



MINISTRY OF HEALTH MALAYSIA

COUNTRY REPORT ON EMF IN MALAYSIA

2024 EMF PROJECT INTERNATIONAL ADVISORY COMMITTEE (IAC) MEETING

In Malaysia, there remains a great concern regarding the health effects caused by non-ionising radiation (NIR) among the public. Hence, the local authorities such as Ministry of Health (MOH), Malaysian Communication and Multimedia Commission (MCMC), Malaysia Nuclear Agency (MNA) and other relevant agencies as well as local universities have been engaged in continuous cooperation to ensure that the public has the current and reliable information on NIR.

Below are the brief reports on NIR activities that had been carried out in Malaysia throughout the year of 2023 until May 2024:

NO.	ACTIVITIES
1.	<p>General research activities related to EMF and health</p> <ul style="list-style-type: none">i. MNA conducted various research in NIR field namely:<ul style="list-style-type: none">a) Project measurement on ELF-EMF at Sungai Ramal, Kajang and Putrajaya.b) Exposure Measurement at Radio Base Station with SRM-3006 at Petaling Jaya, 6-8 June 2023.ii. Several collaborations on research were conducted by MNA. These include:<ul style="list-style-type: none">a) EMF Measurement for Occupational Workers (April-December 2023) in collaboration with Rexaco, Wireless Communication Centre (WCC) Universiti Teknologi Malaysia (UTM), Universiti Putra Malaysia (UPM) and MCMC.b) RF-EMF Exposure and Mapping around Malaysia (2022-2023) in collaboration with MCMC.iii. MCMC in collaboration with a local university, UPM undertook a study for six (6) months from November 2022 till April 2023 to assess the correlation between the variables that influence the perceived risk associated with electromagnetic field (EMF) emission from base stations and consumer-premises equipment (CPE).iv. WCC, UTM is actively conducting the following research:<ul style="list-style-type: none">a) Research on 2G to 4G RF-EMF public exposure level.b) Research on 5G RF-EMF public exposure level.c) RF-EMF radiation level measurement and monitoring for smart metering infrastructure.d) Rf-EMF assessment at RF-EMF laboratorye) Compliance testing at Specific Absorption Rate Laboratoryf) Mathematical modeling of millimetrewave electromagnetic field exposure.



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	<p>g) Characterization of EMF radiation effect due to multiple-input multiple-output implementation in sub-6 GHz fifth generation and beyond fifth generation applications.</p> <p>v. Universiti Malaysia Perlis (UniMAP) carried out is actively conducting the following research:</p> <ul style="list-style-type: none"> a) RF-EMF radiation studies for 5G Base Station (BS) at low, mid and high band frequencies. b) Specific Absorption Rate (SAR) evaluation for exposure of implantable antennas, sub-6 GHz 5G single port antennas, Multiple-Input-Multiple-Output (MIMO) wearable and mobile phone antennas. c) Design and development of small form factor, array 5G and millimeter wave MIMO wearable antennas. d) Design and development of stretchable 5G on body antenna for smart garments. e) Early breast cancer detection imaging system using reconfigurable and non-reconfigurable wearable antennas radiating in Ultrawideband (UWB) frequency, integrated with Machine Learning. f) Design and development of ultra-compact ingestible antenna for Internet of Things (IoT)-based intelligent capsule endoscopy system <p>vi. USM Medical Centre Bertam (PPUSMB) and UKM Specialist Children's Hospital also has conducted the related research on EMF.</p>
2.	<p>New relevant policies and legislations</p> <ul style="list-style-type: none"> i. MOH is working with representatives from various agencies, organizations, and universities in developing new guidelines on MRI safety for medical practice. This guideline includes all the key areas that are important for the delivery of high-quality and effective MR imaging examinations and services. ii. MNA is working with Malaysia Technical Standard Forum Berhad (MTFSB), MCMC and telecommunication and broadcasting Industry in document development and review: <ul style="list-style-type: none"> a) Technical Code for radiofrequency radiation measurement and Simulation for radio communication Infrastructure. b) Technical Code for radiofrequency radiation measurement and Simulation for broadcasting facility iii. MCMC is continuously monitoring the industry compliance to the "Mandatory Standard for Electromagnetic Field Emission from Radiocommunications Infrastructure" (MS EMF). MCMC in collaboration with MNA has carried out RF-



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	<p>EMF measurement at 21 locations nationwide by using two (2) methods: broadband measurement via drive tests and on-site measurement based on MCMC MTSFB TC G032:2021 Technical Code for Prediction and Measurement of RF-EMF Exposure from Base Stations. Overall measurement results found that RF-EMF exposure in these 21 locations is low and below the permissible exposure limit (PEL). Besides, there are no significant differences in RF-EMF exposure between high-density urban areas and low-density suburban, and rural areas.</p> <p>iv. WCC, UTM is working together with various agencies (e.g., spectrum regulator, industry guideline and telcos) on the compliance toward industry guidelines, technical codes and policies related to the management of RF-EMF emission from telecommunication infrastructure in the country. The agencies that have been working closely with them are:</p> <ul style="list-style-type: none"> a) Interagency Working Committee (IAWC) on the Health Effects of Non-ionising Radiation - standardizing activities in dealing with issues related to non-ionising radiation (NIR), especially from the health aspect. In addition, this committee is established to examine the role played by each institution/agency involved in dealing with issues related to NIR. b) Sub-Working Committee for Radiofrequency Electromagnetic Field (RF-EMF). The sub-working committee will provide the IAWC on any review/new development of guidelines/documents and activity/research related to NIR on specific field. In addition, the Sub-Working Committee will report to the IAWC, should there be any new updates or other issues of significance.
3.	<p>Area of public concern and national response</p> <p>i. In addressing the public concerns on EMF exposure from radiocommunications infrastructures, MCMC has conducted Public Complaints and Awareness Management Course on Radio Frequency Electromagnetic Fields from Radio Communications Infrastructure (RCI) – EMF Radiation from Telco Towers: Are We Safe? MCMC organised two (2) sessions of awareness courses focusing on public complaints and management of RF-EMF from radio communications infrastructure in Wilayah Persekutuan Putrajaya and Melaka, from 14 to 15 August and 28 to 29 August 2023 respectively. These courses aimed to improve the understanding of Local Authorities (PBT) and State Government agencies regarding the significance and advantages of wireless technology while assuring stakeholders that RF-EMF from RCI is safe as long as it adheres to the MS EMF, which follows the international safety standards. This year, 34 PBT and agencies from all over the country took part in the courses.</p>



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	<ul style="list-style-type: none"> ii. MNA has involved in various programme including innovation, exhibition and public awareness programme as follows: <ul style="list-style-type: none"> a) Engagement Session for Information on RF EMF from telecommunication structure, 15 March 2023, Dewan Mesyuarat, Sarawak Multimedia Authority. b) Involve for short video making for Public Service Announcement regarding the RF-EMF with MCMC at Cyberjaya, 22 May 2023. c) Dialogue Session with residents of Southbay Residence regarding the complaint on communication structure, 22 September 2023 at Southbay Club House, Penang. iii. RF-EMF based smart meter infrastructure is being rolled out in Malaysia for the electricity management and billing system. The introduction of smart meters and the RF-EMF network in residential areas has raised some concerns from the public regarding its potential health risk. Therefore, WCC, UTM in collaboration with one of the major utility companies in Malaysia, is conducting a public awareness program which include, but not limited to, townhall, seminar, one-to-one engagement and educational printed material. The main objective is to debunk the myths circulating in social media regarding the health impacts of RF-EMF based smart metering infrastructures. iv. WCC, UTM has organised Spectrum Frequency Management Short Course on 1-10 March 2023 and Spectrum Frequency Management Short Course for Royal Malaysia Airforce on 16-19 October 2023. These courses were aimed to produce skilled personnel in spectrum management for military communication.
4.	<p>New public Information activities</p> <ul style="list-style-type: none"> i. MNA in collaboration with MOH, MCMC, local authority bodies and local universities is organising the 11th International Conference on Non-Ionising Radiation (ICNIR 2024) on 24-25 July 2024. It is an annual conference that discuss the benefits and risks of NIR that create concerns and confusions amongst the public and civil society group. ii. The list of training and webinar conducted by MNA are: <ul style="list-style-type: none"> a) Laser safety awareness on 20 February, 3 April and 19 June 2023. b) Laser safety for officer on 20-24 February, 19-23 June, 25-29 September, 14-18 August, 25-29 September, 16-20 October and 1-5 November 2023. iii. Besides training and webinar, MNA also conducted consultancy services in various NIR fields such as UV radiation and RF radiation. The consultancy



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	<p>services were based on the testing they conducted and a technical report for the client will be provided by MNA.</p> <p>iv. WCC, UTM provides publicly accessible information through their website regarding the RF-EMF measurement facilities that are being used by industry to measure RF-EMF emission level from telecommunication infrastructures as well as updates of various industry and public training courses/seminars/talks conducted by WCC, UTM on various topics including RF-EMF Emission and Health Concerns. The website's links are as follows:</p> <ul style="list-style-type: none">a) WCC, UTM's specific absorption rate (SAR) laboratory https://wcc.utm.my/specific-absorption-rate-sar-laboratory/b) WCC, UTM's RF-EMF laboratory https://wcc.utm.my/rfemf-laboratory/c) WCC, UTM's training on RF-EMF emission and health concerns https://wcc.utm.my/training/

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