



# How Shall we Cope With the Increasing Amounts of Airborne Radiation?

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At the beginning of January this year, several major Swedish morning and evening newspapers and the Swedish radio reported that increasing numbers of young Swedish persons were being made ill by their mobile phones. Doctors in the Swedish town Karlstad warned that: "Increasing numbers of teenagers were suffering from chronic lack of sleep, and sleep problems can cause mental problems. One reason may be mobile telephones and computers," according to school doctor Ulla Palenius: "Some young persons need to keep themselves contactable all the time," she continues. Few young persons turn off their mobiles even at night, rather they continue to ring and chat all night long. Too little sleep - or being woken up when you have just fallen asleep - can in the long run result in stress-related illnesses such as burnout. Ulla Palenius and her colleagues working with school health care have reacted to the fact that an increasing number of pupils are showing signs of lack of sleep and difficulty in concentrating. Always being available by mobile could thus lead to burnout. "New ethical rules are needed to protect people's health in the mobile age," says stress researcher Töres Theorell.

This time, it is not a matter of mobile radiation which makes the brain boil. Instead, the important point is psychological. Young people are stressed by all the phone calls and text messages. The fear of not being with it, or missing something, is very great. There are certainly many who get into a state of stress over this. But, is it only psychology behind the modern burnout?

The frequent claim that stress can explain many new medical phenomena is nothing new. It has seemed so obvious that practically no-one has opposed superficial arguments on that theme. The danger with such psychological arguments is that they effectively draw attention away from the more complicated and unpleasant - but real - causes of a problem. Unfortunately, it must often be pointed out that in fact there is a genuine medical cause behind what is claimed to be the stress-dependent complaint; just think of one of the latest Nobel prizes which actually went to two researchers - Barry J. Marshall and J. Robin Warren - who had the temerity (!) to claim that gastric ulcers were actually caused by a bacterium.

At an early stage I raised the question as to whether it was really wise and safe to subject

ourselves to whole-body irradiation, all round the clock and wherever we are, with the same mobile radiation which laboratory studies have shown to cause serious injuries and effects. Also at an early stage, I advised the responsible persons to think deeply before engaging in the full-scale experiment which is now in progress, with us as the laboratory animals. Since then, many authors have borrowed these expressions and my metaphors and used them in their own articles and books and the tide of debate is running high throughout the world.

In my opinion, the connection between illness and the stress caused by always being contactable by mobile phone is probably not the whole truth. In fact we cannot exclude the possibility that the brain cells of these young persons are disturbed and irritated by the high-frequency electromagnetic fields from the mobile phones.

In 2004, my colleague Örjan Hallberg and I published a scientific article with the title "1997 - A curious year in Sweden" in the journal *European Journal of Cancer Prevention* (volume 13, pp 535-538). The background to our study was the rapid increase since 1997 in the costs in Sweden for primary health and medical care and for sickness leave and sickness pensions. We therefore decided to look at the geographical and time relationships between a series of health parameters.

We found a very close correlation between the growth in sickness, sick-leave and other similar parameters and the expansion of the new GSM 1800 mobile telephone system. The interesting point was that rise in sickness in Sweden considered county by county increased rapidly during the period October 1997 to January 1998. Long periods of sick-leave, depression, attempted suicides, percentages of persons on sick-leave (especially in large concerns), industrial accidents, etc., all increased. We could see that this negative development coincided in time with the introduction of the new telephone system and that the study county by county showed a correlation with the mean strength of the mobile radiation. In counties with large distances to the base stations, and thus with high outputs from the telephones, the health was the worst.

Exactly as was pointed out above, Swedish people are sleeping increasing badly. The latest report says that 78% (!) of the Swedes have problems with their sleep. Illness is increasing and Swedes are more tired, much more tired

than they were 20 years ago, with the situation worst for young persons. We researchers have been surprised to find that even persons who are not working show the same negative developments as those who are working or studying. The research team Söderström, Ekstedt, Åkerstedt, Nilsson and Axelsson showed that persons in the risk zone for burnout did not recover over a free weekend. One can thus ask oneself: "Is it this lack of recovery which leads to burnout; in which case the question is naturally why we do not recover." The answer perhaps lies in all the studies (for a short selection, see below\*) which have shown that mobile radiation changes the regional blood-flow in the brain, the brain EEG, short-term memory and powers of concentration. It also affects the duration and quality of dream sleep (=rapid eye movement (REM) sleep), the portion of sleep in which much of the normal recovery should occur. The fact that the mobile radiation also causes direct injuries to our gene pool (i.e. causes breaks in our DNA molecules), inter alia in the brain's nerve cells, can only be regarded as making matters worse.

In the article "Alzheimer mortality - why does it increase so fast in sparsely populated areas?" (Europ Biol Bioelectromag 2005, volume 1, pp 225-246) by Hallberg and Johansson, we investigated even more closely how deaths in different parts of Sweden caused by disorders in the nervous system were correlated to mobile telephone outputs. We made use of the databases provided by the National Swedish Board of Health and Welfare and estimations based on the operators' own information on the mobile coverage. We found a significant statistical relationship between the increased mortality from Alzheimer's syndrome and the output of mobile telephones. This mortality is increasing rapidly and it is expected to increase even more rapidly over the next 10 years. We therefore advised the responsible persons to make a more thorough analysis of this complex question. So far, no such analysis has been started.

Very recently, an article ("Recurrent headache and migraine as a public health problem - a population-based study in Sweden", Headache 2006, volume 46, pp 73-81) was published by Anu Molarius and Åke Tegelberg about headaches and migraine as a current problem in Swedish public health. Does not this fit in with the major TNO study (Zwamborn APM, Vossen SHJA, van Leersum BJAM, Ouwens MA, Mäkel WN, "Effects of global communication system radio-frequency fields on well being and cognitive functions of human subjects with and without subjective complaints", TNO report FEL-03-C148 2003, volume 148, pp 1-89) from Holland, the one which showed that if you expose test persons to radiation from base stations for 3G telephony they get headaches (!), and dizziness and they feel sick!

The explanation offered by Anu Molarius

and Åke Tegelberg is that "recurrent headache and/or self-considered migraine constitutes a substantial public health problem that mainly affects young and middle aged adults. It is associated with poor self-rated health, musculoskeletal and psychosomatic symptoms, increased use of health care and medication as well as unmet needs of health care." Perhaps they should have added the radiation from 3rd generation base stations? In fact this latter point receives further support from a very recent study (Hutter H-P, Moshammer H, Wallner P, Kundi M, "Subjective symptoms, sleeping problems, and cognitive performance in subjects living near mobile phone base stations", Occup Environ Med 2006, volume 63, pp 307-313). And how is it with our "musculoskeletal and psychosomatic symptoms" when we have even more "electrosmog" in the air? The European mobile phone operators are going to extend their networks extensively during the coming years. At the same time as we are expected to ring an increasing proportion of ordinary phone calls using mobile phones, wireless computer traffic is increasing considerably and there will thus be more and more airborne radiation.

In as-yet unpublished experiments with the exposure of human stem cells and fibroblasts to mobile radiation, associate professor Igor Belyaev, at the Stockholm University, has been able to show that these cells are those most affected by GSM and 3G radiation. If these results are found to be correct, we have every reason to be very worried. Here it is impossible to offer psychological explanation models; these cells do not sit up at night sending SMS messages or talking on their mobiles. Nor are they under stress or psychologically burnt out. In that case I really agree with Töres Theorell that "New ethical rules are required to maintain our health in the mobile society," although it is an entirely different type of ethical rules which I would then seek! Otherwise, the whole of humanity in the future would have every reason to feel "musculoskeletal and psychosomatic symptoms" in their anger that due consideration to these problems was not given in time!

In the present-day situation, we do not know whether the radiation reduces our immune defence, whether it is the tiredness itself which causes the problems, or what is going on. However, what is quite obvious is that something serious has happened and is happening. We can no longer turn a blind eye to this and my colleagues and I have therefore recommended responsible authorities many times to take action. [Now, most recently, we were not allowed to meet the former Swedish Minister for Health and Social Affairs - Morgan Johansson - on the grounds that he did not have time. I sincerely hope and pray that his judgement, at a future date, will be seen to be the best.]

Completely independent research projects must be inaugurated immediately to ensure our

public health! These projects must be entirely independent of all types of commercial interests; public health cannot have a price-tag! This is the clear responsibility of the democratically elected body of every country!

The population of Sweden - and of many other countries in the world - is being irradiated more and more. I am anxious in case this may be a major cause of the rapid increase in tiredness in our society.

Above all, I am worried in case the persons who should be taking responsible action are - just now - in a torpor - like the Sleeping Beauty - from which they need to be awakened! Quickly and harshly!

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**"What if our economy were organized not around the lifeless abstractions of neoclassical economics and accountancy, but around the biological realities of nature?"**

**Paul Hawken**