

## Introduction to the IARC Monographs Volume 102

Radiofrequency Electromagnetic Fields (including mobile telephones), 24-31 May 2011

The [International Agency for Research on Cancer \(IARC\)](#) is the cancer-research Institute of the [World Health Organization](#). It was established in 1965 and is based in Lyon, France. In the early years, the IARC received frequent requests for advice on the carcinogenic risk of chemicals, including inquiries about lists of known and suspected human carcinogens. In view of the complexity of the information that was available, IARC began to consider means of obtaining international expert opinion on this topic. In 1970, the [IARC Governing Council](#) adopted a resolution concerning the role of the IARC in providing government authorities with expert, independent, scientific opinion on environmental carcinogenesis. As one means to that end, the Council recommended that the IARC should prepare monographs on the evaluation of carcinogenic risk of chemicals to man, which became the initial title of the book series. In the succeeding years, the scope of the *Programme* broadened as *Monographs* were developed for groups of related chemicals, complex mixtures, occupational exposures, physical and biological agents and lifestyle factors. For this reason, the title of the series was changed in the late 1980s to what it is today, [IARC Monographs on the Evaluation of Carcinogenic Risks to Humans](#).

Through the *Monographs Programme*, the IARC seeks to identify the causes of human cancer. This is the first step in cancer prevention, which is needed as much today as when IARC was established. The global burden of cancer is high and continues to increase: the annual number of new cases was estimated at 12 million in 2008 and is expected to reach 27 million by 2030 ([Boyle & Levin, 2008](#)). With current trends in demographics and exposure, the cancer burden has been shifting from high-resource countries to low- and medium-resource countries. As a result of *Monographs* evaluations, national health agencies have been able, on scientific grounds, to take measures to reduce human exposure to carcinogens in the workplace and in the environment.

The objective of the *Programme* is to prepare, with the help of international Working Groups of experts, and to publish in the form of *Monographs*, critical reviews and evaluations of evidence on the carcinogenicity of a wide range of human exposures. The *Monographs* represent the first step in carcinogen risk assessment, which involves examination of all relevant information in order to assess the strength of the available evidence that an agent could alter the age-specific incidence of cancer in humans. The *Monographs* may also indicate where additional research efforts are needed, specifically when data immediately relevant to an evaluation are not available. It should be noted that the *Monographs* do not extrapolate beyond the range of data available, nor do they extrapolate from experimental data to the human situation. The *IARC Monographs* evaluations may assist national and international authorities in making risk assessments and in taking preventive action, but they do not recommend legislation or regulation, *e.g.*, with respect to exposure limits. Since its inception, the *IARC Monographs Programme* has convened more than 100 Working Groups and published evaluations on nearly 950 chemicals, chemical mixtures, physical and biological agents, occupational exposures and lifestyle factors. A complete list of evaluations is available at the *IARC Monographs web site* at <<http://monographs.iarc.fr/>>.

Agents are selected for review on the basis of two main criteria: (a) there is evidence of human exposure and (b) there is some evidence or suspicion of carcinogenicity. At regular intervals, *ad-hoc Advisory Groups convened by the IARC make recommendations as to which agents should be evaluated with priority in the Monographs series*. The IARC may schedule other agents for review as it becomes aware of new scientific information or as national health agencies identify an urgent public health need related to cancer.

Once an agent has been scheduled for evaluation, the openly available scientific literature is surveyed for published data relevant to an assessment of its carcinogenicity. An *IARC Monographs Working Group* then develops its evaluations through a series of distinct steps. The process begins with separate evaluations of the evidence of cancer in humans and of cancer in experimental animals, each choosing one of the descriptors '*sufficient evidence*', '*limited evidence*', '*inadequate*

evidence', or 'evidence suggesting lack of carcinogenicity'. These descriptors are defined in detail in the *Preamble to the IARC Monographs*, which was revised in 2006 and is published in each Volume. The *Preamble* is also available at the web site.

The two evaluations of the evidence of cancer in humans and of cancer in experimental animals are combined into an evaluation indicating that the agent is 'carcinogenic to humans' (Group 1), 'probably carcinogenic to humans' (Group 2A), 'possibly carcinogenic to humans' (Group 2B), 'not classifiable as to its carcinogenicity to humans' (Group 3), or 'probably not carcinogenic to humans' (Group 4). Mechanistic and other relevant data are also considered, in order to determine whether the 'default' evaluation should be modified. The Working Group then makes an overall evaluation, which reflects the weight of the evidence derived from studies in humans, studies in experimental animals, and from mechanistic and other relevant data.

In May 2011, a Working Group of 31 scientists from 14 countries will be meeting at IARC in Lyon to assess the carcinogenic hazards from exposure to radiofrequency electromagnetic fields. These assessments will be published as Volume 102 of the *IARC Monographs*, which will be the fourth in the series on physical agents, after Volume 75 and Volume 78 on ionizing radiation (X-rays, gamma-rays, neutrons, radio-nuclides), and Volume 80 on non-ionizing radiation (extremely-low frequency electromagnetic fields).

Recently, there has been growing concern about the possibility of adverse health effects resulting from exposure to radiofrequency radiations, such as those emitted by wireless communication devices. The Working Group will discuss the possibility that these exposures may induce non-thermal and/or long-term health effects, in particular an increased risk for cancer.

The Working Group will discuss and evaluate the publicly available literature on the following exposure categories involving radiofrequency radiation: (a) occupational exposures to radiation from radar, and to microwaves, (b) environmental exposures associated with signal transmission used in radio, television and wireless telecommunication, and (c) personal exposures associated with the use of mobile telephones (cell phones).

The conclusions and evaluations of the Working Group will be presented and discussed at a Virtual Press Conference on the eve of May 31, 2011, immediately following the close of the meeting.

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