

SINGAPORE

Report to the World Health Organisation on EMF Activities

International EMF Project

International Advisory Committee

October 2020

Electromagnetic Field Exposure and Health Effects Research Activities

The National University of Singapore has published a paper on the effects of pulsed electromagnetic field (PEMF) on the paracrine function of mesenchymal stem cells (MSC) and concluded that PEMF stimulation is capable of modulating the said function of the MSC for the enhancement and re-establishment of cartilage regeneration in states of cellular stress.

New Policies and Legislation Regarding Electromagnetic Field Exposure

General

In Singapore, the Radiation Protection Act (RPA) and its Regulations govern and regulate activities and safety issues pertaining to ionising and non-ionising radiation. The National Environment Agency (NEA) enforces the RPA and its Regulations.

Under Radiation Protection (Non-Ionising Radiation) Regulations, selected types of non-ionising radiation equipment are controlled:

- 1) Sunlamps
- 2) Microwave ovens
- 3) Ultrasound apparatus
- 4) Magnetic resonance imaging apparatus
- 5) Entertainment lasers
- 6) High power lasers

Telecommunication equipment and electrical power equipment or facility are not classified as controlled apparatus under the RPA. On public exposure to radiofrequency (RF) and Extremely Low Frequency (ELF) radiation from such sources, the NEA adopts the International Commission on Non-Ionising Radiation Protection (ICNIRP) exposure guidelines for RF and ELF radiation.

The Infocomm Media Development Authority (IMDA) had announced in April 2020 that mobile network operators would roll out 5G Standalone networks from January 2021. Operators would be required to provide coverage for minimally half of the country by end-2022, and to scale up to nationwide coverage by end-2025. Singapore will continue to take

guidance from WHO and ICNIRP guidelines, monitor international developments on this matter, and track such radiation levels in Singapore.

Singapore is aware that the [International Agency for Research for Cancer \(IARC\)](#) has classified RF electromagnetic fields and ELF magnetic fields as Group 2B carcinogen (possibly carcinogenic to humans). Government agencies will continue to monitor international developments relating to effects of RF and ELF exposure on health in order to make policy interventions if and when necessary.

Areas of Public Concern and National Responses

There is an increasing trend in the number of queries received from members of the public regarding the safety of RF radiation emitted from mobile base stations and ELF radiation emitted from electrical substations. The queries were addressed based on findings, recommendations and advice from WHO factsheets and health publications on radiation.

New Public Information Activities

An updated list of information on radiofrequency radiation and mobile phones is made available on [NEA website](#) via "Ask Jamie @ NEA".