Steven Ulrich
5150 Steves Way
El Dorado Hills, CA 95762
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June 26, 2023

El Dorado County Community Development Services
Planning and Building Department
Attn: Cameron Welch
2850 Fairlane Court
Placerville, CA 95667

Dear Mr. Welch,

Attached is a letter of opposition to project file # CUP23-0011. Please include the letter and exhibits in the aforementioned file for review by the Planning Department and other interested parties.

Additionally, please include myself in any notices or other correspondence concerning this project.

Sincerely,

Steven Ulrich

CUP23-0011

El Dorado County Community Development Services
Planning and Building Department
Attn: Cameron Welch
2850 Fairlane Court
Placerville, CA 95667

June 26, 2023

Re: Letter of objection to project file # CUP23-0011

Dear Esteemed Members of the Planning Commission,

It has recently come to our attention that Verizon Wireless has submitted a proposal to build a large cellular communication tower less than 500 feet from our home and approximately one dozen of our neighbors. We are objecting to this project for the following reasons:

1) The tower to be constructed will be in excess of 100 feet tall with approximately 21 antennae attached to it. Our home is directly in sight of the tower and higher than the tower so our view will include both the tower and the associated equipment within the small chain link fence surrounding the 40' x 40' area around the tower. This is a rural area and we believe the project will not only be an eyesore that will ruin the view from our home but as a former real estate agent I have no doubt the placement of the project in this area will detract from the value of the surrounding homes.
2) The amount of commercial equipment visible will not only be an eyesore from our vantage point but will also disrupt the peace and quiet in this area of homes on acreage. It is our understanding that there will be a large, automatically operated generator along with cooling systems/motors in place to service the tower. Although the applicants claim that the noise level will be low, noise travels far in this area due to lack of obstructions to block noises. Any noise generated from this equipment or work being performed on the equipment will still be heard and annoying. Again, it will detract from the peacefulness of the area and hence, detract from the value of the surrounding homes.
3) There are alternate sites available according to the application. Some of the other property owners apparently did not respond to inquiries from the applicant and we can understand why, mainly due to the same reasons we are stating. We believe these type of industrial sites belong in either commercially zoned areas or in more remote areas so they do not interfere with the local residents in such a destructive way. There is a large church to the west of our property on Green Valley Road that would be ideal for this type of project. If it's a matter of elevation, the applicant would have the option to extend the height of the tower to overcome that obstacle.
4) Due to concerns everywhere of Microwave Radiation emitted by these type of large, cellular towers this concern will be especially true in the area of this proposed tower. The application mentions the tower will be within Federal Communications guidelines but those are generally used to monitor the radiation at ground level. Additionally, the report attached to the application that references radiation is only a "computer emission prediction" that may or may not be accurate in this case. The bulk of the radiation will be emitted at the height of the antennae whereas our home and others will be at this level and receiving much more radiation than ground level throughout the day, which the report does not address. We have young grandchildren living next door to our home and they spend a lot time at our house/ property so it is especially troubling knowing they will be exposed to this excessive amount of radiation, the

results of which may not be known for another 20 years according to data we've read. (See attached Exhibit "A", Cell Tower Radiation Hazards and Solutions written by Professor Girish Kumar, Exhibit "B" Human Exposure to Radio Frequencies Fields: Guidelines for Cellular Antenna Sites written by the Federal Communications Commission, Exhibit "C" Microwave Frequency Electromagnetic Fields Produce Widespread Neuropsychiatric Effects Including Depression published by U.S. Government National Library of Medicine, and Exhibit "D" We Have No Reason to Believe 5G Is Safe article in the Scientific American.)

5) Although the project does not mention much in the way of lights at the site, lighting the area would also be an issue as it would more than likely be intense and interfere with the view of the surrounding area.

We believe the above reasons should be enough to disapprove this project at this location by our local government who is the last line of defense of their constituents from unwanted interference by large corporations whose only job is to make money for their shareholders. However, if our rights are not taken into account and the project is approved, we believe there should be restrictions attached to the approval as in any other project brought before the Planning Commission as follows:

1) The proposed tower is designed as a "Mono-Pine" design which would look out of place in this area. Another option in this County is an oak tree design. This type of tower would fit in better with the oak tree landscape that has made this County famous.
2) The proposed fence around the project is a cheap, metal "cyclone" fence with cheap plastic strips added and circular barbed or razor wire topping it. This has a mini-prison look and is totally unacceptable. We believe a better alternative would be a tan, concrete-block perimeter wall, 8' in height, and a concrete-block building to house the noisy equipment within it. Additionally, the area around the outside of the compound should have native trees and bushes planted to further camouflage the compound.
3) Homeowners who have direct sight of the compound should be offered compensation so they can plant trees and vegetation on their property in order to block the view of this project. Although the homes in this area are considered costly, several owners are retired and on fixed incomes and would be unable to afford the cost to put in their own trees to block this compound from view.

We ask the Planning Commission to remember, we did not ask for this project. We just ask you to consider our objections and hopefully, you will not approve this project as presented.

Sincerely,

Steven & Teresa Ulrich

5150 Steves Way
El Dorado Hills, CA 95672

A.P.N. 126-130-073-000

EXHIBIT “A”

CELL TOWER RADIATION HAZARDS AND SOLUTIONS

Prof. Girish Kumar
IIT Bombay
Tel:(022) 2576 7436
gkumar@ee.iitb.ac.in

OUTLINE OF PRESENTATION

RF sources

Radiation Pattern of Cell tower Antenna

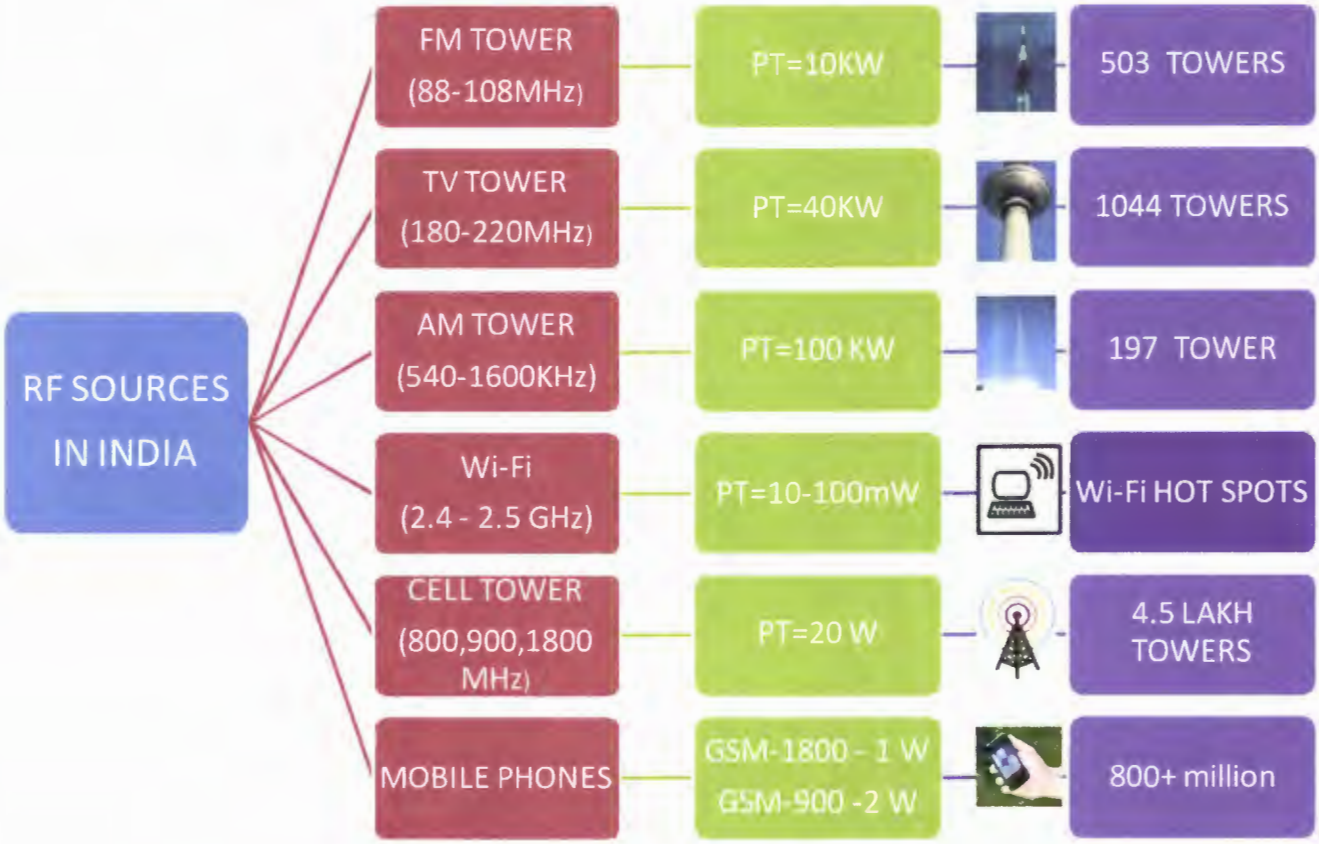
EMF exposure Safety norms

Radiation measurements near cell towers

Review Biological effects

Solutions

RF Sources


RF SOURCES IN INDIA
FM TOWER (88-108MHz)
PT=10KW
503 TOWERS
TV TOWER (180-220MHz)
PT=40KW
1044 TOWERS
AM TOWER (540-1600KHz)
PT=100 KW
197 TOWER
Wi-Fi (2.4 - 2.5 GHz)
PT=10-100mW
Wi-Fi HOT SPOTS
CELL TOWER (800,900,1800 MHz)
PT=20 W
4.5 LAKH TOWERS
MOBILE PHONES
GSM-1800 - 1 W
GSM-900 -2 W
800+ million

Cell Tower Radiation

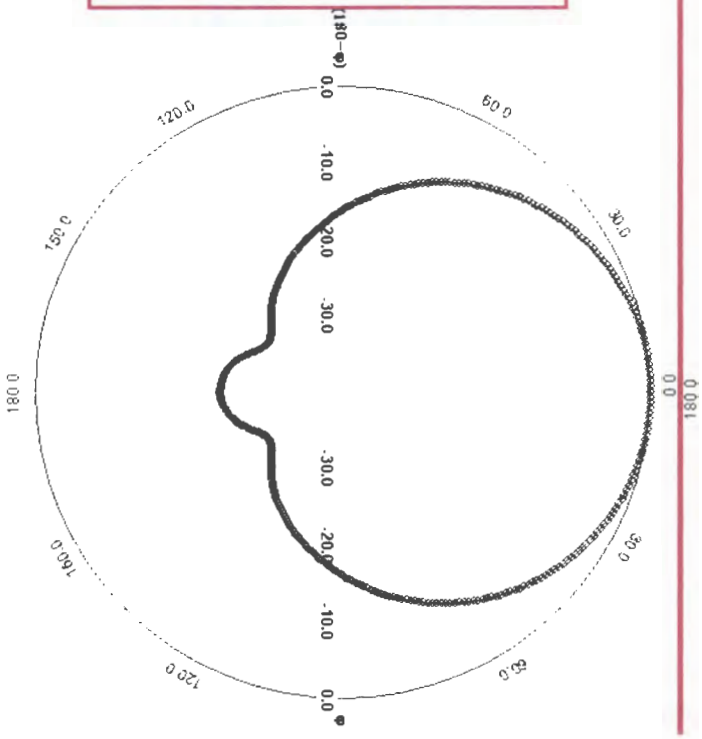
Antennas on Cell tower transmit in the frequency range of:

- 869 - 890 MHz (CDMA)
- 935 - 960 MHz (GSM900)
- 1805 – 1880 MHz (GSM1800)
- 2110 – 2170 MHz (3G)

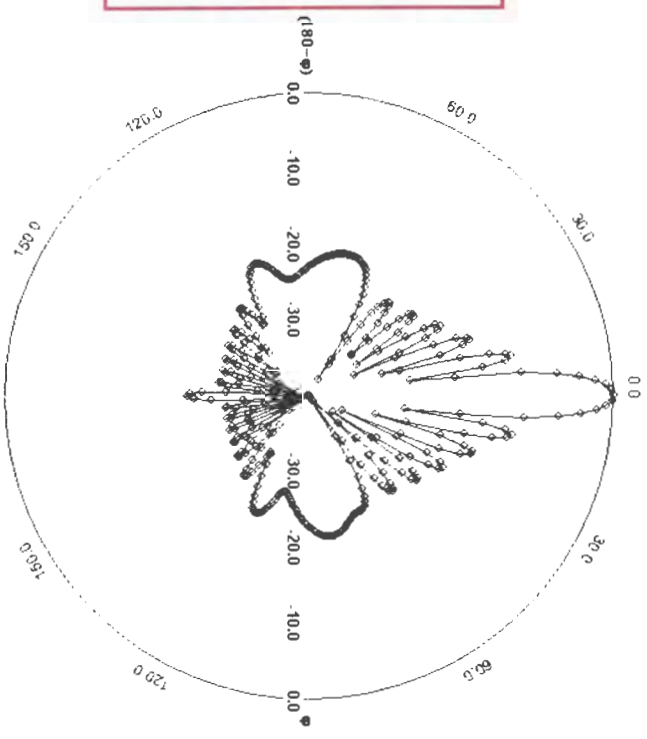
Cell Towers Installed in Mumbai

Radiation Pattern of Antenna

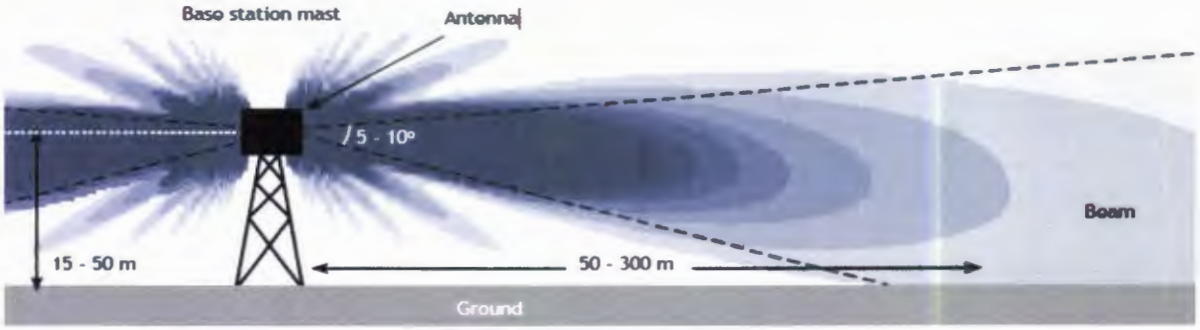
Horizontal plane



Vertical plane



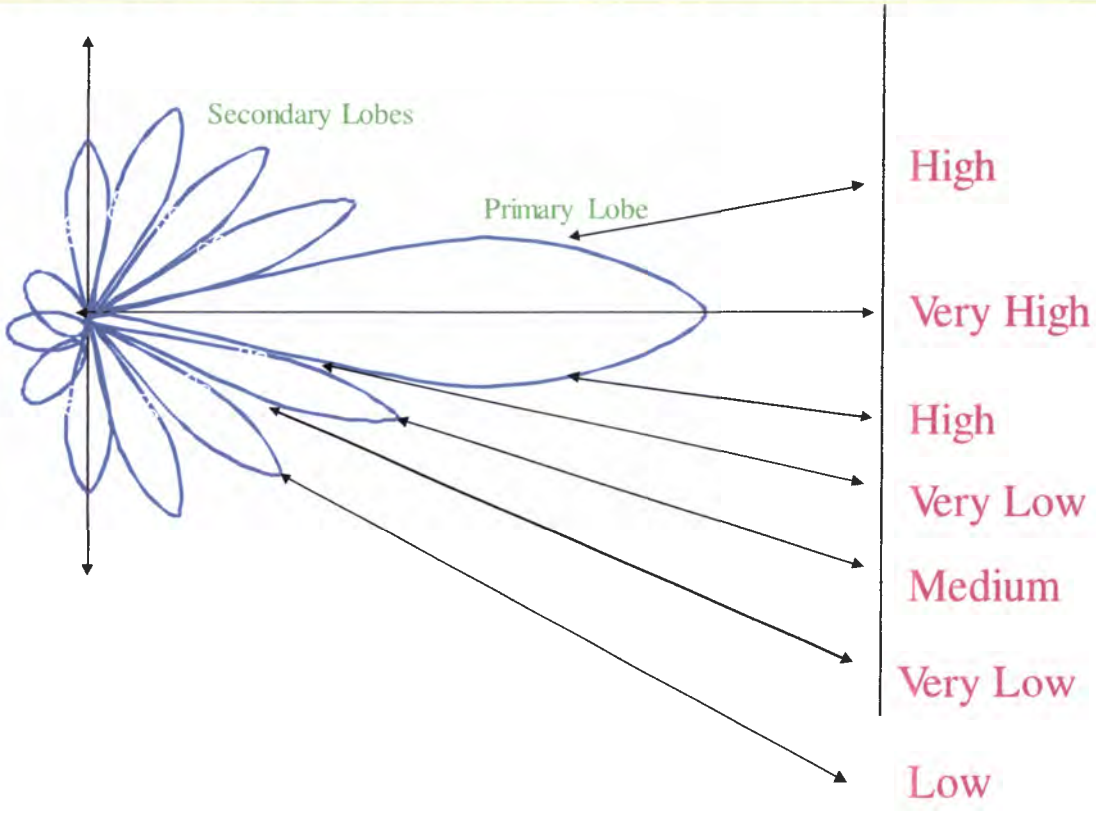
Radiation Pattern of a Cell Tower Antenna



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



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.

Difference between back-haul Circular Dish antenna and cell tower antennas

Operate at higher frequency and lower power. Point-to-point. Not very harmful

Operate at lower frequency and higher power. Point to multi-point. Very harmful

Power Density Calculations

Power density P_d at a distance R is given by

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

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/m^2)	P_d ($\mu W/m^2$)
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), $P_d = 9.2 W/m^2$.

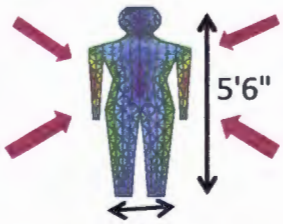
ICNIRP has given following disclosure:

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?



X

Area = 1.43 m²

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 500 W.

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

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

Power absorbed by human body near cell tower

Can one stand in front of a cell tower at 1 m distance for 4 hours continuously?

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

At 1m, Power density = 79.6 W/m^2

Power absorbed in one sec = Pd x .7 (for ½ area) = 55.7 W

Energy absorbed in 1 hour = 55.7 x 3600 = 200.5 kW-sec

For a human body of weight 60 Kg, liquid content at 70% is 42 Litres. So, temp. rise will be 2^{0}F.

In 4 hours, temp. rise will be 8 ^{0}F. Normal body temp will increase from 98.4 to 106.4 ^{0}F. Can one survive?

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

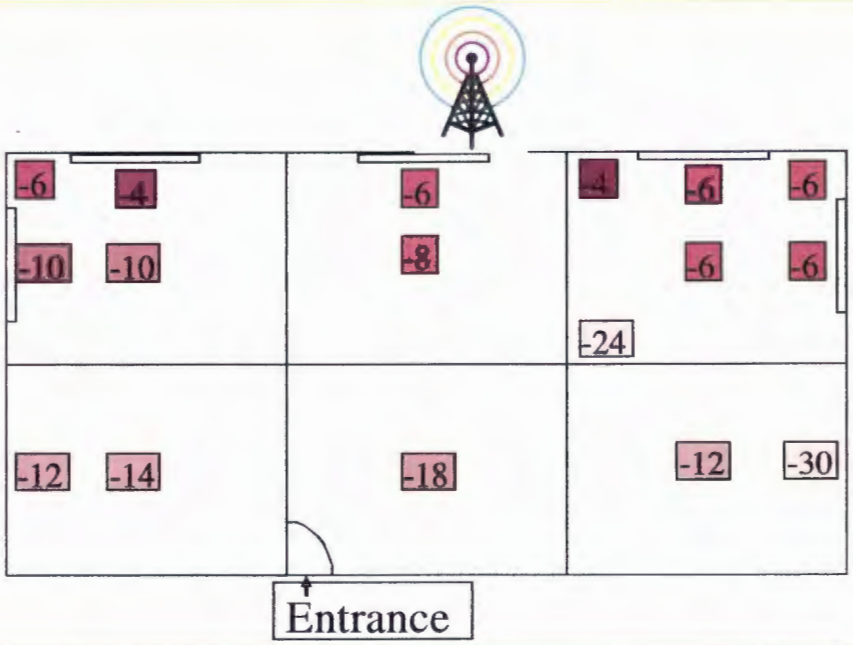
Power density is equal to 31.8 mW/m^2 = 31,800 μW/m^2.

Radiation Measurement at various locations

Cumulative Readings including CDMA, GSM 900, and GSM 1800

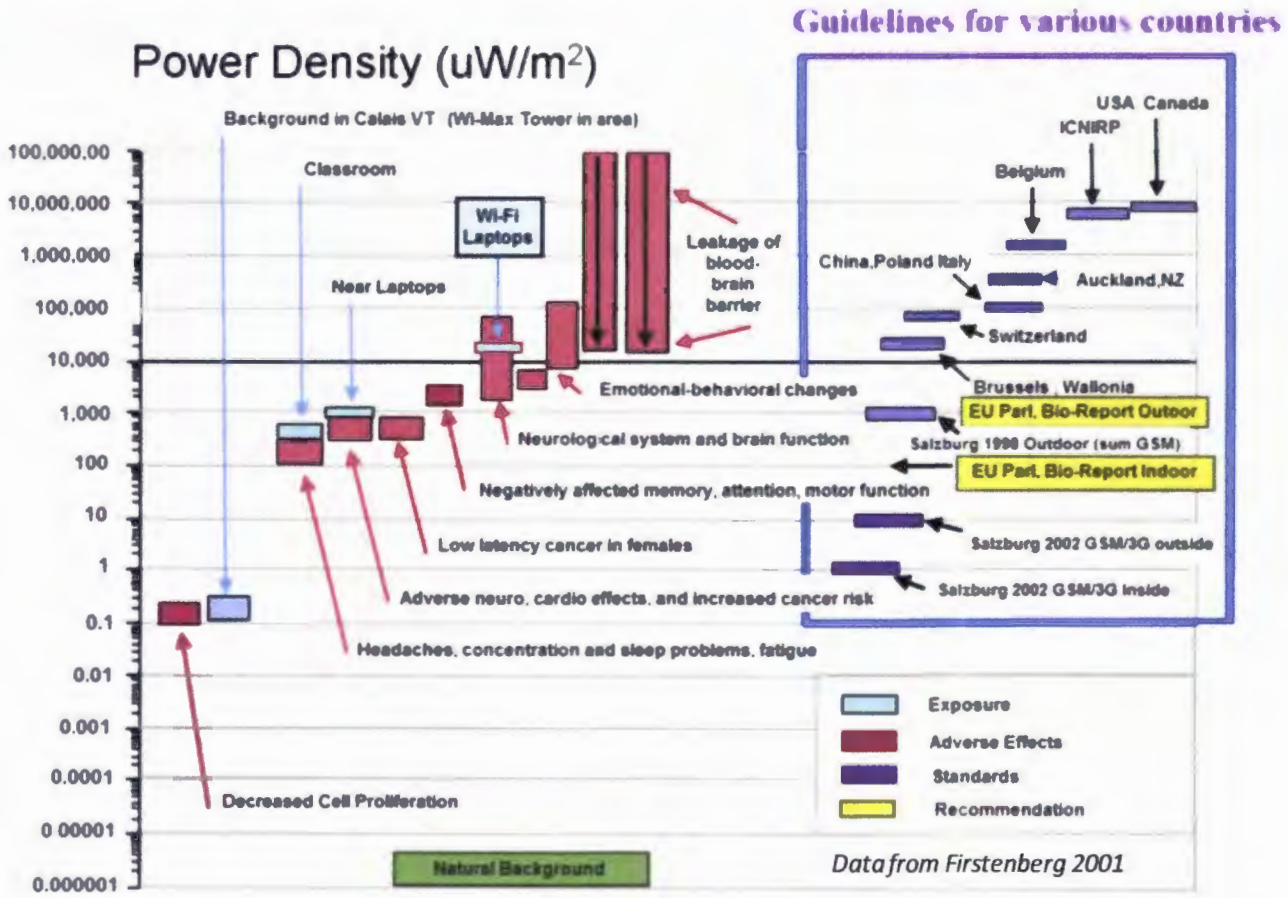
Location	Reading in dBm	Readings in W/m2	Readings in microW/m2
Delhi-Gurgaon Highway - near Toll (3 towers)	0	0.0706	70,686
Vashi Bridge - after Railway Station	-4	0.0282	28,274
Resident 1, 4th Fl: Sergean House Lady w/cancer	-6	0.0177	17,756
Resident 2, Opposite roof, Rane Society, Powai	-10	0.00706	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

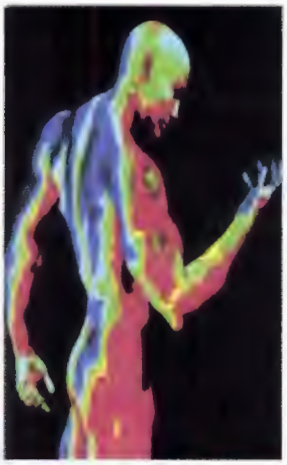
Measurement inside an Apartment

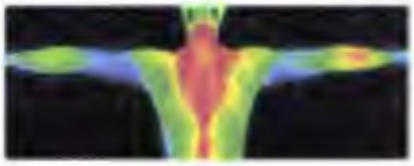


SERGEANT HOUSE Residence (4th Floor) - Lady has been diagnosed with cancer - Cell phone towers few 10 meters away close to window in main beam. Measured Power levels using Radiation Monitor are in dBm, which are very high.

Health concerns with current Safety Guidelines

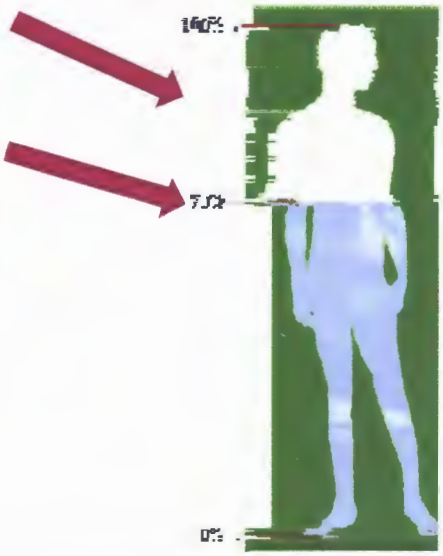


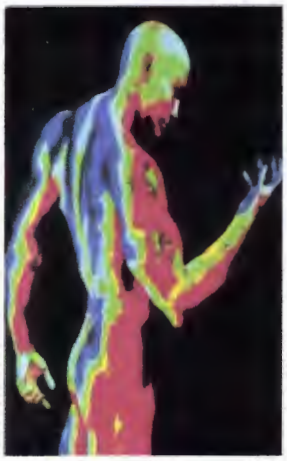




BIOLOGICAL EFFECTS

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

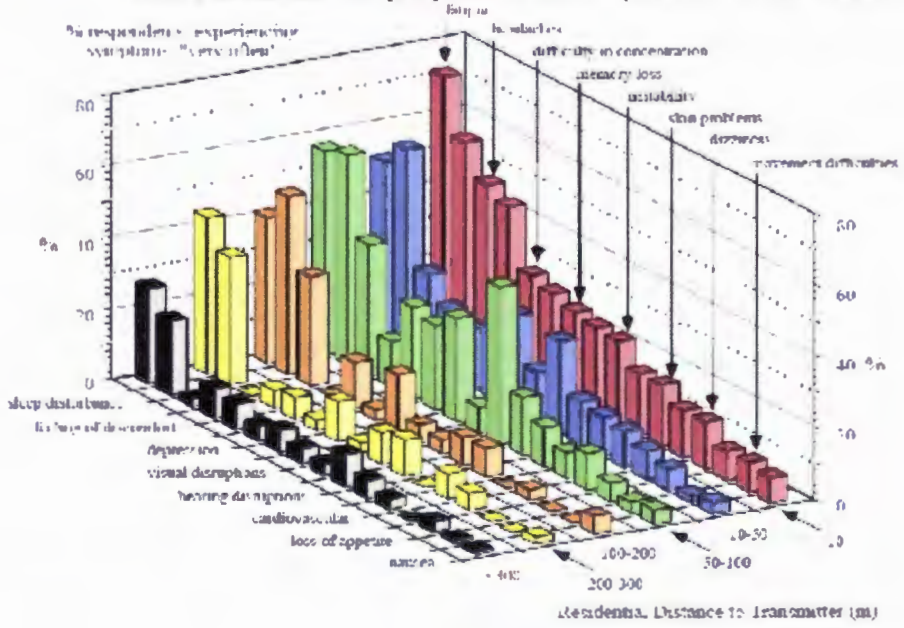
Epidemiological studies- Cell Phone Antennas

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

SPAIN

SPAIN

- Incidents increased with proximity to towers
- Women had more symptoms
- Based on symptoms experiences: Cellular phone base stations should not be sited closer than 300 m to populations. *(Santini R 2002)*



ISRAEL

ISRAEL

Netanya, Irus – Medical Records (Wolf R *et. al* 2004)

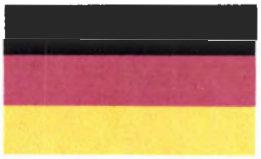
- **Four fold increased** incidence of cancer within 350m after long term exposure to a phone mast compared with the general population of Israel.
- **10- fold** increase specifically among women

Table 1. Cancer cases in area A

Name	Age	Sex	Origin[1]	Smoking	Cancer Type	Measured power density in $\mu w/cm^2$
Hemda	52	f	ash	No	Ovary ca stage 1	$0.3\mu w/cm^2$
Edna	42	f	sph	No	Breast ca in situ	$0.4\mu w/cm^2$
Tania	54	f	ash	No	Breast ca	$0.5\mu w/cm^2$
Neli	67	f	ash	Yes	Breast ca	$0.4\mu w/cm^2$
Galit	24	f	ash	No	Hodgkins	$0.5\mu w/cm^2$
Miriam	61	f	sph	No	Lung ca	$0.3\mu w/cm^2$
Masal	37	f	sph	No	Osteoid osteoma	$0.4\mu w/cm^2$
Max	78	m	ash	No	Hypernephroma	$0.3\mu w/cm^2$

[1] Origin: ash - Ashkenazien Jews sph - Spharadic Jews

GERMANY



GERMANY

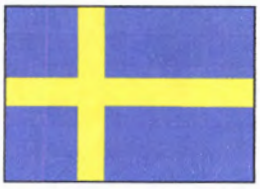
Naila: (Eger H 2004, 2009)

- **3-fold increase** in new malignancies within 400m from a mast after five years exposure
- Breast Cancer topped the list.
- Cancers of the prostate, pancreas, bowel, skin melanoma, lung and blood cancer increased.

Berlin - Head of cancer registry, 2006

- **7 fold increase** in breast cancer

SWEDEN



SWEDEN

- **250,000 Swedes are** electro hypersensitive out of a population of 9,000,000.
- One of the first countries where mobile technology was introduced (approx. 15 years ago).

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

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

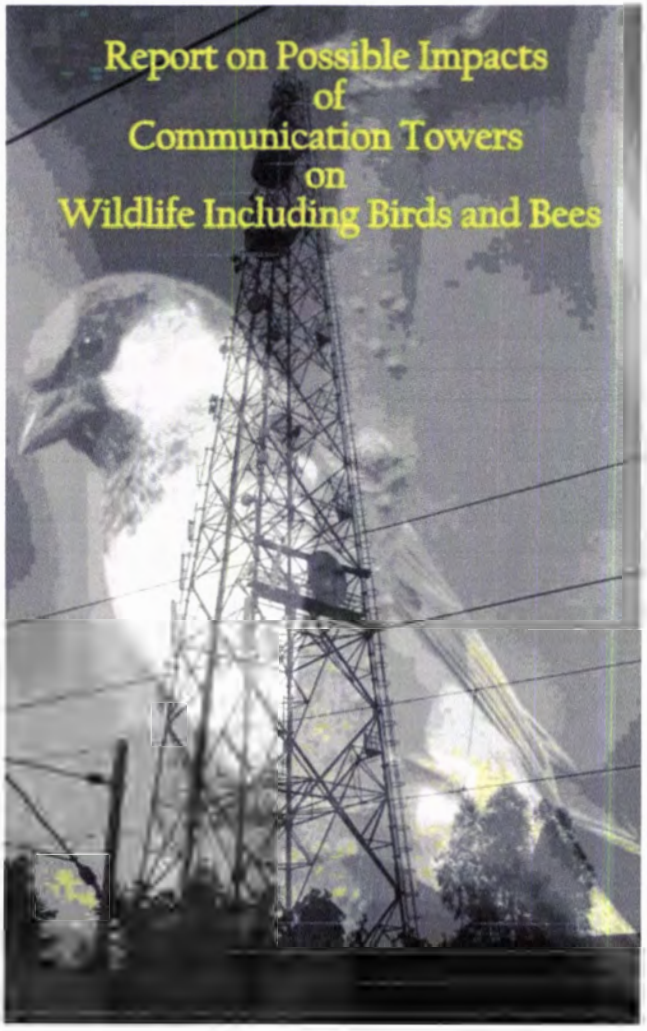
Effect on Environment

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)*

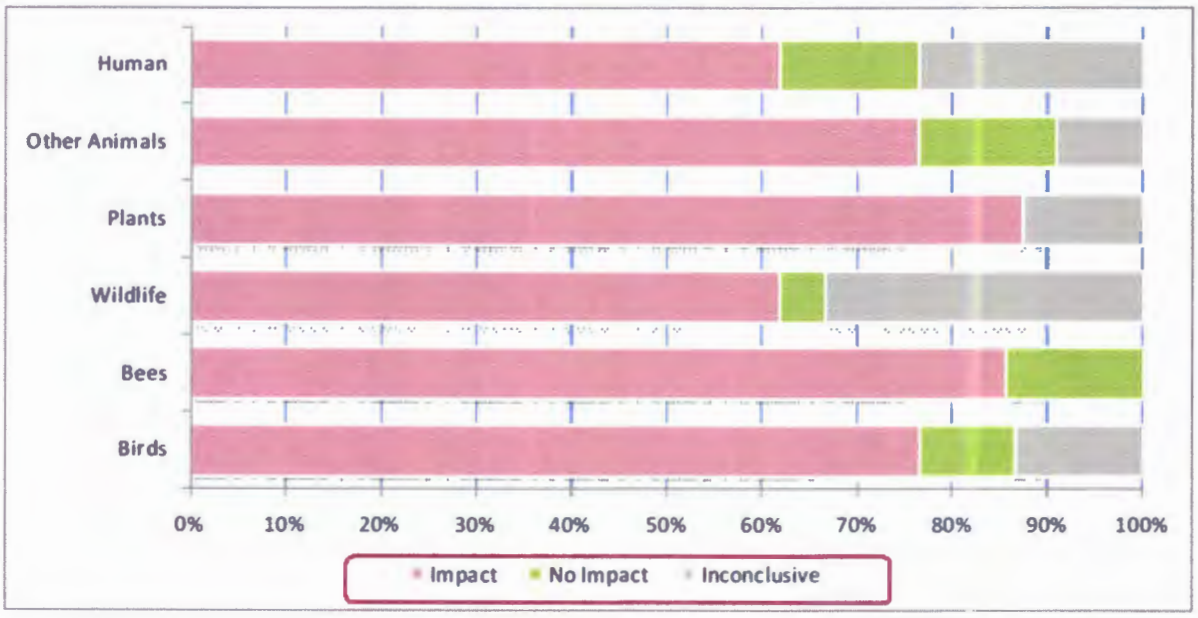
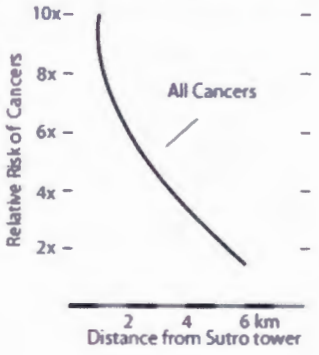


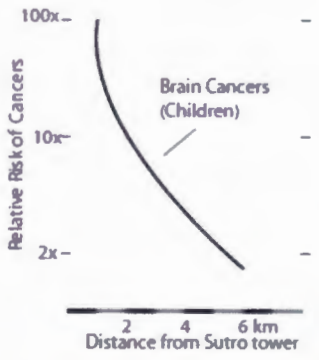
Fig 2. Proportion of study results in various groups of organisms (n=919). The 'Impact' (in red) indicates percentage of studies that reported harmful effect of EMR

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

San Francisco

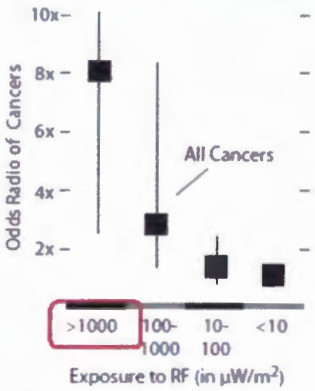
Sutro Tower built 1970s

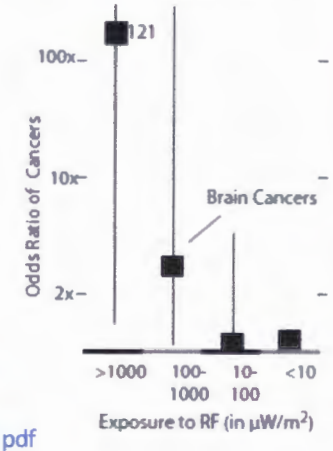




Salzburg, Austria

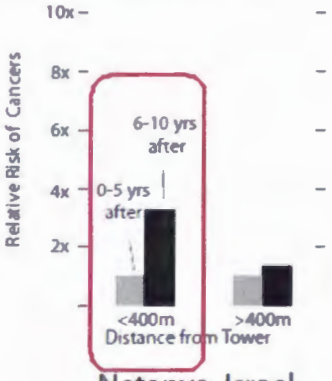
Tower built 1984





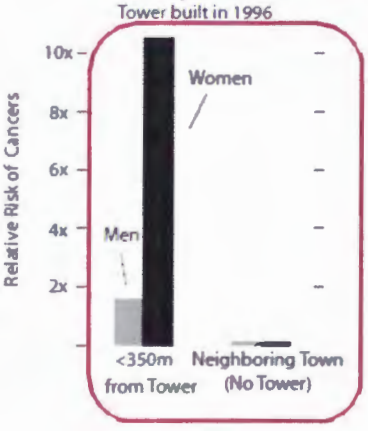
Naila , Germany

Tower built in 1993



Netanya, Israel

Tower built in 1996



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

Automobile industry vs Mobile industry

What do they have in common?

- Both are required, integral part of lifestyle
- Automobiles create air pollution while cell phones and towers create radiation pollution

What is not common?

- Automobile industry has accepted that it creates air pollution and people found solutions, such as, unleaded petrol, catalytic converters, CNG, Hybrid vehicles, etc.
- **Mobile industry is still to accept health problems from cell tower radiations.**

Automobile industry vs Mobile industry

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

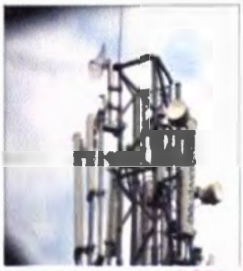
THE TIMES OF INDIA

7 June 2011, Pg 1

State to nix cell towers on schools, hospitals

Prafulla Marpakwar | TNN

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.



Mobile towers in Mumbai **1,600**

On schools and hospitals **500**

6 metres Proposed distance from schools and hospitals

"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

8.06.11
Ind. Exp
Pg. 04
Punjab Edn

BAGHBAN SINGH
TLA

Mohali

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 / m^2)
Haji Ali Juice Center	**85,000 µW / m^2**
Raj Niketan, **Opp. Sahyadri State Guest** House, Malabar Hill	Max: **42,260 µW/m^2** Min: ~178 µW/m^2

The TERM team says

"We were within WHO limits of 4,500,000 µW/ m^2".

ANALYSIS CHECKING

Standard/ Location	Reading (in µW / m^2)	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/m^2.
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

Energy = (Power x 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.

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 on 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 the 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 the 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 meeting in Delhi on October 8 last year. Subsequently the BMC 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 (ICNIRP) 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 another location increases the cost of setting-up of any related electricity.

The ICNIRP is an international scientific advisory body monitoring cell tower radiation and issuing guidelines in combating the danger. However, these guidelines have 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 ICNIRP 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

10 Recommendations

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?

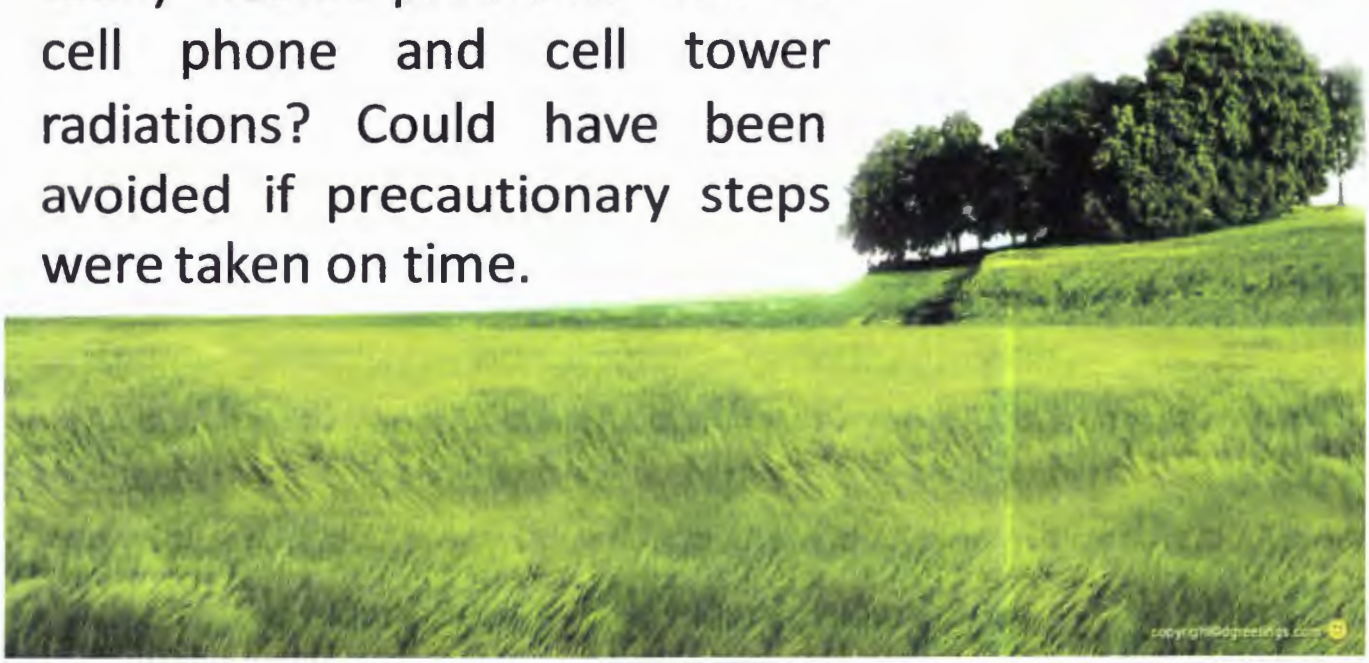
- Produced by Multi-Billion $ Companies
- Products linked to illness
- Industries deny any health problem

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

Children are the Future of Our Nation

Do we want future of our nation to be deaf or suffer from many health problems due to cell phone and cell tower radiations? Could have been avoided if precautionary steps were taken on time.




Thank you

EXHIBIT "B"

Human Exposure to Radio Frequency Fields: Guidelines for Cellular Antenna Sites

Primary antennas for transmitting wireless telephone service, including cellular and Personal Communications Service (PCS), are usually located outdoors on towers, water tanks and other elevated structures like rooftops and sides of buildings. The combination of antenna towers and associated electronic equipment is referred to as a "cellular or PCS cell site" or "base station." Cellular or PCS cell site towers are typically 50-200 feet high. Antennas are usually arranged in groups of three, with one antenna in each group used to transmit signals to mobile units, and the other two antennas used to receive signals from mobile units.

At a cell site, the total radio frequency (RF) power that can be transmitted from each transmitting antenna depends on the number of radio channels (transmitters) that have been authorized by the Federal Communications Commission (FCC) and the power of each transmitter. Although the FCC permits an effective radiated power (ERP) of up to 500 watts per channel (depending on the tower height), the 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. For PCS cell sites, even lower ERPs are typical. As with all forms of electromagnetic energy, the power density from a cellular or PCS transmitter rapidly decreases as distance from the antenna increases.

Consequently, normal ground-level exposure is much less than the exposure that might be encountered if one were very close to the antenna and in its main transmitted beam. Measurements made near typical cellular and PCS cell sites have shown that ground-level power densities are well below the exposure limits recommended by RF/microwave safety standards used by the FCC.

Guidelines

In 1996, the FCC adopted updated guidelines for evaluating human exposure to RF fields from fixed transmitting antennas such as those used for cellular and PCS cell sites. The FCC's guidelines are identical to those recommended by the National Council on Radiation Protection and Measurements (NCRP), a non-profit corporation chartered by Congress to develop information and recommendations concerning radiation protection. The FCC's guidelines also resemble the 1992 guidelines recommended by the Institute of Electrical and Electronics Engineers (IEEE), a non-profit technical and professional engineering society, and endorsed by the American National Standards Institute (ANSI), a nonprofit, privately-funded membership organization that coordinates development of voluntary national standards in the United States.

In the case of cellular and PCS cell site transmitters, the FCC's RF exposure guidelines recommend a maximum permissible exposure level to the general public of approximately 580 microwatts per square centimeter. This limit is many times greater than RF levels typically found near the base of cellular or PCS cell site towers or in the vicinity of other, lower-powered cell site transmitters. Calculations corresponding to a "worst-case" situation (all transmitters operating simultaneously and continuously at the maximum licensed power) show that, in order to be exposed to RF levels near the FCC's guidelines, an individual would essentially have to remain in the main transmitting beam and within a

Federal Communications Commission · Consumer and Governmental Affairs Bureau · 45 L Street NE, Washington, DC 20554
1-888-CALL-FCC (1-888-225-5322) · TTY: 1-888-TELL-FCC (1-888-835-5322) · www.fcc.gov/consumer-governmental-affairs-bureau

few feet of the antenna for several minutes or longer. Thus, the possibility that a member of the general public could be exposed to RF levels in excess of the FCC guidelines is extremely remote.

When cellular and PCS antennas are mounted on rooftops, RF emissions could exceed higher than desirable guideline levels on the rooftop itself, even though rooftop antennas usually operate at lower power levels than free-standing power antennas. Such levels might become an issue for maintenance or other personnel working on the rooftop. Exposures exceeding the guidelines levels, however, are only likely to be encountered very close to, and directly in front of, the antennas. In such cases, precautions such as time limits can avoid exposure in excess of the guidelines. Individuals living or working within the building are not at risk.

Consumer Help Center

For more information on consumer issues, visit the FCC's Consumer Help Center at www.fcc.gov/consumers.

Alternate formats

To request this article in an alternate format - braille, large print, Word or text document or audio - write or call us at the address or phone number at the bottom of the page, or send an email to fcc504@fcc.gov.

Last Reviewed 10/15/19

EXHIBIT "C"

Review J Chem Neuroanat. 2016 Sep;75(Pt B):43-51. doi: 10.1016/j.jchemneu.2015.08.001.
Epub 2015 Aug 21.

Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression

Martin L Pall [1]

Affiliations

PMID: 26300312 DOI: 10.1016/j.jchemneu.2015.08.001
Free article

Abstract

Non-thermal microwave/lower frequency electromagnetic fields (EMFs) act via voltage-gated calcium channel (VGCC) activation. Calcium channel blockers block EMF effects and several types of additional evidence confirm this mechanism. Low intensity microwave EMFs have been proposed to produce neuropsychiatric effects, sometimes called microwave syndrome, and the focus of this review is whether these are indeed well documented and consistent with the known mechanism(s) of action of such EMFs. VGCCs occur in very high densities throughout the nervous system and have near universal roles in release of neurotransmitters and neuroendocrine hormones. Soviet and Western literature shows that much of the impact of non-thermal microwave exposures in experimental animals occurs in the brain and peripheral nervous system, such that nervous system histology and function show diverse and substantial changes. These may be generated through roles of VGCC activation, producing excessive neurotransmitter/neuroendocrine release as well as oxidative/nitrosative stress and other responses. Excessive VGCC activity has been shown from genetic polymorphism studies to have roles in producing neuropsychiatric changes in humans. Two U.S. government reports from the 1970s to 1980s provide evidence for many neuropsychiatric effects of non-thermal microwave EMFs, based on occupational exposure studies. 18 more recent epidemiological studies, provide substantial evidence that microwave EMFs from cell/mobile phone base stations, excessive cell/mobile phone usage and from wireless smart meters can each produce similar patterns of neuropsychiatric effects, with several of these studies showing clear dose-response relationships. Lesser evidence from 6 additional studies suggests that short wave, radio station, occupational and digital TV antenna exposures may produce similar neuropsychiatric effects. Among the more commonly reported changes are sleep disturbance/insomnia, headache, depression/depressive symptoms, fatigue/tiredness, dysesthesia, concentration/attention dysfunction, memory changes, dizziness, irritability, loss of appetite/body weight, restlessness/anxiety, nausea, skin burning/tingling/dermographism and EEG changes. In summary, then, the mechanism of action of microwave EMFs, the role of the VGCCs in the brain, the impact of non-thermal EMFs on the brain, extensive epidemiological studies performed over the past 50 years, and five criteria testing for causality, all collectively show that various non-thermal microwave EMF exposures produce diverse neuropsychiatric effects.

Keywords: Excessive calcium effects; Low-intensity microwave electromagnetic fields; Oxidative/nitrosative stress.

Related information

Cited in Books
MedGen

LinkOut - more resources

Full Text Sources
Elsevier Science

Other Literature Sources
scite Smart Citations

Medical
ClinicalTrials.gov
Genetic Alliance
MedlinePlus Health Information

Miscellaneous
NCI CPTAC Assay Portal

EXHIBIT "D"

Observations
| Opinion

We Have No Reason to Believe 5G Is Safe

The technology is coming, but contrary to what some people say, there could be health risks

By Joel M. Moskowitz on October 17, 2019

Credit: Bill Oxford *Getty Images*

The telecommunications industry and their experts have accused many scientists who have researched the effects of cell phone radiation of "fear mongering" over the advent of wireless technology's 5G. Since much of our research is publicly-funded, we believe it is our ethical responsibility to inform the public about what the peer-reviewed scientific literature tells us about the health risks from wireless radiation.

The chairman of the Federal Communications Commission (FCC) recently announced through a press release that the commission will soon reaffirm the radio frequency radiation (RFR) exposure limits that the FCC adopted in the late 1990s. These limits are based upon a behavioral change in rats exposed to microwave radiation and were designed to protect us from short-term heating risks due to RFR exposure.

Yet, since the FCC adopted these limits based largely on research from the 1980s, the preponderance of peer-reviewed research, more than 500 studies, have found harmful biologic or health effects from exposure to RFR at intensities too low to cause significant heating.

Citing this large body of research, more than 240 scientists who have published peer-reviewed research on the biologic and health effects of nonionizing electromagnetic fields (EMF) signed the International EMF Scientist Appeal, which calls for stronger exposure limits. The appeal makes the following assertions:

"Numerous recent scientific publications have shown that EMF affects living organisms at levels well below most international and national guidelines. Effects include increased cancer risk, cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive system, learning and memory deficits, neurological disorders, and negative impacts on general well-being in humans. Damage goes well beyond the human race, as there is growing evidence of harmful effects to both plant and animal life."

The scientists who signed this appeal arguably constitute the majority of experts on the effects of nonionizing radiation. They have published more than 2,000 papers and letters on EMF in professional journals.

The FCC's RFR exposure limits regulate the intensity of exposure, taking into account the frequency of the carrier waves, but ignore the signaling properties of the RFR. Along with the patterning and duration of exposures, certain characteristics of the signal (e.g., pulsing, polarization) increase the biologic and health impacts of the exposure. New exposure limits are needed which account for these differential effects. Moreover, these limits should be based on a biological effect, not a change in a laboratory rat's behavior.

The World Health Organization's International Agency for Research on Cancer (IARC) classified RFR as "possibly carcinogenic to humans" in 2011. Last year, a $30 million study conducted by the U.S. National Toxicology Program (NTP) found "clear evidence" that two years of exposure to cell phone RFR increased cancer in male rats and damaged DNA in rats and mice of both sexes. The Ramazzini Institute in Italy replicated the key finding of the NTP using a different carrier frequency and much weaker exposure to cell phone radiation over the life of the rats.

Based upon the research published since 2011, including human and animal studies and mechanistic data, the IARC has recently prioritized RFR to be reviewed again in the next five years. Since many EMF scientists believe we now have sufficient evidence to consider RFR as either a probable or known human carcinogen, the IARC will likely upgrade the carcinogenic potential of RFR in the near future.

Nonetheless, without conducting a formal risk assessment or a systematic review of the research on RFR health effects, the FDA recently reaffirmed the FCC's 1996 exposure limits in a letter to the FCC, stating that the agency had "concluded that no changes to the current standards are warranted at this time," and that "NTP's experimental findings should not be applied to human cell phone usage." The letter stated that "the available scientific evidence to date does not support adverse health effects in humans due to exposures at or under the current limits."

The latest cellular technology, 5G, will employ millimeter waves for the first time in addition to microwaves that have been in use for older cellular technologies, 2G through 4G. Given limited reach, 5G will require cell antennas every 100 to 200 meters, exposing many people to millimeter wave radiation. 5G also employs new technologies (e.g., active antennas capable of beam-forming; phased arrays; massive multiple inputs and outputs, known as massive MIMO) which pose unique challenges for measuring exposures.

Millimeter waves are mostly absorbed within a few millimeters of human skin and in the surface layers of the cornea. Short-term exposure can have adverse physiological effects in the peripheral nervous system, the immune system and the cardiovascular system. The research suggests that long-term exposure may pose health risks to the skin (e.g., melanoma), the eyes (e.g., ocular melanoma) and the testes (e.g., sterility).

Since 5G is a new technology, there is no research on health effects, so we are "flying blind" to quote a U.S. senator. However, we have considerable evidence about the harmful effects of 2G and 3G. Little is known the effects of exposure to 4G, a 10-year-old technology, because governments have been remiss in funding this research. Meanwhile, we are seeing increases in certain types of head and neck tumors in tumor registries, which may be at least partially

attributable to the proliferation of cell phone radiation. These increases are consistent with results from case-control studies of tumor risk in heavy cell phone users.

5G will not replace 4G; it will accompany 4G for the near future and possibly over the long term. If there are synergistic effects from simultaneous exposures to multiple types of RFR, our overall risk of harm from RFR may increase substantially. Cancer is not the only risk as there is considerable evidence that RFR causes neurological disorders and reproductive harm, likely due to oxidative stress.

As a society, should we invest hundreds of billions of dollars deploying 5G, a cellular technology that requires the installation of 800,000 or more new cell antenna sites in the U.S. close to where we live, work and play?

Instead, we should support the recommendations of the 250 scientists and medical doctors who signed the 5G Appeal that calls for an immediate moratorium on the deployment of 5G and demand that our government fund the research needed to adopt biologically based exposure limits that protect our health and safety.

The views expressed are those of the author(s) and are not necessarily those of Scientific American.

ABOUT THE AUTHOR(S)

Joel M. Moskowitz, PhD, is director of the Center for Family and Community Health in the School of Public Health at the University of California, Berkeley. He has been translating and disseminating the research on wireless radiation health effects since 2009 after he and his colleagues published a review paper that found long-term cell phone users were at greater risk of brain tumors. His Electromagnetic Radiation Safety website has had more than two million page views since 2013. He is an unpaid advisor to the International EMF Scientist Appeal and Physicians for Safe Technology.

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