

## 5G Mobile Technology Fact Check

The roll-out of the new 5G mobile networks is progressing. Unfortunately, this also leads to an increasing number of false reports about this technology. Corona crisis, bird deaths, military weapons or global conspiracies - the hit parade of false information related to the 5th mobile phone generation is long. The Swiss Telecommunications Association (asut) wants to contribute to the objectification of the debate and puts publicly distributed reports to the test. In March 2019, asut published the "5G Mobile Technology Fact Check" for the first time for all those who want to base their opinion on 5G on facts and not on false reports. The overview is updated regularly.

### Fact Check, April 8<sup>th</sup>, 2020

False Claim	The Facts
<p>“Damage to health through mobile telephony/5G, such as altered brain waves and an increased risk of cancer/tumors, is scientifically proven.”</p>	<ul style="list-style-type: none"> <li>• Studies carried out at the University of Zurich show that mobile telephony affects brain waves in the same way as other substances like coffee, for example. However, “affect” does not equal “damage”. That is why the scientific community emphasizes that this effect is not a “dramatic” one.</li> <li>• To date, reputable cancer registries have not observed an increase in brain tumors. This would be expected if cell phone fields represented a relevant cancer risk. See Facts on False Reports No. 16 for more information.</li> <li>• To assess the state of scientific knowledge on the effects of mobile telephony, renowned expert panels, including <a href="#">BERENIS</a>, <a href="#">FSM</a>, <a href="#">FDA</a>, and <a href="#">ICNIRP</a>, are evaluating scientifically approved studies. Following the findings of the U.S. Food &amp; Drug Administration (FDA), an operating division of the U.S. Ministry of Health, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) has now reached the same conclusion: The previous threshold values and international guidelines on setting threshold values offer sufficient protection from cell phone emissions. This also applies to exposure from the new 5G standard.</li> </ul> <p>Sources:</p> <ul style="list-style-type: none"> <li>• Peter Achermann, Titular Professor of Sleep Research and Signal Analysis in Pharmacology in <a href="#">UHZ News</a>. Zurich Center for Integrative Human Physiology (ZIHP)</li> <li>• <a href="#">Interview</a> with Prof. Martin Rössli, radiation expert and head of the Swiss Tropical and Public Health Institute in Basel.</li> <li>• U.S. Food &amp; Drug Administration, <a href="#">Scientific Evidence for Cell Phone Safety</a></li> <li>• International Commission on Non-Ionizing Radiation Protection (ICNIRP), <a href="#">RF EMF Guidelines 2020</a></li> </ul>
<p>“Wuhan is the first Chinese province that has complete 5G coverage and is also the epicenter of the deadly coronavirus. The deaths aren’t caused by the virus, but by a breakdown of cells triggered by mobile telephony/5G, which imitates the effects of a virus. 5G waves lead to flu-like symptoms.”</p>	<ul style="list-style-type: none"> <li>• The <a href="#">director of the British health authority</a> makes it clear that these reports are fake news and have no scientific basis.</li> <li>• The research of Full-Fact and the dpa fact-checking team shows in detail that the allegations are false and based on faulty assumptions and theories.</li> </ul> <p>Sources: <a href="#">Full-Fact</a>, <a href="#">dpa fact checking team</a></p>

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<p>“Swiss reinsurance company Swiss Re has classified mobile telephony as having the highest risk level and warns that 5G may cause damage to health.”</p>	<ul style="list-style-type: none"> <li>• The actual statement made by Swiss Re is: “The existing concerns regarding possible negative effects of electromagnetic fields on health will likely increase.”</li> <li>• Swiss Re is not claiming that 5G presents a health risk, but is simply expecting a more widespread public discussion due to these concerns. This could then lead to new laws, delays in expanding the network, or lawsuits – presenting a risk for the mobile industry.</li> </ul> <p>Sources: Swiss Re <a href="#">Media release from May 22, 2020</a> / <a href="#">SONAR Report 2019</a></p>
<p>“Current threshold do not offer protection from the effects of mobile telephony/5G because we are experiencing exposure that is thousands of times higher than it was 20 years ago as a result of today’s pulsed, high-frequency radiation.”</p>	<ul style="list-style-type: none"> <li>• The frequencies currently used for 5G in Switzerland have been employed for decades for a wide range of radio applications. These include digital TV, wireless cameras, Wi-Fi, and 4G. This means that 5G radio signals are not new, their properties have been well established for a long time, and their effects on humans and animals is comparable to those of previous applications. Therefore, the existing threshold values to protect individuals from non-ionizing radiation also apply to 5G.</li> <li>• The Swiss order on protection against non-ionizing radiation (NISV) regulates protection for the general public. The emission limits (Immisionsgrenzwerte, IGW) ensure that even 5G mobile antennas do not have any harmful effects on people. The IGW contain the same limits recommended by WHO and the EU, and which are used in the majority of countries. The IGW must be respected in any location where people could potentially spend time.</li> <li>• The limits already contain a safety margin that takes into account exposure by different sections of the population and the scientific uncertainties in modeling this.</li> <li>• Although the IGW already includes a safety margin, an additional precautionary factor was determined for mobile base stations in Switzerland, which is ten times stricter than the international recommendation. These site limits apply to all locations with sensitive areas of use, including apartments, schools, pre-schools, hospitals, permanent workplaces, and children’s playgrounds.</li> <li>• The site limits impose a much stricter restriction on exposure through mobile antennas in Switzerland compared to most European countries.</li> <li>• These emission limits (sites and IGW) also apply to 5G.</li> </ul> <p>Sources: Federal Office for the Environment, <a href="#">FOEN</a>; Federal Office of Communications, <a href="#">OFCOM</a></p>
<p>“The limits fail to take the biological impact of mobile telephony into account. The mobile communications lobby talks these down.”</p>	<ul style="list-style-type: none"> <li>• International committees and governmental organizations regularly evaluate the state of scientific knowledge regarding any potential health implications of mobile telephony. All effects, including thermal and non-thermal impacts, biological effects, cancer, electro sensitivity, etc. are considered.</li> <li>• In its overall assessment from March 11, 2020, ICNIRP drew the conclusion that the existing guidelines for mobile telephony limits offer sufficient protection from all proven</li> </ul>

False Claim	The Facts
	<p>health effects through electromagnetic fields. This also applies to all radio frequencies used by 5G.</p> <ul style="list-style-type: none"> <li>On February 10, 2020, the FDA decreed that today's threshold values are sufficient for protecting public health. This is also true for cancer risks and cell phone use. The FDA does not consider 5G to have any effects on health.</li> </ul> <p>Sources: U.S. Food &amp; Drug Administration, <a href="#">Scientific Evidence for Cell Phone Safety</a>; International Commission on Non-Ionizing Radiation Protection (ICNIRP), <a href="#">RF EMF Guidelines 2020</a></p>
<p>"Radiation exposure via 5G is 100 times higher than through 4G, and 400,000 times higher than 2G."</p>	<ul style="list-style-type: none"> <li>The limits indicated in the regulation on protection against non-ionizing radiation (NISV) are "technology-neutral" and apply to all mobile communication technologies. Therefore, 5G equipment cannot emit stronger radiation than 2G, 3G, or 4G equipment.</li> <li>However, mobile networks have become more efficient at transmitting data thanks to new technologies, as a result of which the actual exposure in Switzerland has only marginally increased between 2008 and 2015, even though the amount of data transmitted during this time increased 200-fold.</li> <li>5G is currently the most efficient mobile technology and requires considerably less transmission power than older standards to transmit the same amount of data. This is because 5G uses leaner and more flexible signal structures and sends fewer control signals than 4G.</li> <li>Adaptive (beamforming) antennas only send radio signals in places where they are actually used by devices. This reduces the average amount of exposure to radio waves compared to 4G or 3G coverage.</li> <li>Users' devices, not the mobile network, determine the amount of exposure to radio waves. By far the biggest share of non-ionizing radiation (around 90%) stems from a user's own cell phone.</li> </ul> <p>Source: <a href="#">Report on Mobile Telephony and Radiation</a>. Published by the working group "Mobile Telephony and Radiation" on behalf of DETEC, November 2019.</p>
<p>"The extremely short-wave, bundled radiation hits our skin like a laser beam and sticks to it. We must expect an increase in skin cancer."</p> <p>"Viruses and bacteria thrive in the microwave environment of 5G and can spread quickly. Due to radiation in the millimeter range, 5G disrupts the body's defense mechanism."</p>	<ul style="list-style-type: none"> <li>Short-wave radio frequencies above 20 GHz (so-called millimeter waves) have poorer propagation characteristics than the mobile telephony frequencies used in Switzerland today. Millimeter waves therefore cannot penetrate as deeply into the human body and are primarily absorbed by the skin.</li> <li>ICNIRP's guidelines from March 11, 2020 apply to frequencies from 100 kHz to 300 GHz and so are also valid for millimeter waves. Corresponding limits for Switzerland are also stipulated in the regulation on non-ionizing radiation protection (NISV).</li> <li>Currently, millimeter waves are not yet approved for mobile telephony use in Switzerland. The Federal Council would first need to adapt the "national mobile telephony allocation plan", and the Communications Commission would have to grant concessions for mobile telephony.</li> </ul> <p>Sources: <a href="#">OFCOM</a>; <a href="#">FSM</a>; <a href="#">FDA</a>; <a href="#">ICNIRP</a>; <a href="#">WHO</a></p>

False Claim	The Facts
<p>“If drug tests delivered the same results as 5G/mobile telephony, they would be taken off the market immediately.”</p>	<ul style="list-style-type: none"> <li>• The entire approval procedure for a drug takes normally 330 days in Switzerland.</li> <li>• Over the past 40 years, more than 30,000 scientific studies have been carried out on electromagnetic fields and more than 4000 studies have focused specifically on mobile telephony radiation.</li> <li>• Based on practical experience and these numerous studies, a preliminary consensus has been reached: There is no consistent or credible scientific proof for health risks below the current threshold values.</li> </ul> <p>Sources: <a href="#">Interpharma</a>; <a href="#">EMF portal</a> of RWTH Aachen University; “<a href="#">Wie gefährlich sind 5G-Mobilfunkstrahlen?</a>” (“How dangerous is 5G Mobile Radiation?”) , NZZ from 04/27/2019; <a href="#">FDA</a>; <a href="#">ICNIRP</a></p>
<p>“The claims that mobile networks cannot be further expanded, that we are facing network congestion, and that we need thousands of new antennas is just fearmongering of mobile providers. They said the same thing about 3G and 4G.”</p>	<ul style="list-style-type: none"> <li>• According to forecasts, data traffic in western Europe will increase by a factor of 5 (524%) by 2024 compared to 2018. By 2024, a quarter of this traffic – 1.3 times the amount of data transmitted today – will be carried via 5G. These developments are also conceivable in Switzerland.</li> <li>• However, in cities and other clusters, only about 2% of the existing infrastructure can be expanded to reach the capacities required for 5G.</li> <li>• Even taking the rollout of 5G over the next few years into account, a strong increase in 4G data volume is also expected. This means mobile networks must also be further expanded for 4G alone.</li> <li>• During the past five years, 4G has covered the biggest share of mobile data traffic by far. Today, it transmits 95% of all mobile network data.</li> <li>• Even though the data volume transmitted via 2G and 3G is barely relevant anymore, between half and three quarters of all cell phone calls are made using these two technologies. They are also used for many machine-to-machine (M2M) applications.</li> <li>• Given the current framework conditions, it is unlikely that a sufficient number of site locations are available to expand 5G in a way that is economically feasible.</li> </ul> <p>Source: <a href="#">Report on Mobile Telephony and Radiation</a>. Published by the working group “Mobile Telephony and Radiation” on behalf of DETEC, November 2019.</p>