

Head of Swiss Radiation Protection Committee accused of 5G-swindle. Nordic countries deceived, too.

By Einar Flydal, cand.scient. and Master of Telecom Strategy, science blogger on EMF, health and the environment

A few weeks ago, the president of Switzerland and her counsel received a serious letter. The authors were a number of the world's foremost scientists in the field of radiation protection and health.

The researchers warned that Martin Rösli (picture), the man who chairs the BERENIS committee, a committee responsible for providing the Swiss government with advice on radiation protection guidelines, should be scrutinized for impropriety – or to put it more bluntly – for scientific fraud.

About time, was my initial reaction. Then, I began to ponder: Is Martin Rösli an outright fraudster? Or are his mischaracterisations of the science the result of the application of unreasonable scientific criteria in his search for truth? It seemed to be an interesting topic worthy of reflection.



Either way, the consequences are substantial, not just for Switzerland, but also for the Nordic countries and Japan, as Rösli is a member of radiation protection committees of those countries as well. These committees establish what is to be considered "accepted science" – and thereby also establish the misconceptions on which the radiation protection and health care agencies, as well as politicians, act.

The final drop causing the scientists' decision to take the unusual step of reporting Rösli, and addressing the president - were his assertions that *no health risks associated with 5G technologies can be shown*. These assertions fall in line with Rösli's long record of cell phone "radiation hazard denial", where his modus operandi has been to argue that the main body of research on the topic unambiguously indicates zero health hazards – despite the fact that the vast majority of research indicates the exact opposite.

Thus, the letter has the potential of triggering what could develop into a serious criminal case. Consequently, I have conducted somewhat of a deep dive into the story, resulting in an unusually long blog post of 11 pages. Forewarned is forearmed!

An important case

The letter of accusation against Martin Rösli is extensive. A number of internationally prominent researchers from several countries have signed it. They accuse him of systematically underestimating solid research findings indicating cancer and other dangers from wireless radiation, both in his writings

and in speaking engagements. Furthermore, they accuse him of having major conflicts of interest; of promoting views counter to the vast majority of scientists in the world; and of conveying strongly erroneous views on what research findings actually show. It's quite a salvo.

The accusations against Martin Rössli are particularly important considering that Martin Rössli chairs the BERENIS committee. I have followed the work of this committee for several years. This group - *the Swiss Expert Group on Electromagnetic Fields and Non-ionizing Radiation* - reviews research in the area of EMF and health effects, and regularly publishes assessments of research studies. The group itself always selects the studies chosen for assessment. It is administratively located under the Swiss Ministry of the Environment. The political and administrative authorities of Switzerland base their policies on healthcare, environmental protection, communication and business development on the assessments delivered by this committee. Assessments of the health effects of man-made EMFs - Electromagnetic Fields - are obviously of importance in all sectors of society.

The influence of this group does not stop at the Swiss border. Academic communities in other countries listen to what the BERENIS committee determines. In countries that don't have their own regular committees, such as Norway, Denmark, Finland and Iceland, the national radiation protection administration, agency or bureau reads reports from such committees as BERENIS, and, might we suppose, readily accepts them at face value. Independent committees, although set up to make their own independent assessments, will of course also be influenced by the conclusions from such committees as BERENIS – and the wireless industry will obviously use committee reports that conclude in ways converging with industry's interests, as proofs for their cause. In addition, and as previously mentioned, Martin Rössli sits on the board of equivalent radiation committees of particular importance for the Nordic countries and in Japan. That makes this whistle-blower case particularly important.

One-sided reports from one-sided committees with one-sided representation

There is a striking similarity between the BERENIS committee reports and the conclusions of reports in other countries, such as the one under the Swedish radiation protection agency, where he is member, and the now infamous British AGNIR-group, the latter disbanded following a series of outrageously one-sided and misleading reports.

A common feature of many of these public committees is their domination by one or more ICNIRP members or sympathizers. ICNIRP is a German-registered foundation, the acronym referring rather immodestly to the *International Commission for Non-Ionizing Radiation Protection*. ICNIRP selects its own members. No scientist opposing the view that heating is the only relevant potential health-factor of non-ionizing radiation worth considering - has ever been accepted as a member of ICNIRP.

As mentioned, a national committee similar to BERENIS exist in the Nordic region under the Swedish Radiation Protection Centre (HERE). Several of the committee members are also ICNIRP members. This presently includes Martin Rössli, Anke Huss and Heidi Danker Hopfe, with whom Rössli has collaborated on publications, in addition to Eric van Rongen who also heads ICNIRP itself.

The Swedish Radiation Protection Expert Committee, half of which are ICNIRP members, will never be able to come to any conclusions contrary to the ICNIRP view, regardless of what findings research may come up with. You will not find discussions of dissenting opinions of significance here, only passive rubberstamping. Of course, Rössli's views in the BERENIS committee need to be consistent with his role in the Swedish radiation protection committee. Hence, the BERENIS committee's conclusions will always be identical to ICNIRP's, and as an ICNIRP-member Rössli contributes to the fortification of the ICNIRP view in the Nordic region.

ICNIRP-membership = Conflict of interest

At one point, the management of the Karolinska Institute in Stockholm stated that this conflict is unacceptable: Being an ICNIRP member is in itself disqualifying for any role in a committee tasked with independent consideration of health risks from EMF (see the accusatory letter here):

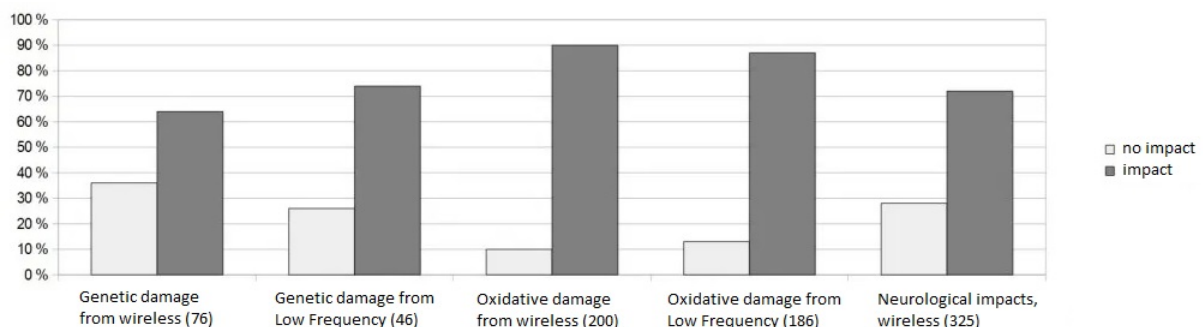
ICNIRP grants committee membership for a few years at a time, but only to people who tow the ICNIRP line. The organization proposes radiation protection guidelines, but only guidelines intended for protection from *acute heating damage*. Although ICNIRP admits there are many other proven mechanisms by which non-ionizing radiation may cause damage, it states that these are too complex and not sufficiently researched and understood to provide grounds for relevant safety limits (ICNIRP 1998).

ICNIRP therefore passes to the next stage of policy providers, the task of deciding whether protection designed to protect only from heating is adequate. Such policy providers may be the WHO, the EU, the International Electricity Committee (CENELEC), other supranational bodies, or national radiation protection agencies. The national bodies are then encouraged to conduct their own assessments of whether their national limits should be set more stringent than ICNIRP provides. It is thus here that BERENIS and the aforementioned Swedish Committee enter the policy supply chain. (The supply chain is further analysed in Flydal and Nordhagen 2019, Part 3 (Norwegian))

In Switzerland therefore, Martin Rööslı sits as a kind of *Tordenskiold's soldier* (an expression referring to the military tactic of the commander Tordenskjold of creating the illusion of a greater number of forces by patrolling them in a circle past the enemy line of sight), whereby he staffs both ends of the supply chain - both at ICNIRP and at BERENIS. ICNIRP would dismiss Rööslı if he did not follow the ICNIRP line in his work at BERENIS. This double role is in itself a conflict of interest. The BERENIS committee, the corresponding Swedish committee and a number of other committees where ICNIRP members also sit - are all characterized by this conflict of interest. When evaluating the assessments of these various committees, this might be useful taking into consideration. So, let's take a look at their assessments.

Conclusions contrary to research findings

More than 3/4 of the world's research within this field find adverse effects on humans, animals and the environment at exposure intensities far lower than those capable of causing thermal heat damage, as shown by the graph below. The graph comprises research papers from the highly recognized database Medline for the period 1990 - 2017 (graph by Flydal 2018, based on data from Lai 2017). The predominance of studies showing positive findings is massive (other analyses of research databases demonstrate approximately the same results).



ICNIRP, BERENIS and Rööslī, however, consistently conclude that research has not demonstrated any such findings *well enough*. Therefore, they claim, the current knowledge status and established opinion is that evidence of negative health effects *have not been demonstrated*.

Even the recent NTP and Ramazzini studies - large rodent trials ongoing for several years, considered by the entire research establishment as solid evidence for mobile phones' cancer-promoting properties (see, for example..) – have been disregarded by ICNIRP, BERENIS and Rööslī, who claim that even these large government studies do not provide sufficient evidence of harm (BERENIS November 2018).

Practical and political decisions are made based on such reports. For example, 5G can now be rolled out free and clear. The line of thinking represented by these committees goes directly against the precautionary principle and is exceedingly industry-friendly, rooted in American legal and corporate tradition from the 1970'ies: *As long as health hazards are considered unproven, the health hazard is to be considered non-existent. Any other conclusion would risk imposing unnecessary and unfair restrictions on society, the individual and the wireless industry.*

Consequently, politicians and government leave it to epidemiological studies - i.e. morbidity statistics - to consider in retrospect whether problems occur that may cause a need for restrictions – in retrospect. Thus, people are reduced to guinea pigs while BERENIS and their sister committees draw their conclusions by ignoring the massive majority of published studies.

The dividing line between ICNIRP, BERENIS, Rööslī and what these call "established knowledge status" on the one hand, and on the other the thousands of scientists, doctors and other professionals who for years have requested urgent measures to mitigate the harm from man-made EMFs, is stark. Regardless of which side you belong to, it is tempting to believe the other side either has been bought off, or are a bunch of morons and ignorants. Or both. In theory, all options are conceivable, and of course outright corruption gets exposed from time to time. The autobiography of researcher Andrew Marino (Marino 2010) details how the U.S. electricity industry paid scientists well for "product defence" lawsuits over high voltage power lines. Scientists happened to be less than truthful in their testimonies even though cases included neighbourhoods near power lines, abnormally affected by cancer. Marino also describes the failure of government bodies and the judicial system.

In appropriate evaluation criteria

However, matters are not as simple as one side being right - and the other being unskilled idiots. Rööslī is a mathematician and epidemiologist. He probably knows as much about statistical method as anyone – as well as about finding faults in other people's use of statistics. So is he then a scammer? Or is he a "mised soul"? I needed to spend some time on this quandary. After all, Rööslī's reports dismissing 5G health concerns *could* be explained by *the quality criteria he uses for assessing research findings*:

Both ICNIRP, BERENIS and some other committees are continuously evaluating whether research studies should be approved or rejected. If approved, their findings should be taken into account when setting safety standards. However, whether the studies are approved or not, depends on the criteria used when assessing the studies, and how these criteria are practiced.

ICNIRP's criteria for evaluating research findings are set so that they permit the evaluators to reject all studies with positive findings, and that is exactly what happens: no studies showing effects other than heating damage pass through. Findings showing damage at lower intensities of exposure (where no significant heat effects occur), as from mobiles or smart meters, are filtered out. The ICNIRP guidelines do not deny that sub-thermal effects might exist, but without exceptions, *for some reason or*

another, each and every study – although peer-reviewed and published in renown journals - are deemed to be below quality standards, or at best insufficient proof. If at all evaluated, something always seems to justify disapproval for these types of findings – when assessed by the ICNIRP criteria by the ICNIRP influenced committees. (Flydal & Nordhagen 2019, Part 3 (Norwegian text), referring a.o. to Mercer 2016, Wright 2017.)

The BERENIS assessment criteria are quite common in stringent, empirical research. Nevertheless, the criteria may be practiced in ways that exclude any study you don't want included. The reason for this is simple: *no empirical* studies will, in practice, be perfect, meet *all* ideal requirements, and provide 100% reliability and validity. Thus, the BERENIS Committee - under Martin Röösl's leadership – can tow the ICNIRP line just like the ICNIRP's people inserted into the WHO do: "No harmful effects have been conclusively shown, more research is needed" ... This line is touted by virtually all the mentioned committees, and has so for years, virtually without exception.

Blatant financial and professional motives

These conclusions - "no harmful effects have been conclusively shown, more research is needed" - provide the entire *ecom-industrial complex* – the stakeholders within electronic communication systems, commercial as well as not – with maximum leeway. From enthusiastic mobile app developers and system developers, to mobile phone producers - and into the halls of the many government bodies who have been led to believe "the green shift" can be realized by streamlining society with wireless technologies. A wider berth for the ecom-industry could not possibly been provided: Only acute tissue burns or heat damage provide the ceiling, as such damages would be too visible and grotesque to be accepted. When symptoms develop slowly and have complex causes, the level and prevalence of injury is unclear, and one can always argue - and convince both oneself and others - that something entirely different from EMF exposure must be the cause.

The financial motives for the adherence and use of such criteria leading to conclusions providing the ecom-industrial complex with max leeway are obvious. But could anyone really be cynical enough to exploit such criteria just as a business strategy? For sure. The efforts made to deny or denigrate negative health findings from man-made EMF follow the same playbook as the whitewashing of tobacco, lead, PCB, mercury, CFCs, pesticides and many other toxic products – well after knowledge of their detrimental effects was at hand. As is now common knowledge, the industries and their experts didn't just use scientists who used criteria and assessment methods that would tone down negative findings, they also funded outright fraudulent research – provided by "product defence institutes" - to provide clean bills of health and clear the product for the market.

The reports from BERENIS and their corresponding committees - i.e. their reviews where all findings proving injury are rejected – fulfil just this very same function. They are used by the industry as evidence of safety. You may find these reports, among other places, [HERE](#) on the website of the GSMA – the mobile industry's international organization. These reports are used in GSMA's lobbying activities. As one might come to expect GSMA does not list any of the many reviews showing conclusions *contradicting* its interest. You will find more than 200 such reviews referred to in (Flydal & Nordhagen 2019, where a Norwegian translation of Martin L Pall's letter to the EU Commission (Pall 2016), analysing 192 of them, is found. There you will also find demonstrated that when radiation protection authorities in countries such as the USA, the Nordic countries and other countries giving max leeway to the ecom-industrial complex, explain to their citizens why exposure below the heating threshold "is harmless", they derive their material and knowledge from the reports that reject all the findings in all these reviews, right out of hand. Thus, they conclude only based on research that found "the nothing they were looking for". According to normal scientific standards, research finding nothing should be disregarded when good studies with positive findings are at hand.

Leaving only inconclusive or negative findings to constitute "the current knowledge status" – as the ICNIRP network does, makes no scientific sense. However, it does explain the need to find the lion's share of the studies – all the ones with positive findings – faulty. One would be hard pressed to imagine Rösli is not well aware of this. Could it still be possible that Rösli is a sincere researcher who simply does a proper job of finding faults in other people's research; based on the strict criteria he honestly believes should be used? If that is the case, he is the ideal person to have in the ICNIRP network - a *useful idiot* – one that can be used in a larger scheme, not understanding the consequences.

Assessment criteria gone astray

In the world of scientific research, the criteria used to evaluate the veracity of results should be strict - to identify invalid results. The nature, and indeed the duty, of scientists is to scrutinize other scientists' research and to look for weaknesses. That is their job, and it is what makes science advance.

However, the assessment criteria must also suit the nature of the research and the characteristics of what is being researched. Assessment criteria must be aligned with the subject studied: For example, different criteria must be used to assess the quality of studies within mathematics (and other closed conceptual worlds); studies of the effects of gravity on tidal flows; statistical studies of population morbidity; studies of the effects of environmental toxins on biological life; and studies of the concept of foreign religions. Research within such diverse fields cannot be subject to the same requirements as to precision, repeatability, transferability, objective and quantifiable scales, or mathematical / statistical assessment criteria, such as statistical significance:

Criteria that are too lax may easily cause faulty findings to be accepted as real, and if the set criteria are irrelevant, the outcome of the assessment could go in any direction. Unfit criteria easily pave the way for other forces to direct the outcome, e.g. political wishes or the scientist's interests and beliefs - whether consciously or not.

A small example from (Marino 2010) illustrates this point: In a series of experiments exposing mice to electromagnetic fields, one set of mice grew smaller than normal, another turned out larger than normal. In a court case, these findings were interpreted by a electricity industry scientist as evidence that the radiation did not affect the size of the mice – after all, the *average size* was unchanged. Another researcher concluded the trials were invalid as they lacked repeatability, i.e. they could not be repeated with the same outcome each time.

Whereas Marino claimed that the experiments were consistent, as they consistently resulted in *an abnormal change* in the growth of the mice, his arguments were dismissed in court on the grounds that repeatability - which in the strict laws of mathematics and physics means the same result every time, should cause *identical* abnormalities, not just abnormalities. The power industry expert did not accept the view that when dealing with biology, you are facing systems which are not mechanistic. They do not normally produce identical outcomes. They are open, dynamic, complex, teleological, homeostatic systems:

"Life-systems" require different criteria

In such systems that build life – whether a cell, a fruit fly, a human or an elephant – connections and processes are complicated and diverse. In addition, they can be influenced by a variety of conditions both internally and from the outside. One influence can also affect how strongly another influence impacts. (In statistics these are called interaction effects.) In addition, such systems are often goal-oriented (teleological), in the sense that they attempt to compensate for threatening influences to maintain their balanced state (homeostasis). Many of these processes are not governed by so-called *discrete* (clearly delineated) processes or changes, but rather by processes and changes with quite

fluid boundaries that are far from being fully understood. Researchers may however have to conceive of the boundaries as being more distinct than they actually are, for the purpose of modelling, measuring and mapping. In addition, two such *open, dynamic, complex, teleological, homeostatic systems* - e.g. two hamsters – are never identical, they can only be almost the same, and we can't know exactly how they differ.

All these complicating factors mean that even small differences somewhere in the system, can make a big difference at later steps in the system, and cause the end result to be quite different in different specimens of the supposedly almost identical complex systems: In principle though, as reactions to identical exposure one hamster might have its growth affected; another one develops bone cancer or "leaky gut"; whereas another is seemingly unaffected and stays healthy. If the trial was aimed solely at testing whether exposure affected one single parameter, e.g. growth, the researchers would not detect any significant effects. They would conclude that the radiation had no effect as abnormal growth happened in just one case.

Research methodology in the more rigorous research traditions prescribes that one should define in advance precisely what to test. The risk of pre-placing measuring points in a way that obscures effects of EMF on health (whether inadvertently or on purpose), are therefore very real.

Those who faithfully follow rigid assessment criteria fit for much simpler systems such as physics, where systems have neither purpose nor will, or make their assessments within a bubble of statistical rules of evidence, can therefore easily discard research showing real findings. They may "throw the baby out with the bathwater" – due to the assessment criteria and their professional thinking providing them with blinders. Which is one of the reasons for science having developed into different traditions using different methods and assessment criteria, with the less rigid *Hill criteria* (Hill 1965) much used to assess the more complex causal relationships within life-sciences. The Hill criteria are not used by ICNIRP, nor by BERENIS. They stick to far more rigid – and mechanistic – criteria. Using the Hill criteria, causal relationships that fall short as assessed by ICNIRP/BERENIS, would have to be accepted as well proven (Hardell & Carlberg 2013, Carlberg & Hardell 2017).

In his position as an ICNIRP member, Rösli is simply tied to using ICNIRP's unfit set of assessment criteria and make BERENIS use criteria of the same kind. Whether they are used by scientific tradition or conviction, or for industry defence is hard to tell without access to his thoughts, but seems less important for the results.

The BERENIS committee - is it qualified?

Retired professor of Biochemistry and Basic Medical Sciences, Martin L. Pall, has assessed the qualifications of ICNIRP members within the fields they assess. Pall finds a clear lack of qualifications as to relevant topics (notes by Pall referred to by Flydal & Nordhagen 2019). So, what is the state of the BERENIS committee? Does Rösli have qualified people with him? Is he himself qualified? I had a brief look:

Martin Rösli is an epidemiologist and mathematician. Much of his work has been within issues related to various instances of morbidity associated with environmental factors, e.g. cigarette smoking in restaurants, traffic accidents and noise pollution. He has led several projects assessing reactions to EMF exposure. Being a statistician, we can take for granted that his contribution has been within statistical method and analysis. While finding clear life-systems impacts from passive smoking, his research within effects from EMF exposure seems perhaps predominantly characterized by lack of findings. Here are the results of the EMF projects listed on Rösli's website:

- CEFALO – a study of brain cancer among children related to mobile use: **no correlation**

- Project on radon and radiation from broadcast masts and child cancer: **no correlation**
- HERMES - study of whether thought functions, behavioural problems and non-specific health problems can be linked to mobile use: **correlation, but not from radiation**

Given the number of studies showing a strong increase in brain cancer among children in country after country in Europe, and the number of studies with clear findings of health complaints near telecommunications masts (Firstenberg 2018, Warnke 2005), one must wonder what went wrong in Röösl's research. Were his evidence requirements too stringent? Should he have chosen research subjects who were slightly older, so they would have had longer exposure? Or are there other reasons for the results? This is difficult to know. But what about the rest of the committee?

The BERNIS Committee has the following representatives, their prime characteristic being conflicts of interest and, with an interesting exception to whom we shall shortly revert, lack of qualifications, nor any published studies within the research field that the BERENIS committee is tasked with assessing:

- a committee secretary with a doctorate in health geography and mathematics, working on geographic information systems
- a man with a PhD who works for a measurement technology company designing wireless solutions
- a neurologist who specializes in MS. He has published one paper on EMF, where he found that treatment with pulsed magnetic fields have some short-term efficacy, which in the paper were considered to be the results of placebo effects
- a veterinarian who does not appear to have produced any relevant work in the field
- a medical doctor having specialized in x-rays (i.e. a quite a different type of radiation)
- a section manager for non-ionizing radiation in the Ministry of Environment
- an epidemiologist specializing on the Zika-virus

While the equivalent Swedish committee is staffed with foreign members that at least can be said to work within the field, the BERENIS committee is staffed with Swiss members who don't seem to have any particular qualifications in the field. Neither does the committee seem to be staffed based on any interest in developing new understanding or knowledge. Frankly, without knowing the inner workings of the committee, it does to the outsider appear to be a council of elders, or a front group, where the committee leader and secretary do the work, leaving the others to rubber stamp their conclusions.

The exception that fitted in so well

In committee work, it is not uncommon for the committee head and secretary to make most of the decisions, while the rest of the committee are nominal. Certainly, the BERENIS committee seems to be run this way. But there is one curious exception to the lack of expertise on the committee. It makes me wonder if being a member in this committee is perhaps primarily an honour awarded, and accepted to maintain useful old boys' networks while letting the committee leader and his secretary do the work:

The exception I am referring to is a man who seems to have some qualifications relevant to the field in question - *Prof. Dr. Peter Achermann*:

Achermann has a management position at *The KEY Institute for Brain-Mind Research*, a research foundation on information and communications technology and society. He held his farewell address as a professor at the Department of Pharmacology and Toxicology at the University of Zurich in August 2019. Achermann is currently co-author of 105 research papers registered in the PubMed database (he is never the lead author).

Judging from his production, Achermann is a specialist in sleep and neurological issues in relation with sleep. Some of the papers he has contributed to (listed below), deal with the effects of radio frequency radiation on brain waves. At the end of the reference list below, I have added them all, and noted the main findings of each paper.

The effects of radio frequency radiation on brain waves is a topic where several researchers have made consistent findings: such radiation affects brain waves when *pulsed* - or *amplitude-modulated*, as radio engineers would say. One of them is Karl Hecht, the great German researcher of the GDR era in this field (Hecht 2018). Another is Andrew Marino, one of the US's major researchers on the issue of EMF and biological effects (Marino 2018).

Achermann makes these findings in all his papers: *pulsed exposure affects the brain*. It is not particularly surprising - it has been established knowledge for a long time. The surprising thing is that *in the one paper he has co-authored with Martin Röösli, in which Achermann's name is added at the end of the authors' list, there is found **no connection** between exposure and well-being.*

That paper with Röösli is from 2006, in the midst of a stream of papers where the connection is always found. So what was the purpose of that paper? It seems to have had the purpose of neutralizing a Dutch investigation commissioned by several ministries – a comprehensive study (Zwamborn 2003) that could have become a "game changer" had it been allowed to stand: It showed an *unequivocal and significant negative impact* on test subjects' well-being when exposed to UMTS (3G mobile data).

At the time the current ICNIRP chairman, Eric van Rongen was on the Dutch National Health Council where he is still a member. As previously mentioned, Eric van Rongen is at present also on the Swedish Radiation Protection Committee, with Anke Huss, who also co-authored the 2006-article. The task of the article seems to have been to render UMTS harmless by negating the findings of exposure that Zwamborn had found. Had Zwamborn's findings remained standing, it could have led to restrictions for the industry.

Zwamborn conducted his study on behalf of the Ministry of Finance, the Ministry of planning, Housing and the Environment, and the Ministry of Health, Welfare and Sports. The counterattack from Röösli and his cohorts was massive and funded by the *Swiss Foundation for Mobile Communications Research*. But how do you undermine a study that makes clear findings? You do so by creating doubt. The Röösli & co study's conclusions largely consisted of speculation as to *why Zwamborn and their own experiments had **not** produced consistent findings.*

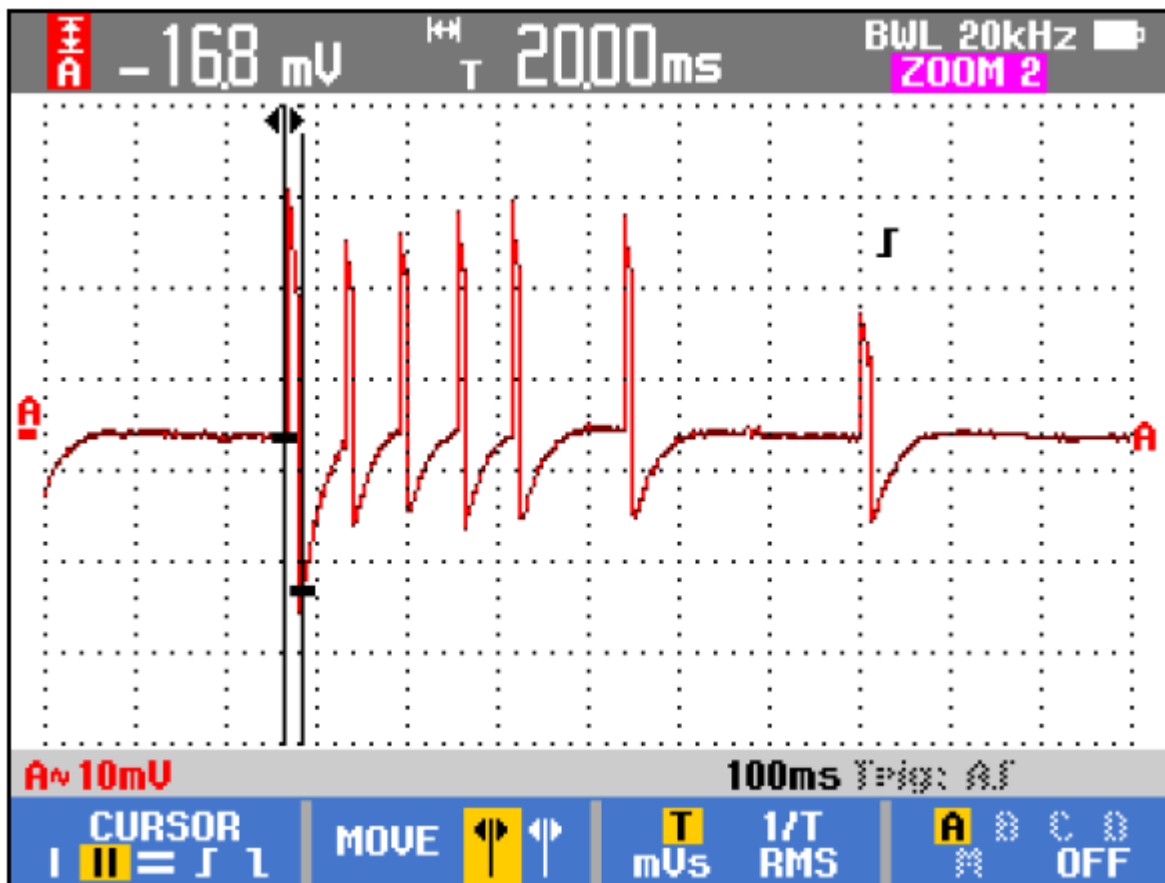
Why was it central to come up with a study that concludes that the two studies were not consistent? My suggestion is the following: According to how these people think, or at least argue, studies showing *inconsistent findings should be ignored, as they have not fulfilled the criteria of repeatability!* Hence, presenting a survey that does *not* make findings, casts doubt on previous findings, and legitimizes the exclusion of it from any ICNIRP style literature study, and makes it legitimate to conclude that "the status of knowledge" remains unchanged. Providing research yielding no findings is since long a

documented, deliberate strategy, designed by PR firms working within the field of "product defence" (Michaels 2008, Oreskes & Conway 2010).

For some reason, Achermann had to accept a conclusion that went against the conclusions in all of his production, before and thereafter. A price that seems not to have been too high for him.

Why Achermann's findings could not be accepted

The figure shows pulses typical for the wireless communication from an Aidon AMS meter (an automatic electricity meter). We can see five pulses appearing with equal intervals, thus creating a brief low-frequency signal "on the top of" the carrier wave, which is the very weak, horizontal black line between the two As. Pulsed radiation is inherent in all radio communications, being the consequence of the coding of information into the carrier signal (*modulation*). Modern generations of radio signals tend to contain more powerful pulses than older ones. As you see in the graph, the pulses are very abrupt and powerful, but so short that they are very, very far from increasing the average intensity of the signal enough to create heating. Therefore, since the ICNIRP based safety standards only consider the heating potential, the exposures stay very well within the set limits.



If Martin Rösli as the head of BERENIS, or Martin Rösli and Anke Huss as co-authors with Achermann, were to accept Achermann's findings in all his other papers - that such low intensity levels of radiation do affect biology through their pulsed signals - they would end up on a collision course with ICNIRP, as well as with the ICNIRP network of researchers and consultants. It would have made the counterattack impossible, their present or future ICNIRP memberships impossible, and most likely also block any further funding from the wireless industry. In short, they would have been excommunicated.

To accept that such non-thermal radiation affects the brain, would also entail admitting that even such “weak” radiation has consequences we do not understand, but which we must assume can be harmful. It would imply a critique of the entire basis for the present ICNIRP recommendations and the exposure standards derived from it. Martin Rööslis's job is obviously to prevent any such admissions.

It will be interesting to see if the accusations against Martin Rööslis are taken seriously - or if they are just brushed aside.

Einar Flydal, 20th of February 2020

This text is a slightly adapted translation of a blogpost in Norwegian, published 27th of January 2020 at <http://einarflydal.com>.

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References

BERENIS assessment criteria for epidemiological studies, experimental animal and cell studies, human experimental studies and dosimetry studies, note, undated, retrieved 12.01.2020 from <https://www.bafu.admin.ch/bafu/en/home/topics/electrosmog/newsletter-of-the-swiss-expert-group-on-electromagnetic-fields-a/beratende-expertengruppe-nis-berenis.html#-1059250647>

BERENIS Newsletter - Special Issue November 2018, <https://www.bafu.admin.ch/bafu/en/home/topics/electrosmog/newsletter-of-the-swiss-expert-group-on-electromagnetic-fields-a.html>

Carlberg, M. & Hardell, L. (2017). Evaluation of Mobile Phone and Cordless Phone Use and Glioma Risk Using the Bradford Hill Viewpoints from 1965 on Association or Causation. *BioMed Research International*, vol. 2017, Article ID 9218486, 17 pages, 2017. doi:10.1155/2017/9218486 <https://www.ncbi.nlm.nih.gov/pubmed/28401165>

Flydal, E and Nordhagen, E (ed.): "5G and our wireless reality – a dicey play with health and the environment", Z-publisher, 2019. (More review and ordering: [HERE](#))

Hardell, L. & Carlberg, M. (2013). Using the Hill viewpoints from 1965 for evaluating strengths of evidence of the risk for brain tumors associated with use of mobile and cordless phones¹). *Reviews on Environmental Health*, 28(2-3), pp. 97-106. Retrieved 6 Dec. 2017, doi:10.1515/reveh-2013-0006, <https://www.degruyter.com/view/j/reveh.2013.28.issue-2-3/reveh-2013-0006/reveh-2013-0006.xml>

Hardell, Lennart & al: Letter of 7 January 2007 to Mrs. Simonetta Sommaruga, President of the Swiss Confederation from Hardell, Adlkofer, Ahonen, Bandara, Belpomme, Belyaev, Carlberg, Carpenter, de Salles, Eger, Havas, Hedendahl, Héroux, Lai, Mallery-Blythe, Miller, Morgan, Nyberg, Oberfeld, Philips, Richter, Sage, Yakymenko, https://einarflydal.com/wp-content/uploads/2020/01/Whistleblow-Martin-R%C3%B6slis_January-2020.pdf

Hecht, Karl: Die Wirkung der 10-Hz-Pulsation der elektromagnetischen Strahlungen von WLAN auf den Menschen, brennpunkt Ausgabe Mai 2018, Diagnose:funk

Hill AB. The environment and disease: association or causation? *Proc R Soc Med* 1965;58:295–300.

Marino, Andrew: *Going Somewhere - Truth about a Life in Science*, Cassandra Publishing, 2010

Mercer, David: *The WHO EMF Project: Legitimizing the Imaginary of Global Harmonization of EMF Safety Standards*, ResearchGate, · May 2016, DOI: 10.17351/ests2016.41, <https://www.researchgate.net/publication/303700958>

Michaels, David: *Doubt is Their Product: How Industry's Assault on Science Threatens Your Health*, Oxford, 2008

Oreskes, Naomi & Conway, Erik M.: *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*, N.Y. 2010

Pall, Martin L: 5G: Great risk for EU, U.S. and International Health! Compelling Evidence for Eight Distinct Types of Great Harm Caused by Electromagnetic Field (EMF) Exposures and the Mechanism that Causes Them, notat datert 17.5.2018, <https://einarflydal.com/wp-content/uploads/2018/10/Pall-ML-5g-emf-hazards-eu-emf2018-6-11us3.pdf>

Warnke, Ulrich: Deutliche Hinweise af Gefahren und Schädigungen durch Kommunikationsfunk-Strahlung sind seit Jahrzehnten 'Stand des Wissens', in Richter & Wittebroch (eds.): *Kommerz, Gesundheit und demokratische Kultur*, Rörig Universitätsverlag, 2005, pp. 103-49

Wright, Nicola: «Downplaying Radiation Risk», Chapter 24 in Walker, Martin J. (ed.): *Corporate ties that bind – An Examination of Corporate Manipulation and Vested Interests in Public Health*, Skyhorse Publishing, N.Y., 2017

Zwamborn APM, Vossen SHJA, van Leersum BJAM, Ouwens MA, Mäkel WN. 2003. Effects of Global Communication System Radio-Frequency Fields on Well Being and Cognitive Functions of Human Subjects with and without Subjective Complaints FEL-03-C148. The Hague, the Netherlands: TNO Physics and Electronics Laboratory. <https://www.rivm.nl/bibliotheek/digitaaldepot/Zwamborn2003COFAMrapport.pdf>

Achermann's articles on pulsed radiation and the brain

Inter-individual and intra-individual variation of the effects of pulsed RF EMF exposure on the human sleep EEG. Lustenberger C, Murbach M, Tüshaus L, Wehrle F, Kuster N, Achermann P, Huber R. *Bioelectromagnetics*. 2015 Apr; 36 (3): 169-77. doi: 10.1002 / bem.21893. Epub 2015 Feb 17. PMID: 25690404 - **Finds Clear Effects on Sleep of Pulsed Radio Frequency Exposure to Brain Waves**

Modeling of EEG electrode artifacts and thermal ripples in human radiofrequency exposure studies. Murbach M, Neufeld E, Christopoulou M, Achermann P, Kuster N.

Bioelectromagnetics. 2014 May; 35 (4): 273-83. doi: 10.1002 / bem.21837. Epub 2014 Feb 13. PMID: 24523224 - **finds that the effects of pulsed radio frequency radiation cannot be due to heating, and that the mode of operation is still unknown**

Stimulation of the brain with radiofrequency electromagnetic field pulses affects sleep-dependent performance improvement. Lustenberger C, Murbach M, Dürr R, Schmid MR, Kuster N, Achermann P, Huber R. *Brain stimulus*. 2013 Sep; 6 (5): 805-11. doi: 10.1016 / j.brs.2013.01.017. Epub 2013 Feb 24. PMID: 23482083 - **finds negative impact on sleep by radio frequency radiation**

Sleep EEG alterations: effects of pulsed magnetic fields versus pulse-modulated radio frequency electromagnetic fields. Schmid MR, Murbach M, Lustenberger C, Maire M, Kuster N, Achermann P, Loughran SP. *J Sleep Res.* 2012 Dec; 21 (6): 620-9. doi: 10.1111 / j.1365-2869.2012.01025.x. Epub 2012 Jun 22. PMID: 22724534 - **a number of changes in sleep were detected as a result of exposure to pulsed radio frequency radiation**

Exposure system to study hypotheses of ELF and RF electromagnetic field interactions of mobile phones with the central nervous system. Murbach M, Christopoulou M, Crespo-Valero P, Achermann P, Kuster N. *Bioelectromagnetics.* 2012 Sep; 33 (6): 527-33. doi: 10.1002 / bem.21710. Epub 2012 Feb 13. PMID: 22331550 - **(assessing a test method)**

Sleep EEG alterations: effects of different pulse-modulated radio frequency electromagnetic fields. Schmid MR, Loughran SP, Rule SJ, Murbach M, Bratic Grunauer A, Rusterholz T, Bersagliere A, Kuster N, Achermann P. *J Sleep Res.* 2012 Feb; 21 (1): 50-8. doi: 10.1111 / j.1365-2869.2011.00918.x. Epub 2011 Apr 12. PMID: 21489004 - **Pulsed Radio Frequency EMF changes the physiology of the brain, and partial pulsing is sufficient**

Cognitive performance measures in bioelectromagnetic research - critical evaluation and recommendations. Rule SJ, Achermann P. *Environ Health.* 2011 Jan 25; 10 (1): 10. doi: 10.1186 / 1476-069X-10-10. Review. PMID: 21266038 - **concludes that the test methods are outdated, and that no biological mechanism has been established for how the brain is affected by EMF.**

Novel methodology to characterize electromagnetic exposure of the brain. Crespo-Valero P, Christopoulou M, Zefferer M, Christ A, Achermann P, Nikita KS, Kuster N. *Phys Med Biol.* 2011 Jan 21; 56 (2): 383-96. doi: 10.1088 / 0031-9155 / 56/2/007. Epub 2010 Dec 22. PMID: 21178239 - **(describes an analysis tool)**

Pulsed radio frequency electromagnetic fields: dose-dependent effects on sleep, the EEG sleep and cognitive performance. Rule SJ, Tinguely G, Schuderer J, Adam M, Kuster N, Landolt HP, Achermann P. *J Sleep Res.* 2007 Sep; 16 (3): 253-8. PMID: 17716273 - **finds influences from real pulsed radio**

Pulsed radio frequency radiation affects cognitive performance and the waking electroencephalogram. Rule SJ, Gottselig JM, Schuderer J, Tinguely G, Rétey JV, Kuster N, Landolt HP, Achermann P. *Neuroreport.* 2007 May 28; 18 (8): 803-7. PMID: 17471070- **finds clear effects from real pulsed radio, but none from sinusoidal curves**

UMTS base station-like exposure, well-being, and cognitive performance. Rule SJ, Negovetic S, Rössli M, Berdiñas V, Schuderer J, Huss A, Lott U, Kuster N, Achermann P. *Environ Health Perspect.* 2006 Aug; 114 (8): 1270-5. PMID: 16882538 - **finds NO clear effects**

Radio frequency electromagnetic field exposure in humans: Estimation of SAR distribution in the brain, effects on sleep and heart rate. Huber R, Schuderer J, Graf T, Jütz K, Borbély AA, Kuster N, Achermann P. *Bioelectromagnetics.* 2003 May; 24 (4): 262-76. PMID: 12696086 - **Finds clear effects**