

Possible relationship between use of mobile phones and the risk of cancer: Questions and Answers

The following questions and answers are intended to set the recent scientific findings from the Agency on the possible relationship between use of mobile phones and the risk of cancer into a broader context.

1 – What contribution does IARC make to this area of scientific research?

IARC conducts its own original research, often in collaboration with other national research groups, and also runs the [IARC Monographs Programme on the Evaluation of Carcinogenic Risks to Humans](#).

The [IARC Monographs Section](#) runs the Programme on the Evaluation of Carcinogenic Risks to Humans. The Section convenes a Working Group of researchers selected on the basis both of their expertise, as demonstrated by their scientific publications, and an absence of true or perceived conflicts of interests. IARC runs the scientific secretariat for the monograph but does not participate in the classifications.

The [IARC Environment and Radiation Section](#) is a research group which conducts large scale epidemiological studies contributing to the understanding of causes of cancer and ultimately primary prevention.

2 – How do the two areas of activity relate to each other?

An IARC Monograph is an evaluation performed at a given point in time. Research conducted by IARC is included in the evaluation by the Working Group. Subsequent to the Monographs evaluation, the Agency continues to research a given area, often informed by gaps in knowledge noted during the Monographs meetings.

In May 2011, IARC convened an international expert Working Group within the [IARC Monographs Programme on the Evaluation of Carcinogenic Risks to Humans](#). The Working Group classified [radiofrequency electromagnetic fields – as emitted by mobile phones – as “possibly carcinogenic to humans” \(IARC Group 2B\)](#). The Working Group evaluated all scientific publications available by May 2011 including those from epidemiological studies, cancer bioassays, mechanisms and other relevant data. The human evidence for an association was found to be “limited”, i.e., some but not all epidemiological studies showed an indication of an increased risk of glioma or acoustic neuroma, but bias and confounding could not be ruled out with reasonable confidence to assume a causal interpretation.

IARC coordinated a multinational case-control study on mobile phone use and risk of glioma, meningioma, and acoustic neuroma (Interphone). The results of [Interphone on glioma and meningioma were published in the International Journal of Epidemiology in May 2010](#) but represented just one component of the scientific literature considered by the above Working Group.

In August 2011, [Cancer Epidemiology published the findings of the IARC-coordinated multinational case-control study Interphone on mobile phone use and the risk of acoustic neuroma](#). This study showed an increased tumour risk restricted to the heaviest users of mobile phones but no trend across other groups of use. Results from this study had been made available to the Working Group writing the IARC Monograph because the manuscript was already in press at the time of the meeting.

IARC is also involved in a Danish nation-wide cohort study of mobile phone subscribers, and monitors incidence time trends of brain tumours in countries with high quality cancer registration.

In October 2011, the British Medical Journal published an update of a nationwide Danish cohort study of mobile phone subscribers¹, a joint work between researchers from the [Institute of Cancer Epidemiology, Danish Cancer Society](#), and the IARC Section of Environment and Radiation. This study showed no link between mobile phone use, including longer term use of more than 10 years, and the risk of glioma or any other brain tumour. These are new results that were not available at the time of the IARC Monographs meeting.

¹ Use of mobile phones and risk of brain tumours: update of Danish cohort study, British Medical Journal, [Volume 35, Issue 5](#), October 2011, Pages 453-464. doi:10.1016/j.canep.2011.05.012.

3 – How do the more recent research findings relate to the Monographs evaluation?

There is clear consistency between the recent Monographs evaluation and IARC's individual research studies. The studies to date do not permit to rule out a relationship between mobile phone use and risk of brain cancer although the evidence is limited (see below). Avoiding frequent use of mobile phones, particularly in children, or using hands-free sets can reduce exposure while waiting for future research to provide a more definitive answer on the possible carcinogenicity of radiofrequency electromagnetic fields.

In the Monographs evaluation, limited human evidence is based on evidence in humans which is considered credible, but chance, bias and confounding cannot be ruled out with reasonable confidence. This makes no assumptions about the possible magnitude of risk. The Interphone study reported such a finding, with the authors concluding that "there were suggestions of an increased risk of glioma at the highest exposure levels, but biases and error prevent a causal interpretation"; similar conclusions were drawn for acoustic neuroma.

The Danish cohort study has no information on amount of mobile phone use and consequently cannot investigate risk in the subgroup of heaviest users. Therefore it confirms the overall Interphone findings of no association, but with reduced potential for bias. It does, however, leave open the possibility that there is a small increase in heavy users. All studies have in common that risk only becoming apparent after 15-20 years of use could not be investigated.

As a classification of "2B" is a mandate for further research using improved methodology, the IARC Section of Environment and Radiation will continue efforts to contribute to this open question using the most promising tools for scientific research available at the time.

4 – How does the IARC Monographs evaluation affect recommendations from the World Health Organization on the use of mobile phones?

There are two distinct yet linked processes. As a research organization IARC provides the latest evidence base in relation to mobile phones and cancer risk. WHO then assesses that scientific information and decides whether there is a need to provide updates to its recommendations on mobile phone use. A close dialogue between the two organizations, including WHO presence on the IARC Monographs Working Group, facilitates this exchange.

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The International Agency for Research on Cancer (IARC) is part of the World Health Organization. Its mission is to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships. If you wish your name to be removed from our press release e-mailing list, please write to com@iarc.fr.