Joining the Dots

An overview of public health trends in 2007

To what extent do these trends reflect the research into adverse effects on health of Electromagnetic Radiation?

Whilst the increase in certain illnesses has been steady for about four decades – most figures are indicating that for the last 15 years we have seen, worldwide, a marked increase in illnesses such as cancers, cardiac illness, obesity, diabetes, asthma, allergies in children, short term memory problems and sleeplessness, to name but a few.

The Melbourne Age announced in November 2007 that experts “warn of a health tsunami” that is likely to further overwhelm our health system.

The Australian Institute of Health and Welfare announced in 2007 that the five leading causes of non-fatal illness in Australia were diabetes, ischemic heart disease, dementia, asthma, anxiety and depression. As 90% of diabetes is related to weight gain this could be included as a sixth.

Factors such as population growth and the ageing population need to be considered, as do environmental chemicals, food additives and hormones.
Additionally, the National Institute for Environmental health Sciences (NIEHS) in America found that 30 per cent of the population was more susceptible to the adverse effects of pollution than the remainder.
Nevertheless, there is so much that is not understood regarding human biology that it would be unwise to draw any definite conclusions about what sorts of effects are being experienced by whom.

One thing here is clear: there is currently a dramatic increase in illness, which goes beyond 30 per cent.

There needs to be a major new environmental factor for such a marked spike to occur.

There is, in fact, only one significant new factor: the sudden explosion in wireless communications technology, which began in Australia approximately 15 years ago.

This report draws a link between current health trends and the research into adverse health effects of EMR. Whilst not all research shows the same results, it appears that the numerous positive studies are reflected in these health issues.

> **"It is clear from my reading of the scientific literature and experiments which I have conducted that there is the strong possibility that biological effects may be induced by long-term exposure to low levels of microwaves and radiofrequency fields." Dr Peter French, St Vincent's Hospital, Sydney, 1997**

For decades now, the medical fraternity has been greatly concerned by the huge incidence of literally un-explained cancers in our population. The explosion of microwave radiation as emitted by communications infrastructure is relatively new, with millions of antennas and satellites irradiating the global population 24 hours a day, 52 weeks a year for the past 15 years. As well as all this, most people spend many hours each day sitting in front of a computer.

Most people don't think about the fact that these frequencies that are being sent all around the planet, somehow magically finding their way to our phones, TVs and radios without even touching us. But the human body has its own delicate and sensitive electrical system, which is easily affected by the many electromagnetic frequencies we are surrounded by and which penetrate our bodies daily.

A group of scientists and doctors in Germany presented evidence at a conference in 2002 showing "a dramatic rise in severe and chronic diseases among our patients exposed to RF/MW". These included extreme fluctuations in blood pressure, heart attacks and strokes in increasingly younger people, degenerative brain diseases such as Alzheimer's and epilepsy, leukaemia and brain tumours. They also found a rise in headaches, sleeplessness, tinnitus and other ailments that were able to be correlated with the onset of exposure to communications microwaves (see Appendix C).

In November 2007 new research has shown that autism in children is

caused by exposure to EMR – currently one in 150 children have this condition compared to one in 10,000 children twenty years ago.

> **"I have no doubt in my mind that, at the present time, the greatest polluting element in the earth's environment is the proliferation of electromagnetic fields." Dr Robert O. Becker, Nobel Prize nominee[1]**

The human body, says Dr. G. J. Hyland of the University of Warwick, UK, calls the human body "an electrochemical instrument of exquisite sensitivity," noting that, like a radio, it can be interfered with by incoming radiation.

Therefore it is misguided to think that electromagnetic radiation would not be having a negative effect on public health, and there is an abundance of scientific research to show that this is the case.

As far back as 1994 Australia's CSIRO did a 150 page literature review on the status of health effects from EMR. The report's author, Dr Stan Barnett, said: "whilst researching the scientific database in preparation for this report it has become evident that subtle changes in cell structure and biochemistry have been frequently reported at exposure levels where gross thermal change could not be attributed as a cause."[2]

And from 1996 until he died in 2003, New Zealand physicist and electromagnetic radiation (EMR) meta-analyst, Dr Neil Cherry, studied over 600 researchers worldwide. He found that EMR caused DNA breakages, chromosome aberrations, increased oncogene activity in cells, altered brain activity, altered blood pressure and increased brain cancer at very low levels – much lower than those allowed by the Australian standard. He also found that it impacts on the pineal gland in the brain, resulting in a reduction of melatonin - a vital part of many of the body's biochemical systems, including the mediation of many hormone functions (including the control of weight) and a major scavenger of damaging free radicals.[3]

These findings have not only been replicated many times since, but have proved to be prophetic: cancer, leukaemia, cardiac disease, diabetes, sleep disturbances, dementia, weight gain or loss, weakened immune system, asthma, allergies, arthritis, nausea, memory and concentration problems, neurological conditions, and depression – all on a sharp rise.

Dr Cherry was surprised to find how much published research there is to show that - across the entire EMR spectrum - damage was done to cellular DNA, rendering it genotoxic and therefore likely to be implicated in the formation of tumours and other illnesses.

Since then other scientists have conducted further studies showing similar results. A study published in August 2007 indicates that mobile phone radiation causes cancer in mice[4], and another one – also published in August 2007 in New Scientist by scientists at the Weizmann Institute of Science in Israel - finds that **after only 5 minutes of exposure to radiation one tenth of the power of a mobile phone, rat and human cell chemicals undergo changes. This study is unique in that it demonstrates for the first time a ":detailed molecular mechanism by which electromagnetic radiation from mobile phones induces activation of extracellular-signal-regulated kinase (ERK) cascade and thereby induces transcription and other cellular processes.[5]**

In August 2007 the largest and most comprehensive meta-analysis ever written on EMR concluded "The clear consensus of the BioInitiative group is that the existing public safety limits are inadequate for both Electromagnetic Fields and radiofrequency radiation"[6]

Marshall and Wetherall found an exponential increase in the USA of autism, ADHD, Chronic Fatigue Syndrome, and Alzheimer's since 1984, the year the first commercial cell phone networks started to spread across the USA. These rates increased even further with the switchover from analog (1G) to digital (2G) in the early 1990s.[7]

In 2005 researchers in China found that relatively low-level RF radiation can lead to DNA breaks[8], and in 2004 the REFLEX project, which summarised the work of 12 research groups in seven European countries, reported that RF radiation could increase the number of DNA breaks in exposed cells, as well as activate a stress response – the production of heat-shock proteins. The manager of the project, Franz Adlkofer, said: "…available scientific evidence of such critical events demonstrates the need for intensifying research – precautionary measures seem to be warranted."[9]

Dr Peter French, microbiologist at the department of immunology at St

Vincent's hospital in Sydney, found that mobile phone radiation switched on heat shock proteins:

> "In plain English, the point is that it has been demonstrated by several researchers that increasing the amount of heat shock proteins in cells results in the increased potential for developing tumours, increased stimulation of metastasis or spread of cancers, the direct development of cancer, de novo, and the decreased effectiveness of anti-cancer drugs. Dr Peter French[10]

Cherry also found that microwaves can open the blood brain barrier, allowing damaging chemicals, viruses and bacteria into the brain which could cause problems such as dementia and brain tumours.[11]

His findings continue to be verified by independent scientists and doctors around the world, many of whom are signatories to large scale resolutions such as the Benevento Resolution in 2006 and Salzburg Resolution in 2000, announcing their findings of a connection between adverse health effects and exposure to microwave radiation (See Appendices A and B).

In February 2007 Swedish scientists announced in the *European Journal of Cancer Prevention* that they had observed a connection between the health of the population and population density, suggesting that the two factors having the strongest correlation with decreased health quality were the estimated average power output from mobile phones…and the reported coverage from the global system for mobile communication base stations in each country."[12]

This has been confirmed by German company ECOLOG's report, commissioned by telecommunications company T-Mobil in 2000. The results of this research - leaked to British group HESE in 2006 - have just been translated into English. It found that cancer, DNA damage, chromosome aberrations, changes to enzymes, changes in the brain, interruption of cell cycle and cellular communication, debilitation of the immune system and changes to the central nervous system.

Around a dozen studies were found in 2006 and 2007 demonstrating similar results, including one that found the signal from a mobile phone affecting genes and neurons in both 'on' and 'off' modes,[13] and another found "some evidence of nervous system structural damage after the EMR exposure".[14]

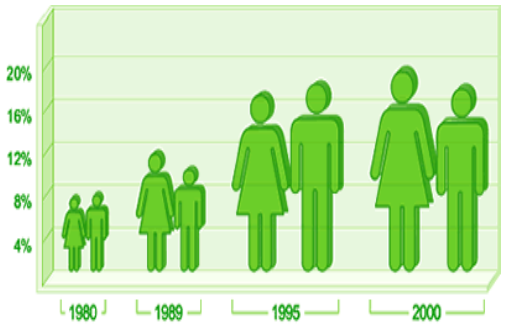
1 Diabetes

According to a trial by the George Institute for International Health over six years to 2007, diabetes is emerging as one of the greatest threats to the health of populations worldwide. More than 600,000 Australians are affected by this condition.

Related to diabetes is obesity, and this has also risen dramatically (see diagram) since the early 90s the world over. It needs to be understood that it has been shown that exposure to EMR at all frequencies alters biochemistry. It is therefore almost impossible to predict how such changes will affect those from different socio-ecnomic or ethnic groups.

Interestingly, researchers in Japan have been able to induce obesity in rats by producing microwave-induced lesions to an area of hypothalamus. They noted a drop in hypothalamic norepinephrine and dopamine and a decrease in adrenal epinephrine – a potential cause of obesity.[15]

The Auditor General reported in 2007 that these conditions just keep on rising. An estimated 90 per cent of new diabetes cases are attributed to weight gain, which according to the Australian Bureau of Statistics is now 52 per cent of all Australians. Since the 1980s the amount of overweight and obese Australian children has more than doubled. It is estimated that at least 60% of Australians aged 18 years and over will be overweight or obese by 2010. Diabetes has risen 77 per cent in Victoria since 2001. The following diagram indicates the sudden rise in obesity from about 1994.



Prevalence of obesity in adults aged 25-64*
Source: AusDiab Study report, 2001.

Magda Havas, Environmental Science Professor at Trent University in Canada, found in 2006 that blood

sugar levels in diabetes rise and fall with an electrical environment.[16] Scientists have also found that dysfunctional mitochondria will interfere with the cellular energy production and can be linked to fatigue - and possibly obesity[17]

"Dr Russell Reiter's book on melatonin lists several illnesses that result from reduced melatonin. The first is arthritis, then diabetes, cancer..." Dr Neil Cherry[18].

2 Cancer

By 2006 there were an estimated 106,000 new cases of cancer diagnosed in Australia, a 34 per cent increase over the past decade. The Australian Institute of Health and Welfare (AIHW) says the number of cancers being diagnosed each year is growing faster than the overall population.[19]

In September 2007 David Whiteman, senior research fellow at the Queensland Institute of Medical Research announced that a rapid rise in oesophagus cancer is linked to obesity. It's a real increase in cancer which you just don't see in epidemiological lifetimes," he said. "It's unprecedented to see a cancer come up so quickly".

Mobile Phone Tower Cancer Clusters

1. In 2002 Tory leader Iain Duncan Smith called for an urgent government probe into the link between mobile phone masts and cancer after it emerged that people living in five of the seven homes surrounding Forest House in Carnarvon Road, South Woodford, which has 16 masts on its roof, have contracted cancer.[20] The… incidence of leukaemia near the South Woodford mast is far higher than would be expected normally, according to the statistics. There was a significant decline in the incidence of all cancers the further residents lived away from the mast.

2. In April 2007 The Sunday Times reported that seven clusters of cancer and other serious illnesses have been discovered around mobile phone towers in the UK, raising concerns over the technology's potential impact on health there.

3. In 2003 Telecom giant Orange has suspended operations at a school phone mast site in Paris after eight cases of cancer were confirmed among children in the district.

4. Near Cardiff in Wales at least eight residents in the parish of St Georges and St Brides have died of cancer in the past five years. In every one of the 10 houses on a residential street close to the Sandy Heath transmitter in

Bedfordshire, there has been a cancer death.[21]

In 2006 17 people around a mobile phone tower in Norfolk County in the US reported symptoms of microwave sickness – including headaches, fatigue, nausea and dizziness since the installation of the tower. The tower is to be removed.[22]

An industry funded study found in 1997 that of the exposed mice, 43% developed cancer, compared to 22% in the control group.[23] This was regarded by biomedical scientists around the world as highly significant. "…it may indicate that in individuals genetically predisposed to certain forms of cancer, the long-term intermittent exposure to RF such as those used by mobile phones may be an important stimulus in the induction of malignancy." Peter French, Principal Scientific Officer, Centre for Immunology, St Vincent's Hospital, Sydney.[24]

In the UK in 1999, analysis conducted for The Sunday Times by Professor Gordon Stewart, one of Britain's leading epidemiologists, shows there may be a significant increase in the risk of cancers, including leukaemia, associated with mobile phone masts.

The study revealed an increased incidence of cancer within up to 7km of masts. Subsequent inquiries have unearthed possible clusters in London, Bedfordshire, south Wales and the Midlands.

People in one area near the mast were found to be 33 per cent more likely to suffer from cancer.

"Public health surveys of people living in the vicinity of cell site (mobile phone) base stations should be being carried out now, and continue progressively over the next two decades. This is because effects such as …cardiac disruption, sleep disturbance, reduced immune system competence, cancers and leukaemia are probable." Dr Neil Cherry"[25]

"When you turn on the body's defence mechanism against disease, which the non-ionising radiation does, and you keep turning it on every day, you down-regulate it and it no longer turns on." Professor Ted Litovitz, 1999[26]

Studies of the sites show high incidences of cancer, brain haemorrhages and high blood pressure within a radius of 400 yards of mobile phone towers.

One of the studies, in Warwickshire, showed a cluster of 31 cancers around a single street. A quarter of the 30 staff at a special school within sight of the 90ft high mast have developed tumours since 2000, while another quarter have suffered significant health problems.

The tower was pulled down by the mobile phone company after the presentation of the evidence by local protesters. While rejecting any links to ill-health, the company admitted the decision was “clearly rare and unusual”.

- A health survey carried out in La Ñora, Murcia, Spain in 2004 around two GSM mobile phone towers showed “statistically significant positive exposure-response associations between the E-field and fatigue, irritability, headaches, nausea, loss of appetite, sleeping disorder, depressive tendency, feeling of discomfort, difficulty in concentration, loss of memory, visual disorder, dizziness and cardiovascular problems.”[27] According to the Mast Sanity group in the UK 47 cancer clusters have been reported around schools in Spain.

- A study instigated by the President of the Federal Agency for Radiation Protection in Germany from 1999 until 2004 found that after five years operation of the mobile phone tower, the relative risk of getting cancer had trebled for the residents of the area in the proximity of the tower compared to the residents outside the area.[28]

- Two studies carried out in 2004 epidemiological studies around transmitters in Israel over many years. Their conclusion was a threefold increase of cancers within a 400 m radius of transmitters, for breast cancer a tenfold increase was found. As a result, two lawsuits were filed for 33 people who lived close to phone towers and consequently contracted cancer and leukaemia in that year. [29]

- In 2006 an Egyptian study found that “Inhabitants living near mobile phone base stations are at risk of developing neuropsychiatric problems and changes in the performance of neurobehavioral functions –

either by facilitation or inhibition".[30]

- In France researchers found that people living within 300 m of a base station suffered from tiredness, headaches, sleep disruption, and within 100 m irritability, depression, loss of memory, dizziness, and loss of libido.[31]

The Nobel Prize winning Irish Doctors Association in 2005 listed 70 research papers showing the dangers from low level microwaves. Dr. Santini listed 20 similar studies, the EM. Radiation Research Trust listed 9 studies, Dr. Blackwell listed 6 similar studies in his report, and finally, four international universities completed the Spanish Study which verified all of the known illnesses.

Dr John Walker, a doctor from Sutton Coldfield, compiled three cancer cluster studies around mobile phone towers from Devon, Lincolnshire, Staffordshire and the West Midlands. He was convinced they showed a potential link between the angle of the beam of radiation emitted from the masts' antennae and illnesses discovered in local populations. [32] Dr Sutton first noticed a high number of specific cancers in the early 1990s. Out of 18 houses in one street eight – ten people were diagnosed with one form of cancer. He said the odds of three such clusters occurring were one in a billion.[33]

The epidemiological figures show that, within 1.4 miles of the Sutton Coldfiled mast, the number of adult leukaemia cases was nearly double what would normally be expected.

- A study published in 2007 by Mina Ha of Dankook University in South Korea found that "children living within 2km of an AM transmitter had more than twice the risk of developing leukaemia, compared to those living more than 20km away." [34]

- Communities living near the Vatican radio transmitter north of Rome have reported high rates of cancer – with twice the usual rate of childhood leukaemia within six kilometres of the radio station. The incidence of both decreased with distance from the antennas.[35]

- In 2000 Australian Dr Bruce Hocking presented the findings of a health study in a 4km zone

surrounding Sydney TV towers. He found that children living within a 4km radius of television towers had a 60% higher incidence of leukaemia than children who lived further from the towers and there was a far greater risk of dying from the disease. Dr Hocking also found a slightly increased rate of adult cancer in the study area than beyond it.[36]

Also showing effects:

Yurekli AI, et al, 2006. *GSM base station electromagnetic radiation and oxidative stress in rats.,* Tubitak-Uekae, EMC TEMPEST Test Centre, Gebze-Kocaeli, Turkey.

Kwee, S., et al, 1998: *Changes in cell proliferation due to environmental non-ionizing radiation* Bioelectrochem Bioenerg; 44 (2): 251 - 255

"…Over 20 studies show that both through reducing melatonin and through enhancing free radical activity, EMR is genotoxic, damaging the DNA and chromosomes, enhancing oncogene expression and transforming cells to neoplastic cells and causing cancer in exposed populations." Dr Neil Cherry[37]

Breast cancer

According to the Australian Bureau of statistics, breast cancer was the most commonly diagnosed new cancer in women in 2001, with prostate cancer in men the most common. [38]

The Australian Institute of Health and Welfare Cancer Monitoring Unit said that the number of women diagnosed with breast cancer has more than doubled in the past 20 years - increasing from 5,318 women in 1983 to 12,027 women in 2002.[39]

In America, the Federal Centre for Disease Control in the US has said that cancer is the leading cause of premature loss of life among American women - and that breast cancer was the leader in that category. According to the Breast Cancer Fund's "State of the Evidence" report, approximately half of all breast cancers are caused by environmental factors, including radiation. [40]

This is directly connected to the role of Melatonin in the body, which has been shown to have anti-cancer properties. For example, adding melatonin to cancer cells in a laboratory dish will cause them to stop growing. Placing the same dish in an electromagnetic field will cause the cells to start

growing again. Research has also shown that night shift work may increase the risk of breast cancer by lowering melatonin levels. At least three studies suggest a link between night-shift work and increased risk of breast cancer.

In Brisbane, Queensland, from 1995 until 2006 14 women working night shift for ABC TV in the same room contracted breast cancer. On 13th July 2007 it was reported that a 15th woman working in the same room had also been diagnosed with breast cancer.

And also in July 2007 a Sydney hospital announced it was investigating a possible cancer cluster after five female staff members were diagnosed with breast cancer within six years. Management at Concord Hospital, in Sydney's west revealed it launched a preliminary investigation in May concerning cancer patterns among staff. Five female workers were diagnosed with the disease between 2001 and 2006.

"These are sufficient to classify a causal relationship between EMR and breast cancer, with melatonin reduction as the biological mechanism." Dr Neil Cherry[41]

In 2003 Norwegian researchers reported an increased risk of beast cancer among female telegraph operators exposed to RF/EMF. Premenopausal women showed an increased risk of oestrogen-receptor-negative tumours. Premenopausal women appear to be at higher risk than postmenopausal women.

A drop in melatonin levels has also been connected with increases in breast cancer[42]

Another Norwegian study also showed a 60 percent increase in breast cancer risk in women of all ages living near high voltage power lines.[43]

Cleary, S., et al, 1990, *Glioma Proliferation Modulated in Vitro by Isothermal Radiofrequency Radiation Exposure, Radiation Research*, Vol. 121, No. 1 (Jan., 1990), pp. 38-45

Male Breast Cancer and Male Breasts

Although breast cancer is rare in men, numerous studies point to a connection between EMR exposure and male breast cancer. A recent literature review on male breast cancer also identifies exposure to EMR as a risk factor.[44]

In 2001 three cases of male beast cancer showed up in the same office. A law suit was filed – the attorney arguing that the cancers were caused,

at least in part, by an electrical vault that was next to the basement office where the men worked. He said that the odds of this happening were a trillion to one.

Another very recent phenomena is the appearance of male breasts. The Sunday Age reported in July 2007 that breast reduction operations on men have sky-rocketed, with approximately a 22 per cent rise over the past 12 months. Whilst hormone residues that get into the waterways are the first thing the mind goes to - one must remember that these have been around for a few decades and cannot in this instance be implicated.

Pollan M, et al, *Breast cancer, occupation, and exposure to electromagnetic fields among Swedish men*. Am J Ind Med 2001, 39 (3): 276-85

Demers, et al 1991, *Occupational Exposure to Electromagnetic Fields and Breast Cancer in Men,* American Journal of Epidemiology Vol. 134, No. 4: 340-347

Brain cancer

Brain cancer is specifically associated with mobile and cordless phone use rather than towers.

Whilst this report is focusing on trends for the past 15 years, it is interesting to note that brain cancer rates were already climbing in the United States among people under the age of 45 by 1990, according to a study published in *The American Journal of Industrial Medicine*.[45] These findings are the first to report a statistically significant increase in new cases of brain tumours among younger people. Dr. Devra Lee Davis, from the University of Washington noted that other researchers had implicated electromagnetic radiation from mobile phones as a possible cause of brain tumours.[46]

Professor Jillian Birch of Manchester University said in 2001 that cancers such as brain tumours and leukaemia are on a sharp rise in children – and that modern living could be to blame.[47]

The number of brain tumour cases in the US and Europe has increased by up to 40% in the past 20 years, according to data released at a medical conference in Italy in 2003.[48]The incidence rate for brain tumours is increasing among people of all ages, but males between 20 and 40 years old are the most affected, according to Dr. Alba Brandes, an

oncologist at the Azienda-Ospedale in Padua. "The latest epidemiological studies indicate that white collar workers--intellectuals and professionals--are among the most affected," he said. "The reason is still unknown, though environmental causes such as cellular phones, computers and exposure to electromagnetic fields cannot be ruled out".

This year the Swiss Federal Agency for Environment issued a report that said: “it has to be generally regarded as possible that intensive long-term use of mobile telephones could to an increased risk of brain tumours.”[49]

In Melbourne in 2006 seven people at the Royal Melbourne Institute of Technology (RMIT) developed brain tumours two floors underneath transmitting antennas. They had been working there for ten years.

- In January 2007 the *International Journal of Cancer* published a study that found a higher incidence of brain tumours on the same side of the head the phone was used after ten or more years of exposure,[50] and also in 2007 a meta-analysis by Swedish researcher Hardell published on the *Occupational Health and Environmental Medicine* website also found that the long term risk of such tumours was two-and-a-half times higher than would normally be expected.[51]

- In 2006 Hardell also found that “for all studied phone types an increased risk for brain tumours, mainly acoustic neuroma and malignant brain tumours.”[52]

- In 2003 another Swedish by Leif Salford found mobile-phone exposure caused brain damage in lab rats. Researchers found damage to neurons in rat brains exposed to radiation from mobile phones, saying radiation from GSM mobile phones, which are prevalent around the world, was associated with leakage in the blood-brain barrier. [53]

- In Qatar, a developing country, scientists found a slight rise in brain tumours between 2004 and 2005[54].

- In Finland researchers showed that using a mobile phone

decreased blood flow in the brain.[55]

- An Italian study found that mobile phones temporarily excite the neurons in the part of the brain closest to the phone.[56]

The Interphone project - a multi-national series of epidemiological studies conducted by Finland's Radiation and Nuclear Safety Authority - tested whether using mobile phones increases the risk of various cancers in the head and neck found that "people who use mobile phones for more than ten years have nearly 40 per cent chance of developing brain tumours on the side of the head against which they hold their phones".[57] The project comprised national studies from 13 different countries, which were coordinated by the International Agency for Research on Cancer (IARC), an agency of the World Health Organisation (WHO). The German team reported a 2.2-fold increase in the incidence of gliomas amongst those who had used a mobile phone for at least ten years.[58] Teams from Denmark, Sweden and the UK have already reported their results, which some observers interpret as indicating a long term risk.

In 2007 officials in Belgium and Germany called for a ban on mobile phone use by children under 16, due to the ongoing evidence of harm. Some doctors in Vienna are displaying warning notices in their surgeries.[59]

Many researchers have also found that mobile phone users reported symptoms of burning or a dull ache in temporal, occipital or auricular areas, headache, concentration problems, discomfort, memory loss, burning skin, tingling and tightness.[60] [61] [62]

Also showing effects:

Eulitz, C, Ullsperger, P, Freude, G, Elbert ,T, 1998: *Mobile phones modulate response patterns of human brain activity*. Neuroreport 9(14):3229-3232.

Szmigelski, S.,1997, *Polish Military Personnel edposed to RF had 2.7 times the average rate of brain Cancer,* Second World Congress for Electricity and Magnetism in Biology and Medicine, Bologna, Italy. *Microwave News,* Jan/Feb 98, p. 10.

"Over 40 studies [show] that cell phone frequencies [mirror] the biological and epidemiological studies for EMR over the past four decades. This includes…increased brain cancer. I predict a significant increase in brain tumours in younger groups than normal from the use of mobiles".[63]

"Symptoms of reduced immune system competence, cardiac problems, especially of the arrhythmic type and cancers, especially brain tumour and leukaemia are probable". [64] Dr Neil Cherry

Prostate and Testicular Cancer

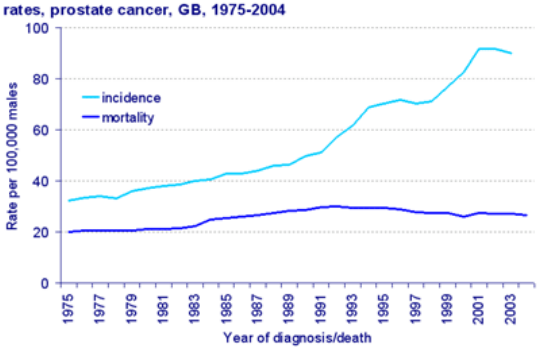
An Australian Institute for health and Welfare report shows that rates of prostate cancer have risen 42% in the past five years, pushing up the number of prostate cancer cases by 50% to an estimated 18,700 in 2006.[65]

In 2003 prostate cancer was named by the AIHW as one of the most common cancers in Australia.

"There is a large and coherent body of evidence of biological mechanisms that support the conclusion of a plausible, logical and causal relationship between EMR exposure and cancer, cardiac, neurological and reproductive health effects." Dr Neil Cherry[66]

And figures from Europe show a dramatic rise in the incidence of prostate cancer from 1993 and then 1999. (See diagram).

Figure 1.4: Age standardised (European) incidence and mortality rates, prostate cancer, GB, 1975-2004



Also showing effects:

Dasdag, S, Ketani, MA, Akdag, Z, Ersay, AR, Sar,i I, Demirtas ,OC, Celik, MS, 1999: *Whole-body microwave exposure emitted by cellular phones and testicular function of rat*s. Urol Res 27(3):219-223.

UPDATE: In October 2007 another cancer cluster of 10 people has been discovered on the top floor of a hospital in Israel.

3 *Heart Disease and High Blood Pressure*

Globally, high blood pressure was one of the top three leading modifiable risk factors of disease in 2005, along with tobacco and alcohol. New research has now shown that high blood pressure now causes up to 66% of cardiovascular diseases, such as heart disease and stroke in the Asia-Pacific Region, according to The George Institute for International Health.[67]

Heart disease, heart attacks, heart irregularities, strokes and high blood pressure are all rising sharply.

In Australia, the Baker Heart Research Institute's Professor Simon Stewart in June 2007 sent medical staff into shopping centres around the country to measure the blood pressure of 15,000 Australians. The preliminary findings were that 42 per cent of Australians now have high blood pressure - up from 35 per cent in 2000. Full results of the study are expected later in the year.

In the US, almost a third of all adults suffer from high blood pressure, a dramatic rise over the past decade. A recent report in the *Hypertension: Journal of the American Heart Association* indicates some 65 million adults were diagnosed with high blood pressure in 2004, versus 50 million 10 years ago. (New York Times, June 2004).

Also in 2004 a health survey from 1988 to 2000 by the US Heart, Lung and Blood Institute and published in *The Journal of the American Medical Association* said they were struggling to control the growing rate of childhood obesity in the United States, with children and adolescents' blood pressure levels climbing sharply.
A survey done by the British Heart Foundation for the UK's National Health Service in 2002 claimed the number of people living with heart failure has risen by 15 per cent.[68]

A mechanism for this was proposed by Professor Russell Reiter, one of the world's leading researchers on melatonin, who summarises its role as being vital for healthy sleep, reducing

cholesterol and blood pressure, and therefore the incidence of strokes. [69]

High blood pressure was also found amongst those living around phone towers in the UK[70]

Also showing effects:

Parazzini M, et al, 2006: *900 MHz mobile phone radiation and heart rate variability,* Bioelectromagnetics

Bortkiewicz, A., et al, 1995: *Dysregulation of autonomic control of cardiac function in workers at AM broadcasting stations (0.738-1.503 MHz).* Electro- and Magnetobiology 14(3): 177-191.

Vangelova, K et al, 2006. *RF exposure adversely affected cardiovascular system*, Int J Hyg Environ Health 209(2):133-8.

"In 1998 Braune et al found increases blood pressure as a result of exposure to EMR"[71]

"There is a large and coherent body of evidence of biological mechanisms that support the conclusion of a plausible, logical and causal relationship between EMR exposure and cancer, cardiac, neurological and reproductive health effects." Dr Neil Cherry[72]

4 Asthma and Allergies

A report in July 2007 published in the *Medical Journal of Australia* claimed that young children are being admitted into hospital with severe food allergies at five times the rate of a decade ago. The report's author, Professor Raymond Mullins who also works as a practitioner in Canberra, noted a 12-fold increase in childhood allergies in the last couple of years.[73]

By 2001 there had been a 25 per cent rise in asthma in Sydney, with an increase in the death rate by 5 per cent.

Another report by the Australian Institute of Health and Welfare in 2005 found that asthma is the most common chronic disease among children up to the age of 14.[74]

The National Jewish Medical and Research Centre in Denver reported that after re-unification, West Germans were found to be far more allergic than their eastern counterparts, even though industrial pollution was so much higher. Many researchers and scientists were - and still are - puzzled by this fact, but what they failed to examine is the fact that East Germany had much stricter regulations regarding ambient radiation levels than West Germany. Since East Germany adopted West Germany's standards, allergies in former East Germany have since reached par with the levels of former West Germany.

In 1997 microbiologist Dr Peter French of St Vincent's Hospital in Sydney was conducting experiments on mast cells. What he discovered was that the production of histamine – the chemical responsible for allergic reactions - and which is involved in bronchial spasm, is nearly doubled after exposure to mobile phone frequencies. He speculated that this could result in an increase in illnesses such as asthma and allergies in the years to come.[75]

- Low-frequency electromagnetic fields (ELFs) have been shown to increase the number of mast cells in the body.[76]

- Microwaves have also been found to increase immunoglobulin antibodies in

the body which are responsible for triggering an allergic reaction to a particular substance or protein.[77]

Dr. John Holt … pointed out that mobile phone frequencies double the amount of histamines and thus cause asthma and allergies.[78]

5 Alzheimer's Disease

Someone develops Alzheimer's every 72 seconds, according to America's 2007 Alzheimer's Association report. The Alzheimer's Association today reports that in 2007 there are now more than 5 million people in the United States living with Alzheimer's disease, which is a 10 percent increase from the previous prevalence nationwide estimate of 4.5 million.

15 years ago Alzheimer's disease was considered a rare condition – what has happened in the interim?

The American Diabetes Association has also warned that today's mushrooming diabetes epidemic will become tomorrow's Alzheimer's epidemic in an address to the Association's 67th Annual Scientific Sessions, held June 2007 in Chicago.

And in the UK, experts from the Alzheimer's Society have predicted this year that rising rates of obesity will lead to dramatic increases in the number of people with Alzheimer's disease. Obesity, smoking, high blood pressure and cholesterol all increase the risk of dementia because they can lead to damage of the blood vessels in the brain, which in turn leads to the death of brain cells.[79]

In Australia, $1,000,000 per year is spent on Alzheimer's disease. Whilst this is also a picture of the ageing population – there is nevertheless no real reason for this to result in such a high rate of dementia.

In June 2007 neurologist Sudha Seshadri of Boston University found that diabetes speeds — and may even cause — Alzheimer's disease. The central problem in diabetes is the body's inability to regulate blood sugar through the hormone insulin.[80]

Exposure to electromagnetic radiation has been shown to effect an abnormal drop in the levels of the neurotransmitter acetylcholine.[81] A drop in the levels of this neurotransmitter has been linked to a number of neurological and neuromuscular disorders - including Alzheimer's disease.

Several studies by Salford and his colleagues demonstrated the permeability of the blood brain barrier[82] [83], and in 2003 another study showed that mobile phones damage key brain cells and could trigger the early onset of Alzheimer's disease. They found that radiation from mobile phone handsets damages areas of the brain associated with learning, memory and movement. “We have good reason to believe that what happens in rat's brains also happens in humans”, he said.[84]

“Melatonin plays a vital free radical scavenging role in the brain where, because it is high in iron, has a high production rate of hydroxyl radicals (OH·). Free radical damage is now known to play a formative role in most brain disorders, including Alzheimer’s disease, multiple sclerosis and Parkinson’s disease.” Dr Neil Cherry.

“EM fields alter the levels of protective proteins…. these protective proteins are related to Alzheimer’s and that a reduction in protective proteins means a greater probability of Alzheimer’s. This is a theory which we have not tested, but there is data out there that appears to relate the incidence of Alzheimer’s to exposure to electromagnetic fields.” Professor Ted Litovitz[85]

6 Sleep disturbance

There are many causes of sleeplessness – but there is little doubt that sleep problems are on the rise.

In increasingly sophisticated economies in the West this could lead to the creation of "zombie nations", reported the UK Telegraph in June 2007. Symptoms of deprivation range from weight gain to irritability, hallucinations and depression, Professor Russell Foster, of Oxford University, told the Cheltenham Science Festival.

A recent study of 2000 women by Britain's National Sleep Foundation found that 70 per cent of the women experienced regular ongoing sleep problems, with men only 52 per cent.

And in the US in 2006 42 million people (one in five) took medication to help them sleep – up 60 per cent since 2000.

A study conducted around the Schwarzenburg radio and TV tower in Switzerland in the mid 1990s showed that the local population suffered from insomnia and other neurological problems such as nervousness, weakness, tiredness, restlessness and aching limbs,[86] whilst the tower was operating, but resumed normal sleeping patterns when it was switched off. Cherry explained that this was due to reduced melatonin levels caused by exposure to the signal.

- Hutter et al[87] found that people living near mobile phone towers suffered from headaches, tiredness, sleep disturbance, loss of memory, dizziness, and difficulty in concentrating.

- In Oberlaindern in Germany in 2003 a radio tower was closed down due to complaints from the locals, who complained the signal was keeping them awake. [88]

"... They were sampling melatonin before and after the tower was permanently turned off and found a significant rise in melatonin after the tower was turned off. They found a dose response increase in sleep disturbance. When the tower was turned off experimentally, the sleep quality improved and melatonin rose in animals." Dr Neil Cherry[89]

- In addition, resting EEG patterns have shown a shortening of REM sleep and a strengthening of alpha waves. In 1996, researchers K. Mann and J. Röschke in Neuropsychobiology, pointed out that "REM sleep plays a special physiological role for information processing in the brain"[90]

- Recent studies from Spain, France and the UK around mobile phone towers found that sleep problems were among the symptoms experienced.

Other neurological effects indicated by scientific research includes anxiety and depression, both of which are also on a sharp rise; nevertheless due to the prevalence of mood-altering drugs and other environmental factors these problems are obviously too complex to mention in the context of only one potential cause.

Nevertheless, a 2004 Spanish study around a mobile phone tower found that depressive tendencies were among the symptoms experienced.

Fritzer G, J et al, 2007: *Effects of short- and long-term pulsed radiofrequency electromagnetic fields on night sleep and cognitive functions in healthy subjects,* Biolelectromagnetics;28:316-325.

Vecchio, F et al, 2007, *Mobile phones change brain wave patterns*, Eur J Neurosci 25(6):1908-1913

Borbely, A et al, 1999: *Pulsed high-frequency electromagnetic field affects human sleep and sleep electroencephalogram*. Neurosci Lett 275(3):207-210.

7 *Arthritis*

More children are suffering from arthritis than ever before. Unpublished data released in June, 2007 from a study conducted jointly by the American College of Rheumatology and the American Academy of Paediatrics at the behest of the Centres for Disease Control and Prevention states that nearly 300,000 children in the United States have significant arthritis. The Bloorview MacMillan Children's Centre in Toronto states that this number is “probably an underestimate” since it only takes into account those children who have actually been diagnosed with arthritis.

An Australian study confirms that the rate of childhood arthritis is four to six times higher than rates typically quoted.

Data released in the *Medical Journal of Australia* showed that there was a jump of 46 per cent in arthritis cases from 1990 to 1995. “There is a clear indication of a dramatic growth in the prevalence of arthritis in people aged 24 and over”. Dr Kenneth Muirden of the Arthritis Foundation of Australia said.

There are now six million arthritis sufferers in Australia.

And in Australia, 93,000 West Australian children aged between five and 15 are estimated to be overweight or obese, putting them at risk of not just heart disease as they get older but also the crippling bone disease arthritis, reported a West Australian Health Department survey in June 2007.

“Multiple observations of melatonin reduction in EMR-exposed populations mean that EMR exposure increases the incidence of arthritis, diabetes, cancer, reproductive, neurological and cardiac disease and or death, as identified by Reiter and Robinson.”
Dr Neil Cherry[91]

8 *Memory Loss and Concentration*

This is a common experience – it hardly needs to be said that we all experience memory loss, no matter how old we are. Scientists have found on numerous occasions that mobile phones may cause long-term memory loss.

In 2000 Dr. Henry Lai, a research professor in bioengineering at the University of Washington, has linked long-term memory loss and diminished navigating skills in rats with the microwaves emitted by mobile phones.

"This is the first study that shows that radio frequencies can affect long-term memory functions in rats," Lai said. Previous studies have focused mainly on short-term memory.

Lai placed 100 rats in a large tank of water and taught them to swim to a platform in the middle of the tank. After swimming to the platform six times, the rats were easily able to find their way to it.

Next, half of the rats were exposed to microwaves similar to those emitted by mobile phones. All of the exposed rats forgot the way. The unexposed rats, once again, had no problem swimming to the platform.

"Then we took the platform away," Lai said. "The normal rats went to the location, but the irradiated rats, on the other hand, swam around randomly, and did not approach the former location of the platform.[92]

- In 2006 researchers in Israel found an effect from mobile phone base station radiation on cognitive function. They exposed 36 volunteers ot the station such that the right or the left side of the brain was exposed. At the same time, subjects performed tests to activate either the left or right side of the brain. They showed that exposure to the left side of the brain slowed responses in three of the four tasks.[93]

- Also in 2006 in China a research team exposed rats to a GSM mobile phone signal for 15 minutes a day for eight days. Results showed that exposure reduced synaptic

activity and the numbers of excitory synapses in the experiment.[94]

- In Greece in 2006 it was shown that phone radiation affects cognitive functions in humans.[95]

- Another study on cerebral blood flow was conducted where it was observed by the researchers that 16 volunteers experienced a short-term decrease in cerebral blood flow[96]

- Recent studies from Spain, France and the UK around mobile phone towers found that memory and concentration were affected by exposure.

Also showing effects:

Krause et al, 2007: *Effects of pulsed and continuous wave 902 MHz mobile phone exposure on brain oscillatory activity during cognitive processing,* Bioelectromagnetics 2007;28:296-308.

Huber R et al, 2005, *Exposure to pulse-modulated radio frequency electromagnetic fields affects regional blood flow*. Eur J Neurosci; 21:1000-6

"Mild et al. (1998) show significant dose-response relationships for cell phone usage and headaches, dizziness, memory loss, discomfort, fatigue, and loss of concentration." Dr Neil Cherry[97]

9 *Male Infertility*

Male fertility has been declining for over 20 years. Whilst oestrogenic chemicals are clearly a factor here, many studies have indicated that EMR is also a likely variable.

- An American study from the Reproductive Centre in Cleveland in 2006 shows that men who used a mobile phone had a 25 per cent lower sperm count than men who never used a mobile. Sperm counts in the US have plummeted 29 per cent, attributed by the study's authors to mobile phone emissions.[98]

- In 1997 Magras & Xenos placed mice at various locations in relation to an RF tower in Greece in order to monitor their fertility over several generations. The 'low' exposure group became infertile after five generations, and the 'high' exposure group after three generations. [99]

- Dr George Carlo of the US led a six-year, US$28 million research program for the Wireless Telecommunications Industry in the US. It found that the cumulative DNA damage caused by RF exposure is carried forward to future generations.

"Reduced melatonin leads to increased DNA strand breaks and chromosome aberrations. These in turn lead to cancer and reproductive effects." Dr Neil Cherry.

Conclusion

Due to the fact that EMR alters biochemistry, there can be no limit to the possible biological effects, adverse or otherwise, as a result of exposure. This remains the same with any type of chemical pollution, but it is particularly the case with the volatile and poorly understood nature of radiant electricity.

However to look only at trying to reverse such health trends is like trying to rid the bathroom floor of water without first looking to see where the water is coming from, and turning off the tap.

Communications frequencies use so-called non-thermal levels of microwave radiation – i.e. they do not directly heat living tissue in the same way a microwave oven does. Well-known scientist and author Robert Becker said in 1985, "…when non-thermal dangers were originally documented in America, military and industrial spokespeople refused to acknowledge them, lying to Congress and the public. Many scientists who naturally wanted to continue working went along with the charade."

Dr. George Carlo uses the analogy of putting a frog in water. If you put a frog in boiling water, it will jump out. However, if you put a frog in cold water and gradually heat the water, you can cook the frog because the frog's body will adjust to the slight changes in temperature and it will not notice it is being cooked. Well, the same thing might be happening to an unsuspecting public.

It has taken 50 years to finally take seriously the threat of global warming. David Suzuki said in the 1970s that we only had 40 years left if development continued at the same pace. He was right - but governments did not act, and now we are paying the price. It has been same with tobacco.

Whilst not proposing that the wireless world should be switched off tomorrow, I believe that we must heed independent scientists on the dangers of non-thermal radiation before populations are further damaged.

There are problems in this area of research due to the volatile and invisible nature of what is being examined - however this is no excuse to bury our heads in the sand.

A study reported in the media on 16th July 2007 stated that people are so dependent upon their mobiles that they could not in any way envisage having to live without them. This, though, is an illusion, for there was no demand for this technology prior to its creation.

"I have found more than 30 studies showing chromosome damage in people exposed to radiofrequency microwave radiation. This is far more than we have for benzine, which is a carcinogen." Dr Neil Cherry[100]

Groups in the UK and Europe have suggested lowering the exposure limits or using more fibre optic cabling, and by siting antennas away from residential areas and schools.

It is extraordinary that in Australia telecommunications carriers can still install antennas on roofs of shops, churches, schools and other public buildings without permission from owners, local councils, or those nearby, in spite of regular protests.

This technology has been rolled out the world over without any prior warning or any recourse to protest. There were no regulations for the testing of the emissions, in spite of the known dangers. Communities were caught by surprise, with no time to gather information about this new pollutant.

Nevertheless in Europe and the US wireless-free zones are now being created, along with materials and buildings as a shield against EMR. For example, a building now exists in Budapest with the sole aim of shielding its occupants from antennas, and in Canada officials from the Slocan Valley Economic Development Commission are claiming that keeping the valley mobile-free will draw in tourists and new residents.[101]

"The problems are going to increase unless a determined effort is made to only install sites that produce extremely low mean residential exposures - somewhat less than 0.01uW/cm2." Dr Neil Cherry, 2001.

The human race has evolved against a background of very low level natural radiation - about 8Hz. The current artificial radiation is now billions of times higher than when our grandparents lived. "This pulsing is in

the frequency range of our brain waves and can cause them to speed up or slow down, changing our level of consciousness, as has been demonstrated by electroencephalograms" (EEG).[102]

If the effects showing up now after only 15 years are anything to go by - and if levels continue to increase as they are bound to do with the further development of wireless technology - what sort of effects on the human being can we expect in future years? Research is beginning to indicate that there may be no safe threshold for these exposures, just like for x-rays….and if that's the case, we are in trouble because non-ionising radiation is everywhere and growing exponentially.

In view of current data, it is not hard to envisage worldwide, irreversible damage on all levels – including those of a more subtle nature as indicated by the Egyptian study - if the issue is not taken more seriously by governments. There are also indications that EMR may be contributing to global warming through the atmospheric agitation of hydrogen molecules in the upper atmosphere and ionosphere.[103]

I have only presented the studies indicating adverse health effects from EMR that relate to publicised health trends – leaving out many of the problems that have been documented - either anecdotally or as epidemiological evidence – such as Electrosensitivity, hearing loss, ADHD, autism, violence and epilepsy.

However there are studies that indicate that bacteria growth is affected by microwave radiation. Is there a connection between this and the huge rise in infection rates and bacterial illness?[104] Other studies indicate that microwave radiation can also cause abnormalities in the T-lymphocyte ratio, which lead to an increased susceptibility to viral, fungal, and bacterial infections.[105]

"All truth passes through three stages. First it is ridiculed. Second, it is violently opposed. Third, it is accepted as being self-evident." Schopenhauer.

Appendix A

Benevento Resolution

The International Commission for Electromagnetic Safety (ICEMS) held an international conference entitled *"The Precautionary EMF Approach: Rationale, Legislation and Implementation"*, hosted by the City of Benevento, Italy, on February 22, 23 & 24, 2006. The meeting was dedicated to W. Ross Adey, M.D. (1922-2004). The scientists at the conference endorsed and extended the 2002 Catania Resolution and resolved that:

More evidence has accumulated suggesting that there are adverse health effects from occupational and public exposures to electric, magnetic and electromagnetic fields, or EMF[1], at current exposure levels. What is needed, but not yet realised, is a comprehensive, independent and transparent examination of the evidence pointing to this emerging, potential public health issue.

Resources for such an assessment are grossly inadequate despite the explosive growth of technologies for wireless communications as well as the huge ongoing investment in power transmission.

There is evidence that present sources of funding bias the analysis and interpretation of research findings towards rejection of evidence of possible public health risks.

Arguments that weak (low intensity) EMF cannot affect biological systems do not represent the current spectrum of scientific opinion.

Based on our review of the science, biological effects can occur from exposures to both extremely low frequency fields (ELF EMF) and radiation frequency fields (RF EMF). Epidemiological and *in vivo* as well as *in vitro* experimental evidence demonstrates that exposure to some ELF EMF can increase cancer risk in children and induce other health problems in both children and adults. Further, there is accumulating epidemiological evidence indicating an increased brain tumour risk from long term use of mobile phones, the first RF EMF that has started to be comprehensively studied. Epidemiological and laboratory studies that show increased risks for cancers and other diseases from occupational exposures to EMF

cannot be ignored. Laboratory studies on cancers and other diseases have reported that hypersensitivity to EMF may be due in part to a genetic predisposition.

We encourage governments to adopt a framework of guidelines for public and occupational EMF exposure that reflect the Precautionary Principle[2] -- as some nations have already done. Precautionary strategies should be based on design and performance standards and may not necessarily define numerical thresholds because such thresholds may erroneously be interpreted as levels below which no adverse effect can occur. These strategies should include:

6.1 Promote alternatives to wireless communication systems, e.g., use of fibre optics and coaxial cables; design cellular phones that meet safer performance specifications, including radiating away from the head; preserve existing land line phone networks; place power lines underground in the vicinity of populated areas, only siting them in residential neighbourhoods as a last resort;

6.2 Inform the population of the potential risks of cell phone and cordless phone use. Advise consumers to limit wireless calls and use a land line for long conversations.

6.3 Limit cell phone and cordless phone use by young children and teenagers to the lowest possible level and urgently ban telecom companies from marketing to them.

6.4 Require manufacturers to supply hands-free kits (via speaker phones or ear phones), with each cell phone and cordless phone.

6.5 Protect workers from EMF generating equipment, through access restrictions and EMF shielding of both individuals and physical structures.

6.6 Plan communications antenna and tower locations to minimize human exposure. Register mobile phone base stations with local planning agencies and use computer mapping technology to inform the public on possible exposures. Proposals for city-wide wireless access systems (e.g. Wi-Fi, WIMAX, broadband over cable or power-line or equivalent technologies) should require public review of potential EMF exposure and, if installed, municipalities should ensure this information is available to all and updated on a timely basis.

6.7 Designate wireless-free zones in cities, in public buildings (schools, hospitals, residential areas) and, on public transit, to permit access by persons who are hypersensitive to EMF.

ICEMS[3] is willing to assist authorities in the development of an EMF research agenda. ICEMS encourages the development of clinical and epidemiological protocols for investigations of geographical clusters of persons with reported allergic reactions and other diseases or sensitivities to EMF, and document the effectiveness of preventive interventions. ICEMS encourages scientific collaboration and reviews of research findings.

The Precautionary Principle states when there are indications of possible adverse effects, though they remain uncertain, the risks from doing nothing may be far greater than the risks of taking action to control these exposures. The Precautionary Principle shifts the burden of proof from those suspecting a risk to those who discount it.
http://www.icems.eu/benevento_resolution.htm - _ftnref3#_ftnref33 International Commission for the Electromagnetic Safety.

We, the undersigned scientists, agree to assist in the promotion of EMF research and the development of strategies to protect public health through the wise application of the precautionary principle.

Signed:

1. Fiorella Belpoggi, European Foundation for Oncology & Environmental Sciences, B.Ramazzini, Bologna, Italy
2. Carl F. Blackman, President, Bioelectromagnetics Society (1990-91), Raleigh, NC, USA
3. Martin Blank, Department of Physiology, Columbia University, New York, USA
4. Natalia Bobkova, Institute of Cell Biophysics, Pushchino, Moscow Region
5. Francesco Boella, National Inst. Prevention & Worker Safety, Venice, Italy
6. Zhaojin Cao, National Institute Environmental Health, Chinese Centre for Disease Control, China
7. Sandro D'Allessandro, Physician, Mayor of Benevento, Italy, (2001-2006)

8. Enrico D'Emilia, National Institute for Prevention and Worker Safety, Monteporzio, Italy
9. Emilio Del Giuduice, National Institute for Nuclear Physics, Milan, Italy
10. Antonella De Ninno,Italian National Agency For Energy, Environment & Technology, Frascati, Italy
11. Alvaro A. De Salles, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil
12. Livio Giuliani,East Veneto & South Triol, National Inst. Prevention & Worker Safety, Camerino University
13. Yury Grigoryev, Institute of Biophysics; Chairman, Russian National Committee NIERP
14. Settimo Grimaldi, Inst. Neurobiology & Molecular Medicine, National Research, Rome, Italy
15. Lennart Hardell, Department of Oncology, University Hospital, Orebro, Sweden
16. Magda Havas, Environmental & Resource Studies, Trent University, Ontario, Canada
17. Gerard Hyland, Warwick University, UK; International Inst. Biophysics, Germany; EM Radiation Trust, UK
18. Olle Johansson,Experimental Dermatology Unit, Neuroscience Department, Karolinska Institute, Sweden
19. Michael Kundi, Head, Institute Environmental Health, Medical University of Vienna, Austria
20. Henry C. Lai, Department of Bioengineering, University of Washington, Seattle, USA
21. Mario Ledda, Inst. Neurobiology & Molecular Medicine, National Council for Research, Rome, Italy
22. Yi-Ping Lin, Centre of Health Risk Assessment & Policy, National Taiwan University, Taiwan
23. Antonella Lisi, Inst. Neurobiology & Molecular Medicine, National Research Council, Rome, Italy
24. Fiorenzo Marinelli, Institute of Immunocytology, National Research Council, Bologna, Italy
25. Elihu Richter, Head, Occupational & Environmental Medicine, Hebrew University-Hadassah, Israel

26. Emanuela Rosola, Inst. Neurobiology & Molecular Medicine, National Research Council, Rome, Italy
27. Leif Salford, Chairman, Department of Neurosurgery, Lund University, Sweden
28. Nesrin Seyhan, Head, Department of Biophysics; Director, Gazi NIRP Centre, Ankara, Turkey
29. Morando Soffritti, Scientific Director, European Foundation for Oncology & Environmental Sciences, B. Ramazzini, Bologna, Italy
30. Stanislaw Szmigielski, Military Institute of Hygiene and Epidemiology, Warsaw, Poland
31. Mikhail Zhadin, Institute of Cell Biophysics, Pushchino, Moscow Region.

Date of Release: September 19, 2006. For more information, contact Elizabeth Kelley, Managing Secretariat, International Commission For Electromagnetic Safety (ICEMS), Montepulciano, Italy. Email: info@icems.eu.

Appendix B

Salzburg Resolution on Mobile Telecommunication Base Stations
International Conference on Cell Tower Siting

Salzburg, June 7-8, 2000

www.land-sbg.gv.at/celltower

1. It is recommended that development rights for the erection and for operation of a base station should be subject to a permission procedure. The protocol should include the following aspects:

    - Information ahead and active involvement of the local public
    - Inspection of alternative locations for the siting
    - Protection of health and wellbeing
    - Considerations on conservation of land- and townscape
    - Computation and measurement of exposure
    - Considerations on existing sources of HF-EMF exposure
    - Inspection and monitoring after installation.

1. It is recommended that a national database be set up on a governmental level giving details of all base stations and their emissions.
2. It is recommended for existing and new base stations to exploit all technical possibilities to ensure exposure is as low as achievable (ALATA-principle) and that new base stations are planned to guarantee that the exposure at places where people spend longer periods of time is as low as possible, but within the strict public health guidelines.
3. Presently the assessment of biological effects of exposures from base stations in the low-dose range is difficult but indispensable for protection of public health. There is at present evidence of no threshold for adverse health effects.

Recommendations of specific exposure limits are prone to considerable uncertainties and should be considered preliminary. For the total of all high frequency irradiation a limit value of 100 mW/m² (10 µW/cm²) is recommended.

For preventive public health protection a preliminary guideline level for the sum total of exposures from all ELF pulse modulated high-frequency facilities such as GSM base stations of 1 mW/m² (0.1 µW/cm²) is recommended.

Disclaimer: The Resolution represents the personal opinion of the undersigning scientist and public health specialist and not that of the organisation they are affiliated to.

Dr. Ekkehardt Altpeter	Inst. for Social- and Preventive Medicine, University of Bern	Bern, Switzerland
Dr. Carl Blackman	US Environmental Protection Agency	Research Triangle Park, North Carolina, USA
Dr. Neil Cherry	Lincoln University Christchurch	Christchurch, New Zealand
Prof. Dr. Huai Chiang	Zhejiang University School of Medicine Microwave Lab	Hangzhou, China
Dr. Bill P. Curry	EM SciTek Consulting Co.	Glen Ellyn, Illinois, USA
Prof. Dr. Livio Giuliani[1]	National Institute of Occupational Safety and Prevention (ISPESL)	Rome, Italy
Prof. Dr. Yuri Grigoriev	Centre of Electromagnetic Safety, Institute of Biophysics	Moscow, Russia
Dr. Helene Irvine	Greater Glasgow Health Board, Dept. of Public Health	Glasgow, Scotland, UK
Dr. Christoph König	Federal State of Salzburg, Public Health Dept., Environmental Health	Salzburg, Austria
Prof. Dr. Michael Kundi	University of Vienna, Inst. for Environmental Health	Vienna, Austria
Ronald Macfarlane	Health Promotion and Environmental Protection Office, Toronto Public Health	Toronto, Canada
Dr. Malcolm MacGarvin	modus vivendi, Consultant for the European Environment Agency	Glenlivet, Scotland, UK
Dr. Fiorenzo Marinelli[1]	Ist. di Citomorfologia C.N.R.	Bologna, Italy
Prof. Dr. Wilhelm Mosgöller	University of Vienna, Inst. for Cancer Research	Vienna, Austria
Dr. Gerd Oberfeld	Federal State of Salzburg, Public Health Dept., Environmental Health	Salzburg, Austria

Dr. Colin Ramsay	Scottish Centre for Infection and Environmental Health (SCIEH)	Glasgow, Scotland, UK
MA Cindy Sage	Sage Associates	Santa Barbara, California, USA
Dr. Louis Slesin	Microwave News	New York ,USA
Prof. Dr. Stan Szmigielski[1]	Department of Microwave Safety, Military Institute of Hygiene and Epidemiology	Warsaw, Poland

1) This preliminary guideline level of 1 mW/m² (0.1 µW/cm²) is, by the participants marked with a ([1]), understood as an operational level for one facility (e.g. a cell tower).

Appendix C

Interdisziplina re Gesellschaft fur Umweltmedizin e. V.
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IGUMED ƒ Interdisziplina re Gesellschaft fur Umweltmedizin eV
9. October 2002

Freiburger Appeal

Out of great concern for the health of our fellow human beings do we - as established physicians of all fields, especially that of environmental medicine - turn to the medical establishment and those in public health and political domains, as well as to the public.

We have observed, in recent years, a dramatic rise in severe and chronic diseases among our patients, especially:

- Learning, concentration, and behavioural disorders (e.g. attention deficit disorder, ADD)
- Extreme fluctuations in blood pressure, ever harder to influence with medications
- Heart rhythm disorders
- Heart attacks and strokes among an increasingly younger population
- Brain-degenerative diseases (e.g. Alzheimer's) and epilepsy
- Cancerous afflictions: leukaemia, brain tumours

Moreover, we have observed an ever-increasing occurrence of various disorders, often misdiagnosed in patients as psychosomatic:

- Headaches, migraines
- Chronic exhaustion

- Inner agitation
- Sleeplessness, daytime sleepiness
- Tinnitus
- Susceptibility to infection
- Nervous and connective tissue pains, for which the usual causes do not explain even the most conspicuous symptoms.

Since the living environment and lifestyles of our patients are familiar to us, we can see, especially after carefully-directed inquiry, a clear temporal and spatial correlation between the appearance of disease and exposure to pulsed high -frequency microwave radiation (HFMR), such as:

- Installation of a mobile telephone sending station in the near vicinity
- Intensive mobile telephone use
- Installation of a digital cordless (DECT) telephone at home or in the neighbourhood

We can no longer believe this to be purely coincidence, for:

Too often do we observe a marked concentration of particular illnesses in correspondingly HFMR-polluted areas or apartments;

Too often does a long-term disease or affliction improve or disappear in a relatively short time after reduction or elimination of HFMR pollution in the patient's environment;

Too often are our observations confirmed by on-site measurements of HFMR of unusual intensity.

On the basis of our daily experiences, we hold the current mobile communications technology (introduced in 1992 and since then globally extensive) and cordless digital telephones (DECT standard) to be among the fundamental triggers for this fatal development.

One can no longer evade these pulsed microwaves. They heighten the risk of already-present chemical/physical influences, stress the body's immune system, and can bring the body's still-functioning regulatory mechanisms to a halt. Pregnant women, children, adolescents, elderly and sick people are especially at risk.

Our therapeutic efforts to restore health are becoming increasingly less effective: the unimpeded and continuous penetration of radiation into living and working areas , particularly bedrooms, an essential place for relaxation, regeneration and healing, causes uninterrupted stress and prevents the patient's thorough recovery.

In the face of this disquieting development, we feel obliged to inform the public of our observations, especially since hearing that the German courts regard any danger from mobile telephone radiation as "purely hypothetical" (see the decisions of the constitutional court in Carlsruhe and the administrative court in Mannheim, Spring 2002).

What we experience in the daily reality of our medical practice is anything but hypothetical! We see the rising number of chronically sick patients also as the result of an irresponsible "safety limits policy", which fails to take the protection of the public from the short- and long-term effects of mobile telephone radiation as its criterion for action. Instead, it submits to the dictates of a technology already long recognised as dangerous. For us, this is the beginning of a very serious development through which the health of many people is being threatened.

We will no longer be made to wait upon further unreal research results - which in our experience are often influenced by the communications industry, while evidential studies go on being ignored. We find it to be of urgent necessity that we act now!

Above all, we are, as doctors, the advocates for our patients. In the interest of all those concerned, whose basic right to life and freedom from bodily harm is currently being put at stake, we appeal to those in the spheres of politics and public health. Please support the following demands with your influence:

New health-friendly communications techniques, given independent risk assessments before their introduction and, as immediate measures and transitional steps:

Stricter safety limits and major reduction of sender output and HFMR pollution on a

justifiable scale, especially in areas of sleep and convalescence.

A say on the part of local citizens and communities regarding the placing of antennae (which in a democracy should be taken for granted);

Education of the public, especially of mobile telephone users, regarding the health risks of electromagnetic fields;

Ban on mobile telephone use by small children, and restrictions on use by adolescents;

Ban on mobile telephone use and digital cordless (DECT) telephones in preschools, schools, hospitals, nursing homes, events halls, public buildings and vehicles (as with the ban on smoking);

Mobile telephone and HFMR-free zones (as with auto-free areas);

Revision of DECT standards for cordless telephones with the goal of reducing radiation intensity and limiting actual use time, as well as avoiding the biologically critical HFMR pulsation; and

Industry-independent research, finally with the inclusion of amply available critical research results and our medical observations.

Signed:

Dr. med. Thomas Allgaier General medicine, Environmental medicine, Heitersheim

Dr. med. Christine Aschermann, Neural physician, Psychotherapy, Leutkirch

Dr. med. Waltraud Bar,General medicine, Natural healing, Environmental Medicine, Wiesloch

Dr. med. H. Bernhardt, Pediatry, Schauenburg

Dr. Karl Braun von Gladiss, General medicine, Holistic medicine, Teufen

Hans Bruggen, Internal medicine, Respiratory medicine, Environmental medicine, Allergenics, Deggendorf

Dr. med. Christa-Johanna Bub-Jachens, General medicine, Natural healing, Stiefenhofen

Dr. med. Arndt Dohmen, Internal medicine, Bad Sackingen

Barbara Dohmen, General medicine, Environmental medicine, Bad Sackingen

Verena Ehret, Doctor, Kotzting

Karl-Rainer Fabig, Practical doctor

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Other Appeals:

Lichtenfelser Appeal:

http://www.elektrosmognews.de/news/20050703_LichtenfelserAppell.pdf

Bamberger Appeal:

http://www.milieuziektes.nl/Rapporten/Appell_AerzteBamberg230704.pdf

Hofer Appeal:

http://www.elektrosmognews.de/news/20050605_hofer_appell.html

Helsinki Appeal:

http://www.elektrosmognews.de/news//20050226_helsinki_erstunterzeichner.html

Appendix D

Precautionary principle

The **precautionary principle** is a moral and political principle which states that if an action or policy might cause severe or irreversible harm to the public, in the absence of a scientific consensus that harm would not ensue, the burden of proof falls on those who would advocate taking the action.

The precautionary principle is most often applied in the context of the impact of human actions on the environment and human health, as both involve complex systems where the consequences of actions may be unpredictable.

As applied to environmental policy, the precautionary principle stipulates that for practices such as the release of radiation or toxins, massive deforestation or overpopulation, the burden of proof lies with the advocates. An important element of the precautionary principle is that its most meaningful applications pertain to those that are potentially irreversible, for example where biodiversity may be reduced. With respect to bans on substances like mercury in thermometers, freon in refrigeration, or even carbon dioxide exhaust from automobile engines and power plants, it implies:

> "... a willingness to take action in advance of scientific proof [or] evidence of the need for the proposed action on the grounds that further delay will prove ultimately most costly to society and nature, and, in the longer term, selfish and unfair to future generations."

The concept includes ethical responsibilities towards maintaining the integrity of natural systems, and the fallibility of human understanding.

Some environmental commentators take a more stringent interpretation of the precautionary principle, stating that proponents of a new potentially harmful technology must show the new technology is without major harm before the new technology is used. *Wikipedia*

References

[1] Becker, R., 2000: Interview with Linda Moulton Howe. Author of The *Body Electric* (William Morrow & Co., 1987) and *Cross Currents* (Tarcher/Putnam, 1990).

[2] Barnett, S., 1994, *Status of Research on Biological Effects and safety of Electromagnetic Radiation: Telecommunications Frequencies*, CSIRO, Division of Radiophysics.

[3] Cherry, N., 2000: *Evidence that Electromagnetic Radiation is Genotoxic: The Implications for the Epidemiology of Cancer, Cardiac, Neurological and Reproductive Effects*.

[4] Oberto G, et al, 2007: *Carcinogenicity Study of 217 Hz Pulsed 900 MHz Electromagnetic Fields in Pim1 Transgenic Mice.* Radiat Res; 168 (3): 316 - 326

[5] Friedman et al, 2007: *mechanism of fort-term ERK activation by electromagnetic fields at mobile phone frequencies*, Biochemical Journal, 405, 559-568, printed in UK.

[6] BioInitiative Report 2007; *A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Fields (ELF and RF)*

[7] Marshall 2001, Weatherall 2007.

[8] Lixia S., et al, 2006: Effects of 1.8 GHz radiofrequency field on DNA damage and expression of heat shock protein 70 in human lens epithelial cells. Volume 602, Issues 1-2, 1 135-142

[9] Diem, E., et al, 2005: *Non-thermal DNA breakage by mobile-phone radiation (1800 MHz) in human fibroblasts and in transformed GFSH-R17 rat granulosa cells in vitro*, 2004.

[10] The Parliament of the Commonwealth of Australia, 2001: *Inquiry into Electromagnetic Radiation*, *Report of the Senate, Environment, Communications, Information Technology and the Arts Committee*: Ch 2 P.28, 2.61.

[11] Op cit: Cherry, *2000.*

[12] Hallberg, O., 2007: *Adverse health indicators correlating with sparsely populated areas in Sweden*; European Journal of Cancer Prevention. 16(1):71-76.

[13] Zhao, TY et al, 2007: *Studying gene expression profile of rat neuron exposed to 1800 MHz radiofrequency electromagnetic fields with cDNA micro assay.* Toxicology, 235 (3): 167 - 175

[14] Orendacova, J., et al 2007: *Neurobiological effects of microwave exposure: a review focused on morphological findings in experimental animals*; Arch Ital Biol, 145(1):1-12.

[15] Takahashi, et al 1994: *Obesity and Insulin Resistance in Human Growth Hormone Transgenic Rats*, Endocrinology Vol. 139, No. 7 3057-3063

[16] Havas, M., 2006, Electromagnetic Hypersensitivity: Biological Effects of Dirty Electricity with Emphasis on Diabetes and Multiple Sclerosis. *Electromagnetic Biology and Medicine*, 25: 259-268.

[17] Xie et al, 2004; Goldberg G, 2006; Buchachenk et al, 2006.

[18] Reiter, R.J., 1994: *Melatonin suppression by static and extremely low frequency electromagnetic fields: relationship to the reported increased incidence of cancer*. Reviews on Environmental Health, 10(3-4): 171-86.

[19] Australian Institute of Health and Welfare, 2006: *Cancer in Australia – an Overview*.

[20] ZDNet.co.uk, 2002

[21] Ibid

[22] EMR and Health: Vol 2 No 3, 2006.

[23] Repacholi, M., 1997, *Lymphomas in Eμ-Pim1 transgenic mice exposed to pulsed 900 MHz electromagnetic fields,* Radiat Res 1997; 147 (5): 631 - 640

[24] EMR Inquiry: Chapter 2, p. 83, 2001, Op cit.

[25] Cherry, N., 2001, *Probable Health effects Associated with base Stations in Communities: The Need for Health Surveys.*, p. 2.

[26] http://www.feb.se/Bridlewood/NEWS1999.HTM

[27] Oberfeld, et al, 2004: *The Microwave Syndrome: Further Aspects of a Spanish Study*

[28] Eger, H., et al, 2004: *The influences of being physically near a cell phone transmission mast on the incidence of cancer:* Umwelt Medizin Gesellschaft, 2004.

[29] Wolf and Wolf, 2004: *Increased Incidence of Cancer near a Cell Phone Transmitter Station*, International Journal of Cancer Prevention, Vol 1, No 2.

[30] Abdel-Rassoul, G., et al 2006: *Neurobehavioral effects among inhabitants around mobile base stations*,, NeuroToxicology, doi:10.1016/j.neuro.012.

[31] Santini, R., et al, 2002: *Study of the health of people living in the vicinity of mobile phone base stations: Influences of distance and sex*, Pathol Biol 50: 369-73.

[32] Times Online: April 22 2007.

[33] http://www.starweave.com/gallery

[34] Ha, M., et al 2007: *Radio-Frequency Radiation Exposure from AM Radio Transmitters and Childhood Leukaemia and Brain Cancer*, American Journal of Epidemiology.

[35] Michelelozzi, P., et al, 2002; American Journal of Epidemiology 155(12):1096-103.

[36] Hocking, B., et al 1996: *Cancer incidence and mortality and proximity to TV towers*,, Medical Journal of Australia.

[37] Senate Inquiry 2001, Op cit. Ch. 2, 2.44.

[38] Australian Bureau of Statistics: *Cancer in Australia*: A Snapshot, 2004-05

[39] Media Release, Australian Institute for Health and Welfare May 2006.
[40] Breast Cancer Fund & Breast Cancer Action, San Francisco, 2006: *State of the Evidence, What is the connection between the environment and breast cancer*, 4th edition
[41] Ibid
[42] Blask, D., 2005, *Melatonin-Depleted Blood from Premenopausal Women Exposed to Light at Night Stimulates Growth of Human Breast Cancer Xenografts in Nude Rats*, Cancer Research 65, 11174-11184.
[43] Breast Cancer Fund, Op cit 2006.
[44] Ravandi-Kashani F, Hayes T.G, 1998: *Male breast cancer: a review of the literature*. Elsevier: Volume 34, Number 9 , pp. 1341-
23 Rachel's Environment & Health News, 1996.
[46] ibid
[47] BBC News, 2001.
[48] Oncolink Cancer News, 2003: *Brain tumour incidence on the rise in U.S. and Europe*.
[49] Swiss Agency for the Environment, Forests and Landscapes, 2005: *Electrosmog in the Environment*.
[50] Lahkola et al, 2005: *Mobile phone use and risk of acoustic neuroma: results of the Interphone case-control study in five North European countries*, British Journal of Cancer, 93 (7): 842 - 848
[51] Hardell, L., et al, 2007: *Long-term use of cellular phones and brain tumours - increased risk associated with use for > 10 years*, Occupational Environ Med. Published Online First: doi:10.1136/oem.2006.029751.
[52] Hardell, L., et al; 2006: *Tumour risk associated with use of cellular telephones or cordless desktop telephones*. World Journal of Surg Oncology, 11. doi: 10.1186/1477-7819-4-74.
[53] Salford, L., et al: 2003: *Nerve cell damage in mammalian brain after exposure to microwaves from GSM mobile phones.* Environmental Health Perspectives, Volume 111, Number 7.
[54] Salahaldin and Bener, 2006: International Tinnitus Journal, 12(2):145-8.
[55] Aalto, S et al: 2006. J Cereb Blood Flow Metab,
[56] Rossinin, P., et al: 2006, Annals of Neurology,
[57] McLean, L: 2007, *EMR and Health*, Vol 3 No 1.
[58] Microwave News, January 2006.
[59] EMR and Health, 2006 Vol 2, No 1 & 2.
[60] Mild, et al, 1998, *Mobile phone use and subjective symptoms. Comparison of symptoms experienced by users of analogue and digital mobile phones.*, Occup Med (Lond) 51(1):25-35, 2001
[61] Hocking, B., 1998, *Preliminary report: symptoms associated with mobile phone use*, Occup Med (Lond);48(6):357-360
[62] Chia et al, 2000, *Prevalence of Headache among Hand-Held Cellular Telephone Users in Singapore: A Community Study*, Environmental Health Perspectives Volume 108, Number 11.
[63] Cherry, 2000, *Probable Health effects Associated with base Stations in Communities: The Need for Health Surveys*, p.1
[64] Ibid.
[65] Australian Prostate Cancer Website: http://www.prostatehealth.org.au/newsitem.html?notice_id=497.
[66] Cherry, 2000, Op cit.
[67] George Institute for International Health 2005: *High blood pressure the culprit in 2 out of 3 heart attacks and strokes in the Asia-Pacific*,.
[68] Muntner, P., et al: *Trends in Blood Pressure among Children and Adolescents*, Journal, of the American Medical Association, 2004; 291:2107-2113..
[69] Russell and Robinson, 1995: *Melatonin: your body's natural wonder drug*, New York Bantam Books.
[70] Op cit,
[71] Braune, S, et al, 1998: *Resting blood pressure increase during exposure to a radio-frequency electromagnetic field*. Lancet 351(9119):1857-1858.
[72] Cherry, 2000: Op cit, p. 25.
[73] Mullins, 2007: *Paediatric food allergy trends in a community-based specialist allergy practice, 1995–2006*, Medical Journal of Australia.
[74] Australian Institute for Health and Welfare: *Selected Chronic Disease among Australia's Children*, 2005
[75] French, P., et al (1997): *Electromagnetic Radiation at 835 MHz changes the morphology and inhibits proliferation of a human astrocytoma cell line.*
[76] Rajkovic et al, 2003: *Histological and stereological analysis of cutaneous mast cells in rats exposed to 50 Hz EMF*, 6th International Congress of the European Bioelectromagnetics Association (EBEA), Budapest, Hungary, November 13-15, (abstract).
[77] Bergier et al 1990, Dmoch & Moszczynski 1998, Moszczynski et al 1999, Yuan et al 2004, Kimata 2005.
[78] FEB - The Swedish Association for the ElectroSensitive
http://www.feb.se/ARTICLES/TheGoldenGoose.html
[79] BBC News: http://news.bbc.co.uk/1/hi/health/6249174.stm
[80] WebMD: http://www.cbsnews.com/stories/2007/06/26/health/webmd/main2984847.shtml
[81] Modak et al 1981, Dutta et al 1992, Omura & Losco 1993, Testylier et al 2002, Gautier et al 2003
[82] Persson, B.R.R., Salford, L.G. and Brun, A., 1997: *Blood-brain barrier permeability in rats exposed to electromagnetic fields used in wireless communication*. Wireless Network 3: 455-461.
[83] Ibid

[84] Salford, L., Op cit, 2003.
[85] Senate Inquiry, Op cit 2000, Ch 2, 2.60.
[86] Swiss Agency report, Op cit.
[87] Hutter, et al; 2000: *Subjective symptoms, sleeping problems, and cognitive performance in subjects living near mobile phone base stations.*
[88] mX newspaper, 2007.
[89] Senate Inquiry, Op cit, 2001, Ch.2, 2.87.
[90] Peter Wagner, Joachim Röschke, Klaus Mann, Jürgen Fell, Wolfgang Hiller, Clarissa Frank, Michael Grözinger, 2000: Human Sleep EEG under the Influence of Pulsed Radio Frequency Electromagnetic Fields. *Neuropsychobiology* 2000;42:207-212 (DOI: 10.1159/000026695), Vol. 42, No. 4,
[91] Cherry, N., 2000, *EMR Reduces Melatonin in Animals and People*
[92] Wang, B.M. and Lai, H., 2000: *Acute exposure to pulsed 2450-MHz microwaves affects water maze learning in the rat*. Bioelectromagnetics 21:52-56.
[93] Eliyahu, I. et al, 2006: *Bioelectromagnetics*, 27(2): 119-126.
[94] Xu, S et al,: *Neurosci Lett* Jan 25, 2006.
[95] Papageorgiou, G., et al 2006: *Neurosci Lett*, Jan 4.
[96] Wolf, M., et al, 2006: *Do GSM 900MHz signals affect cerebral blood circulation? A near-infrared spectrophotometry study*, Optics Express, Vol. 14, Issue 13, pp. 6128-6141
[97] Cherry, N., 2000, *Evidence that Electromagnetic Radiation is Genotoxic: The implications for the epidemiology of cancer and cardiac, neurological and reproductive effects*, p. 33.
[98] Agarwal, et al 1997: *Effect of cell phone usage on semen analysis in men attending infertility clinic: an observational study*, 2006.
[99] Magras and Xenos, 1997: *RF radiation induced changes in the pre-natal development of mice.* Bioelectromagnetics, 18(6): 455-
[100] Koyama, S et al, 2007; *Mobile Phone Radiation affects bacterial and gene mutations.* J Radiat Res (Tokyo) 48(1):69-75.
[101] Op cit
[102] Levitt, B., Morrow. 2007: Electrosmog: What Price Convenience?
[103] Op cit
[104] M. S. Dreyfuss and J. R. Chipley, 1980, *Comparison of Effects of Sublethal Microwave Radiation and Conventional Heating on the Metabolic Activity of Staphylococcus aureus:* Appl Environ Microbiol. 1980 January; 39(1): 13–16.
[105] Moszczyński P, Lisiewicz J, Dmoch A, Zabiński Z, Bergier L, Rucińska M, Sasiadek U., 1999: *The effect of various occupational exposures to microwave radiation on the concentrations of immunoglobulins and T lymphocyte subsets* Wiad Lek. 1999;52(1-2):30-4