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NEWS

Health risks from mobile phone radiation – why the experts disagree

Mobile phones and other digital devices are now a big part of modern life – but are they dangerous? There were an estimated 5.3 billion mobile phone subscriptions worldwide by the end of 2010, so if mobile phone use is linked to head cancers, the implications are immense. We look at the scientific uncertainty in this area, and what this means for policy.

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David Gee, EEA Senior Advisor on Science, Policy and Emerging Issues

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The International Agency for Research on Cancer (IARC), a global authority on cancer, recently concluded that radiation from mobile phones is a ‘possible’ head cancer risk. However, scientific opinion is split on the issue – many different studies have reached different conclusions based on the same evidence.

The European Environment Agency (EEA) recommends taking a precautionary approach to policy making in this area. This position is based on an evaluation of the existing evidence and on the lessons from earlier hazards, analysed in the EEA “Late Lessons from Early Warnings” project.

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community about whether mobile phone use increases the risk of head cancers. We recommend using the precautionary principle to guide policy decisions in cases like this. This means that although our understanding is incomplete, this should not prevent policy makers from taking preventative action”.

Why do scientists disagree?

One reason scientists disagree is because the mechanisms by which the radiations from mobile phones could cause cancer are not yet understood. However, waiting for that knowledge could take decades: the biological mechanisms connecting tobacco smoke and cancer are still not fully understood, some 60 years after the first published studies linked smoking and lung cancer.

Another area of uncertainty is the design of animal studies, investigating the effects of electro-magnetic fields (EMF) from mobile phones and cancers. A few studies suggest a positive link, but many others fail to find any. But even if all animal studies were negative, this would not necessarily indicate a negative result in humans, as human reactions can be very different compared to those of animals. For example, animal evidence of smoking and lung cancer came only *after* evidence in humans was established.

Human studies may be inconclusive for several reasons. For example, any brain cancer effects of prolonged mobile phone use could take many years to develop and analyse, whereas mobile phones have only been in widespread use for a couple of decades. The evidence linking smoking or asbestos and lung cancer only became clear 20-25 years after first mass exposures began.

Nonetheless, there are some examples of scientifically rigorous research which already indicate a risk from mobile phones. As the EEA has often noted, potential early warnings such as these should not be ignored, especially given the serious and irreversible nature of any cancer effects and the large numbers exposed, which includes vulnerable groups such as children.

The precautionary principle

Because the evidence on mobile phones and cancer presents a mixed picture, the EEA recommends using the precautionary principle (PP), as recommended in the EU Treaty, to better manage the risk. There is no clear legal definition of the PP so the EEA has produced a working definition:

The precautionary principle provides justification for public policy actions in situations of scientific complexity, uncertainty and ignorance, where there may be a need to avoid, or reduce, potentially serious or irreversible threats to health and the environment, using an appropriate strength of scientific evidence, and taking into account the pros and cons of action and inaction.

The PP requires us to weigh evidence in a different way. This is not new - societies are used to using different strengths of evidence for different reasons, based on the costs of being wrong.

For example, criminals must be found guilty '*beyond all reasonable doubt*' before they are convicted; injured people in compensation cases need only show *a balance of evidence* in order to win compensation for negligence; while doctors only need slight evidence of a serious illness to prescribe treatment. Such precautionary approaches are justified where it is not yet possible to establish causality *beyond reasonable doubt*.

Implications for policy makers and the mobile phone industry

Citizens could be better informed about the risks of mobile phone use, as recommended by the EEA in September 2007. There is sufficient evidence of risk to advise people, especially children, not to place the handset against their heads: text messaging, or hands-free kits lead to about ten times lower radiation levels, on average, than when the phone is pressed to the head.

Governments may also wish to label mobile handsets as a 'possible carcinogen', in line with the IARC decision. In addition, more independent research is needed. The cost of these measures is very low, but the potential costs of inaction may be very high.

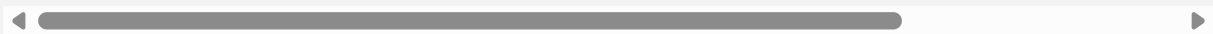
Additional information

International Agency for Research on Cancer (IARC) INTERPHONE study

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