25.6 rads. DNA breaks are very obvious

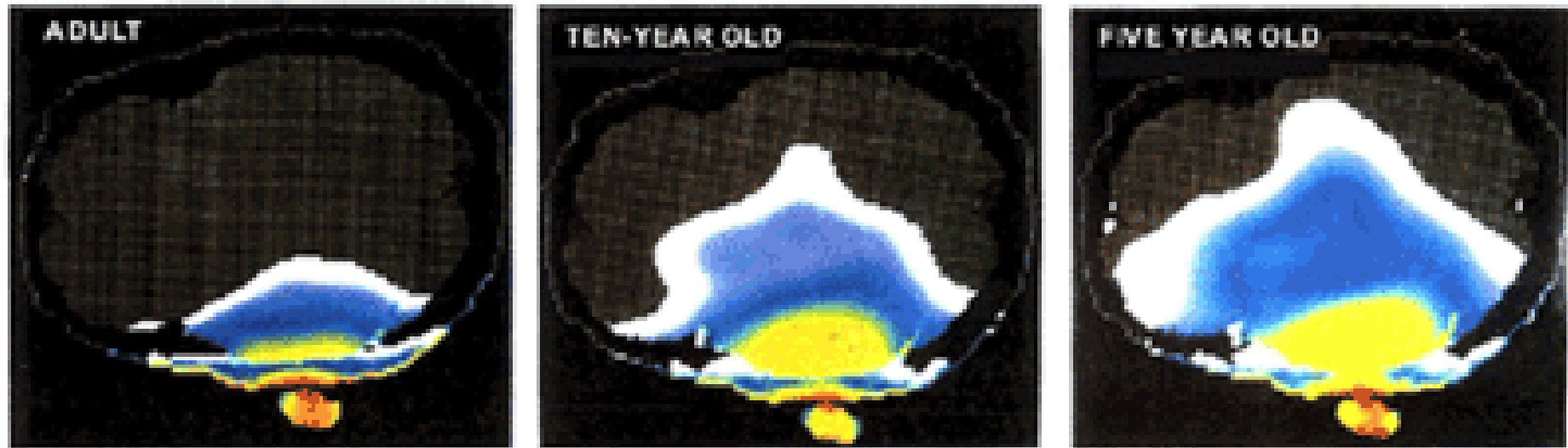


Fig.3 Cell Phone level microwave exposure 2hrs 2.45GHz reaching so called Safe SAR levels
Comet Tail = DNA Damage

When Damage to DNA > Rate of DNA repaired, there is possibility of retaining mutations and initiating cancer

Risk to Children

Children are more vulnerable:



RF penetration in the skull of an adult (25%), 10 year (50%) and a 5 year old (75%).



Fetus & Mother -RF can pass placental barrier & continuously react with the developing embryo and increasing cells leading to miscarriages, deformity to the child, etc.

NEWS COVERAGE IN HT – 07 JAN. 2013

Radiation affects health: global report

PROOF The Bioinitiative 2012 report refutes claims by cellular phone operators that there is no conclusive evidence to prove correlation between radiation and health problems



Reetika Subramanian

reetika.subramanian@hindustantimes.com

MUMBAI A global report published on Sunday has turned the tables on cellular phone operators and even the civic body, who have been claiming that there is no "conclusive evidence" to prove the correlation between exposure to mobile tower radiation and health problems.

"Continuous base station-level exposure can result in illness and have biological effects that can interfere with normal body processes, prevent the healing of damaged DNA, produce immune system imbalances, cause metabolic disruption and lower resilience to disease," states the Bioinitiative 2012 report.

The report has been published by 29 independent scientists and health experts from 10 countries, including Sweden, India, Italy, Greece, US and Russia, after 1,800 papers written by scientists and health experts globally were studied and analysed

HARM TO HEALTH

THE AIM OF THE REPORT: It studies and highlights the possible risks from wireless technologies and electromagnetic fields; around 1,800 global research papers written by scientists and health experts were studied before the 2012 report was released on Sunday.

WHAT THE REPORT SAYS

Continuous base station-level exposure can result in illness.

Prolonged exposure can interfere with the functioning of the body, prevent it from healing damaged DNA, can produce immune system imbalances, create metabolic disruption and lower resilience to disease.

Headaches, difficulty in concentration and behavioural problems have been found in children and adolescents; and sleep disturbances, headaches and concentration issues in adults.

Existing global public safety limits don't seem to be sufficiently protective of public health, especially when it comes to that of the fetus, newborn and very young children.

Early childhood exposure may increase the risk of developing hyperactivity, learning disorders and behavioural problems.



WHO'S BEHIND THE REPORT?

The Bioinitiative 2012 report is published by 29 independent scientists and health experts from 10 countries, including India, Sweden, Italy, Greece, Canada, Austria, US and Russia. This is the second edition of the report; the first was published in 2007.

COMBAT RADIATION EFFECTS

Health agencies and regulatory agencies should go by recent studies and adopt new, biologically relevant safety limits and adhere to the lowest scientific benchmarks for harm. Special safety limits must be put in place for sensitive population, including foetus, infants, children, elderly and those with pre-existing diseases.

Strong precautionary action and clear public health warnings needed immediately to prevent global epidemic of brain tumours. Steps must be taken to lower rates of premature death.

Follow the scientific benchmark of 0.03 milliwatts/square metre for 'lowest observed effect level'.

The safe radiation limit as per the report is
0.5 milliwatts/sq m

INDIA'S LIMIT IS
450 milliwatts/sq m



to suggested global radiation emission levels, telecom expert Anuj Jain said: "Based on the findings, the government should formulate its own study on the correlation between health issues and radiation."

"The report indicates that

India has set a high limit for radiation emission from mobile towers," said Professor Girish Kumar from IIT Bombay. "It is of utmost necessity to bring down the permissible limit to global safety standards."

The 29-member panel of

health experts included two Indian Professor Jitendra Professor Paulraj R. Jawaharlal Nehru Delhi. The duo studied of radiation on fertility, reduction.

The safe radiation limit as per the report is
0.5 milliwatts/sq m

INDIA'S LIMIT IS
450 milliwatts/sq m



BIO-INITIATIVE REPORT 2012

- ➡ Prepared by 29 Researchers from 10 Countries
- ➡ Gave references of 1800 research papers
- ➡ Bio-initiative Report 2007 gave additional references of 2000 papers
- ➡ Strong evidence on health effects



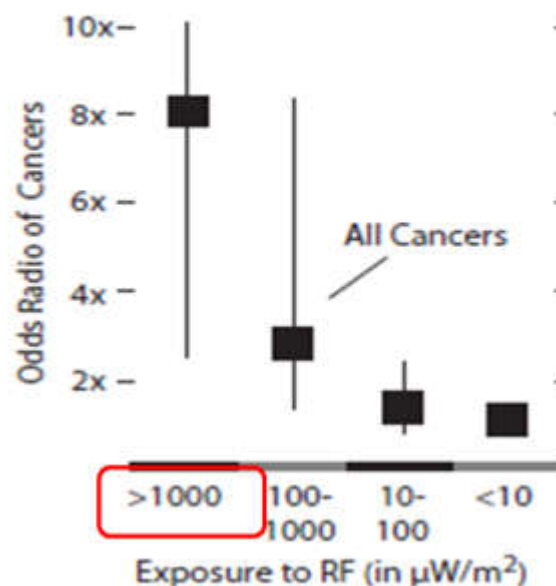
Epidemiological studies- Cell Phone Antennas

Studies in France, Israel, Germany, Spain, the Netherlands, Egypt and Austria - all document adverse health effects below the FCC guideline.

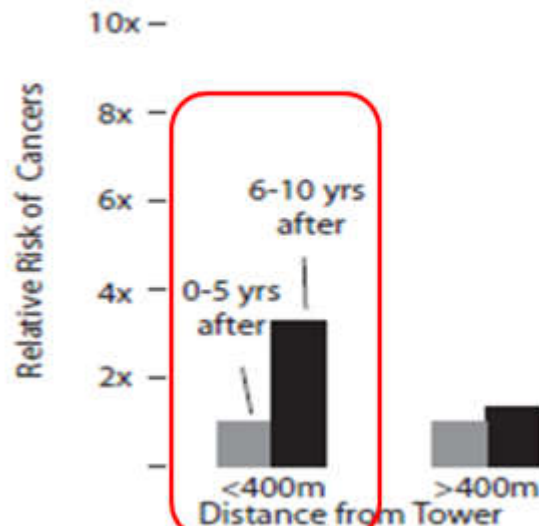


Effect of Cell Towers (Global References)

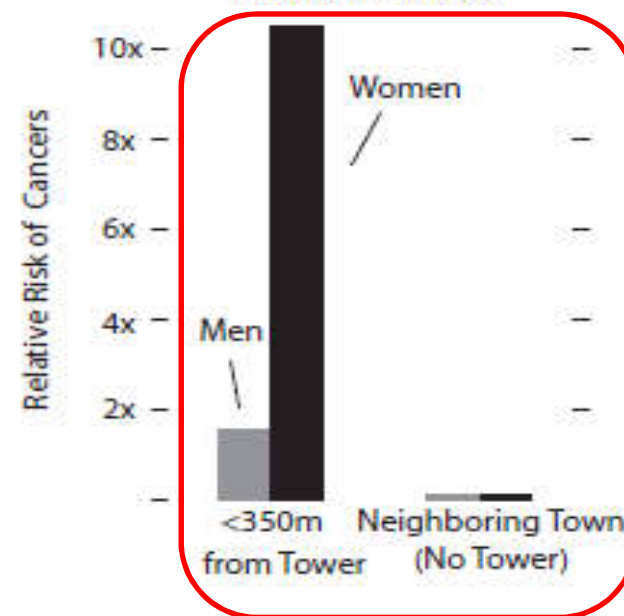
Salzburg, Austria
Tower built 1984



Naila, Germany
Tower built in 1993



Netanya, Israel
Tower built in 1996



❑ 8 times increased cancer risk for exposure $> 1000\mu\text{W} / \text{m}^2 = 1 \text{ mW} / \text{m}^2$

❑ Risk is higher after 6-10 years of exposure

❑ Women living near towers had 10 times increased cancer risk

BRAZIL

New study from Brazil: direct link to 4,924 cancer deaths from cellular antennas radiation



May 17, 2011

❑ Scientists found between 1996 and 2006 died in Belo Horizonte a total of 4924 victims of cancer types that may be caused by electromagnetic radiation, such as **tumors in the prostate, breast, lung, kidneys and liver.**

❑ 80% of victims lived within 500 m's away from cell phone antennas

Source: http://www.next-up.org/pdf/Brazil_New_study_direct_link_to_4924_cancer_deaths_from_cellular_antennas_radiation_28_07_2011.pdf

INDIA



❖ 10 Housewives in Sher-e-Punjab Colony - Andheri (E), Mumbai have been diagnosed with various forms of cancer

6 - Breast Cancer cases, 1 - Ovarian Cancer , 1 - Blood Cancer, 1 - Inguinal Lymph Node Cancer, 1 - unknown – relapsed after chemotherapy

❖ Increased cancer cases with proximity to Towers

Within 91 m from a mobile tower



Name of deceased	Year of death	Cause of death	Age at time of death
Radhabai Sathe	2005	Breast cancer	66
Deshpande	2006	Oesophagus cancer	48
Shubhangee Deshpande	2007	Rectum cancer	66
Pujaree	2008	Cancer	46
Gawai	2008	Breast cancer	52
Shah	2009	Cancer	48
Vidyadhar Dev	2009	Liver cancer	52
Ransube	2009	Throat cancer	73
Archana Malvadkar	2009	Spinal cord cancer	17

NEWS COVERAGE IN MUMBAI

DNA, Mumbai - 22 April 2013

'Cancerous' cell phone towers panic Parsi Colony

6 cancer cases in 3 yrs, residents call meet to devise strategy

Ashutosh Shukla @ashutoshshukla

Froy Kavarana, a resident of Shree Samarth building in Dadar's Parsi Colony, says that she feels "horrible" when sitting in her room. Operated for a cancerous tumour in her stomach last year, Kavarana and three other people in her building blame cell phone tower radiation for the disease.

Despite minister of state for communications and information and technology, Milind Deora, stating that there is no proof that radiation from cell phone towers is hazardous to health, citizens continue to be apprehensive.

After six cases of cancer were reported in the past three years in the neighbourhood, the residents of the Parsi Colony are a panicked lot. They have put up banners and distributed handbills in the area, inviting people for a meeting on April 28, protesting against the cell phone towers on buildings in



A resident of Dadar's Parsi colony points at a cell phone tower atop a building in the area on Sunday -AjendraSawarkar

the vicinity.

Kavarana, who is still undergoing treatment post her surgery last year, says, "I can't prove it, but people like me — who have suffered from cancer — have a strong suspicion that it is due to the cell phone towers that came up around here a few years ago."

Aditya Gandhi, whose mother

was detected with ovarian cancer in 2010, says, "Our window opens up to cell phone towers which are less than 35 metres away, on the third floor terrace of the adjoining building."

Some residents have spent large amounts of money putting up radiation films to obstruct the radiation emitted from these

towers. Avaa Jassawalla, who lives in Boman Lodge on Dr. Ambedkar Road, spent over Rs1.5 lakh to put up such films two months ago. "I am unable to enjoy the view from my penthouse apartment, only because of the towers that are just 15 metres away," she says.

ashutosh@ndia.net

Chunabhatti hsg society's protests fall on deaf ears

Ateeq Shalikh @evanstonq

Residents of a housing society in Chunabhatti, Sen, have been protesting against two mobile towers on their building, but their pleas are falling on deaf ears. They claim that their builder has been pocketing the rent paid by the service providers for the towers.

The construction of the building in question, Swami Samarth, started back in 2000, and by 2005, seven floors of the building were ready. Two years later, the builders, Bhadrap-based Shree Swami Samarth Developers, allowed two telecom service providers to install towers on the building.

"It was only in November 2010 that we managed to form a housing society, but the developer tried stopping us by complaining to the registrar of cooperative housing societies saying that the signatures of two residents had been forged," says Kanjanna Shetty, a resident of the building.

Even applications filed under the Right to Information Act by the residents at the local Brihanmumbai Municipal Corporation office proved futile, with officials saying they were unable to trace the files of their building.

A seventh floor resident, Sarla Gangat, says, "The builder is not even doing anything to get the occupation certificate for the building. For over seven years now, we have been requesting him to start the process of getting the mandatory certificate issued, but he doesn't care."

Residents claim that the builder earns around Rs8-10 lakh annually as rent from these two cell phone towers.

Justifying their actions, Sandeep Jalgaonkar of Shree Swami Samarth Developers says, "Earlier, this building did not have any Floor Space Index; it was I who got the Transfer of Development Rights (TDR) at a cost of Rs40-50 lakh, and now, I need to recover my expenses."

ateeq.shalikh@ndia.net

NEWS COVERAGE IN JAIPUR

Dec. 2011

आदिनाथ मार्ग पर ज्यादा रेडिएशन सात लोगों को कैंसर, दो की मौत

रेडिएशन का स्तर खतरे से 1120 गुना अधिक, स्थिति खतरनाक

संगम सञ्चारद्वारा उपलब्ध

[illegible]

एक घर, दो को वैन कैंसर

[illegible]

64 65 66

बनाने की जगह में एसाउथवेल, सेंट्रल पार्क और मीडवॉश के बंगले

११. बल्लिवुड के स्टारिज्म का जमाना है। ये स्टारिज्म क्यों है? इसका कारण क्या है? इसका सामना करने वाले कलाकारों का जीवन कैसा है? इसका सामना करने वाले कलाकारों का जीवन कैसा है?

अगर माबाइल

...तो इन

***MAGNETIC FIELD UNIT**

SEVEN cancer cases in C-Scheme – Jaipur City

अगर मोबाइल टावर सुरक्षित हैं ...
...तो इनकी बीमारी का
राज क्या है?

© 2004 Blackwell Publishing Ltd *Journal of Internal Medicine* 255: 103–110

[illegible]

दो को कैंसर, एक को हृदय रोग, एक को लकवा

किसात सटकी-1

[illegible]

परिवार के मुखिया ही शिक्षण

सोशल लॉग वाले ब्राउज़र की दृष्टि से भी हमें
में हमें जाने चाहिए कि दुनिया 70 वर्षों के
की पहिले एक साल में फिर से एक बार
है। इसका जलवायु हमें इसी तरह से सोचना

11 May 2012

शालीमार बाग समिति ने कहा- तीन की मौत

रेडिएशन से 6 को कैंसर का दावा

नगर संचालकाला | अहमदाबाद

शहर में सौ-बोथी के बन्द अजमेर रोड स्थित शहीदांग्राम कालोनी में मोबाइल टावरों की स्थापना के कारण फैसल से लोगों की चिन्ता बढ़ गई है। शहीदांग्राम ग्राम विकास समिति ने टावर हटाने के लिए प्रशासन के कार्यालय कालोनी के जल लोग फैसल से मिली है। इनमें से तीन की हानि हो चुकी है। समिति ने सफाई संख्या 67 से टावर हटाने की मांग करते हुए संबंधित कंपनी को पत्र भिजा है। हाल ही नगरपाल विकास मंत्री शहीद यादवगाम में मोबाइल टावरों के स्थापना से शहर में सौ-बोथी की स्थापना हो गई है।

If mobile towers were safe.. What is the mystery behind their illness?

जो-कालीन-ले-सुनिश्च-अ-
लगाय-मकर-आ-गए-है

क्षेत्र में
और भी
पीड़ित

अशोक भास्कररावराव
(52) को लार दिने
केन लक्ष्मण कुला। सो-
प्रथित मे कले लारे योना
ने इतले ही भुवार् के लार
कीने अमलना
मे अमल इतना

संसार कर्ममयिवास
मनस्य च
तस्य
मोक्षमिवा
(अर्थात्) यः इत्येव जगत्तु यः (अर्थात्) यः यः
तः सः सः न हिंसायां च सः सः सः सः सः सः
[संसारमयिवास]
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[संसारमयिवास]

[illegible]

Measured
levels from
10 to 50
mW/m²

US Air Force RF Review in 1988

US Air Force RF review in 1988 acknowledges non-thermal biological effects

In the Soviet Union, permissible RF/MW radiation exposure levels for whole-body irradiation are specified for various time intervals. RF/MW radiation exposures may not exceed:

0.1 W/m² for 3 hours/day,

1 W/m² for 2 hours/day, and

10W/m² for 15-20 minutes provided that safety goggles be worn.

Naval Medical Research Institute - USA

Naval Medical Research Institute – USA Report dated 4th Oct. 1971 acknowledges biological effects and has given 2000+ references. Under categories A to Q, they have given more than 130 types of health hazards.

It includes the effects on whole body, brain, eyes, head, blood, heart, infertility, Altered Sex Ratio of Births (more girls!), Hair Loss, Mutation, and so on...

Effect on Birds and Animals

Have you ever seen any bird near cell towers?

May be not, because birds have more volume and less weight, so heating effect is very fast.



Birds and Bees

- Interfere with navigation and reproduction



Animals

- Dairy cows – Decreased milk production, reproductive and developmental problems and decline in overall health.
- Sheep, dogs, cats, rabbits living near base stations affected.

Effect on Plants



4 Cell Towers near Gurgaon-Delhi Toll Naka

In the nearby Farm House, output of most of fruit bearing trees drastically reduced from 100% to < 5% after 2.5 years of cell tower installation.

Expert Group Reported Impacts of Communication Towers on Wildlife Including Birds and Bees (2011)

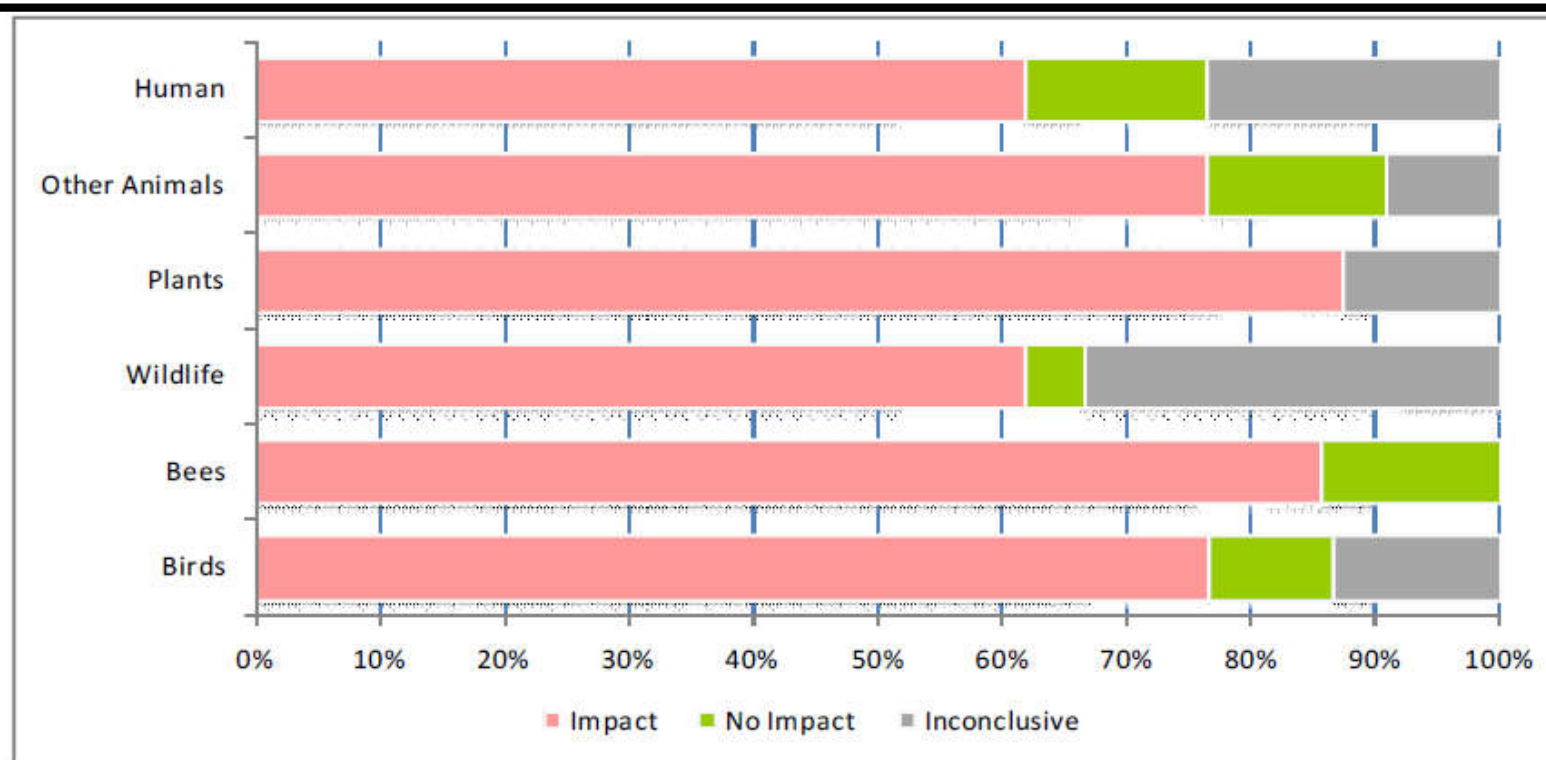
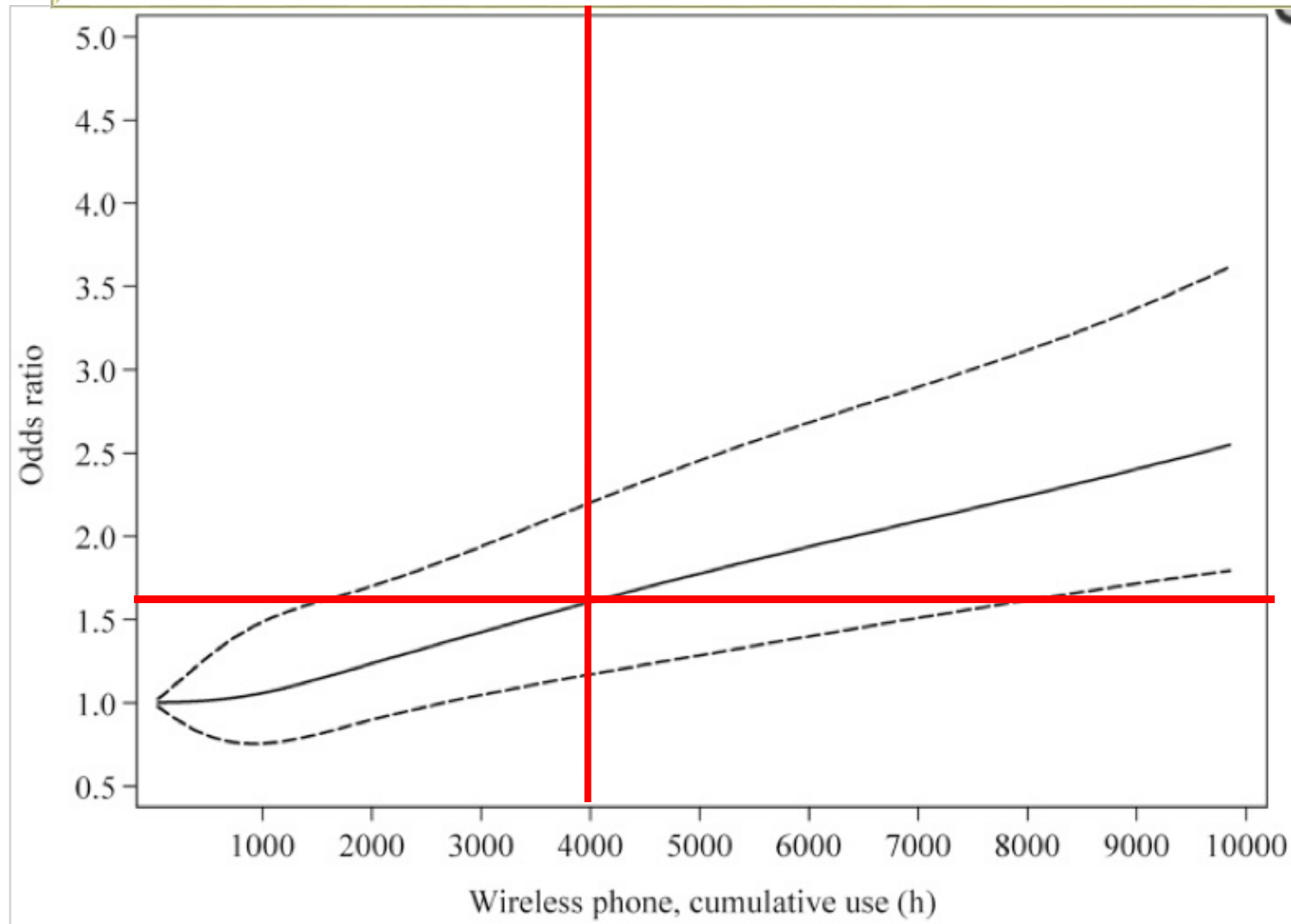


Fig 2. Proportion of study results in various groups of organisms (n=919). The 'Impact' (in red) indicates percentage of studies that reported harmful effect of EMR

Out of 919 research studies collected:

593 - report Impact; **130** - No Impact; **196** - Inconclusive

Malignant Brain Tumors vs. Cumulative Use



4000 hours
= approx.
1 hour use
for 11 years
or
less than
6 months
of 24 hours
exposure to
100 mW/m²

L. Hardell, M. Carlberg, Mobile phone and cordless phone use and the risk for glioma – Analysis of pooled case-control studies in Sweden, 1997–2003 and 2007–2009, Pathophysiology (Oct. 2014)

25,000 Brain Tumours Diagnosed in Andhra Pradesh and Telangana

Deccan Chronicle, Hyderabad – 9 June 2014

Over 25,000 primary brain tumours are diagnosed every year in Andhra Pradesh and Telangana. Of these, about 7 per 1 lakh population are found to be malignant tumors, while about 13 are non-malignant ones.

Dr B.S. Shiva Reddy, neurosurgeon at Medicity Hospital, said, “There are 120 types of brain and central nervous system tumours. The least aggressive type of tumours grow slowly while the malignant tumours, containing cancer cells, grow rapidly invading other body systems.”

Exposure to ionising radiation from therapeutic and diagnostic medical procedures, atmospheric testing of nuclear weapons, industrial accidents and **heavy use of mobile phones also increases the risk of gliomas – a type of brain tumour.**

Neurosurgeon Dr Rama Krishna said, “There is too much of a dispute on the claim that the use of mobile phones will cause tumours. **But it is clear that excessive usage of mobile phones does lead to frequent headaches in a section of people.** Children below 16 years must not be given phones for use as their body systems are still developing and it can cause early damage.”

Scientists Recommend - RF Fields should be classified as “Class 2A” or even “Class 1”

According to Dr. Anthony Miller, who was on the IARC committee, the accumulated evidence is now strong enough to suggest RF fields really should be classified as **Class 2A (probable carcinogen)**.

In Dec. 2013, Hardell group from Sweden showed that the evidence available suggests that RF-EMF exposure from mobile (and cordless) phones should be regarded as **Class 1 "human carcinogen"**.

Alasdair Philips of [Powerwatch \(U.K.\)](#) says, “The criteria on strength, consistency, specificity, temporality, and biologic gradient for evidence of increased risk for glioma and acoustic neuroma were fulfilled.”

In April 2014, it was reported that "Health risk from Wi-Fi devices rising". It stated that “Epidemiological evidence shows that radio frequency should be classified as a known **human carcinogen**.”

SOLUTIONS TO REDUCE EMF HAZARD

- Convince DOT to reduce the norm immediately to $<10\text{mW/m}^2$
- Cellular Operators should reduce transmitted power from **20W/carrier** to max. 1 -2 W in densely populated area.

HOW TO IMPLEMENT ?

Remove the power amplifier or reduce gain of amplifier.

ADDITIONAL BENEFITS:

Cooling of amplifier will not be required: may not need Air conditioner



Power requirement will reduce: may not need Diesel Generator. Solar panel can meet this requirement



Operators can claim carbon credit. Leads to Green Telecom

You can see: [TRAI-Green-Telecom-Openhouse-GK Report](#)

DISADVANTAGES OF REDUCING POWER:

Range will reduce



Install more low power transmitters or low power repeaters



Which will cost them MORE MONEY!

CONCLUSIONS

- ❑ There is RF radiation from cell phones, cell towers, computers, laptops, AM, FM, and TV towers, leakage from microwave oven, Wi-Fi, Radars, etc., which are additive.
- ❑ In addition, there is radiation from overhead high voltage transmission lines, which has been classified by WHO as Class 2B (Possible Carcinogen) in 2002.
- ❑ The awareness must be created among the people. People should unite to convince Govt. of India to adopt stricter radiation norms.