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The English version is a summary of the more extensive situation report bulletin in Finnish.

Researchers Interested in both High and Low Levels of Exposure

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Contents

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No. 01

Editorial

I concluded my previous editorial by saying that the European Commission had just given its proposal for the directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (electromagnetic fields), and I promised to return to subject in the next bulletin.

My plan was to write a separate news article on the Commission's proposal for this bulletin, but I realised it is not worth sharing information that is far from being finalised. As far as I know, the directive proposal has been discussed and is still being discussed within EU institutions. Since the matter is still being processed, it is best to patiently await the final result. I will address this subject again in the next bulletin.

Since writing the previous report, I have had the opportunity to attend some interesting conferences. The Bioelectromagnetics Society had its 33th Annual Meeting in Halifax, Canada, in June. I particularly recall a session covering how issues related to electromagnetic fields are discussed in the media and how researchers should prepare themselves for interviews. Evidently, the subject matter has been widely covered by the media in various countries. The advice was in line with what I have heard in Finland too, such as the importance of preparing yourself for the occasion in advance.

Another interesting conference related to our theme was EMF 2011, organised by the European Commission in Brussels in November. The conference presentations can be downloaded from the Commission website. The discussion was lively, and it was obvious that there is quite a keen interest in the health effects of electromagnetic fields across Europe. Some people still feel they have symptoms that they associate with electromagnetic fields. Naturally, it would be good if scientific research shed some new light on the issue.

The actual presentations were mainly a variety of reports on what has been studied previously and what we know so far. The discussions, however, were very interesting. It was also announced at the conference that a three-year research project called ARIMMORA has been launched with EU funding. The project will examine the interaction mechanisms that might explain the possible relationship between exposure to extremely low-frequency magnetic fields and childhood leukaemia.

Quite a large number of interesting new scientific articles have been published recently, so it was easy to find some for this bulletin. The first article reports on a piece of research that examined the possibility of children developing asthma if their mothers were exposed to magnetic fields during pregnancy – a topic that has not been studied much in the past. The next two articles discuss the effects of high magnetic fields; the exposure levels are much higher than those people are normally exposed to.

This bulletin also includes results from Brazilian, Chinese and Taiwanese studies. As you can see, exposure to electromagnetic fields attracts interest in quite a few countries. Towards the end of the report, you will find a few articles related to occupational exposure. The first of them discusses the potential association between occupational exposure to magnetic fields and motor neuron disease.

The very last article on occupational exposure is rather technical. It is about a study that used calculations to estimate the exposure to electric fields in live-line work. The reason I included this article was that in some tasks it may be important to be able to find out the level of exposure to electric fields. The future employee directive will obviously specify the situations that require the measuring of exposure levels.

Hope you enjoy reading this summary in English!

Leena Korpinen,
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The Finnish situation report bulletin includes summaries of the following publications, preceded by the editor-in-chief's comments.

No. 02

Maternal Exposure to Magnetic Fields During Pregnancy and the Risk of Asthma in Offspring

Editor-in-chief's comment: The researchers' objective was to find out if maternal exposure to magnetic fields during pregnancy is associated with the risk of asthma in offspring. According to the researchers, the findings provided new epidemiological evidence that children whose mothers had high exposure to magnetic fields during pregnancy may have an increased risk of developing asthma. It will be interesting to see whether other researchers' studies on this topic will confirm these observations.

Source:

Li D-K, Chen H, Odouli R. Maternal Exposure to Magnetic Fields During Pregnancy in Relation to the Risk of Asthma in Offspring. Arch Pediatr Adolesc Med. 2011;165(10):945-950

No. 03

The Response of the Human Circulatory System to an Acute 200-µT, 60-Hz Magnetic Field Exposure

Editor-in-chief's comment: The article describes a pilot study in which ten volunteers experienced a one-hour exposure to a 200-µT, 60-Hz magnetic field, and the effects of the exposure on their circulation were studied using various methods. According to the researchers, the magnetic field used in this experiment did not affect perfusion, heart rate or mean arterial pressure. They did observe some effects, but these may be related to the test arrangements or other factors.

Source:

McNamee D.A, Corbacio M, Weller J.K, Brown S, Stodilka R.Z, Prato F.S, Bureau Y, Thomas A.W, Legros A.G. The response of the human circulatory system to an acute 200-µT, 60-Hz magnetic field exposure. May 2010 Springer-Verlag

No. 04

Neurophysiological and Behavioural Effects of a 60 Hz, 1,800 µT Magnetic Field in Humans

Editor-in-chief's comment: The study aimed at examining the effects of a 60-Hz, 1,800- µT magnetic field exposure on neurophysiological and neuromotor (standing balance, voluntary motor function and physiological tremor) aspects in humans. The results showed that standing balance is reduced by magnetic field exposure and physiological tremor increases within the frequency range previously associated with effects on the central nervous system, while no exposure effect appeared in other investigated parameters. It should be noted, however, that the exposure used was quite high compared to the exposure levels encountered in an everyday environment.

Source:

Legros A, Corbacio M, Beuter A, Modolo J, Goulet D, Prato F.S, Thomas A.W. Neurophysiological and behavioral effects of a 60 Hz, 1,800 µT magnetic field in humans. Springer-Verlag September 2011

No. 05

Exposure to Magnetic Fields and Childhood Acute Lymphocytic Leukaemia in São Paulo, Brazil

Editor-in-chief's comment: The article deals with a case-control study that included children diagnosed with acute lymphocytic leukaemia (ALL) from eight Brazilian hospitals. According to the researchers, the results were consistent with other similar studies, yet these results did not provide support for an association between magnetic fields and childhood leukaemia.

Source:

Wünsch-Filho V, Pelissari D.M, Barbieri F.E, Sant'Anna L, de Oliveira C.T, de Mata J.F, Tone L.G, de M. Lee M.L, de Andréa M.L.M, Bruniera P, Epelman S, Filho O.V, Kheifets L. Exposure to magnetic fields and childhood acute lymphocytic leukemia in São Paulo, Brazil. 2011 Elsevier Ltd

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No. 06

The Monitoring Results of Electromagnetic Radiation of 110-kV High-Voltage Lines in One Urban Location in Chongqing P.R. China

Editor-in-chief's comment: The study examined electromagnetic fields created by 110-kV power lines in China. The researchers measured both electric and magnetic fields and noticed that, to some extent, the walls and roofs of buildings provided a shield against the electric fields generated by nearby power lines. They also noted that the lines can be set up in a way

that reduces exposure, and this merits attention when considering the potential impact on human health.

Source:

Qin Q-z, Chen Y, Fu T-t, Ding L, Han L-l, Li J-c. The monitoring results of electromagnetic radiation of 110-kV high-voltage lines in one urban location in Chongqing P.R. China. Springer Science+Business Media B.V. 2011

No. 07

Exposure to Extremely Low-Frequency Magnetic Fields and the Risk of Childhood Cancer: Update of the Epidemiological Evidence

Editor-in-chief's comment: The article examines recent pooled analyses on the risk of childhood leukaemia and the risk of brain tumours. According to the author, the assessment that extremely low-frequency magnetic fields are possibly carcinogenic and may cause childhood leukaemia is still valid. New ongoing research activities will hopefully provide additional insight and clarity to this controversial issue.

Source:

Schüz J. Exposure to extremely low-frequency magnetic fields and the risk of childhood cancer: Update of the epidemiological evidence. 2011 Elsevier Ltd.

No. 08

Prevalence of Self-Reported Electromagnetic Hypersensitivity and Its Association with Mental Illnesses in Taiwan: A Population-Based Study

Editor-in-chief's comment: The researchers conducted a telephone interview with 1,251 adults in Taiwan on the perception of risk from various environmental agents and their effects on health and well-being. The researchers found out that people with mental illnesses were even two times more likely than others to report electromagnetic hypersensitivity.

Source:

Tseng M-C.M, Lin Y-P, Cheng T-J. Prevalence and psychiatric comorbidity of self-reported electromagnetic field sensitivity in Taiwan: A population-based study. Journal of the Formosan Medical Association (2011) 110, 634–641

No. 09

Do 60-Hz Magnetic Fields Cause Electromagnetic Hypersensitivity? – A Provocation Study

Editor-in-chief's comment: The article describes a double-blinded study that investigated the impact of magnetic field exposure on heart rate, respiration rate and heart rate variability. The participants were also asked to report their subjective symptoms. Based on the results, the research group concluded that the subjective symptoms did not result from exposure to a 60-Hz, 12.5-µT magnetic field, but from other non-physiological factors.

Source:

Kim D.W, Choi J.L, Nam K.C, Yang D.I, Kwon M.K. Origins of Electromagnetic Hypersensitivity to 60 Hz Magnetic Fields: A Provocation Study. Bioelectromagnetics, WileyPeriodicals,Inc. 2011

No. 10

Evaluation of Occupational Exposure to Magnetic Fields and Motor Neuron Disease Mortality

Editor-in-chief's comment: The research group evaluated the association between occupational exposure to electromagnetic fields and motor neuron disease (MND). As a conclusion, the group recommends that, instead of occupational magnetic field exposure, future research should focus on other types of exposure, such as electric shocks and contact currents, when investigating increased risk of ALS (amyotrophic lateral sclerosis) in some electrical occupations.

Source:

Parlett L.E, Bowman J.D, van Wijngaarden E. Evaluation of Occupational Exposure to Magnetic Fields and Motor Neuron Disease Mortality in a Population-Based Cohort. JOEM Volume 53, Number 12, December 2011

No. 11

Validation of a Numerical Approach to the Analysis of a Live-Line Worker Exposure to the Electric Field

Editor-in-chief's comment: The article reports on a study that evaluated the usefulness of numerical models in analysing exposure to the electric field. The results were quite good, and this approach is well suited for exposure assessment.

Source:

Krajewski W. Validation of a Numerical Approach to the Analysis of a Live-Line Worker Exposure to the Electric Field. Progress In Electromagnetics Research, 119, 315–333, 2011

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