

Brief on Environmental Issues of Base Transceiver Stations (BTS)

BTS are radio transmitters mounted on either free-standing masts or on buildings. Radio signals are fed through cables to the antennas and then launched as radio waves into the area, or cell, around the base station. At position where people are exposed to the radio waves from BTS, the level of exposure is much more constant over whole body than when they are exposed to a mobile phone. Depending on the location of the base stations and the level of mobile phone usage to be handled, base stations may be anything from only a few hundred meters apart in major cities to several kilometers apart in the concentrate.

2. Though there is no concrete evidence of health damage related to radio frequency (RF) radiation from BTS. However, internationally acknowledged experts in the field of RF research have shown that RF (of certain range) of the type used in digital cellular antennas and phones can have critical effects on cell cultures, animals and people in laboratories and have also found epidemiological evidence (studies in communities, not in the laboratory) of serious health effects at ‘non-thermal levels’, where the intensity of radiation was too low to cause heating. It has been found in different studies that RF can double the rate of lymphoma in mice, changes in and increase in tumor growth in rats cancer in police soldiers exposed to RF and increased breaks in double and single stranded DNA (genetic material). RF has also caused leukemia in children, headache, Neurological changes, loss of memory, increased blood pressure and damage to eye cells when combined with commonly used glaucoma medications.

3. The Ministry of Environment raised the issue of health hazards from BTS and requested Pakistan Nuclear Regulatory Authority (PNRA) in 2005 to investigate the matter. PNRA, in response, informed that the boosters/ antennas erected by telecommunication companies emit radio frequency (RF) fields which are non-ionizing. And that as per requirements of PNRA Ordinance, 2001 and Radiation Protection Regulations (Pak/904), PNRA deals only with the ionizing radiation. PNRA informed that it had conducted a radiation survey of areas around boosters/ antennas of assorted telecommunication companies located in Islamabad, within public domain and found negligible radiation level for below that of natural background level. According to PNRA, the frequency of RF fields is of short range and does not cause significant stochastic or deterministic health effects to human beings.

4. In 2006, Pak-EPA had requested Pakistan Telecommunication Authority (PTA) to adopt the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines and to follow the recommendations of the report titled ‘Environmental and Health Related Effects of the Cellular Base Station Antennas’ carried out IT and Telecom Division, Ministry of Information Technology. PTA issued Policy

Guidelines for Mitigating Environmental and Health Related Effects of Cellular Base Station Antennas in 2007.

5. In 2008, the Federal Minister showed his apprehension on the cumulative effect of several towers installed in cities desired to carry out a joint study with PNRA. Complaints have also been received regarding the noise, vibration and emissions generated by the GENSET used by BTS due to electric breakdown. In this regard, Pak-EPA requested PNRA to record the overall radiation level to see the accumulative effect of mobile towers. Pak-EPA is also planning to initiate a study on noise and emission caused by generators used by BTS.

Recommendations:

- The cellular companies may be bound to obtain environmental approval from the concerned EPA before installing BTS.
- PTA should issue license to telecommunications network operators under ICNIRP Guidelines which specify frequencies that the operators can use and the maximum powers that they can transmit.
- ICNIRP guidelines for public response should be made mandatory to be adopted by mobile phone network operators.
- BTS Stations should be required to undergo routine evaluation for Compliance. Whenever an application is submitted to the concerned EPA for construction or modification of a transmitting facility or general of a license. Furthermore, EPAs should have authority to take action if a cellular base station antenna does not comply with the ICNIRP Guidelines.
- Possibility of replacement of Macrocellular base stations by Microcellular base stations which are mounted at street level typically on the external walls of existing buildings may be looked at. Microcellular antennas are a lot smaller than Macrocellular antennas and can often be disguised as building features.
- Federal and Provincial EPAs should develop a setup in order to evaluate the compliance of cellular companies. EPAs may also be equipped with the Spectral Monitoring Equipment that can measure radiation of BTS.
- Operators should calculate compliance distance in various directions from their antennas in order to define a boundary outside which the guidelines should never be exceeded. Generally, for large macrocellular base stations radiating up to 100 watts or more, exclusion zones in the range 10-15 m may be required in front of the antennas to ensure exposures remain within the ICNIRP Guidelines for public exposure.