HELLENIC REPUBLIC
Report on EMF activities
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New policies and legislation

- In October 2018, the Ministry of Digital Policy, Media and Telecommunications launched an open public consultation of a new law concerning the licencing and control of land based antenna stations of all types. According to this proposed law, the safety limits for the exposure of the general public in the vicinity of all kinds of antenna stations are set (again, as in the current legislation) to 70% of the 1999 EU Council's Recommendation basic restrictions and reference levels values in all cases, and to 60% of them for antennas located closer than 300 meters from the perimeter of specific facilities, i.e. schools, kindergartens, hospitals or eldercare facilities. The proposed law includes provision for the establishment of a 9-members special committee (the members will be appointed by the Ministries of Digital Policy, Media and Telecommunications, Environment & Energy and Health) having as a mandate to review the need for revision of the current EMF exposure limits for the general public. This committee is entitled to invite for hearings all interested parties.

It should also be noted that according to this proposed law, the verification of compliance of the radiofrequency emissions with the legislated EMF exposure limits is accomplished (as in the current legislation) by: a) in situ measurements performed by the Greek Atomic Energy Commission (EEAE) or other authorized by it entities, in the vicinity of (at least) 20% of all the antenna stations installed in urban areas every year, and b) through the operation of the *National Observatory of Electromagnetic Fields*, which is a network of 500 fixed (480 broadband and 20 frequency selective) and 13 mobile (vehicle mounted frequency selective) measurement stations throughout Greece that continuously monitor the EMF levels in the frequency range 100 kHz - 7 GHz. The funding of these activities is ensured by: a) the fee of 220 € that the owners of licensed antenna stations are billed annually the for each licensed antenna station and b) the fee - not exceeding the 80% of the above sum - charged to those who request in-situ EMF levels measurements at their premises. The installation of mobile phone base stations at the premises of schools, kindergartens, hospitals or eldercare facilities is still forbidden.

Moreover, as part of the licensing procedure for antenna stations, the exposure levels of the general public in the vicinity of antenna stations (>164Weirp) are assessed, in every case, through the electromagnetic emissions studies submitted by the antenna operators, in order to be examined by EEAE which gives its expert opinion.

- In November 2018, the Ministry of Digital Policy, Media and Telecommunications, set up a working group comprised of all relevant stakeholders in order to prepare the national 5G roadmap. EEAE participates in this group, as EMF exposure from the upcoming 5G networks is also a subject of discussion within the group. Trial 5G networks are being deployed in 3 major cities in Greece.

Public information activities

- The results of measurements performed in the vicinity of more than 10000 antenna stations are uploaded at EEAE web site (http://eeae.gr).
- The third annual report concerning the operational aspects and the measurement results of the National Observatory of Electromagnetic Fields was published in February 2019 (https://paratiritirioemf.eeae.gr/images/news/EEAE_EPHP_report_2018.pdf, in Greek language). The measurement results of the first three years of operation (2016-2018) of the National Observatory of Electromagnetic Fields revealed that all values were well below the reference levels for general public exposure, as defined by the Greek legislation. The results of this national monitoring network which is operated and controlled by EEAE, are presented through an interactive web portal (https://paratiritirioemf.eeae.gr), in which data are constantly updated with the latest station measurements.
- A nationwide public opinion survey about perceptions, attitudes and knowledge on radiation-related topics was conducted in Greece during the period June-July 2018 in a sample of 1.811 persons with the use of telephone interviews on a structured questionnaire. Up to now, at national level there were no available data from public opinion surveys about radiation-related topics. The questionnaire used in the survey was divided in 6 thematic areas: general questions about radiation, medical exposure, exposure from the environment, electromagnetic fields, nuclear energy & waste management and the trust, transparency and visibility of EEAE. A detailed presentation of the survey results are available in English language at: https://eeae.gr/en/news/announcements/6218-perceptions,-attitudes-and-knowledge-of-the-public-opinion-in-greece-about-radiation-national-survey-results.

For the vast majority of respondents (85%) their exposure to radiation is a matter of concern. Radioactive waste, radon, solarium tanning beds, mobile phone antennas and mobile phones are the first five items considered as radiation sources of high risk (with scores 4.7, 4.3, 4.1, 3.9. and 3.6 respectively, on a scale from 1-no risk to 5-high risk). The first five radiation sources that the responders mentioned that they know were mobile phones (64 %), the sun (30 %), Wi-Fi (20%), mobile phone antennas (19%) and microwave ovens (16%) (unprompted answers). The first three known sources of radiation exposure in the environment were the sun (55 %), mobile phone antennas (39%) and power lines (13%) (unprompted answers). The main

findings concerning EMF are that mobile phone antennas (59%), mobile phones (57%) and Wi-Fi (24%) are the sources that the public is concerned about the most and 7 out of 10 say they would react actively (by filing a complaint, protesting, taking legal actions etc.) in case that a mobile phone base station was installed near their residence. Lack of public trust towards the public authorities responsible for radiation protection was also recorded. Also, 64% thinks that there is lack of transparency in the way that public authorities deal with radiation protection and 73% believe that the information provided about radiation-related topics is not adequate or sufficient.

The survey was conducted as part of the institutional project entitled "Assessment of the national system for protection against ionizing and non-ionizing radiation – awareness-raising actions" (code name "AVRA"), National Strategic Reference Framework, 2017-2019 (funded by the European Regional Development Fund under the "Strategic Development Action of Research and Technological Organizations" of the program "Entrepreneurship and Innovation Competitiveness").

This survey is seen by EEAE as a strategic tool for developing appropriate information and training actions. In parallel with the quantitative public opinion survey, a qualitative survey using in-depth interviews with interested parties and stakeholders was conducted, in order to investigate safety culture aspects.

Research activities

Research actions and programmes concerning biological effects, dosimetry and exposure assessment to electromagnetic fields are being performed mainly in universities and research centers and are funded by the government, the European Commission and other international sources. Some new publications from greek researchers:

- Stefi AL, Margaritis LH, Skouroliakou AS, Vassilacopoulou D., Mobile phone electromagnetic radiation affects Amyloid Precursor Protein and α-synuclein metabolism in SH-SY5Y cells, Pathophysiology 2019, doi:10.1016/j.pathophys.2019.02.004
- Fragopoulou AF et al., Hippocampal lipidome and transcriptome profile alterations triggered by acute exposure of mice to GSM 1800 MHz mobile phone radiation: An exploratory study, Brain Behav 2018; 8 (6): e01001, doi:10.1002/brb3.1001
- Samaras T et al., Theoretical evaluation of the power transmitted to the body as a function of angle of incidence and polarization at frequencies > 6 GHz and its relevance for standardization, Bioelectromagnetics 40 (2): 136-139
- Gourzoulidis GA, Kappas C, Karabetsos E, Development of a flowchart system for the risk assessment of occupational exposure to low and high frequency electromagnetic fields, Hell J Radiol 2019; 4(1): 18-25.