

## Mobile phones officially under suspicion

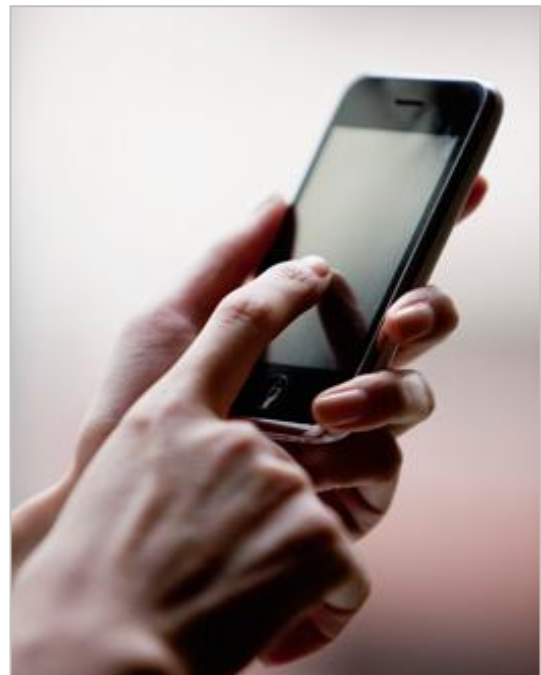
**World Health Organization says evidence that heavy mobile-phone use causes brain cancer is slim — but not zero.**

[Alison Abbott](#)

Mobile-phone use has joined the World Health Organization's purgatorial category of "possibly carcinogenic for humans".

A committee of experts brought together by the International Agency for Research on Cancer (IARC), a World Health Organization (WHO) scientific centre in Lyon, France, announced yesterday that it cannot rule out the possibility that heavy mobile-phone use may increase the risk of brain cancer.

The IARC's formal opinions on such matters — always based on published data — are influential, and likely to raise the temperature of an already overheated debate on mobile-phone use and health. The WHO's 'possible carcinogen' category covers 266 other radiation sources and chemicals, including certain pesticides and gasoline — and also items such as coffee, which joined the list in 1991 as a possible cause of bladder cancer. The IARC regularly puts together expert groups to evaluate evidence for the carcinogenic potential of chemicals and radiation sources that have raised concern. Its categories include 'carcinogenic', 'probably carcinogenic', 'possibly carcinogenic' and 'not classifiable'.



The World Health Organization says mobile phones are like coffee, a "possible carcinogen."

*Imaginemore Co., Ltd./Corbis*

The IARC expert group of 31 scientists from 14 countries was headed by epidemiologist Jonathan Samet of the University of Southern California in Los Angeles. The group held a closed conference between 24 and 31 May to assess potential carcinogenic hazards associated with exposure to radiofrequency electromagnetic fields, including radio and television transmitters, as well as mobile phones.

## The side of caution

The charity Cancer Research UK responded to the committee's conclusions with a blog (<http://scienceblog.cancerresearchuk.org/2011/05/31/who-verdict-on-mobile-phones-and-cancer/>) pointing out that published studies on the subject have serious design flaws, and noting that there has been no obvious increase in the incidence of brain cancer since mobile-phone use became common in the past 15 or so years.

The IARC expert group did not disagree with either point, but was more cautious. At its press conference on 31 May, Samet said that the group's concern related mostly to epidemiological data that has emerged from one of the two large epidemiological studies carried out so far — the Interphone study, which the IARC coordinated. That study collected data on brain-cancer patients in 13 countries and compared their reported use of mobile phones with that of individuals without cancer. Those reporting the heaviest use of mobile phones had a 40% higher risk of a brain cancer called glioma. Worldwide, 250,000 new cases of glioma are reported each year.

This case-controlled study is not definitive, the expert group stressed. Prospective studies, such as the COSMOS study — an international survey currently looking to recruit 250,000 mobile-phone users across five European countries — will be more revealing. COSMOS will monitor the health of participants over the next 20–30 years and compare this to their level of mobile-phone use.

IARC scientist Robert Baan also points out that the InterPhone study collected data from 1997 to 2003. Mobile-phone technology has developed rapidly since then: the 3G generation of devices emits 100-fold less radiation than the GSM generation that dominated during the years that Interphone collected data.

The non-ionizing radiation emitted by mobile phones is not strong enough to break chemical bonds in DNA molecules — the mechanism by which ionizing radiation causes cancer — but there are many studies addressing a possible carcinogenic mechanism. Very little of the published evidence is strong.

## Appropriate risk

"Most of the studies are flawed," admits Baan. "But a few suggest that non-ionizing radiation might have an indirect carcinogenic effect by promoting the actions of known carcinogens. If we had placed non-ionizing radiation in the not classifiable category, some people would have incorrectly interpreted that as no risk, and we didn't think that appropriate."

The IARC does not issue advice, but its director Christopher Wild says that until further research has clarified whether a danger really exists, it makes sense to "take pragmatic measures to reduce exposure such as hands-free devices or texting".

How easy is it to leave IARC purgatory? According to Baan, coffee has been on the possible carcinogen list for two decades because the public doesn't think its cancer risk is important. "But we think that our report on non-ionizing radiation will prompt more rigorous studies on its potential, particularly as a co-carcinogen." As soon as significant new evidence is published, whatever it reveals, the IARC will revisit the classification, he says.

A short summary of the group's conclusions will be published in *The Lancet Oncology* on 1 July and will be available online within a few days, says the IARC. A full report will be published as an IARC monograph in the coming months.