

# **RAMIFICATION SUBDUE**

**–impede radiation**

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## INTRODUCTION:

Electromagnetic radiation emitted by cell phone towers is a form of environmental pollution and is a new health hazard, especially to children and patients. The present studies were taken to estimate the microwave/RF pollution by measuring radiation power densities near schools and hospitals. The values of electromagnetic radiation in the environment were compared with the levels at which biological system of humans and animals starts getting affected. The values were also compared with the international exposure limits set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). The highest measured power density was  $11.48 \text{ mW/m}^2$  which is 1,148% of the biological limit. The results indicated that the exposure levels in the city were below the ICNIRP limit, but much above the biological limit.

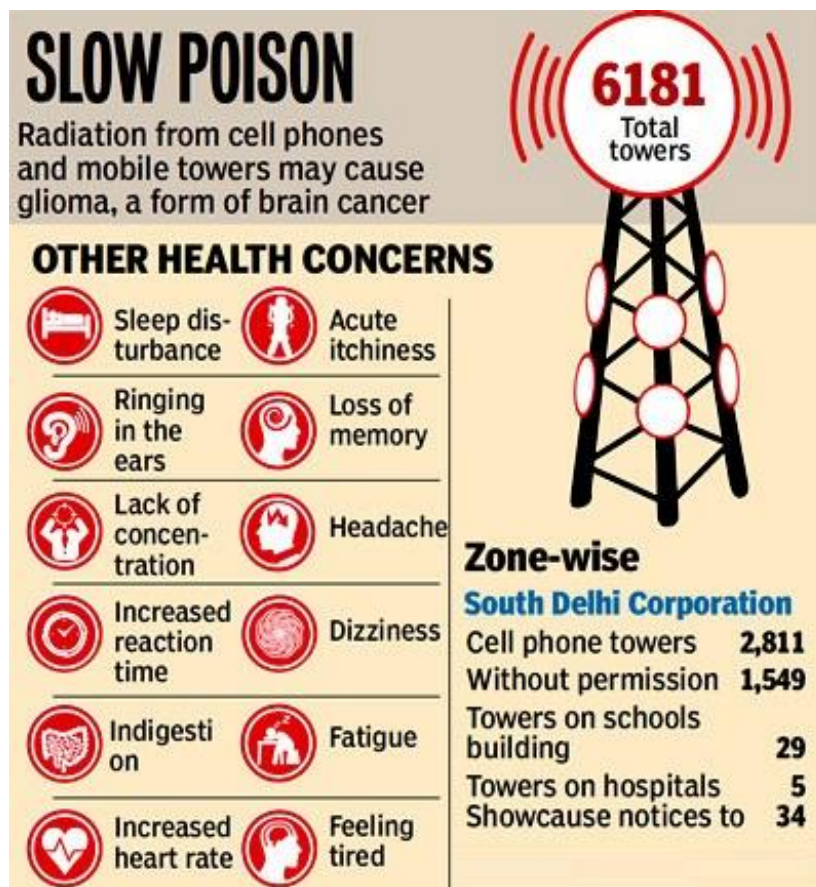


## A Closer Look at Cell Tower Exposure:

Cell towers(or cell sites) that hold antennas and other communication equipments flood the area for miles around with powerful high frequency radio waves(known as microwaves) to support the use of cellphones as well as Wi-Fi, WiMax, Wireless LANs, Bluetooth supported devices and more.

Cell Tower microwaves might travel for as few as two miles in hilly areas, and up to 45miles where there are fewer obstructions, and can easily penetrate brick and metal.

Smaller versions of cell towers, often seen on rooftops and billboards ,typically installed 800 to 1300 feet apart. Mobile towers are especially dangerous because they emit microwaves at a frequency of 1900 MHz and adversely impact every biological organism within one square kilometre.



## **Microwaves:**

Microwaves are electromagnetic waves with wavelengths ranging from as short as one millimeter to as long as one meter, which equates to a frequency range of 300 MHz to 300 GHz. This broad definition includes both UHF(Ultra High Frequency) and VHF (Very High Frequency), but various sources use different other limits. In all cases, microwaves include the entire super high frequency band (3 to 30 GHz, or 10 to 1 cm) at minimum, with RF(Radio Frequency) with lower boundary at 1 GHz (30 cm), and the upper around 100 GHz (3mm).

## **Radiowaves:**

Radio waves are a type of electromagnetic radiation with wavelengths in the electromagnetic spectrum longer than infrared light. Like all other electromagnetic waves, they travel at the speed of light. Naturally occurring radio waves are made by lightning, or by certain astronomical objects. Artificially generated radio waves are used for fixed and mobile radio communication, broadcasting, radar and other navigation systems, satellite communication, computer networks and innumerable other applications. In addition, almost any wire carrying alternating current will radiate some of the energy away as radio waves; these are mostly termed interference. Different frequencies of radio waves have different propagation characteristics in the Earth's atmosphere; long waves may bend at the rate of the curvature of the Earth and may cover a part of the Earth very consistently, shorter waves travel around the world by multiple reflections off the ionosphere and the Earth. Much shorter wavelengths bend or reflect very little and travel along the line of sight.

## **HEALTH EFFECTS:**

The microwaves from cell phone towers can interface with your body's own EMF'S, causing a variety of potential health problems including:

- Headaches
- Memory loss
- Cardiovascular stress
- Low sperm count
- Birth defects
- Cancer

## **Biological effects of microwave radiation:**

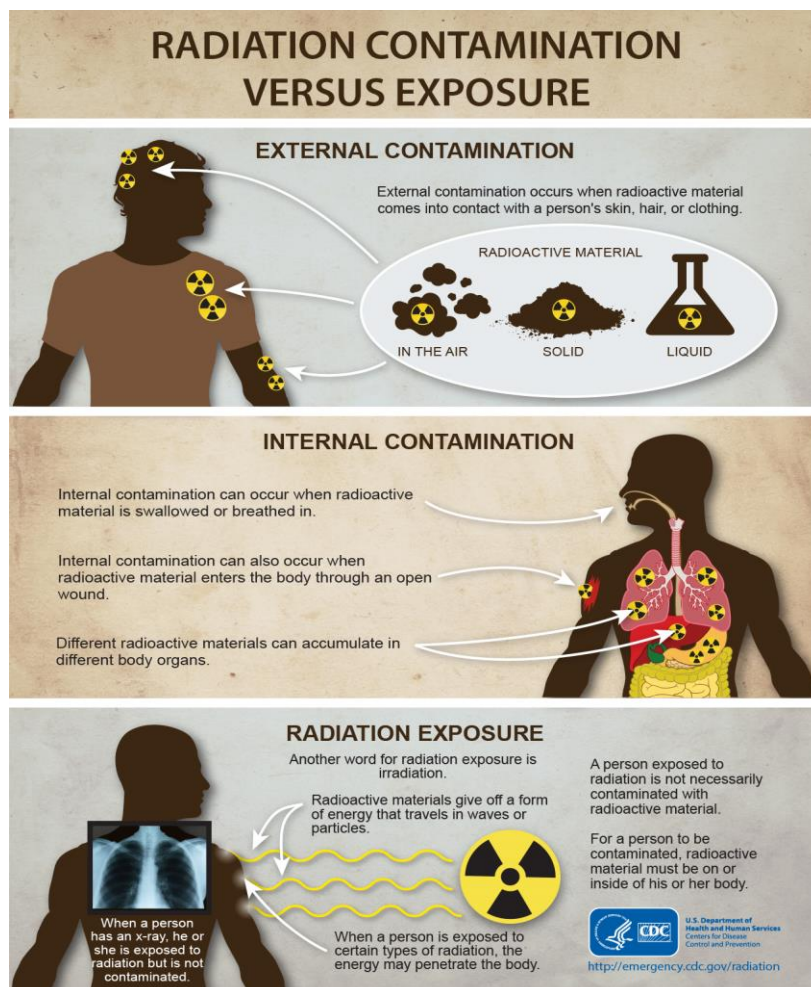
When a human body is exposed to the electromagnetic radiation, it absorbs radiation, because human body consists of 70% liquid. It is similar to that of cooking in the microwave oven where the water in the food content is heated first. Microwave absorption effect is much more significant by the body parts which contain more fluid (water, blood, etc.), like the brain which consists of about 90% water. Effect is more pronounced where the movement of the fluid is less, for example, eyes, brain, joints, heart, abdomen, etc. Also, human height is

much greater than the wavelength of the cell tower transmitting frequencies, so there will be multiple resonances in the body, which creates localized heating inside the body. This results in boils, drying up of the fluids around eyes, brain, joints, heart, abdomen, etc. There are several health hazards associated with cell phones and cell towers. Some of these are described in the following sub-sections.

## The Blood Brain Barrier:

A closer look at the cells within the brain also revealed that exposed animals had scattered and grouped dark neurons often shrunken with loss of internal cell structures. Neuronal damage of this kind may not have immediate consequences but in the long run, it may result in reduced brain reserve capacity that might be unveiled by other later neuronal diseases. It must be noted that the blood-brain barrier and neurons are the same in a rat and a human being.

In another research, a single two-hour exposure to a cell phone just once during its lifetime, permanently damaged the blood-brain barrier and, on autopsy 50 days later, was found to have damaged or destroyed up to 2 percent of an animal's brain cells, including cells in areas of the brain concerned with learning, memory and movement. It is known that this barrier is damaged in Alzheimers and Parkinsons disease. So there is a risk that disruption of this protection barrier may damage the brain.



## **Risk to Children and Pregnant Women:**

Children are more vulnerable to cell phone radiation as they:

- Absorb more energy than adults from the same phone owing to their smaller head and brain size, thinner cranial bones and skin, thinner, more elastic ears, lower blood cell volume, as well as greater conductivity of nerve cells and the energy penetrates more deeply. Tumors in the mid brain are more deadly than in the temporal lobe,
- Children's cells reproduce more quickly than adults which makes cancers more deadly
- Their immune system is not as well developed as adults hence are less effective against fighting cancer growth,
- Children have longer life time exposure

## **Know Your Exposure**



**The BabySafe Project**  
[www.BabySafeProject.org](http://www.BabySafeProject.org)



## CONCLUSION:

The seriousness of the health hazards due to radiation from the cell phones and cell towers has not been realized among the common man. Cell phone industry is becoming another cigarette industry, which kept claiming that smoking is not harmful and now there are millions of people around the world who have suffered from smoking. In fact, cell phone/tower radiation is worse than smoking; as one cannot see it or smell it, and its effect on health is noted after a long period of exposure.

Therefore, majority of people tend to have casualness towards personal protection. Unfortunately, ignorance and non-awareness adds to this misery and all of us are absorbing this slow poison unknowingly. Even if people are aware of the radiation hazard, they may not have the choice to move away from it if the tower is installed near their office or residential building.

If people in the mobile companies think there is no health hazard, then let them stand in front of their own transmitting tower at 1m distance in the main beam for 6 hours – are they willing to take the risk? Similar effect will be there at 10m distance in about 600 hours (25 days). If mobile companies accept that radiation causes serious health problems, will people stop using cell phones? However, then researchers/technocrats/entrepreneurs will come out with possible solutions, which may be expensive but that cannot be greater than the health risk faced by humans, birds, animals and environment.