Topic:

“Effect of wireless communication on environment”

Abstract:

In the race to embrace newer technologies, we often forget or ignore the negative side of it and do not realize its effect until late. A pervasive computing system is one such example, which introduces newer, smaller, convenient, omnipresent devices aimed at replacing the huge immobile computers. These systems then end up in landfills and are not regular municipal waste. They contain many hazardous substances like heavy metals, non-biodegradable materials and persistent, bio accumulative toxins. Various end-of-life options need to considered for such substances. The inherent property of pervasiveness is mobility and use of unwired devices. The communication among such devices has to be through the air instead of wire. The only media presently used for this wireless communication is the part of electromagnetic spectrum (the radio frequency). Constant exposure to this frequency is a cause of concern among some researchers. Though there is no study, which has consistently shown the health hazard from RFR (radio frequency range), but this does not prove the non-existence of the hazard. This paper is an attempt to make the reader aware of threat to human life and ecosystem, caused by mobile devices and wireless communication and suggest some solutions to the same.

Introduction:

Change is the only constant in the world, or better said, advancement and evolution is imperative to any field of science and technology. Computing and communication science has seen drastic change in the past decade or two. Computer systems have come long way from the early application specific huge mainframe computers, which were used in closed protective environments. The main disadvantage of these systems, as considered today, is their immobility. The computing scenario has completely changed now. Today we see integration of various technologies to achieve mobility and to access any information anywhere. This is what we call Pervasive computing – access to any information anywhere, anytime. This requires innovation to produce handy devices, which are not tethered by wires or cables of yesteryears. The communication medium has changed from cables and twisted pair wires to that of wireless transmission. A part of electromagnetic (EM) spectrum, which can travel in space without a need of wire, is used for this wireless communication. Development of such technology has far reaching impacts on society.

* Effect on environment:

Little of or not thought has been given to the physical final end result of pervasive computing: devices of varying size, weight and complexity that will be useless and obsolete in pervasive world. These devices (mobile), by their very design and function, are ubiquitous, massively distributed, and embedded in numerous everyday objects and the environment. Pervasive computing brings with it a dangerous waste.

The growth of waste electrical and electronic equipment is about 3 times that of other municipal waste. Pervasive computing will add to the already existing “ mountain of obsolete PCs, both by increasing the nature and quantity of physical devices and the rate at which they become obsolete. Not only computing, but also communications devices are expected to proliferate. It is estimated that 780 million Bluetooth devices will be shipped in 2005.

Apart from hand held devices like cell phone, wireless transmission towers for radio, TV, telecommunications, radar and many other applications, emit RFR. Once emitted, the radiation travels through space at the speed of light and oscillates during propagation.

If exposure is sufficiently intense, microwaves can cause biological effects. Possible injuries include cataracts, skin burn, deep burns, heat exhaustion and heat stroke. The effects of this heating range from behavioral change to eye damage.

Wireless Technologies (4G, 5G) Are Very Harmful to Human Health and Environment: A Preliminary Revie... The intent of this article is to show that wireless technology is, without remedy other than termination, one of the most devastating environmental and health threats and threats to personal liberty ever created.

As wireless technologies become available in new markets all over the world, we need to consider the environmental issues. The very countries enjoying new benefits from the rapid spread of low cost cell phones are the same ones with few or unenforced laws and regulations related to the environment. A recent report from INFORM, *Waste in the Wireless World: The Challenges of Cell Phones,* calls attention to the hazardous materials used in the phones and batteries including arsenic, antimony, beryllium, cadmium, and lead. By 2005 the U.S. annually will send 65,000 tons of phones to the garbage heap, including disposable phones that are used for an hour or more and then tossed. By shifting the rhetoric from the concept of "disposable" to "recyclable," and by debating the role that manufacturers have in the process (as beverage companies already have), we can come to terms with the problem before we suffer the effects of a degrade environment as the dangerous materials leach into our soil and water.

## Impacts on visual landscape of cities

The towers for wireless systems, in particular, historically, have been designed to meet the technical requirements only, having no commitment to architectural aspects. The large number of radio base stations installed to meet the demand of mobile telephone service, linked to several other wireless communications systems such as systems for commercial broadcasting, television, data communications, radar, radio, satellite communication, has helped produce an unpleasant aesthetic impact on the environment, affecting the landscape of cities, and has been raising great concern of public entities and society in general.

However, the increase in use of different devices that make use of radio transmitters has resulted in interference problems. In some hospitals in Scandinavia, cell phones are banned because they have caused ventilators, defibrillators, and dialysis machines to fail. Other studies have shown these failures to be very rare.

* Conclusion and comments:

Electromagnetic pollution has affected the urban environment for over 50 years by radio and television base stations, located close to major urban centers and has been found neither problem, nor any public movement or claim by the society regarding the harm to the people health from these radiations. These systems operate with a power transmission hundred of times greater than that transmitted by cellular telephone antennas and the type of radiation (non-ionizing radiation) is the same irradiated by cellular telephone RBS. However, the great concern from mobile technology is the visibility we have from the antennas because they are everywhere and we can see them in all places where we are.

The implications for developing nations and non-democracies may be more serious. Cellular phones are a challenge to authoritarian governments whose means of survival is the suppression of information in order to subdue the population.

References:

<https://firstmonday.org/ojs/index.php/fm/article/view/1069/989>

[www.informinc.org/cellphone.htm](http://www.informinc.org/cellphone.htm)