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# Tower Tension: Understanding the noxious effect of Mobile Tower Radiation

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বিজ্ঞানের কল্যাণে জলে স্থলে আকাশে  
আজ এত পথ খুলেছে, এত রথ ছুটেছে যে,  
ভূগোলের বেড়া আজ আর বেড়া নেই।  
আজ কেবল নানা ব্যক্তি নয়,  
নানা জাতি কাছাকাছি এসে জুটল;  
অমনি মানুষের সত্যের সমস্যাও বড়ো হয়ে দেখা দিল।  
বৈজ্ঞানিকশক্তি যাদের একত্র করেছে  
তাদের এক করবে কে।  
মানুষের যোগ যদি সংযোগ হল তো ভালোই,  
নইলে সে দুর্যোগ।  
সেই মহা দুর্যোগ আজ ঘটছে।  
একত্র হবার বাহ্যশক্তি হু - হু করে এগোল,  
এক করবার আস্তর শক্তিই পিছিয়ে পড়ে রইল।  
— শিক্ষার মিলন - রবীন্দ্রনাথ ঠাকুর

Social constructionists argue that things in the world gained their character from social action rather than by virtue of any objective properties they may have. This means that our knowledge about the world depends on ‘who we are’ and ‘where we are’. Our knowledge of things does not have any objective basis, but is relative to the culture and the time in which it is produced – it is dependent upon its location in time and space. Keith Tester holds a strong constructionist position and argues that nature does not have objective reality. The many objects that make up the environment are products of society and what we know about reality is a social construct. So the relationship between environment and society is that the latter produces the former.

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Talking about reality and social ways ensuing environmental alterations, the grace of Science and Technology has conferred us with *mobile handset* – a tool which has brought the distant so close, amazing things have happened since then. New age busy parents are getting in touch with their children frequently, in times of need friends and family is at your door step in just a moment, all at the relief of that elfin mobile handset. Lately it serves much more than a communication device. It has become a trouble fixer of all kinds. Its use is increasing like a conflagration. 1995 marked the formal introduction of mobile phones in India. According to the 2011 Census, 53% household use mobile phones resulting 4.4laks installation of mobile towers.<sup>1</sup>

As we speak on a mobile phone, the word collectives are converted to electromagnetic waves and reach the nearby tower. Then through the mobile towers near the listener at the other end reach the handset of the listener who then responds. This is how communication is build. So in this whole process the link between the mobile phone and the mobile tower is maintained by the electromagnetic radiation (EMR) wave. The technology behind the mobile phone is such that it is not mired by the increasing distance between the communicators. In fact its waves move from one tower to the other. In course of the discussion, it should be mentioned that every city has a central office (MTSO) of the service provider companies of the mobile phone connections. When a call is made the offices check it's under which provider and prepares the specific channel for dialogue between the speakers. The cell tower gets the signal subsequently. Till the process is done the word "*connecting...*" flashes on the mobile screen. Here lies the importance of the mobile towers.

The process remains active following the transmission of the electromagnetic radiation from both the mobile phones and the cell towers. The electromagnetic radiation is imperceptible, odorless, and

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1. Kumar, Girish. "Report on Cell Tower Radiation" DOT Delhi, December 2010. (Web. 02 Jan. 2015.)

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noiseless. Taking the advantage of these features the mobile towers are installed at the roofs of the high rise buildings, schools and hospitals in densely populated regions. The gargantuan formation of the mobile towers is not only a common scene in the cities but even in the suburbs and villages are observing its existence.

Technology secures our wellbeing. But we have to be watchful about the prospective adversities technology brings in and be prepared to resist it. Provided in many cases use of technology has to be bridled so that it doesn't turn into a pang in human existence. Still when technology breaks the barrier of daintiness and entertainment and becomes a way of life, adding into different vocations, it grows difficult to evade. Here's when vulnerability of mankind is captured before technology. Therefore we cannot shun the eventual difficulties for the use of mobile phones even if it is an important part of our pacing everyday life.

Although to maintain the mobile phone technology the significance of mobile towers cannot be discarded but the reality of high EMR has to be taken into account. A human body exposed to EMR absorbs radiation, because it consists of 70% liquid. Exactly like microwave cooking where the watery part in the food content is first heated. 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. Therefore there are several health hazards associated with cell phones and cell towers.

The minimum level of Radio Frequency (RF) waves can damage the Deoxyribonucleic Acid (DNA), studies show that exposure at levels below the current Federal Communications Commission (FCC) exposure standard, produces single and double strand breaks in DNA. Children are more susceptible to mobile phone radiation as they absorb more energy than adults from the same phone due to their

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smaller brain size, their cells reproduce more quickly than adults which makes cancers more deadly, their immune system is not well developed as adults, hence are less effective against fighting cancer growth. The radiation causes irreversible infertility in men and women, affects the skin, causes tinnitus and ear damage, affects the eyes, cell phone emission weakens bones, causes sleep disorders and more sharply increases cancer risk.<sup>2</sup>

Doctors in Naila, Germany examined 1000 people staying close to mobile towers for 10 years. The researchers found that the proportion of newly developing cancer cases was significantly higher among those patients who had lived within 400 meters from the cellular transmitter site during the past 10 years, compared to those patients living further away.<sup>3</sup> According to Biomedical Engineer, Mariana Pereira, EMR causes Vibroacoustic stimulation whose symptoms are joint pain, vertebral column pain, gastric problem, respiratory problem, irritation etc.<sup>4</sup> The first ever international conference in Sweden on the effects of mobile tower radiation reported that children exposed to cell phones are five times more vulnerable to brain cancer risks.<sup>5</sup> John Walker, scientist and member of Electromagnetic Radiation Research Trust, USA claims regions adjacent to mobile tower erections is multiple times more carcinogenic than others.<sup>6</sup> Based on the survey conducted by the researchers at the University of California, the children exposed to EMR in their mother's womb were studied to have unnatural

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2. Kumar, Girish. "Report on Cell Tower Radiation" *DOT Delhi*, December 2010. (Web. 02 Jan. 2015.)
  3. Chopra, Rajesh. "Stop Mass Killings! Cell tower Radiation." *Live India Dot Com*. 2009. (Web. 16 Dec. 2014.)
  4. Ibid.
  5. Lean, Geoffrey. "Mobile phone use 'raises children's risk of brain cancer fivefold'" *Independent, UK*, 23 October 2011. (Web 05 Jan 2015.)
  6. Walker, John. "Review of some current knowledge of the effect on people's health of telephone base station mast radiation - the path towards a safer level." Walker-Radiation Research Trust, 2007. Web 22 Feb 2015.
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behavioral disorders when they grow up. A study in Israel informed that based on medical records of people living within 350 meters of a long established phone mast, showed a fourfold increased incidence of cancer compared with the general population of Israel, and a tenfold increase specifically among women, compared with the surrounding locality further from the mast.<sup>7</sup> Rehaan Dastur, one of the first users of mobile phones in India used a mobile phone which had a cracked end for three years and suffered a stroke that paralyzed his body, distorted and froze his face. The doctor treating him at Delhi's Apollo hospital told him he had Bell's palsy, caused by Electromagnetic Radiation (EMR) emitted from the antennae in his cell phone. The EMR travelled through the crack in the phone, into Dastur's ears, nerves and brain. He returned to 95 % of his former self after a month's treatment and felt the recurring jangling in his nerves when passed a mobile tower.<sup>8</sup> Forty year old, Niru Bhutoria, resident of Natraj Building in South Kolkata has splitting headaches every other day. Other residents of the same building also suffered from headaches, nausea, diarrhea etc. Mrs. Bhutoria suspected that it happened since a mobile phone tower with as many as nine antennae of different service providers has been installed on the building opposite her residence.<sup>9</sup> Rishi Majumder from Tehelka reported in 2010 that Delhi is under new epidemiological threat due to cell tower installation in the city.

The EMR not only affects the human lives many studies and reports suggested it also concerns the animals in our surroundings. Dhanya R. scientist at The Selim Ali Centre for Ornithology and Natural History stressed that EMR hurts the light bird skulls and heat up the

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7. Wolf, Ronni, and Danny Wolf. "Increased incidence of cancer near a cell-phone transmitter station." *International Journal of Cancer* 1.2 (2004).

8. Majumder, Rishi. "Radiation City" *Thelka*. Delhi, 5 June 2010. (Web. 06 Jan 2015.)

9. Das, Sharmistha. "Towering Trouble" *The Telegraph*, 30 Oct 2013. (Web. 15 Mar 2015.)

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small body fluids in them. So, hardly anyone witnesses pigeons, sparrows, swans in the close proximity of mobile towers. It also disturbs their navigational skills. Albert Einstein once said, “If the bee disappears from the surface of the earth, man would have no more than four years to live.” Today due to EMR the bees cannot return to their hives. A sharp decline has also been noticed in commercial bee population in Kerala posing a serious threat to honey bees, hitting apiculture (the cultivation of bees on a commercial scale for the production of honey). The State has the highest density of mobile towers.<sup>10</sup> Punjab University reported that dairy cows exposed to magnetic field for more than two years resulted in sharp decline in milk yield. Also deformities were seen in hen eggs for the EMR hazard. Exposure to EMR affects the overall wellbeing of animal world. Other than domesticated animals even wildlife is also exposed to the harmful effects of EMR.

Let alone the bees, birds & animals, EMR emanating from mobile towers also affect vegetables, crops and plants in its neighborhood. Mobile phone EMF can block seeds, slow down germination and root growth, thus affecting the growth of agricultural crops & plants. Progressive weakening of trees close to phone masts is also observed.<sup>11</sup>

International Endeavour in controlling EMR – Specific Absorption Rate (SAR) helps in measuring the radiation rate in a human body. International Commission of Non-ionizing Radiation Protection (ICNIRP), Europe has limited the safe SAR of 2 watt/kg every 10 gram tissue of a human body. USA and England has fixed it as 1.6 watt/kg and 1.0 watt/kg respectively. For every base station the safe SAR is fixed at 100watt/kg internationally. There are more than 1.9 million Cell phone Towers and Cell Phone Antennas in the USA, all

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10. Kumar, Girish. “Report on Cell Tower Radiation” *DOT Delhi*, December 2010. (Web. 02 Jan. 2015.)

11. *Ibid.*

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of which emit wireless microwave radiation, also known as RF radiation. More than 25% of Cell Phone Towers are hidden, camouflaged as flag poles, chimneys, trees, water towers, light houses even tombstones. Although officials continue to deny there is any health risk associated with cell phones tower radiation, there are countless studies that say otherwise. However, in USA there is evidence of cell tower installation away from densely populated regions. Only in the downtown work areas the huge buildings have installed mobile towers for their personal use.

Indian government has also agreed to the ICNIRP supported safe SAR of 9200 mm watt per square meter. Telecom Operators' Radiation Auditors, Cogent and EMR Solution Ltd. announced 600 mm watt/square meter as a safe range of radiation emission.

West Bengal Government in EMR control - Telecom Regulatory Authority of India (TRAI) reported till March 2014 the mobile phone consumer in Kolkata was 2crore 10 lakhs, few assigned to more than one connection. To enhance commerce, service providers are competing in installing mobile towers. In June 2014 an official of Cellular Operators Association (COA) in a Kolkata seminar, states that, ICNIRP guideline of the radiation rate of one-tenth of 4.5 watt per meter square is followed in the State. This calculation is slated to be harmless. Telecom Enforcement, Resource and Monitoring (TERM) cells of the Department of Telecommunications are in charge of monitoring this range in India. The COA official also adds that to stop 'call drop' 30% more towers have to be installed maintaining the ICNIRP standard. In August 2014 Telecom and IT minister, Shri Ravi Shankar Prasad declared that in the financial year 2013-14 the government of India have collected a sum of rupees 12,957.42 crores as revenue from the service providers. This declaration strengthens the positions of the service providers and makes them big players of the India economy.

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Nevertheless, the West Bengal Pollution Control Board (WBPCB) till date has published three guideline charters in controlling the installation of the mobile base stations. The first order came out on April 2008, next the directions were published in November 2009 and thirdly a statutory circular was made available in September 2010. The order, direction and the statutory circular accepted the installations of mobile towers on residential buildings, schools, hostels and hospitals can cause harmful EMR hazards in the neighborhood. It also mentioned to avoid setting up of mobile in narrow lanes to escape natural disasters like earthquake or cyclone. The guidelines also included formalities related to local and state authority for an installation etc. However, in reality many towers have been installed with multiple antennas of various service providers and seldom are the guidelines followed. In fact there are reports of unauthorized mobile tower installations in the city and around. Orders have been flouted just to gain few extra bucks from the service providers. There are instances of per head maintenance cost of a residential building being recouped by renting the roof of the building to the service provider companies for setting up mobile towers. But the authority is turning a deaf ear to the people's complain.

Again in West Bengal there are stories of achievements where the neighboring people have stopped mobile tower compilation in their locality. Shambhunath Ghosh from Bally and Anup Makhhal from Abada in Howrah district successfully resisted the unauthorized mobile tower installation.<sup>12</sup> Their movement faced with many challenges. They evaded life threats for the sake of their well being. Anup Makhhal asserts proudly that when the men of his village were out for work, women of his locality fought against the ultimate power heads and stopped the installations. In the dark of night they would throw the equipments of base station installations in the ponds. The

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12. Qualitative Interview with Shambhunath Ghosh (08.04.2015.) and with Anup Makhhal (11.04.2015.)



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claims of the Eco feminists for so many years again accurately describe this incident. However, there are few unsuccessful stories of Kishalay Mitra of South Kolkata who have been fighting legal battle since 2010 to dismantle the mobile tower in his opposite building, is awaiting a day of fortune.

A Kolkata based organization; *Sabuj Mancha* has taken up the issue of radiation from mobile towers as their agenda. The environmental activists firstly, aim to demand a public declaration of the recommendations made by the committee formed by the West Bengal government to understand the hazards related to mobile tower radiation. Considering the conjectures based on the recommendation was that, the radiation transmitted from the mobile towers has a close parallel to the incidence of cigarette industry and ‘Green House Gas’ effects on the warming of the planet. Currently, there is no specific law to deal with mobile tower installations and their ill effects, especially radiation. It neither falls under the Environment Act, 1986, nor the AIR Act, 1981. But WBPCB has published order, circulars at different point in time to counter the installations debate. So a specific law and a consequent act has to be demanded. Moreover, when the government of India acknowledges the rights of the service providers, the rights of the users should also be taken into account.

On one hand when the mobile phone practice is inlaid with modernity, on the other hand recurrently questions are asked, what is important in life? Modernity in lifestyle or a healthy, beautiful lifestyle? The mobile phones have gained prominence more as emotional objects than communicative devices. The clear line between ‘utility’ and ‘indispensability’ has to be drawn. The technology of mobile phones has many utilities in the present world. However, it shouldn’t be bound within the limits of ‘indispensability’. The ‘choice’ of what is important and what is not for us should not be decided by any profit seeking market economy but by us!

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