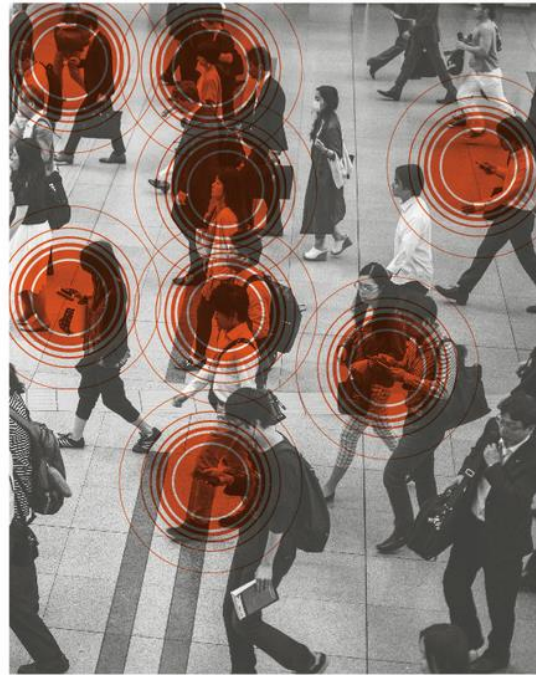


## Field Strength Exposure Symposium

In: Exhibitions, Press releases / 18 May 2017 / Tags: COMOP, COPIC, expositions aux ondes, Field strength exposure, Human & Field, Human Hazard



[Human and Field: Submission or Interaction/ ATDI and CAS WUT Symposium \(STERDYŃ 19-21 MAY 2017\)](#)



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## HUMAN HAZARD

The deployment of different sources of electromagnetic fields (EMF) to cater for the telecommunication and ICT needs of urban and rural communities has developed very rapidly. This has been due to strong competition, ongoing traffic growth, quality-of-service requirements, network coverage extension and the introduction of new technologies. It has prompted concern on the possible effects of prolonged exposure on people's health. The growing concern in some countries about electromagnetic field exposure from antenna towers has led to imposition of new legislation and/or regulations, to ensure protection of the public health. Public concern about possible health hazards due to continued exposure to EMF has become a significant issue for regulators and service providers in some markets. The regulation of non-ionizing radiations contains exposure standards and emission standards. The exposure standards are specifications that limit the exposure of people to the electromagnetic fields, and the emission standards are specifications that limit the emission of electromagnetic fields from the devices. The EMF assessment methods depend on site and environment; calculations are suitable in many cases and have significant benefits (accurate, fast and cost effective), whereas measurements are usually only required in very complex environments. Field monitoring is effective for the safety of workers when working on towers. While, field surveys can provide public reassurance, continuous monitoring has limited long term benefit, when electromagnetic fields levels are low and stable. The ITU estimates that seven billion people (95 per cent of the global population) live in an area that is covered by a mobile-cellular network. Mobile-broadband networks (3G or above) reach 84 per cent of the global population but only 67 per cent of the rural population. The electromagnetic fields are undetectable by people, and the lack of communication and information to citizens can generate a lack of trust, which may become fear. Global technical standards can help facilitate compliance with international exposure guidelines, strengthen collaboration among stakeholders, ensure transparency, and promote communication with citizens. In 2009, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) reconfirmed its 1998 radio frequency "guidelines on limiting exposure to high and radiofrequency fields in the range (100 kHz–300 GHz)." The World Health Organization (WHO) is developing an update of the Environment Health Criteria (EHC) monograph on radiofrequency fields. The current position of the WHO is that the ICNIRP guidelines provide protection for all persons from all established health hazards. However, there are gaps in scientific knowledge and research is on-going. Above a certain threshold exposure level, the absorption of radiofrequency (RF) EMF energy by the body or a part of the body results in a rise in body temperature. The absorption of RF is measured in terms of the Specific Absorption Rate (SAR). The SAR limits are set with a safety margin, below the threshold level at which the body temperature starts to rise. The human body is efficient at maintaining its temperature and has sophisticated mechanisms to prevent the temperature from rising when heat is absorbed from any source, as demonstrated by our ability to live in varying climatic conditions from cold to hot all around the world. Around the world, the use of mobile phones and other wireless systems is expanding rapidly. While this provides the opportunity for advances in public and personal safety, education, medicine and the economy, it also brings new responsibilities and challenges for local authorities. In particular, there have been some concerns, that along with the benefits brought by wireless networks, there may also be risks to health.

*Dr. Haim Mazar ATDI, Spectrum Management and Engineering, Vice Chair ITU-R Study Group 5 (terrestrial services)*

## Jack Rowley – Senior Director Research & Sustainability, GSMA

Abstract: Cellular mobile networks rely on continuous coverage from mobile network antennas sites to provide connectivity to portable devices. The radio connection between the fixed antenna sites and the mobile device is constantly monitored and the output power adjusted to maintain the target communication service, initially voice but increasingly now data. Any person using a mobile or portable telecommunications device is exposed to the radiofrequency electromagnetic fields (RF-EMF) that are transmitted by the device and network antennas. These RF-EMF transmissions are necessary to convey the communication signals (voice or data) between the device and its corresponding wireless network. This paper will review existing research on the relative radiofrequency (RF) exposure levels and factors that influence exposures for both fixed and mobile sources. Both sources typically result in exposure levels that are a small fraction of international RF exposure guidelines. For example, mobile devices typically operate at about 1% of their maximum power [1, 2] and the mean environmental RF levels from cellular mobile communications systems are typically less than 0.1  $\mu\text{W}/\text{cm}^2$  (the international public limit is 450  $\mu\text{W}/\text{cm}^2$  at 900 MHz) [3]. In some countries misunderstanding by the public and policy makers has been associated with the adoption of policies that cause inefficient deployment of cellular services. Scientifically based policy for the siting of antennas is associated with lower levels of public concern and more efficient antenna deployment. Some good practice policy recommendations are proposed based on evidence and practical experience.

## Haim Mazar – RF Spectrum and Engineering ITU Expert Vice Chair of ITU-R Study Group 5

Abstract: Compliance with human exposure limits for electromagnetic fields (EMFs) is a significant health and safety issue to regulators, service providers and wireless equipment suppliers. The recent exposure limits are reported. In addition to WHO, IEEE and ICNIRP, following the ITU Plenipotentiary Conference in 2014 (PP14) Resolution 176 on "Human exposure to and measurement of electromagnetic fields", ITU-R, D and T are most active to regulate and standardise the radio aspects of the EMF. The Specific Absorption Rate (SAR) and the power-density (PD) reference levels in European countries, USA, Canada, China, Japan and Korea are compared and contrasted. The allowed SAR cellular handsets' exposure limits for localized heating are more restrictive in the USA, Canada and Korea (1.6 W/kg), relative to others (2 W/kg). Even the averaging is more restrictive: averaged over 1 g in N. America and Korea, versus 10 g tissue in ICNIRP 1998 and ANSI/IEEE C95.1-2006. Europe in general follows the ICNIRP 1998 PD levels from base stations. Despite the (non-mandatory) EU Council Recommendation 1999/519/EC, some EU countries adopt more restrictive thresholds. USA and Japan are the most liberal countries, adopting in 300–1,500 MHz power-density 4/3 of the ICNIRP1998 and IEEE 2006 levels. On 13 March 2015, Health Canada revised the 2009 PD limits (that were identical to the USA) and published more restrictive reference levels. There is no scientific reason to use different exposure limits in different countries. Some explanations of the different limits are provided.

## Sébastien Grimoud – Engineer specialized in spectrum management

Abstract: The potential health risks of radiofrequency electromagnetic fields (RF EMFs) emitted by cellular networks (GSM, UMTS, Wifi...) are currently of considerable public interest. A very important issue is the requirement for coexistence between wireless equipment and people living around those types of transmitters. In the last few years a noticeable acceleration in the activities related to the technical standards in the area of the human exposure of electromagnetic fields has been investigated at international, European and national levels. Notifications have been specified by the European Union to the regulation authorities and cellular operators in the Europe union community (IEEE standard 95.1-11999). The purpose of those recommendations was to take into account the potential health risk especially when the antennas used by the operators are located in urban areas (usually located on rooftops) and when they are close to sensitive areas like hospital, schools, people living near by the RF transmitters... Today, the observance of existing EMF maximum permissible levels (standards) is mandatory for all base station equipment installations. • The maximum permissible exposure (MPE) in a frequency range from 10kHz to 300GHz. • The area of exposition risk where the field strength is higher than the acceptable level (in outdoor or indoor environment). • All the EMF (electromagnetic fields) sources with different frequencies and different modulations. • Full access to clear and accurate information about EMF emitting sources.