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SCIENTIFIC ARGUMENTS TO PROVE IMMEDIATE APPLICATION OF PRECAUTIONARY PRINCIPLE MEASURES AGAINST MOBIL PHONE.

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INTRODUCTION

Millions of people are using mobile cell phones and hundreds of thousands of base stations antennas generate microwaves (ultra high frequencies) pulsed in low frequencies to make those phones work. Even though official studies say there is no danger in this new technology, the following text presents scientific arguments, which are in opposition and emphasize its harmfulness to health.

N.B. Some of the scientific arguments brought-up in this text have been presented in a paper at the 26th international meeting of Bio electromagnetic Society in Washington D.C.

(R. Santini. The reason for applying the precautionary principle against mobile phone base stations – Abstract book. 2004. Pages 293-294).

Many factors are likely to influence the exposure level to pulsed microwaves near to base station sitings and particularly:

- distance to transmitting sources;
- whether you are located within or outside the main beam emitting from ultra-high frequency transmitters"
- the presence of passive relay transmitters made of metallic structures (outside shutters of windows, garage doors, flight of stairs), which can magnify the density of microwaves electrical field at the measuring point (INERIS report, December 2003, p. 22);
- fluctuation of power transmitted by base stations due to the quantity of phones communicating and processed by those;
- presence of other magnetic sources in the environment;
- Operators modifications of antennas quantity and characteristics of a base station
- (R. Santini. Les téléphones cellulaires et leur station relais : Risques pour la santé ? La Presse médicale. 1999 – 28 : 1884 – 18886 – R. Santini et coll. Danger des téléphones cellulaires et de leurs stations relais. Pathol. Biologie. 2000. 48 : 525-528).

In the same way, the phone users' exposure level is likely to change with :

- length of communication;
- the use, or not, of head phone kit keeping the phone antenna away from the head;
- the user's age (children's greater sensitivity due to higher pulsed microwaves penetration);
- technical characteristics of the used device, ...
- Phone used in poor transmission conditions in basements, in raining conditions, in fog, ...
- (R. Santini et Coll. Electric fields from 900 MHz digital cellular telephones.
- Bio electromagnetic's . 20th meeting. Florida. Abstract book. 1998. Pages 95-96).

SCIENTIFIC ARGUMENTS

Many scientific arguments can be put forward to prove the immediate application of the precautionary principle against mobile and cell phone's base stations and in particular :

1. The chronic exposure to microwaves is responsible for biological effects.

The microwave syndrome (EHS) or radiofrequency sickness has been described since 1960. A recent publication ⁽¹⁾ specifies that this pathology is linked to chronic exposure at pulsed very high frequencies, similar to those generated by cell phone technology.

This technology is typical by :

- *Asthenic syndrome* (tiredness, irritation, nausea, headache, anorexia, nervous breakdown, depression);
- *cardiovascular dystonic syndrome* (bradycardia, tachycardia, hyper or hypotension);
- *diencephalic syndrome* (sleepiness, insomnia, mind concentration problem)

One associates also dermographisme (cutaneous allergy, eczema, psoriasis), modification in sanguine formula, disturbance in EEG and in reproduction, interference in sense organs and tumour.

N.B. Similar symptoms to those described here above of microwave syndromes are highlighted in residents who are neighbours of mobile phone antennas, and or users of mobile phones (see below).

2. Exposure to a mobile cell phone produces biological effects

2.1. Non specific disorders determine the "microwave's syndrome":

A Sweden/Norway a study from M. Sandström et al. put a highlight on relation between the quantity, the amount of time used on phone calls and the increase of complaints like cephalgia, tiredness, heat on ear sensation ⁽²⁾. A French survey led by R. Santini et al. also relates to a significant increased rate of complaint's revealed during communication (ear tingling, discomfort feeling, heat on ear), in relation to time spent (more than 2 minutes) and the number of calls per day (more than 2). Besides, this study emphasizes that women experience greater sensitivity for sleeping problems ⁽³⁾.

Other effects from cell phone were observed in men :

- sleeping alteration and blood pressure;
- increase of headache,...

2.2. REFLEX report in European Union – 200 :

European Union, Switzerland and Finland funded the study. Twelve laboratories have investigated, results of double blind experiments, on human and animal cell DNA exposed to ELF (50 Hz) and to mobile phone RF (1800 MHz pulsed or not at 217 Hz). TAS for mobile phone was **0,3 t 1 W/kg – so below 2W/kg limit recommended by ICNIRP.**

In December 2004, Prof. Franz Adlkofer, program coordinator presented the results. Mainly :

Electromagnetic fields generated by mobile telephones cause **DNA breaks** and increase **chromosome aberrations** in some exposure conditions of energy and duration

http://www.next-up.org/pdf/reflex_eu_%20rapport_%20fina_complet_%20next-up_org_fr.pdf

[Answer](#) from Prof Adlkofer for what concerns ICNIRP position on the REFLEX study.

2.3. Cell phones and brain tumours / “INTERPHONE” European study – 2006 :

- In 2003, a Swedish research, of 1617 patients showed an significant increase of astrocytome risk for analogical, digital and cordless phone users (**L. Hardell et al. Further aspects on cellular and cordless telephones and brain tumour. Int. J. Oncology. 2003.22 : 399-407**).
- In 2004, another Swedish study, of 752 persons reported an increase of acoustic neuroma (more than x 3,9) on the side of the head where the phone was held, and **after use of a mobile phone for more than 10 years** (**S. Lonn et al. Mobile phone use and the risk of acoustic neuroma. Epidemiology. 2004. 15 : 653 – 659**).
- In 2006, and in the INTERPHONE European study domain, an English issue (**S.J. Hepworth et al. Mobile phone study. Mobile phone use and risk of glioma in adults : case control study. BMJ Online Firsth, 20th January 2006**) did not find any significant effect of brain tumour. In the opposite, a German study (**J. Schüz et al. Cellular phones, cordless phones and the risk of glioma and meningioma. Am. J. Epidemiol. 2006. Online ISSN 1476 – 6256**) highlighted an increase of (2,2 x more) for glioma in phone users after 10 years of use.
- In 2006, L. Hardell et al. (**L. Hardell et al. Pooled analysis of two case-control studies on the use of cellular and cordless telephones and the risk of malignant brain tumours, diagnosed in 1997 – 2003. Int. Arch. Occup. Environ. Health. 2006. – PubMed. PMID/16541280**) Published a synthetic study showing a significant increased risk of acoustic nerve tumour for users of cell and cordless phones, **after 10 years of utilization**.

3. Biological effects are reported by residents in the proximity of mobile phone base stations and television senders.

3.1. For residents in the proximity of mobile phone base stations :

3.1.1. R. Santini results :

The first study issue is a French one. Published in 2001 by R. Santini in a French scientific journal (La Presse médicale), it's based on 530 residents, neighbours to antennas⁽⁴⁾. It highlighted an significant increase of complaints up to an distance of :

- 100 m for irritability, depressive tendency, memory loss, problems with concentration, dizziness.
- 200 m for headache, sleeping disorder, discomfort, skin problems.
- 300 m for fatigue.

The obtained results also show a greater sensitivity of women, and people older than 60 years and emphasize a greater harmfulness for a position in front of antennas⁽⁵⁾.

N.B. Some further results obtained in R. Santini study have been published in 2002 and 2003 in another French scientific paper (Pathologie Biologie) :

- **R. Santini et al. Enquête sur la santé de riverains de stations relais de téléphonie mobile : I / Incidences de la distance et du sexe. Pathol. Biol. 2002. 50 : 369 – 373.**
- **R. Santini et al. Enquête sur la santé de riverains de stations relais de téléphonie mobile : II / Incidences de l'âge des sujets, de la durée de leur exposition et de leur position par rapport aux antennes et autres sources électromagnétiques. Pathol. Biol. 2003. 51 : 412 – 415.**

3.1.2. Some other publications on effects on residents, neighbours to base stations antennas :

Two other studies, one Spanish E.A. Navarro et al. in 2003 ⁽⁶⁾ and another one Austrian H.P. Hutter et al. in 2006 ⁽⁷⁾ were published following those of R. Santini et al. Their results, which confirm those obtained by R. Santini warn of health problems revealed by residents, neighbours to base stations.

A Dutch government study issue in September 2003 ([Rapport – TNO-FEL-Report-03148](#)) was made in laboratory on volunteers in double blind condition. It shows evidently only after **45 minutes of exposure at 0,7 V/m** to RF, of the same type as the one of base station antennas (GSM 900 MHz – UMTS 2100 MHz), effects on memory, visual attention, wellbeing feeling, ...The results make significant differences visible between electro sensitive subjects and others.

3.1.3. Mobile base station antennas and cancer risks :

Many recent observations take into account a link between people, exposed to mobile phone base station antennas, and increased cancer risk :

- In France, an investigation was lead at Saint Cyr l'Ecole and was the object of a [report](#) from Institut de Veille Sanitaire (IVS) in October 2004 ("*Investigation du signalement d'un agrégat de pathologies diverses à Saint Cyr l'Ecole – Département des Yvelines (78) – 2004. 67 pages*"). According to this report, the total number is 2 times higher than the expected number, ...", and "we observe a much higher proportion in central nervous system tumours than in reference populations with a SAR in the order of 4".

Despite those worrying conclusions, increasing cancer cases were imputed to "chance" by IVS.

- In Israël, an investigation done by Usfie on base stations and radio transmitters proximity, residents report a number of 9,3 times higher level of cancer for a maximal exposure to RF of 10 V/m (27 microwatts per cm².)
- (S. Aburuken et al. A cancer cluster in Usfie (Israël). Preliminary notice. January 2005. Report can be found at : Shalita@shani.net.

- In Naila city, Germany, physicians conducted a study on more than 900 people, with 302 living in a perimeter of 400 m from the base station antennas. The doctors reported a doubled cancer risk in the resident group, neighbours to the base station antennas, compared to the people living further away (*Electrosmog – Revue raum et Zeit. 2004. 132 : 30 – 33*).

- An issue transmitted in 2004 (**D. Wolf et al. Increased incidence of cancer near a cell phone transmitter station. Int. J. Cancer. Prevention. 2004. 1 : 123 – 128**) highlights a relative increased cancer risk in the city of Netanya (Israël) for residents living in a radius of 350 meters from mobile phone base station antennas.

More than twenty years ago, the author of this text finalized an article on microwaves danger with this words :

“...one can't avert from mutagenic or carcinogenic risks which could result from human exposure to microwaves.”

[R. Santini et al. potentialités mutagène et cancérigène des micro-ondes. La Presse Médicale. 1984. 13 (3) : 126]

3.2. For T.V. transmitters :

- Adults exposed (radius of 2 km) to a T.V. transmitter show a significant increase of leukaemia and bladder cancer ⁽⁸⁾.

- Children exposed to a T.V. relay had a significant increase of risk to leukaemia in a radius of 12 km ⁽⁹⁾.
 - Children exposed to a radio transmitter undergo a drop in memory and attention, a drop in muscular performance and a drop in reflex reactions ⁽¹⁰⁾.
 - Women exposed to T.V. transmitter waves show a significant drop of immune defences ⁽¹¹⁾.
 - It was drawn to attention by residents near a radio transmitter in Rome that a significant increase of leukaemia death rate occurred within a radius of 6 km ⁽¹²⁾.
4. **Some countries have already adopted lower exposure limits for their population than those actually authorized.**

Italy, in their decree of 1998, passed a resolution for exposure threshold of 10 $\mu\text{W}/\text{cm}^2$ (6,1 V/m) instead of 450 and 900 $\mu\text{W}/\text{cm}^2$ (41 and 58 V/m) recommended by European Instances for 900 and 1800 MHz frequencies respectively. Grand-Duché of Luxembourg adopted, in December a 2000, an exposure threshold of 3 V/m. In Austria, the Salzburg Resolution recommended 0,6 V/m.

5. **Sensitivity to very high frequencies is not the same for everybody.**

In 1995, INRS (Institut National de Recherche et de Sécurité) subsequently concluded, in the light of a epidemiologic survey in the French Armée de l'Air (French air force) : "Unquestionably there exists a individual sensitivity to RF actions. Submitted to the same exposure, some people might get clinical problems, and some not". ⁽¹³⁾ According to IRPA (International Protection Association) this individual sensitivity to RF (electrosensitivity) would be of genetic order ⁽¹⁴⁾ but also because of age and sex of the exposed persons.

6. **Very low frequencies (ELF) are present in mobile phone signal.**

ELF have biologic effects (sleep problems, depression effects, pineal gland and melatonin disruption, increased carcinogenic risk,...) and this goes for EMF/ELF of 0,2 to 0,4 microTesla (2 to 4 milliGauss). ⁽¹⁵⁾ One must remember that ELF at level of EMF which could reach 18 milliGauss (1,8 microTesla) are highlighted in the mobile phone signal ⁽¹⁶⁾.

N.B.

- In 2002, CIRC (Centre International de Recherche sur le Cancer) finally classified ELF as a possible carcinogenic for human as soon as ELF reaches 0,4 microTesla (4milliGauss). For CIRC this value represents the limit at which the risk of leukaemia is double for children. (IARC – Press. Non-ionising radiation, Part. I : Static and extremely low frequency (ELF) of Electric and Magnetic Fields. 2002. 80 : 429 Pages. ISBN 92 – 832 – 1280 – 0).

- **But**, already in 1993, in an article "Controverse" published in a journal of MGEN, R. Santini pointed out, in a controversy with Doct. J. Lambrozo (medical manager for EDF), the carcinogenic risk for ELF from 3 mille Gauss (0,3 microTesla) – (R. Santini. Les lignes à haute tension en question. Valeurs Mutualistes MGEN. 1993. 154 : 40 - 41).

Since the disclosure of the danger of ELF by CIRC in 2002 – and 10 years after R . Santini's warning – one can only ask how many children with leukaemia could have been avoided in France if radio protection measures had been applied as early 1993 ?
Certainly many hundred.

CONCLUSION

In regard of what we found and in order to protect population living near base stations, and phone users, we should apply the precautionary principle right away and set out to work on the radio protection measures, already described in 1998 in R. Santini book. ⁽¹⁸⁾ :

a) For mobile phone base stations :

- Avoid to site them closer than 300 m to habited areas;
- In no circumstances can the main beam of the antenna microwaves be pointed to residences or living places;
- In areas near antenna's, residents can not be exposed to more than $0,1 \mu\text{W}/\text{cm}^2$ ($0,61 \text{ V/m}$ microwave power density^(17,18), ...

N.B. In order to command respect to electro sensitive persons and the more fragile population (children, old people, sick, immune-depressed, ...) the power density of pulsed microwaves should be near zero, as a rule, in the neighbourhood of mobile phone antenna base station's, their environment is likely to affect those particular populations.

b) For mobile telephone users :

- The phone connection should not exceed 2 to 3 minutes with a maximum of 4 to 5 communications per day ;
- Young people under 16 should not use their telephones except in emergency as it has already been recommended in official reports in Great-Britain and in Russia^(17,18), ...

But still the industry tries to impute problems, manifested by residents living near sitings of antenna base stations, to psychosomatic manifestations linked to the sight of antennas. This assertion is not credible. As a matter of fact, it has been proofed that wild animals (white storks) living near mobile phone base station antennas, develop abnormal behaviour and experience a drop in reproduction.⁽¹⁹⁾

Awareness of the danger of the technology, used in mobile telephones is urgent. It should go the same way as the alarm that was sent in "L'APPEL DE FRIBOURG" (Friburg Appeal) by German physicians associate the radiofrequency sickness symptoms in their patients to radio waves: "The increasing appearance of these illnesses mark the beginning of the exuberance of radio waves in the environment" – (Copy of the Friburg Appeal is at : igumed@gmx.de)

ADDITIONAL BIBLIOGRAPHIC REFERENCES
(see original [French PDF version](#))

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Roger SANTINI

Honour President – Next-up Founder

Is not going to participate with all of us anymore in the battle for a better life.

He left us on the 14th of June 2006

But he is still even more live than dead ...

The last respect and memory honours of France

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