

A Review of Completed and Ongoing RF Bioeffects Research Relevant to Cancer Risk Assessment

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Objective

To review the current literature database relevant to risk assessment of whether low-level exposure to radio frequency (RF) emissions can cause or promote cancer.

Background

A number of government regulatory agencies, standard setting bodies, and scientific expert groups will perform risk analysis to determine whether exposure to low-level RF energy can cause or promote cancer in humans. One such evaluation by the International Agency for Research on Cancer (IARC) is scheduled for ~2005. These evaluations are generally based upon scientific data in the peer-reviewed literature with prioritized weight given to sufficiently designed epidemiologic studies and lifetime rodent bioassays. The usefulness of *in vitro* evidence in such evaluations is generally limited to elucidating mechanisms of action for endpoints observed in human or animal studies. In determining whether sufficient information is available to make a decisive risk assessment, evaluating scientists must first determine whether an adequate number of studies exist, especially those studies given prioritized weight in a risk assessment. With regard to the evaluation of low-level RF exposure and cancer, the World Health Organization (WHO) has developed a research agenda (http://www.who.int/peh-emf/research_agenda/agenda_priorities.htm) outlining remaining areas of research needed to provide a sufficient database for decisive risk assessment. If sufficient studies are available, it must be determined by evaluating scientists whether the findings are generally consistent. If inconsistent findings do exist, it must be determined whether these are likely the result of artifacts and/or inadequacies in the study design, or whether they reveal a legitimate and potentially adverse human health concern.

Discussion

There are currently over 1800 individual studies listed in the WHO database (<http://www-int.who.int/peh-emf/database.htm>) available for risk analysis. Many of these studies are directly relevant to the issue of whether low-level exposure to radio frequency (RF) energy can cause or promote cancer, including ≥ 40 relevant epidemiologic studies, ≥ 25 long-term rodent bioassays, and ≥ 25 chemically-, genetically-, or radiation- initiated rodent bioassays. The available database of studies relevant to cancer, and how these studies address the current WHO research agenda, will be discussed.