

Researchers looking into the effects of electromagnetic fields in the natural world



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No. 01

Editorial

I attended the BioEM2024 conference that took place June 16–21, 2024, in Crete, Greece. As before, the event discussed the effects of electromagnetic fields from a variety of perspectives. I took special note of the fact that the European Union is currently funding parallel research projects in the area of radio frequency fields. Together, these projects form the European Research Cluster on EMF and Health (CLUE-H). It was also interesting to hear about the studies related to electric and hybrid vehicles. The intensity of the fields emitted by these vehicles is known precisely. More information on the conference is available on the organizer's website. On the BioEM website, I discovered that the BioEM2025 conference will take place June 22–27, 2025, in Rennes, France.

As I have already mentioned in my previous bulletins, the European Commission has asked 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). Further information on this process is available on SCHEER's website.



In November 2023, SCHEER launched a public consultation on the Preliminary Opinion on potential health effects of exposure to low frequencies. The exact title of the Opinion published by SCHEER is “Potential health effects of exposure to electromagnetic fields (EMF): Update with regard to frequencies between 1Hz and 100kHz”. The latest information on SCHEER’s website is that the comments received are currently being examined.

Once again, I have found some fascinating scientific articles for this new bulletin. The bulletin starts with a publication that reports on the effects of electromagnetic fields on wild fauna and flora. I have usually focused on studies relating mainly to people, but this article piqued my interest. This time, childhood leukemia is examined in relation to magnetic fields near transformer stations or transformer rooms in residential buildings.

Towards the end of the bulletin, the topics discussed include the safety of smart meters and how to conduct a risk assessment for workers with wearable medical devices exposed to electromagnetic fields.

Hope you enjoy reading this summary in English!

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Editor-in-chief, Situation Report Bulletin

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No. 02

Editor-in-chief's comment: Based on the results from a previously-held workshop, the authors wrote a report summarizing current knowledge on the biological effects of electric and magnetic fields on wild fauna and flora. The writers noted that no strong adverse effects from anthropogenic fields were highlighted at the workshop. However, some gaps in knowledge remain, so they recommend further studies to identify the interaction mechanisms and the ecological consequences related to this topic.

Biological effects of electric, magnetic, and electromagnetic fields from 0 to 100 MHz on fauna and flora: Workshop report

Source:

Pophof B, Henschenmacher B, Kattnig D R, Kuhne J, Vian A, Ziegelberger G. Biological effects of electric, magnetic, and electromagnetic fields from 0 to 100 MHz on fauna and flora: Workshop report. Health Physics 2023, 124(1):39–52.

No. 03

Editor-in-chief's comment: The researchers examined the risk of childhood leukemia in relation to the magnetic field generated by transformer stations. The study was conducted in two Northern Italian provinces. The researchers found no overall association between residential proximity to transformer stations and childhood leukemia. However, there was some evidence for elevated risk of childhood leukemia among children aged five years or older. According to the authors, the precision of the study was limited by the low numbers of exposed children.

Residential exposure to magnetic fields from transformer stations and risk of childhood leukemia

Source:

Malavolti M, Malagoli C, Wise L A, Poli M, Notari B, Taddei I, Fabbi S, Teggi S, Balboni E, Pancaldi A, Palazzi G, Vinceti M, Filippini T. Residential exposure to magnetic fields from transformer stations and risk of childhood leukemia. Environmental Research 245 (2024) 118043.

No. 04

Editor-in-chief's comment: The researchers assessed associations between residential proximity to transformer rooms and childhood leukemia from the perspective of exposure to magnetic fields. The study included data from five countries. Using population registry based data, the researchers examined the association between living in buildings with built-in transformers and the risk of childhood leukemia. According to the article, the small number of cases in the data preclude strong conclusions.

International study of childhood leukemia in residences near electrical transformer rooms



Source:

Crespi C M, Sudan M, Juutilainen J, Roivainen P, Hareuveny R, Huss A, Kandel S, Karim-Kos H E, Thuróczy G, Jakab Z, Spycher B D, Flueckiger B, Vermeulen R, Vergara X, Kheifets L. International study of childhood leukemia in residences near electrical transformer rooms. *Environmental Research* 249 (2024) 118459.

No. 05

Editor-in-chief's comment: The researchers examined if activation of the vestibular system by electromagnetic induction is possible in the context of magnetic resonance imaging (MRI). The electromagnetic fields used in MRI scanning are different from the extremely low frequency electric and magnetic fields near power lines, but the possible effects of extremely low frequency fields on the vestibular system have also been studied. The writers conclude that the induction hypothesis and its potential impact on the vestibular system cannot be completely excluded.

Is activation of the vestibular system by electromagnetic induction a possibility in an MRI context?

Source:

Bouisset N, Nissi J, Laakso I, Reynolds R F, Legros A. Is activation of the vestibular system by electromagnetic induction a possibility in an MRI context? *Bioelectromagnetics* 2024; 1–13.

No. 06

Editor-in-chief's comment: The researchers examined if people rating themselves as electro-hypersensitive (EHS) have more sleep problems than others. The study also sought to find out if variants of the CACNA1C gene are associated with this issue. The study included 2,040 participants in Switzerland, and dealt with exposure to electromagnetic fields used in mobile communication. According to the researchers, those considering themselves as EHS rated their subjective sleep quality worse than non-EHS individuals. It made no difference whether they had reported exposure to high frequency electromagnetic fields or not.

Reduced subjective sleep quality in people rating themselves as electro-hypersensitive: An observational study

Source:

Eicher C, Marty B, Achermann P, Huber R, Landolt H-P. Reduced subjective sleep quality in people rating themselves as electro-hypersensitive: An observational study. *Sleep Medicine* 113 (2024) 165–171.

No. 07

Editor-in-chief's comment: The researchers examined if somatic symptom distress and attribution could be associated with people later developing symptoms related to environmental factors. The



study included 2,336 participants in Sweden. The participants completed the PHQ-15 questionnaire. The study focused on symptoms related to chemical substances, certain indoor environments, sounds, and electromagnetic fields. According to the researchers, expectations played a role in the development and persistence of many environmental intolerances.

Do somatic symptom distress and attribution predict symptoms associated with environmental factors?

Source:

Köteles F, Nordin S. Do somatic symptom distress and attribution predict symptoms associated with environmental factors? *Journal of Psychosomatic Research* 179 (2024) 111637.

No. 08

Editor-in-chief's comment: Based on data from earlier studies, the authors examined if smart meters have an effect on human health. They note that near smart meters, the level of exposure to high frequency electromagnetic fields is 5-6 times lower than the public exposure limit recommended by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). They say these exposure levels are too low to have any measurable effect on the human body, or any health symptoms or physiological effects for humans. The writers therefore consider smart meters to be safe to use.

Smart meters and human health

Source:

Plante M, Barbieri M B, Bulcao J A, Cabanes P A, Deschamps F, Jackson S, Korpinen L, Magne I, Nakasono S, Ostiguy G, Stunder D, Tripp H. Smart meters and human health. *CSE* N°32 February 2024.

No. 9

Editor-in-chief's comment: The writers examined how exposure to electromagnetic fields affects wearable medical devices and how the risk assessment for workers should then be conducted.

Risk Assessment for workers with wearable medical devices exposed to electromagnetic fields

Source:

Vivarelli C, Censi F, Calcagnini G, Falsaperla R, Mattei E. Risk Assessment for workers with wearable medical devices exposed to electromagnetic fields. *Health Physics* 2024, 00(00):00–00.



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The next situation report bulletin will be published in winter 2024. The archive is available at www.leenakorpinen.com.

