

Antennas
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Module - 02
Lecture - 07
Antenna Radiation Hazards-II

Hello and welcome. In the last lecture we talked about cell phone radiation and what are the guidelines given by WHO and we notice that WHO has already classified cell phone as possible carcinogen and designated as class 2B. We also looked at what are the precautions which we can take for using safely cell phone and my strong recommendation is please try to limit your cell phone use per day to maximum about 20 minutes or so.

Today let us look into what are the cell tower radiation characteristics, how it is radiating, in which direction it is radiating and what are the associated health hazards and precautions which we need to take.

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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.



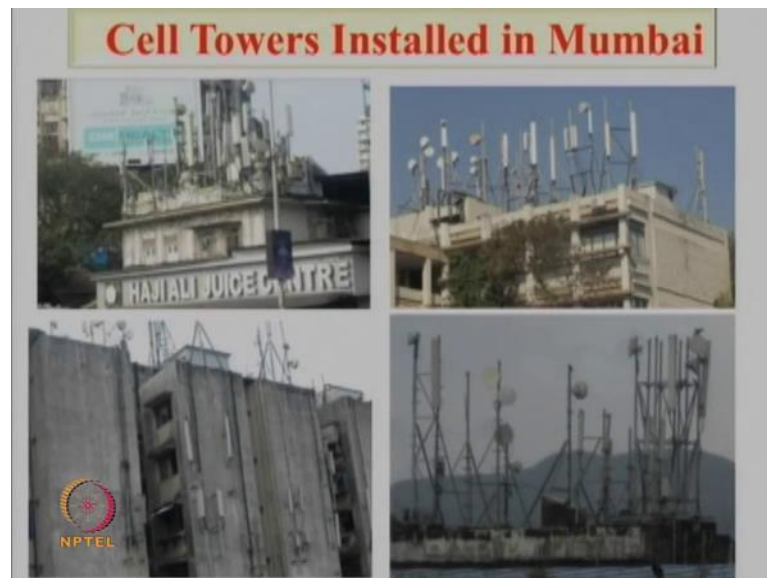
So, let us see now in India we have various technologies which are prevalent in the rest of the world also. So, we have a CDMA technology works in this frequency range GSM900 technology which is 900 range, GSM1800, then we have 3G or 4G has just started in India and the big launches have been taking place and also we have a Wi-Fi,

Bluetooth which radiates exactly in the same frequency range as of a microwave oven and these days in India there is a big push by our prime minister.

So, he is talking about digital India and he is talking about smart cities, but unfortunately in the smart cities the agenda is invariably Wi-Fi and I felt that the smart cities would be a city where we can get a absolute neat and clean drinking water, we do not have to buy Bisleri or other branded water, we need clean air to breath you do not want air pollution over there we want good roads and the city we want housing for all the people, we want good education for each and every sector then only a city will become smart city.

Unfortunately there is a over emphasis on Wi-Fi enabled and that we think or it is being said that you will become smart well that is not really true and too much Wi-Fi creates lot of health problem also and I strongly recommend all of you people to see this website which is Wi-Fi in schools dot com and this website is dedicated to help the public realize that wireless internet or Wi-Fi or cell phone or cell tower all those things emit radiation that cause serious health effect which is damage to DNA, cancer and infertility.

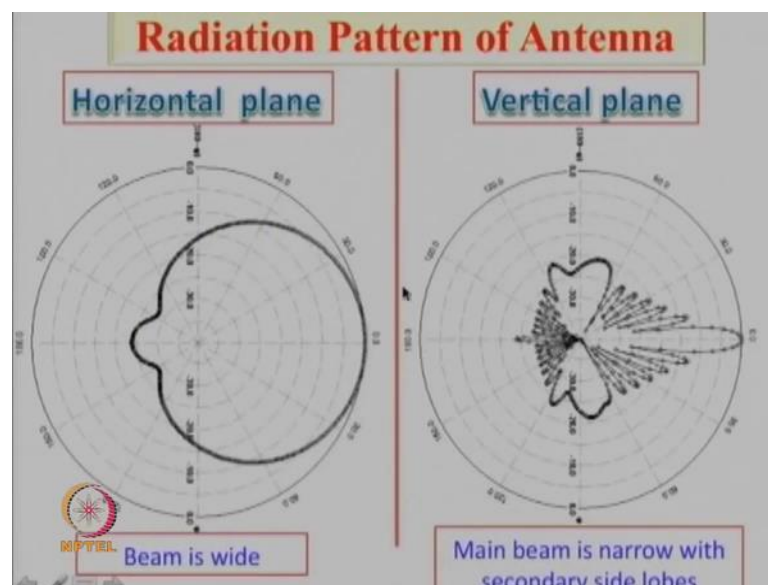
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So, let us just see the way these antennas have been installed all over the country in a very haphazard manner. So, you can see that you know there are number of antennas on a given rooftop and in India we allow them to transmit about 20 watt of power and you can see there at least 10 of these antennas are there. So, 200 watt power is getting transmitted from one roof top.

Now, just to compare this power in a microwave oven typical microwave power inside a microwave oven which is getting generated, is of the order of 500 watt and in that 500 watt power food gets cooked in one or two minutes or five minutes depending upon the size of the food. You might have noticed that if you just put one cup of water that one cup of water starts boiling in just about one to two minutes. So, now you think about the human body which consists of 70 percent liquid what is happening to that this radiation is penetrating and unfortunately these cell towers are transmitting 24 hours a day and I want to actually mention here how this radiate.

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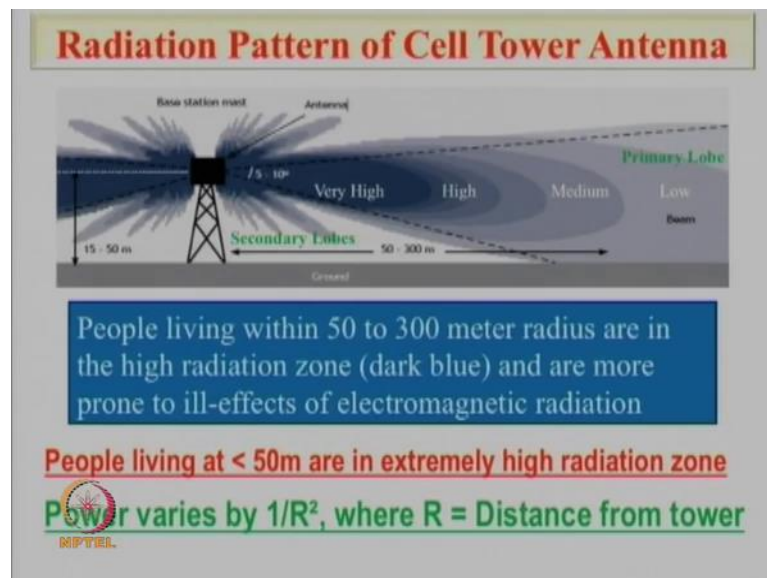
So, let us just say that this is the tower in fact, I call them vertical tube light or there is a reason tube light takes time to turn on similarly our human brain is taking time to understand this microwave radiation. The reason is we cannot see the radiation, we cannot smell the radiation, we cannot you know visualize the radiation and also the effect happens over a long time.

So, for these radiations we define where is the maximum radiation. So, the maximum radiation is generally in the front side direction. So, this is normally radiation pattern is a three dimensional pattern, but here I shown in two plane horizontal plane and vertical plane. So, in the horizontal plane, suppose if there is a antenna here. So, in the horizontal direction one can see that the beam is wide there is a relatively less radiation in the back side and this is generally used to cover about 120 degree. So, what they do? They put a

one antenna like this orienting like this then another one at 120 degree which will cover this region and another 120 degree angle which will cover this. So, that is how they cover 360 degree in the horizon.

Now, in the vertical plane the radiation is maximum in the front direction. So, you can see that this beam is relatively narrow, but there are lots of these side lobes which are present over here. Now this is what we have been discussing about antennas. So, we know that this is the main lobe and these are the side lobe over here this is the back radiation. So, now, people living in this direction will receive maximum radiation, people living over here will receive relatively lesser radiation. So, this is the radiation pattern of the antenna.

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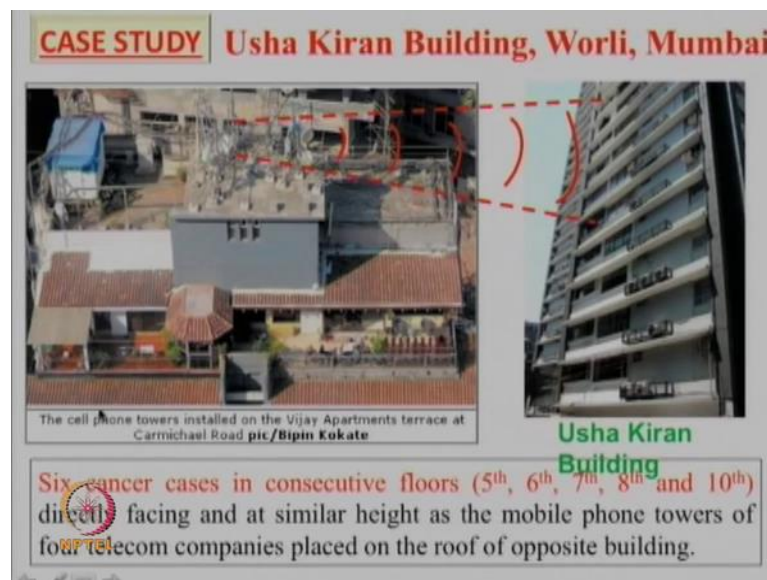
Now, we also know that the radiation pattern also varies as the power varies as 1 by R square where R is the distance from tower. Now this thing I have taken from German website and what it shows here 50 to 300 meter distance is there and what it says people living within 50 to 300 meter radius are in the high radiation zone and are more prone to ill effects of electromagnetic radiation.

Now, you please recall the example which I gave in my previous to previous lecture. So, we had calculated radiation density at 50 meter as well as 300 meter. So, at 50 meter radiation density was approximately 31 milliwatt per meter square and at 300 meter it was approximately 0.9 milliwatt per meter square.

Now, see according to them even those values are causing ill effects. So, how can we adopt in India 900 milliwatt per meter square for GSM800 and also I want to mention what this actually shows here 50 to 300 meter, but there are people who may be living at less than 50 meter distance and these are then people in the extremely high radiation zone and I also want to mention that these are the things for just one antenna on a rooftop.

Now, if there are multiple antennas and pointing in this particular direction then the health hazard will be even more and a more drastic.

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So in fact, about three four years back one case was reported in the Mumbai area, were what it was reported that 4 cancer cases were reported here in this building on 6th floor, 7th floor, 8th floor and the reason later on was found out that on the opposite building on the 7th floor is multiple antennas were installed. So, from the 7th floor if you now not recall the previous radiation pattern the radiation is in the front direction. So, the maximum radiation will be moving towards this direction so 6th floor, 7th floor, 8th floor people will be receiving more radiation. So, that is why they were four cancer cases and while this discussion was going on number of cancer cases increased from four to six because this is the leading edge and the trailing edge.

So, people living on the other floors also started developing health problem. So, then what happened? 2 years later 6 cancer cases were reported and you can see that these

were on 5th floor, 6th floor, 7th, 8th and 10th and after very long discussion back and forth finally, these towers were removed, but about two people meanwhile died because of the cancer.

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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 ZEALAND (Auckland)	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 - inside 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		

So, how do we define the radiation now? So, as I mentioned earlier India had adopted ICNIRP guideline and that is for GSM900 it was 4500 and for GSM1800 it is 900, for 3G and 4G it is 10000 and then after great effort in fact, I have made roughly 30 to 40 trips to Delhi in the last 5-6 years, we made presentation TC, TRAI, DOT we made presentation to inter ministry committee and so on and finally, government reduce the norm to one-tenth of ICNIRP guideline on September 1, 2012. But we still feel it is very high as I mentioned earlier ICNIRP guidelines are good for 6 minutes per day and one-tenth of that will be good for 60 minutes per day which is one hour where a cell tower radiation is 24 hours a day. So, this norm is very very high.

So, now let see here Austria New South Wales had proposed 0.01, Austria Salzburg actually adopted at 1 milliwatt per meter square also. If you see all these countries are avail less value except if you look at the USA here which is 3000 and many a times people say oh! USA has a very high norm why should we concerned about, but if you actually look at the USA FCC guideline OET 56, page 21 and what is written there, that they allow high power transmission along highways or rural area, but in the urban area power transmitted is about 0.5 to 1 watt and where as in India we allow them to transmit

20 watt of power and which is 20 times more and that is why people are developing health problem in 2 to 5 years. So, if it was reduced by 20 times the health problem will be shifted by decades.

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Guidelines of 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


MPTTEL

Now, just see this here Austrian medical association. So, these Austrian medical guidelines came in March 2012 and they have been very clear about that. They have written very specifically, that irrespective of ICNIRP recommendation - regular exposure of more than four hours per day, just see what we have mentioned - greater than one milliwatt per meter square itself is very far above normal and what we have? We have 450 or even 1000 for 3G and 4G and that is also for 24 hour exposure, which is extremely high and dangerous to the health of the people.

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NEWS COVERAGE in HT – 07 JAN.

Radiation affects health: global report

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

HARM TO HEALTH
The Bioinitiative 2012 report refutes claims by cell phone operators that there is no conclusive evidence to prove correlation between radiation and health problems

COMBAT RADIATION EFFECTS
The Bioinitiative 2012 report refutes claims by cell phone operators that there is no conclusive evidence to prove correlation between radiation and health problems

INDIA'S LIMIT IS 450 milliwatts/sq m

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

BIO-INITIATIVE REPORT 2012

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

In fact, I would like to bring here a bio-initiative report - the two reports came, one report came in 2007, other report came in 2012. Now 2000 report give 2000 scientific papers references and 2012 give report of 1800 research paper. So, there are more than 3800 paper which say that there are strong evidences of health effect and by the way these roughly 3800 and many more have come in the last 4 years. So, let say more than 4000 paper they have been published in best possible journals of the world, they have been written by the scientist of the world these papers have been reviewed by the various scientist. So, all of them cannot be wrong.

Of course, I want to tell you also that there are roughly 25000 paper which say there are no health hazard or there is a no conclusive evidence and in fact, scientist around the world actually went through that and find out that that 75 percent of those papers are funded by industry. So, one has to be careful and anyway you cannot ignore 4000 scientific papers which say there are health hazards.

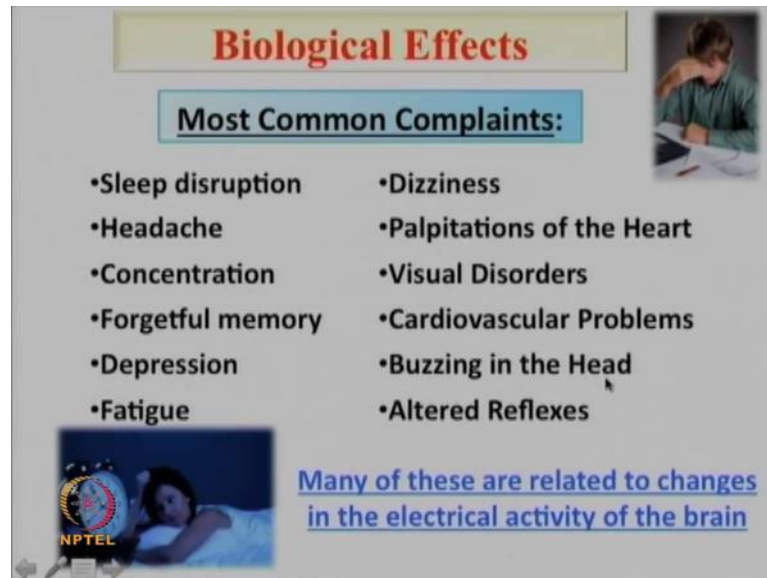
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Radiation Measurement at Various Locations			
Cumulative Readings including CDMA, GSM 900, and GSM 1800			
Location	Reading in dBm	Readings in W/m2	Readings in milliw/m2
Terrace, New Rajindra Nagar, Delhi	+09	0.561	561
Resident 1, Bedroom - Chowpatty	+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. Sergean 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
Rajawade Gandhi nagar	-26	0.00018	0.18
On road near Evita (Hiranandani Building)	-28	0.00011	0.11
D-Market Hiranandani, Powai	-34	0.000028	0.028
IIT Bombay School of Management - Entrance	-46	0.0000018	0.0018

Now, we have done the measurement at thousands of places and I just want to mention here at this place we measured the radiation density to be 17.7 milliwatt per meter square and the lady in that house developed cancer within 1 year. In fact, we had sent our team to do the radiation measurement in that Usha Kiran building where we had a 4 to 6 cancer cases and we found out that the radiation intensity was 5 to 10 milliwatt per meter square.

Now, these are the health concerns with the current guideline so in fact actually speaking it is not just that the health problem only it is the last thing which is a cancer. In fact, lot of health problems start occurring even at 0.1 milliwatt per meter square also. So, these are it starts with the headache it starts with the sleep disorder dizziness and so on and so forth.

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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

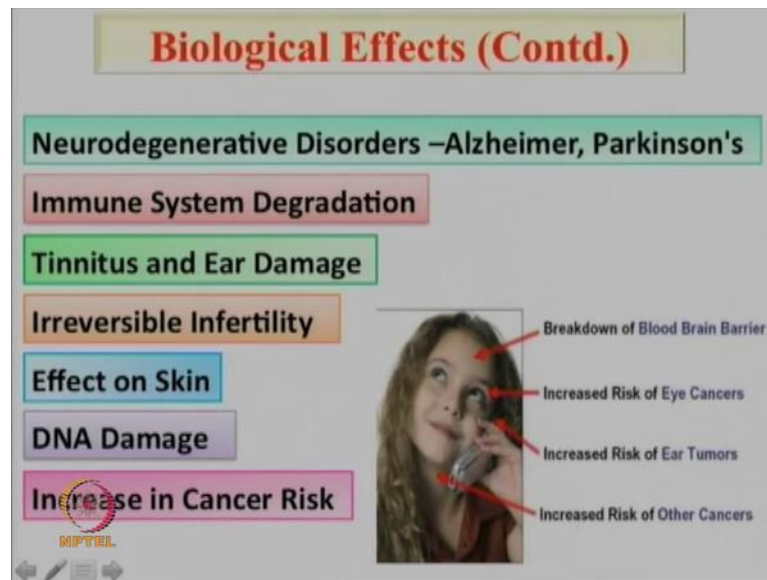
Many of these are related to changes in the electrical activity of the brain

NPTEL

So, what are the most common complaints if you use cell phone for longer time or if you live close to the cell phone tower or work close to the cell phone tower you may actually have a problem like sleep disruption or disorder, headache, concentration problem, forgetful memory, depression fatigue and irritation and so on and so forth.

And, if you ignore that then the problem can be little more serious now dizziness problem, heart problem, especially if you are keeping cell phone next to your heart, visual disorder problem, cardiovascular problem, buzzing in the head and so on and if you ignore that then things become even more serious.

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So, especially as I mentioned earlier if you feel start feeling headache then it can lead to Alzheimer and Parkinson's disease also, immune system degradation I already mentioned about ear, irreversible infertility has now become a major major concern. It has been reported that if you are exposed to the cell tower radiation infertility is one of the possibility and in fact, cell phone many people keep the cell phone in their pant pocket and for men it is affecting the sperm count and for ladies or girls it is affecting the, ovaries are there near that. So, the x in the ovaries are getting affected it is also affecting the skin it is causing a DNA damage and then DNA damage lead to increase in the cancer risk.

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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

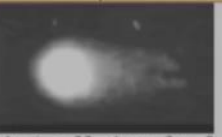


Fig.3 Cell Phone level microwave exposure 2hrs 2.45GHz reaching so called safe SAR levels
Comet Tail = DNA Damage

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

So in fact, this study has been carried out by Professor Henry Lai. So, here is a bundle of a DNA one can see that at nice spherical bundle here not this bundle is exposed to x-ray. So, one can see that x-ray has lot of energy. So, it can break the DNA you can see that the break in the DNA is very very obvious, but now coming to the cell phone or microwave or Wi-Fi radiation.

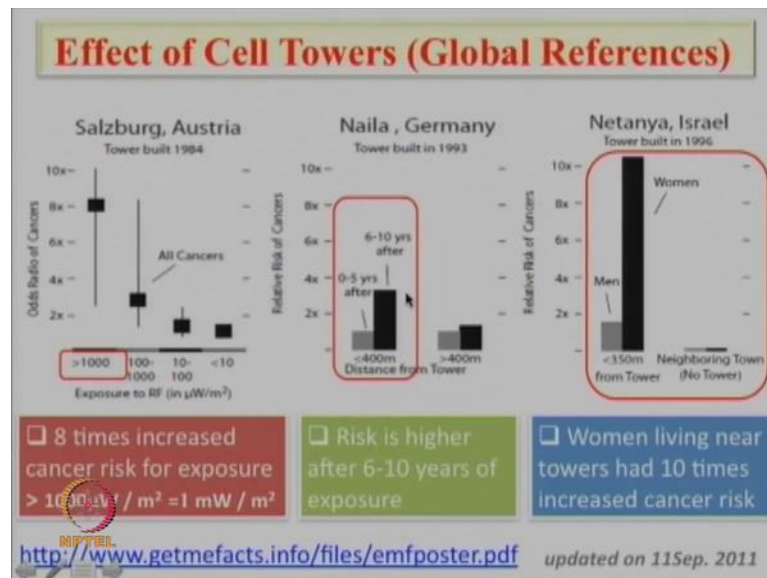
So, not that does not have enough energy to break the bond like this, but you can see that there is a DNA damage and I also mention that earlier also when these molecules (Refer Time: 16:48) cause a DNA damage and when damage to DNA is greater than rate of DNA repair there is a possibility of retaining mutation and initiating cancer. So, this means that not only we will get affected, but our coming generation will also get affected.

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Now, let us see the studies which have been done around the world. So, you can see some nice pictures of the things which we have put for you around the world.

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So let us see; what is happening let start with the center of attraction Naila Germany. Tower was built in 1993 and they have studied the people living within 400 meter distance. So, in the first 0 to 5 years this is their order ratio of getting cancer that approximately about 1.1 one being normal. So, one 1.1 there is not much of a difference, so one can ignore that. After 5 years there may not be much affect, but 6 to 10 years later

see what is happening that is about 3.2 times. So, people living within 400 meter actually are prone to the cancer risk ratio to 3.2 times.

Now, let us just see why Austria adopted such a stuff norm. So, what they observed that the people who are exposed to this is a 1000 microwatt per meter square which is equivalent to 1 milliwatt per meter square. So, people who are exposed to that radiation the increase in order ratio is 8 times. So, now, you can imagine what is going to happen after about 6 to 10 years of the installation of the cell tower we may have a real cancer in the entire country.

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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

RIPTTEL

So, this is the study reported from Brazil. So, they direct link to the 4,924 cancer deaths which happened and these were the people who were living 80 percent of these victims were living within 500 meter from the cell phone because of the radiation.

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Now, these are some of the coverage in India. So, one can actually see that this is a coverage in Mumbai. So, cancerous cell phone towers panic Parsi colony. So, 6 cancer cases were reported in 3 years and in fact, in my first newsletter I have reported many of these cases and you can actually download my newsletter just says cell phone or cell tower radiation newsletter or you can send an email to me I will mail you my newsletter.

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This is the study reported in Jaipur. So, basically we can see here 7 cancer cases in one area, 6 cancer cases in another area. In fact, several other reports are there. So, there are

cancer clusters near the cell tower. So, later on what happened? The seller operators came, they started doing the measurement and they said all the towers are within the norm and the norm was very high.

In fact, then we sent our team to these places and we found out at the measured levels were between 5 to 15 watt per meter square; and what is the norm 450 to 900 milliwatt per meter square. So, definitely those norms are very very high.

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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.

The slide includes three images: a bee on a purple flower, a colorful parrot, and a group of brown cows in a green field.

Now, we talked about the effect on the human being, but let us also talked about the effect on birds and animals because birds and animals are most of the time outdoor specially the birds they are flying around. So, let me ask you a simple question have you seen any bird near cell towers and chances are you have not because the birds get affected very significantly because of the cell tower radiation and you might have noticed that the sparrow population all over the world is going down.

In fact, some of the countries have now actually started saying sparrows are endangered species. In fact, it is actually affecting the honeybee's population also. It is also affecting the animals in fact, it has been reported that the dairy cows which are living close to the cell tower the milk yield has gone down drastically.

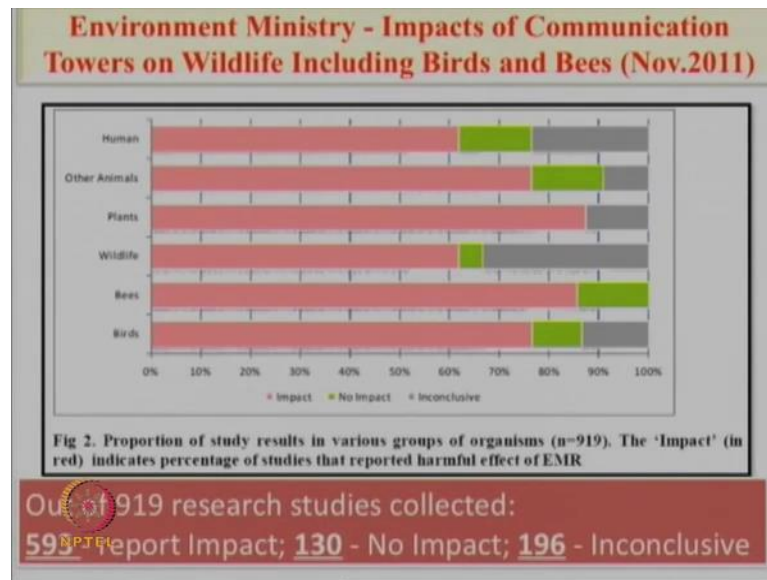
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So, now this is also affecting the plants also. In fact, this picture is taken by me this is actually the four cell towers are there located in Gurgaon-Delhi Toll Naka area and I have taken picture from this farm house here and the owner of the farmhouse actually told me that after the cell towers have been installed there lemon yield has gone down from 100 to less than 5 that is a 95 percent reduction. In fact, after that I myself did measurements at so many places where people had complaint about let us say the mango yield going down, guava yield going down. In fact, orange was a very strange case. So, oranges which were earlier this big size after the installation of the cell tower few years later their size became smaller.

Why? Because the tower antenna is fixed here a tree is fixed here so there is a constant radiation coming from there. So, the water molecules in this fruit starts vibrating and that creates problem so in fact, the size reducer and also these oranges became bitter. So, later on the owner actually cut the tree. So, similar things which we have noticed in fact, a especially in the some of the places like in west Bengal and in Kerala, Tripura and other places they have actually reported that the coconut yield has gone down again coconut trees are tall like this cell of towers are there they are constantly radiating towards there. In fact, the even a reporter that some places even the water inside the coconut is getting dried up and also the browning effect also the notice on the side where the antenna was there.

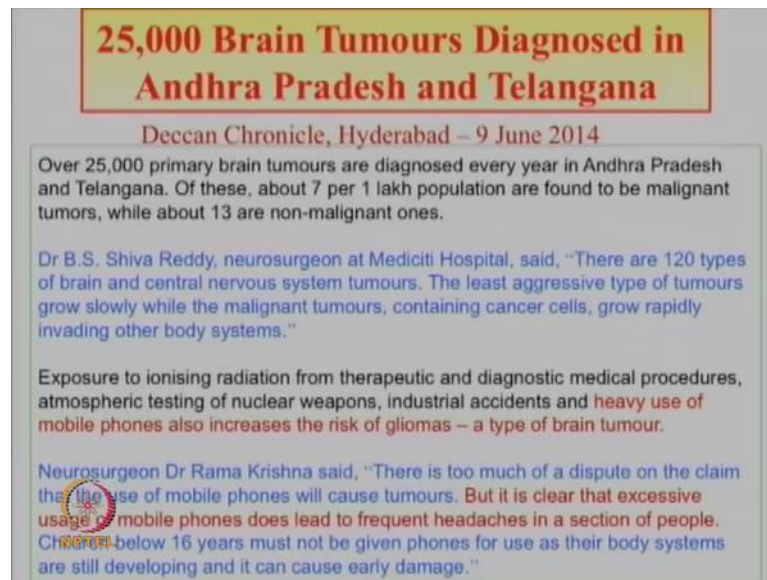
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So in fact, alarm on these things. Environment ministry had also conducted a study in fact they actually had an expert team of 10 people that report came in November 2011. So, what they actually reported? They went through 919 paper and they mentioned 593 papers said there is an impact, 130 said no impact and 196 were inconclusive. And they are actually reported even that it was supposed to be birds and bees, but they notice that affect on the human being you can see that all these other things they show that there is a strong adverse affect.

So, environment ministry has already reported and we would also like that you know that government should wake up and do something serious about it.

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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 Mediciti 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."

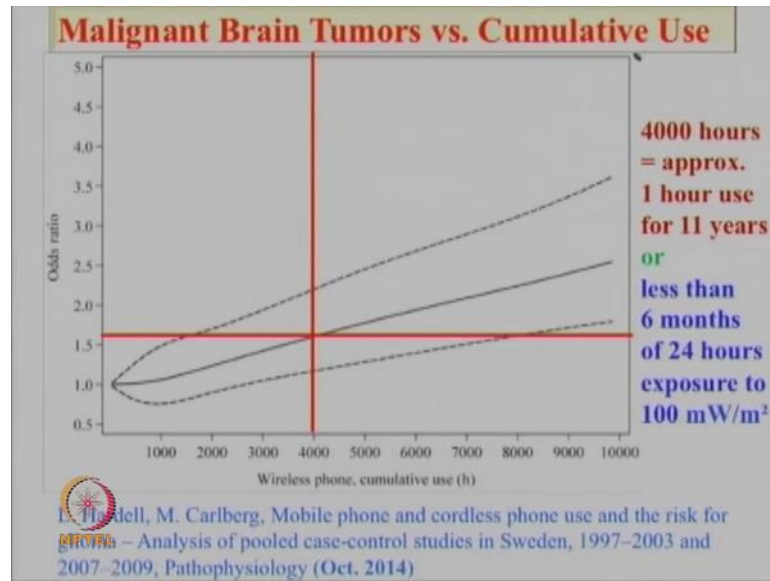
Exposure to ionising radiation from therapeutic and diagnostic medical procedures, atmospheric testing of nuclear weapons, industrial accidents and heavy use of mobile phones also increases the risk of gliomas – a type of brain tumour.

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."

Now, as I mentioned earlier we are sitting on a cancer epidemic. So, this is the news which came in June 2014 and it was reported in Hyderabad that 25000 brain tumors were reported in Andhra Pradesh and Telangana only.

Now, that is just two states. In fact, actually speaking I talk to the ICMR Indian Council of Medical Research. So, they did mention that the cancer cases are increasing. So, just to tell you in 2014 it was reported that 10 lakh new cancer cases were added; in 2015 11 lakh new cancer cases were added. Now the known cancer from smoking, tobacco, liquor that they found out to be about 3 lakh for rest of the 8 lakh cases all they said is it is because of the change in the lifestyle and in the last 10 year the major change in the lifestyle is our cell phone, cell towers which are radiating 24 hours people who are living within the close vicinity of the tower developing problem, people who are using cell phone for hours and hours they are developing health problems.

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Now, this is the study again reported in October 2015 and what they had reported is number of hours along this side and that is the odd ratio of getting malignant brain tumor. I have drawn the vertical lines of this is my contribution vertical line and horizontal line here and I will tell you the reason also why I put at 4000 hour. So, if somebody who uses cell phone everyday for one hour, one hour multiplied by 365 days will be 365 multiplied by 11 will be close to 4000 hour so; that means, if you are using one hour phone everyday in about 11 years this is the median of the case here chances of getting brain tumor will be about 1.6 and these are the two extreme cases which depends upon the type of cell phone the health of the people and so on and so forth, but you can see that this is linearly increasing.

So, all of you can actually think about when did you buy your cell phone how many hours you have use cell phone. Now this is just for cell phone by the way if you are living next to cell tower, well then you are going to have a much faster effect on you and the reason another thing which I want to save recall I mention that interphone study said half hour used in about 10 years, but here increase or better technology. So, one hour here in 11 years this is the chances of getting brain tumor. So, please take care of your health and your near and dear ones health.

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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**."

I mentioned earlier. So, scientist have been asking government and the WHO that are RF field now should be classified as "Class 2A" or even "Class 1" and in fact, you can also see here it is also written their health risk from Wi-Fi devices is also arising. So, there are people who are recommended class 2A, there are people who are recommending class 1 and class 1 over here. So, please unite, all people of the world please unite convince your governments to adopt better norm and convince the WHO to adopt better norm.

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SOLUTIONS TO REDUCE EMF HAZARD

- Convince DOT to reduce the norm immediately to $<10\text{mW}/\text{m}^2$
- Cellular Operators should reduce transmitted power from $20\text{W}/\text{carrier}$ to max. $1-2\text{W}$ 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: [TRAJ-Green-Telecom-Openhouse-GK Report](#)

DISADVANTAGES OF REDUCING POWER:

Rate will reduce → Install more low power transmitters or low power repeaters → It will cost MORE MONEY!

So, what are the solutions? So, for cell phone I have already given the solution and the solution is cut down your cell phone usage, but what about cell tower? Suppose there is a cell tower next to your home or next to your office what do we do? So, we all have to unite we have to convince in India the body is DOT Department of Telecommunication, now they were the one who reduce the norm earlier from 4500 to 450 we have to convince them to immediately reduced it to less than 10 milliwatt per meter square. So, even though please remember safe is 1 milliwatt per meter square. So, this will be your one step in between and the step can be very easily obtained all they need to do it is compel the operators and tell the seller operator that instead of transmitting 20 watt per carrier they can maximum transmit 1 to 2 watt in densely populated area.

Now, there are lots of benefits by doing this also and how this can be implemented? Very simple remove the power amplifier or reduce gain of the amplifier this can be achieved. So, why they are not doing it? The reason why they are not doing it is that if they reduced the transmitted power range will reduce and if the range reduces then the coverage at a far away point will be not there. So, they have to install more low power transmitter or low power repeater and this would actually cost more money and let just look at what money we are talking about. So, in fact, with that some preliminary study.

So, right now in India we have 5 lakh towers which is about 0.5 million the need to install another 5 lakh tower now each tower cost about 15 to 20 lakhs of rupees which really means they have to invest about 75000 [FL] to 100000 [FL] and that is lot of money. But we also did ROI calculation for them that is a return on investment and that is so simple that if they increase the price usage per minute of cell phone just buy 5 paisa.

Now, you see the power of 5 paisa. So, 5 paisa multiplied by 20 minutes which is the average today. So, that will be 1 rupee per day. So, 1 rupee multiplied by 365 multiplied by 100 [FL] user; that means, they can make 36500 [FL] in 1 years. So, in 3 years time they will recover their entire investment with interest. So, see we are actually suggesting a simple solution. So, that they are also no tax and people is also tax very little and also they will get a very big additional benefit also if their turnover goes up by 30-40000 crore per year more their share prices will also go up.

So, we are not trying to say that you know we are not against the seller operators. So, we are not against the cellular tower. In fact, what we are against is the high power radiation. In fact, I have actually even given a slogan also because lot of people came. So, we want to remove the tower because of the health hazard I said look if you remove the tower then phones will not work. So, instead of that you know we gave them the thing reduce the power or remove the tower.

So, try to convince the operator to reduce the power if they agree very good; otherwise then health is more important and in fact, my conclusion is extremely simple. It is people who have to decide health versus wealth how much wealth we are talking about just 5 paisa increase per minute of the cell phone use whose health we are talking about you are talking about the health of the entire human being, we are talking about the health of the birds, bees, animals, trees, plants, fruits, everything.

But however, there is a twist health is on this side wealth is on this side. So, there is a cross and that really means that people have to work hard, they have to create awareness among the people and try to convince the people about the health hazard and when people unite they can convince the government and when large number of people go to the government and tell them that look we are not against the technology all we want is a safe radiation. So, technology can live happily with the safe radiation people can enjoy this nice fantastic technology without affecting their health.

So, thank you very much please create awareness to all your friends to all your neighbors and try to convince government to adopt better radiation norm. So, that we have safe country we have safe world.

Thank you very much. Bye.