

***Diagnose:funk is the environment and consumer organization  
to protect against electromagnetic radiation***

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## **Chronology of mobile communications**

### **Political and scientific documents, 2003-2018**

This chronology documents a wide range of regulatory and scientific warnings and evidence of mobile technology risks

Users are insufficiently informed about the risks of mobile communications technologies by the German health authorities, and a precautionary policy is not being initiated. In the United States, the Federal Communication Commission (FCC) is demanding 76 billion euros for the first start-up of the frequency increase in 2016. But the state not only attracts financial benefits. The entire monitoring device is based on the data that are stored by each user. And the industry uses the digital profiles for personalized advertising to boost consumption and growth. These interests explain why the states do a common thing with mobile telephony and do not protect the population from risks.

The uncertainties in the Public about the risks are not due to ambiguous research results, but rather to the dominant influence of industry on politics, science and media. This chronology shows that not only a precautionary policy is overdue, but a security policy with strict protective regulations. This has been demanded in many publications for years. The EMF Portal, reference database of the WHO and the German federal government, lists the number of approx. 26,000 publications, of which some 6,000 were compiled by the EMF Portal. Of these, 1,430 are mobile communications. In the diagnostic: radio internal evaluation, about 800 of these studies show biological effects. diagnose:funk, the Study evaluates continuously and published the results in study, research, and on the homepage [www.EMFData.org](http://www.EMFData.org). In the assessment of the study situation, the chronology, documented, learning diagnose:funk agreed with a number of publications of leading science and reputable political institutions.

The events documented in this chronology are usually found on [www.diagnose-funk.org](http://www.diagnose-funk.org) under the heading `articles and on [www.EMFData.org](http://www.EMFData.org) more information and documents. This chronology documents a wide range of regulatory and scientific warnings and evidence of the risks of mobile communications technology.

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#### **2003**

**February 2003:** Opening of the blood-brain barrier: The working group of the Swedish scientist Leif Salford in series with the rats in the Experiment after a two-hour GSM-irradiation, an increased permeability of the blood-brain barrier for Albumin-Eiweise and as a result of neuron damage (Salford et al. 2003). The radiation intensities were at SAR 1 W / kg and far below. Salford said: "there are good reasons to believe that what happens in the rat brain also happens in the human brain."(BBC Interview, 2003). "We cannot rule out the fact that several decades of daily use of mobile phones have a negative effect on a whole Generation of users already in the middle of age."(ebda)

**June 2003:** The Bundestag printed paper 15/1403, "Health and environmental aspects of mobile Telecommunications and broadcasting equipment - scientific discourse, regulatory requirements and public debate", from 8.7.2003, contains a 100-page research overview of the Chapter "security", indicating potential risks and, above all, for protection zones around nurseries around calls. There, the effects of radiation are determined, among other things:

"Of the studies on human subjects, 79% had positive results. Most of the effects related to the nervous system or the brain (86 %), effects in Connection with cancer (64 %)"(p. 27).

"The establishment of protection zones, in which, for example, the use of mobile phones or the construction of transmission facilities is prohibited or strongly restricted, is a frequently discussed measure. These zones can serve, among other things, the protection of possibly more radiation-sensitive persons. Their setup is therefore primarily considered for hospitals, schools or gardens. As part of the voluntary commitment of December 2001, the mobile operators in Germany want to take into account the locations of schools and kindergartens more strongly in the planning of broadcasting facilities.... Some studies are in favour of further measures: the protection zones are intended to include all places where people stop regularly for more than four hours" (p. 81).

**November 2003:** The field research of the Veterinary University of Hannover published: "The effects of electromagnetic fields from mobile phone systems on performance, health and behaviour of farm animals: An inventory" (Prof. W. Löscher, magazines. Pract. Veterinary surgeon, 84, 11, 20013). It shows a pathogenic effect of radiation on living beings. The study was commissioned by the land of Bayern. The relevance of Löscher's studies is confirmed in the German Press case 15/1403 (P. 24: "Of particular interest here is a publication on cattle (Löscher / Käs 1998), in which significantly reduced milk yields, fencing as well as spontaneous false and dead Burts were documented. The following matters are of particular relevance:

– The state of health of the cattle improved greatly after they were brought to pasture land, which was far away from the transmitting mast, but immediately deteriorated again upon return to the old location;

- the negative health effects occurred only after the GSM microwave antennas were installed on a tower, which had previously only been used for the transmission (analog) TV and radio signals....Finally, the decline in bird and bee populations following the introduction of new base station masts is reported.

The Occurrence of negative effects in animals is therefore of particular relevance, because it is evident that the effects may be real and not just psychosomatic Genesis. In addition, the often higher electro-sensitivity of animals compared to humans could lead to the conclusion that the health problems encountered in animals within a relatively short time range suggest that long-term exposure in humans could have similar consequences."

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## 2004

**December 2004:** the results of The REFLEX study will be presented by prof Franz Adlkofer. The project was funded by the EU and implemented in a network of 11 university institutions. The results: GSM-1800 and GSM-900 change below the applicable limit value for the partial-body exposure of 2 W/kg in various human and animal cells after intermittent and continuous exposure to the structure and function of genes. Effects have been identified:

Increase in single and double-stranded DNA fractures in human fibroblasts, HL60 cells and granulosa cells

from rats but not in human lymphocytes

Increase in nuclei and chromosomal Aberrations in human fibroblasts  
Changes in gene expression in several cell types, but in particular in human endothelial cells and embryonic stem cells of mice  
A significant increase in DNA strand breaks was observed in human fibroblasts at a SAR value of 0.3 W/kg.

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## 2005

**Spring 2005:** the "radiation protection guidelines "(2005) of the Federal Office for Radiation Protection criticises the installation of mobile radio transmission systems and unsecured consequences and calls for precautionary measures: "a radiation protection evaluation of new technologies is only possible until now after market introduction of the technology, since the data required for this purpose is not made available to radiation protection in advance. "And further: "In Germany, a General law is currently lacking a basis for the radiation protection of the population of non-ionizing radiation ...

The consequence is that, apart from a few exceptions, a largely uncontrolled exposure of the population... The question of the impact of electromagnetic emissions on the living environment are not only national, but also international been very much neglected." "On the other hand, today we are faced with a broad introduction of new workloads without the possibility of a final assessment and evaluation of the risks (e.g. mobile communications)." (Pp. 42, 44, 46, 50)

"Although the energies of non-ionizing high-frequency electromagnetic fields are too low to contribute to cancer induction. However, the scientific discussion of mechanisms for cancer promotion is discussed. For this reason, is also displayed here, Preventive care, particularly for Adolescents and young adults with special sensitivity to radiation cannot be excluded ... Prevention is a second important principle when dealing with risks in addition to the Prevention of risks, which serves to maintain health and should therefore be considered as a radiation protection principle in the relevant legal regulations." (P. 54)

**February 2005:** presentation of the study on the inhibition of a DNA repair mechanism by UMTS. At a Workshop of the WHO, the Russian-Swedish research group led by Prof. I. Y. Belyaev / E. Markova (University of Stockholm) presents the results of their study: UMTS-radiation delayed repair mechanisms in the cell for up to 72 h, and draws from the studies in the summary: "The obtained research results support the hypothesis that UMTS microwaves affect due to their signal characteristics of the cells even more strongly than the GSM microwaves." (Belyaev, Lecture Zurich 2005).

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## 2006 / 2007

**August 2006:** In the EMF Handbook, in 2006, of the ECOLOG Institute, it is noted that the studies "on the effects of high frequency radiation on the Central nervous system ... the Institute states, and it assesses them as "consistent indications" (pp. 2-15, 2-12). These "disorders of the central nervous system" occur already at 0.01 W/m<sup>2</sup>, carcinogenicity at 0.1 W/m<sup>2</sup>. The renowned ECOLOG Institute was commissioned by Telekom in 2000 by experts. In the study conducted by the ECOLOG Institut for T-Mobile, the technology is classified as hazardous to health. Seven studies on the effect on the blood-brain-barrier as a "positive" (Appendix B, p. 11 ff).

**September 2007:** The Bioinitiative Report provides detailed scientific Information on the effects on Health due to electromagnetic radiation. The authors reviewed more than 2000

scientific studies and concluded that the currently valid public safety limit values are unsuitable for the protection of Public Health.

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## 2008

In October 2008, the position paper of the federal government (Bund für Umwelt und Naturschutz Deutschland) "for future-compatible radio technologies" was published with the appeal: "the health of people is damaged by widespread, unnatural radiation with an unprecedented power density. Short-term and long-term damages are visible and will manifest especially in the next Generation, unless politically responsible and unrestrained action is taken."

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## 2009

**April 2009:** the EU Parliament (Decision 2008/2211(INI) of 2. In view of the increasing EMF exposure, children and pregnant women are no longer protected by the limit values.

July 2009: Belgium lowers its mobile edge limits to 3 volts per Meter.

**August 2009:** the research report of AUVA-Versicherung (Austria), the ATHEM-Report, is published. He was led by the Medical University of Vienna. It shows the existence of Athermal damaging effects on Proteinbiosynthesis, shows effects on the brain, as well as it takes to DNA damage position. The report provides the protective function of the limit values in question.

**September 2009:** in the U.S. Senate a Hearing on mobile phones takes place. All the speakers warn scientists, only the distributor of the mobile communications industry denies the health driving. Parallel to this Hearing, the "Washington conference" will be held with senior scientists. She admonishes further research without any loss of time.

**September 2009:** the European Environment Agency (EEA) publishes a second early warning based on these conference results: "The Washington conference on mobile phones has just evaluated the current evidence of possible driving associated with mobile phones, in particular the possible brain tumor risk" (...) "the evidence of a brain tumor risk from mobile phones, although still very limited and highly doubtful, is unfortunately stronger than" The (Prof. J. McGlade, EEA Director). The EEA refers to the results of the Bioinitiative active report.

**October 2009:** In the magazine Umwelt-Medizin-Gesellschaft (UMG) is the focal topic of "Health effects of electromagnetic fields". A continuous warning is given of the proven risks. UMG released the article by Ulrich Warnke "An initial mechanism for damage effects due to magnetic fields, with a simultaneously acting high frequency of the mobile and communication radio".

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## 2010

**January 2010:** A team of Doctors in Umwelt-Medizin-Gesellschaft 2/2010 the Selbitz study (Eger/Jahn). According to a survey conducted in the city of Frankenwald, they found that with increasing proximity to cell towers there are significantly more and stronger health problems. [

**September 2010:** Prof. Wilhelm Mosgöller, cancer specialist at Med. University of Vienna,

under the title: "prevention due to repeated detection of so-called Athermal effects of RF-EMF", published a current comprehensive report on the state of research on Genotoxicity of electromagnetic fields. It lists 27 studies showing genotoxic effects. Its conclusion: international research has produced findings that justify risk reduction measures in the event of exposure by RF-EMF (high-frequency electromagnetic fields).

**October 2010:** The ICEMS (International Commission for electromagnetic safety) have Not published the monograph on "thermal effects and mechanisms of interaction between electromagnetic fields and living organisms", with 25 research report, the adverse effects can prove. ICEMS includes more than 40 scientists worldwide.

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## 2011

**January 2011:** the Rimbach study (Buchner / Eger) is published in the magazine Umwelt-Medizin-Gesellschaft 1/2011. In it you will rise to show that the duration of radiation from mobile radio to change masts neurotransmitters, the stress hormones adrenaline and Noradrelanin, the Dopamine levels to drop.

**April 2011:** Seletun-paper of diagnosis:funk translated. In November 2009, a group of well-known science met in Seletun, Norway, for an intensive discussion on existing scientific evidence and health consequences of artificial electromagnetic fields (EMF). These included Adamantia Fragopoulou (Greece), Yuri Grigoriev, (Russia) Olle Johansson (Sweden), Lukas H. Margaritis (Greece), Lloyd Morgan (USA), Elihu Richter (Israel), Cindy Sage (USA). The group of Scientists calls on in their programmatic report (Seletun paper ,Environmental Health (2010; 25: 307-317) the governments to Act, "because there is a lot of Evidence that biological effects and adverse health effects already at radiation intensities that are many orders of magnitude below the existing limit values in the world."

**April 2011:** New resolution of the Russian National Committee for Protection against Non-ionizing Radiation (RNCNIRP) of 2011, translated by diagnosis:funk. A worldwide sensation, the appeal of the RNCNIRP has already caught in the year 2008, the high-level Commission of Russian scientists forecast severe damage to the health of the young generation through the use of mobile phones and the mobile phone radiation. The new resolution of the RNCNIRP, entitled "electromagnetic fields from mobile phones: health effect on children and young people" in April 2011 goes a step further. In the resolution, the RNCNIRP states that medical statistics and national and international research findings indicate that there is already evidence of damage that can be attributed to mobile phone use and its radiation with great probability.

**May 2011:** The Committee on the Environment, Agriculture And Local Affairs of the Council of Europe calls in a unanimously adopted resolution, "The potential dangers of electromagnetic fields and their impact on the environment" the European governments to change course:

" "On the other hand, other non-ionizing frequencies in the low frequency range seem, for example, from power lines or certain high frequency waves used in radar, telecommunications and mobile telephony, to have, to varying degrees, potentially harmful biological effects at non-thermal area, and in the case of plants, insects, other animals, and also in the human body, and this at intensities below the official limits. The Precautionary Principle and the current limit values must be revised. To wait for a high level of scientific and clinical proof can lead to very high health and economic costs, as was in the past with asbestos, leaded petrol and tobacco."

The resolution was adopted with minor amendments by the Standing Committee of the Council of Europe and approved.

**May 2011:** The International Agency for Research on Cancer (IARC) of the World Health Organization (WHO) classifies the radiation "from mobile phones may be carcinogenic to humans (group 2B), based on an increased risk for glioma, a malignant type of brain tumor",. The phrase "possibly" is a compromise. 31 scientists from 14 countries participated in the IARC study. Swedish and Israeli scientists are becoming more clear: they assume a 2 to 5-fold risk of cancer for many heavy phone users. "A lot of calls" is defined as half an hour a day! To date, the industry has used WHO as a driving force for the safety of radiation. This has now come to an end.

**November 2011:** the Canadian Environmental Medicine Genois / Lipp publish the first comprehensive research on electrosensitivity: "electromagnetic sensitivity-fact or imagination?" diagnosis:funk publishes a translation.

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## 2012

**April 2012:** Prof. Devra Davis gives the lecture 'mobile phone exposure-toxicology and epidemiology – an update to the state of research'. On 4. April 2012 Prof. Devra Davis about the international results of research on the biological effects of mobile phone radiation at the National Institute of Environmental Health Sciences (NIEHS) of the USA, an Institute under the Supreme American national health protection Agency (United States Department of Health and Human Services). The Director of the NIEHS Prof. Linda Birnbaum. Prof. Devra Davis shows how the knowledge of harmful effects of mobile radio radiation and how necessary a pre-care policy is. The Video is in German synchronized [www.EMFData.org](http://www.EMFData.org).

August 2012: In the EMF-Monitor, Dr. H.-P. Neitzke, Manager of the ECOLOG-Institute, published the article "influence of weak magnetic fields on biological systems: Biophysical and biochemical mechanisms of action". In this work, the induction of electric currents, the coupling on magnetite crystals, and the Radical will be presented-Pair mechanism as a bio-physical approaches to the explanation of the influence of magnetic fields on physiological processes, and thus a mechanism of injury published.

**October 2012:** The research report, the leading Anglo-Saxon scholars is published in English as the brochure from the competence initiative e. V.: "health hazards caused by mobile radio: Why we need to be for the protection of children act": "Our examination of the results, to date, more than 200 scientific peer-reviewed studies have been published that adhere to a link between long-term mobile phone use and serious health threats. The sum of relevant information is large, your statement unmistakably. The potential health risks identified include not only brain tumors, but also damage to fertility, genes, blood-brain barrier and melatonin production. In addition, there are other biological effects that are associated with the development of cancer."

**November 2012:** the magazine Umwelt-Medizin-Gesellschaft 4/2012 published articles on Burn-Out, in which a connection to electromagnetic fields is shown. This is enhanced in the 1/2013 issue by a research survey of the mechanism of action ROS (oxidative cell stress)": "increasing" Burn-Out" incidence due to technically generated magnetic and electromagnetic fields of mobile and communication Radio " by Ulrich Warnke and Peter Hensinger.

**December 2012:** the Bioinitiative Report 2012, prepared by an International Association of

leading scientists, evaluates almost 2000 research and concludes that the risks of mobile communications are proven. diagnosis: funk publishes a translation of the summary.

**March 2012:** in Austria, the "guide to transmitter building" with criteria for the establishment of mobile towers is published jointly by:

Medical doctors for a healthy environment

"General Accident Insurance Institution

To the Federal Chamber of Labour

Austrian Medical Association

The Vienna Office For The Environment

From The Austrian Chamber Of Commerce-Business Sector

The summary states: "the introduction and worldwide distribution of radio-frequency radio services (e.g. wireless LAN, mobile radio) is without example in the history of technological innovations. The rapid development is accompanied by concerns about health effects. This leads to considerable resistance, especially where infrastructure is expanded without any involvement of the local population. This guide describes strategies and procedures to meet the need for technical innovation on the one hand and the understandable desire for low emissions on the other. The recommendations are based on scientific findings and the experience of past years. The guide provides concrete recommendations for a participatory approach in the development of base stations for building authorities, residents and operating companies with the aim of taking into account health and economic consequences. Conflict-prone construction projects can thus be realized through a constructive dialogue-controlled process."

The guide will be published in an updated version in October 2014.

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## 2013

**February 2013:** the European Environment Agency (EEA) includes mobile communications in its risk catalogue. The documentary "late lessons from early warnings, Volume II" contains for the first time a chapter on mobile communications. The EEA press release states: "new technologies sometimes have very harmful effects, but in many cases early warning signs are suppressed or ignored. The second volume of "Late Lessons from early warnings" investigates specific cases where danger signals have gone unheeded, in some cases leading to death, disease and destruction of the Environment... The report also considers the warning signs emerging from currently used technologies, including mobile phones, genetically modified organisms, and nanotechnology... the report recommends the wider application of the "precautionary principle".

**February 2013:** German Bundestag, Committee on the Environment, Nature Conservation and nuclear safety. In the consultation on electromagnetic fields and their potential for danger, the criticism of the risks and the demand for a precautionary policy weighs. The invited experts Prof. Hutter (Univ. Vienna), Prof. Kühling (BUND), Dr. Neitzke (Ecolog Institute) lead a sharp criticism of the uncontrolled spread of microwave technology and demand new safety standards. The debate (Video and written contributions) is documented on the website of diagnosis: funk.

**February 2013:** press release of the SPD parliamentary group after the German parliament hearing on the amendment of the 26. BImSchV. "It is high time that the federal government did what it could to protect citizens from electromagnetic radiation. The precautionary principle for protection against electromagnetic radiation based on current paths and mobile radio systems must be applied more consistently. This was stated by the three

experts invited by the Opposition in the hearing on the amendment of the 26. BlmschV clearly worked out. In the last decade, the focus has been on the Prevention of evidence of acute effects, the data is now evident in the area of chronic effects. The existing limits do not provide sufficient safety space and must be lowered accordingly. This has already happened in other European countries. The experts agreed, after all, that in the everyday life of the people the number of field sources of new technologies, starting with the power lines via the mobile phone up to wireless and Bluetooth radio connections has increased very strongly and will increase even further. Many of our neighbouring countries have already been sensitive to this and have adapted their limits. They are lower there by orders of magnitude. Germany must now also take the next step and ensure the highest level of protection below the weak limit values in force here."(27.02.2013)

**March 2013:** The Canadian health authority publishes the research overview, "Radiofrequency Toolkit for Environmental Practitioners". In the report, the BioInitiative Report and the WHO decision are laid down as important foundations (foreword). In Chapter 10, the state of research on fertility is being worked up with the most widely accepted conclusions for an authority: "Though a number of different mechanisms have been proposed, increased oxidative stress (either from increased ROS or decreased antioxidant capacity) seems most likely to be implicated. It can explain observed effects on sperm directly and also indirectly through other possible mechanisms such as DNA damage."(P. 269)

"Overall, oxidative stress seems one of the more plausible mechanisms of RF-induced sperm damage. It has been found fairly consistently in human and animal studies on sperm specifically and on other cells in general. Mechanisms by which oxidative stress is caused by increased ROS and decreased antioxidant have been shown to exist in neurodegenerative diseases such as Parkinson's and Alzheimer's." (P. 272)

Chapter 14 provides detailed recommendations on Radiological use and precautionary policy.

**April 2013:** a research group of the Freie Universität Berlin shows that bees perceive different electrical charges on the body surface of their fellow species, decide and learn their meaning. In an Interview, the bee researcher Dr. Ulrich Warnke interprets the study. It sees both its research findings confirmed and its conclusions that the artificial electromagnetic fields of mobile radio disrupt the communication and navigation system of bees, a cause of bee mortality. In a focal point of diagnose: funk he explains these relationships.

**August 2013:** Belgium: mobile phone ban for infants. On 30 August 2013, two royal decrees of the federal government on stricter regulations in relation to electromagnetic radiation from mobile phones were published in the Belgian Gazette. Thereafter, the sale and placing on the market of special mobile phones for under seven years will be banned in the future. Advertising on television, on the Radio, on internet sites and in print media, which is aimed at this age group, is also prohibited. In general, consumers are obliged to specify the specific absorption rate (SAR) of mobile phone models, as well as to point out in the advertising. Both decisions will enter into force on 01.03.2014. The whole thing goes back to plans of the Belgian Minister for social Affairs and health, Laurette Onkelinx and the Minister for economy and consumer protection, Johan Vande Lanotte.

**November 2013:** reinsurer Swiss-Re classifies mobile communications into the highest risk level. Swiss-RE warns its customers under the heading of "unimaginable consequences of electromagnetic fields" the product liability division of mobile phones and transmitters can provide them with risks. Electromagnetic fields emanating from transmitting equipment and



mobile phones, are now classified among the potentially highest risks.

**December 2013:** The Swedish group led by Professor Hardell evaluated the latest data on the effect of mobile phone radiation on the brain. They showed an up to 7.7 fold increased brain tumour risk for long-term use of mobile phones and DECT phones of more than 20 years. This result not only confirms the WHO classification of non-ionizing radiation as "possibly carcinogenic to humans" (category 2B) in may 2011. Professor Hardell calls for that mobile phone radiation should now be level 2B "carcinogenic" (level 1) higher-graded.

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## 2014

**August 2014:** WLAN Review: in the Springer Reference Book "Systems Biology of Free Radicals and Antioxidants" (I. Laher (ed), 2014), the article "Effects of Cellular Phone-and Wi - Fi-Induced Electromagnetic Radiation on Oxidative Stress and Molecular Pathways in Brain" by Naziroglu M. & Akman H. gives a survey of WLAN and, due to the overall study situation, points out that weak WLAN radiation can The Reference Book has great scientific significance because it documents the state of research as a reference book.

**August 2014:** "wireless St. Gallen pilot installation as a first step towards low-radiation mobile radio in the City " is the name of the project transferred to normal operation in 2014. Since 2012, an alternative mobile telephone range has been available in the inner city area. St. Gallen-Wireless meets four important requirements for the creation of a low-power and low-radiation wireless network:

End \_Es gives only one network for all users.

The radio link is kept as short as possible with a small cell network.

The Indoor and Outdoor supply is separated from one another.

These are shielded from the buildings and mounted in such a way that the installation in buildings is avoided or minimized. In practice, the project is a success.

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## 2015

**January 2015:** France adopts a law to protect against mobile communications.

1. 1. Once a year, a list must be provided of all places where the radiation values exceed an average. The operators are obliged to stop this excess as far as is technically possible.
2. What do you mean? The installation of WiFi antennas is subject to registration. Local authorities may disclose this information to the public, but they do not have to.
3. Wi-Fi (WiFi) prohibition of crèches in children. In primary schools, Wi-Fi may only be in use if the teaching requires it.
4. 4. The government must submit a report on the situation of electro-sensitive within one year.

**March 2015:** study by the Federal Office for Radiation Protection confirms a carcinogenic effect. "In a study in mice, the biologist Prof. Dr. Alexander Lerchl and his Team were able to prove that cancer-causing substances caused tumor rates are significantly increased if the animals live long electric were exposed to magnetic fields, such as mobile phones. "The effects on tumors of the liver and lungs discovered by the Fraunhofer Institute in 2010 were fully confirmed," says Lerchl, who conducted the study together with colleagues from Jacobs University and the University of Wuppertal. "In addition, we have found a significantly higher rate of lymphoma," the scientist explains the new results. In addition, some of the effects were also found at field strengths below the existing limit values. 6.3.2015, press release of Bremer Jacobs University. "The study states:" in principle, it can and must

therefore be concluded that tumour-promoting effects of life-long exposure to high-frequency electromagnetic fields in the ENU mouse model are to be regarded as established. Also, why increased tumour incidence increased in the groups with weak and medium exposure levels (0.04 W/kg or 0.4 W/kg) and not in the most exposed group with 2 W / kg.“ (Lerchl 2015, P. 35)

**April 2015:** Südtiroler Landtag decides to Provision the mobile. The experts - "hearing mobile communications" on 29.4.2015 in the Landtag South Tyrol has first consequences. The parliamentary group of the GREENS brought the application "in the Future, you want to deal more consciously with Wi-Fi, cellular, radiation exposure," in which a Wi-Fi Moratorium and the precautionary measures required. It was concluded on 10.06.2015 by a majority: "The Südtiroler Landtag commissions the state government: 1. In schools, kindergartens, hospitals, retirement homes and other public facilities, where possible, to replace existing facilities with less radiation and to use them until then only if it is assured that the use is limited in time and space and that it is user-dependent as far as possible by manual operation.  
2. What do you mean? To set up a working group to evaluate the new technologies and their radiation exposure. It is intended to clarify which technologies for mobile communications, the mobile Internet and civil protection are low-radiation and future-proof. 3. Similarly, the impact of digital media on students and the meaningful use of these media should be checked for a good learning success. On the basis of the results, the state government will take appropriate measures to protect health and healthy learning.  
4. An information and awareness call campaign in the the potential risks to the health, especially of the Unborn, babies, children and Young people and a conscious use of mobile phones, Smartphones and Wi-Fi. Public transport also play a special role, in which the simultaneous use of many mobile phones can lead to a drastic increase in radiation and thus the health risk. The monitors in the local South Tyrolean trains are used for a related advertising campaign.“

**May 2015:** appeal to the UN. 194 scientists from 39 countries, many of which chair holders are researching the effects of non-ionising radiation from mobile radio, in an appeal to the UN and WHO to address health risks in their Um World programme: "numerous recently published scientific publications show that EMFs affect living organisms - well below most international and national limit values. The effects include an increased risk of cancer, cellular Stress, an increase of harmful free radicals, genetic damage, Changes of structures and functions in the reproductive system, deficits in Learning and memory, neurological disorders, and a negative impact on the General well-being of the people. As the growing evidence of harmful effects on plant and animal life shows, the threat extends far beyond humanity."

The signatories of the appeal criticize the fact that the applicable limit values (ICNIRP guidelines) ignore scientific evidence.

**May 2015:** first pilot project on VLC technology. The Fraunhofer Heinrich-Hertz-Institute (HHI) in Berlin has developed a data transmission technology, in the light of commercially available LED lamps used for room lighting, is used with an embedded microchip as a data carrier. On 20. The first practical project in Europe with optical data transmission, the Visible Light Communication (VLC), will be launched on the island of Mainau in Lake Constance on 15 May 2015. This project was inspired by the green MdL Thomas Marwein. It is supported by the state government of Baden-Württemberg. This can be a break into a new phase of mobile communication.

**June 2015:** The book, "OVERPOWERED. What science tell us about the danger of cell phones and other WiFi devices" by US researcher Martin Blank PhD is published. Martin Blank was president of the Bioelectromagnetics Society (BEMS) for many years, author of work on the effects of electromagnetic fields on the genetic and cellular stress systems. The author treats as contemporary witnesses the history of research on electromagnetic fields, the state of research, the role of industry and its tactics in preventing the application of the precautionary principle. The book by US researcher Martin Blank explains why, despite clear research results, the prevailing opinion " it is not yet known exactly " comes to what role institutions and corrupted scientists play in this. Blank has written a standard work, as only an insider can write.

**August 2015:** review of the damage mechanism oxidative cell stress. The research group led by Prof. Igor Yakymenko at the Kiev Institute of Experimental Pathology, oncology and radiobiology published the Review "Oxidative mechanisms of biological activity in weak high-frequency fields". The authors see it as proven that cellular radiation causes harmful oxidation processes in cells. Out of 100 peer-reviewed studies, 93 % (= 93 studies) demonstrate the damage mechanism of oxidative cell stress: "in conclusion, our analysis shows that high frequency radiation of low intensity is a strong oxidative effect factor for living cells, with a high disease-causing potential." (P. 3) This was an "unexpectedly strong non-thermal character of biological Effects," writes the research group in the Editorial of March 2015. Microwave radiation from low-intensity mobile radio terminals could "lead to mutagenic effects due to significant oxidative damage to DNA" because "the significant overproduction of ROS in living cells when exposed to microwave radiation could cause a wide range of health problems and diseases, including cancer in humans". diagnosis: funk publishes a German translation of the review in the series Brennpunkt.

**September 2015:** Prof. Karl Hecht publishes the research report: "is the division into ionizing and non-ionizing radiation still up-to-date? The latest level of scientific knowledge: EMF radiation can generate O<sub>2</sub> and NO radicals in excess in the human body", in which he demonstrates that both types of radiation damage the human body via the same active mechanism.

**October 2015:** mechanism of action of non-ionizing radiation uncovered. In a new research paper "The polarization: A critical factor for the understanding of biological effects of electromagnetic radiation of low intensity", published in the prestigious scientific journal "Scientific Reports" (Online journal of the Nature Publishing Group published), to show the researchers, Dr. Dimitris J. Panagopoulos (University of Athens, Greece), Prof. Olle Johansson (Karolinska Institute, Stockholm, Sweden) and Dr. George L. Carlo (Institute for healthy Adaptation, Washington, DC, USA), that one characteristic of the EMF is probably responsible for the bio-effects of weak technical EMF: the polarization.

**October 2015:** the Israeli Ministry of Health provides Wi-Fi in kindergartens and pre-schools. The Israeli Ministry of Health (MoH) has launched a large-scale public awareness campaign to reduce the exposure of children to electromagnetic radiation and radio radiation. The recommendations were published in the Environmental Health in Israel Report 2015. It explains: "with regard to children, prevention should be implemented consistently, as they are more susceptible to the emergence of cancer." The report includes, inter alia, a ban on WiFi in kindergartens/pre-schools and limits the hours of use in schools. The radiation exposure must be constantly checked. Mobile phone providers must inform new mobile phone purchasers of radiation safety information, as formulated by the manufacturer. In addition, you will need to provide hands-free assistance with each new mobile phone and

provide information on the safe use of mobile phones on your Website. The Ministry of Health advises against the Installation of base stations of cordless telephones in a bedroom, study or children's room.

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## 2016

**January 2016:** the report of the Otto-Hug radiation institute "under-estimated health hazards due to radioactivity on the example of radar soldiers" is published. The report of Walter Mämpel, Sebastian Pflugbeil, Robert Schmitz, Inge Schmitz-Feuerhake, deals with the interactions of Radar and mobile phone radiation - see Chapter "6.4 POSSIBLE SYNERGISMS OF IONIZING AND RF RADIATION" and the Damage in the corresponding chapters. The introduction states: "exposure from radar beam has so far been considered to be harmful to health by the official side and by the radar commission only if the power density of the radiation in the tissue leads to a measurable increase in temperature. In the meantime, however, a number of studies have been carried out on the effects of radio Mo-bilfunk, the high frequencies of which are also in the micro-frequency range. These show that, with long-term exposure even below the so-called heat threshold, irreparable and pathological disorders such as Infertility can occur. Combination effects between the ionizing and non-ionizing radiation are also considered as a possible cause of multiple disease phenomena that can be observed in radar soldiers and workers."(P. 9)

**January 2016:** the city of Berkeley decides mobile phone warning. It requires mobile phone sellers to warn their customers about possible dangers from the radiation with the hint: "to ensure safety, the US federal government demands that mobile phones comply with the guidelines for high frequency exposure. If you carry a mobile phone in a trousers or shirt pocket or put behind the bra while it is turned on and connected to a wireless network, the federal guidelines for exposure to radio frequency radiation may be overridden. Refer to the user guide of your mobile for information on how to use it safely."

**February 2016:** the diagnosis:funk focal point " Smartphones & Tablets damage fertility. 130 studies confirm effects " is published. In it, the explosive situation is documented for the first time for the public. 130 studies and 13 Reviews demonstrate that the pulsed microwave radiation endangers the male sperm and the healthy development of the embryo. In almost no area, the results of mobile phone research are as comprehensive and clear as the damage to the reproductive organs.

**February 2016:** the Film THANK YOU for CALLING by the film maker Klaus Scheidsteger is released in Austria. The Film examines not only serious indications of possible health risks, but above all the question of why this research has so far hardly arrived at public perception. Based on facts, insiders and exciting protagonists, the Film reconstructs a large-scale disguise tactic of the mobile communications industry.

**March 2016:** mechanism of Spin - conversion and oxidative cell stress is confirmed. These mechanisms describe the prestigious US-high frequency researchers Barnes / Greenbaum (2016) in their article "Some effects of weak magnetic fields on biological systems: RF fields can cell the concentration of radicals and cancer growth rates". They thus confirm the hypotheses that Warnke (2009) and Neitzke (2012) have set up on the mechanism of action.

**May 2016:** USA: NTP-study confirms cancer risk from mobile radio. On 27.05.2016 the results of the largest study so far, financed by the US government with 25 million Dol-lar, on non-ionizing radiation and cancer, will be presented. The result: mobile radio radiation can

lead to tumors. By the radiation of two types of cancer (Schwannoma, glioma) and were triggered with an additional number of rats präkanzerogene cell changes (hyperplasia of glial cells). The study was conducted in the National Toxicology Program (NTP) within the National Institutes of Health the U.S. government. The result is so explosive that the scientists went to the public before the publication in a technical journal with the tested result. According to the scientists, the US government required a clarification and precautionary policy.

**July 2016:** France wants to protect children from radiation. On 8. On 27 July, the French public health authority for food, the environment and the workplace (ANSES) publishes the scientific report "radio frequency exposure and children's health". It concludes that children are more affected by exposure to radio frequency radiation. For this reason, the report recommends the immediate reduction of exposure to the radiation of all wireless devices in young children. The health authority calls for exposure reduction. All of the wireless devices, from Tablets, remote controlled toys, Wireless toys, baby phones, to mobile phones, should be subject to stricter regulatory Constraints.

**July 2016:** the European Academy for environmental medicine (EUROPAEM) published the EMF - guideline on electromagnetic hypersensitivity: "EMF-guideline for Prevention, diagnosis and treatment of health problems caused by electro-magnetic fields", written by an international Team of scientists and Physicians. The guideline describes in detail the current state of research on the risks of low-frequency and high-frequency electromagnetic fields (EMF), the current state of research on electro-Hyper-sensitivity (EHS) and provides recommendations on how doctors can diagnose and treat EHS.

**July 2016:** the article "Electrohypersensitivity - phantom or signs of a common risk?" by Bernd I. Budzinski and Karl Hecht appears in nature and Law, 7 / 2016, 463-473. From a legal and medical point of view, the authors criticise the fact that the relationship between the increase of illnesses and causes in the environment, especially by mobile radio radiation, is not investigated, although the research situation speaks for this connection. They analyse lobbying causes and call on environmental associations to sue against the omissions.

**August 2016:** the journal internistic praxis 56, 593-603 (2016) publishes the article health effects due to high - and low-frequency fields. Part 1: High-frequency fields (mobile radio), authors Prof. Wilfried Kühling (BUND, Vors. the scientific advisory board) and Dr. Peter Germann, doctor. The joint version states: "in the immediate vicinity of the body, wireless techniques that work with high-frequency radiation are increasingly being used. The resulting electromagnetic fields act on the natural bio-electrical system of organs and lead to various health-related effects. An overview of the essential scientific findings is given. It addresses the related assessment problems, outlines the radiation causes and effects, identifies the shortcomings of the statutory protection granted, and identifies assessment criteria for the necessary protection and Prevention."

**August 2016:** the Review "Radiofrequency radiation injures trees around mobile phone base stations" is published, authors Cornelia Waldmann Selsam, Helmut Breunig, Alfonso Balmori-de laPuente, Alfonso Balmori. He shows the damaging effect of radiation on trees.

**August 2016:** the Austrian General Accident Insurance Institute (AUVA) publishes the ATHEM Report II "investigation of Athermal effects of electromagnetic fields in the mobile communications sector", conducted at the Medical University of Vienna. One of the reasons for the investigation was that in Italy, the Rome Court of Cassation, the highest court of

Justice, has for the first time attributed the brain tumor of a manager to his frequent mobile phone. The applicant receives an 80% disability pension. The ATHEM project focused on laboratory studies on the cellular mechanism of possible genotoxic effects. The results of the ATHEM Report include:

To cellular radiation damages the genetic material (DNA)

The damage mechanism is oxidative cell stress

Effects from which the applicable limit values do not protect.

September 2016: the magazine Umwelt-Medizin-Gesellschaft 3/2016 focusing on " new technologies - new risks?" published with three articles and a special supplement to the risks of mobile communications technology:

Dr. Wolfgang Baur: mobile phone, Smartphone, Tablet and co.: the opportunities and risks in dealing with new media

Peter Hensinger, Isabel Wilke: Mobile Communications: new results confirm the risks of non-ionizing radiation

Professor Ralf Lankau: the unification of man: with health card, self-tracking and eHealth for homo digitalis

Dr. Klaus Scheler: polarization: an essential factor in the understanding of biological effects of pulsed electromagnetic waves of low intensity (12-page special supplement)

**June 2016:** NTP-study (USA): The first results of the largest study of non-ionizing radiation and cancer, conducted in the National Toxicology Program (NTP) within the National Institutes of Health Science (NIEHS) of the U.S. government, are published. The result: mobile-phone radiation can lead to tumors. By the radiation of two types of cancer (Schwannoma, glioma) and were triggered with an additional number of rats präkanzerogene cell changes (hyperplasia of glial cells).

**June 2016:** The American Cancer Society takes to the results of the NTP study: "The NTP report, which establishes a connection between mobile phone radiation and two cancer types, marked a paradigm shift in our understanding of radiation and risk of cancer. These results come unexpectedly. We would not have expected that non-ionizing radiation could cause these tumors."

**October 2016:** The General accident insurance (AUVA), Austria precautionary recommendations for cell phone use published on the basis of the results of the ATHEM report.

**December 2016:** Limit increase rejected. The Swiss Council of States agrees on December 8, 2016 against the motion and the associated increase in the limit values for mobile radio antennas, with 20 to 19 votes with 3 abstentions. In order for the implementation of the Motion 163007 "to ensure the modernization of mobile networks as quickly as possible", both the National Council and the Council of states had to vote for it.

**December 2016:** the Federal Office for Radiation Protection publishes the study "diverging risk assessments in the field of mobile communications". The study compares the assessment of the study situation in the world 15 different organizations. Diagnosis:funk e. V. and the competence initiative e. V. is one of the world's 15 most important organizations.

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## 2017

**January 2017:** ants show disturbed behavior in WLAN radiation. The biologist Marie-Claire Cammaerts (University of Brussels) looked at the effects of mobile phone radiation on ants.

The result was reported by the TV station RTL. The ants responded Already to the switched-off mobile phone with battery, they differ slightly from their normal running distance. Stronger response was in standby mode and even stronger in voice mode. The experiment appears as a research report " Ants can be used as bio-indicators to reveal biological effects of electromagnetic waves from some wireless apparatus."

**February 2017:** February 2017: the international mobile operator Orange publishes 10 mobile phone rules to protect against radiation exposure. The recommendations from Orange are comparable to those of the Austrian Medical Association and those of the Austrian General accident insurance institution (AUVA).

**February 2017:** The article "polarization makes biological Effects of EMF to understand," Dr. Klaus Scheler appears as a special supplement of the Umwelt-Medizin-Gesellschaft 3/2016. Scheler explains the importance of the study 'The polarization: A key factor for the understanding of biological effects of pulsed low-Intensity electromagnetic waves' by Panagopoulos et al. in the Scientific Report 2015 on a mechanism of action.

**February 2017:** India: No mobile phone on schools and hospitals, The highest Indian court, the High Court in New Delhi, was confirmed by a judgment of the high court of Rajasthan, which prohibits the siting of mobile phone masts near schools and hospitals. He thus suspended permits from local courts and authorities, reports the newspaper Times of India on 11.02.2017.

**March 2017:** the journal Naturheilkunde 1-2017 appears with the focus on modern health risk. In six extensive articles the reader is informed about the state of research on mobile radio radiation, the causes of electrohypersensitivity, the importance of radiation for evolution, the risks of WLAN and the effects of digital media on child brain development.

**April 2017:** The Reykjavik appeal against Wi-Fi in schools it seems. On 24.02.2017 the "conference to screen usage and wireless microwave radiation", organized by the "Parents organization of preschool children was held at the Icelandair Hotel Natura in Reykjavik", with 100 visitors. International speakers Dr. Dariusz Leszczynski (Finland), Professor Lennart Hardell (Sweden), Tarmo Koppel, PhD Candidate (Estonia), Dr. Robert Morris (USA), Björn Hjálmarsson MD (pediatrician), Cris Rowan (Canada), Prof. Catherine Steiner-Adair (USA, Harvard). An appeal to waive Wi-Fi in schools was passed, under which 133 scientists and representatives of NGOs signed.

**April 2017:** court judgment Italy: Tumor recognized by mobile phone radiation as an occupational disease, in a judgment of 30.03.2017 of the Italian Labour Court of the city of Ivrea. For 15 years, the company telephoned more than 3 hours a day with the mobile phone. He was awarded a monthly pension of 500 euros by the accident insurance.

May 2018: a report on WLAN is published by the consumer-headquarters south Tyrol (VZS). The SCS demonstrates that Wi-Fi is harmful to health, and rejects Wi-Fi in schools. The vzs opinion is a response to an opinion of the South Tyrolean state government, which is intended to justify the introduction of WLAN at schools. The VZS has accused the government of falsification of the academic situation.

**May 2017:** The physician Franz Adlkofer and Lebrecht von Klitzing publish the article "Wi-Fi technology - an experiment at the expense of society with an uncertain outcome".

**May 2017:** diagnosis:funk focal point:" mobile phone radiation and brain tumors " appears.

In focus, diagnose:funk publishes the translation of the review on cancer risks of non-ionizing radiation, written by the Swedish scientists Michael Carlberg and Prof. Lennart Hardell: "Evaluation of Mobile Phone and Cordless Phone Use and Glioma Risk Using the Bradford Hill Viewpoints from 1965 on Association or Causation" (2017). You come to the conclusion: "high-frequency radiation should be classified as a carcinogen that can cause glioma." "The risk of getting glioma (brain tumour) by telephoning increases by 2-3 times depending on the duration of use. As a consequence, they demand: "The current guidelines for exposure to radiofrequency radiation must be revised."

**June 2017:** the German Federal Office for Radiation Protection (BfS) advises too prudent mobile phone use: "whether on holiday or at home you should give a break to the mobile phone use. The BfS recommends a careful handling of the mobile phone: that is, if possible, use the landline instead of the mobile phone or at least use a Headset. This increases the distance of the device to the head and body - and this reduces the absorption of radiation. Another option is to write text messages instead of making calls."

**June 2017:** Fraunhofer HHI successfully completes VLC project. Data transmission using LED light instead of Wi-Fi. In the spring of 2015, the project "VLC Mainau" was launched with the aim of, an existing conference room on the island of Mainau with Visible Light Communication (VLC) technology. The Fraunhofer-Institut für Nachrichtentechnik, Heinrich-Hertz-Institut (HHI) and Mainau GmbH have successfully completed the project with the realization of a first optical WLAN environment.

**June 2017:** in the user manual WLAN-Router Speed Port, Telekom warns: "the integrated antennas of your Speedport send and receive radio signals, for example. for the deployment of their Wi-Fi. Avoid placing your Speedport in close proximity to sleeping, children's and sitting rooms to minimize exposure to electromagnetic fields."

**September 2017:** international appeal calls for a 5G Moratorium. More than 180 international scientists and doctors warn against the health risks of the mobile radio standard 5G and demand a Moratorium. They call for the review of the technology, the setting of new, more "limits for the maximum total exposure" of all wireless communication, as well as the expansion of the wired digital telecommunications.

**October 2017:** VLC project launched by the Fraunhofer-Gesellschaft at the Hegel-Gymnasium in Stuttgart. In the school room, which has been equipped with the necessary equipment, are mounted above the working table lights. Their light enables students to communicate wirelessly via light on Laptops.

**November 2017:** BioInitiative Report, Supplement 1 to cell phones, radiation and cancer appears. In May 2017, Professor Hardell and his co-worker Michael Carlberg published a review of the research on the effect of the mobile phone stimulation on the development of brain tumors. They conclude that the classification of the World Health Organisation (WHO) must be carried out from Group 2B "possibly carcinogenic" to Group 1 "carcinogenic". This is taken over in the BioInitiative Report Supplement 1.

**December 2017:** the statement from Nicosia to Wi-Fi in schools, the 'Cypriot doctors ' challenge chamber', the 'Austrian chamber of Physicians, chamber of Physicians of Vienna, and the Cyprus National Committee for the environment and children's health', together with the protection of children and young people from mobile phone radiation, as well as the ban of wifi in kindergartens and schools.



**January 2018:** The Swiss Doctors for environmental protection, criticize 5G-introduction. The health risks of the new 5G technology are unknown. 5G is based on shortwave radiation, which is absorbed by the skin with unknown consequences. Therefore, the AefU demand a Moratorium for 5G to investigate the health consequences.

**January 2018:** France prescribes radiation minimisation. According to the French Mobile Communications Act, locations "extremely atypic load" must be reduced within 6 months to "preferably 1 V/m" (=2,650  $\mu$ W/m<sup>2</sup>).

**February 2018:** review on Wi-Fi. The magazine Umwelt-Medizin-Gesellschaft 1/2018 publishes the study review "biological and pathological effects of radiation of 2.45 GHz on cells, fertility, brain and behavior", written by Dipl. Biol. Isabel Wilke, editor of the smog reports. The Review documents more than 100 studies that demonstrate health risks of the carrier frequency 2.45 GHz and the pulsed variant WLAN.

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**March 2018:** the Swiss Council of States rejects higher limit values for 5G. The Council of states had to re-vote on a proposal to revise the regulation on protection against non-ionizing radiation (NISV) on 05.03.2018. With 22 to 21 votes, with 2 abstentions, he said 'no' to the Motion and, in effect, rejected higher limits for mobile radio antennas.

March 2018: NTP study: The research group of Prof. Lennart Hardell published a Review on the study location, mobile phone radiation and cancer. diagnosis: funk publishes the article in the series focus.

**April 2018:** The database [www.EMFData.org](http://www.EMFData.org) goes Online. With this database, created by diagnosis: funk, the study situation is documented. At the Start, it contains 400 studies that demonstrate biological effects and many know. Document.

**May 2018:** Wi-Fi: diagnosis:funk published the preparation of Prof. Karl Hecht: "the effect of The 10 Hz Pulsation of the electromagnetic radiation from Wi-Fi to the people".

**June 2018:** the "Medical Association for digital media, Stuttgart" States in an open letter to the Ministry of culture of Baden-Württemberg that no WLAN will be introduced in schools.

**July 2018:** mobile phone radiation can affect memory performance. This was the result of a study of almost 700 young people in Switzerland. The study was conducted at the Swiss Tropical and Public Health Institute (Swiss TPH) (Foerster et al. 2018).

**July 2018:** France: Prohibition of mobile phone use in schools. In order to counteract screen dependence, the French National Assembly passed on July 30, 18 at its last reading the extended legal ban on mobile phones in schools.

**August 2018:** NTP study: The working group of oncologists Prof. Lennart Hardell (Sweden) presents a comprehensive Interpretation of the NTP study in which the results in connection with epidemiological and medical-biological studies. diagnosis: with this focal point, funk presents a translation of this work.

**August 2018:** researchers at the Ramazzini Institute (Bologna) established on 2500 male and female rats after life-long irradiation with 1800 MHz (2G network) increased rates of Schwannomas of the heart and of gliomas (Falcioni et al. 2018). In female animals there was a trend dependent on radiation intensity. The study is considered a confirmation of the NTP results.

**August 2018:** new brochure of the Kompetenz Initiative on "Electrohypersensitivity. Risk for individuals and society" appears.

**August 2018:** NTP study. The NTP Peer Review Panel confirms the results of the study. Professor James C. Lin, member of the panel, then publishes the article "Clear evidence of cell-phone RF radiation cancer risk" in IEEE Microwave Magazine. Prof. Lin was a leader in ICNIRP until 2016. It now calls for a Revision of the limit values.

**September 2018:** in the article "White Zone Rhön": less mobile = less diseases, tree damage and insect deaths?" in the journal Natur und Recht, the judges A. D. B. I. Budzinski and Prof. Wilfried Kühling demonstrate the legal unsustainability of German mobile communications policy on the basis of proven damage to man and nature.

**September 2018:** New Reviews of the overall study situation are published on the basis of the results of the NTP and Ramazzini study: Belpomme et al. (2018), Kocaman et al. (2018), Miller AB et al. (2018), Melnick (2018).

**September 2018:** 5 G mobile radio standard: the first three studies on 5G by Betzalel et al. (2018), Russell (2018) and diCiulla (2018) appear. On the basis of the results of the study, which show health-related effects, the authors call for a stop to the introduction.

**November 2018:** Berenis, the Swiss government's non-ionizing radiation Advisory Group, publishes an analysis of the results of NTP and Ramazzini studies. It indicates that the cancer-causing effects detected are non-thermal. The scientific quality and Standard of laboratory techniques, especially in the NTP study, are high, the results are consistent and cause to review the limit values and to respect the precautionary principle.

**November 2018:** In a paper called EMF Call, initiated by Prof. Lennart Hardell, the undersigned scientists speak about the competence and the right to define limit values of the private lobbying association ICNIRP. The ICNIRP limit values are a risk and the definition of protective limit values by independent scientists is required.

**November 2018:** the federal delegates' assembly of the federal government for the environment and nature conservation (BUND) adopts a catalogue of requests, in which the federal government calls for a precautionary and protective policy on electromagnetic fields.