

One Degree change the planet's future PART 9 health matters Death rays

Clare Peddie

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Just how much of a danger does all that man-made radiation present, writes Clare Peddie.

MOBILE phones are everywhere but scientists all over the world are still puzzling over the question of whether they could harm our health.

If there is a link between mobile phone use and cancer, it is likely to take a while to show up.

The accepted wisdom is that mobile phones communicate by signals called radio waves, also known as radio frequency radiation. Television and radio signals are transmitted in the same way.

Unlike high-frequency radiation such as X-rays, which will damage our cells and DNA in sufficiently high doses, the radio waves given off by mobile phones are a lower frequency.

They do not have enough energy to cause the same type of damage and are known as non-ionising radiation.

The radiation produced by mobile phones generates heat and may affect biological material, such as the human body.

They can penetrate the body's tissues but energy absorption is generally greatest at the surface. However, the body's normal heat regulation processes should carry away any heat.

Mobile phones are like twoway radios. They transmit radiation when the user speaks but this transmission falls to very low levels when the user is listening. The handset is most often held against the ear which means the emissions are close to the head and brain.

The Australian 2002 Radiation Protection Standard sets limits for mobile phone radiation exposure so that any temperature increase of the body's tissues is much less than that experienced in the course of everyday life, which is typically about 1C.

The **Australian Centre for Radiofrequency Bioeffects Research** at Swinburne University of Technology has \$2.5 million funding over five years from the National Health and Medical Research Council to study the effects of exposure.

Research director Associate Professor Andrew Wood says the small amount of heat produced should not be a problem but health effects cannot be ruled out yet.

"I'm a biophysicist so I'm interested in the mechanism," he says. "It's extremely unlikely that these very weak forms of radiation could do anything physiological. The amount of heat produced is very tiny, so if there is going to be an effect, it has to be by some mechanism that we don't know yet. Then we're in strange territory." Current research has not convincingly shown that radiation from mobile phones can cause health problems. Some individual studies have suggested links with cancer but it is difficult to either prove or disprove.

This is partly because:

O Cancers can take a long time to appear;

O Few people who are exposed to something that is known to cause cancer (such as smoking, alcohol consumption or an inherited risk), will actually go on to develop it;

O It is often difficult to pinpoint the precise cause of cancer in anyone;

O Some studies rely on people having accurate memories of how much they used their mobile phone in the past (sometimes 10 years or more).

A major international study, Interphone, which compared patterns of mobile phone use to the incidence of brain tumours, is yet to deliver its final report.

The study was co-ordinated by the International Agency for Research on Cancer.

Studies are mainly focused on tumours in relatively young people (30 to 59 year olds with the highest prevalence of mobile phone use five to 10 years ago) and on regions within the participating countries with longest and highest use of mobile phones.

Australian co-ordinator Professor Bruce Armstrong, from the University of Sydney, says a paper on the results of the study is still being prepared. There will be no communication of any details until the paper is peer-reviewed and published in a scientific journal.

Some of the other studies have been published but Professor Armstrong says the results are inconclusive.

"None of the other studies have shown any convincing evidence of an association between mobile phone use and brain tumours," he says.

But Associate Professor Wood says the northern European study revealed a concern about tumours on the side of head.

"It seemed that tumours were turning up on the same side of the head that people reported using their phone on," he says.

The study relied on self-reporting, so that was considered a weakness.

SOURCE: Australian Science Media Centre.

Find out more

The **Australian Centre for Radiofrequency Bioeffects Research**: www.acrbr.org.au
[<http://www.acrbr.org.au>]

The International Agency for Research on Cancer (IARC) is part of the World Health Organisation: www.iarc.fr [<http://www.iarc.fr>]

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