WHO NIR IAC Committee - EMF

Germany - National Report 2021

1. Special topic 5G

The expansion of mobile networks including the introduction of 5G technology continues to be of substantial interest to German public and politics.

Dialogue-Initiative: “Deutschland spricht über 5G”

The current development and expansion of the 5G network is leading to a controversial discussion among the population. Missing information is often the reason for reservations about the expansion or even lack of acceptance.

To counter this, the federal government has initiated the communication initiative “Deutschland spricht über 5G” (Germany is talking about 5G). In addition to broad information for the public via a homepage and a number of social media channels, it also includes dialogue options - online and in the future also on site in relevant communities.

The initiative will jointly communicate the technology, the opportunities and possible risks of 5G mobile radio. The basic concept of the initiative is to inform the public objectively, comprehensively, neutrally and transparently and to facilitate a dialogue.

As 5G and the following generations will use higher frequency bands in which research data are sparse, the following research projects have been initiated:

- Effects of exposure with centimeter and millimeter waves (5G frequencies) on cells of the body surface.
- At frequencies above 20 GHz (27 and 41 GHz) gene expression and DNA methylation changes in human skin cells will be studied.
- Smart Cities: Estimation of the overall exposure of humans by additional 5G mobile communication technologies. - Exposure scenarios will be developed in an interdisciplinary approach of futurology, modelling and computer simulations.
- Consideration of current cellular antenna technology during RF-EMF exposure assessment. – Measurements in the vicinity of mobile phone base stations that use adaptive antennas with beam forming and beam steering to provide a detailed picture about the possible maximum exposure contribution of such base stations.

2. New “Competence Center for Electromagnetic Fields”

As a consequence of increasing demands a BfS-associated “Competence Center for Electromagnetic Fields” (KEMF) was founded in February 2020. The new entity is located in Cottbus, south of Berlin. The Center will intensify ongoing BfS activities with a special focus on new dialogue and communications formats. The Center ist funded by the German Federal Government and will serve as the contact point for all questions on EMF protection issues as raised by citizens as well as by different stakeholders. Up to now 14 scientists from different disciplines have been recruited.

3. EMF Research Activities

Research projects are initiated when gaps in knowledge have to be filled in order to provide a basis for national regulations and a high level of radiation protection of the general population. The focus of current research projects is on static and ELF fields in connection to the ongoing expansion of the national power grid and on wireless communication.

Completed Projects (selection)

- Assessment of feasibility and preparation of a pooling study on the relationship between amyotrophic lateral sclerosis (ALS) and exposure to magnetic fields. http://nbn-resolving.de/urn:nbn:de:0221-2020011721003
- What significance do magnetic fields have in the public perception of the extension of the high-voltage power grid? http://nbn-resolving.de/urn:nbn:de:0221-2019121120809
- Investigation of presentation formats for results of low-frequency field measurements and their relevance to risk communication. http://nbn-resolving.de/urn:nbn:de:0221-2020060822215
- Effect of high frequency electromagnetic fields on brain activity, sleep and cognitive performance in elderly men. http://nbn-resolving.de/urn:nbn:de:0221-2019101519604
- International Workshop: Environmental effects of electric, magnetic and electromagnetic fields: Flora and fauna. , Munich, 5 - 7 November 2019 http://nbn-resolving.de/urn:nbn:de:0221-2020050821802

Activities at the Federal Institute for Occupational Safety and Health (BAuA):

General research activities

- Optical Radiation, completed projects in 2020/2021:
    - Ageing resistance of laser protection filters (https://www.baua.de/EN/Tasks/Research/Research-projects/f2442.html)
- Optical Radiation, currently ongoing projects:
    - F 2448: Effect of light on the alertness during the day: Dependence on the spectral composition of light and the exposure time (https://www.baua.de/EN/Tasks/Research/Research-projects/f2448.html)
    - F 2449: Occupational circadian effective light exposure Subproject 1: Job-Exposure-Matrix (JEM) for the assessment of circadian effective light exposure for selected occupations based on objective measurements Subproject 2: Determination of circadian effective daylight exposure based on long-term measurements and simulations (https://www.baua.de/EN/Tasks/Research/Research-projects/f2449.html)
    - F 2483: Simplified risk assessment of incoherent high-power spotlights Subproject I: Evaluation criteria for the risk assessment of high-power spotlights Subproject II: High-Power Spotlights Risk Assessment (HiPoSisAs) - Photochemical and Thermal Retinal Hazards at Workplaces (PEROSH project) (https://www.baua.de/EN/Tasks/Research/Research-projects/f2483.html)
    - F 2496: Non-visual effectiveness of light at night as a function of the light direction (https://www.baua.de/EN/Tasks/Research/Research-projects/f2496.html)
    - F 2534: Effects of temporal light modulation on workers' cognitive performance, mental workload and well-being
- Optical Radiation AND electromagnetic fields, currently ongoing projects:

    - Assessment of occupational health and safety regulation requirements at frequencies/wavelengths between the German ordinances on electromagnetic fields (EMFV) and artificial optical radiation (OStrV)

New policies and legislations regarding NIR exposure

- Optical radiation:
    - none
- Electromagnetic fields:
    - Technical Rules specifying the German ordinance on electromagnetic fields are pre-published (www.baua.de/tremf, only in German language) and are currently translated into English language.

Areas of public concern and national responses

- Optical radiation:
    - none
- Electromagnetic fields:
    - Selected in-store measurement results of electronic article surveillance devices show violations of exposure limits for general public, workers, and workers at particular risk. As response, national experts (of product safety, occupational safety and health at federal and state levels, and statutory accidence insurance) are closely monitoring the current development and consider appropriate mitigation actions.

New public information activities

- None regarding occupational exposure mitigation for both, OR and EMF