

Mobile Phones and Health Hazards

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ABSTRACT

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Background: Scientists are beginning to uncover worrying evidence that microwave radiation could cause physiological damage. Dr. Narendra Singh, had discovered that low-level microwave radiation could split the DNA molecules in the brains of live rats; such splitting is associated with Alzheimer's disease, Parkinson's disease and cancer.

Methodology: Analysis of evidences linking brain damage and electromagnetic waves from mobile phones.

Result: The brain is made up of watery tissue good at absorbing microwave radiation. Scientists believe there may be two main effects: 1. Heating tissue 2. Altering cell membranes. Microwaves can make membranes more permeable to potassium and calcium ions, which are important to cell functions. Cellular phone cause electromagnetic interference on implantable cardiac defibrillators. Digital cellular phone generate strong amplitude modulated fields with pulse repetition rate near the physiological range sensed by the ICD as an arrhythmia, High Voltage firing or inhibition of pacing output of the ICDS occurred when the phone was within 2.8–5.8 cm of the ICD pulse generator

Keywords: Mobile phone radiation, Brain damage, Electromagnetic waves

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Ralph Mills first knew something was seriously wrong with his brain when he began to get lost in his garden. As a long-distance driver he had spent years navigating his way across Europe without difficulty; suddenly he could not leave his house without some-one to guide him. Baffled, he visited his GP, within an hour he was in hospital, where doctors found a brain tumour the size of a tennis ball above his right ear.

Mills, from Harlow in Essex, had never been seriously ill before and had no history of cancer in his family. Was his tumour mere chance? Or could it, he wondered, be related to his constant use of a mobile phone? His company had given him a mobile in 1985 and for 12 years he had used it, often for about an hour and a half each day.

More than 20 other people who believe they have suffered brain tumours, memory loss or damage to their immune systems caused by mobile phones are lining up to seek legal redress

Scientists are beginning to uncover worrying evidence that microwave radiation could cause physiological damage. One of those at the forefront of the research is Dr. Henry Lai, an expert in non-ionising radiation and a Professor at the School of Medicine and College of Engineering at the University of Washington in Seattle,

America. Two and a half years ago The Sunday Times disclosed for the first time scientific research pointing to the possible threat that mobile phone posed to health. Three studies, one by Lai, had found evidence of potentially damaging changes to brain cells linked to radiation emitted by mobile phones. It was the first insight into the risk of mobiles "cooking" the brain based on well-founded scientific evidence. Lai and a colleague, Dr. Narendra Singh, had discovered that low-level microwave radiation could split the DNA molecules in the brains of live rats; such splitting is associated with Alzheimer's disease, Parkinson's disease and cancer. "Dr. Lai's work has shown that there is an increase of 50 percent in damage to DNA when it is exposed to mobile phone radiation". Memory loss is another damaging effect.

Electromagnetic fields in the home environment (Colour TV, computer monitor, micro wave oven, cellular phone etc) as potential contributing factors for the induction of oncogene C-fos Abl, oncogene. C-fos Ab2, integrin alpha 5 beta, and development of cancer as well as effects of micro wave on amino acid composition of food and living human brain were studied. In human subjects exposed to all the sources of the EMF for 3 minutes at a distance of 50 cm induced transitional abnormalities on the EMF entry area, like

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1) Decrease in acetylcholine, 2) appearance of circulatory disturbances with the appearance of thromboxane B2, 3) short lasting appearance of oncogene C-fos Ab2, 4) short lasting appearance of oncogene C-fos Ab1 5) no appearance of integrin alpha 5 beta 1. These changes were maximum with cell phone use.¹

Patents for microshields, which are designed to reduce the radiation received by the mobile phone user's head, go back as far as 1993. Shields are now available from at least one independent company. They do reduce radiation—the question is whether that radiation is harmful.

Mobile phones emit microwave radiation whenever calls are made. The brain is made up of watery tissue good at absorbing microwave radiation. Scientists believe there may be two main effects: 1. Heating tissue 2. Altering cell membranes. Microwaves can make membranes more permeable to potassium and calcium ions, which are important to cell functions.

A study of 11,000 mobile phone users carried out by Dr. Kjell-Hansson Mild, at the National Institute of Working Life in Umea, Sweden, suggested an increase in fatigue, headaches and skin irritation for regular users.

Scientists say that cordless phones do not pose any health risks because they use one fifth of the power of most mobile phones.

Although the health effects of low level radio frequency radiation used in transmission in cellular phones are contentious, head ache like symptoms to development of brain tumours has been attributed to the use of cellular phones.

In response to a structured questionnaire, following general symptoms were reported. Unpleasant sensation, dull ache, burning feeling in temporal, occipital and auricular areas, symptoms beginning minutes after call lasting for an hour or even until evening. Many also complained of local symptoms at the site of wearing the cell phone.²

Doubt has been cast on the safety of cellular phone use by epileptic patients. Coupling of biogenic magnetic particles in the human brain to mechano sensitive membrane ion gates may provide a mechanism for interaction of environmental magnetic fields with humans.³ Extremely low frequency alternating magnetic fields primarily were considered, and in the model A.C fields with frequencies below 10 Hz have minimal effect. Pulsed fields, square waves, and D C

fields also could force open the membrane gates long enough to disrupt normal neurophysiological process. Thus activated cell phone can precipitate an attack in epilepsy patients.⁴

Cell phone use while driving increases accident proneness. 150 subjects were observed on simulated driving situations while using cell phone. Cell phone use caused distractions which led to significant increase in the proportion of situations to which subjects failed to respond. Among subjects over age 50, failure to respond increased by about one third. Intense conversation over cellular phone while driving distracted all age groups. The results were not influenced by gender or prior experience with cellular phone.⁵

Yet another area of health hazard while using cell phone is its interference with functioning of biomedical equipments. Since the beginning of the nineties there have been warnings not to use mobile phone in the vicinity of medical devices. Functional failure of dialysis machine, respirators and defibrillators prompted the banning of their use in many hospitals in Scandinavia and then in other countries. A study was conducted to determine the minimum distance at which interference occurred. A total of 224 devices were examined, nine different types of transmission conditions were applied, giving a total of 2016 tests which showed that 1-1.5 meter from the medical device is a safe distance for mobile phones. Hence all life saving and life support systems that can also be used outside the hospital should be made mobile phone proof.⁶

Cellular phone also cause electromagnetic interference on implantable cardiac defibrillators. Digital cellular phone generate strong amplitude modulated fields with pulse repetition rate near the physiological range sensed by the ICD as an arrhythmia, High Voltage firing or inhibition of pacing output of the ICDS occurred when the phone was within 2.8 –5.8 cm of the ICD pulse generator.⁷

END NOTE

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