20.6.2023

WHO International EMF Project
Report on activities in Finland from June 2022 to June 2023

General research activities related to EMF health

The international collaborative cohort study of mobile phone use and health (COSMOS) is on-going, and the Finnish participant is Tampere University (TUNI). The study involves approximately 15,000 Finnish participants who filled in the baseline questionnaires and have been followed up since 2009 – 2010 with three repeat questionnaire rounds and information on health outcomes obtained through linkages to various registers. Call data have been obtained repeatedly from mobile network operators traffic databases. Methodological work has focused on exposure metrics, with a regression calibration tool developed for the study (Reedijk et al., submitted). Cancer incidence analyses have been conducted and the results submitted for publication (Feychting et al. 2023).

Analyses of brain tumor incidence in the past two decades to evaluate whether there is any hint of a relation to the increase in radio frequency (RF) electromagnetic field exposure in the population are on-going at TUNI. Analyses of incidence trends of meningioma have been submitted for publication (Ekqvist et al. 2023). A collaborative analysis of male glioma incidence trends in the Nordic countries did not show any increases attributable to frequency of mobile phone subscriptions (Deltour et al. Environ Int 2022).

Anssi Auvinen (Tampere University and STUK – Radiation and Nuclear Safety Authority) participates in WHO RF Task Group and ICNIRP Scientific Expert Group on ELF during 2023.

Aalto University has conducted computational modelling studies of human exposure to electromagnetic fields in the ELF and intermediate frequency ranges. Dosimetry modelling has been used for the estimation of the thresholds for sensory effects (electro- and magnetophosphenes) of ELF electromagnetic field exposure, producing data for the development of human exposure limits. Aalto is also currently undertaking projects on the measurement of electrical conductivity and development of a new anatomically accurate whole-body human model for dosimetry modelling. Ilkka Laakso (Aalto University) participates in WHO RF Task Group and is a member of the ICNIRP Scientific Expert Group.

University of Eastern Finland (UEF) has conducted epidemiological and cellular studies during years 2022-2023. Epidemiological studies concentrated on residential extremely low frequency magnetic fields (ELF MF) and skin cancer as well as on adult hematological malignancies and brain tumors in relation to magnetic fields from indoor transformer stations. In addition, UEF is preparing an epidemiological scientific paper on all cancers in this same context, and also a study on ELF MF's possible link to Alzheimer's disease (AD) have been in analyzing phase. In *in vitro* level UEF has studied influence of 50 Hz MFs on circadian genes and DNA damage responses in murine hematopoietic FDC-P1 cells as well as effects on ROS production or DNA damage responses in human SH-SY5Y neuroblastoma cells. Radiation research group in UEF is also studying possible link between 50 Hz MFs and AD utilizing human astrocytes generated from pluripotent stem cells from AD patients and from healthy controls. Another line of cell level studies is to study possible beneficial modificating effects of static and 50 Hz MFs on tumor killing effects of doxorubicin and ionizing radiation.

20.6.2023

New policies and legislations regarding EMF exposure

No new policies and legislations

Areas of public concern and national responses

STUK has responded to several questions on EMF health effects. The radiation safety of base stations was the main area of public concern during the last year.

Municipal authorities requested statements from STUK on several proposals for a town plan where new residential areas were located near existing power lines or on new power lines planned to be constructed near residential houses. STUK gave recommendations for spatial planning. STUK recommends that premises where the presence of children is permanent should not be located so that the average magnetic flux density exceeds 0.4 µT.

New public information activities

STUK's website was updated (https://stuk.fi/en/frontpage).