

November 3, 2006

Jersey Mobile Phone Base Stations (Masts)

Summary

- Mobile phone masts are now globally considered to be a serious threat to the wellbeing of those who are exposed to them.
- Safety guidelines have not been updated in the UK since 1998. The guidelines were introduced on the basis of thermal effects, and took no account of biological effects. Jersey follows these guidelines.
- There were originally over 50 masts in Jersey, this is expected to increase to over 200 in the near future with the introduction of new mobile phone operators.
- There is abundant evidence of genuine concern amongst reputable scientists and medical doctors that exposure to the emissions of mobile phone base stations is NOT without risk to health. What is uncertain is just how this risk to health will manifest in an individual as this is determined by the individuals own constitution and health. Children in particular with their developing immune and nervous systems, the elderly and those who already suffer from ill health are more prone to the adverse effects of EMR (Electromagnetic Radiation).
- Scientists and doctors have confirmed effects to health can include:- Learning, concentration and behavioral disorders, Extreme fluctuations in blood pressure, Heart rhythm disorders, Heart attacks and strokes among an increasingly younger population, Brain-degenerative diseases, Cancerous afflictions including leukemia and brain tumors.
- There are only six known studies purely on the effects of phone masts on people. ALL concluding effects of ill health. (Six Studies Showing ill-health effects from Masts – Dr Graham Blackwell 2005)
- Lloyds of London admitted that they are now writing in exclusion clauses against low level radiation damage into their public liability insurance. Other insurance companies are following this lead.
- The US, Australia and New Zealand governments have all adopted the precautionary principle and have introduced policies of prudent avoidance which have effectively banned the erection of these masts from school buildings and residential areas. France has 20 new proposed laws (No.2491) related to the reduction of public health risks from mobile phone installations and apparatus.
- Over 50% of councils in Scotland are now operating precautionary policies to prevent masts from being sited near schools, hospitals and residential areas. Kent County Council has banned all mobile phone masts from its property because of fears about radiation emissions.

1.0 The Issue - Introduction

The recent opening of the Jersey mobile phone market to competition has meant additional mobile phone operators coming to Jersey. This has in turn meant each operator setting up their own mobile phone network. To set up these mobile phone networks they are required to erect mobile phone masts.

The electro magnetic radiation (EMR) emitted from these masts **is a serious health concern.**

Those unfortunate enough to have mobile masts sited near where they live are exposed to round-the-clock radiation. It is the long term, low level exposure that is predicted as creating cumulative effects and long-latency illness. Children are particularly at risk, as are the elderly and those who already suffer from ill health.

The fact there are now three mobile operators in Jersey has seen a major increase in these masts in the Island. From over 50 masts we are likely to see an increase of over 200 masts in the near future. A fourth operator has also been granted a licence.

In addition to these very serious health concerns, the planned and ongoing erection of these masts has to be considered an unsightly blight to Jersey's landscape.

Please read this paper.

2.0 The Health implications

Reports (and associated articles) advise that exposure to EMR from these masts can lead to serious ill health.

2.1 Sleeping disorders, chronic fatigue, memory and concentration problems, headaches, anxiety, seizures in those who already suffer from epilepsy, nosebleeds (especially amongst young children), unexplained clusters of cancer, and reduced neutrophil counts. (A neutrophil is a kind of white blood cell, important to the immune system, which engulfs bacteria) (Taken from- How exposure to GSM and TETRA base-station Radiation can adversely affect humans - GJ Hyland, University of Warwick and International Institute of Biophysics, Germany 2003)

2.2 Worldwide research links the pulsing of masts to the disruption of sleep patterns and degradation of our immune system. What world-renowned independent scientists say, and much of this is accepted by the Health Protection Agency, is that very low-level radiation emitted from masts suppresses the level of the hormone, melatonin, in our system. Melatonin is produced by the pineal gland during the hours of darkness as we sleep to scavenge the toxins in our body, including damaged cells, DNA and the pre-cancer cells that we all produce. Scientific opinion is that in the absence of adequate melatonin, damaged and pre-cancer cells cannot be properly scavenged and will eventually mutate and cause cancer itself. Yet cancer is only one of the illnesses that can develop as a result of exposure to low level radiation. There is also evidence that it causes chromosomal problems with links to birth defects and miscarriages. It is now recognized that a proportion of the population is, to a greater or lesser degree, electro-magnetically sensitive and, as such, liable to a wide range of symptoms caused by radiation. These include headaches, dizziness, nosebleeds, lack of concentration and behavioural problems - the very young and the elderly being particularly susceptible. Unlike the continuous waves associated with television and radio and like communications, mobile phone emissions have an element of amplitude modulation or pulsing. The crucial point here is that modulation or pulsing occurs at frequencies close to the electrical pulses of the human brain - which can lead to 'entrainment' (the body reacting to external messages rather than those from the brain). It is believed that entrainment is the

reason for increased reports of epilepsy, depression, headaches, migraines etc in communities/schools with masts sited nearby.

2.3 The Summary of Independent Research into mobile phone masts (Appendix 1) provides detailed information on the health impacts and supporting research; and states the inadequacy of the ICNIRP Guidelines. It concludes "On the basis of many inter-consistent reports of adverse health effects in the vicinity of GSM Base-stations [Mobile Telephone Masts], it must be concluded that such installations pose a **real risk** to the health of people resident nearby. It is to be stressed that this conclusion is not purely personal, but is one that is shared by many eminent scientists of international standing and medical doctors worldwide." (Dr G J Hyland, University of Warwick)

3.0 The current safety standards and UK guidelines

3.1 The safety limits for electromagnetic radiation (EMR) or base station mast emissions were set in 1998 by an institutional committee called ICNIRP. At this time it was generally thought that the only effects of EMR would be thermal (i.e heating) **As a result only thermal effects were considered when setting the guidelines, biological effects were not considered when setting these guidelines.** ICNIRP guidelines have been adopted by the UK and Jersey, but many other parts of the world have formulated much more stringent guidelines on the erection of Mobile masts.

3.2 In May 2002 "The Stewart Report" was commissioned by the UK Government to consider the possible health effects of mobile phones and their base stations. Three of the conclusions reached which are relevant to base stations are as follows.

- a) "Some scientific evidence shows that radio frequency (RF) radiation may affect biological function. (This is a non thermal effect.) It is not possible to say, therefore that the exposure to RF radiation even at levels below national guidelines, is totally without potential adverse health effects"
- b) Some peoples well being maybe adversely effected by the environmental impact of mobile phone base stations (masts) sited next to houses, schools, or other buildings as well as by fear of perceived effects.
- c) A precautionary approach should be adopted until more detailed information becomes available.

3.3 Professor Sir William Stewart was very clear in his report as to what he considered to be a precautionary approach - "no masts near schools". When you consider children spend considerably more time at home than school, it is a logical extension that masts should not be erected near the homes of children.

4.0 Research which raises serious concerns

4.1 In 2000 T mobile in Germany commissioned a highly rated independent research institute "The ECOLOG Institute" in Hanover to review all relevant available research to date with regards to the health risks of mobile telecommunications. This review of over 220 peer reviewed and published papers also recommended the adoption of the precautionary principle stating "If there are sufficient indications that there may be damaging effects, the precautionary principle for the protection of health and the environment will apply and avoidable exposures will be avoided until such time when there is enough knowledge for a wider introduction of the technology in question."

The report justifies this approach making reference to the lessons learnt from the introduction of asbestos, DDT, CFCs, Formaldehyde, wood preservatives, mass x-ray screenings etc. Where these technologies and products were widely used, even many years after the first clear indications of health and ecological damage had appeared. The report however came to a dramatically different conclusion to those of "The Stewart Report" with regards to the effects of EMR and found evidence of non-thermal and biological effects stating (in section 7)

"It can be concluded that electromagnetic fields with frequencies in the mobile telecommunications range do play a role in the development of cancer". The report also found evidence for disruptions of the endocrine and immune system as well as detrimental effects on the central nervous system.

The report recommends (section 8) that the precautionary limit should be 0.01W/m². It states "This should be rigorously adhered to by all base stations near sensitive places such as residential areas, schools, nurseries, playgrounds, hospitals and all other places at which humans are present for longer than four hours."

It is worth noting in 2000 mobile operators paid the British Government £22.5 billion for 3G mobile licences. The industry expects to erect thousands more masts for new mobile services. The guidelines to erect these masts have not changed since 1998, despite increasing evidence of adverse health effects.

4.2 However it is not just scientists who are telling us of the adverse health effects from mobile phone base stations.

- a) The Freiburger appeal was published in October 2002 (Germany) in response to "A dramatic rise in severe and chronic diseases". It called for new regulations to halt the devastating health consequences of pulsing E.M.R. This appeal as at the 1st January 2005 had been signed by over 3000 medical professionals.
- b) The Helsinki Appeal 2005 signed by physicians and researchers calls for the rejection of the ICNIRP Guidelines stating "In the light of recent scientific information, the standards recommended by ICNIRP have become obsolete and should be rejected".
- c) The Irish doctors Environmental Association states thermal limits and mast policy is inappropriate.
- d) The Salzburg Resolution 2000 was signed by 19 scientists and public health doctors from 10 countries and was the first international conference dedicated to public health issues connected with exposure to base station emissions. The resolution recommends that outdoor exposure should be below 0.1 microwatt / square cm which is equivalent to an electric field of 0.6 volts per meter. (V/m) Significantly less than ICNIRP Guidelines.

There is thus abundant evidence of genuine concern amongst reputable scientists and medical doctors that exposure to the emissions of base stations is NOT without risk to health. What is uncertain is just how this risk to health will manifest in an individual as this is determined by the individuals own constitution and health. Children in particular with their developing immune and nervous systems, the elderly and those who already suffer from ill health are more prone to the effects of EMR.

"I am now convinced that EMF's (electromagnetic fields) pose a health hazard. There is statistical association between magnetic fields and cancer that goes beyond the shadow of reasonable doubt. I think there is clear evidence that exposure to EMF's increases the risk of cancer." Dr David Carpenter, Dean of the State of New York School of Public Health.

5.0 Human specific scientific research

5.1 There are only six known studies purely of the effects of phone masts on people. ALL concluding effects of ill health. (Six Studies Showing ill-health effects from Masts – Dr Graham Blackwell 2005)

- a) 2002 Santini (France). Found significant negative health effects on people living within 300 meters of mobile phone base stations.

November 3, 2006

- b) 2003 Netherlands Organisation for applied scientific research. Found significant health effects on well being from 3G mast emissions well below accepted "safety" levels.
- c) 2004 Oberfeld Gerd (Spain) Found significant ill health effects (depression, fatigue, sleeping disorders, concentration and cardiovascular problems) in those living in the vicinity of two mobile phone base stations.
- d) 2004 Wolf (Israel) found a four fold cancer increase within 350 meters of a phone mast, ten fold amongst women.
- e) 2004 Naila Study (Germany) found trebled risk of cancer near cellular antenna / masts.
- f) 2005 Team of Austrian Scientists found that the radiation of a cell phone base station at a distance of 80 meters causes significant changes of the electrical currents in the brains of testees.

These are the only know studies that specifically consider the effects of masts on people. All six show clear and significant ill-health effects. There are no known studies relating to health effects of masts that do not show such ill-health effects.

6.0 The Insurance companies concerns

Five years ago, in an "Insurance Industry" meeting, several insurance companies, including Lloyds of London, admitted that they are now writing in exclusion clauses against low level radiation damage into their public liability insurance. More recently, Lloyds cited the striking resemblance between the current concerns about mobile phone technology and the development of the asbestos and tobacco issues (which will end up costing insurers a fortune). Australia's leading insurance company, Mercantile Mutual, is reported to have objected to plans by Vodafone to build a transmitting tower on its Sydney office block. Its formal objection stated: "There is an increasing body of scientific and medical evidence of the risk to health posed by exposure to emissions from telecommunication base stations. The risk to health may expose us as owners of the property to liability for injury to persons who are even alleged to have been exposed to emissions from the base station". Recently the giant Insurance group, Swiss Re, stated in their publication 'Electro-Smog a Phantom Risk' that on the basis of today's knowledge alone it must be expected that an EMF claim would succeed. This view has been supported by the recent exit from the re-insurance market of Scandinavia's largest insurance group, Skandia. They cite reducing exposure to potential EMF claims as being one of the reasons. The world's leading insurance companies are obviously taking the issue very seriously indeed. A causal link between mobile phone mast emissions and public health will be established beyond doubt in the near future and successful legal action will most certainly follow.

7.0 Global advancements in regulations for erection of mobile masts

The telecommunication companies say that there is no risk. But other countries are taking notice of the scientific evidence available and are adopting the precautionary approach which was recommended by both the Stewart report and the Ecolog report.

For example, the US, Australia and New Zealand governments have all adopted the precautionary principle and have introduced policies of prudent avoidance which have effectively banned the erection of these masts, in some cases within 500mts of school buildings and residential areas.

France has 20 new proposed laws (No.2491) related to the reduction of public health risks from mobile phone installations and apparatus. In their "explanation of motives" the members of parliament state "One finds oneself, in effect, clearly in the context where the principle of precaution must be applied. There is a debate at the heart of the scientific community. It is the responsibility of the elected representatives of the nation NOT to wait for scientific certainty

before taking measures to protect people..... "Everyone has the right to live in a balanced environment which is favorable to their health"..... This population-on which this risk is imposed without having asked their opinion about it, is chronically subject to the beams from the antennas. Now a certain number of research studies have produced evidence on the cumulative effects of electromagnetic radiation including the effect of exposure to weak emissions..... There is an attack on the fundamental right of everyone to well being and health".

The first proposed law (Article 1) limits exposure to electromagnetic fields to 0.6 volt a meter. This is the same as that recommended by the Salzburg resolution and is considerably less than the ICNIRP guidelines.

The second proposed law (Article 2) creates a 300 mtr exclusion zone from houses and sensitive buildings.

One should also note that over 50% of councils in Scotland are now operating precautionary policies to prevent masts from being sited near schools, hospitals and residential areas.

Kent County Council has banned all mobile phone masts from its property because of fears about radiation omissions, and is believed to be the first council to be working towards a complete ban within its boundaries.

8.0 Conclusions

We ask that you seriously consider the information in this paper, and undertake personal research yourself to validate this information if necessary.

We ask...

Is Jersey protecting its citizens (and children) against the harmful effects of emissions from mobile phone masts?

With the introduction of more mobile operators and in turn more base stations are we seriously putting Islanders health at risk?

What is Jersey's precautionary approach?

Note: We acknowledge EMR is also emitted from mobile phones and other technology equipment; many of these products are used by choice. This paper focuses on mobile phone masts which are an immediate concern to the people of Jersey.

Appendix 1

Introduction to Summary of INDEPENDENT Research

Below is a summary of Independent Research into Mobile Telephone Masts that we have put together from various independent sources, with references, which you will find very informative. Like many people, we never realised the full extent of the health issues around Mobile Telephone Masts, nor the official wall of silence that exists, until circumstances led us to spend a large amount of time and effort looking into the whole issue. We were shocked, and we expect you will be too.

It is only by assessing independent, good quality information that you or we can make up our own minds about the Mobile Telephone Mast issue. This document hopes to give you a summary. **Please read it.**

To introduce this and to aid your understanding:

Government and Telecommunication Companies quote the 'ICNIRP Guidelines' as assurances of safety for any mast/s saying, 'The mast has an ICNIRP [safety] Certificate' or, 'The mast's emissions fall well below the ICNIRP Guidelines', etc. However, the ICNIRP Guidelines **ONLY** cover the Thermal (i.e. heating) effects of Mobile Telephone Mast emissions. Hence all that an ICNIRP certificate means is that the mast won't cook you!

When the guidelines were made in 1998 it was generally thought that the only effects of the Mobile Telephone Mast emissions would be thermal, hence the ICNIRP Guidelines as they currently stand. However, it is now widely accepted that NON-Thermal effects do occur but, vitally and to our minds, negligently, these guidelines have NOT been updated to include NON-Thermal effects. The Thermal (heating) effects are accepted to be negligible - however, NON-Thermal effects are now known to affect the make-up of our bodies and how our bodies work, posing real risks to our health and to our lives. This summary details some of the NON-Thermal effects. From studying independent research it is clear that, although the ICNIRP Guidelines are always quoted to assure the public of the safety of a Mobile Telephone Mast, these assurances are completely **FALSE** since the ICNIRP Guidelines **DO NOT PROTECT US** against the NON-Thermal effects, which are being negligently and completely ignored.

Many people believe that the reason that the ICNIRP Guidelines have not been updated with guidelines for NON-Thermal effects is because there is still no "dose-response equation" for no risk (or acceptable risk). Dr. Neil Cherry [13] said, the safe level for microwaves is nil. Additionally, the ICNIRP Guidelines ignore long-term low-level exposure to microwaves.

What are the Non-Thermal Effects detailed in the research? Here are some examples:

- DNA damage potentially leading to cancers such as Breast cancer and Testicular cancer,
- Signal pulsing, similar to rapidly flashing lights, causing or worsening Epilepsy,
- Reduction in Melatonin levels - and increase in nitric oxide (NO) levels - resulting in: reduced cancer fighting cells in our bodies, sleeping disorders, increased cholesterol levels leading to greater risk of atherosclerosis and coronary heart disease, increased blood pressure giving greater risk of blood clots and strokes. Also increasing chances of

serious disorders such as Alzheimer's disease, Lou Gehrig's disease, Multiple Sclerosis and Parkinson's,

- Tinnitus and Hearing problems, Headaches, Reduced drug effectiveness.

These effects are increasingly being found to occur in reality within the population at large who are exposed to Mobile Telephone Mast radiation. Many German and European doctors (equivalent to our GPs) are so concerned that they have signed up to the "Freiburger Appeal" to demand that health concerns over Mobile Telephone Masts are taken seriously. Other similar appeals exist across Europe [6]. The Doctors note many symptoms increasingly seen by them in the vicinity of Mobile Telephone Masts. They are:-

- 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 [14]
- Cancerous afflictions: leukemia, brain tumors
- 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

Additionally we have found multiple examples of the following to add to the above list:-

- Pineal dysfunction which may contribute to the onset of depression or may exacerbate existing depressive disorders, possibly leading to suicide.
- Miscarriages

Government and the Telecommunication Industry would prefer you to read and hear about their scientists' 'research' - but with their huge financial gains reliant on 'safe results' can you blame anyone for being sceptical about how trustworthy their research actually is?

Please read our summary of INDEPENDENT scientific research that, we believe, the government and the industry are trying to suppress. This research is carried out by independent scientists whose careers are often put at risk because they dare to question the safety of these Mobile Telephone Masts and oppose the government view by saying that these masts may well cause much harm to people.

'The reality of such a risk to public health is not yet officially recognised, however, and those who dare to depart from the 'official' line, by warning of potential dangers to human health posed by non-thermal influences of the radiation used in mobile telephony, are subject to immediate criticism and derision – particularly by those with a vested

interest in maintaining the growth of mobile telephony. A good example of this is the ferocious attack by the committee of COST281 on my report for the EU Parliament (commissioned by STOA). - Dr G J Hyland, in his December 2003 Paper, "The inadequacy of the ICNIRP Guidelines governing human exposure to the microwave emissions of GSM/TETRA Base-stations." [11]

Current INDEPENDENT Scientific Research That Proves Mobile Phone Masts Are NOT Safe

All of the Examples Below are Non-Thermal Effects from Mobile Telephone Mast emissions that are not covered by the UK Government / ICNIRP Guidelines. (See Point 7 below).

1. Genetic Damage in Blood Cells and Other Cells

Drs Ray Tice and Graham Hook found human blood cell changes following exposure to four different types of cell phone signals. Genetic damage was seen in the form of micronuclei present in blood cells exposed to mobile phone radiation. [1] Also seen with Dr.Lai and Singh [2]

A recent 4-year EU-backed study by twelve partners in seven countries, EU Reflex, repeatedly showed irrefutable evidence of mobile phone emissions, at levels within ICNIRP, and hence UK, guidelines, causing double-strand DNA breaks of the sort that lead to cancer. [3] Many environmental factors, including sunlight, cause DNA strands to break. However, it is the amount and type of DNA breaks that occur that may or may not lead to cell mutations and therefore cancer. It is possible for the cell to make mistakes when repairing single-strand breaks, but the likelihood of serious mistakes (mutations) increases substantially with double-strand breaks - the type seen from exposure to mobile phone radiation. Where this type of DNA damage occurs in the blood cancers such as **Breast cancer and Testicular cancer** can result.

It has been reported that, in Paris, Orange dismantled a Mobile Telephone Mast that it had placed on a school's roof after 8 school children contracted cancer. This surely is quite damning - indicating that the industry/company knows that these Mobile Telephone Masts DO or MAY WELL cause ill health - why else would they dismantle their mast from the school?

2. Electrical Hypersensitivity (EHS), Chronic Fatigue Syndrome and Sleep Disorders etc.

The most commonly reported adverse effect of Mobile Telephone Mast radiation, is EHS. The symptoms are wide ranging, including **headaches and nausea, dizziness, recurrent nosebleeds, skin irritations and rashes, sleep disorders, hearing problems, high blood pressure, fatigue, irritability and depression.** Some people with epilepsy report increased incidence of seizures, people with chronic fatigue syndrome and multiple sclerosis report increased debilitation, as do those with or developing fibromyalgia. Further down the time line, reports of localised clusters of thyroid problems, motor neurone disease and cancers require full and proper investigation. Where such studies have been made, especially with regard to cancer, the correlation with Mobile Telephone Mast emissions is strong enough now to warrant more formal verification.

The common cause of the above effects is the increase in the production of nitric oxide – triggered by Mobile Telephone Mast Radiation. [15] and [16] Nitric oxide is a dilator of blood vessels and a regulator of dream sleep. It also affects the blood-brain barrier and prevents the body's normal formation of melatonin from serotonin. Several studies have noted the reduction in Melatonin levels when the body is subjected to Mobile Telephone Mast radiation [4]. A knock-on effect is the overproduction of peroxynitrite, which is toxic at a cellular level. This leads directly to Motor Neuron Disease (MND) and Lou Gehrig's disease (ALS).

Such is the broad role of nitric oxide in the body, that disturbance of its production creates an avalanche of negative effects. Many “modern” trends in disorders from Multiple Sclerosis to Autism and ADHD, Alzheimer's to Motor Neuron Disease may stem directly from the over-production of nitric oxide. That Mobile Telephone Mast radiation has been shown to alter the production of nitric oxide in living beings is therefore a significant and serious factor in the evaluation of current and growing environmental levels. It is the long-term low level exposure that is predicted as creating cumulative effects and long-latency illness.

3. Weakening of the Blood-Brain Barrier

Many laboratory studies, such as [5], have looked at the effect of pulsed microwave radiation on animals, revealing a wide range of biological changes to tissue structure or function such as the opening of the Blood Brain Barrier, allowing the protein albumen, amongst other substances, to enter the brain, and raising questions about, for example, **Multiple Sclerosis** and **Alzheimer's**, which are linked to proteins being found in the brain. Similarly, the weakening of the Blood Brain Barrier allows toxins in the bloodstream to pass into brain cells, leading to headaches and nausea (as commonly observed around Mobile Telephone Masts) - and, potentially, large-scale brain damage in the longer term.

4. Increased Incidence of Epilepsy

When noting the reports of an increased number of seizures in some epileptic children when exposed to the emissions of Mobile Telephone Mast radiation, it should be remembered that exposure to a light (such as that from a stroboscope) flashing at a rate somewhere between 15-20 times per second (Hz) can provoke seizures in the 5% minority of epileptics who suffer from photosensitive epilepsy.

Visible light and microwaves are both different kinds of electromagnetic radiation, and the microwave radiation used in GSM mobile phone telephony similarly ‘flashes’ (pulses) – in the case of TETRA at 17.6Hz, which is within the 15-20 times per second (Hz) range [9] and is a rate that the brain is able to recognise. Also, unlike visible light, pulsed microwaves are not reliant on the eye and optic nerve to access the brain, since they can penetrate the skull directly, leading to epilepsy risk from Mobile Telephone Mast radiation.

A familiar piece of misinformation quoted by mobile phone operators is that the emissions of a Mobile Telephone Mast are comparable to that of only a 60W light bulb, and thus equally harmless. Quite apart from the fact that the light from a 60W light bulb *can be* harmful to a person with photo-sensitive epilepsy, if it is flashed at an appropriate rate, the comparison is solely based on intensities and neglects three important points:-

1. The fact that *more* than one carrier signal is usually transmitted from the mast. Thus, the figure of 60W must be multiplied by the number of carriers that are actually transmitted in any particular case; in order to minimise inter-carrier interference, however, this number is restricted typically to 4 at the most, so the total output wattage can be as high as 240W.

2. Beams from the mast, however, are not emitted uniformly in all directions (as happens with light from a light-bulb), but are instead concentrated in specific directions, the degree of directional focusing being quantified through the so-called 'gain' (G) of the antenna, even omni-directional types, typical values of which, in the case of GSM, range from about 40 to 60. If we use an optimistic figure of 30 the so-called 'effective isotropic radiated power (EIRP), given by the multiplying Power by Gain – is 1800W, which is further increased to 7.2kW if 4 carriers are transmitted – a value that is 120 times higher than the 60W quoted! The maximum EIRP value permitted by law is 1500W per carrier, whilst the maximum number of carrier signals is 16 (at 1800MHz) and 10 (at 900MHz); in practice, however, the number of carriers is usually restricted to 4 at the most, for the reason mentioned above.

3. The comparison neglects the all important frequency dimension, in particular the difference in the frequency that characterises the visible light from the light bulb from that which defines the radiation to be (invisible) microwave radiation. For whilst the output from such a bulb is, during the day, completely negligible in comparison with visible light of natural origin – i.e. that from the Sun – this is not so in the case of the microwave radiation emitted by a Mobile Telephone Mast day and night, which, several hundred of metres away, is typically 100 million million (10^{13}) times higher than the microwave radiation that is emitted by the Sun at the same frequency. Accordingly, the emissions of Mobile Telephone Masts have caused an enormous (and relatively sudden) alteration in the natural environment (at this frequency) from that in which life on Earth has, over a very much longer time, evolved. The impact of this altered environment on biology is further enhanced by the high coherence of the mobile phone radiation. [11]

5. Naila: 10-year Study of Residents near Mobile Telephone Mast Proves Cancer Link

Following a call by Wolfram König, President of the Bundesamt für Strahlenschutz (Federal Agency for Radiation Protection), to all doctors of medicine to actively collaborate in the assessment of the risk posed by Mobile Telephone Mast radiation, the aim of this study was to examine whether people living close to Mobile Telephone Masts were exposed to an increased risk of becoming ill with malignant tumors (i.e. cancer).

[12]

The basis of the data used for the survey were PC files of the case histories of patients between the years 1994 and 2004. While adhering to data protection, the personal data of almost 1,000 patients was evaluated for this study, which was completed without any external financial support. It is intended to continue the project in the form of a register.

The result of the study shows that the proportion of newly diagnosed cancer cases was significantly higher among those patients who had lived for the past ten years at a distance of up to 400 metres from the Mobile Telephone Mast, which has been in operation since 1993, compared to those patients living further away, and that the patients fell ill on average 8 years earlier. In the years 1999-2004, *i.e. after five years' operation of the transmitter installation, the relative risk of getting cancer had trebled* for the residents of the area in the proximity of the installation compared to the inhabitants of Naila outside the area. (*N.B. Naila is a town halfway between Berlin and Munich, near the German border with the Czech Republic*)

Previously, Santini and Santini (2001) and Santini et al (2002) [7] surveyed people living up to 300m from Mobile Telephone Masts. There was a statistical match between distance from Mobile Telephone Masts and health problems: tiredness up to 300m; headache, sleep disruption, 'discomfort' up to 200m; depression, memory loss, dizziness, visual disturbances up to 100m. Women were more susceptible than men.

6. International Medical Appeals: Freiburger, IDEA, Lichtenfelser, Hofer, Bamberger, and Helsinki

In the Freiburger Appeal [6], initially 50 doctors in Germany reported reduced therapeutic efficiency of prescribed drugs correlated with the use of pulsed microwaves, such as those from Mobile Telephone Masts. Some 40,000 signatories have now supported the appeal, including 1,200 doctors. Alongside the Freiburger Appeal there are now similar appeals from Lichtenfelser, Hofer, Bamberger and Helsinki. In the Irish Republic, the IDEA group of Doctors has its own reports relating to Mobile Telephone Masts [10] which confirm the findings of the Freiburger Appeal doctors.

7. Inadequacy of the ICNIRP Guidelines

The Government tell us "If a proposed mobile phone base station meets the ICNIRP guidelines for public exposure it should not be necessary for a local planning authority, in processing an application for planning permission or prior approval, to consider further the health aspects and concerns about them".

However, the view of Dr. Hyland from Warwick University is that these regulations are completely inadequate:

"... It must thus be concluded that GSM/TETRA telecommunication technology, as currently regulated by the ICNIRP safety guidelines, is less than safe, and constitutes a risk to public health because these guidelines afford **absolutely no protection** against **non-thermal biological influences** exerted by the kind of radiation emitted by the associated Base-stations." [11]

Dr. Hyland [11] has carried out a lot of research on Mobile Telephone Mast emissions. Relevant research shows how the current ICNIRP Guidelines, as adopted in the UK, are

woefully inadequate since they only protect against thermal effects and, vitally, not against NON-Thermal effects, which are far more relevant.

Since it is accepted that, at the levels given off by the Mobile Telephone Masts, thermal effects on people are negligible, ICNIRP Guidelines are therefore not protecting people at all. The government as well as the telecommunication industry and other interested parties appear to be deliberately ignoring the NON-Thermal effects of the radiation from Mobile Telephone Masts, claiming that there is no research to say that Mobile Telephone Masts are not safe. This is quite untrue. There is plenty of evidence from independent scientists that warn us of grave dangers to our health from the radiation from Mobile Telephone Masts.

It must also be noted that other countries have adopted much stricter guidelines than Britain has, and there are moves in some European cities for much, much lower limits on Mobile Telephone Mast emissions of microwave radiation.

8. Conclusion

“On the basis of many inter-consistent reports of adverse health effects in the vicinity of GSM Base-stations [Mobile Telephone Masts], it must be concluded that such installations pose a **real risk** to the health of people resident nearby. It is to be stressed that this conclusion is not purely personal, but is one that is shared by many eminent scientists of international standing and medical doctors worldwide.” [11]

And, a warning about government and industry ignoring these health issues, and the conflict of interest between research and revenue earning:

“.... The reality of such a risk to public health is not yet officially recognised, however, and those who dare to depart from the ‘official’ line, by warning of potential dangers to human health posed by *non-thermal influences* of the radiation used in mobile telephony, are subject to immediate criticism and derision – particularly by those with a vested interest in maintaining the growth of mobile telephony.” [11]

Other Sources of Information:-

GRAM website - www.nomasts.org.uk

Mast Sanity – www.mastsanity.org

Mast Action UK – www.mastaction.co.uk

Powerwatch – www.powerwatch.org

Radiation Research – www.radiationresearch.org

TETRAwatch – www.tetrawatch.net

References

[1] Bioelectromagnetics (23, pp 113-126) Microwave News Jan/Feb 2002

[2] Environmental Health Perspectives Volume 112, Number 6, May 2004 Magnetic-Field-Induced DNA Strand Breaks in Brain Cells of the Rat by

Henry Lai and Narendra P. Singh <http://ehp.niehs.nih.gov/docs/2004/6355/abstract.html>

also

<http://www.washington.edu/alumni/columns/march05/wakeupcall01.html>

- [3] EU Reflex Project (REFLEX: Risk Evaluation of Potential Environmental Hazards from Low Energy Electromagnetic Field Exposure Using Sensitive in vitro Methods) <http://www.verum-foundation.de/cgi-bin/content.cgi?id=euprojekte01>
- [4] "Melatonin metabolite excretion among cellular telephone users" by Burch JB, Reif JS, Noonan CW, Ichinose T, et al. In Int Journal Radiat Biol 2002;78:1029-1036
"Effects of the 1900 MHz electromagnetic field emitted from cellular phone on nocturnal melatonin secretion" by Jarupat S, Kawabata A, Tokura H, Borkiewicz A. in Journal Physiol Anthropol 2003; 22:61-63.
- [5] "Nerve Cell Damage in Mammalian Brain after Exposure to Microwaves from GSM Mobile Phones" by Leif G. Salford, Arne E. Brun, Jacob L. Eberhardt, Lars Malmgren, Bertil R.R. Persson. Environmental Health Perspectives, January 2003 (Journal of the US National Institute of Environmental Health Sciences)
- [6] Freiburger Appeal : http://www.emrnetwork.org/news/IGUMED_english.pdf
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
Letter from Bamberg to Edmund Stoiber: <http://www.tetrawatch.net/links/links.php?id=stoiberlet>
- [7] Santini 2002 Parliamentary Office for Evaluation of scientific and technological alternatives
- [8] Journal of BioElectromagnetics (23:488495) by researchers in Chemical Engineering and Molecular Physics.
- [9] "Effects of mobile phone emissions on human brain activity and sleep variables" by Hamblin D.L. & Wood A.W. in Int. J. Radiat. Biol. 2002; 78(8): 659-669.
- [10] IDEA (Irish Doctors Environmental Association): <http://www.ideaireland.org/emr2005dailreport.htm>
- [11] "The inadequacy of the ICNIRP Guidelines governing human exposure to the microwave emissions of GSM/TETRA Base-stations." By Dr. G J Hyland http://www.radiationresearch.org/Dr_Hyland_Dec03A.pdf
- [12] "The Influence of Being Physically Near to a Cell Phone Transmission Mast on the Incidence of Cancer" By Horst Eger, Klaus Uwe Hagen, Birgitt Lucas, Peter Vogel, Helmut Voit (all medical doctors). Published in *Umwelt-Medizin-Gesellschaft* 17,4 2004, as: 'Einfluss der räumlichen Nähe von Mobilfunksendeanlagen auf die Krebsinzidenz'
- [13] Dr Neil Cherry - <http://www.neilcherry.com/>
- [14] Electromagnetic Radiation and Epilepsy by Andy Davidson, Tetrawatch http://www.tetrawatch.net/papers/emr_epilepsy.pdf
- [15] Pall ML, Satterlee JD. Elevated nitric oxide/peroxynitrite mechanism for the common etiology of multiple chemical sensitivity, chronic fatigue syndrome and posttraumatic stress disorder. Annals of the New York Academy of Science, 2001;933:323-329, and Pall ML. Common etiology of posttraumatic stress disorder, fibromyalgia, chronic fatigue syndrome and multiple chemical sensitivity via elevated nitric oxide/peroxynitrite, Medical Hypotheses, 2001;57:139-145.

[16] Mobil- und Kommunikationsfunk in Kooperation mit falscher Lebensweise - Wie unsere Gesundheit durch stimulierte NO-Radikale (Stickstoffmonoxid) in Gefahr gerät, HESE Projekt:

<http://www.hese->

[project.org/de/emf/WissenschaftForschung/Warneke_Dr.%20rer.%20nat._Ulrich/Mobil-%20und%20Kommunikationsfunk.pdf](http://www.hese-project.org/de/emf/WissenschaftForschung/Warneke_Dr.%20rer.%20nat._Ulrich/Mobil-%20und%20Kommunikationsfunk.pdf)