

The opinion of NGOs on the preliminary draft on Radio Frequencies and health effects

APPENDIX 1

Comments on the WHO EHC RF draft.

Section cancer

Here are some examples of striking bias in favour of ICNIRP/industry perception.

On page 3 and following the draft presents the Danish cohort as having “important strengths”. There is very little critique although this study has so severe limitations that it is uninformative about health risks from mobile phone use. One main reason is the exclusion of the heaviest exposure group that is extraordinary: namely the by far heaviest 200 000 users of mobile phones. These 200 000 corporate users used the mobile phone far more on average than a private subscriber at the time of the study period until 1995. As an example in 1999 a corporate user in Sweden on average used a mobile phone for outgoing conversations six times more than a private user (statistical data from Swedish Post and Telecommunications Authority PTS)¹ These six times (at least) heaviest 200 000 users represent 50% of the 400 000 private subscribers included in the study. Before 1995 the difference in usage between a corporate user and a private user can be expected to have been even larger because the rates per called minute were higher before 1995 compared to 1999. In addition, the Danish cohort only included private subscribers of mobile phones until 1995.

A UK study by Benson et al. is also presented also as having “strengths” and it is claimed that it reduces several possible biases with case-control studies. However, like the Danish cohort, the Benson study has so severe limitations that it also is uninformative as to the risks encountered by a normal to intensive use of mobile phones.

In contrast to the presentation of these two cohort studies, the presentation of all of the Hardell studies is filled with critique in every second sentence. There is no mentioning of the fact that unlike Interphone and the two cohort studies (Danish cohort, Benson) the Hardell studies have less exposure misclassification as they also include cordless phone use (DECT) as a source of

¹ PTS: Svensk Telemarknad 2003. Page 69 and 72. Available online
<https://www.pts.se/sv/Dokument/Rapporter/Telefoni/2004/Svensk-telemarknad-2003---PTS-ER-200424/>

radiofrequency exposure. Also the Hardell studies do not show a highly unlikely protective effect of short term and/or little mobile phone use in contrast to the Interphone and the Danish cohort.

In contrast to the EHC presentation of the Hardell studies the Italian supreme court in a ruling 2012 considered the Hardell studies to be the most reliable. Also the IARC Working group on RF cancer risks in 2011 concluded that the Hardell studies together with the Interphone studies was a major reason to classify RF-radiation as possibly carcinogenic to humans. Furthermore in an analyse of epidemiological studies on brain tumor risk and mobile phone use an international team of scientists concluded in 2009 that the Hardell studies had less bias than other available studies, including the Interphone and Danish cohort:

“there is possible evidence linking mobile phone use to an increased risk of tumors from a meta-analysis of low-biased case-control studies”.²

The Interphone study is presented in the WHO draft as showing no clear increased risks. However the Interphone results is by many experts considered to show the opposite: a statistically significant increased risk in the exposure category where you would expect to first observe an increased risk, i e in the highest exposure category. For instance the risk was increased for malignant brain tumors among the users who used a mobile phone for more than 1640 hours, also for the group with 1-4 years latency, with OR 3.77 (1.25–11.4). This exposure category, over 1640 hours, correspond to a normal or even low use of mobile phones today (30 min a day over 10 years)

An objective description of the Interphone results would further underline that most risk estimates are below 1, i e showing a highly implausible protective effect of mobile phone use for all users below 1640 hours that probably has led to an underestimation of the risks. Instead these implausible results are put forward by the draft authors as an argument against the increased risks observed in the highest exposure category, quote:

The shape of the exposure response pattern for cumulative hours of use adds further indication of an effect from potential recall bias, with no raised risk estimates in the first 9 deciles of exposure, and a raised risk only in the 10th decile, and with the lowest risk estimates observed in the 9th decile;

Neither is there any mentioning of the failure to take cordless phone and other RF-exposure sources into consideration. This misclassification of a major exposure (cordless phones as well as other RF-sources) is one likely contributing explanation to the reported reduced risks for brain tumors for

those who had used the mobile phone only a little or as a “regular user”, defined by the Interphone as a person who had used the mobile phone at least once a week during at least 6 months.

Hardell and colleagues showed in a separate analyze that if the cordless phones were excluded and if the included age group was restricted to 30-59 years as in the Interphone, the results of the Interphone and the Hardell group were similar.³

On page 37 the presentation of the Cefalo study on children is yet another example of a biased presentation. Among the researchers behind the study, Maria Feychting and Martin Röösli, are also experts responsible for the WHO EHC draft. This partly industry funded study (Swiss Research Foundation on Mobile Phone Communication) was published in 2011 and presented results on mobile phone use among children and the risk for brain tumors. The most striking aspect of the results of this study is that it showed a consistent increased risk for malignant brain tumours in children that had used a mobile phone. Nearly all calculated ORs are above 1.0 (100% of calculated OR:s above 1.0 in table 2, page 5; 90% above 1.0 in table 3 page 6 and 83% of calculated OR:s in table 4 page 7).

The Cefalo study also showed increasing risk by increasing cumulative duration of subscriptions and cumulative duration of calls, with OR:s increasing from 1.34 to 1.45, to 1.58 (duration of subscriptions) and 1.33, to 1.44, to 1.55 (duration of calls).

Together with the statistically significant finding of an increased risk of brain tumors (OR2.17) in children who had had a subscription for the longest time of period and also the increasing trend with increasing time of subscriptions the results are rather alarming.

In a paper presented 2010 Maria Feychting and Martin Röösli concluded that a false positive result of this very same study would be unlikely:

“it is unlikely that we will find a false positive result in the CEFALO study. Further, our findings indicate that a true risk would be rather underestimated than overestimated, because of non-differential error in the exposure assessment.”⁴

Hardell et al. Re-analysis of risk for glioma in relation to mobile telephone use: comparison with the results of the Interphone international case-control study; Int J Epidemiol. 2011

Aydin et al. Impact of random and systematic recall errors and selection bias in case--control studies on mobile phone use and brain tumors in adolescents (CEFALO study); Bioelectromagnetics 2011

This is the opposite of what is being presented in the draft for the WHO EHS and to support that view the authors refer to the Swedish brain tumor incidence data.

Further into the draft all results on cancer risks from radiofrequency radiation from broadcasting tower's and mobile phone towers in the same way fail to present the results in an objective manner: studies showing no risks are not questioned as much to their reliability in contrast to those showing increased risks of cancer among people and children living in the vicinity.

In 2012 Khurana et al. published a review of all available studies on base stations and health outcomes, quote:

*"We identified a total of 10 epidemiological studies that assessed for putative health effects of mobile phone base stations. Seven of these studies explored the association between base station proximity and neurobehavioral effects and three investigated cancer. We found that eight of the 10 studies reported increased prevalence of adverse neurobehavioral symptoms or cancer in populations living at distances < 500 meters from base stations."*⁵

While the authors of the EHC draft argue against the reliability two German studies showing increased risks of cancer for people living in the vicinity of a mobile phone base station they present a British study on childhood cancer and base stations (Elliott et al. 2010) without relevant critique on its ability to give any information about the risks to small children living in the vicinity of base stations. The study is non-informative due to:

1. The study is based only on calculated exposure from base stations where the mother lived during pregnancy based on data from mobile phone operators and the address where the mother lived when pregnant. That implies huge probable errors in actual exposure.
2. The highest calculated exposure group was too low to expect increased cancer risks: above 0.017 mW/ m² and 600 meters from a base station.
3. Valid information about where the child lived after it was born (the study is based on the address where the child's mother lived during pregnancy) is unavailable. Therefore the study fails to address its own main objective: to study exposure during the first years of life and cancer risks in children.

Further into the draft paper the authors present data on brain tumor incidence trends. However there is no mentioning of the fact (that cannot be unknown to the authors) that brain tumours are increasing in Denmark, as reported in the Danish Cancer Register's last report (2012). The incidence of tumours in brain

⁵ Khurana et al. 2010: Epidemiological evidence for a health risk from mobile phone base stations.

and central nervous systems per 100 000 inhabitants increased by 41.2% in men and 46.1% in women between 2003 and 2012.⁶ This increase supports the increased risk as shown by the Hardell group, the Interphone, the Cefalo and a French study (Coureau et al. 2014)⁷ not included in the draft.

Also Norway and Finland to a lesser extent though, show increased incidence trends in brain tumours over the last 10 years. The exception among the Nordic countries is Sweden where the number of brain tumours reported to the cancer registry is documented to be underreported by the Swedish Health Authority in a report published 2009. Since Sweden is by far the largest country among the Nordic, the incidence trends in Sweden have considerable influence when data for all Nordic countries are mixed. However in the EHC draft there is no reservation to the possible unreliability of the reported data in cancer registries.

Final remarks:

Since 2011 when the IARC classified RF as "possibly carcinogenic to humans" (Group 2B), a peer-reviewed paper has been published calling for re-classification to "probably carcinogenic to humans" (Group 2A)⁸, as well as a paper calling for re-classification to "carcinogenic to humans" (Group 1)⁹

⁶ Statens Serum Institut: Cancerregisteret 2012 page 8
<http://www.ssi.dk/Sundhedsdataogit/Registre/~media/Indhold/DK%20-%20dansk/Sundhedsdata%20og%20it/NSF/Registre/Cancerregisteret/Cancerregisteret%202012.ashx>

⁷ Coureau et al.: Mobile phone use and brain tumours in the CERENAT case-control study; Occup Environ Med. 2014

⁸ Davis et al. (2013). Swedish review strengthens grounds for concluding that radiation from cellular and cordless phones is a probable human carcinogen. <http://1.usa.gov/1B32wH1>

⁹ Hardell & Carlberg (2013). Using the Hill viewpoints from 1965 for evaluating strengths of evidence of the risk for brain tumors associated with use of mobile and cordless phones. Rev Environ Health. <http://1.usa.gov/1jelT8p>