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Subject : BioInitiative report  
Your ref. : -  
Our ref. : U-5601/EvR/iv/673-L1 Publication nr 2008/17E  
Annexes : -  
Date : 2 September 2008

Dear Minister,

A report published on 31 August 2007 is playing an increasingly prominent role in the debate on electromagnetic fields and health: the *BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Fields (ELF and RF)*<sup>1</sup>. The report contains recommendations on establishing limits for exposure to electromagnetic fields that are much lower than the limits that are currently applied in the Netherlands and in many other countries, and is receiving increasing attention from society.

Your Ministry has expressed interest in a judgement of the Health Council on the BioInitiative report. In this advisory letter therefore, the Council's Electromagnetic Fields Committee, after consultation of the Standing Committee on Radiation and Health, gives its opinion as to the scientific value of this report.

*Method used to compile the BioInitiative report*

Scientific advisory reports are usually the result of a process in which a group of experts, using the current state of science, extensively discusses a topic until a consensus is reached. The group is made up of independent experts from the various areas of expertise relevant to the topic. In the case of electromagnetic fields, for example, this would be biologists, epidemiologists, technical experts, physicians and in some cases also psychologists and risk experts. This procedure is followed by bodies such as the World Health Organisation (WHO) and the Health Council, as well as organisations involved in drafting proposals for exposure limits, such as the International Commission on Non-ionizing Radiation Protection (ICNIRP) and the International Commission

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<sup>1</sup> See [www.bioinitiative.org](http://www.bioinitiative.org).



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for Electromagnetic Safety (ICES) of the Institute of Electrical and Electronics Engineers (IEEE). The various experts and the interactions between them, combined with a review of all relevant scientific information, ensure that a balanced judgement on the latest scientific knowledge can be reached. It is of importance that this process is transparent. This multidisciplinary weight-of-evidence method leads to a scientifically sound judgement that is as objective as possible.

The BioInitiative report did not follow this procedure. The report is a collection of a number of chapters, called 'sections', written by individual authors. Seemingly no consultation or discussion on these sections took place between the authors. The report also does not indicate what, if any, brief was given to the authors. In any event, the sections were not written in a standardised way. Notably, not all authors are scientists. The methods used to collect literature are not defined. In many cases a selection of the available scientific material has been made, but the selection criterion is not stated. The Committee points for example to Section 12, in which the authors refer, among other things, to epidemiological studies into the association between exposure to 50 Hz magnetic fields and the prevalence of breast cancer. The authors dismiss a number of studies carried out in the home environment because exposure could not be determined with sufficient accuracy. However, this also applies to all studies into the association between living close to power lines and the prevalence of childhood leukaemia, which are discussed at length in another section of the report. The authors have also excluded various studies that did not find an association between breast cancer and exposure to magnetic fields from their analysis. It can be concluded that the scientific quality of the review sections is extremely varied.

The first section, written by one of the main initiators of the BioInitiative report, contains the summary and conclusions, which in many cases go further than the conclusions reached by the authors of the review sections. It is unclear if or how this has been discussed with them, whether they support the phrasing of conclusions in the Summary and on what basis the author reached different conclusions.

*Why was the BioInitiative report written?*

In Sections 2, 3 and 4, the same author presents exhaustive arguments in support of her belief why the current exposure limits are inadequate. In Section 2, the reason for writing the report is given:

*The Report has been written to document the reasons why current public exposure standards for non-ionizing electromagnetic radiation are no longer good enough to protect public health.*



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Upfront, therefore, the reason for writing the report was not to give an objective analysis of the current state of science, that would subsequently lead to recommendations. Instead, the aim was to present information to demonstrate why current standards are inadequate.

#### *Shortcomings*

In addition to the objections of principle and methodology outlined above, several sections also contain a number of factual errors. The Committee gives two examples. On page 6 of Section 1 the author states:

*It appears it is the INFORMATION<sup>2</sup> conveyed by electromagnetic radiation (rather than heat) that causes biological changes - some of these biological changes may lead to loss of wellbeing, disease and even death.*

This statement lacks a scientific basis and is, according to the Committee, incorrect. First of all no information is being transferred by low frequency fields and heating does not occur. With radiofrequency fields, information is being transferred by modulation. Some experimental studies found indications that certain biological effects may occur upon exposure to a modulated signal, but not, or to a lesser extent, with exposure to an unmodulated signal. As yet, there is no sufficient scientific evidence to confirm this. It is not known whether such effects may lead to health effects. The suggestion that some of the observed biological effects may lead to reduced wellbeing, disease, or even death lacks scientific basis.

On page 15 of Section 1 the author states:

*For example, the roll-out of the new 3rd Generation wireless phones (and related community-wide antenna RF emissions in the Netherlands) caused almost immediate public complaints of illness.(5)*

The reference is to a 2003 TNO study.<sup>3</sup> Both the statement and the reference to the TNO study are not correct. Long before UMTS networks were put into service some people already attributed

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<sup>2</sup> Capitalization by the author.



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various health complaints to electromagnetic fields, especially those generated by GSM base stations. The TNO study indicated that exposure to an UMTS base station-like signal (but not to a GSM signal) might have a negative influence on wellbeing. Publication of this study led to public concern and an increase in the number of complaints, even without UMTS signals being transmitted. Four independent follow-up studies did not find any indications to confirm the TNO results.<sup>4</sup>

The Committee will not go into further detail here with regard to the many other shortcomings of the report, which runs to over 600 pages. If necessary, this can be done in another publication. All these deficiencies also do not add to the Committee's confidence in the quality of the BioInitiative report.

#### *Conclusion*

In view of the way the BioInitiative report was compiled, the selective use of scientific data and the other shortcomings mentioned above, the Committee concludes that the BioInitiative report is not an objective and balanced reflection of the current state of scientific knowledge. Therefore, the report does not provide any grounds for revising the current views as to the risks of exposure to electromagnetic fields.

The BioInitiative report argues that any effect of electromagnetic fields on biological systems should be avoided, thereby ignoring the distinction between effect and damage. The Committee does not agree with this approach, as documented in previous publications (for example, in the

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<sup>3</sup> Zwamborn, APM, Vossen, SHJA, van Leersum, B, e.a. Effects of global communication system radio-frequency fields on well being and cognitive functions of human subjects with and without subjective complaints. The Hague: TNO Physics and Electronics Laboratory, 2003; FEL-03-C148.

<sup>4</sup> - Regel, SJ, Negovetic, S, Rösli, M, e.a. UMTS base station-like exposure, well-being, and cognitive performance. *Environ Health Perspect*, 2006; 114(8): 1270-1275.

- Riddervold, IS, Pedersen, GF, Andersen, NT, e.a. Cognitive function and symptoms in adults and adolescents in relation to rf radiation from UMTS base stations. *Bioelectromagnetics*, 2008; 29(4): 257-267.

- Eltiti, S, Wallace, D, Ridgewell, A, e.a. Does short-term exposure to mobile phone base station signals increase symptoms in individuals who report sensitivity to electromagnetic fields? A double-blind randomised provocation study. *Environ Health Perspect*, 2007;115(11): 1603-1608.

- Furubayashi, T, Ushiyama, A, Terao, Y, e.a. Effects of short-term W-CDMA mobile phone base stations exposure on women with and without mobile phone related symptoms. *Bioelectromagnetics*, 2008; in press.



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2002 advisory report entitled *Mobile telephones; an evaluation of health effects*). In the 2008 Annual Update on Electromagnetic Fields this topic will be further addressed.

Yours sincerely,

Prof M. de Visser  
Vice-president

The following members served on the Electromagnetic fields committee while this advisory report was being produced:

- Dr G.C. van Rhoon, physicist; Erasmus University Medical Centre Rotterdam, *chairman*
- Dr L.M. van Aernsbergen, physicist; Ministry of Housing, Spatial Planning and the Environment, The Hague, *advisor*
- Prof G. Brussaard, Emeritus Professor of Radio communication; Eindhoven University of Technology
- Dr G. Kelfkens, physicist, National Institute for Public Health and the Environment, Bilthoven, *advisor*
- Prof H. Kromhout, Professor of Occupational Hygiene and Exposure Determination, Institute for Risk Assessment Sciences, University of Utrecht
- Prof F.E. van Leeuwen, Professor of Cancer Epidemiology; Free University Amsterdam, and Dutch Cancer Institute, Amsterdam
- Dr H.K. Leonhard, physicist; Ministry of Economic Affairs, Groningen, *advisor*
- Prof W.J. Wadman, Professor of Neurobiology, University of Amsterdam
- D.H.J. van de Weerd, MD, specialist in medical environmental affairs; Gelderland Midden emergency services / Arnhem mental health services
- Prof A.P.M. Zwamborn, Professor of Electromagnetic Effects; Eindhoven University of Technology, and TNO, The Hague
- Dr E. van Rongen, radiobiologist; Health Council, The Hague, *secretary*.