1. General research activities related to EMF health

**BBEMG**
The Belgian BioElectroMagnetic Group (BBEMG), created in 1995, is a consortium of 6 research teams involved for several years in the study of health effects of extreme low frequency electromagnetic fields. The BBEMG is particularly interested in the effects of electric and magnetic fields generated by the transport and use of electric power in our daily life and places of work (50 Hz). [http://www.bbemg.ulg.ac.be/UK/1PresBBEMG/researchteam.html](http://www.bbemg.ulg.ac.be/UK/1PresBBEMG/researchteam.html). This work is supported by a grant from ELIA (the electrical industry, no governmental support).

In the frame of a research program for 2005-2009 further studies of biological effects have been done including genetic studies on electric hypersensitivity ([P. De Boever](http://www.bbemg.ulg.ac.be/UK/1PresBBEMG/researchteam.html), Environmental Toxicology Department of VITO, the Flemish Institute for Technological research); in-vitro studies on the effects of ELF's on cell differentiation and proliferation and fundamental research on therapeutic effects ([M. Hinsenkamp](http://www.bbemg.ulg.ac.be/UK/1PresBBEMG/researchteam.html), Department of Orthopaedic Surgery and Traumatology of the University of Brussels); monitoring of exposure of children to 50 Hz magnetic fields in Belgium ([G. Decat](http://www.bbemg.ulg.ac.be/UK/1PresBBEMG/researchteam.html), Department Integrated Environmental Studies of VITO, the Flemish Institute of Technological research); the elaboration of "contact current" hypothesis ([J.-L. Lilien](http://www.bbemg.ulg.ac.be/UK/1PresBBEMG/researchteam.html), laboratory of Applied and Computational Electromagnetics of University of Liège), electromagnetic hypersensitivity ([M. Crasson](http://www.bbemg.ulg.ac.be/UK/1PresBBEMG/researchteam.html), J.J. Legros, M. Ansseau, Psychoendocrinology Unit of the University of Liège); review of epidemiological studies ([M. De Ridder](http://www.bbemg.ulg.ac.be/UK/1PresBBEMG/researchteam.html), L. Braeckman, Public Health Department of the Ghent University).

Efforts made in last years have been presented at the workshop "Low frequency electrical environment: what are the health implications?" (May, 2009). A new BBEMG project (July 2009-July 2013) will involve 5 research teams.

**THE WIRELESS & CABLE GROUP**
The Wireless & Cable group of the Ghent University (led by [L. Martens](http://www.wica.intec.ugent.be)) is involved in several national and international projects related to technical aspects of the interference of electromagnetic radiation and humans. His group also executes measurements in the field around GSM/UMTS base stations. In 2008 a modeling of exposure for spheroid adult and child phantoms in a realistic exposure environment has been performed. It is reported that the highest absorption occurs in the smallest phantom and that the ICNIRP reference levels do not satisfy the absorption limits for a realistic exposure scenario. Therefore, ICNIRP reference levels should be adapted to provide compliance to the basic restrictions for realistic exposure scenarios: [http://www.wica.intec.ugent.be](http://www.wica.intec.ugent.be).

**LABORATOIRE D’HYPERFREQUENCIES**
The research group of [D. Adang](http://www.wica.intec.ugent.be), [A.Vander Vorst](http://www.wica.intec.ugent.be) and [C.Remacle](http://www.wica.intec.ugent.be) at the Laboratoire d’Hyperfréquences of the University of Louvain-La-Neuve has finished *in-vivo* study on rats, investigating the effects of long term exposure to radiofrequency waves at the exposure level equal to the limit recommended by the ICNIRP. An increased mortality and changes in some blood parameters in exposed rats compared to the control group have been found. This study so far did not appear in the peer reviewed literature.

**VITO** (Flemish Institute for Technological Research)
The VITO (a group led by [G. Decat](http://www.bbemg.ulg.ac.be/UK/1PresBBEMG/researchteam.html)) has continued an evaluation of occupational and public exposure to the radio and intermediate frequencies related to the use of welding devices, magnetic reactivators in libraries, energy saving lamps, DECT-phones, and exploitation of the TETRA base stations. This work has been supported by international (e.g. EMF-NET) and national (Department of Environment, Nature and Energy of the Flemish government) grants. A measurement campaign for estimating the indoor exposure of children to ELF, VLF and RF fields from indoor and outdoor EMF sources has been finished in 2008: [http://www.lne.be/en/environment-and-health/research/NIS3_summary.pdf](http://www.lne.be/en/environment-and-health/research/NIS3_summary.pdf). The study has been supported by the department of Environment, Nature and Energy of the Flemish government.
ANPI
The evolution of the public exposure to electromagnetic radiation during the last 6 years and the expected evolution during the next years in the Brussels Capital Region has been analysed by B. Stockbroeckx. The work is supported by the Brussels Capital Region.

ESAT-TELEMIC
This research group of the Leuven University (led by G. Vandenbosch) is involved in the modeling, design, and measurement of antennas dedicated to operate in the presence of or even inside the human body. The group also performs projects and measurements involving shielding textiles. They are to be used in (future) wireless Body Area Networks. The group also cooperates in projects to illuminate human tissue, where it takes care of the technical aspects. It provides general information about electromagnetic radiation to the general public at many occasions.

THE HEALTH COUNCIL
The Health Council has published several advisory reports to policy makers:

- Advisory report concerning the legislation for base stations (February 2009). This advisory report elaborates the motivation to limit the exposition norm for base stations to 3 V/m.
- Recommendations concerning the exposition of the population to magnetic fields of electrical installations (October 2008). The Health Council recommends that the long term exposure of children to magnetic fields of, on average, more than 0.4 μT, be avoided.
- Non-ionizing radiation: overview of advisory reports 2000-2008 (October 2008)
- Possible biological effects of modulated microwaves (February 2008). The conclusion in this report was that there is no evidence that these waves cause an effect on health, but that there are a number of indications that incite precaution.
- Wireless communication systems and GSM in hospitals (February 2007). In this report the risks of electromagnetic interference between a life-supported equipment and communication devices emitting EMF are analyzed. It is recommended that high-risk appliances such as walkie-talkies and analogue radiotelephones should be banned in hospitals. Middle to low-risk appliances such as cell phones (GSM), wireless phones, wireless Internet, etc. can be allowed, on the condition that a distance of minimum 1,5 m be maintained to sensitive apparatus.

2. New policies and legislations regarding EMF exposure

Radio frequency

Until recently, the federal authority was competent for fixing exposure norms, among others for the exposure to radio waves originating from transmitting stations (royal decree of 10 August 2005). For radio waves between 10 MHz and 10 GHz, the frequency band which is used most frequently for telecommunication, four times more stringent limit values were fixed in Belgium as compared to values recommended by the European Council.

In January 2009, the Constitutional Court of Belgium has decided that the regional authorities are competent to determine limit values for the electromagnetic field (in the form of quality standards for the environment) and to set the exploitation conditions for transmitting stations. The royal decree of 10 August 2005 is defunct. The federal authority remains competent to define product norms.

Since March 2009, an ordinance is applicable in the Brussels-Capital Region for a broad spectrum of electromagnetic fields, from 100 kHz to 300 GHz (except TV- and radio transmitters), including the radiation from cellular phone base stations. This ordinance limits the electromagnetic field to 3 V/m (at 900 MHz). At this moment, there are no implementing orders made for this decision.

In the Walloon Region a decree is applicable since April 2009 for stationary antennas. This decree limits the electromagnetic field to 3 V/m per antenna.

In January 2009, a resolution concerning non-ionising radiation was approved by the Flemish Parliament. Concerning antennas of electromagnetic waves, a limit of exposure of 3 V/m is suggested, in accordance with the ordinance of the Brussels Capital Region. For the moment the Flemish government is working on a new regulation to replace the former federal Royal Decree of 10 August 2005.

Extremely Low Frequencies

Concerning the electromagnetic fields from the electricity grid (50 Hz), Belgian legislation (General Regulations on Electrical Installation) limits the strength of the electrical field. The limits are equal to those recommended by
the ICNIRP. Until now, there is no Belgian legislation at the federal level for limiting the exposure of the public to magnetic fields of 50 Hz. Belgium accepts the ICNIRP recommendation of 100 µT.

In 2004, the Flemish Government has established a quality standard for the domestic interior (decision of the Flemish government of 11 June 2004). In Flanders, a limit value (intervention value) of 10 µT is valid. This decision also sets the value to strive for (the goal value): 0.2 µT. These limit values are meant to protect the population against possible risks of long term exposure.

3. Areas of public concern and national responses

Alarming media responses to some international studies (e.g. the updates of the Interphone-project) and the above-mentioned national scientific studies and advisory reports has lifted concerns of public. In response to public concern, new initiatives for policy and public information have been taken.

- The interdepartmental policy conference “Printemps de l’Environnement” has taken place in 2008, led by the federal minister of Environment. The health risks of EMF and the need for better regulation have been discussed.
- The EMF-policy conference has been organised by the Walloon Region. The need for better regulation has been discussed.
- The Flemish Parliament has organised during 2008-2009 a number of hearings with invited scientists. In 2009 the resolution concerning non-ionising radiation has been adopted.
- The Federal Parliament has adopted in 2009 a resolution concerning a better availability of consumer information regarding the purchase of mobile phones and the protection of public health against the risks from electromagnetic fields.
- There are incentives to set special requirements for mobile phones designed for use by young children.

4. New public information activities

The federal government:

- In 2008, the Ministry of Health, Food chain safety and Environment has published a brochure “Les champs électromagnétiques et la santé: votre guide dans le paysage électromagnétique”. This brochure is available in 3 languages (Dutch, French, German). A number of fact-sheets on frequently asked questions are prepared.

The government of the Brussels Capital Region:

- A map of all the locations of antennas that require an environmental permit is accessible online. The most important technical data of each installation is listed.

The report is written by Federal Ministry of Health, Food chain safety and Environment, DG Environment in collaboration with the Department of Environment, Nature and Energy of the Flemish Region, the Directorate-General of Agriculture, Natural Resources and Environment of the Walloon Region, the Brussels Institute for Environment of the Brussels-Capital Region and the Health Council.