

**Table 1**

Reported symptoms of people living & working near cellular base stations	Studies (listed below) providing data															
	A	B	C	D	E	F	G	H	I	J	K	L	N	O	P	Q
<i>(symptoms most reported on scale 0-2)where relevant</i>																
Headache	2	2	2	2	-	2	2	2	1	1	-	-				
Concentration difficulties	1	2	2	2	2	0	1	0	2	1	-	-				
Learning and memory problems	1	2	1	2	2	0	2	0	2	-	-	-				
Chronic fatigue	2	2	2	2	1	1	-	0	2	-	-	-				
Sleep problems	2	1	2	2	-	0	2	0	-	1	-	-				
Depression	1	0	2	2	-	0	1	2	1	1	-	-				
Dizziness	0	0	1	2	-	2	1	2	0	1	-	-				
Irritability	2	2	1	0	1	0	1	0	1	1	-	-				
General vitality problems	1	1	1	0	2	1	-	1	1	-	-	-				
Behavioural problems	-	2	-	0	2	0	-	1	2	-	-	-				
Migraine	-	2	-	-	-	2	-	2	-	-	-	-				
Nausea & appetite changes	1	0	1	0	-	0	-	0	1	1	-	-				
Circulatory system	-	-	-	-	-	-	-	-	-	2	-	-				
Blurred vision	-	-	-	-	-	-	1	-	-	1	-	-				
Tremors	-	-	-	-	-	-	1	-	-	-	-	-				
Cancer	-	-	-	-	-	-	-	-	-	-	2	2				

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A. **Santini 2002** – Report presented to the French Parliamentary Office for Evaluation of Scientific and Technological Alternatives.

B. **Freiburger Appell**, October 2002

### **FREIBURGER APPELL, October 2002 (B in the table)**

A signed document, including about 200 medical practitioners, regarding symptoms they were seeing in people living near to mobile phone base stations, and using mobile phones and cordless phones, was published by:

IGUMED – Interdisziplinäre Gesellschaft für Umweltmedizin e.V. [www.igumed.de](http://www.igumed.de)

This document included:

*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 tumors
- *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, which the usual causes do not explain

*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;

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- 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 in 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".*

*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 recognized 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".*

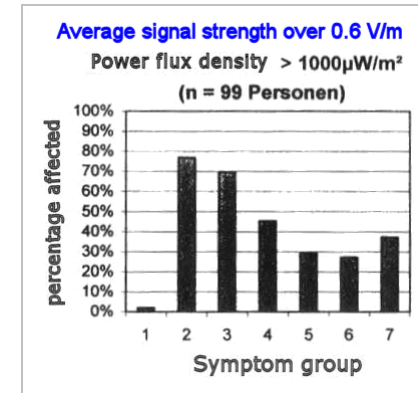
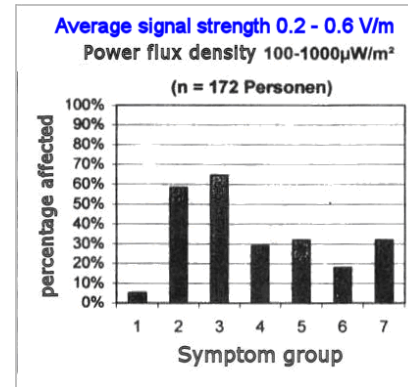
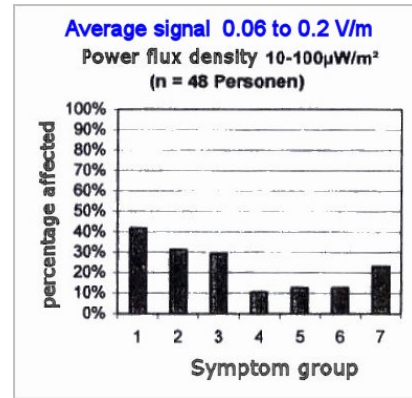
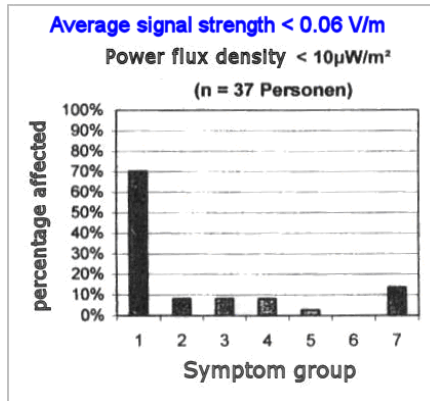
- iii. **Navarro E A et al 2003** - *The microwave syndrome: a preliminary study in Spain*, Electromagnetic Biology & Medicine 22 (2 & 3) 161-169
- Oberfeld G et al 2004** - *The microwave syndrome – further Aspect of a Spanish Study* International Conference Proceedings, Kos, Greece 2004

**Table 2**

	Age, sex and distance adjusted model - with controls in less than 0.05 V/m				
	0.05-0.22 V/m		0.25-1.29 V/m		trend
	OR	(p)	OR	(p)	(p)
Depressive tendency	39.4	0.002	59.4	0.0003	0.0016
Fatigue	28.5	0.003	40.1	0.0009	0.0039
Sleeping disorder	10.4	0.002	10.6	0.0004	0.0008
Concentration problems	8.3	0.003	19.2	0.0000	0.0001
Headaches	6.0	0.01	6.1	0.004	0.0050
Unusual discomfort	4.3	0.03	10.9	0.0002	0.0007
Irritability	3.1	0.07	9.2	0.0002	0.0009
Memory problems	2.4	0.21	7.8	0.001	0.0031
Loss of appetite	6.7	0.12	27.5	0.003	0.0030
Nausea	5.9	0.13	12.8	0.021	0.0499
Visual disorder	2.5	0.18	5.8	0.005	0.0186
Dizziness	3.0	0.17	8.4	0.004	0.0117
Cardiovascular problems	9.4	0.06	17.9	0.011	0.0333

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D. **Open letter to Edmund Stoiber**, president of the federal state of Bavaria, Germany, from the group of German doctors



Here are the graphs that accompanied the German Doctors' letter to Edmund Stoiber, president of the federal state of Bavaria, Germany

**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

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E. **Balmori A 2005** – *Possible effects of electromagnetic fields from phone masts on a population of White Stork* Electromagnetic Biology and Medicine 24:109-119

40% of storks nesting within 200m of a mast had no chicks, whereas only 3.3% of those further than 300m did not have chicks (p= 0.001). The white stork behaviour recorded within 200m included:

- The couple frequently fight over the sticks
- The sticks fall to the ground when trying to build the nest
- The most affected nests never get built
- Frequent death of young chicks in their early stages

F. **Hutter H P et al 2006** – *Subjective symptoms, sleeping problems and cognitive performance in subjects living near mobile phone base stations* Occup Environ Med 63:307-13

There were 365 participants in urban & rural areas living near to 10 selected base stations (primarily 900 MHz GSM). Actual field strength was measured in 336 households. The control threshold of 0.2 V/m seems rather high (see German doctors' graphs above) and a high percentage of 'control' participants reported symptoms (e.g. 61% of control people reported frequent headaches compared with a level of 10 to 25% in a normal untroubled population, so the Odd Ratios in the table below may significantly underestimate the problems).

Average power density W/m <sup>2</sup>	< 0.1	0.1-0.5	> 0.5	
Average signal strength V/m	< 0.2	0.2-0.44	> 0.44	p
Headaches	1.0	1.36	3.06	0.017
Difficulty to concentrate	1.0	1.32	2.55	0.035
Cold hands or feet	1.0	1.03	2.57	0.019
Tremor	1.0	0.68	2.37	0.062
Loss of appetite	1.0	1.24	2.40	0.069

Exposed (n= 85) compared with controls (n=80)		
Neurological complaints	RR	p
Headache	2.77 [1.06-7.40]	< 0.05
Memory changes	7.48 [2.29-26.98]	< 0.001
Tremors	8.0 [no controls]	< 0.01
Dizziness	4.41 [1.26-16.46]	< 0.01
Sleep disturbance	2.77 [1.06-7.40]	< 0.05
Depressive symptoms	2.80 [1.02-7.94]	< 0.05
Blurred vision	1.63 [0.69-3.91]	> 0.05
Irritability	1.48 [0.68-3.27]	> 0.05
Lack of concentration	1.77 [0.65-4.97]	> 0.05

**H: Preece AW, et al**, 2005, The Akrotiri Military Antennae Survey Report.

Residents of Akrotiri, Asomatos and Pano Kyvides were included in this survey which measured RF exposure from all sources including military signals. The estimates of the numbers of people living in each village were: 800 in Akrotiri, 350 in Asomatos and 1000 in Pano Kyvides. Questionnaires were distributed to all households, with an overall response rate of 87%.

In the two 'exposed' villages, in most areas, GSM mobile phone mast signals dominated (up to 1.4 V/m) while the 17.6 MHz military signals were up to 0.3 V/m. Average readings were less than half these values. The corresponding readings in the control village were <0.01 V/m.

There was no excess of cancer, birth defects or obstetric problems. There was heightened risk perception and a considerable excess of migraine, headache and dizziness, which appears to share a gradient with RF exposure. The increased Odds Ratios (OR) and percentages of people in

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'good health' are shown in the tables below. Note that the data for all of the effects listed is statistically significant (at  $p < 0.05$  or 95% probability).

Condition	Akrotiri		Asomatos		Pano Kyvides		p-value
	(%)	OR	(%)	OR	(%)	OR	
Migraine	23.1	2.73	14.8	3.21	9.9	1.0	.000
Headache	51.3	3.69	35.1	1.89	22.2	1.0	.000
Dizziness	35.7	5.70	20.9	2.47	10.2	1.0	.000
Depression	10.2	2.95	9.7	2.50	3.9	1.0	.002

Name of scale	% reporting good health			Significance
	Akrotiri	Asomatos	Pano K	p
Physical functioning	75.7	70.7	80.9	0.000
Role physical	71.4	71.5	81.0	0.001
Bodily pain	72.1	71.2	79.9	0.001
General health	55.2	56.9	59.6	0.025
Vitality	56.7	55.4	62.9	0.000
Social functioning	72.3	70.8	82.4	0.000
Role emotional	74.2	73.3	82.4	0.004
Mental health	64.6	63.1	73.6	0.000

**I: UK Parent-Teacher study (2000)**

This study reported by Powerwatch showed that both parents and teachers were concerned about "uncharacteristic behaviour" shown by pupils in a school which had had a mast for nearly three years when compared with one without.

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**J. Bortkiewicz et al 2004** – *Subjective symptoms reported by people living in the vicinity of cellular phone base stations* Med pr 55(4):345-51

**K. Eger H et al 2004** – *The influence of being physically near to a cell phone transmission mast on the incidence of Cancer* Umwelt Medizin Gesellschaft 17.4.2004

**L. Wolf R & Wolf D 2004** – *Increased incidence of cancer near a cell-phone transmitter station* Int J of Cancer Prevention 1(2)

**M. Eberhardt JL et al 2008** – *Blood-brain barrier permeability and nerve cell damage in rat brain 14 and 28 days after exposure to microwaves from GSM mobile phones* Electromagn Biol Med 27(3):215-29

This study found that a single 2 hr exposure breached the blood brain barrier (BBB) allowing albumin (a toxic agent) to enter brain cells, peaking 14 days after exposure, and the presence of dark neurons peaked at 28 days, the last time the cells were examined. The team felt that the damage was created directly, or possibly indirectly toxic agents were allowed through to damage cells as a result of the breach of the BBB. The exposures were lower than the current recommended ICNIRP levels, and in fact, the lower SAR values leaked more albumin than higher ones; the weakest fields were biologically more harmful. **The weakest fields could be experienced by** people standing close to a mobile phone user, or even **people living near mobile phone transmitter masts.**