Reviewer's report

Title: Mobile phone radiation health risk controversy and the reliability of science used to justify safety standards

Version: 1 Date: 13 November 2009

Reviewer: Franz Adlkofer

Reviewer's report:

The commentary is an important contribution to a topic of increasing public attention worldwide. It sheds some light on an ongoing controversy within the scientific community, but does not look into the real causes for the discrepant views we are confronted with. Their roots lie in the history of EMF research which was dominated from the beginning by economical and political interests. The conclusions correctly drawn in this commentary would be considerably strengthened by briefly discussing this undeniable historical background. Altogether, I agree to a great extend with the reasoning of the authors, but propose that the points made below will be considered before publication.

MAJOR COMPULSORY REVISIONS

1) The commentary discusses the weight of evidence to assume a health risk due to the exposure to mobile phone radiation. It comes to the conclusion that nothing is proven yet, but to say there is nothing may be premature. Considering the available international literature I arrive at a somewhat different position. While the outcome and the limitations of the INTERPHONE study have been correctly discussed, the scientifically sounder epidemiological work of Lennart Hardell and his results have not even been mentioned. The genotoxic potential of mobile phone radiation as demonstrated in at least three most recent in vitro-studies (1,2,3) has been ignored, too. The authors do not need to follow my assumption that the weight of evidence speaks more in favour of a cancer risk due to the exposure to mobile phone radiation than against it, but they should let us know their opinion about these most recent contributions to the scientific literature.

2) I cannot make out whether the commentary doubts more the correctness of the all-clear signals of the ICNIRP and the WHO or the correctness of the safety standards they promote or of both. The present safety limits based on short-time energy absorption reliably prevent an increase of tissue temperature. However, there is ample literature which demonstrates in vitro biological effects far below the safety standards which might be at least theoretically of significance for the development of chronic diseases as well as for disturbances in well-being. Too, the WHO states in its obviously forgotten Environmental Health Criteria Radifrequency and Microwaves Report of 1981 the following:

"In the absence of adequate knowledge concerning the mechanisms of interaction between microwave energy and biological systems, and in the light of
the limitations inherent in the SAR, the following conclusions can be drawn: (a) SAR alone cannot be used for the extrapolation of effects from one biological system to another, or for the extrapolation of biological effects from one frequency to another. (b) Curves for exposure which produce equivalent SAR for a given body over the microwave/RF energy spectrum may be used to predict equivalent average heating, provided data concerning heat dissipation indicates equivalent heat dissipation dynamics. Such curves cannot, however, be used as the only basis for predicting biological effects or health risks over the microwave/RF spectrum, since from current knowledge, it is not possible to state that equivalent average energy absorption rate for given radiation frequencies is associated with equivalent biological effects."

In the light of this, the present safety standards cannot be considered thrustworthy. The authors should make it clear where they stand.

MINOR ESSENTIAL REVISIONS

page 4, 1st paragraph, last sentence: please note that work in the laboratories of Ruediger (4) and Schär (5) clearly demonstrate a genotoxic potential of ELF-EMF which certainly increases the weight of the epidemiological findings

page 4, 2nd paragraph, line 4: please note that the statement that the "negative studies outweigh the positive ones" is questionable (6)

a few mistakes that should in any case be corrected (see also quality of written English):

page 3, 3rd paragraph, 1st sentence: syntax

page 5, 2nd paragraph, last sentence: be unable to 'either' and not "neither"

page 6, 2nd paragraph, line 2: 'increase' instead of "increased"

page 6, 2nd paragraph, line 6: 'to reliably show' instead of "to show"

page 7, 2nd paragraph, line 12: delete "of"

DISCRETIONARY REVISIONS

Page 8, 2nd paragraph, last sentence: “…… epidemiological evidence has very limited usefulness for setting of human safety standards ….”. Of course, this is true, but do we need epidemiological data which can be used for setting of standards?


**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Declaration of competing interests:**

I declare that I have no competing interests.