CELL TOWER RADIATION HAZARDS AND SOLUTIONS

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OUTLINE OF PRESENTATION

Cell Tower Statistics

Microwave Heating Principle

Radiation Pattern of Cell tower Antenna

EMF exposure Safety norms

Radiation measurements near cell towers

Review Biological effects

Solutions

Cell Phone and Tower Statistics in India

India Population – 1.2 billion

Mobile Towers – 4.5 lakh

Mobile subscribers – 800+ Million

Microwave Radiation

Microwave radiation effects are classified as:

- Thermal
- **Non-thermal**

The 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.

Microwave Heating Concept

4.2 KW (4200 W) of microwave power raises temperature of 1 Litre of water by 1^0C in 1 second.

In energy absorption term, 4.2 KW-sec microwave energy will increase the temperature of 1 Litre by 1^0C.

For example, in a microwave oven, temperature of one cup of water increases from 30^0C to 100^0C in approx. 70 seconds with 500W of microwave power.

With 1W power (same as output power of cell phones), temp. will increase by 1^0C in 500 seconds.

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 1^0C when cell phone is used for approx. 20 minutes.

Warm sensation/pain > tinnitus > irreversible hearing loss

All these effects lead to Ear Tumor

<u>Tinnitus or "Ringxiety"</u>- sensation of cell phone ring

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

Re-evaluation - Risk underestimated by at least 25%

- For every 100 hours of use -26% ↑ risk of meningioma
- Initial 24% risk of glioma ↑to 55% over 10 years- regular users are taken as people who use it for **2hrs/month.**
- Doubled - quadrupled brain tumor risk - heavy users **(1/2 hour/day)** over 8 to 10 years.
- Children, young adults– excluded. New study - Mobi-kids

WHO: Cell phone use 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

Cell Tower 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)

Cell Towers Installed in Mumbai

Radiation Pattern of Antenna

Horizontal plane

Vertical plane

Radiation Pattern of a Cell Tower Antenna

Propagation of "main beam" from antenna mounted on a tower or roof top

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

Radiation Pattern of a Cell Tower Antenna

Note: Diagram only for illustration

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.

Power Density Calculations

Power density P_d at a distance R is given by

$$P_d = \left(\frac{P_t \times G_t}{4\pi R^2} \right) \quad \text{Watt/m}^2$$

P_t = Transmitter power in Watts

G_t = Gain of transmitting antenna

R = Distance from the antenna in meters

Power Density at distance from cell tower

For P_t = 20 W, G_t = 17 dB = 50

Distance R (m)	P_d (W/m^2)	P_d ($\mu W/m^2$)
1	79.6	79,600,000
3	8.84	8,840,000
5	3.18	3,180,000
10	0.796	796,000
50	0.0318	31,800
100	0.008	7,960
500	0.000318	318

Above values are for a **single carrier and a single operator**.

Power Density for multiple carriers and operators

For P_t = 20 W, G_t = 17 dB = 50

No. of carriers = 5, No. of operators = 3

Distance R (m)	P_d (W/m²)	P_d (μW/m²)
1	1194.0	1194,000,000
3	126.0	126,000,000
5	47.7	47,700,000
10	11.94	11,940,000
50	0.477	477,000
100	0.1194	119,400
500	0.00477	4,770

For **5 carriers** and **3 operators** on the same roof top or tower, radiation level is extremely high.

International Exposure Standards and Guidelines

International Exposure limits for RF fields (1800MHz)	
9.2 W/m²	**ICNIRP and EU recommandation 1998 – Adopted in India**
2 W/m²	Exposure limit in Australia
1.2 W/m²	Belgium (except Wallonia)
0.5 W/m²	Exposure Limit in Auckland, New Zealand
0.24 W/m²	Exposure limit in CSSR, Belgium (Wallonia), Luxembourg
0.1 W/m²	Exposure limit in Poland, China, Italy , Paris, Toronto Board of Health1999
0.095 W/m²	Exposure limit in Switzerl, Italy in areas with duration > 4hours
0.09 W/m²	ECOLOG 1998 (Germany) *Precaution recommendation only*
0.025 W/m²	Exposure limit in Italy in sensitive areas
0.02 W/m²	**Exposure limit in Russia (since 1970), Bulgaria, Hungary**
0.001 W/m²	"Precautionary limit" in Austria, Salzburg City only
0.001 W/m²	Bio-Initiative Working Group 2007) *Precautionary recommendation – outdoor*
0.0001 W/m²	Bio-Initiative Working Group (2007) *Precautionary recommendation - indoor*
0.00001 W/m²	BUND 2007 (Germany) *Precaution recommendation only*
0.00001W/m²	**New South Wales, Australia (2010)**

FCC Guidelines – Human exposure to RF fields

Cellular cell site towers are typically 50-200 feet high.

Majority of cellular or PCS cell sites in urban and suburban areas operate at an ERP of 100 watts per channel or less. An ERP of 100 watts corresponds to an actual radiated power of 5-10 watts, depending on the type of antenna used.

In urban areas, cell sites commonly emit an ERP of 10 watts per channel or less.

http://www.fcc.gov/guides/human-exposure-rf-fields-guidelines-cellular-and-pcs-sites

In INDIA, cell sites transmit 100's of Watts of power with antenna gain of 50, so ERP = 5000 Watts

Other Standards and Guidelines

- **BioInitiative Report 2007 (610 pages)**

1000 $\mu W/m^2$ for outdoor, cumulative RF exposure.
100 $\mu W/m^2$ for indoor, cumulative RF exposure.

- **Building Biology Institute, Germany**

a. <0.1 $\mu W/m^2$ - no concern

b. 0.1 - 10 $\mu W/m^2$ - slight concern

c. 10 - 1000 $\mu W/m^2$ - severe concern

d. > 1000 $\mu W/m^2$ - extreme concern

ICNIRP Guidelines

India adopts ICNIRP guideline for Power density (P_d)
= Frequency /200, frequency is in MHz

For GSM900 (935-960 MHz), $P_d = 4.7 W/m^2$ and
GSM1800 (1810-1880 MHz), $P_d = 9.2 W/m^2$.

ICNIRP has given following disclosure:
ICNIRP is only intended to protect the public against short term gross heating effects and NOT against 'biological' effects such as cancer and genetic damage from long term low level microwave exposure from mobile phones, masts and many other wireless devices.
http://ww.icnirp.de/documents/emfgdl.pdf

Power Absorbed by Human Body

Microwave power absorbed by human body if exposed to so called safe radiation level adopted in India, which is f/200, where f is in MHz?

Area = 1.43 m²

X

ICNIRP Guideline – At 940 MHz, Power density (P_d) is 4.7W/m²

Power received (P_r) by human body will be [$P_r = P_d$ x Area] = 6.75 Watts in one sec.

Microwave oven: 700 to 1000 W. With say 60% efficiency, microwave power output is say <u>500 W.</u>

In one day, microwave energy absorbed will be [6.75 Watts x 60x60x24 sec] = <u>583.2 KW-sec.</u>

This implies that human body can be safely kept in a microwave oven for 1166 secs = 19 minutes per day

Power Received by an Antenna

Power Received P_r by an antenna at a distance R is given by:

$$P_r = \frac{P_t \times G_t \times Area}{4\pi R^2} = P_t \times G_t \times G_r \times \left(\frac{\lambda}{4\pi R}\right)^2$$

- For a transmitter power, P_t = 20 W
- Transmitting antenna gain, G_t = 17.0 dB = 50
- Receiving monopole antenna gain, G_r = 2 dB =1.6
- Received power at R = 50 m is:
- At 940 MHz, P_r = 0.413 mW = -3.8 dBm
- At 1840 MHz, P_r = 0.108 mW = -9.7 dBm

Power density is equal to 31.8 mW/m^2 = 31,800 μW/m^2.

Radiation Measurement at various locations

Cumulative Readings including CDMA, GSM 900, and GSM 1800

Location	Reading in dBm	Readings in W/m2	Readings in microW/m2
Delhi-Gurgaon Highway - near Toll (3 towers)	0	0.0706	70,686
Vashi Bridge - after Railway Station	-4	0.0282	28,274
Resident 1, 4th Fl: Sergean House Lady w/cancer	-6	0.0177	17,756
Resident 2, Opposite roof, Rane Society, Powai	-10	0.00706	7,069
Near Hub mall, Goregaon	-10	0.00706	7,069
Gandhi Nagar Over railway bridge-near building	-12	0.00446	4,460
Ustav Chowk, Kharghar	-12	0.00446	4,460
Vikroli - before Godrej	-14	0.002814	2,814
Govandi- Residential towers - near Indian Oil	-14	0.002814	2,814
Belapur Flyover, near RBI- CIDCO	-16	0.001776	1,776
Vashi Highway – near Turbhe	-18	0.001120	1,120
Nerul Bridge	-20	0.000707	707
Vivero pre School (opposite powai lake)	-22	0.000446	446
Powai police station	-22	0.000446	446
Rajeev Gandhi nagar	-26	0.000177	177
On road near Evita (Hiranandani Building)	-28	0.000112	112
D-Mart,Hiranandani, Powai	-34	0.0000280	28
IIT Bombay School of Management - Entrance	-46	0.00000178	1.78

Measurement inside an Apartment

SERGEANT HOUSE Residence (4th Floor) - Lady has been diagnosed with cancer - Cell phone towers few 10 meters away close to window in main beam. Measured Power levels using Radiation Monitor are in dBm, which are very high.

Health concerns with current Safety Guidelines

BIOLOGICAL EFFECTS

BIOLOGICAL EFFECTS

Multiple Resonances - localized heating - results in boils, drying up the fluids around eyes, brain, joints, heart, abdomen, etc.

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

Risk to Children

Children are more vulnerable as:

- Skulls are smaller & thinner - ↑'s radiation absorption
- ↑rate of Cell division - more susceptible to genetic damage
- Myelin sheath not developed - Electrical brain-wave activity
- Immune system not well developed -less effective against fighting cancer growth

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

Effect on Eye/ Uveal Melanoma

Good quality lens

Ability to focus the laser beam at the various locations is altered.

Prolonged exposure to microwave radiation can lead to macroscopic and microscopic damage to the lens and part of this damage does not heal and accumulates with time.

Irreversible infertility

Continuous exposure → 30% sperm decrease in intensive mobile users, in addition to damage of sperms

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.

DNA Damage

Prof. Henry Lai
University of Washington
1995, Diem *et al. 2005*

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

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

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

EFFECT OF CELL TOWERS *updated on 11Sep'11*

http://www.getmefacts.info/files/emfposter.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

Source: L B Deshpande, who studied the deaths in his Solapur locality since two towers were installed four years ago

Effect on Environment

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.

4 cell towers near Gurgaon-Delhi Toll Naka

Output of most of fruit bearing trees drastically reduced from 100% to < 5% after 2.5 years of cell tower installation.

Report on Possible Impacts
of
Communication Towers
on
Wildlife Including Birds and Bees

(Oct. 2011)

Expert Group to study the possible impacts of communication towers on Wildlife including Birds and Bees *(2011)*

Table 3. Number of research studies (collected from Open access Bibliographic databases) collected and collated based on the study subjects and results

	Impact	**No Impact**	**Neutral/ inconclusive**	**Total (n)**
Birds	23	3	4	30
Bees	6	1	0	7
Human	459	109	174	742
Other Animals (+Wildlife)	85(+13)	16(+1)	10(+7)	111(+21)
Plants	7	0	1	8
Total	593	130	196	**919**

Expert Group to study the possible 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

DOT Inter-Ministry Committee accepts cell phone and tower radiation hazard

INTER-MINISTERIAL COMMITTEE (IMC) Report ON EMF RADIATION was uploaded on DOT website in Jan. 2011.

Mentions several health hazards due to radiation on human health and environment (pages 12-27).

Mentioned Bio-initiative report 2007 has recommended 1000 microW/m2 for outdoor cumulative RF exposure (Page 32).

Yet recommended RF exposure limits in India may be lowered to 1/10th of the existing reference level, which will be 0.92W/m2 for GSM1800 (Page 33)

NEWS COVERAGE

THE TIMES OF INDIA

7 June 2011, Pg 1

State to nix cell towers on schools, hospitals

Prafulla Marpakwar | TNN

Mobile towers in Mumbai **1,600**

On schools and hospitals **500**

6 metres Proposed distance from schools and hospitals

Mumbai: Taking a cue from the widespread concern about mobile towers installed on school and hospital buildings, the Maharashtra government is all set to amend the Development Control (DC) Rules in this regard. Of the 1,600 mobile towers in Mumbai, nearly 500 (or 30%) are atop schools and hospitals. The remaining are on private or commercial buildings.

"Since fears have been expressed about the radiation from mobile towers, we are readying to remove them from school and hospital buildings," a senior official told TOI on Monday. "Once the DC rules are amended, it will be mandatory for the operators to remove the towers within six months."

As per the proposed amendment, the operator will have to submit a certificate stating that the emission is within the permissible level and an undertaking that the existing tower will be removed within six months. "New Delhi has already imposed stringent restrictions on mobile towers. We have proposed that they should be at least six metres away from a school or hospital and that the radar should not face the school or hospital," the official said.

The proposed measures will be implemented by the concerned civic corporation.

The Indian EXPRESS

Chandigarh - 8 June 2011, Pg 1

Inform public about health hazard of mobile towers: High Court to Govt

08.06.11 Ind. Exp. Pg. 04 Pune Edn

RAGHAV OHRI
CHANDIGARH, JUNE 7

EXPRESSING concern over the effects of radiation from mobile towers installed in residential areas, the Punjab and Haryana High Court has held that it will be the duty of the government and mobile companies to inform residents about the harmful effects. A division bench ruled the government will be duty bound to inform the public living where a mobile tower is to be erected, about the "amount of radiation it will emit" and its harmful effects thereof on the health of people. The information will have to be supplied in the shape of a public notice, the court has ruled, before the mobile tower is erected. The HC has also directed the companies in the business of installing mobile towers to do the same.

The directions were passed on an appeal by M/s Wireless TT Info Services Limited and another which had moved the HC against Haryana, challenging the validity of Haryana Municipal (erection of communication towers) by-laws, 2009. HC has upheld by-laws. The petitioner had challenged the levy of tax, terming it unreasonable.

Making it clear that "there is no absolute right to carry on any business", the Bench ruled that "it (business) is always subject to reasonable restriction and regulation", and highlighted the damage being caused due to the radiation originating from the mobile towers. "It will be the duty of the local authorities to issue a public notice for information of all concerned where the permission for erection of a tower is being considered or granted to apprise the public as to what amount of radiation it will emit and the effect thereof on the health of the people living in the area," read the judgment.

The HC held that "the mobiles emit signals in the form of radio waves...It is also feared that the radio waves can cause changes to the cells in our brain. If the DNA in the brain cells get damaged, they may become cancerous and cause brain tumors... it is also feared that the radio waves can alter chemical and electrical reactions in our brain, changing, in effect, the way the brain cells communicate...Studies conducted revealed that sparrows have declined in most contaminated electromagnetic fields".

IBNlive.com

India has worst radiation norms: report

Nikita
CNN-IBN

Mumbai: An Inter Ministerial Report submitted to the Department of Telecommunications (DoT) has recommended the cutting down of mobile phone tower radiation by one-tenth of the present level.

The 5.4 lakh mobile phone towers in the country pose a huge threat to the health of the citizens. Experts say that the amount of radiation emitted from these towers in a day, is equivalent to putting one's body in an oven for 19 minutes!

India has the worst cell phone tower radiation norms in the world. The upper limit is so high that within 2 years the health of 1 crore Indians could be affected.

Actress Juhi Chawla check cell tower radiation

- Got an independent radiation check

The radiation levels were extremely high all around my house!

This is a cause for concern, not only for my family, but also for all the people living in Malabar Hill.

http://www.groundreportindia.com/2011/06/juhi-chawla-radiation-from-sahyadri.html#links

Milind Deora and A.K Mittal of TERM inspects radiation level of mobile towers at Haji Ali, Mumbai

22nd September'11

Measurement Location	Reading (in µW / m²)
Haji Ali Juice Center	**85,000 µW / m²**
Raj Niketan, **Opp. Sahyadri State Guest** House, Malabar Hill	Max: **42,260 µW/m²** Min: ~178 µW/m²

The TERM team says

"We were within WHO limits of 4,500,000 µW/ m²".

ANALYSIS OF READINGS

Standard/ Location	Reading (in µW / m²)	Comments
Indian Guideline - ICNIRP' 98	**4,700,000**	Equivalent to putting a person in microwave oven for 19 min/day.
IMC recommendation - Jan. 2011	4,70,000	However, the report mentions several health hazards at 1000 µW/m².
Haji Ali Juice Center	85,000	This level is very high but TERM says it is safe as it is within ICNIRP guideline
Opp. Sahyadri State Guest House	42,260	Cancer case in this house - "..same as above.."
Range at which health problems have been observed	>10,000 >100	**Several Cancer Cases** observed in India **Headaches, concentration problem, fatigue, miscarriage, joint pains etc** Disclaimer – Symptoms based on Individual sensitivity
Safe Radiation Density level	100	For long term continuous exposure (as per Bio-Initiative Report 2007)

Ultimately, everything is related to Energy

$$\boxed{\text{Energy} = (\text{Power} \times \text{Time})}$$

If we want to be safe for:

- 100 years, power density must be <100 $\mu W/m^2$
- 10 years, power density must be <1000 $\mu W/m^2$
- 1 year, power density must be <10,000 $\mu W/m^2$

Above values are for continuous exposure. If we are exposed for only a few hours per day, then we can afford to be exposed to higher radiation density.

News Coverage in Jaipur, Rajasthan

Dec 2011

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

रेडिएशन का स्तर खतरे से 1120 गुना अधिक, स्थिति खतरनाक

नगर संवाददाता. जयपुर

क्या आप यकीन करेंगे कि जयपुर के सी-स्कीम स्थित आदिनाथ मार्ग क्षेत्र में 100 मीटर के दायरे में ही रेडिएशन का स्तर खतरे का निशान पार कर गया है। यहां यह स्तर 1120 गुना तक पाया गया है। रेडिएशन के इस स्तर का खुलासा मुंबई की नेस्ता रेडिएशन सोल्यूशन ने अपनी रिपोर्ट में किया। आठ माह में यहां कैंसर के सात रोगी और एक आईएएस व एक डॉक्टर की मौत के बाद इलाके के लोग इन हालातों के लिए रेडिएशन को जिम्मेदार मान रहे हैं।

काबिल-ए-गौर है कि मोबाइल टावरों के रेडिएशन के मानक दुनिया में सबसे खराब हमारे यहां 92 लाख माइक्रोवाट प्रति वर्ग मीटर (9.2 वाट प्रति वर्गमी.) तय कर रखे हैं। जबकि दुनिया के अधिकतर देशों में रिहायशी इलाके में 100 माइक्रो वाट प्रति वर्ग मीटर से ज्यादा रेडिएशन खतरनाक है। ऐसे में दूर संचार विभाग की रेडिएशन में मोबाइल कंपनियों पर मेहरबानी पर सवाल उठने लगे हैं कि इस नीति के पीछे भी कहीं 2-जी स्पेक्ट्रम जैसी कोई साजिश तो नहीं छिपी है।

एक घर, दो को ब्रेन कैंसर

संजय

अदिनाथ मार्ग निवासी जैम पैलेस के संचालक दो भाइयों को तीन माह के अंतराल में ही ब्रेन कैंसर हो गया। बड़े भाई 55 वर्षीय संजय कासलीवाल लाखों रुपए खर्च कर आठ माह बाद अमेरिका से लौटे थे कि इसी बीच उनके 52 वर्षीय छोटे भाई प्रमोद कासलीवाल को भी नवंबर में जांच कराने पर ब्रेन कैंसर होने का पता चला। उनका भी अमेरिका में इलाज जारी है। संजय के बार-बार सीजी व रेडियो थैरेपी के कारण आंखें कमजोर हो चुकी हैं, बायां पैर सुन्न रहता है।

शेष | पेज 6

खतरे की जद में एसएमएस, सेंट्रल पार्क और मंत्रियों के बंगले

सी स्कीम के आदिनाथ मार्ग के बी-6डी प्लॉट पर लगे तीन मोबाइल टावरों से सेंट्रल पार्क महज 100 मीटर, मंत्रियों के बंगले 150 मीटर और एसएमएस अस्पताल 250 मीटर की दूरी पर हैं। इन टावरों पर मोबाइल कंपनियों के 12 एंटीना लगे हैं। बी-6डी के आसपास डेढ़ दर्जन घरों में तो रेडिएशन स्तर अंतरराष्ट्रीय मानक से 1120 गुणा तक पाया गया। वहीं विभाग के रेडिएशन मानक से इस इलाके का रेडिएशन स्तर काफी कम है।

रेडिएशन जैसा मुंबई से आए विशेषज्ञों ने मापा

इलाका	रेडिएशन स्तर*
संजय कासलीवाल के घर में	1000
कासलीवाल के घर की छत पर	17000
स्टर्लिंग अपार्टमेंट की मंजिलें	112000
अंडर स्कूल के अंदर	17000
सेंट्रल पार्क के अंदर	7000
शरण मेटरनिटी की छत पर	1000
केसी डायग्नोस्टिक की बालकनी में	17000

*माइक्रो वाट प्रति वर्गमी.

...पर सरकार को खतरनाक नहीं लगा रेडिएशन

दूरसंचार विभाग ने तीन महीने पहले ही शहर के आठ ऑपरेटर्स के मोबाइल टावरों का रेडिएशन स्तर जांचा। सभी जगह रेडिएशन खतरे से कम बताया। सभी ऑपरेटरों को क्लीनचिट दे दी। डिप्टी डायरेक्टर महेन्द्र पंत ने बताया कि शहर में 1000 टावर लगे हैं। किसी में भी रेडिएशन स्तर अधिक पाया गया तो पांच लाख रु. जुर्माना लगेगा।

'यहां हर घर में रेडिएशन'

आदिनाथ मार्ग के लोगों ने हमसे रेडिएशन स्तर चेक करवाया। हर घर में रेडिएशन पाया गया। इलाके में तीन टावर होने के कारण भारी मात्रा में निकलने वाली इलेक्ट्रोमैग्नेटिक किरणें चौबीसों घंटे खतरनाक साबित हो रही हैं। कासलीवाल परिवार में तो दो भाइयों के साथ-साथ कुत्ते को भी कैंसर हो चुका है। क्षेत्र में गिलहरियों व चिड़ियों का निशान बंद हो गया है।

नेहा कुमार, निदेशक, नेस्ता रेडिएशन सोल्यूशन, मुंबई

रेडिएशन से कैंसर रिपोर्टेड नहीं

मोबाइल टावर के रेडिएशन से चिड़चिड़ापन, डिप्रेशन जैसी बीमारियां रिपोर्टेड हैं, लेकिन दुनिया में इससे कैंसर होने की रिपोर्ट मेरी नजर में नहीं आई।

डॉ. रामेश्वर शर्मा, कैंसर चिकित्सक, एसएमएस

एक्सपर्ट व्यू •

हमारे यहां आस्ट्रिया से 10 लाख गुना रेडिएशन का मानक

हमारे यहां कंपनियों के दबाव में रेडिएशन मानक रूस से 460 गुना और आस्ट्रिया से 10 लाख गुना ज्यादा रखा ज्यादा का मी नीन-3 अपने लगा प्रो. (10

केवलादेव उद्यान से मात्र 50 मीटर की दूरी पर मोबाइल टावर। (देखें पेज ▷ 3)

रेडिएशन से खामोश हो रही चहचहाहट

घर-घर में रेडिएशन के बीमार, मोबाइल टावरों के विरोध में प्रदर्शन

एसएमएस स्कूल के पास लगे टावर के विरोध में बच्चों ने प्रदर्शन किया।

लोग लामबंद सरकार गंभीर

अगर मोबाइल टावर सुरक्षित हैं ...

...तो इनकी बीमारी का राज क्या है?

मोबाइल टावरों से निकलने वाला विकिरण स्वास्थ्य के लिए खतरनाक है या नहीं इस पर कोई प्रामाणिक अध्ययन अभी तक मौजूद नहीं है, ये एक तथ्य है। एक तथ्य ये भी है कि शहर की पांच कॉलोनियों में रहने वाले दो परिवारों के कुछ सदस्य कैंसर के हाथों जान गंवा चुके हैं, कुछ कैंसर से लड़ रहे हैं तो कुछ विकिरण से सम्बंधित रोगों के लक्षण दर्शा रहे हैं। तथ्य ये भी है कि इन सभी के घर के पास मोबाइल टावर लगे हुए हैं।

उपेन्द्र शर्मा . हरिश जोशी @ जयपुर

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शहर में माइक्रोवेव विकिरण के खतरनाक स्तर का खुलासा राजस्थान पत्रिका के सर्वे में होने के बाद कुछ परिवारों ने हमारे कार्यालय में सम्पर्क किया। कोई इस लड़ाई में खुलकर सामने आने को तैयार है तो कोई पारिवारिक कारणों से सामने नहीं आना चाहता, मगर सभी का ये ही कहना है कि मोबाइल टावरों के विकिरण की जांच होना जरूरी है। शहर पर छाए इस खामोश खतरे को इन परिवारों ने जीया है, और इनकी मंशा है कि शहर के किसी और परिवार को ऐसी परिस्थिति से नहीं गुजरना पड़े।

@ पेज 02

विकिरण के दुष्प्रभावों से सिर्फ यही परिवार नहीं, कई अन्य लोग भी पीड़ित हो सकते हैं। आपकी जानकारी में ऐसे व्यक्ति या परिवार हों, तो हमारे रिपोर्टर उपेन्द्र शर्मा (99289-13180) व हरिश जोशी (94148-55947) से सम्पर्क करें।

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

राजस्थान पत्रिका — केस स्टडी-1 — सी-स्कीम

शहर की पांच कॉलोनी सी-स्कीम में स्टेच्यू सर्किल से थोड़ा आगे रहने वाले एक सम्भ्रांत परिवार के दो पुरुष सदस्य कैंसर से ग्रस्त हैं, एक सदस्य को लकवा हो गया तो एक महिला सदस्य को हृदय रोग। कारण क्या है.., बिना गहन जांच के कहना मुश्किल है, लेकिन एक तथ्य ये जरूर है कि इनके मकान से सटे मकान की छत पर मोबाइल टावर लगा हुआ है। अपने बच्चों के भविष्य (शादी व कॉरियर) की चिंता के कारण इस परिवार ने हमसे पहचान छुपाने की इच्छा जताई है। लेकिन वे चाहते हैं कि राज्य या केन्द्र सरकार के स्तर पर मोबाइल टावरों पर स्पष्ट नियम-कायदे बनें और इन्हें घने रिहायशी इलाकों से दूर लगाना चाहिए।

परिवार के मुखिया ही शिकार

मोबाइल टावर वाले मकान की दीवार से सटे कमरे में रहने वाले परिवार के मुखिया 70 वर्षीय बुजुर्ग को पिछले एक साल से कैंसर रोग ने जकड़ रखा है। इनका अधिकांश समय इसी कमरे में बीतता था।

सी-स्कीम में स्टेच्यू सर्किल से थोड़ा आगे स्थित पीड़ितों के मकान की छत, जिसके बगल में लगे मोबाइल टावर नजर आ रहे हैं। पत्रिका

क्षेत्र में और भी पीड़ित

"इस पूरे इलाके में दर्जन भर ऐसे लोग हैं, जो कैंसर से ग्रस्त हैं। इस इलाके में कई कम्पनियों के मोबाइल टावर लगे हुए हैं और सरकार तो इलाके में कोई जनरेटर ऑडियल सीधा कराकर रहिए, यदि सच का खुलासा हो सके। उल्टा ही नजिति तो ओर से मुख्यमंत्री, संजय और महापौर को ज्ञापन देने और कानूनी लड़ाई लड़ेंगे।"

एडवोकेट वरुण पुरोहित

जयपुर, अलोक नगर क्षेत्रीय निवासी

कैंसर से लड़े अब नियमों के लिए लड़ेंगे

संजय कासलीवाल

शहर के जाने-माने व्यवसायी कासलीवाल परिवार के दो सदस्यों पर पिछले एक वर्ष में कैंसर की काली छाया पड़ चुकी है। संजय कासलीवाल (55) और प्रमोद कासलीवाल (52) को गत दिनों ब्रेन ट्यूमर हुआ। सी-स्कीम में रहने वाले संजय ने हाल ही मुम्बई के एक शीर्ष अस्पताल में अपना इलाज करवाया और प्रमोद ने कोलंबिया (अमरीका) में। प्रमोद अभी भी अमरीका में ही है। संजय ने शनिवार को राजस्थान पत्रिका को बताया कि हमने चिकित्सा मंत्री, पर्यावरण मंत्री और मुख्य सचिव को इस समस्या के प्रति ज्ञापन भी भेजा है। सरकार से मांग है कि वह मोबाइल टावरों के बारे में कड़े नियम बनाएं और उन्हें सख्ती से लागू करे।

राजस्थान पत्रिका — केस स्टडी-2 — कासलीवाल परिवार

संजय ने बताया कि मुम्बई स्थित मोबाइल कम्पनियों के दफ्तर में शिकायत करने पर वहां से आई टीम ने भी हमें अपनी रिपोर्ट दी है। रिपोर्ट में हमारे घर के पास में लगे टावरों के कारण विकिरणों का स्तर तय मापदंडों से कहीं ज्यादा आया। हाल ही हमने नगर निगम से भी सूचना के अधिकार कानून के तहत मोबाइल टावरों की स्थापना के नियमों के बारे में जानकारी मांगी है। संजय ने जल्द ही प्रशासन के स्तर पर कुछ नहीं होने पर कानूनी कार्रवाई करने की बात भी कही। वे जल्द ही संबंधित अधिकारियों से दोबारा शिकायत करेंगे।

News Coverage in Jaipur, Rajasthan *17 Jan 2012*

चिकित्सा मंत्री भी चिंतित, लिखा सीएम को पत्र

जयपुर . प्रदेश के चिकित्सा एवं स्वास्थ्य मंत्री ए. ए. खान ने मुख्यमंत्री अशोक गहलोत को पत्र लिखकर मोबाइल टावर से निकलने वाले खतरनाक रेडिएशन के लिए राज्य में सुरक्षा निदेशालय खोलने की मांग की है। खान ने रेडिएशन को जनता के स्वास्थ्य के लिए खतरनाक मानते हुए मुख्यमंत्री से मांग की है कि मोबाइल ऑपरेटर्स को पाबंद करने के लिए अब विस्तृत नियम बनाए जाने जरूरी हैं।

पूरे राज्य में है समस्या : खान ने अपने पत्र में लिखा है कि सी-स्कीम में आईआईटी बॉम्बे के प्रोफेसर गिरीश कुमार की ओर से कराए गए रेडिएशन के अंकेक्षण में यह तय मात्रा से ज्यादा पाया गया है। उन्होंने लिखा है कि प्रोफेसर की रिपोर्ट में केवल सी-स्कीम क्षेत्र में मानक उत्सर्जन सीमा से अधिक मात्रा में रेडिएशन का उत्सर्जन पाया गया है जबकि पूरे राज्य में ऐसे कई टावर हैं जो संभवतः इससे भी ज्यादा मात्रा में रेडिएशन का उत्सर्जन करते हैं।

सुरक्षा निदेशालय जरूरी

खान का कहना है कि सर्वोच्च न्यायालय के निर्देशों के अनुसरण में प्रत्येक राज्य में मोबाइल टावर सुरक्षा निदेशालय होना जरूरी है। ऐसे में उनका सुझाव है कि राज्य में मोबाइल टावर स्थापित किए जाने के संबंध में कोई नियम नही है इसलिए विस्तृत नियम बनाया जाना जरूरी है।

ऑपरेटर्स के यंत्र पर विश्वास नहीं : खान ने लिखा है कि राज्य के मोबाइल ऑपरेटर्स में शायद ही किसी के पास रेडिएशन मापने के सक्षम यंत्र उपलब्ध हैं। इसके लिए मोबाइल टावर रेडिएशन सुरक्षा निदेशालय में स्वास्थ्य विभाग, विज्ञान एवं प्रोद्योगिकी तथा रेडिएशन भौतिकी के विशेषज्ञ शामिल हों। निदेशालय सभी टावर्स की मासिक रिपोर्ट प्रस्तुत करे।

IIT expert to help Kolkata City to tackle radiation

The Bengal Post, May 15 2011, Page 5

The Bengal Post CITY 5
Sunday May 15-2011

IIT expert to help city tackle tower radiation

Subhankar Chowdhury

Kolkata: With fears being raised on the effects of electromagnetic radiation from mobile phone towers on the health of humans, an expert from IIT has approached the West Bengal pollution control board and offered his help in tackling the problem. According to a recent report of the PCB, the intensity of electromagnetic radiation in the city has been increasing and could pose a health hazard to residents.

In a bid to deal with the problem effectively, Girish Kumar, a professor of IIT Bombay, who is also a researcher in the field, wrote to the board on Friday, offering to share his expertise with the board in tackling the menace. The professor, who teaches in the electrical engineering department, has also written to the Kolkata Municipal Corporation (KMC) on this issue.

"I have heard that like in other metros, mobile towers are coming up in residential areas and near schools and hospitals across the city. Despite strict rules and regulations, the WBPCB gets at least 15 to 20 complaints every month. I have been working in this area for several years. I had spoken with Shri Chandrasekhar, secretary in the department of telecommunication (DoT) last December about taking concrete steps in tackling cell tower radiation. I hope to share this expertise with PCB officials," the professor said.

The professor had given a presentation on the hazards posed by mobile tower radiation at the Inter-Ministerial Committee (IMC) meeting, DoT, Delhi on October 8, last year. Subsequently, the IMC came out with a report on the same subject in January, this year.

The professor claimed that as per the International Commission of Non-Ionizing Radiation Protection (ICNRP) guidelines, installation of base station antennas within the premises of schools and hospitals must be avoided, because children and patients are more susceptible to electro-magnetic radiation. Installing them in narrow lanes increases the risk of earthquakes or wind related disasters.

The ICNRP is an international scientific advisory body monitoring cell tower radiation and issuing guidelines in combating the danger. However, these rules have been clearly ignored by mobile companies, alleged the IIT expert.

"The problem is that DoT officials often overlook these guidelines and submit to the interests of mobile companies. There is also a lack of public awareness about the perils of cell tower radiation. The best way is to create pressure through public awareness via bodies such as the PCB of respective states so that the DoT officials in turn compel mobile companies to adhere to the guidelines. Therefore, I want to work with WBPCB and KMC," Kumar said.

REASONS TO WORRY

- The IIT professor had given a presentation on the hazards posed by cell tower radiation at the inter-ministerial committee meeting in Delhi on October 8, last year
- Shri Chandrasekhar claimed that as per the ICNRP guidelines, installation of base station antennas within the premises of schools and hospitals must be avoided, because children and patients are more susceptible to electro-magnetic field

REPORT

ON

CELL PHONE TOWERS RADIATION HAZARDS

Submitted To

West Bengal Environment Minister

Prepared By

Technical Advisory Committee

September 2011

Measurements in the presence of West Bengal Environment Minister

20 Recommendations made

Solutions – Better Radiation Norms

- With immediate affect, we should adopt safe radiation level as 0.01 W/m^2, so power transmitted from each tower must be reduced.
- This will reduce coverage area. There may be some call drops initially.
- People must be informed about harmful effects of radiation and this is being done to protect them.
- In 1 to 2 years, the safe radiation level should be reduced to 0.001 W/m^2, this will give enough time to operators to plan the network for smooth operation.
- Requires large number of towers with reduced output power, more number of repeaters, fiber optic solutions, etc.

Solutions – Better Radiation Norms (Continue)

- 24 hours monitoring of cell tower radiation must be done at various places.

- Utmost care must be taken to ensure that main beam of the antenna is not in the direction of residential/office buildings as well as, where there is large concentration of people, animals, birds, trees, etc. Operators must be informed:

"**Reduce the Power or Remove the Tower**"

- **High cost for operators - not more than health of people**

Solutions – How to meet the increased cost?

- Low power RF output (max. 1 to 2 Watts) means less heating and power consumption, so cooling cost is reduced, low power solar solution can be adopted, carbon credit can be claimed.
- Can increase cost per minute by Rs. 0.10
- Govt. can reduce the license fee
- Can be subsidized for 1 to 2 years to recover investment cost.

Cell phones – Cigarettes of 21st century

What do they have in common?

- Produced by Multi-Billion $ Companies
- Products linked to illness
- Industries deny any health problem

Cell tower radiations are even more harmful than cigarettes because

- One can not see it
- One can not smell it
- One can not move away if his house/office is near cell towers

Thank you