INTERNATIONAL EMF PROJECT
24th International Advisory Committee

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National Report (Republic of Korea)

1. EMF regulations and standards

The EMF exposure limits in Republic of Korea were established in 2001 (MIST Notification No. 2019-4) and enforced since April 2002. Ministry of Science and ICT (MSIT) is responsible for EMF regulations, except power lines which is regulated by MOTIE (Ministry of Trade, Industry and Energy). National Radio Research Agency (RRA) is in charge of the standards. The EMF exposure limits of SAR in Korea are based on the international standards developed by IEEE (FCC guideline). Until Dec. 2012, only the limit of local SAR for head had been mandated. The SAR limits for workers and for body, limbs and whole-body average were adopted and effective from January 2013. The limits of electromagnetic field level are based on the international standards developed by ICNIRP in 1998. The new ELF EMF guideline adopted by ICNIRP in 2010 is not adopted yet in Korea.

There are two measurement standards for electromagnetic field strength and SAR (RRA Notifications No. 2019-3, 2018-18). The devices and installations regulated for SAR and electromagnetic field strength are described in the separate notification (RRA Notification No. 2019-1). The assessment results for the electromagnetic field level for the broadcasting stations (aggregated antenna power > 60 W) and the base stations (aggregated antenna power > 30 W or 60 W, depending on the type of the communication system) before putting into service or during the periodic inspection (5-year terms) (Clause 65 of Presidential Decree of Radio Wave Act) shall be reported. The regulations for high-power stations (over 500 W) were added on Dec. 12, 2017 (enforcement date: since Dec. 12, 2018), and the regulations for Household Appliances were mandated since Dec. 2016 (enforcement date of Electric blankets: since July 2017, IH cooker, hobs and hotplates: from Jan. 2019). The regulations for 5G mobile phone and base stations were mandated since Jan. 17, 2019.

The regulations for EMF rating and labelling were enforced from August 1, 2014 (MSIT Notification No. 2017-20). The operators of radio stations should affix the labels for EMF strength rating in an appropriate place. For portable devices used in direct contact with the head, those who manufacture or import such devices should affix the labels for SAR rating, and/or display the highest SAR values appropriately.

2. Public Concerns and Risk Communications

The public concerns about EMF are still very high in Korea. The public appeals against the radiation of electro-magnetic energy from base stations have been submitted to government offices and operators in a year. Regarding power lines and substations, more than hundred complaints have been filed to KEPCO (Korea Electric Power Corporation). Government offices, operators and KEPCO are actively taking care of such complaints.

EMF web sites for interactive and bilateral communication (www.rra.go.kr/emf, www.emf.or.kr, www.emf60hz.com, home.kepco.co.kr) have been providing EMF related information, including the guidelines for the safe use of home appliances and mobile phones, Q&A, videos for education and forum offered by RRA. Especially, from 2012 the information on the SAR values of each mobile-phone model, including the kid's phone and watch phone from April 2015, was opened to the public through this website. RRA also endeavors to provide the correct information on electromagnetic waves and to alleviate the concerns of the general public through interactive communications. Since 2015, RRA has been running the education programs on electromagnetic wave safety and forums to enhance the bilateral risk communication with the public. Currently, we are expanding the target audiences of the education programs and forums, and also developing new contents such as issue reports, videos for EMF experiment, etc.

KEPCO also operates the Public Information Dissemination Center since 2006. From 2004, two kinds of Newsletters, one for EMF measurement standards and the other one for biological effects, exposure limits and policies are published biannually. Every other year, a survey on "perception for EMF exposure and its hazard" for general public or experts is performed.

3. Researches on the biological effects of EMF

To protect the human body from potential health risk to EMF exposure and to scientifically identify the effects of the electromagnetic fields on human health, a new five-year RF research project has been launched this year, which is titled as "A study on public health and safety in a complex EMF environment". The total budget of the project is 30 billion KRW per year and it is funded by MSIT. Under the superintendence of ETRI (Electronics and Telecommunications Research Institute), several universities as well as an academic society (KIEES, Korean Institute of Electromagnetic Engineering and Science) are joined for the project. Main research topics of the project are as follows:

- Development of EMF compliance assessment of 5G base station
- In vitro study to identify the effect of EMF and UV combined exposure using 3D culture tissue model
- Development of i*n vivo* and *in vitro* exposure system
- Integrative and cumulative exposure assessment based on spatiotemporal EMF characteristics for epidemiological study
- Korea-Japan Joint Animal Study to validate NTP study
- Cohort study on the relation between mobile-phone use and behavioral cognitive development of pregnant women and children
- *In vivo* study to investigate the effects of RF exposure on neurological disorder

The project in ELF frequency band launched in 2015 was finished last year, which was funded by KEPCO (Korea Electric Power Corporation). One of the main research objectives was to investigate worker exposure to 60 Hz magnetic field in the working environments (especially, substation), to set the worker exposure limit value to 60 Hz magnetic field and to establish ELF EMF management planning for workers. The research period was 38 months in total. KERI, KESRI (Korea Electrical Engineering & Science Research Institute), Inje University, Hoseo University and Soon Chun Hyang University participated in that project.

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