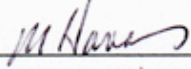


*Environmental Petition submitted to the
Auditor General of Canada, June 2008*

Request that first generation DECT Phones be Banned in Canada

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Date:	19 June 2008
Document:	16 pages

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COMMUNICATIONS WITH HEALTH CANADA REGARDING DECT PHONES

On March 9, 2007, I sent an email to Robert P. Bradley, Director of the Consumer and Clinical Radiation Protection Bureau, Product Safety Programme, Health Canada asking that he consider banning DECT phones in Canada.

Dr. Bradley responded on March 26, 2007 and told me he was unaware of DECT technology and that after receiving my email, he did a “google” search and also had a brief discussion with research staff of the Electromagnetic Division. He stated that he would have his staff look further into this technology. He also advised me that banning such devices came under the jurisdiction of Industry Canada. He went on to write:

“We provide advice regarding the potential health issues arising from any of the technologies that they regulate. This advice is considered in the decisions to allow or disallow any device for use in the Canadian market. Should our review of the DECT systems, or any other wireless devices in the future, lead us to believe them not to be safe you can be assured that we will so inform Industry Canada.”

Five months later, on August 19, 2007, I contacted Dr. Bradley again, via email, and asked for an update on progress to review the literature on DECT phones. Dr. Bradley failed to respond to that email. That was 10 months ago.

BACKGROUND INFORMATION ON DECT PHONES

DECT is an acronym for (Digitally Enhanced Cordless Technology, previously known as Digital European Cordless Telephony). It is a technology that originated in Germany and has spread to other countries, including Canada.

DECT phones operate at 2.4 and 5.8 GHz and provide a digital signal that is both powerful and clear. DECT phones can be used up to 300 meters from their base station (cradle that holds the phone). Several manufacturers including Panasonic, GE, Motorola, AT&T, and V-Tech use this technology.

Unlike other types of cordless phones, DECT cordless phones continuously emit microwave radiation at full power as long as the base station is plugged into an electrical outlet. These phones emit radiation 24/7 whether they are being used or sitting idle in their cradle. This exposes people to unnecessary microwave radiation and has been raised as a potential health concern by scientists and doctors in Germany and Austria.

CHRONIC EXPOSURE TO RADIATION FROM THE DECT PHONE BASE (CRADLE)

I own a DECT phone (which I no longer use). It is a 2.4 GHz phone made by AT&T. On June 16th, 2008 I measured the radiation coming from this phone while it was in idle. I used an Electromog Meter with an omni-directional antenna. This meter has an operating range of 50 MHz to 3.5 GHz. Background level (6-minute maximum) in my home immediately prior to testing was 0.000 microW/cm². Clearly in parts of my home there is no radio frequency radiation within the 50 MHz to 3.5 GHz range. I then measured the radiation at various distance from the base of the phone. Values in Figure 1 represent a 6-minute maximum near the phone. The values decrease with $1/x^2$, with "x" representing the distance in cm.

I then compared the values I obtained for my DECT phone to studies in the literature that document adverse health effects from radio frequency radiation and superimposed the data (Figure 2).

What Figure 2 shows is that at a distance just beyond 3 meters from my DECT phone base unit (according to studies of RF radiation) EEG brain waves are altered. At 2.8 meters motor function, memory and attention of children are affected. At 1.7 meters sleep is disturbed. How many people have DECT phones near their bed? At 30 cm memory is impaired and at closer distances the immune system is affected, REM sleep is reduced, insulin levels drop, and there are pathological changes in the blood brain barrier. Studies also show that there is 100% increase in adult leukemia between 45 and 130 cm from the phone and a similar increase in childhood leukemia between 35 and 260 cm.

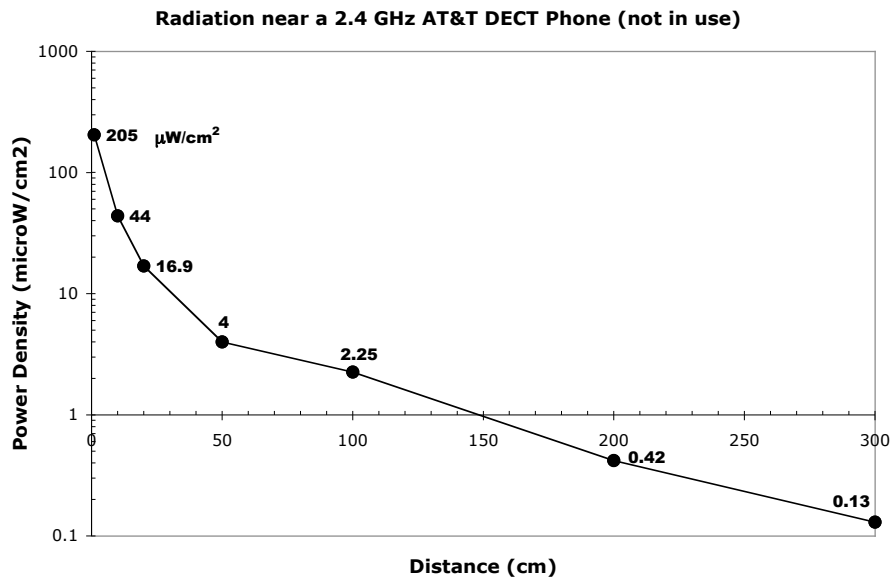


Figure 1. Radiation near a 2.4 GHz AT&T DECT phone while the phone was not in use.

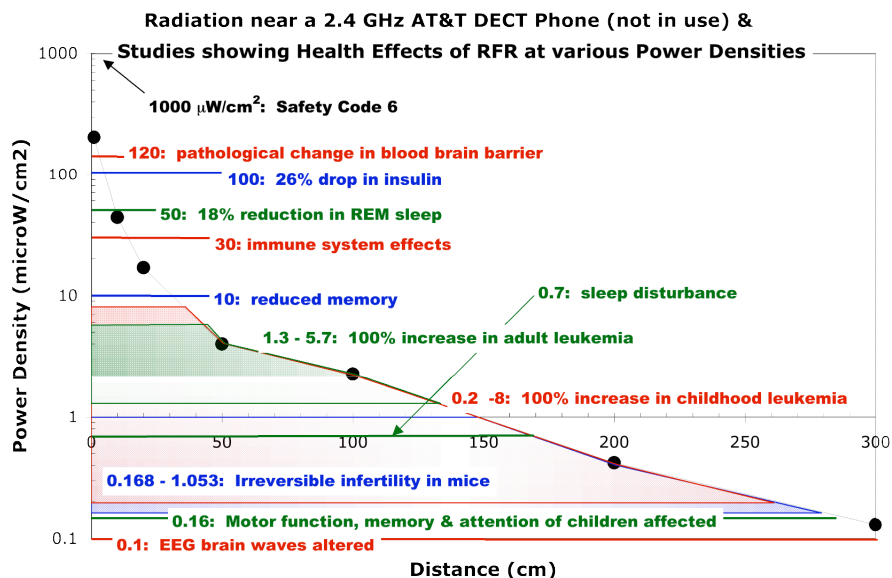


Figure 2. Studies showing health effects of radio frequency radiation (RFR) at various power densities superimposed on radiation from a DECT phone (2).

What Figure 2 also shows is that all of these effects are well below Health Canada's Safety Code 6 (1000 microW/cm²), which suggests that Safety Code 6 is failing to protect the health of Canadians.

Children are sensitive to DECT phones according to Dr. Leberecht von Klitzing, a German medical physicist and researcher at the University of Luebeck and one of the medical physicists who signed the Freiburger Appeal (1,3). His research on blood

samples taken from children in the vicinity of DECT phones showed that the red blood corpuscles did not ‘ripen out properly’ (a direct translation). The physical signs were listlessness and/or aggression, pallor, and sleeplessness. These symptoms could be reversed with the removal of the phone.

Symptoms of 356 people under long time home exposure to high frequency pulsed electromagnetic fields associated with DECT phones and/or mobile phone base stations were evaluated (Appendix A). At levels *well below* those in Figure 1, the following symptoms increased with increasing power density: sleep disturbance, fatigue, depression, headaches, restlessness, dazed state, irritability, difficulty concentrating, forgetfulness, learning difficulties, difficulty finding words, frequent infections, Frequent infections, sinusitis, lymph node swellings, joint and limb pains, nerve and soft tissue pains, numbness or tingling, allergies, tinnitus, hearing loss, sudden hearing loss, giddiness, impaired balance, visual disturbances, eye inflammation, dry eyes, tachycardia, episodic hypertension, collapse, hormonal disturbances, thyroid disease, night sweats, frequent urge to urinate, weight increase, nausea, loss of appetite, nose bleeds, skin complaints, tumours, and diabetes. Many of these are the symptoms now associated with electrohypersensitivity (EHS).

Based on these studies DECT phones should not be in bedrooms or near children, who are likely to be more sensitive to this form of radiation.

Because DECT phones are so powerful and because the radiation can penetrate through walls people can be exposed to this radiation even if they do not own a DECT phone. If their neighbours have one they can also be exposed.

I have neighbours who have DECT phones and I can measure radiation from their phones coming into my home in the rooms nearest their phone. Homes in my neighbourhood are approximately 10 meters apart. Imagine living in an apartment building with a DECT phone on the other side of an adjacent wall.

Indeed a few years ago I visited a person in Toronto who was electrically sensitive. I measured the radiation in her home and found high readings in her bedroom. We traced the source to a DECT phone in her neighbour’s apartment. Without knowing it and without having any control over her own exposure, this person was exposed to microwave radiation while sleeping. Indeed she complained of sleep difficulties and often slept on the couch in the living room where levels of radiation were much lower. It is possible that her exposure to the DECT phone contributed to her electrical sensitivity.

A recent study reported that some young people who use mobile phones at least 15 times daily were more prone to have difficulty falling asleep, disrupted sleep, restlessness, stress and fatigue than those who used them less than 5 times a day (Appendix B).

Second and third generation DECT phones, with lower radiation levels, are now available in Germany but have not yet crossed the Atlantic to Canada. Furthermore, there are digital phones on the market that do not use DECT technology. So it is possible for people to have the benefits of digital mobile phones without being constantly exposed to

microwave radiation. Unless the current generation of DECT phones is banned in Canada, there will be no incentive for Canadians to buy cordless phones that does not radiate continuously. In the meantime, Canadians will be unnecessarily exposed to these microwave frequencies.

HOW OTHER JURISDICTIONS ARE RESPONDING TO DECT PHONES

In 2002, a group of Physicians signed the Freiburger Appeal, which requests that *immediate measures and transitions steps* be taken to ban mobile phone use and digital cordless (DECT) phones in preschools, schools, hospitals, nursing homes, event halls, public buildings and vehicles. They go on to state that DECT standards for cordless telephones be revised with the goal of reducing radiation intensity (3).

In 2005, Dr. Gerd Oberfeld, MD with the Salzburg Region Public Health Department in Austria, wrote an open letter to teachers, parents about wireless technology and stated the following (4):

“The official advice of the Public Health Department of the Salzburg Region is not to use WLAN and DECT in Schools or Kindergartens.”

In 2006, the German Federal Agency For Radiation Protection (Bundesamt für Strahlenschutz – BfS) issued a health warning concerning DECT phones in their Press Release dated 31 January 2006 (5):

A cordless phone of DECT standard is often the strongest source of high frequency electromagnetic radiation in a private home. To renounce your cordless phone as a precautionary measure will contribute to minimise your personal radiation exposure . . .

Cordless landline telephones of DECT standard have no output control to regulate power output according to the actual power needed. Therefore, the base station and the handset are permanently emitting radiation at the same power level during a call, no matter whether the user holding the handset is one meter or 300 meters away from the base station . . .

To prevent possible health risks, the BfS recommends minimizing personal radiation exposure. The following tips will help you if you are not prepared to completely give up the benefits of a cordless phone: Put the base station in a place where you do not spend much time, for example in the hall. Do not put it directly on your desk. Only make short phone calls. Use the latest generation of phones, which are emission free when the handset is connected to the base station.

INFANTS RESPOND TO DECT PHONES AND DECT BABY MONITORS

According to Powerwatch in the UK (6):

“Over the past five years we, with the help of parents, have measured a variety of baby monitors and the DECT pulsing ones seem to be far more disruptive of the infant's sleep and state of contentment (causing restlessness, irritability and crying). The old wired ones and the older "analogue" cordless ones do not seem to cause the same problems if kept at least one metre from the cot / bed.

We have had a number of reports from parents that their babies did not sleep well and cried a lot when they used DECT monitors but were ok when no baby monitor was used. When they then tried a cheaper analogue monitor, the infant then slept as well as they did with no monitor.

A DECT monitor placed in your baby's bedroom will expose them to more pulsing microwave radiation than living near to a mobile phone base station mast would do. As a result, whilst there have been no studies done into baby monitors specifically, studies that cover mobile phone masts provide a good background to the effects that would be expected in your baby.”

Dr. von Klitzing reported that otherwise perfectly healthy infants had erratic heart beat when exposed to a DECT cordless phone. When the DECT phone was removed from the bedroom or neighboring apartment, the infant's heartbeat returned to normal (7).

ACUTE EXPOSURE TO RADIATION WHILE USING MOBILE PHONES

A secondary concern of mobile phones (cordless and cell, analog and digital) is that people who use them are exposing their brain to microwave radiation. Studies show an increase in various types of tumors (gliomas, astrocytomas, acoustic neuromas, uveal melanomas) that range from a 30% increase to a 4.6-fold increase (8). Often the tumor is on the same side of the head that one uses the phone and becomes a statistically significant risk after 10 years of use, which is a relative short latency period for a brain tumor. See also Appendix C.

Once again children are likely to be more sensitive and authorities in the UK have warned that children should minimize their use of this technology (9).

INADEQUACY OF HEALTH CANADA'S SAFETY CODE 6 GUIDELINES

In 1999, an Expert Panel of the Royal Society of Canada (10) was convened to review the potential health risks of radio frequency radiation from wireless devices. In their report they state the following:

- ❑ A growing body of scientific evidence suggests that exposure to RF fields at intensities far less than levels required to produce measurable heating can cause effects in cells and tissues.
- ❑ These biological effects include alterations in the activity of the enzyme ornithine decarboxylase (ODC), which is associated with cancer growth; regulation of calcium; and permeability of the blood-brain barrier
- ❑ Some of these biological effects brought about by non-thermal exposure levels of RF could potentially be associated with adverse health effects.

Canada's guideline for DECT phone frequencies (2.4 and 5.8 GHz) is 1000 microW/cm² (11). In Russia the guideline is 10 microW/cm² for the same frequency range, and in Salzburg, Austria the recommended level is 0.1 microW/cm² (12). The Canadian Safety Code 6 Guideline is based on thermal effects, whereas the other guidelines are based on biological effects. It is Health Canada's position that stricter guidelines are not required because if this radiation does not heat body tissue it will have no effect and the current guidelines protect us from such heating. Scientific evidence points to the contrary (2,12) as has been recognized by other governments (3,4,5) and has been recently documented in the Bioinitiative Report that calls for biological guidelines for microwave radiation (13).

The Canadian public needs to be protected against microwave radiation and it is Health Canada's responsibility to do so. It seems that in this case, Health Canada is failing to protect the public and is not acting expeditiously to inform Industry Canada of the potential treat of microwave radiation presented by DECT phone technology. This situation needs to be changed. Under no circumstances should these early warning signals of adverse health effects be dismissed or disregarded. At the *very least* Health Canada should invoke the Precautionary Principle if they consider the scientific evidence inconclusive.

PETITIONS REQUESTS/QUESTIONS:

1. Based on the fact that:
 - a. DECT phones radiate 24/7 at maximum power, and that
 - b. Levels of radiation within 3 meters of a DECT phone base station, while not in use, have been associated in various scientific studies with ill health, memory loss, sleep disturbances, cancers, etc. and that
 - c. Newer versions of DECT phones are available in Germany that have lower emissions,

Will Health Canada recommend to Industry Canada that these phones be banned in Canada? Could they also provide their rationale for their decision?
2. Will Industry Canada consider banning DECT phones in Canada? If not, what kind of information is necessary to warrant a ban of this technology?

3. What is Health Canada doing to warn Canadians about DECT phones?
4. What is Health Canada doing to minimize the exposure of children to DECT phones and other types of wireless technology in schools and in the home?
5. Since studies are documenting adverse health effects at levels well below Safety Code 6 why has Health Canada not revised this safety code so that it protects the Health of Canadians?
6. What combination of scientific research results is required for Health Canada to revise Safety Code 6? In other words, what does Health Canada recognize as “conclusive scientific evidence” of harmful effects? Please provide specifics of the types of scientific studies required, the number of studies required, and the types of results needed to provide what Health Canada would consider “conclusive evidence”.
7. What research is Health Canada conducting or funding to determine the safety of DECT phones and other types of wireless technology including cell phones, cell phone antennas, WiFi, WiMax, smart meters, radio frequency identification tags, and broadband over power lines (BPL)?
8. Does Health Canada or Industry Canada know if DECT baby monitors are sold in Canada and, if they are, would they consider warning the public not to use them?
9. In light of scientific uncertainty, will Health Canada recommend prudent avoidance and/or the Precautionary Principle to the Canadian public? If not, why not?
10. Is any of the research conducted by Health Canada (including reviews of the literature as well as primary research) directly or indirectly funded by the wireless telecommunications industry and/or the electric utility? Could Health Canada provide a list of financial contributions made to them by these organizations during the past 10 years?
11. Is any of the research conducted by Industry Canada (including reviews of the literature as well as primary research) directly or indirectly funded by the wireless telecommunications industry and/or the electric utility? Could Industry Canada provide a list of financial contributions made to them by these organizations during the past 10 years?

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Appendix A. Study by Dr. Cornelia Waldmann Selsam

Source: http://www.powerwatch.org.uk/news/20050722_bamberg.asp

The following is a foreword to an Open Letter written by Dr. Cornelia Waldmann Selsam to Edmund Stoiber, Prime Minister of Bavaria in Germany.

"These reports show that the people for years have been ill due to pulsed high frequency electromagnetic fields, without the treating doctors recognising the cause. For that reason, people who are receiving the high frequency at home or at work have suffered and are suffering and they receive no therapy. The deciding [effective] therapy is to end the exposure.

"The continually repeated assertion in the media by the Radiological Protection Commission (Strahlenschutzkommission), that there is no proof for health risks under the present valid limits, has had the consequence that most doctors, (including myself until a year ago) have not drawn a relationship between the many unexplained illness patterns and high frequency radiation. The doctors do not know that at not one single mobile phone base station have investigations into the health-state of the people been carried out. Thus, the evaluation of the Strahlenschutzkommission in 2001 has no scientific basis.

"In Oberfranken, we have just evaluated the medical complaints of 356 people who have had long-term [radiation] exposure in their homes.

- The pulsed high frequency electro magnetic fields (from mobile phone base stations, from cableless DECT telephones, amongst others), led to a new, previously unknown pattern of illnesses with a characteristic symptom complex.
- People suffer from one, several or many of the following symptoms: Sleep disturbances, tiredness, disturbance in concentration, forgetfulness, problem with finding words, depressive mood, ear noises, sudden loss of hearing, hearing loss, giddiness, nose bleeds, visual disturbances, frequent infections, sinusitis, joint and limb pains, nerve and soft tissue pains, feeling of numbness, heart rhythm disturbances, increased blood pressure episodes, hormonal disturbances, night-time sweats, nausea.
- Even at $10 \mu\text{W}/\text{m}^2$ ($0.001 \mu\text{W}/\text{cm}^2$ only $0.06 \text{ V}/\text{m}$ average) many people are becoming ill.
- The symptoms occur in temporal and spatial relationship to exposure. It is no way only a subjective sensitivity disturbance. Disturbances of rhythm, hearing problems, sudden deafness, hearing loss, loss of vision, increased blood pressure, hormonal disturbances, concentration impairments, and others can be proved using scientific objective measures.
- Some of the health disturbance disappears immediately the exposure ceases (removal of DECT telephone, temporary moving away from home, permanently moving away, using shielding).

Therefore, the expansion must be stopped immediately. Mobile phone base stations, in whose fields people are exposed to more than $10 \mu\text{W}/\text{m}^2$ [$0.001 \mu\text{W}/\text{cm}^2$] must be turned off . . . DECT telephones must be changed . . . Affected people, relatives and doctors must jointly commit themselves and work together with all their energy [to this end].

Evaluation of symptoms of 356 people under long time home exposure to high frequency pulsed electromagnetic fields (DECT telephones, mobile phone base stations) versus the level of the power flux density in microwatts per square metre.

Foreword - Documented Health Damage under the Influence of High Frequency Electromagnetic Fields, Dr. Cornelia Waldmann Selsam, Karl-May-Str.48, 96049 Bamberg.

The values convert approximately as follows:

- * $10 \mu\text{W}/\text{m}^2 = 0.001 \mu\text{W}/\text{cm}^2 = 0.06 \text{ V/m}$ average
- * $100 \mu\text{W}/\text{m}^2 = 0.01 \mu\text{W}/\text{cm}^2 = 0.2 \text{ V/m}$ average
- * $1000 \mu\text{W}/\text{m}^2 = 0.1 \mu\text{W}/\text{cm}^2 = 0.6 \text{ V/m}$ average

The *symptom groups* are defined as follows:

- Group 1: No symptoms
- Group 2: Sleep disturbance, tiredness, depressive mood
- Group 3: Headaches, restlessness, dazed state, irritability, disturbance of concentration, forgetfulness, learning difficulties, difficulty finding words.
- Group 4: Frequent infections, sinusitis, lymph node swellings, joint and limb pains, nerve and soft tissue pains, numbness or tingling, allergies
- Group 5: Tinnitus, hearing loss, sudden hearing loss, giddiness, impaired balance, visual disturbances, eye inflammation, dry eyes
- Group 6: Tachycardia, episodic hypertension, collapse
- Group 7: Other symptoms (hormonal disturbances, thyroid disease, night sweats, frequent urge to urinate, weight increase, nausea, loss of appetite, nose bleeds, skin complaints, tumours, diabetes)

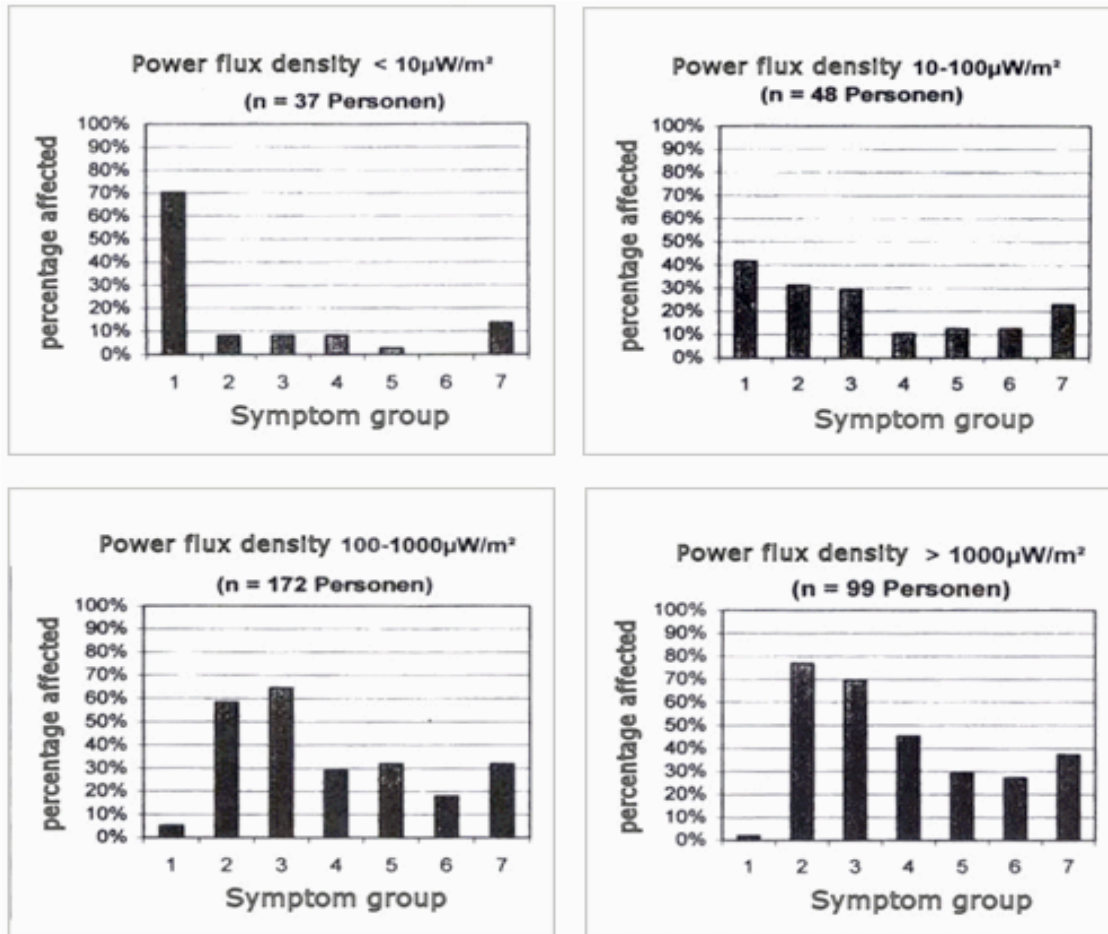


Figure 1. Symptoms grouped by power flux density. Note conversion as follows: $10 \mu\text{W}/\text{m}^2 = 0.001 \mu\text{W}/\text{cm}^2$; $100 \mu\text{W}/\text{m}^2 = 0.01 \mu\text{W}/\text{cm}^2$; $1000 \mu\text{W}/\text{m}^2 = 0.1 \mu\text{W}/\text{cm}^2$

If true, this is a very clear trend. For those where it is under $10 \mu\text{W}/\text{m}^2$ [$0.001 \mu\text{W}/\text{cm}^2$] 70% of the sample (37 people) suffered no adverse health effects. For those where the power flux density is over $100 \mu\text{W}/\text{m}^2$ [$0.01 \mu\text{W}/\text{cm}^2$] only 5-6% of the sample (172 people) did not experience adverse health effects. Please look at this graph to see how these levels translate to exposure from a typical mast. Microwave signals are often above $0.6 \text{ V}/\text{m}$ [$0.1 \mu\text{W}/\text{cm}^2$] within 400 metres! There are no confounding factors listed in the data, but the strength of the trend is extremely pronounced.

This is further evidence to support the potential adverse health effects that may be synonymous with the pulsed Microwave technology that surround us in everyday life. Those in the medical profession are beginning to voice their concerns, and it is worth bearing in mind that they have first hand experience of real people with real problems. It is important not to discard this evidence due to lack of experimental control, as it seems that a number of qualified professionals have independently found the same trends. At the very least this should call for more organised research into these findings.

Appendix B: *Mobile phones stop teenagers getting a good night's sleep*

By Kate Devlin Medical Correspondent, Telegraph (UK)

Last updated: 1:23 AM BST 10/06/2008

TEENAGERS WHO send more than five text messages or make more than five calls a day on their mobile phones are ruining their chances of getting a good night's sleep, a new study shows.

Young people who often used their phone to text or call their friends were more likely to have trouble sleeping than those who used their mobile moderately.

As a consequence "excessive texters" felt more tired during the day and drank more caffeine to help them stay awake.

Many young people also felt a "pressure" to be at the end of their phones "around the clock", the stress of which led them to take up smoking or drinking, the team behind the research warned.

The study, presented at SLEEP 2008, the 22nd Annual Meeting of the Associated Professional Sleep Societies (APSS), in Baltimore, found that teenagers who used their mobiles often were more prone to disrupted sleep, restlessness, stress and fatigue than other young people.

Researchers at Sahlgren's Academy in Gothenburg, Sweden, looked at 21 otherwise healthy teenagers, between 14 and 20 years of age, who had regular school or work hours and who did not suffer from serious sleep problems.

The volunteers were split into two groups, the first who made less than five calls or sent less than five texts a day and a second group who used their phones at least 15 times daily.

The scientists found that those who used their mobile phones the most were most susceptible to stress and fatigue.

Not only did they find it more difficult to fall asleep than the other group but they also suffered from more disruptive sleep patterns once they finally nodded off.

The study also found that those who often used their phones were more likely to take drinks designed to make them feel more alert during the day.

They were also more likely to feel more awake at night than in the morning, suggesting a delayed biological clock.

Dr Gaby Badre, who led the study, said that those who used their phones the most appeared to have a different, more frantic lifestyle than other teenagers.

Dr Badre said: "Addiction to cell phone is becoming common. Youngsters feel a group pressure to remain inter-connected and reachable round the clock.

Children start to use mobile phones at an early stage of their life. There seem to be a connection between intensive use of cell phones and health compromising behaviour such as smoking, snuffing and use of alcohol."

Getting a good night's sleep was extremely important for young people, she added, and they should be made more aware that excessive mobile phone use can bring with it "serious health risks" as well as attention problems and trouble sleeping.

Jessica Alexander, from the Sleep Council, which promotes healthy sleeping habits, said: "Too many teenagers are stimulating their brains with mobile phones or computers late at night, when they should be settling down in preparation for sleep."

Although adults are advised to get between seven and eight hours sleep a night, doctors recommend that adolescents get nine hours.

However, another paper presented at the SLEEP 2008 conference shows that teenagers often get into a pattern of getting less sleep on school nights and having to "make up" the difference at weekends.

Appendix C: Sunday Times: Headline: Cellphone link to tumours.

The Sunday Times. Publication: SST Date: 23 Mar 2003 Page: A16

http://www.rfsafe.com/its_time_to_be_rf_safe.htm

SCIENTISTS HAVE found the first evidence of a link between regular use of digital mobile phones and brain tumours. Researchers in Sweden discovered a 30% increased risk of brain tumours among regular users, typically those spending more than an hour a day on the phones. Such tumours occurred most frequently on the side of the head to which the person held their phone. The biggest increase was seen in acoustic neuromas, which form behind the ear and can mostly be treated.

Mobile phones have been found to alter the workings of brain cells, affect memory and cause cancer in laboratory rats. Until now, however, there has been no proven link to human disease.

The new study, published in the International Journal of Oncology, was based on the analysis of 1600 tumour victims who had been using mobile phones for up to 10 years.

Professor Kjell Mild, the Swedish biophysicist who led the study, said: "*The evidence for a connection between phone use and cancer is clear and convincing. The more you use phones and the greater the number of years you have them, the greater the risk of brain tumours.*"

An earlier study by Mild and Lennart Hardell, a cancer specialist, linked brain tumours to the use of analogue mobile phones. The new research repeated this and also looked at digital mobiles and "DECT" cordless phones. It showed that all three types were linked with increased tumour rates.

Acoustic neuromas are usually slow growing and can be detected because they cause tingling and hearing loss. However, it takes doctors an average of two years to make a diagnosis, and surgery, the usual treatment, can leave damaged nerves that lead to involuntary facial spasms. Since 1980, the number of acoustic neuromas diagnosed in Britain has risen from one in every 100,000 of the population to one in 80,000 a year.

The mobile phone industry has long resisted any suggestion of a link to cancer, though it accepts that mobile phone radiation does affect the electrical activity in the brain.
