



Advancing Sound Public Policy on the Use of
Electromagnetic Radiation (EMR)
P. O. Box 117 Marshfield VT 05658 E-mail: info@emrpolicy.org
Tel: 802-426-3035 FAX: 802-426-3030

FOR IMMEDIATE RELEASE

October 23, 2003

Contact: Janet Newton

Dutch Government Study Finds Non-Thermal Effects from Exposure to Mobile Telecommunications Antennas

Background Behind the Headlines

In late September 2003 the Netherlands Ministries of Economic Affairs, Housing, Spatial Planning and the Environment, and Health, Welfare and Sport released the results of a study of the effects on human well being and cognition from exposure to low-intensity radiofrequency/microwave (RF/MW) radiation. **The study outline characterizes the strength of the applied RF/MW fields (maximum 1V/m) as comparable to the field strength that the Netherlands Organization for Applied Scientific Research (TNO) has measured at the base of antenna towers, on rooftops, and to the maximum field strengths measured by TNO in people's homes.**

Statements in the conclusion section of the study include (emphasis added):

From our research it is concluded that our hypotheses to find no causal relation between the presence of RF-fields and the measured parameters is rejected. We have found a statistically significant relation between UMTS-like fields with a field strength of 1 V/m and the Well Being . . . It is noted that the World Health Organization (WHO) definition of health reads as "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity." Within this WHO definition, the perceived Well Being is part of health.

. . . The results are unlikely to be attributed to statistical noise . . . Note that each exposure frequency is associated with changes in some tasks or parameters, while other frequencies are not . . .

. . . In literature, it is speculated that the effects on the cognitive parameters may be explained by an unknown mechanism induced by thermal effects. In our study, it is shown that the thermal effects are negligible and therefore, an explanation based on thermal effects seems highly unlikely for effects on the cognitive parameters.

Currently the RF/MW exposure limits in The Netherlands endorse guidelines similar to those recommended by the International Council on Non-Ionizing Radiation Protection (ICNIRP). These guidelines allow exposures of up to **49V/M for the 900 MHz frequency range and 61 V/M for 1800 MHz frequency range. In the United States the exposure limits allowed by the Federal Communications Commission (FCC) are 47 V/m and 61 V/m at those frequencies respectively.**

Two articles from the journal ***Microwave News - A Report on Non-Ionizing Radiation*** give much-needed context to the findings of this Dutch government study entitled: "Electromagnetic fields generated by mobile telecommunication antennas can have effects on well-being."

Here, by permission of the publisher, is the pertinent text of those articles (emphasis added):

From the November/December 2000 issue, p.3, article entitled "Dutch Panel Advises Against Precautionary Limits for Towers:"

The precautionary principle should not be used as a basis for RF/MW exposure limits that protect against possible nonthermal effects, the Health Council of the Netherlands advises in a recent report.

*Any precautionary measures must be based on a "reasonable suspicion" of health risks, argues a 12-member panel appointed by the council. **Such health risks would be "virtually impossible" at the levels found near base stations,** concludes the panel, chaired by Dr. Eric Roubos of the University of Nijmegen.*

*The report came in response to a September 1999 request from the Dutch ministries for housing and for health, which was prompted by public concerns about radiation from cellular towers. **The council measured radiation levels near a GSM antenna and found them to be "far below" the 49 V/m limit (636 $\mu\text{W}/\text{cm}^2$) recommended by the council in 1997 (see MWN, M/J97).***

From the May/June 2003 issue, p. 3, "The Talk of Dublin" an article reporting on the May 2003 COST 281 Workshop: *Mobile Phone Base Stations and Health*, held in Dublin, Ireland:

*Dr. Eric van Rongen of the Health Council of the Netherlands in The Hague is investigating the claims of those who say they are electrosensitive. He presented the protocol for a study which will expose 36 self-described electrosensitives and 36 controls to various microwave signals at a power level of 1 V/M. **"My impression is that this is a zero experiment," commented Dr. Niels Kuster of IT'IS in Zurich. He wondered why van Rongen had not used higher exposures so that he would have had a better chance of picking up a response. Van Rongen acknowledged that the field was very low but said that he was bound by the instructions of the ethics committee that had reviewed the experiment.***

"It's very interesting that the committee would not allow exposures up to the ICNIRP level," replied Kuster. (The Dutch health council has endorsed ICNIRP-type guidelines:" see MWN, M/J 1997. (ICNIRP allows exposures of up to 61 V/m at 2000 MHz.) Results are due this summer. "My expectation is that we will not see anything," van Rongen said.

Further thanks to Louis Slesin, publisher of *Microwave News*, for providing this official Press Release from the Netherlands Ministries that sponsored this study on the effects of mobile telecommunications antennas.

Press release of the Ministries of Economic Affairs, Housing, Spatial Planning and the Environment, and Health, Welfare and Sport

Electromagnetic fields generated by mobile telecommunication antennas can have effects on well-being

A new study into the effects of electromagnetic (EM) fields generated by mobile telecommunication antennas on human beings shows a statistically significant relationship between the well-being experienced by the investigated subjects (e.g. vertigo, tingling, concentration) and exposure to UMTS-like EM fields. Such relation has not been found for human well-being and exposure to GSM EM fields. The study further shows a significant relationship between GSM and UMTS EM fields and cognitive functions (reaction speed, alertness, memory, etc). In most cases it concerns an improvement of cognitive functioning. Such relation has also been found in previous studies.

The study, named COFAM (COgnitive Functions And Mobiles) has been performed by the Netherlands Organization for Applied Scientific Research TNO and was commissioned by the Ministries of Economic Affairs, of Housing, Spatial Planning and the Environment, and of Health, Welfare and Sport. The Minister of Economic Affairs has sent the report to the Second Chamber of Parliament today.

The results of this study are taken very serious by the three ministers, but cannot at this point lead to final policy conclusions. The setup and results of this study are unique at this moment. Reproduction by an independent institute is necessary to confirm the results of the TNO study. The study does not allow conclusions to be made on whether the effect is permanent or reversible. The obvious question is: "Is it harmful?" This question cannot be answered on the basis of the conclusions and recommendations of TNO. It is also not possible to give an unequivocal conclusion on a biological mechanism underlying the results. Follow-up studies will have to be performed, whereby international cooperation will have to be sought. The report will also be sent to the European Commission.

The ministries have set up a call center to provide information to the public. The phone number is 0900-2683663.

Excerpts from the 89-page study:

Outline of the study

The study has been performed with two groups of 36 test subjects each. One group consisted of people that had been registered in the past by the Monitoring Network Health and Environment with symptoms they attributed to the presence of antennas. The other group is the reference group consisting of people without such symptoms. All subjects have performed several tests both in the presence and in the absence of EM fields comparable to those emitted by GSM and UMTS antennas. The strength of the applied fields (maximum 1 V/m) is comparable to the fields strength measured at the bottom of the antenna poles at the rooftop and to the maximum field strengths measured by TNO in peoples' homes. Using specific tests, information on cognitive functions has been obtained. Moreover, information has been asked by questionnaires on well-being. After consultation with a Medical Ethical Review Committee, a relevant section of an internationally recognized questionnaire has been used to this end, asking information on symptoms such as vertigo, fatigue and headache. The study has been performed double-

blind, meaning that neither the study subjects nor the TNO investigators knew during the investigation whether EM fields were present or not. In view of this study design, it is highly unlikely that environmental factors might have been of influence on the results.

The effects observed from EM fields generated by the antennas do not necessarily apply to mobile telephones since the signal characteristics of antennas and telephones are different. Moreover the biological cause of the observed results is unknown, preventing translation to mobile telephone use.

From pp. 61-63 - Conclusions and recommendations

The research is carried out according to rigorous scientific standards and exhibits no major problems with respect to methodology, sample size, and analysis. This is the result of two independent specialists who have reviewed the relevant documents.

From our research it is concluded that our hypotheses to find no casual relation between the presence of RF-fields and the measured parameters is rejected. We have found a statistically significant relation between UMTS-like fields with a field strength of 1 V/m and the Well Being. Both group A and group B show similar effects in the well-being results. It is noted that the World Health Organization (WHO) definition of health reads as "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity." Within this WHO definition the perceived Well Being is part of health.

Also, a statistically significant difference is observed between the generally experienced Well Being within group A and group B. The bias introduced by the selection procedure together with the different demographical structure between both groups makes a direct comparison between group A and B invalid.

From the cognitive tasks, it is observed that a slightly higher number of significant effects is found in group B when compared to group A. The results are unlikely to be attributed to statistical noise. From the 30 cognitive function tests, we found that eight cognitive function tests are statistically significant. Statistical noise could allow up to four false statistically significant results. Note that each exposure frequency is associated with changes in some tasks or parameters, while other frequencies are not.

In literature, similar results on cognition are found. From our results and the available literature, it is not possible to speculate on a scientifically justified hypothesis to explain the potential effects of RF fields on cognition. However, one aspect can be tackled. In literature, it is speculated that the effects on the cognitive parameters may be explained by an unknown mechanism induced by thermal effects. In our study, it is shown that the thermal effects are negligible and therefore, an explanation based on thermal effects seems highly unlikely for effects on the cognitive parameters.

An important scientific issue is the fact that relations that are found must be reproducible. Since this research is the first one to find a statistically significant relation on Well Being by using a subset of Bulpitt's questionnaire, reproduction of our research by a research group independent of TNO is necessary.

Without any question, the results justify more scientific research into this area. Apart from the reproduction as mentioned above, research is recommended in the following areas:

- Examine a dose-response relation, decrease and increase the radio frequency field strength in order to find the effects on the dimensions found in the Well Being.
- Examine whether a difference exists between sex, and adult versus children.
- Examine the biological mechanism to better understand whether the effects found can be ascribed to physical quantities and to better understand the impact to health related questions.
- Examine the biological mechanism within the brain functions to understand the potential effects on cognitive tasks.
- Examine the effect of different pulse forms and frequencies used.
- Examine why some cognitive function tests exhibit responses to an RF stimulus while other cognitive function tests do not.
- Examine if the effects found for the UMTS-like signal also hold for other CDMA signals.

For further information contact the Netherlands Organization for Applied Scientific Research (TNO) at: info@fel.tno.nl