

The Safety of Electromagnetic Fields Attracts Attention in the EU



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No. 01

Editorial

At the end of September, I attended the annual BioEM2021 conference organized by the Bioelectromagnetics Society (BEMS) and the European BioElectromagnetics Association (EBEA). This year's hybrid event was held in Ghent, Belgium. In addition to the scientific program, the conference addressed the merging of EBEA and BEMS into one society. Information about the preparations for the new society is available on the BEMS and EBEA websites. The BioEM2022 conference will take place June 19–24, 2022, in Nagoya, Japan.

The European Commission has requested the Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) to produce two scientific opinions on the safety of electromagnetic fields (Opinion I and II). Opinion I: To advise on the need for a (technical) revision of the Council Recommendation 1999/519/EC annexes and of the annexes of Directive 2013/35/EU in view of the latest scientific evidence available, in particular that of the ICNIRP guidelines updated in 2020,



with regard to radio frequency 100 kHz to 300 GHz. Opinion II: To update the SCENIHR (Scientific Committee on Emerging and Newly Identified Health Risks) Opinion of 2015 in the light of the latest scientific evidence with regard to frequencies between 1Hz and 100 kHz. The deadlines for the preliminary opinions are as follows: Opinion I, July 2022, and Opinion II, July 2023.

For radiofrequency fields, SCHEER has identified a need for external experts to participate in the relevant group, so the SCHEER working group put out a call for experts in radiofrequency fields (cell biology and biophysics, and human or animal (vertebrates) biology/toxicology) that was open until November 14, 2021.

The World Health Organization (WHO) was also seeking experts to join their Task Group on Radiofrequency Fields and Health Risks that will contribute to the development of a WHO monograph on radiofrequency fields. The deadline for this was December 15, 2021.

Despite the Covid-19 pandemic, quite a few studies related to electric and magnetic fields continued to be published. Once again, I have found some fascinating scientific articles for this new bulletin. The bulletin starts with an article that discusses magnetic fields and childhood leukemia. The article includes recent studies that the researchers examined using pooled analysis. Another article describes an interesting Finnish study on the association between low-frequency magnetic fields and skin cancer.

The bulletin concludes with two articles related to EU Directive 2013/35/EU. The first one discusses the health surveillance required for electromagnetic fields, and the latter one explores the problems related to the directive.

Hope you enjoy reading this summary in English!

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No. 02

Editor-in-chief's comment: The researchers investigated if there is an association between magnetic fields and childhood leukemia when conducting a pooled analysis of the most recent studies only. They found no increased risk of leukemia among children exposed to greater magnetic fields. According to the researchers, their results are not in line with previous pooled analyses.

Pooled Analysis of Recent Studies of Magnetic Fields and Childhood Leukemia

Source:

Amoon A T, Swanson J, Magnani C, Johansen C, Kheifets L. Pooled analysis of recent studies of magnetic fields and childhood leukemia. *Environmental Research* 2022, 204, 111993.

No. 03

Editor-in-chief's comment: The researchers measured electric and magnetic fields from 154 kV power cables and their distribution in utility tunnels. They compared the measurements against exposure standards, and marked the safe working area with lines on the floor. According to the researchers, using safety lines to mark the intensity of exposure to electric and magnetic fields may alleviate concerns related to the fields.

Analysis of Electric and Magnetic Fields Distribution and Safe Work Zone of 154 kV Power Line in Underground Power Cable Tunnel

Source:

Seong M, Kim D H, Kim S C. Analysis of electric and magnetic fields distribution and safe work zone of 154 kV power line in underground power cable tunnel. *Safety Science* 2021, 133, 105020.

No. 04

Editor-in-chief's comment: The researchers examined exposure to magnetic fields by using 3D techniques with Geographic Information Systems (GIS). To validate their model, they also conducted measurements. Based on the measurements, the researchers considered their model to be reliable, as long as the precision used in the digital terrain modeling was 5 x 5 meters. It will be interesting to see if the model can be applied in other studies as well.

3D GIS for Surface Modelling of Magnetic Fields Generated by Overhead Power Lines and Their Validation in a Complex Urban Area

Source:

Miravet-Garret L, de Cózar-Macías Ó D, Blázquez-Parra E B, Marín-Granados M D, García-González J B. 3D GIS for surface modelling of magnetic fields generated by overhead power lines and their validation in a complex urban area. *Science of the Total Environment* 2021, 796, 148818.

No. 05

Editor-in-chief's comment: The researchers' aim was to assess the association of skin cancer with exposure to magnetic fields. They used a database of residential buildings with indoor transformer stations that they had used in an earlier study. According to the researchers, MF exposure of at least



six months was not associated with skin cancer. If exposure had started under the age of 15, however, they considered the risk of melanoma to be higher. This finding was based on seven exposed cases.

Residential Extremely Low Frequency Magnetic Fields and Skin Cancer

Source:

Khan M W, Juutilainen J, Naarala J, Roivainen P. Residential extremely low frequency magnetic fields and skin cancer. *Occup Environ Med* 2021; 0, 1–6, 107776.

No. 06

Editor-in-chief's comment: The author has examined human exposure to low-frequency electromagnetic fields. According to him, exposure scenarios have become more complex. After reviewing a large set of normative and technical documents, he has created an overview of the requirements and limits presented in them. The article presents assessment methods accompanied by examples.

Assessment of Human Exposure (Including Interference to Implantable Devices) to Low-Frequency Electromagnetic Field in Modern Microgrids, Power Systems and Electric Transports

Source:

Mariscotti, A. Assessment of human exposure (including interference to implantable devices) to low-frequency electromagnetic field in modern microgrids, power systems and electric transports. *Energies* 2021, 14, 6789.

No. 07

Editor-in-chief's comment: The researchers have examined the association between residential exposure to electromagnetic fields and the risk of amyotrophic lateral sclerosis (ALS) and the dose-response relation related to it. They conducted a systematic literature review and concluded that the available data were too limited to conduct a dose-response analysis for the modeled exposure studies or to perform further stratified analyses.

Residential Exposure to Electromagnetic Fields and Risk of Amyotrophic Lateral Sclerosis: A Dose–Response Meta-Analysis

Source:

Filippini T, Hatch E E, Vinceti M. Residential exposure to electromagnetic fields and risk of amyotrophic lateral sclerosis: a dose-response meta-analysis. *Scientific Reports* 2021, 11, 11939.

No. 08

Editor-in-chief's comment: The authors discuss occupational exposure to electromagnetic fields and health surveillance from the perspective of Directive 2013/13/35/EU. The aim of health surveillance should be the early detection and monitoring of known adverse effects, as well as the early



identification of workers at particular risk. For low-frequency magnetic fields, workers at particular risk include those with active implanted medical devices, for example.

Occupational Exposure to Electromagnetic Fields and Health Surveillance according to the European Directive 2013/35/EU

Source:

Modenese A, Gobba F. Occupational exposure to electromagnetic fields and health surveillance according to the European Directive 2013/35/EU. *International Journal of Environmental Research and Public Health* 2021, 18, 1730.

No 9

Editor-in-chief's comment: In their article, the authors discuss some critical issues related to Directive 2013/35/EU. For example, they examine what is meant by "temporarily exceeding" exposure limit values.

Issues in the Implementation of Directive 2013/35/EU Regarding the Protection of Workers against Electromagnetic Fields

Source:

Contessa G M, D'Agostino S, Falsaperla R, Grandi C, Polichetti A. Issues in the implementation of directive 2013/35/EU regarding the protection of workers against electromagnetic fields. *International Journal of Environmental Research and Public Health* 2021, 18, 10673.

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