

Mobile phone use and cancer linked

By Nic Fleming, Science Correspondent 31/08/2007

Fresh fears over the health hazards linked to using mobile phones have been raised after scientists found that handset radiation could trigger cell division.

- **Have your say: Are you worried about the safety of mobiles?**

A study found that exposure to mobile phone signals for just five minutes stimulated human cells to split in two - a process that occurs naturally when tissue grows or rejuvenates, but that is also central to the development of cancer.

Previous research on the safety of mobile use has led to conflicting conclusions, with some suggesting links with tumours in the nervous system and others finding no risks.



Mobile phone radiation could trigger cell division

The six-year **Mobile Telecommunications** and Health Research Programme, which provided £8.4 million of **Government and industry** funding for 25 studies, is expected to present its final report next month.

Official guidance that mobile phones were safe was based on the mainstream scientific assumption that electromagnetic radiation from such devices could damage cells and tissue only by heating them.

But the new research, reported in this week's *New Scientist*, supports the position of those researchers who argue that handsets can trigger potentially harmful changes to cells irrespective of temperature changes.

Prof Rony Seger, a cancer researcher at the Weizmann Institute of Science in Rehovot, Israel, and colleagues exposed rat and human cells to electromagnetic radiation at a similar frequency to that emitted by mobiles but at only about one tenth of the power.

After just five minutes the researchers identified the production of extracellular signal-regulated kinases (ERK1/2) - natural chemicals that stimulate cell division and growth.

Cancers develop when the body is unable to prevent excessive growth and division of cells in the wrong place.

Prof Seger said yesterday: "The real significance of our findings is that cells are not inert to non-thermal mobile phone radiation."

"We used radiation power levels that were around one tenth of those produced by a normal mobile. The changes we observed were clearly not caused by heating."

The UK has adopted international safety standards for electromagnetic radiation. These state that the amount of energy absorbed from an electric field or radio wave cannot exceed two watts

per kilogram (W/kg) when averaged over 10 grams of tissue. Almost all mobile phones emit less than one W/kg.

Graham Philips, of Powerwatch, a lobby group that campaigns on mobile phones, masts and powerlines, said: "Current safety guidelines assume health effects from mobiles can occur only when significant heating of body tissue occurs."

"This study shows biological changes in response to low-level mobile phone radiation - something that could have implications for health. Further research is required. However, guidance based purely on thermal effects is clearly out of date."

Other scientists pointed out that cell division occurred naturally as tissue grew or rejuvenated within the body, and that the preliminary study did not prove any health effects.

Simon Cook, a biochemist at the Babraham Institute near Cambridge, said: "The reason people are intrigued is that this pathway is frequently activated in cancer."

"The research is certainly interesting. However, they saw a very transient activation of this pathway, which we know is not sufficient to promote cell division."

"In cancer you see a much stronger, persistent and sustained activation and even this is just one of many changes required for cancer development."

Simon Arthur, from the University of Dundee, said: "The ERK1/2 pathway can be turned on by a huge variety of different things such as natural compounds produced by the body that regulate cell growth, and various forms of environmental and chemical stress."

"The research shows the effect on cells in culture in tightly-controlled laboratory conditions. In a living person there are lots of different processes occurring at the same time, so we do not know whether the signal from radio waves would produce a similar measurable effect."