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To whom it may concern

HEALTH EFFECTS OF CELLULAR BASE STATIONS AND HANDSETS

The Directorate Radiation Control is the section – previously within the National Department of Health and currently as part of the South African Health Products Regulatory Authority (SAHPRA) – that is responsible, from the viewpoint of human health, for regulating electronic products producing **non-ionising** electromagnetic fields (EMF), i.e. where the frequency of such EMF is less than 300 GHz. In carrying out its responsibility, the Directorate has been utilising the World Health Organization's (WHO) International EMF Project (www.who.int/peh-emf/) as its primary source of information and guidance with respect to the health effects of EMF. The International EMF Project was established by the WHO in 1996 to (i) assess the scientific evidence for possible adverse health effects of non-ionising electromagnetic fields on an on-going basis, (ii) initiate and coordinate new research in this regard, (iii) compile health risk assessments for different parts of the electromagnetic spectrum, and (iv) advise national authorities on EMF radiation protection. The Department of Health has been a member of the International Advisory Committee of the International EMF Project since 1998.

In June 2005 the International EMF Project hosted a workshop that was specifically aimed at considering the possible health consequences of the emissions from cellular base stations and wireless networks. The findings of this workshop were summarised in a 2-page Fact Sheet (http://www.who.int/peh-emf/publications/facts/fs304/en/). The following extract from this Fact Sheet is still considered by the WHO as a summary

of the findings to date, i.e. ***"Considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak RF signals from base stations and wireless networks cause adverse health effects."***

Another WHO Fact Sheet was published in June 2011 and reviewed in October 2014, i.e. *Electromagnetic fields and public health: mobile phones*. This Fact Sheet can be found at http://www.who.int/mediacentre/factsheets/fs193/en/ and the conclusion is stated as follows: **"*A large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use.*"**

The WHO recommends utilising internationally recognised exposure guidelines such as those that were published in 1998 by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and reconfirmed in 2009. The 1998 guidelines were replaced by the updated 2020 version for the frequency range 100 kHz – 300 GHz (i.e. including **all** the frequencies employed by the cellular industry). The Directorate Radiation Control likewise recommends the use of these ICNIRP guidelines to protect people against the known adverse health effects of EMF.

On 27 January 2020 the WHO published a statement on their website with respect to "***Radiation: 5G mobile networks and health***". Below are extracts from the Q&A section of that statement:

> ***"5G, or fifth Generation, is the latest wireless mobile phone technology, first widely deployed in 2019. 5G is expected to increase performance and a wide range of new applications, including strengthening e-Health (telemedicine, remote surveillance, telesurgery).***
>
> ***5G represents an evolution in telecommunication standards. To enable increased performance, 5G will extend into higher frequencies around 3.5 GHz and up to a few tens of GHz. The higher frequencies are new to mobile phone networks, but are commonly used in other applications, such as point-to-point radio links and body-scanners for security checks.***

> ***To date, and after much research performed, no adverse health effect has been causally linked with exposure to wireless technologies. Health-related conclusions are drawn from studies performed across the entire radio spectrum but, so far, only a few studies have been carried out at the frequencies to be used by 5G.***
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> ***Tissue heating is the main mechanism of interaction between radiofrequency fields and the human body. Radiofrequency exposure levels from current technologies result in negligible temperature rise in the human body.***
>
> ***As the frequency increases, there is less penetration into the body tissues and absorption of the energy becomes more confined to the surface of the body (skin and eye). Provided that the overall exposure remains below international guidelines, no consequences for public health are anticipated.***
>
> ***WHO is conducting a health risk assessment from exposure to radiofrequencies, covering the entire radiofrequency range, including 5G, to be published by 2022."***

The numerous measurement surveys, which have been conducted around the world and in South Africa, have shown that the actual levels of public exposure as a result of base station emissions invariably are only a fraction of the ICNIRP guidelines, even in instances where members of the public have been really concerned about their exposure to these emissions. At present there is **no** confirmed scientific evidence that points to any health hazard associated with the very low levels of exposure that the general public would typically experience in the vicinity of a cellular base station. The Department is therefore satisfied that the health of the general public is not being compromised by their exposure to the microwave emissions of cellular base stations. This also means that local and other authorities, in considering the environmental impact of any particular base station, do not need to and should not attempt, from a public health point of view, to set any restrictions with respect to parameters such as distance to the mast, duration of exposure, height of the mast, etc.

The Directorate Radiation Control is not able to make any pronouncements about the specific levels of EMF that a member of the public would experience at any particular base station site when it is in operation. However, generally speaking unless a person would climb to the top of a mast (or other structure supporting an antenna) and position him/herself not more than a few meters away right in front of the active antenna, such a person would have no real possibility of being exposed to even anywhere near the afore-mentioned ICNIRP guideline limits. Since these base stations are typically cordoned off by means of barbed wire fencing and locked gates/doors in order to protect the sensitive and expensive technology, getting to a mast and actually climbing it despite the afore-mentioned security measures would certainly not be considered responsible behaviour. Even then the only real threat to the health of the person would be falling at any height from the structure in question. Based on the results of numerous global and local surveys, the experience has been that the exposure to base station EMF at ground level is typically well below the afore-mentioned ICNIRP guideline limits. Against this background of available data, there would be no scientific grounds to support any allegation that adverse health effects might be suffered by a responsible member of the public due to the EMF emitted by a base station.

Although the Directorate Radiation Control currently neither prescribes nor enforces any compulsory exposure limits for electromagnetic fields, the Directorate does advise all concerned (whether they be a government department, the industry or the public) that voluntary compliance with the afore-mentioned ICNIRP exposure guidelines is the recommended and science-based way to deal with any situation involving human exposure to the non-ionising electromagnetic fields emitted by cellular base stations and handsets.

Yours sincerely,

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