

In Belgium, regional governments are responsible for the electromagnetic policy of their territory and this report was prepared by the Flemish Department of Environment & Spatial Development authorized for the electromagnetic policy in Flanders, the northern region of Belgium.

1. Research activities related to EMF radiation and health

Continuous

Expert support EMF radiation: This ongoing activity establishes a multidisciplinary expert group, in order to gather knowledge on EMF and to support our department. The group currently consists of imec, Ghent University and Sciensano. They monitor and interpret (international) research into possible health effects of EMF and new wireless technology, applications and related changes in exposure to EMF.

Completed

Validation of the computational model for the calculation of magnetic fields near power lines: Our department uses a mathematical model to calculate magnetic fields from power lines for the transport and distribution of electricity. This model has been validated by comparing results with measurements at different types of high-voltage power lines and with the results of other simulation software.

Development of electronic sensors for measuring magnetic fields to monitor exposure near power lines: The design, production and testing of online electronic sensor units for measuring magnetic fields from high-voltage power lines is set up for establishing a permanent monitoring system of exposure to magnetic fields in the vicinity of the high-voltage power lines. The sensors are able to measure low values (precautionary principle) and higher values (standard in Flanders and ICNIRP guideline).

Inventory and critical review of international reports on health effects of exposure to extremely low-frequency electromagnetic fields [report will be published in June 2024]: This study aims to identify and interpret evidence-based international review reports on health effects of extremely low-frequency electromagnetic fields - at either acute, subacute or chronic exposure - in terms of methodology used and results. A protocol for the methodological quality assessment of overview reports has been developed and registered with the Open Science Forum.

RF measuring procedure: use of broadband meter for 5G NR measurements: This measurement study showed that it was possible to use a broadband meter to measure the exposure from 5G NR antennas, and to check compliance with the legal standards. The broadband measurements are a good indicator of compliancy to the standards if used in combination with a user device to create beamforming in order to have a worst case scenario in terms of exposure.

In progress

More effective deployment of RF sensors for monitoring trends in radiation exposure [expected 2025]: This research will ultimately contribute to the development of an exposure monitoring network in Flanders. The earlier developed RF electronic sensors are deployed in a pilot setup. Sensor measurements and other data sources will be used to develop an interpolation model leading to an exposure map estimating EMF. The goal of the monitoring network is to map the time-dependent RF exposure using measurement data collected by sensor boxes and modelling in zones located between these boxes.

Pilot project monitoring ELF: By manufacturing a limited number of sensor boxes, validating them and placing them in the field, we are testing the sensor boxes over a long period of time and can also evaluate them. It is a first step towards a Flemish monitoring network of sensors in function of policy.

Measurement study on different sources of RF [expected 2025]: In the first part, we focus on the proportion of exposure coming from different sources, such as digital gas and water meters, LoRa networks, private 5G networks in hospitals, In the second part, we study the average exposure of an individual in several daily environments over a given period of time via an exposimeter.

2. New relevant policies and legislations

Following upgrades to the 380 kV high voltage network, the Flemish government has approved regulations for acute and a framework for chronic exposure to magnetic fields from power lines for the transport and distribution of electricity. This includes (1) a limit for acute exposure to magnetic fields (100 μ T), (2) a framework for the long-term exposure to magnetic fields (0.4 μ T), based on the precautionary principle to be used in projects for new or modified power lines and for constructing houses, childcare facilities and schools under existing power lines, (3) simulations of the exposure near power lines and (4) the deployment of a monitoring network for the magnetic fields using electronic, online sensors. High voltage power line operators signed a covenant with the government, containing measures they need to take to prevent long-term exposure.

3. New communication activities

To address concerns, we communicate scientifically based answers to questions from the public and can provide also EMF calculations for those living near a high-voltage line.

We keep cities and municipalities informed through a newsletter when there are relevant changes to EMF policy for them.

Citizens and local governments looking for information on EMF and health can check out our website where we gather science-based knowledge on both RF and ELF.

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